Appendix B

Environmental Impact Assessment Reports

Environmental Impact Assessment Report

Hawthorne Multi-Use Bridge

Windsor, Ontario

SWW187112

Submitted to:

The Corporation of the City of Windsor
2450 McDougall
Windsor, Ontario Canada
N8X 3N6

Submitted by:

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November 2018

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wood.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1.0 INTRODUCTION

Wood Environment & Infrastructure Solutions, a division of Wood Canada Limited (Wood) has been retained by the City of Windsor (City) to complete the Environmental Assessment and to prepare a scoped *Environmental Impact Assessment (EIA) Report* for the detail design and construction of the Hawthorne Multi-Use Bridge crossing over the Little River; herein referred to as the Project. The Project is being completed as a Schedule 'B' project under the Municipal Class Environmental Assessment (MCEA) (June 2000, as amended in 2007, 2011, and 2015) process. This report was developed in consultation with regulatory agencies as applicable. The field survey program as described below was executed following standard biological inventory and assessment procedures under the *Environmental Assessment Act* and the *Conservation Authorities Act* and protocols developed by the Ontario Ministry of Natural Resources and Forestry (MNRF) to meet the requirements of the Provincial Policy Statement (PPS).

This report provides a summary of the outcome of the field survey program relating to aquatic and terrestrial ecosystem resources, including an assessment of natural heritage features and functions within the vicinity of the Project. Field surveys visually assessed and documented fish habitat features within the Little River, catalogued botanical species, delineated vegetation communities, identified significant natural features and reported on potential for wildlife occurrences. With respect to Species at Risk (SAR), this report also provides a summary of background information, including consultation with MNRF, and provides an evaluation of potential SAR occurrence based on habitat preferences for species where potential occurrences are known.

The report also provides a description of the detail design of the proposed bridge crossing, environmental concerns related to the Project, assessment of impacts, both temporary and permanent, and recommendations for mitigation measures and strategies to be implemented during construction. The preferred alternative design for the multi-use bridge was developed as part of the MCEA Study and carried forward within this report.

The primary intent of this report is to serve as the technical submission to support the review and approval by the Essex Region Conservation Authority (ERCA) under the *Conservation Authorities Act* – Ontario Regulation (O. Reg.) 150/06 - Development, Interference with Wetlands and Alterations to Shorelines and Watercourses. To further support this submission and to facilitate the initiation of the formal review process by ERCA, an application form is provided in (Appendix A).

Study Area

The proposed Hawthorne Multi-Use Bridge crosses the Little River between Esplanade Drive and Tecumseh Road; immediately east of the Hawthorne Drive cul-de-sac (Figure 1). The study area to document and evaluate aquatic ecosystem resources included a reach within the Little River that extended upstream and downstream of the crossing for 125 m. The study area relative to terrestrial ecosystem resources included a 120 m buffer around the bridge crossing.

P:\2018\Projects_Other\SWW187089 City of Windsor Pedestrian Bridges\11 GIS\MXD\Project Location Hawthorne Pedestrian Bridge 1.mxd

LEGEND

- Potential Bridge Location
- Railway
- Watercourse
- Waterbody

NOTES:
- Aerial imagery extacted from Google Earth, 2017.

0 50 100 200 300 400 500 Metres

Datum: NAD83
Projection: UTM Zone 17N

N W E S

THE CITY OF WINDSOR wood.

HAWTHORNE PEDESTRIAN BRIDGE

Project Location

PROJECT N°: SWW187089 SWW187112	**FIGURE: 1**
SCALE: 1:8,000	DATE: October 2018

SECONDARY SOURCE REVIEW

Secondary sources of information were gathered to contribute to a review of natural heritage elements within the Project study area including database searches to ascertain species community compositions and potential occurrences of SAR either in or adjacent to the Project study area. Resources used to conduct the secondary source review include:

- Ministry of Natural Resources and Forestry (MNRF) Natural Heritage Information Centre (NHIC) database (1km^2 square 17LG4187);
- Atlas of the Breeding Bird of Ontario (100 km ^{2} 17LG48) (ABBO; Cadman et al., 2007);
- eBird.org (Little River Hotspot beside Aspen Lake, 1 km northeast) (Cornell Lab of Ornithology, 2017);
- Atlas of the Mammals of Ontario (AMO; Dobbyn, 1994);
- Bat Conservation International (BCI 2017);
- Ontario Reptile and Amphibian Atlas (100km^2 square 17LG48) (ORRA; Ontario Nature, 2015);
- Ontario Butterfly Atlas (100 km^2 square 17LG48) (OBA; MacNaughton et al. 2016);
- Essex River Conservation Authority (ERCA) publications including watershed report cards;
- Fisheries and Oceans Canada Aquatic SAR maps; and,
- Municipal records associated with the Official and Master Plans and/or other planning documents.

In addition to the secondary sources listed above, ERCA and the Aylmer District MNRF were contacted for natural heritage and species information in the vicinity of the Project study area. The MNRF was contacted by Wood on April 23, 2018. SAR records, significant natural heritage features and fish community information for the Project study area and surrounding lands were requested at that time. MNRF provided a response to this request on June 28, 2018. Details of the response are provided in the sections below. ERCA was solicited for fish community information and fish sampling records from known sampling stations within the watershed on April 23, 2018. ERCA responded to this request on May 11, 2018. Copies of all relevant agency correspondence is included in Appendix B.

4.0 FIELD SURVEY METHODOLOGIES

Qualified Wood staff executed the field survey program as described below on the mornings of May 28 and July 10, 2018. Field surveys were completed during suitable weather conditions for observing wildlife. Surveys occurred on foot to assess the aquatic and terrestrial ecosystem conditions, as well as searches for potential SAR and evaluation of SAR habitat. A portion of the manicured lawn east of the Little River is surrounded by chain link fence and was surveyed from the fence boundary only, as Permission to Enter (PTE) was not obtained for this area.

4.1 Aquatic Ecosystem

To augment the secondary source information, an aquatic habitat assessment was undertaken within the Little River to document fish habitat features and general fluvial conditions. Field conditions were assessed in accordance with the Ministry of Transportation (MTO) Environmental Guide for Fish and Fish Habitat (MTO 2009). The Project study area included a zone of detailed assessment extending 30 m upstream to 30 m downstream of the bridge crossing. Completed habitat mapping field sheets are provided in Appendix C. Due to water depth and lack of water clarity, detailed channel characteristics were not measured within the Little River, only visual observations from the shore are provided within this report. No formal fish community surveys were undertaken as sufficient background information was available to infer the sensitivity and significance of the fish community present. A photographic record of Little River is provided in Appendix D. Water chemistry and habitat characteristics are summarized below.

4.2 Terrestrial Ecosystem

4.2.1 Vegetation Communities and Plant Inventories

Site investigations included visiting accessible vegetation units within the terrestrial study area. Vegetation ecosites were delineated and classified as per the Ontario Ecological Land Classifications (ELC) System (ELC; Lee et al.1998). Field sheets are provided in Appendix E and a list of botanical species observed is provided in Appendix F. The First Approximation of ELC (Lee et al. 1998) was applied for the determination of ecosite type; however, the 2008 catalogue of ecosite types was applied where ecosites could not be determined through the application of the First Approximation. The occurrence of ELC communities were cross-referenced with provincially significant vegetation communities as identified in the Significant Wildlife Habitat Technical Guide (OMNR 2000) and Significant Wildlife Habitat Criteria Schedules (SWHCS) for Ecoregion 7E (OMNR 2015) to determine whether these habitats exist with the Project study area.

Botanical species occurrences were cross-referenced with the NHIC database to determine existence of rare species within the Project study area. Common and scientific names of botanical species are based on the current nomenclature as listed in the NHIC database.

Vegetation inventories were conducted by walking linear transects, parallel to Little River, throughout the study area. All plant species observed were recorded, and the entire study area was surveyed for SAR botanical species.

Wildlife Inventories

Wildlife inventories were compiled based on incidental observations, including evidence of tracks and/or scat. Habitat was assessed for significant wildlife habitat attributes as per the SWHCS for Ecoregion 7E. The MNRF defines Significant Wildlife Habitat (SWH) as ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or Natural Heritage System (OMNR 2000; OMNR 2015). SWH is divided into four (4) main categories:

- Seasonal Concentration Areas of Animals;
- Rare Vegetation Communities and Specialized Habitat for Wildlife;
- Habitat for Species of Conservation Concern (excluding Endangered or Threatened species); and
- Animal Movement Corridors.

To determine the existence of SWH within the Natural Heritage System, the SWHCS identify ecosites and/or natural features suitable for wildlife to carry our critical life processes (listed within the four main categories described above). As the Project study area falls within Ecoregion 7E (Lake Erie Lake Ontario Ecoregion), the SWHCS for Ecoregion 7E applies to determination of candidate SWH within the Project study area.

Species at Risk

In Ontario, SAR are those species whose individuals or populations are considered Extirpated, Endangered, Threatened, or Special Concern, as determined by the provincial Committee on the Status of Species at Risk in Ontario (COSSARO), and are regulated by the provincial *Endangered Species Act*, *2007* (ESA). The federal *Species at Risk Act, 2002* (SARA) also applies in Ontario; however, federal agencies typically defer responsibility for SAR to the province unless the subject lands are federally-owned.

The potential for SAR and rare species to occur with the Project study areas was determined based on a review of background information, agency consultation and the completion of site level reconnaissance surveys. The background information included a review of the NHIC online database of significant floral and faunal species near the Project study area. The background information noted above (i.e., wildlife atlases) were also used to develop a complete list of SAR and rare species occurrences that may overlap the Project study area for the purpose of evaluating the potential for SAR occurrence based on habitat preferences for each species. Additionally, correspondence with MNRF contributed potential SAR within the Project study area.

Visual surveys for SAR and SAR habitat were conducted within the study area, with particular attention to those species identified through background information and following consultation with MNRF (Appendix B).

4.0 EXISTING CONDITIONS

4.1 Aquatic Ecosystem

The Little River watershed covers an area of 64.9 kilometer $(km)^2$, with the Upper Little River watershed, location of the Project, covering an area of 45 km^2. To support agricultural land uses, the Upper Little River watershed has been historically dredged, ditches have been constructed and tile drains were installed to improve drainage (Chapman and Putnam, 1984). Within the Project study area, Little River flows in a northward direction along the western margin of Teedie Park and the Little River Corridor to the Detroit River. The Detroit River is approximately 3.3 river km (rkm) downstream of the proposed bridge crossing. The morphology of Little River downstream of the Project study area has been modified and straightened and is considered to be highly altered nearing the confluence of the Detroit River. Downstream alterations have included shoreline hardening (i.e. sheet pile walls) and dredging for recreational use and flood control.

Previous fish community studies undertaken in 2009 and 2011 within the Little River watershed resulted in catch dominated by coolwater species. Species that were identified as part of these studies include White Sucker (*Catostomus commersonii*), Common Shiner (*Luxilus cornutus*), Creek Chub (*Semotilus atromaculatus*) and Quillback (*Carpiodes cyprinus*). Within smaller tributaries of the Little River watershed Brown Bullhead (*Ameiurus nebulosus*), Bluegill Sunfish (*Lepomis macrochirus*), Rock Bass (*Ambloplites rupestris*), Banded Killifish (*Fundulus diaphanus*) and Yellow Perch (*Perca flavescens*) were captured during these previous studies. These studies also reported warmwater species, including Pumpkinseed Sunfish (*Lepomis gibbosus*) and Largemouth Bass (*Micropterus salmoides*). Fish catch was noted to be greater, with the highest diversity of species identified, within Little River near Lauzon Road (Hydro One, 2010), upstream of the Project site. This section of the Little River is noted to be in a more natural state compared to downstream reaches near the Detroit River, with a well developed, yet narrow, riparian buffer and where meandering is evident from aerial satellite photography.

Previous reports (Stantec, 2017) indicate that fish surveys completed by ERCA from 1979 until 2007 included stations in the Upper Little River Watershed. Fish species identified from these historical surveys that were not identified during the 2009 and 2011 studies include:

- Warmwater fish species: Green Sunfish (*Lepomis cyanellus*), Goldfish (*Carassius auratus*), Tadpole Madtom (*Noturus gyrinus*), Tubenose Goby (*Proterorhinus semilunaris*), Round Goby (*Neogobius melanostomus*), Freshwater Drum (*Aplodinotus grunniens*) and Logperch (*Percina caprodes*).

- Coolwater fish species: Hornyhead Chub (*Nocomis biguttatus*), Black Crappie (*Pomoxis nigromaculatus*), White Crappie (*Pomoxis annularis*), Northern Pike (*Esox lucius*), Golden Shiner (*Notemigonus crysoleucas*) and Blackside Darter (*Percina maculata*).
- Coldwater fish species: Mottled Sculpin (*Cottus bairdii*) and Brook Stickleback (*Culaea inconstans*).

MNRF was consulted as it related to fish records, but no historical or current fish records for the Little River were available; however, fish records were provided for the adjacent Hawkins Drain. Fish species identified in Hawkins Drain include Killifish (*Fundulus sp.*), Bluegill Sunfish, White Sucker, Gizzard Shad (*Dorosoma cepedianum*), Largemouth Bass, Spottail Shiner (*Notropis hudsonius*) and Yellow Perch. Hawkins Drain is approximately 550 m north of the proposed bridge crossing location.

Channel diagnostics of the Little River as determined from the field survey were noted to be generally consistent throughout the Project study area, where flow characteristics were described as a slow moving flat morphology. Water clarity was turbid and brown in colouration with limited visibility below the water surface. Substrate composition could not be examined due to lack of visibility below the surface and water depth at the centre of the watercourse. At the proposed bridge crossing location, the Little River is approximately 9 m in width and has a straight planform alignment within the overall valley. The maximum water depth was measured to be approximately 0.9 m. Observable nearshore substrates included a combination of sand, gravel and minor cobble substrate. Given the observed conditions, local and watershed topography and proximity to the Detroit River, it is expected that fine materials comprise the majority of substrate within the study area. Along the east bank of the Little River near the proposed bridge crossing an engineered concrete block spillway was observed. The spillway was approximately 6 m wide and extended into the water and up along the embankment in proximity to the existing Teedie North/South Trail Multi-Use Path (MUP) (Ganatchio Trail – Little River Extension). The riparian area included a narrow, but dense buffer of deciduous trees along each side of the Little River which provides some form of thermal shading to nearshore areas (Figure 2). Within the valley, Little River is confined along the east bank, while on the west side there is an approximately 8 m wide floodplain. Vegetation within the floodplain is dense and consists of herbaceous species with scattered deciduous trees. A MUP runs parallel to each side of the Little River within the study area. West of the Little River riparian area, a narrow stretch of manicured lawn is present between the MUP and residential area of Hawthorne Drive. East of the Little River riparian area, a large area of manicured lawn is present beyond a chain link fence. A residential area of Esplanade Drive is present south of the proposed bridge crossing. Commercial development is further to the east of the above noted manicured lawns.

Water Quality

Surface water quality parameters were measured during each field survey. Water temperatures of the Little River were recorded as 21.7 ˚C and 24.1˚C, respectively. While, pH was recorded as 7.7 and 7.5, and conductivity was recorded as 1162 µs/cm and 1349 µs/cm, during the respective visits.

Fish Habitat Characteristics

The observed nearshore gravel substrate provides some opportunities for cover, though the extent is unknown. As indicated above, substrate composition is likely to include finer material rather that coarse material., Minor areas of undercutting were noted along the east bank through this reach, however, due to water level and inaccessibility, a full assessment could not be readily completed. Areas of undercutting are known to provide cover and refuge for fish. The west side of the channel slopes gradually downward from the floodplain and is unlikely to provide any areas of undercutting. No fish species, structures or aquatic vegetation were observed within any reach of the Little River. No significant or critical habitat features were observed or noted during the completion of the field surveys. As noted above, the Little River is known to provide habitat for a variety of species and as such these species are likely dependent on the available resources for foraging, reproduction and nursery functions. The lack of rare and/or unique habitat features, including aquatic vegetation, boulder clusters, submerged logs, most often utilized by fish suggests that the local habitat available is not critical for their survival.

4 Species at Risk

Occurrence potential for SAR to inhabit the Little River was determined through a search of the MNRF's NHIC (MNRF, 2018a), a review of DFO's federal aquatic SAR mapping (DFO, 2018) and through consultation with MNRF. SAR that were identified within the NHIC square encompassing the proposed bridge crossing location and provided by MNRF include:

- Snapping Turtle, *Chelydra serpentina*, (Listing Status - Special Concern)

Snapping Turtles generally inhabit areas with soft substrate and aquatic vegetation. No aquatic vegetation was observed within the Project study area; however potential for soft substrate does exist as noted above in Section 4.1. Slow moving water within shallow nearshore areas on the west side of the Little River were noted to provide suitable habitat for this species (Appendix D). Although Snapping Turtle are currently listed as Special Concern, they receive no specific protection under the ESA.

No federally protected SAR were identified from DFO mapping (DFO, 2018); however, occurrence records were noted for Pike Creek which lies east of the Little River watershed. Protected species identified include Grass Pickerel (*Esox americanus vermiculatus*), Northern Brook Lamprey (*Ichthyomyzon fossor*), Silver Chub (*Macrhybopsis storeriana*), Silver Lamprey (*Ichthyomyzon unicuspis*), Spotted Sucker (*Minytrema melanops*) and Warmouth (*Lepomis gulosus*). Based on species habitat requirements, these species are not expected to inhabit the Little River within the study area.

4 Terrestrial Ecosystem

Physiography

The Project study area is located within Essex Clay Plain and St. Clair Plain Physiographic Region. The St. Clair Plain Physiographic Region covers an area of 5,900 km^2 within Essex and Kent County. The area is comprised mostly of agricultural land on clay and sand plains of ancient lake bottoms and bedrock. Sand and clay plains extend down 30 to 60 m before bedrock is encountered. Ground surface elevation is between 175 and 213 meters above sea level (masl). Thea area is generally flat and varies little topographically (Chapman and Putnam, 1984).

Soils

Soils in Essex County are generally considered to be poorly-drained. Significant alterations to drainage have been undertaken historically to improve agricultural production. The construction of drainage ditches and tiling are the most common practice employed to improve drainage. Some small undrained areas contain peat or muck accumulations. Three (3) major soil associations in Essex County are:

1. Brookston Soil Association (most predominant);
2. Berrien Association; and,
3. Haldimand Association.

Brookston Soil consists of very deep, poorly drained soils of silty material and the underlying loamy till in depressions on till plains and moraines.

Geotechnical investigations at the proposed bridge crossing were undertaken as part of this assignment indicate the presence of a thin veneer of topsoil followed by silty clay. The silty clay layer was stratified between the weathered zone and the crust zone. The weathered zone extended in depths ranging from 2.1 m to 2.9 m below the ground surface. The crust zone extended in depths ranging from 3.7 m to 5.5 m below the ground surface. Underlying the crust

was the grey zone where the boreholes terminated. The grey zone stratum was characterized by increases in natural moisture content and virtually no fissures as compared to stratum above. A total two (2) boreholes were investigated for this assignment. Complete results of these evaluations can be found in the associated technical reports (Wood, 2018).

4 Vegetation Communities and Habitat

The Project study area is located within the Carolinian Deciduous Forest Region (Rowe, 1972). Typical species include Sugar Maple (*Acer saccharum*) and American Beech (*Fagus grandifolia*), mixed with Basswood (*Tilia Americana*), Red Maple (*Acer rubrum*), Red Oak (*Quercus rubra*), White Oak (*Quercus alba*), and Bur Oak (*Quercus macrocarpa*). Secondary species include Black Walnut (*Juglans nigra*), Sycamore (*Platanus occidentalis*) and Shagbark Hickory (*Carya ovata*). Less common species include Butternut (*Juglans cinerea*), a provincial SAR, and Bitternut Hickory (*Carya cordiformis*), Rock Elm (*Ulmus thomasii*), Silver Maple (*Acer saccharinum*) and Blue Beech (*Carpinus caroliniana*). The presence of coniferous species is generally limited in Essex County; however White Pine (*Pinus strobus*), Eastern Hemlock (*Tsuga canadensis*) and Eastern Red Cedar (*Juniperus virginiana*) are reported. Rare coniferous species include Black Spruce (*Picea mariana*), Tamarack (*Larix laricina*) and Eastern White Cedar (*Thuja occidentalis*). Tree cover within the Little River watershed is estimated to be 2.2% (ERCA, 2013).

The Project study area is within Ecoregion 7E, the *Lake Erie-Lake Ontario Ecoregion*. Approximately 78% of the ecoregion is cropland and pasture, with forest cover comprised of deciduous (11%) and mixed forest (<1%) covering a majority of the remaining natural landscape (Crins et al. 2009).

Within the Project study area, west and east of the Little River includes dense residential and commercial development, with areas of manicured lawn present. The embankments and floodplain are comprised of cultural woodlands and thickets with mainly non-native and early successional species. Similar habitat is present above the embankments, with an increased layer of upland groundcover consisting of non-native early successional species. A complete listing of species observed can be found in Appendix D.

4.2.1.1 Ecological Land Classification

Field surveys classified the vegetation surrounding the Little River in accordance with the Ecological Land Classification (ELC) of Southern Ontario Guide (Lee et al. 1998 and 2008 amendments). Field sheets are provided in Appendix E. The following vegetation communities were identified:

- CUT: Cultural Thicket (east and northeast of proposed bridge crossing location); and,

- COW: Cultural Woodlot (west side of Little River and southeast of proposed bridge crossing location).

Land use in the general vicinity of the proposed bridge crossing, including areas that are not anticipated to be impacted by the Project, area shown in Figure 2 and summarised in Table 2 below.

Table 1: Ecological Land Classification

Land Type Classification	Description
CUT1 Mineral Cultural Thicket Ecosite	The northeast portion of the study area is dominated by shrub cover consisting mainly of Gray Dogwood, Staghorn Sumac and Hawthorn *sp*.
CUW1 Mineral Cultural Woodland Ecosite	The remainder of the naturalized portion of the study area was comprised of cultural woodland containing mainly early successional and non-native tree species including Siberian Elm, Silver Maple, Green Ash and Weeping Willow.

4.2.1.2 Vegetation and Botanical Species

The areas to be directly impacted along the embankments of the Little River are currently dominated by typical plant species of disturbed, sunny habitats, including a mixture of native and non-native species. No plant SAR or provincially rare species were observed within the area of impact or elsewhere in the area investigated as part of the field surveys. A complete species list is provided in Appendix F.

4 Wildlife

Inventories of wildlife were compiled from available literature and resource atlases. Based on a review of background information, 108 species of birds, 17 species of butterfly, 23 species of mammals, 9 species of reptiles, and 5 species of amphibians are reported to occur within the region encompassing the Project study area. A compiled species list with conservation ranks and the record sources is provided in Appendix F.

Birds

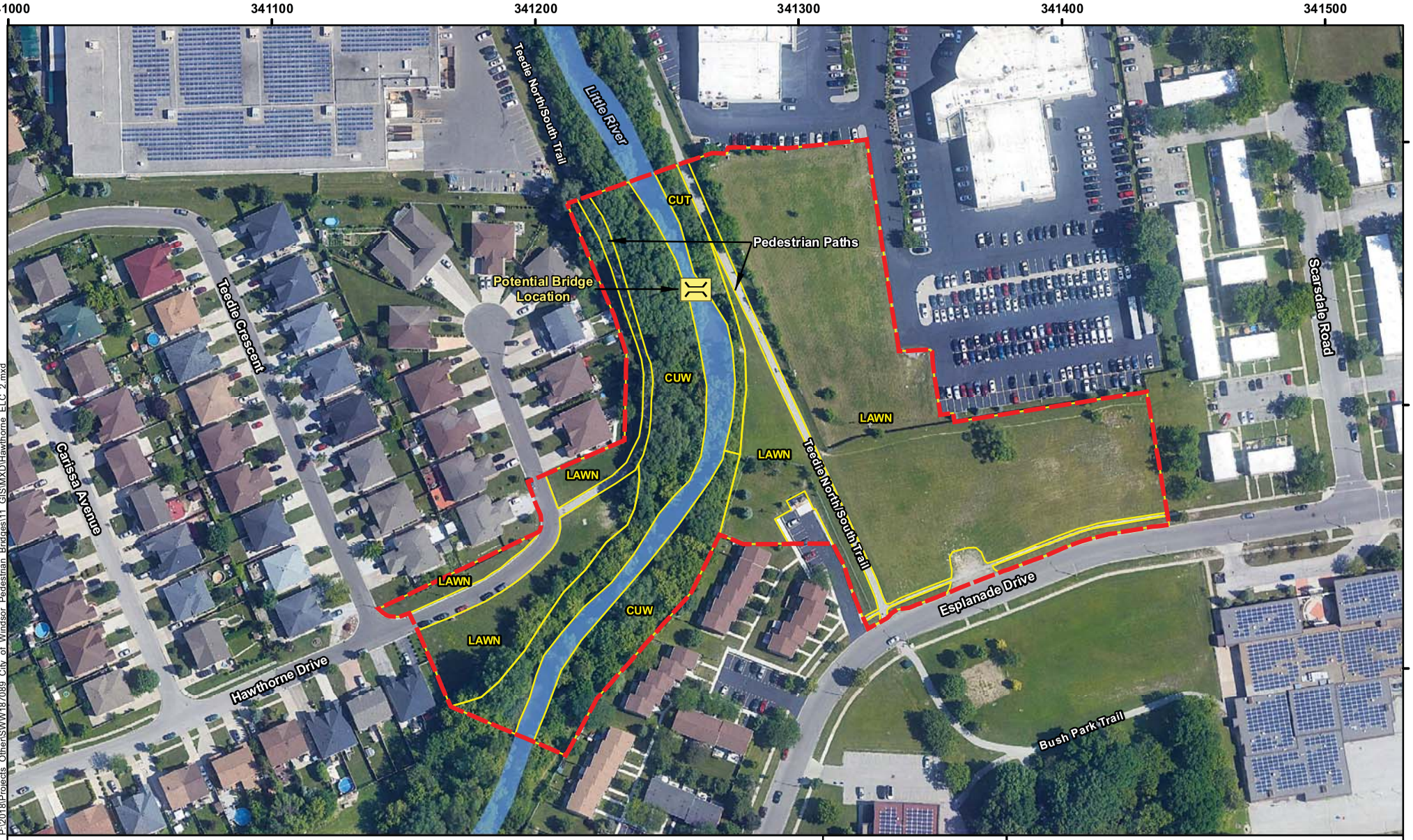
Using the ABBO list, eBird location approximately 1 km northeast of the proposed bridge crossing location, results from the 2018 field surveys and MNRF correspondence, 108 identified species of birds, including five (5) Endangered or Threatened SAR, were identified for the Project study area. The ABBO lists 82 species within the appropriate square, with 52 of these species confirmed to be breeding. The three (3) species identified through correspondence with MNRF are also included in the ABBO list.

The Project study area was surveyed for the presence of bird nests and evidence of breeding activity during the field surveys. No nests or breeding activity were observed. A total of seven (7) species of birds were observed, including American Robin (*Turdus migratorius*), Black Throated Blue Warbler (*Setophaga caerulescens*), Canada Goose (*Branta canadensis*), European Starling (*Sturnus vulgaris*), Norther Cardinal (*Cardinalis cardinalis*), Song Sparrow (*Melospiza melodia*), and Red-winged Blackbird (*Agelaius phoeniceus*).

Mammals

Within the vicinity of the Project study area, 19 species of mammals were reported in the AMO (Dobbyn, 1994), additionally, MNRF correspondence identified that Endangered SAR bats are known to occur in the general area. Bat Conservation International (BCI) ranges for bats in Ontario includes four (4) Endangered bat species whose ranges encompass the Project study area. None of these species are identified as occurring within the Project study area in the AMO. It is important to note that the exact locations of species occurrences are not available from the Atlas or BCI. Consequently, it is likely that many of these species do not occur within the Project study area.

White-tailed deer are the primary resident mammal wildlife in Essex County with ranges and habitat usage reflective of the season and current urban and agricultural land use practices. Deer can be typically found along forest/woodlot edges for the majority of the year with increased congregating occurring in denser cover during the winter. The availability of woodlots and suitable wintering yards are known limiting habitat features for deer in Essex County. Land resource mapping indicates that deer habitat in Essex County is considered to be Class 2 (very slight limitations to the production of ungulates) and Class 2W (Class 2 winter ranges) (CLI, 1990).



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LEGEND

- Potential Bridge Location
- Survey Area
- Ecological Land Classification (ELC)
  - CUM: Cultural Meadow
  - CUT: Cultural Thicket
  - LAWN: Manicured Lawn
- Buried Watercourse
- Permanent Watercourse
- Waterbody

0 25 50 100 150 200 Metres

NOTES:
- Aerial imagery extacted from Google Earth, 2017.

Datum: NAD83
Projection: UTM Zone 17N

N W E S

THE CITY OF WINDSOR wood.

HAWTHORNE PEDESTRIAN BRIDGE

Ecological Land Classification

PROJECT N°: SWW187089 SWW187112	FIGURE: 2
SCALE: 1:2,000	DATE: October 2018

Many distinct species of mammals are found in Essex County. According to Eder (2002) a total of 34 mammals species have ranges including Essex County and may overlap the Project study area. Mammal species common to Essex County include the Little and Big Brown Bats (*Myotis lucifugus* & *Eptesicus fuscus*), Eastern Grey Squirrel (*Sciurus carolinensis*), Eastern Cottontail (*Sylvilagus floridanus*), Raccoon (*Procyon lotor*), Striped Skunk (*Mephitis mephitis*), Red Fox (*Vulpes vulpes*), Coyote (*Canis latrans*) and White-tailed Deer (*Odocoileus virginianus*). Of the 34 mammal species found in Essex County, three (3) are considered rare. These include the Gray Fox (*Urocyon cinereoargenteus*) (considered Threatened by MNRF and COSEWIC); the Eastern Pipistrelle (*Pipistrellus subflavus*) and the Eastern Mole (*Scalopus aquaticus*). Of these species, only the Eastern Mole has been recorded in Essex County and the species was identified 1997 in the Leamington area. This species is considered Special Concern (SC) both provincially and federally and imperiled (S2) by NHIC (2009).

No mammals were observed during the completion of the field survey program.

Reptiles and Amphibians

Within the vicinity of the Project study area, nine (9) species of reptiles and five (5) species of amphibians were reported in the ORAA (Ontario Nature, 2017) and NHIC database and through MNRF correspondence. It is important to note that the exact locations of species occurrences are not available from the Atlas. Consequently, it is likely that many of these species do not occur within the Project study area. One (1) Green Frog was observed during the completion of the field survey program.

Within the Project study area, the Little River is slow moving, turbid and brown in colouration which may be suitable for reptiles and amphibians. The lack of aquatic vegetation and presence of some gravel substrate limits suitability for turtles. The slow flow and gradual slope on the west side of the Little River was noted to provide suitable habitat. The adjacent floodplain and banks may provide foraging and thermoregulation opportunities for snakes; however, the surrounding dense development and manicured lawn limits opportunities for these species.

Invertebrates

Background research using NHIC, OBA, and MNRF correspondence included 17 species of butterfly (only invertebrates identified), none of which are Threatened or Endangered. It is important to note that the exact locations of species occurrences are not available from these sources. No invertebrates were observed during completion of the field survey program; however,

Milkweed species, an attractant for Butterflies, particularly Monarch (*Danaus plexippus*), was observed in sporadic areas.

4□□□□ Natural Heritage Features and Areas

The Little River and the adjacent narrow natural riparian area provide refuge to wildlife from the surrounding residential and commercial development within the valley corridor. This natural corridor is suitable to provide foraging, thermoregulation and nesting habitat to a variety of wildlife species.

4□□4□ Significant Wildlife Habitat

4.2.4.1 Seasonal Concentration Areas

Seasonal concentration areas are those habitats where large numbers of a single species or many species congregate at one or several times a year. The SWH Criterion Schedules (SWHCS) for Ecoregion 7E outlines 14 wildlife habitats meeting the criteria for seasonal concentration areas of animals. Based on habitats and ecosites documented during field surveys, no candidate seasonal concentration areas are present within the Project study area.

4.2.4.2 Rare Vegetation Communities

Rare vegetation communities often contain rare species, particularly plants and small invertebrates, which depend on such habitats for their survival and cannot readily move to or find alternative habitats. The SWHCS for Ecoregion 7E outlines seven (7) wildlife habitats meeting the criteria for rare vegetation communities. Based on habitats and ecosites documented during field surveys, no candidate rare vegetation communities are present within the Project study area.

4.2.4.3 Specialized Habitat of Wildlife

Specialized habitat for wildlife are those microhabitats that are critical to a species or several species. The SWHCS for Ecoregion 7E outlines seven (7) wildlife habitats meeting the criteria for specialized habitat for wildlife. Based on habitats and ecosites documented during field surveys, no candidate specialized habitat for wildlife is present within the Project study area.

4.2.4.4 Habitat for Species of Conservation Concern

Habitat for species of conservation concern includes habitat for wildlife species classified as Special Concern or rare in Ontario, as well as several other rare habitats. Candidate habitat for

species of Special Concern is present in the Project study area. These species are discussed above and in Table 2 below.

Table 2: Special Concern Species Potential Occurrence

Species Name, Status (SARA, ESA, S-Rank), and Data Source	Preferred Habitat	Potential Species Habitat/Occurrence
Special Concern Birds		
Bald Eagle (*Haliaeetus leucocephalus*) SARA: No Status ESA: Special Concern S-Rank: S4 Source: eBird (2017)	Habitat is mature forest with scattered supercanopy trees located adjacent to large productive waterbodies. Nest trees are generally among the largest available trees in the area, with a full crown and multiple accessible perches. The trees typically have accessible broad crotches capable of supporting a nest, and unobstructed view and flight paths in all directions, but especially towards the water. Bald Eagles will nest in a variety of trees that can provide the required structural characteristics (Armstrong 2014).	**Moderate** – Observed near man-made water body approximately 1 km northeast. No nesting habitat in project footprint.
Eastern Wood-Pewee (*Contopus virens*) SARA: Special Concern ESA: Special Concern S-Rank: S4B Source: eBird (2017)	Usually found in clearings and forest edges, this species breeds in nearly any type of wooded habitat including mature woodlands, urban shade trees, roadsides and orchards, but typically prefers deciduous forest and to a lesser extent, open pine woodlands of the south and mixed hardwood-conifer forest of the north (CLO 2015; McCarty 1996).	**Moderate** – Recorded adjacent to the man-made waterbody 1 km northeast of the potential bridge location. Potential nesting habitat in study area.
Special Concern Reptile - Turtles		
Northern Map Turtle (*Graptemys geographica*) SARA: Special Concern ESA: Special Concern S-Rank: S3 Source: ORAA (2017)	Inhabit slow-moving large rivers and lakes with a soft bottom. Habitat required that supports the female's mollusk prey (ECCC 2017b).	**Moderate** – The Little river is slow-moving and large. Substrate was not suitable within the proposed bridge location, however some suitable may have been present within the study area. Water quality may not be suitable for the mollusc prey this species feeds on.
Snapping Turtle (*Chelydra serpentina*) SARA: Special Concern ESA: Special Concern S-Rank: S3 Source: ORAA (2017)	Slow moving water with a soft mud bottom and dense aquatic vegetation usually in ponds, sloughs, shallow bays or river edges and slow streams and wetlands (COSEWIC 2008a).	**Moderate** – The river is slow moving, however aquatic vegetation is sparse and mud bottom may be absent or limited.

Species Name, Status (SARA, ESA, S-Rank), and Data Source	Preferred Habitat	Potential Species Habitat/Occurrence
Special Concern Invertebrates		
Monarch (*Danaus plexippus*) SARA: Special Concern ESA: Special Concern S-Rank: S4B Source: OBA (2017)	Larvae feed on the leaves, flowers and fruits of milkweed plants, usually for nine to fifteen days. This species overwinters in Mexico, returning to Ontario usually in May or June, until August to October (Environment Canada 2014)	**Moderate** –Common Milkweed (*Asclepias syriaca*) was observed within the study area during the 2018 field surveys.
Special Concern Plants		
Climbing Prairie Rose (*Juglans cineres*) SARA: Special Concern ESA: Special Concern S-Rank: S2S3 Source: NHIC (1992)	Occurs in open or early successional habitat including prairie remnants, open woods, shrub thickets, old fields and abandoned agricultural and urban land. Disturbed areas where the plant may be found includes pastureland, hedgerows, drainage embankments, roadsides and ditch slopes. The plant may also persist in semi-shade habitat (Environment Canada 2013).	**None** – None were found within the project footprint or study area during field surveys.

[1] *Species At Risk Act, 2002* (SARA).

[2] *Endangered Species Act, 2007* (ESA).

[3] S1 - Extremely rare throughout its range in the province; S2 - Rare throughout its range in the province; S3 - Uncommon or vulnerable species; S4 - Apparently Secure Species; S5 - Secure Species; SX - Extirpated; B - Breeding; N - Non-breeding; ? - Uncertainty

[4] Dates shown are the most recent record. NHIC = Natural Heritage Information Centre, ABBO = Atlas of the Breeding Birds of Ontario, AMO = Atlas of Mammals of Ontario, ORAA = Ontario Reptile and Amphibian Atlas.

4.2.4.5 Animal Movement Corridors

Animal movement corridors are habitats that link two (2) or more wildlife habitats that are critical to the maintenance of a population of a particular species or group of species particularly in highly fragmented landscapes (OMNR 2000, OMNR 2015). These corridor habitats serve a key ecological function to enable wildlife to move between areas of SWH or core natural areas with a minimum of mortality (OMNR 2000, OMNR 2015). Animal movement corridors are elongated, naturally vegetated parts of the landscape used by animals to move from one habitat to another (OMNR 2000). These corridors may include valleylands, dense vegetated riparian buffer areas, and hedgerows, and are potentially used by a variety of wildlife species including migratory and breeding birds, reptiles, and amphibians. The SWHCS for Ecoregion 7E outlines one (1) wildlife habitat meeting the criteria for animal movement corridor habitat. Based on habitats and ecosites documented during field surveys, no candidate specialized habitat for animal movement is present within the Project study area.

4 Species at Risk

An online search of the MNRF's NHIC (MNRF, 2017b) was conducted within the 1 km^2 square encompassing the Project study area to identify potential presence of provincial SAR. No provincially regulated SAR was identified within the NHIC database, though one (1) terrestrial Special Concern species, Snapping Turtle, was listed. MNRF was solicited for further information pertaining to SAR and significant natural heritage features in the vicinity of the site. Correspondence with MNRF identified the local presence of five (5) SAR and the potential for bat SAR (Appendix B).

Background data collection using the ABBO, ORAA, OBA, MNRF NHIC, DFO Aquatic SAR Maps, MNRF correspondence and field surveys for this project suggest that a total of twelve (12) regulated SAR that may occur within proximity of the Project study area (Table 3). These species and their potential for occurrence are summarized below:

The ABBO lists species breeding within a square as possible, probable or confirmed based on observed behaviour and/or nesting evidence. Species confirmed to be within the appropriate square are included in this section. The ABBO, AMO, OBA and ORAA utilize a provincial wide 10 km x 10 km (100 km^2) square grid system. Due to the large spatial extent (100 km^2), the potential presence of these SAR within a given area should be interpreted with caution.

The probabilities provided in Table 3 are based on an assessment of each species' habitat preferences/needs in conjunction with existing conditions observed during the field survey and background information. Additional SAR may come into the area or species already occurring in the area may be up-listed at any time. For this reason, ongoing communication with the MNRF is strongly recommended to ensure compliance with the ESA (2007). The probabilities of occurrence are defined as 'High', 'Moderate', 'Low', and 'None' and are based on the following definitions:

- **High**: Those species recorded in the vicinity of the project (typically within 10 km and recorded in the past 20 years) and whose preferred habitat is abundant within the Project study area. Species with high probability of occurrence would be expected to breed within or frequently use the habitats available within the Project study area and would be known to have a high relative abundance within the region (i.e., compared to other regions in Ontario).
- **Moderate**: Those species in the vicinity of the project but have limited suitable habitat within the Project study area. Species with moderate probabilities of occurrence may not occur within the Project study area frequently, but may intermittently use it for foraging, migration or movement to other parts of their home-range.

- **Low**: Those species recorded in the vicinity of the Project study area, but whose preferred habitat does not occur or is extremely limited within the Project study area. These species may intermittently move through the Project study area but are unlikely to become permanent residents.
- **None**: Those species whose preferred habitat is completely absent from the Project study and may only migrate intermittently through the Project study area.

Table 3: Species at Risk Potential Occurrence

Species Name, Status (SARA, ESA, S-Rank), and Data Source	Preferred Habitat	Potential SAR Habitat/Occurrence
SAR Birds		
Bank Swallow (*Riparia riparia*) SARA: Threatened ESA: Threatened S-Rank: S4B Source: ABBO (2001-2005)	Nesting occurs in vertical or near-vertical banks of substrate such as fine sand or silt, such as eroding lake bluffs and river banks, topsoil piles in construction areas and extraction faces in aggregate pits. Foraging occurs in a variety of open terrestrial and aquatic habitats (Falconer et. al. 2016).	**Low** - No suitable nesting habitat in the immediate vicinity of the proposed bridge location. Potential suitable foraging habitat present within the study area.
Barn Swallow (*Hirundo rustica*) SARA: Threatened ESA: Threatened S-Rank: S4B Source: ABBO (2001-2005)	Often found feeding in a range of open habitats including fields, marshes, meadows, and ponds. They primarily use man-made structures such as building, bridges, and culverts for nesting (COSEWIC 2011a).	**Low** – No structure suitable for nesting is present at the potential pedestrian bridge location. The riparian canopy does not provide open areas for foraging, though the manicured lawn east of the river may. Generally manicured lawn is not ideal foraging habitat.
Bobolink (*Dolichonyx oryzivorus*) SARA: Threatened ESA: Threatened S-Rank: S4B Source: ABBO (2001-2005)	Bobolink nest primarily in forage crops, hayfields and associated pastures are their preferred habitat. Bobolink also occur in wet prairie, graminoid peatlands and abandoned fields dominated by tall grasses, no-till cropland, small-grain fields, reed beds and irrigated fields in arid regions. This species does not generally occupy fields of row crops or pastures in valleys with high shrub density or intensively grazed pastures (COSEWIC 2010a).	**Low** – No suitable habitat within the vicinity of the potential bridge location or study area.

Species Name, Status (SARA, ESA, S-Rank), and Data Source	Preferred Habitat	Potential SAR Habitat/Occurrence
Chimney Swift (*Chaetura pelagica*) SARA: Threatened ESA: Threatened S-Rank: S4B, S4N Source: ABBO (2001-2005)	Nesting and roosting habitat is generally a dark, sheltered spot with vertical surfaces to attach the nest to. Hollow trees were the main nesting habitat prior to European settlement. Artificial structures became commonly used after European settlement, including chimneys and barns. Feeding often occurs near water due to the abundance of insects (COSEWIC 2007a).	**Low** – No suitable nesting habitat within the vicinity of the potential bridge location. Potential suitable foraging habitat may occur within the Little River area.
Common Nighthawk (*Chordeiles minor*) SARA: Threatened ESA: Special Concern S-Rank: S4B Source: ABBO (2001-2005)	Breeding habitat includes open habitat such as sand dunes, beaches, forest clearings, short-grass prairies, pastures, and a variety of other landscapes. Urban and natural areas are used for nesting and feeding, though natural areas seem to be preferred (COSEWIC 2007b).	**Low** –Potential suitable nesting and foraging habitat may occur within the study area.
Eastern Meadowlark (*Sturnella magna*) SARA: Threatened ESA: Threatened S-Rank: S4B Source: ABBO (2001–2005)	A bird most common in native grasslands, pastures and savannas. It also uses a wide variety of other anthropogenic grassland habitats. As with other grassland bird species, the suitability of grassland habitat for this species involves a combination of landscape and patch characteristics (COSEWIC 2011b).	**Low** – The habitat within the study area is not suitable for Eastern Meadowlark.
Red-headed Woodpecker (*Melanerpes erythrocephalus*) SARA: Threatened ESA: Special Concern S-Rank: S4B Source: ABBO (2001–2005)	Generally, prefer open deciduous forests, particularly with oak and beech, forest edges, riparian forests, grasslands, orchards, pastures, roadsides, urban parks, golf courses, cemeteries, as well as along beaver ponds and brooks (COSEWIC 2007c).	**Low** – Potential suitable habitat in the vegetated riparian area.
SAR Reptiles – Turtles		
Blanding's Turtle (*Emydoidea blandingii*) Great Lakes – St. Lawrence population SARA: Threatened ESA: Threatened S-Rank: S3 Source: ORAA (2009)	Prefers lakes, permanent or temporary pools, slow-flowing streams, marshes and swamps that are shallow and rich in nutrients, organic soil and dense vegetation. Females dig their nest various loose substrates, including sand, gravel, organic soil and cobblestone up to 400 m from a waterbody (ECCC 2017a).	**Moderate** – The Little River is slow-flowing with shallow areas along the west shore. However aquatic vegetation was not present.

Species Name, Status (SARA, ESA, S-Rank), and Data Source	Preferred Habitat	Potential SAR Habitat/Occurrence
SAR Reptiles –Snakes		
Butler's Gartersnake (*Thamnophis butleri)* SARA: Endangered ESA: Endangered S-Rank: S2 Source: ORAA (2014)	Inhabits open areas with dense grasses (cultural meadows, grasslands, old fields, tallgrass prairie communities) in close proximity to wet areas (small marshes, seasonal wet areas, small bodies of water). Also found in early successional habitat with shrubs and trees, along treed edges and in vacant lots, small parks and abandoned sites in urban areas (Environment Canada 2016).	**Moderate –** Potential suitable habitat within the study area, though limited due to the short-manicured lawn surrounding the Little River.
Eastern Foxsnake (*Pantheropis gloydi*) Carolinian population SARA: Endangered ESA: Endangered S-Rank: S3 Source: ORAA (2018)	Use a mosaic of habitat types, including early successional habitat (marsh and coastal meadow marsh, prairie, savannah, old field, sand dunes and dune-slough complexes) (ECCC 2017). Also associated with anthropogenic features including residential areas bordering suitable natural habitat.	**Moderate** – Potential suitable habitat within the study area, though limited due to the short-manicured lawn surrounding the Little River.
SAR Mammals		
Eastern Small-footed Myotis (*Myodis leibii*) SARA: No Status ESA: Endangered S-Rank: S2S3 Source: MNRF correspondence	Roosts under loose rocks on exposed rock outcrops, crevices and cliffs, and occasionally in buildings, under bridges and highway overpasses and under tree bark. Caves and mines that remain above 0˚C provide overwintering habitat (Humphrey 2017).	**Low** – No suitable habitat within the Project footprint. Not known to occur in Windsor (Humphrey 2017).
Little Brown Myotis (*Myotis lucifugus*) SARA: Endangered ESA: Endangered S-Rank: S4 Source: MNRF correspondence	Roosts in tree cavity, including small spaces or crevices found in loose bark, hollow trees, rock faces and human structures such as attics, walls and bat boxes. Hibernates in caves and abandoned mines during the winter months. Typically forages over water with surrounding open habitat (COSEWIC 2013).	**Low** – Trees present within the study area.
Northern Myotis (*Myotis septentrionalis*) SARA: Endangered ESA: Endangered S-Rank: S3 Source: MNRF correspondence	Roosts in usually decaying tree cavity, including small spaces or crevices found in loose bark, hollow trees, rock faces and human structures such as attics, walls and bat boxes. Hibernates in caves and abandoned mines during the winter months. Typically forages for primarily terrestrial insects (Environment Canada 2015).	**Low** – Trees present within the study area.

Species Name, Status (SARA, ESA, S-Rank), and Data Source	Preferred Habitat	Potential SAR Habitat/Occurrence
Tri-coloured bat (*Perimyotis subflavus*) SARA: Endangered ESA: Endangered S-Rank: S5 Source: MNRF correspondence	Roosting habitat includes trees, dead clusters of leaves or arboreal lichens on trees. Barns or similar structures may also be used. Caves and mines that remain above 0˚C provide overwintering habitat (Environment Canada 2015).	**Low** – Trees present within the study area.
SAR Fish		
Northern Madtom (*Noturus stigmosus*) SARA: No Status ESA: Endangered S-Rank: S1 Source: MNRF correspondence	Prefers riffles and runs in medium to large streams and rivers with clear to turbid waters and moderate to swift current over sand to rock substrate.	**Low** – No suitable habitat within the Project footprint. Extended periods of turbid water likely restricts occupancy.

[1] *Species At Risk Act, 2002* (SARA).

[2] *Endangered Species Act, 2007* (ESA).

[3] S1 - Extremely rare throughout its range in the province; S2 - Rare throughout its range in the province; S3 - Uncommon or vulnerable species; S4 - Apparently Secure Species; S5 - Secure Species; SX - Extirpated; B - Breeding; N - Non-breeding; ? - Uncertainty

[4] Dates shown are the most recent record. NHIC = Natural Heritage Information Centre, ABBO = Atlas of the Breeding Birds of Ontario, AMO = Atlas of Mammals of Ontario, ORAA = Ontario Reptile and Amphibian Atlas.

Tri-colored Bat (*Perimyotis subflavus*) primarily roost in tree foliage (mainly within clustered oak or maple leaves), with leaf roosts shaped like umbrellas with a "roof" and a hollow core where bats rest. Little Brown Myotis (*Myotis lucifugus*) and Northern Myotis (*Myotis septentrionalis*) roost in tree cavities, including small spaces or crevices found in loose bark, hollow trees, rock faces, and human structures such as attics, walls, and bat boxes. Eastern Small-footed Myotis (*Myotis leibii*) prefer heavily forested, mountain regions and frequently roosts in caves within hemlock forests. Suitable snags (i.e. standing live or dead trees) meeting the requirements of maternity roost sites (i.e. a >10 cm diameter at breast height [DBH] exhibiting cracks, crevices, hollows, cavities, and/or loose or naturally exfoliating bark) were not observed within the Project study area.

Northern Madtom (*Noturus stigmosus*) was included in the Wood correspondence to MNRF though this fish species was located in an NHIC square outside of the Project study area. The MNRF did not indicate records of this species in the vicinity of the Project study area. The Northern Madtom typically inhabits large creeks and small rivers and has been captured locally in deep water within the Detroit River and Lake St. Clair. The Northern Madtom usually avoids turbid waters and demonstrates a preference for areas with little cover and a moderate current and rocky substrate.

Confirmation of the results presented above related to SAR and Project implications under the ESA (2007) were sought from the MNRF. A technical letter outlining the results of the field survey program and occurrence probabilities was provided to the MNRF for review on September 25, 2018. The MNRF confirmed on October 12, 2018 that the Project would not likely result in any impacts to SAR and additional approvals under the ESA (2007) were not likely necessary. The MNRF further provided a list of mitigation measures relative to SAR of which must be implemented to ensure continued compliance with the ESA (2007) during construction. These mitigation measures are provided below in Section 6.5. MNRF correspondence is provided in Appendix B.

PROPOSED PROJECT DETAILS

The proposed Hawthorne Multi-Use Bridge crossing over the Little River is a pony truss clear span superstructure design with supporting abutments at the top of bank. No in-water piers are included as part of the design. The span of the bridge is 35 m with a travelled width of 2.44 m. The centerline of the bridge is approximately 3.39 m above the design water level of 175.44 meters above sea level (masl) and 4.65 m above the approximate stream bed elevation. Embankments below the abutments will not change with grading following backfill of the abutment excavations to match existing. General arrangement drawings are provided in Appendix G and Figure 3 below provides an illustration of a similar type representation of the bridge crossing structure being proposed. This illustration is of a bridge crossing the Little River downstream of the proposed Hawthorne Multi-Use Bridge.

Figure 3: Representation of the Proposed Bridge Structure

**installed downstream of Project Site on Little River*

Description of the Work

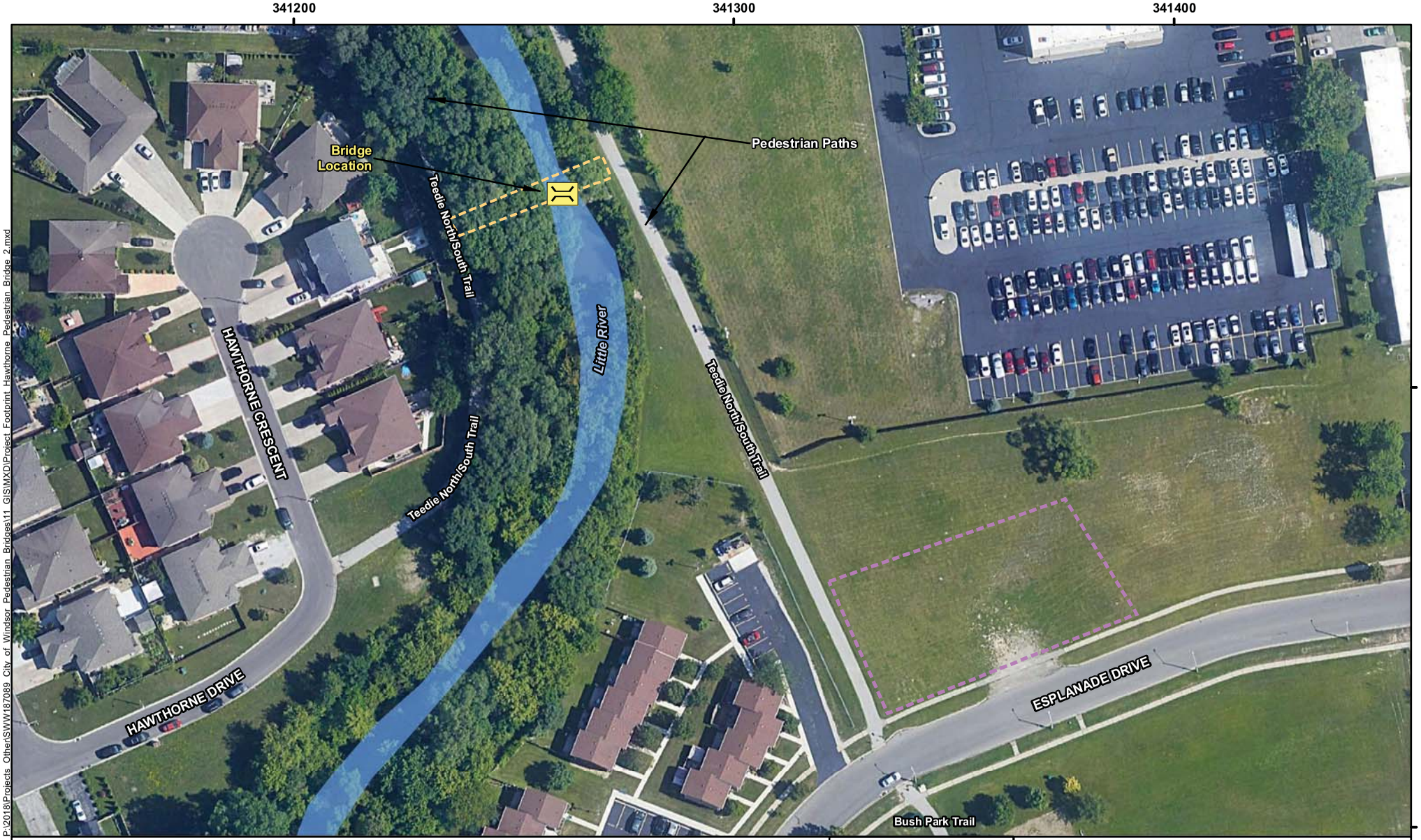
A temporary staging and storage area will be delineated within an existing area of manicured lawns. The temporary staging and storage area will be on the north side of Esplanade Drive, immediately east of the MUP. On the east side of the Little River, access to the site of the proposed bridge crossing from the temporary staging and storage area will follow the existing MUP. Access

to the MUP path on the west side of the Little River will be off Hawthorne Drive. All access routes will utilize the existing MUP in order to minimize disturbances to existing vegetation.

Excavations for abutment construction will be required on both sides of the Little River. The excavations will be above the existing water level and set back from the water's edge by approximately 5 m. All excavated material will be removed from the site and stored within the temporary staging and storage area. Excess material not used as backfill will be removed off site as per applicable provincial requirements. Construction of connecting pathways from the MUP to the bridge will include removal of the existing topsoil layer, placement of gravel material and compaction. Completion of these works requires the removal of existing vegetation, including select riparian trees. To the greatest extent possible, tree removals will be limited. Trees within the direct footprint of the path and excavation will be removed. It is estimated that 30 m^2 of existing riparian vegetation along the east embankment will be removed permanently as a result of the Project. The area of permanent vegetation impact on the west embankment is estimated to be 60 m^2. Project related footprint impacts related to the removal of vegetation are presented in Figure 4. No temporary or permanent fill will be placed below the OHWM at any point during the Project.

Erection of the bridge superstructure will occur from the east side of the crossing given ease of access and minimal clearance restrictions. The erection process will occur from the top of bank and will not require any entry into the watercourse or access to the embankments below the abutments.

Based on the information provided to date and proximity to the Little River, it is assumed that dewatering of the excavations will be required to facilitate construction of the new abutments as the excavation is likely to contain seeping groundwater (Wood, 2018). It is further assumed that dewatering can be managed daily to be below 50,000 L/day and as such dewatering activities related to the project works do not require registration in the Ministry of Environment, Conservation and Park's (MECP) Environmental Activity Sector Registry (EASR). Should conditions or the scope of work change during the course construction, requirements for compliance under the *Ontario Water Resources Act* (OWRA) should be further reviewed by the Project Team.



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LEGEND

- Potential Bridge Location
- Project Footprint Impact
- Temporary Work Space
- Waterbody

NOTES:
- Aerial imagery extacted from Google Earth, 2017.

Datum: NAD83
Projection: UTM Zone 17N

0 25 50 100 150 200 Metres

THE CITY OF WINDSOR wood.

HAWTHORNE PEDESTRIAN BRIDGE

Pedestrian Bridge Footprint

PROJECT N°: SWW187089 SWW187112	FIGURE: 4
SCALE: 1:1,200	DATE: October 2018

□□□□ IMPACT ASSESSMENT AND RECOMMENDED MITIGATION

The following sections have been prepared to provide a summary of potential direct and indirect impacts to the natural environment relative to the Project works and recommendations for mitigation measures and strategies to avoid, minimize and/or reduce these impacts.

Identified project related impacts include exposure of protected soils, increased erosion and sediment mobilization potential and equipment and machinery operating adjacent to a watercourse. The use of industrial equipment has the potential to leak and/or result in spills of petroleum products, hydraulic fluids and/or oil/grease into the Little River. Increases in containments to surface water features, including sediment, can result in the displacement of aquatic species, alterations to habitat form, function and value, reductions in respiratory functions and feeding efficiencies, direct acute toxic effects, increases in stress responses and/or delayed impacts resulting from chronic exposure or persistence of the contaminant in the environment.

In general, anticipated impacts to the Little River, on wildlife, particularly SAR, are anticipated to be negligible as the Project's permanent footprint is small in extent and is not within areas identified as critical, rare or of particular importance to local resident wildlife. Temporary works related to construction has been identified as the main vector of potential project related impacts for the construction of the new bridge crossing; however, as presented below the implementation of the recommended mitigation measures will reduce risk of impacts to the aquatic ecosystem.

Permanent footprint impacts as a result of the project are expected to result in the loss of local wildlife habitat that consists primarily of non-native, tolerant and early successional species. The footprint impact is expected to cover approximately 60 m^2 and 30 m^2 on the west and east sides of the bridge crossing respectively. Within the impacted area no critical, limiting and/or significant aquatic habitat was documented. Similarly, no rare or significant vegetation species or communities, including SAR, or SWH was documented within the impacted area.

□□□□ General Mitigation

The following general mitigation strategies will be implemented during construction:

- Staging will occur within the designated area north of Esplanade Road to avoid disturbing the natural environment beyond the Project footprint.
- No access to the natural shoreline and areas adjacent to the Little River beyond the abutment excavation will occur, to protect environmentally sensitive areas. Silt fence will be installed around the perimeter of the work area to provide a visual barrier to

construction staff and equipment operators and to minimize the likelihood of a potential release of sediment into the Little River.

- Operate, store, and maintain equipment, vehicles, and associated materials in a manner that prevents the entry of any deleterious substance from entering the Little River.
- Implement drip pans under machinery (i.e. generators, pumps, etc.) in operation within the work area.
- Any re-fuelling is to be undertaken at least 30 m from the Little River and any other surface drainage feature; to the greatest extent possible given the limitations imposed by the site layout.
- Temporarily store, handle and dispose of all materials used or generated (e.g. organics, soils, construction waste and debris, etc.) during site preparation, construction, and clean-up in a manner that prevents their entry to the Little River.
- Ensure a Spill Management Plan (including spill kit materials, instructions regarding their use, education of staff, and emergency contact numbers) is present on-site at all times for implementation in the event of an accidental spill. All spills are to be reported to the MECP's Spills Action Centre (SAC) at 1-800-268-6060.
- All Project related works are to be undertaken in compliance with Ontario Provincial Standard Specifications (OPSS) 182 – General Specification for Environmental Protection for Construction In and Around Waterbodies and on Watercourse Banks.
- Ensure that machinery arrives on site in a clean condition and is maintained free of fluid leaks, invasive species and noxious weeds.
- Identify local regulatory authorities and have contact information available on site. Local regulatory authorities are to include the MECP, MNRF, DFO, the City of Windsor, ERCA and local emergency service providers.

Erosion and Sediment Control Measures

- Design and implement standard Erosion and Sediment Control (ESC) measures, consistent with current OPSS and Ontario Standard Provincial Drawings (OPSD), to contain/isolate the work area, manage site drainage/runoff and prevent erosion of exposed soils and migration of sediment. ESC measures will be implemented prior to commencement of works, and maintained through all phases of the project, until vegetation is re-established, and all disturbed ground is permanently stabilized. The layout of prescribed ESC measures is provided in Appendix G as part of the detail design drawing package. The drawing illustrates the layout of the proposed ESC measures to be implemented during the course of construction
- ESC measures will include:
    - Installation of effective ESC measures before starting work to prevent sediment from entering the Little River. Silt fence barrier will be installed along the down

slope where upgradient areas have been disturbed or exposed as a result of site access requirements or construction activities. Silt fence barrier will also be installed around any staging/storage areas where material with the potential to result in sediment mobilization into the Little River is present. Silt fence barrier will be installed as per OPSS 805 and OPSD 219.110. Silt fence shall be free of a reinforcing netting to avoid possible wildlife entanglement.

- Dewatering shall be undertaken in agreement with relevant legislation and approval. At a minimum, a filter bag to remove suspended sediment from dewatering activities will be used. The filter bag will be located in an area where vegetation is present to sufficiently provide a stabilized flow path as the effluent returns to the Little River. Monitor flow discharge path for evidence of erosion and implement additional measures as required.
- Waste material (e.g., excavation spoils, construction waste and materials) shall be stored and contained beyond the top of bank, and away from surface drainage features to prevent re-entry.
- Regular inspection and maintenance of ESC measures and structures during construction.
- Removal of non-biodegradable ESC materials once site is stabilized.
- The use of mesh or netting type stabilization material must not be used for ESC measures. To prevent the entanglement of SAR snakes, an alternative product such as Curlex Net-free® blanket or the use of rip-rap over geotextile fabric is recommended.
- Stabilization will include the application of a native seed mix applied to meet the standards of OPSS 804.

Fish and Fish Habitat

- To protect the local fish community during critical life stages (i.e. spawning and rearing), no in-water work will be permitted from March 31st to July 1st in any given year. It is noted that no direct in-water work is required for this Project; however, in-water work is defined as '*all works following earth disturbance along the embankment in preparation for abutment excavation to backfill, grading and embankment stabilization with topsoil and seed*'. The erection of the superstructure can be completed outside of the timing restriction as this work does not pose any significant risk of impacting the Little River.
- All dewatering discharge, if required, shall be directed to a filter bag to remove sediments. The filter bag shall be located in an area that is sufficiently vegetated, stable and does not display any evidence of erosion or instability.

- Immediately stabilize disturbed embankments resulting from project activities to prevent erosion and/or sedimentation, preferably through re-vegetation with native species suitable for the site.
- Remove all construction materials from site upon project completion.

4 Wildlife

- Removal of woody vegetation will occur outside of the migratory bird nesting period (April 1st to August 15th) and activities will occur in accordance with the *Migratory Birds Convention Act* (MBCA) and *Migratory Bird Regulations*. These timing constraints should not be perceived as absolutes. This period represents the core breeding period, although some species may nest in March and September. Ultimately, the objective from a compliance perspective is to not circumvent the MBCA. As such, due diligence measures should be implemented and documented for any nest searching efforts, including record control, to ensure compliance with the MBCA;
- For activities which may occur during bird nesting season, surveys to identify nesting activity will be completed by a qualified Avian Biologist within 48 hours of scheduled work activities. The Avian Biologist conducting the surveys must be able to identify birds by species and be knowledgeable of nesting seasons and activities for appropriate species.
- If nesting activity is detected within the work area, activities which may potentially impact the nest will not be undertaken.

Species at Risk and Significant Wildlife Habitat

The following measures have been provided by the MNRF and must be employed to ensure Project works do not contravene the ESA (2007) (MNRF, 2018b).

- Any species listed as Endangered or Threatened on the (SARO) List that is encountered within the Project area must be protected from all harm and harassment.
- Any SAR incidentally encountered must be protected from harm and harassment. If a SAR species is encountered, it should be given adequate time to leave the area before starting work. If a SAR species must be moved, a qualified Biologist should be contacted for advice/help before it is moved.
- Any SAR individual that is present at the project site should be reported to the MNRF Aylmer District staff (519-773-4751 or ESA.Aylmer@ontario.ca) within 48 hours of the observation or the next working day, whichever comes first.
- If an injured or deceased SAR is found or a SAR individual is accidentally unearthed from overwintering, the specimen must be placed in a non-airtight container that is maintained at an appropriate temperature and a Wildlife Custodian (authorized under the *Fish and*

Wildlife Conservation Act) should be contacted. A list of authorized Wildlife Custodians, their locations and their specialties (e.g. reptiles) is available at https://www.ontario.ca/page/find-wildlife-rehabilitator. MNRF must be contacted immediately after the occurrence.

- As a cold-blooded species, snakes are generally slow moving in periods of cool temperatures, and therefore, are more susceptible to harm. To the extent possible, any digging/excavation activities and vegetation clearing associated with the project should be conducted before March 30th or after June 1st, to ensure work is completed when snake individuals are either over-wintering or are active and most able to flee areas of disturbance. When this is not possible, the area to be excavated/cleared of vegetation must be walked and visually surveyed for the presence of SAR snakes each day prior to (re)initiating these activities.
- Prior to project commencement, temporary snake barrier fencing should be installed along the limits of the construction footprint in order to exclude snakes from entering the area. Reptile and Amphibian Exclusion Fencing for installation specifications are provided in Appendix H. The location of fencing is depicted on the drawings in Appendix G. Fencing must also be placed around the full perimeter, including access points, of the temporary staging and storage area. Fencing at access can be temporarily repositioned during the day with full closure to be re-instated at the end of the working day. The height of the fencing should meet requirements to exclude both Eastern Foxsnake and Butler's Gartersnake.
- The use of mesh or netting type stabilization material must not be used for ESC measures. To prevent the entanglement of SAR snakes, an alternative product such as Curlex Net-free® blanket or the use of rip-rap over geotextile fabric is recommended.
- Construction and vegetation clearing equipment that is left idle for over one (1) hour or is parked overnight on the property should be surveyed for the presence of SAR snakes before (re)ignition. This visual examination should include all lower components of the machinery, including operational extensions and running gear.
- Butler's Gartersnake (*Thamnophis butleri*) will utilize animal and crayfish burrows to overwinter and escape extreme heat during the summer period. They will also utilize natural and artificial cover objects such as logs, rocks, rock piles, brush piles and debris for thermoregulation and to forage under for earthworms. These specific features must be flagged for avoidance and protected from all disturbances that would result in damage and destruction of their habitat functions.
- Care should be taken to limit the creation and duration of debris stockpiles (i.e. lumber, topsoil, bricks, other construction materials, etc.) to ensure that no potential Eastern Foxsnake (*Pantherophis gloydi*) habitat is created during the construction period.

□□□□ Adaptive Management

To ensure the mitigation strategies are implemented as intended and to provide any 'field fit' recommendations, compliance monitoring as part of Contract Administration services will be provided by Wood during the course of construction.

DFO Self-Assessment

As the proposed project works are being conducted in or near a waterbody that support fish that are part of or that support a Commercial, Recreational or Aboriginal (CRA) fishery, a Self-Assessment was undertaken as per requirements of the *Fisheries Act*. Project activities and criteria as provided by DFO to indicate when review is required were compared to the scope of this Project. Under *Bridges – Construction Clear Span Bridges,* DFO review is required where permanent fill (i.e. rock, soil, concrete, etc.) is placed below the OHWM. As this Project involves the placement of fill below the OHWM, a DFO Request for Review submission is required. A completed application form is provided in Appendix I.

Potential to Cause Serious Harm to Fish and Fish Habitat

The assessment of Project related impacts was undertaken utilizing the DFO Risk Management Framework (RMF) (DFO, 2005). The RMF is decision-making processes of which applies a risk management approach to evaluate project impacts with habitat protection provisions of the *Fisheries Act*. The RMF identifies Pathways of Effects (PoE) diagrams that are used to describe development project in terms of the activities that are involved, the type of cause-effect relationships that are known to exist, and the mechanisms by which stressors ultimately lead to effects in the aquatic environment.

On the PoE diagrams, cause-and-effect pathways connect the activity to a potential stressor, and a stressor to an ultimate effect on fish and fish habitat. Each pathway provides the opportunity to apply mitigation measures of which can reduce or eliminate a potential effect. If mitigation measures cannot be implemented or if the mitigation measures do not fully address an identified stressor, then the effects are considered to be residual. The series of PoE diagrams provided by DFO include common land-based and in-water activities associated with a broad range of development projects (DFO, 2014).

Identified residual effects are then determine on their likelihood to result in serious harm as defined under the *Fisheries Act*. DFO defined serious harm as follows (DFO, 2005):

- the **death of fish**;
- a **permanent alteration** to fish habitat of a spatial scale, duration or intensity that limits or diminishes the ability of fish to use such habitats as spawning grounds, or as nursery, rearing, or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes;

- the **destruction of fish habitat** of a spatial scale, duration, or intensity that fish can no longer rely upon such habitats for use as spawning grounds, or as nursery, rearing, or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes.

Through a review of project activities under the RMF, the identification of applicable PoE diagrams, the project works were screened to determine if there was potential to cause serious harm to fish and fish habitat. Through this assessment the areas to be temporarily and permanently impacted as a result of the project were considered to be seasonally accessible to fish but did not provide any significant value as habitat that would be considered critical for any potential species present in the Little River. The determination of habitat was based on an evaluation of flow characteristics and the hydraulic regime, substrate composition, to the extent possible, and availability of features that could provide structure (cover or refuge) for inhabiting fish species or suitable areas for spawning. The identification of these habitat components was determined to be generally consistent within the immediate area of the proposed bridge crossing. Furthermore, these components were determined to not be rare or limiting within the Project study area and as such were considered to not be critical for the functioning of the aquatic ecosystem.

The following PoE diagrams were applicable to this Project:

Land-Based Activities: Excavation, Grading, Use of Industrial Equipment and Vegetation Clearing.

In-Water Activities: Placement of Material or Structures in Water, Use of Industrial Equipment, Wastewater Management and Water Extraction.

The extent, duration and intensity of impacts, including residual effects, under the Placement of Material or Structure in Water PoE was considered to result in residual effects from the permanent construction of the abutments below the OHWM. The area to be permanently impacted was considered to be small relative to the available habitat within the Project study area. The area of impact below the OHWM was estimated to total 7.41 m^2 which includes both bridge abutment areas. The area of permanent impact occurs directly at the top of bank of the Little River and does not occur within any portion of the normal wetted area of the Little River. The resulting residual effects were determined to not result in changes to the food supply, habitat structure or cover, sediment concentrations, or nutrient concentration. With the application of mitigation measures as presented above, no other residual effects were identified and as such the Project was not considered to cause serious harm to fish or fish habitat under the *Fisheries Act*. It is anticipated that DFO will support this decision and issue a Letter of Advice (LOA) and not require an Authorization under Section 35 of *Fisheries Act*.

□□□□ CONCLUSIONS AND RECOMMENDATIONS

The results of this study as documented within this report indicate that the proposed Project poses minimal risk to inhabiting wildlife species and is not expected to result in the significant loss or alteration of any ecological form or function of habitat. The implementation of the mitigation measures as presented above will limit any temporary impacts on the natural environment and ensure compliance with the ESA (2007). As noted above, MNRF has confirmed that impacts to SAR are not anticipated and as, such permitting under the ESA (2007) would not be required for this project to proceed (Appendix B).

Through the DFO Self-Assessment process as presented above, identified impacts were determined to not likely cause serious harm to fish and fish habitat as defined under the *Fisheries Act*. A formal Request for Review by DFO is still however required for the Project to proceed as work below the OHWM will occur. It is anticipated that DFO will issue a LOA as the work will occur within a small area and appropriate mitigation measures will be applied to mitigate identified impacts. The construction of new bridge abutments are also not anticipated to alter the natural channel form or function through this stretch of the Little River. Embankment restoration immediately following construction will promote long term stability and re-naturalization of the Little River top of bank area.

To protect the natural environment during the course of construction, the following key mitigation features will be implemented:

- Implement ESC measures as presented in Appendix G, ensuring controls are in place to minimize the likelihood of sediment entering Little River;
- Restrict in-water work from March 31st to July 1st to protect the critical life stages of fish;
- Restrict digging/excavation activities and vegetation clearing to before March 30th or after June 1st, to ensure work is completed when snake individuals are either over-wintering or are active and most able to flee areas of disturbance; and,
- Contact Aylmer District MNRF for any encounters or sightings of SAR.

CLOSURE

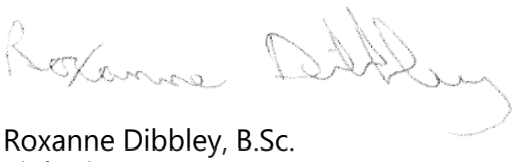
This Report has been prepared based on a review of secondary source information, agency consultation, the execution of a field survey program and is based on the anticipated Project footprint as presented as part of the most current design (Appendix G). We trust that this memorandum provides a level of detail and technical expertise to meet the requirements of ERCA for a formal submission and subsequent approval for the Project under O. Reg. 158/06.

If you should have any questions regarding this submittal or require further project related information, please contact the undersigned.

Sincerely,

Wood Environment & Infrastructure Solutions,
a Division of Wood Canada Limited

Prepared By:



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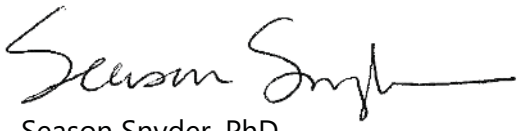
Senior Environmental Scientist

Reviewed by:



Season Snyder, PhD
Senior Ecologist

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APPENDIX A

ERCA - Application for Development, Interference With Wetlands and Alterations to Shorelines and Watercourses Permit

Essex Region Conservation Authority
sustaining the place for life

regs@erca.org
P.519.776.5209
F.519.776.8688
360 Fairview Avenue West
Suite 311, Essex, ON N8M 1Y6

LANDOWNER AUTHORIZATION

I, We, City of Windsor (name of property owner) are the owner(s) of property described as Lot _____, Plan Number _____ or Concession _____, Roll Number _____, municipal address known as _____ _____ in the Town(ship) of City of Windsor and hereby authorize Bradley Dufour - Wood (name of agent) (contact number) 519-650-7109 to act as agent to obtain information from the Essex Region Conservation Authority regarding the above-referenced property and, further, to authorize Representatives of the Essex Region Conservation Authority to undertake field investigations, survey and/or prepare reports regarding Authority issues for the above-referenced property.

_____ Dec. 5/18
Signature of Owner *Date*

_____ _____
Signature of Owner *Date*

Essex Region Conservation Authority
sustaining the place for life

Essex Region Conservation Authority

360 Fairview Ave. W., Essex, ON, N8M 1Y6, p: (519)776-5209, f: (519)776-8688, www.erca.org

APPLICATION FOR PERMIT
FOR DEVELOPMENT, INTERFERENCE WITH WETLANDS AND ALTERATION TO SHORELINES AND WATERCOURSES

	APPLICATION FEE	APPLICATION NUMBER
✓ Section 28 - Conservation Authorities Act as amended ☐ Section 14 - Public Lands Act as amended		

Applicant/Owner:

Name	Telephone
City of Windsor - Trevor Duquette	519-253-2300 x2772
Complete Mailing Address - Street No. & Name, Town/City	Postal Code
2450 McDougall Avenue	N8X3N6
E-mail Address	Cell #
tduquette@citywindsor.ca	519-890-1593

Contractor/Agent: *(if applicable)*

Name	Telephone 519-650-7109
Bradley Dufour - Wood	Email bradley.dufour@
Complete Mailing Address - Street No. & Name, Town/City	Postal Code
900 Maple Grove Road, Unit 10, Cambridge, Ontario	N3H4R7

Location of Proposed Works:

Municipality	Waterway
City of Windsor	Littler River
Municipal Street Address	Legal Description: (Lot/Plan/Concession)
east of Hawthorne Cul-de-sac	

Proposed Works to be Undertaken — See Schedule "B" attached

CONSTRUCTION OF BREAKWALL, DOCK, BOAT HOUSE/LAUNCH/RAMP etc.	
area: length: width:	OFFICE USE Floodproofing Elevation:
Construction Details:	

CONSTRUCTION OF A DWELLING, GARAGE, ADDITION, OTHER STRUCTURE	
area: 90 m length: 18 width: 5 m	OFFICE USE Floodproofing Elevation:
Setback from Waterway: abutments are 5 m from normal wetted edge	
Drainage Details (*ie. side yard swales, retaining walls*):	

PLACEMENT & GRADING OF FILL	
Dimensions of area to be filled	length: 2.5 width: 3 depth:
Type of materials to be used	☐ sand ☐ earth ☐ gravel ☐ armour stone ✓ other
Erosion/silting prevention *(describe)*	Silt fence barrier around abutment excavation

OTHER
Construction of bridge abutments below the OHWM of the Little River. Bridge to be 3.388 m above

Attach two (2) copies of plans depicting:
1) Location of property in relation to surrounding buildings, streets, roadways, etc. (*plot plan*)
2) Size, location and dimensions of property - all existing structures
3) Location, dimensions and elevation of all proposed structures, and fill
4) Elevation of any windows, doors, vents, or other exterior openings in relation to final grade

The above submission must be in complete final form before it will be scheduled for consideration by the Board of Directors. This application, if approved, does not preclude any approvals by any other existing laws and regulations. Any false or misleading statement contained in this application may result in withdrawal of any permit issued on the basis of this application.

Personal information on this form is collected under the authority of Conservation Authorities Act, RSO 1980, and will be used only by programme administration. Questions about the collection of personal information should be directed to: ERCA, 360 Fairview Avenue West, Essex, Ontario, N8M 1Y6

T.D.

Applicant's Signature

Dec 5/18

Date

Essex Region Conservation Authority
sustaining the place for life

2018 FEE SCHEDULE

Watershed Management Services

		2018	HST	Total
Floodplain Regulations and Related Development Applications				
1) Requests for information on regulations for property transaction (lawyers, owners, purchasers or agents)		$ 175.00	$ 22.75	**$ 197.75**
2) Applications for renewal of existing permits within one calendar year of expiration of original permit		$ 115.00	x	**$ 115.00**
3) Technical review and clearance where permit or site visit is not required		$ 115.00	x	**$ 115.00**
4) Placing or grading of fill within regulated areas, light repair of existing breakwalls, small building additions, small out buildings not requiring a survey		$ 150.00	x	**$ 150.00**
5) Completing files required for approvals complying with the DART Protocol for Municipal Drainage Act/Section 28		$ 200.00	x	**$ 200.00**
6) Technical evaluations (elevation, setback survey or site report; property evaluation for tax assessment; ecological evaluation and/or report)		$ 775.00	$ 100.75	**$ 875.75**
7) Alteration to waterways/shorelines including breakwalls, finger docks less than 15 square metres, crossings, outlets, etc. (not requiring engineering or other detailed analysis)		$ 500.00	x	**$ 500.00**
8) Alteration to waterways/shorelines including breakwalls, crossings, outlets, etc. (requiring engineering or other detailed analysis) & docks exceeding 15 sq. metres that include lifts, PWC platforms or other accessories		$ 800.00	x	**$ 800.00**
9) Applications for new building construction including renovations and for sites not directly abutting shorelines or watercourses		$ 500.00	x	**$ 500.00**
10) Applications for building construction sites directly abutting shorelines or watercourses (including additions impacting on setback)		$ 800.00	x	**$ 800.00**
11) Application for non-inhabitable garage/storage building <53.5 m^2) and for <50% building additions not including other renovations		$ 250.00	x	**$ 250.00**
12) Applications involving more than one regulated activity, or those requiring engineering studies/designs, environmental studies		$ 1,200.00	x	**$ 1,200.00**
13) *Applications where work has proceeded without authorization and/or prior to application of permit*		*Double noted fees to reflect costs in these situations*		
14) Development proposals involving multiple dwelling units (more than 5 lots) where stormwater management or other engineering evaluations are required.	Base cost (up to 5 lots)	$ 2,000.00	x	**$ 2,000.00**
	Cost per additional lot	$ 160.00	x	**$ 160.00**
	Maximum	$ 5,000.00	x	**$ 5,000.00**
15) Commercial/industrial/institutional developments where stormwater management or other engineering evaluations are required.	Base cost (up to one hectare)	$ 1,750.00	x	**$ 1,750.00**
	Cost per additional hectare	$ 400.00	x	**$ 400.00**
	Maximum	$ 4,000.00	x	**$ 4,000.00**
16) Municipal Infrastructure/Recreational Projects involving one or more regulated activities or those requiring specific engineering design and or Environmental studies.	Base Cost for projects less than 20 hectares	$2,500.00	x	**$ 2,500.00**
	Max Cost for projects over 20 ha or multi disciplinary	$6,500.00	x	**$ 6,500.00**
17) Input/review/comment on full Environmental Impact Assessments (EIAs) done by consultants		$ 1,025.00	x	**$ 1,025.00**
18) Input/review/comment on scoped EIAs done by consultants		$ 500.00	x	**$ 500.00**
19) Technical review and clearance where EIA is not required		$ 115.00	x	**$ 115.00**
20) Input, review, clearances on substantial drainage proposals in defined areas of environmental concern		$ 800.00	x	**$ 800.00**
21) Input, review, clearances on other drainage proposals		$ 150.00	x	**$ 150.00**
Other Development Services				
22) Survey services		$ 425.00	$ 55.25	**$ 480.25**
23) Technical review fee assessed on resubmission of previously reviewed technical or environmental studies		$ 250.00	x	**$ 250.00**

Watershed Planning

Planning Act Applications				
24) Minor Variance		$ 115.00	x	**$ 115.00**
25) Draft Plan of Subdivision/Condominium Approval		$ 300.00	x	**$ 300.00**
26) Clearance Letters for Subdivision /Condominium Approval (applies to each phase of subdivision requested)		$ 115.00	x	**$ 115.00**
27) Consent		$ 200.00	x	**$ 200.00**
28) Multiple Consent applications on a single application (up to 3)		$ 200.00	x	**$ 200.00**
29) Multiple Minor Variance applications on a single application (up to 3)		$ 115.00	x	**$ 115.00**
30) Minor Official Plan/Zoning By-Law Amdendment (E.g., Single Family Residence)		$ 200.00	x	**$ 200.00**
31) Major Official Plan/Zoning By-Law Amendment (E.g., Industrial,Commercial,Institutional, Subdivision etc)		$ 300.00	x	**$ 300.00**
32) Site Plan Control		$ 200.00	x	**$ 200.00**
33) Official Plan Amendment and Zoning By-law Amendment Combination		$ 275.00	x	**$ 275.00**
34) Part Lot Control Exemption		$ 115.00	x	**$ 115.00**
35) Consent with Zoning By-Law Amendment Combination		$ 250.00	x	**$ 250.00**
36) Consent with Minor Variance Combination		$ 250.00	x	**$ 250.00**

"X" indicates that the fee is exempt from HST

APPENDIX B

Agency Correspondence

Dufour, Bradley

From: ESA-Aylmer (MNRF) <ESA.Aylmer@ontario.ca>
Sent: Friday, October 12, 2018 9:54 AM
To: Dufour, Bradley
Cc: Andrew-Mcbride, Peter; MacLeod, Shane D; tduquette@citywindsor.ca; Dibbley, Roxanne
Subject: RE: Information Request for Design and Construction of Two Pedestrian Bridges, Windsor, Ontario

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From: Dufour, Bradley [mailto:bradley.dufour@woodplc.com]
Sent: October 11, 2018 11:41 AM
To: ESA-Aylmer (MNRF) <ESA.Aylmer@ontario.ca>
Cc: Andrew-Mcbride, Peter <peter.andrew-mcbride@woodplc.com>; MacLeod, Shane D <shane.macleod@woodplc.com>; tduquette@citywindsor.ca; Dibbley, Roxanne <roxanne.dibbley@woodplc.com>
Subject: RE: Information Request for Design and Construction of Two Pedestrian Bridges, Windsor, Ontario

Karissa,

Please find an updated figure that depicts the revised and final location of the McHugh Pedestrian Bridge over Little River. The crossing has shifted to the north by approximately 10-15 m. The project footprint is now further away from the identified crayfish burrows. I trust that this slight alignment alteration does not impact your decision with regards to ESA compliance. Please confirm this conclusion.

Regards,
Brad

Bradley Dufour, M.Sc., CAN-CISEC, CPESC
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From: Dufour, Bradley
Sent: Tuesday, October 09, 2018 8:28 AM
To: ESA-Aylmer (MNRF) <ESA.Aylmer@ontario.ca>
Cc: Andrew-Mcbride, Peter <peter.andrew-mcbride@woodplc.com>; MacLeod, Shane D <shane.macleod@woodplc.com>; tduquette@citywindsor.ca; Dibbley, Roxanne <roxanne.dibbley@woodplc.com>
Subject: RE: Information Request for Design and Construction of Two Pedestrian Bridges, Windsor, Ontario

Karissa,

Thank you for the prompt response We will ensure the mitigation measures outlined in your letter are incorporated into the design and construction phasing for this project. Should you require any further project notifications related to design or compliance, please do not hesitate to contact me.

Regards,

Brad

Bradley Dufour, M.Sc., CAN-CISEC, CPESC
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From: ESA-Aylmer (MNRF) <ESA.Aylmer@ontario.ca>
Sent: Friday, October 05, 2018 4:13 PM
To: Dufour, Bradley <bradley.dufour@woodplc.com>
Cc: Andrew-Mcbride, Peter <peter.andrew-mcbride@woodplc.com>; MacLeod, Shane D <shane.macleod@woodplc.com>; tduquette@citywindsor.ca; Dibbley, Roxanne <roxanne.dibbley@woodplc.com>
Subject: RE: Information Request for Design and Construction of Two Pedestrian Bridges, Windsor, Ontario

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From: Dufour, Bradley [mailto:bradley.dufour@woodplc.com]
Sent: September 25, 2018 2:02 PM

To: ESA-Aylmer (MNRF) <ESA.Aylmer@ontario.ca>
Cc: Andrew-Mcbride, Peter <peter.andrew-mcbride@woodplc.com>; MacLeod, Shane D <shane.macleod@woodplc.com>; tduquette@citywindsor.ca; Dibbley, Roxanne <roxanne.dibbley@woodplc.com>
Subject: RE: Information Request for Design and Construction of Two Pedestrian Bridges, Windsor, Ontario

Hi Karissa,

Please find attached two (2) figures that outline anticipated project impacts for each of the bridge crossings. These figures outline permanent footprint impacts of the new bridges and temporary work areas that are to be utilized by the Contractor during construction. All areas still require refinement as our study progresses. We will provide updates if any substantial changes are to occur beyond what is presented in the figures. Our engineering team is still developing drawings, once complete those can be provided for your reference and inclusion in the project file.

I've also provided a markup on the McHugh Pedestrian Bridge figure which highlights the area where the crayfish burrows were found during the field surveys. The area was a low depression in the ground.

If you require further information or have additional questions, please feel free to contact me.

Brad

Bradley Dufour, M.Sc., CAN-CISEC, CPESC
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From: ESA-Aylmer (MNRF) <ESA.Aylmer@ontario.ca>
Sent: Friday, September 07, 2018 5:01 PM
To: Dufour, Bradley <bradley.dufour@woodplc.com>
Cc: Andrew-Mcbride, Peter <peter.andrew-mcbride@woodplc.com>; MacLeod, Shane D <shane.macleod@woodplc.com>; tduquette@citywindsor.ca; Dibbley, Roxanne <roxanne.dibbley@woodplc.com>
Subject: RE: Information Request for Design and Construction of Two Pedestrian Bridges, Windsor, Ontario

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From: Dufour, Bradley [mailto:bradley.dufour@woodplc.com]
Sent: August 24, 2018 2:04 PM
To: ESA-Aylmer (MNRF) <ESA.Aylmer@ontario.ca>
Cc: Andrew-Mcbride, Peter <peter.andrew-mcbride@woodplc.com>; MacLeod, Shane D <shane.macleod@woodplc.com>; tduquette@citywindsor.ca; Dibbley, Roxanne <roxanne.dibbley@woodplc.com>
Subject: RE: Information Request for Design and Construction of Two Pedestrian Bridges, Windsor, Ontario

Good afternoon Karissa,

Please find attached a Species at Risk screening letter that provides an outline of field surveys undertaken, habitat potential and anticipated project related impacts to the listed species as provided below. With this submission, we are looking for your acceptance of our conclusions to ensure compliance with the *Endangered Species Act*, 2007. We are in the process of preparing a formal Environmental Impact Assessment report of which we can provide to your office for further review once complete.

If you have any questions, please do not hesitate to contact me.

Regards,
Brad

Bradley Dufour, M.Sc., CAN-CISEC, CPESC
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From: ESA-Aylmer (MNRF) <ESA.Aylmer@ontario.ca>
Sent: Thursday, June 28, 2018 10:43 AM
To: Dufour, Bradley <bradley.dufour@woodplc.com>; tduquette@citywindsor.ca
Cc: Andrew-Mcbride, Peter <peter.andrew-mcbride@woodplc.com>; MacLeod, Shane D <shane.macleod@woodplc.com>
Subject: RE: Information Request for Design and Construction of Two Pedestrian Bridges, Windsor, Ontario

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Species at Risk (SAR)
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An initial SAR (Endangered and Threatened species) screening has been completed for the above-noted property.

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- Eastern Meadowlark (threatened) – species and general habitat protection
- SAR Bats (endangered) – species and general habitat protection

Species of special concern (not legally protected under the ESA) are also known to occur in the area for your information:
- Climbing Prairie Rose

Please note that this is an initial screening for SAR and the absence of known element occurrences does not indicate the absence of species, as the province has not been surveyed comprehensively for the presence or absence of SAR, and MNRF data relies on observers to report sightings of SAR. Field assessments by a qualified professional may be necessary where there is a high likelihood for SAR species and/or habitat to occur within the project footprint and potentially be impacted.

Based on the information provided for this project, MNRF considers there to be high likelihood for the above-noted species and/or habitat to occur within the proposed project footprint. Please refer to our attached SAR Screening Process Technical Bulletin. MNRF strongly recommends that no onsite activities (i.e., site alterations, vegetation/debris removal, etc.) occurs until Step 2 is completed in order for proponents to demonstrate due diligence and remain in compliance with the ESA. Failure to comply with this recommendation could result in a contravention of the ESA and possible compliance/enforcement action.

It is important to note the following:
- The Committee on the Status of Species at Risk in Ontario (COSSARO) meets regularly to evaluate new species for listing and/or re-evaluate species already on the SARO List.
- As a result, species designations may change, and changes may occur in both species and habitat protection, which could affect the level of protection they receive under the ESA (2007) and whether proposed projects may have adverse effects on SAR.
- Habitat protection provisions for a species may change if a species-specific habitat regulation comes into effect.

When activities or projects will result in adverse effects to endangered or threatened species and/or their habitat, additional action would need to be taken in order to remain in compliance with the ESA. Additional action could be applying for an authorization under section [illegible] of the ESA or completing an online registry for an ESA regulation and following the rules in regulation if the project is eligible ([illegible]). Questions about the registry process should be directed to MECP's Registry and Approval Services Centre at [illegible] or at [illegible]@ontario.ca. Please be advised that applying for an authorization does not guarantee approval and the process can take several months.

Fish and Fish Habitat

There is no aquatic information available for Little River; however, aquatic resource area data is available for the [illegible] Drain (directly east of Little River) at [illegible]:
- Species such as [illegible], Bluegill, [illegible], Largemouth Bass, Spottail Shiner, White Sucker, Yellow Perch.

In response to your request, the fisheries timing window is typically March [illegible]th to July [illegible]th to protect spawning activity of fish.

MNRF recommends you contact the appropriate Conservation Authority and DFO for up-to-date fisheries, mussel and drain information.

Please be advised that it is your responsibility to be aware of and comply with all relevant federal or provincial legislation, municipal by-laws or other agency approvals.

If you have any questions or require additional information, please feel free to contact me.

Regards,

Karissa Reischke, MSc. | Management Biologist
Ministry of Natural Resources and Forestry | Aylmer District |
[illegible] | karissa.reischke@ontario.ca
[illegible] John St N, Aylmer, ON [illegible]

From: Dufour, Bradley [mailto:bradley.dufour@woodplc.com]
Sent: April 23, 2018 7:50 AM
To: ESA-Aylmer (MNRF) <ESA.Aylmer@ontario.ca>
Cc: Andrew-Mcbride, Peter <peter.andrew-mcbride@woodplc.com>; MacLeod, Shane D <shane.macleod@woodplc.com>
Subject: Information Request for Design and Construction of Two Pedestrian Bridges, Windsor, Ontario

Please find attached an information request to support the design and construction of 2 pedestrian bridges over the Little River in Windsor, Ontario.

If additional information is required, please let me know.

Regards,
Brad

Bradley Dufour, M.Sc., CAN-CISEC, CPESC
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bradley.dufour@woodplc.com
www.woodplc.com

wood.

Wood Environment & Infrastructure Solutions,
a Division of Wood Canada Limited
900 Maple Grove Road, Unit 10
Cambridge, ON N3H 4R7
Canada
T: 519-650-7100
www.woodplc.com

August 22, 2018
SWW187089

Karissa Reischke
Ontario Ministry of Natural Resources and Forestry
Aylmer District
615 John St N
Aylmer ON, N5H 2S8

RE: Little River Multi-Use Bridges, Windsor, Ontario

Dear Ms. Reischke,

Proponent Information

Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited (Wood) has been retained by the Corporation of the City of Windsor (COW) to complete the detailed design and site-specific environmental studies for construction of two (2) new multi-use pedestrian bridges in Windsor, Ontario. Wood has previously submitted an Information Request to the Ontario Ministry of Natural Resources (MNRF) on April 23, 2018 and a response was received June 28, 2018. On site natural heritage screening was undertaken in the spring and summer of this year, specifically focused on potential for Species at Risk (SAR) occurrences at the each of the proposed bridge locations.

Purpose of the Memorandum

The following provides a summary of on site observations related to occurrences of SAR and identification of typical habitat elements required for each of the identified species. The intent of this summary is to provide the MNRF with site specific information to inform future project direction and to determine requirements for approvals under the *Endangered Species Act*, 2007 (ESA).

Contact Information

Wood Environment & Infrastructure Solutions
900 Maple Grove Road, Unit 10
Cambridge, Ontario N3H 4R7
Tel: (519) 650-7100
Attn: Bradley Dufour

The Corporation of the City of Windsor
Parks and Recreation
2450 McDougall Street
Windsor, Ontario N8X 3N6
Tel: (519) 253-2300 x2772
Attn: Trevor Duquette

Location

The proposed multi-use bridges are located in Windsor, Ontario, spanning the Little River; McHugh bridge and concrete box culvert (UTM 17T 341331.11 m E 4687068.31 m N) and Hawthorne bridge (UTM 17T 341263.95 m E 4686177.94 m N) (Figure 1).

At the proposed location of the McHugh bridge, the embankments of the Little River contain visible cobble material and are densely vegetated with shrub and herbaceous species. An existing Multi-Use Path (MUP) is present on each side of the Littler River. The MUPs are beyond the top of the bank and run parallel to the Little River within the area of study. West of the Little River and the Windsor Family Credit Union (WFCU) Parkland Trail, a stormwater drainage feature is present. The stormwater feature runs parallel to the Little River and captures surface flow from the adjoining WFCU Centre parking lot. Standing shallow water and dense common reed (*Phragmites australis*) were observed in the stormwater feature. East of the Little River, a small natural area is present, with soccer fields and residential development farther east of the natural area, south of the proposed bridge location. A stormwater pond was noted approximately 330 m northeast of the proposed bridge crossing. The McHugh Street bridge is approximately 60 m upstream of the proposed bridge crossing.

At the proposed location of the Hawthorne bridge, a narrow buffer of deciduous trees along each side of the Littler River is present. A MUP, the Teedie North/South Trail, is present, running parallel, on each side of the Little River. West of the Little River, a narrow area of manicured lawn is present, with residential development and roads immediately farther west. East of the Little River, a large area of manicured lawn is present with residential development and roads south of the proposed bridge crossing. Commercial development is beyond the manicured lawns, approximately 60 m northeast of the proposed bridge crossing.

Figures 2 and 3 below illustrate the general characterizations of natural heritage and environmental features identified above. To provide additional site specific context, representative photographs are provided below in Attachment 1.

General Description of Proposed Activities

The proposed bridge crossing structures will be clear spans that will be set at an elevation at or above the top of bank. No in-water supporting structures or permanent alterations to the embankment below the Ordinary High Water Mark (OHWM) are anticipated. A connecting path to the Ganatchio Trail will be made on both sides at each bridge. Connecting paths are anticipated to be 3.0 m in width. Footprint impacts will be minimized to the greatest extent possible, with specific consideration given to minimizing removal of vegetation and trees at the top of bank.

The detailed design for each bridge will be refined as the study progresses and information from other technical disciplines is compiled and reviewed by the project team.

Additional Information

Background data collection using the Natural Heritage Information Centre (MNRF NHIC) and correspondence with MNRF identified eight (8) SAR as potentially occurring within the general project area (Table 1).

Table 1: Species at Risk and Rare Species Occurrences in the Vicinity of the Proposed McHugh and Hawthorn Bridge Crossings

Common Name	Scientific Name	Provincial Status (ESA, 2007)
Reptiles[1,2]		
Butler's Gartersnake[1,2]	*Thamnophis butleri*	Endangered
Eastern Foxsnake (Carolinian population)[2]	*Pantherophis gloydi*	Endangered
Snapping Turtle[1]	*Chelydra serpentina*	Special Concern
Birds[2]		
Bank Swallow[2]	*Riparia riparia*	Threatened
Barn Swallow[2]	*Hirundo rustica*	Threatened
Eastern Meadowlark[2]	*Sturnella magna*	Threatened
Plants[2]		
Climbing Prairie Rose[2]	*Rosa setigera*	Special Concern
Fish[1]		
Northern Madtom	*Notorus stigmosus*	Endangered

[1] Listed in MNRF NHIC records as occurring within the last 30 years
[2] MNRF correspondence received June 28, 2018

Surveys of the proposed bridge crossings were undertaken by two (2) qualified Wood biologists in May and July 2018. Field surveys were completed during appropriate weather conditions to observe and detect wildlife. No SAR vegetation was observed within proximity to either proposed bridge site. Overall,

potential reptile SAR habitat was present on both banks at the McHugh bridge location and east of the McHugh bridge location while SAR habitat was very limited in proximity to the Hawthorne bridge location. The Little River was slow moving and turbid in colouration, with no visibility below the surface at both bridge sites during both surveys. Substrate could not be examined due to the water depth (greater than 1 m) and the lack of visibility below the surface. The observed turbid water and slow current are not the preferred habitat for Northern Madtom.

Meadow habitat east of the Little River at the McHugh bridge location is potentially suitable for Butler's Gartersnake (BGS) and Eastern Foxsnake (EFS). Crayfish burrows were observed, which are known to be used by BGS as access to underground overwintering sites. This area of meadow habitat is bordered to the southeast by deciduous trees which are considered to not be ideal habitat for either SAR snake species. The vegetation east of the MUP, north of the McHugh Street bridge, and east of the paved path south of the McHugh Street bridge is mowed, however, and less ideal than the drain banks or the naturalized area south of the bridge. Barn swallows were observed flying over Little River near the McHugh bridge location during the July survey; however, there was no evidence of nesting nearby, particularly under the McHugh Street bridge. The McHugh Street bridge will not be disturbed during construction of the McHugh bridge. No other avian SAR were observed or heard during the surveys. The surrounding meadow habitat is likely too small to support grassland nesting birds such as Eastern Meadowlark. This species was also not observed or heard calling during surveys which occurred during the breeding bird season.

None of the SAR listed in Table 1, or their habitat, were observed at the Hawthorne bridge. Manicured lawns and residential development surrounding the Hawthorne bridge was considered to not be suitable for the aforementioned SAR. The short grass does not have a thatch layer to provide thermoregulation opportunities for snakes or suitable vegetation for Eastern Meadowlark nesting. Similar to the McHugh bridge, visibility to observe substrate within the Little River was restricted due to turbid colouration and water depth.

Closure

Historical records of SAR occurrences are provided for the general area at McHugh and Hawthorne bridge locations and following the completion of field surveys, it is our opinion that potential suitable habitat for BGS and EFS exists only at the McHugh bridge location. Direct impacts to these species or detrimental destruction of key habitat features are not anticipated to result from the proposed works as footprint impacts are minimal and staging/storage areas will be outside of the identified potential habitat area. During construction, project commitments will be made to ensure standard mitigation measures are implemented of which will ensure any area resident or migrant wildlife, including SAR, are suitably protected during construction.

With the above noted, Wood, on behalf of COW, requests a further SAR screening by MNRF for the proposed project. Should you require further information related to this project or if you have any questions please do not hesitate to contact the undersigned. Thank you for your time and assistance.

Sincerely,

Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited

Roxanne Dibbley, B. Sc.
Biologist
Direct Tel.: 226-387-0623
E-mail: roxanne.dibbley@woodplc.com

Bradley Dufour, M. Sc., CISEC, CPESC
Senior Environmental Specialist
Direct Tel.: 519-650-7109
E-mail: Bradley.dufour@woodplc.com

Attachment #1

Photographic Record

Photo 1: McHugh Bridge – Facing downstream from bridge approximately 60 m upstream.

Photo 2: McHugh Bridge – Potential snake habitat east of Little River.

Photo 3: McHugh Bridge – Crayfish burrow east of the river.

Photo 4: McHugh Bridge – Public path east of the river, facing south.

Photo 5: McHugh Bridge – West bank and pedestrian path, facing north.

Photo 6: McHugh Bridge – Facing west bank and WFCU recreation complex from east bank of river.

Photo 7: Hawthorne Bridge – Adjacent land on the west side of the river.

Photo 8: Hawthorne Bridge – Pedestrian path and residential development immediately west of the river.

Photo 9: Hawthorne Bridge – Adjacent land on the east side of the river, facing south.

Photo 10: Hawthorne Bridge – Facing east from the river toward manicured lawn and development.

P:\2018\Projects Other\SWW187089 City of Windsor Pedestrian Bridges\11 GIS\MXD\Project Location 2.mxd

LEGEND

- Potential Bridge Location
- Railway
- Watercourse
- Waterbody

NOTES:
- Aerial imagery extacted from Google Earth, 2017.

0 50 100 200 300 400 500 Metres

Datum: NAD83
Projection: UTM Zone 17N

N W E S

THE CITY OF WINDSOR wood.

WINDSOR PEDESTRIAN BRIDGES

Project Location

PROJECT N°: SWW187089 SWW187112	**FIGURE: 1**
SCALE: 1:8,000	DATE: August 2018

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LEGEND

- Potential Bridge Location
- Survey Area
- Potential SAR Snake Habitat
- Buried Watercourse
- Permanent Watercourse
- Waterbody

Photo Locations
(Labelled with ID; arrow displays direction of photo)

1: Facing South from Existing Bridge
2: Low-lying Area within Potential SAR Snake Habitat
3: Crayfish Burrow
4: Facing Downstream / South from Pedestrain Path
5: Facing North from Pedestrian Path on West of Little RIver
6: Facing West from Top of East of Little River

NOTES:
- Aerial imagery extacted from Google Earth, 2017.

Datum: NAD83
Projection: UTM Zone 17N

0 25 50 100 150 200 Metres

THE CITY OF WINDSOR wood.

WINDSOR PEDESTRIAN BRIDGES

McHugh Pedestrian Bridge

PROJECT N°: SWW187089 SWW187112	**FIGURE: 2**
SCALE: 1:2,200	DATE: August 2018

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LEGEND

- Potential Bridge Location
- Survey Area
- Manicured Lawn
- Buried Watercourse
- Permanent Watercourse
- Waterbody

Photo Locations
(Labelled with ID; arrow displays direction of photo)

7: Facing North from Pedestrain Path on West of Little River
8: Facing North East from Pedestrain Path on West of Little River
9: Facing South from Manicured Lawn on East of Little River
10: Facing East from Manicured Lawn on East of Little River

NOTES:
- Aerial imagery extacted from Google Earth, 2017.

Datum: NAD83
Projection: UTM Zone 17N

0 25 50 100 150 200 Metres

THE CITY OF WINDSOR wood.

WINDSOR PEDESTRIAN BRIDGES

Hawthorne Pedestrian Bridge

PROJECT N°: SWW187089 SWW187112	**FIGURE: 3**
SCALE: 1:2,200	DATE: August 2018

[illegible]
[illegible]
[illegible] John Street North
[illegible]
[illegible]
[illegible]

[illegible]
[illegible]
[illegible] rue John Nord
[illegible]
[illegible]
[illegible]

October [illegible]

[illegible]

[illegible]
The Corporation of the City of Windsor
[illegible] McDougall Street
Windsor [illegible]

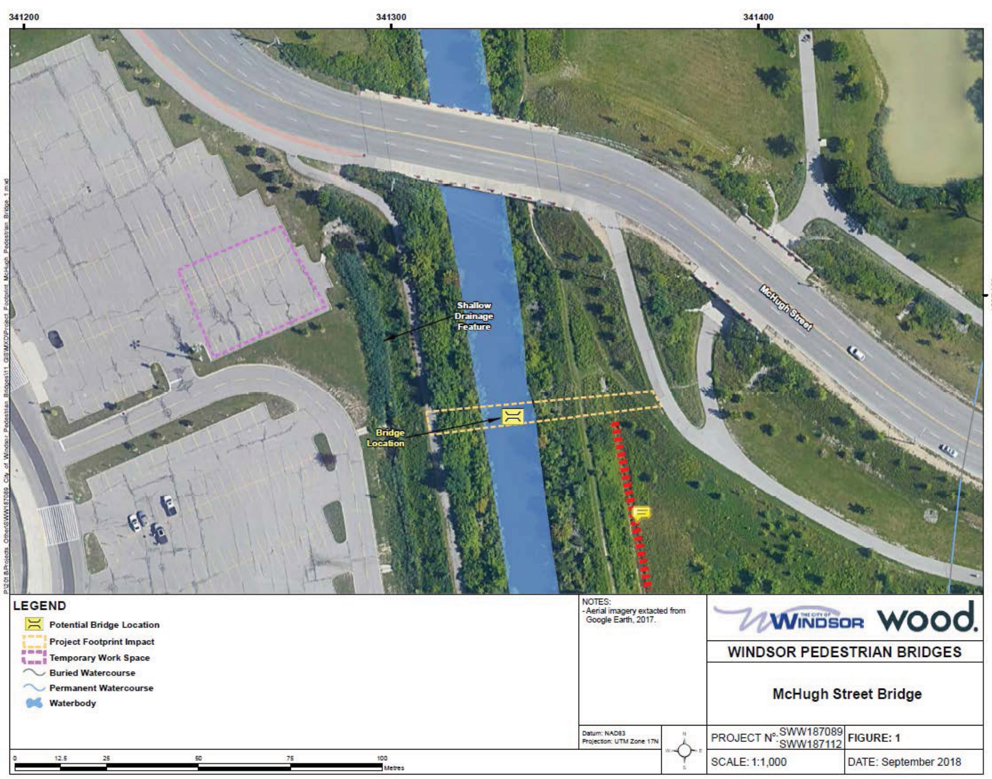
Dear Mr. [illegible]

<u>RE: Two Pedestrian Bridges across Little River and the *Endangered Species Act, 2007*</u>

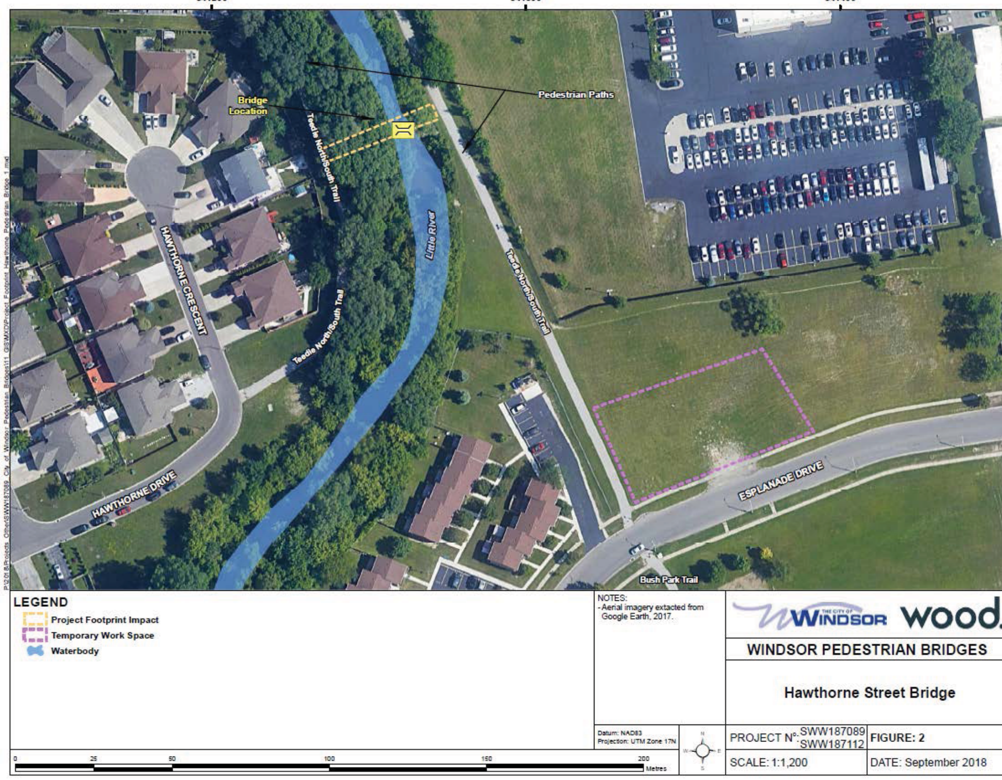
The Ministry of Natural Resources and Forestry (MNRF) has reviewed the information that was provided on the two proposed pedestrian bridge project to assess the potential impacts of the proposal on endangered or threatened species and their habitats. From the information provided, it is our understanding that the proposed project falls within these parameters:

1. The project spans across Little River with McHugh bridge located [illegible] metres south of McHugh Street bridge and Hawthorne bridge located west of Hawthorne Crescent in the City of Windsor, Essex County.
2. The proposed project involves the development of two pedestrian bridges spanning across Little River. The proposed bridges will be set at an elevation at or above the top of bank resulting in no in-water works. See Figure 1 and 2 for detailed project footprint.

[illegible]



[illegible]



c. The proposed project will begin in [illegible]

d. MECP has reviewed species at risk (SAR) occurrence information on file and determined that there are known occurrences of SAR in the general area with potential to occur in the project location:

- Eastern Foxsnake (Carolinian population) (endangered) – with species and regulated habitat protection [illegible]
- Butler's Gartersnake (endangered) – with species and general habitat protection.

Based on a review of the above information, MECP has determined that the activities associated with the project as currently proposed [illegible] section 9 (species protection) and/or section 10 (habitat protection) of the *Endangered Species Act, 2007* (ESA) [illegible] for SAR [illegible]

e. Any species listed as endangered or threatened on the Species at Risk in Ontario (SARO) list that is encountered at the project location must be protected from all harm and harassment.

f. Any species at risk incidentally encountered must be protected from harm and harassment. If a SAR species is encountered, it should be [illegible] before starting work. SAR species must be moved [illegible] qualified biologist should be contacted for advice before it is moved.

g. Any SAR individual that is present at the project site should be reported to the MECP [illegible] District staff (contact information below) within 48 hours of the observation or the next working day [illegible] first.

4. If an injured or deceased SAR is found or a SAR individual is accidentally unearthed from overwintering, the specimen must be placed in a non-airtight container that is maintained at an appropriate temperature and a Wildlife Custodian authorized under the Fish and Wildlife Conservation Act should be contacted. A list of authorized Wildlife Custodians, their locations and their specialties (e.g., reptiles) is available at [illegible]ontario[illegible]find-wildlife-rehabilitator. MNRF contact information below must be contacted immediately after the occurrence.

5. As a cold-blooded species, snakes are generally slow moving in periods of cool temperatures and therefore more susceptible to harm. To the extent possible, any vegetation clearing activities and vegetation clearing associated with the project should be conducted [illegible] to ensure work is not completed when snake individuals are either overwintering or are active and most able to flee areas of disturbance. When this is not possible, the area to be impacted by vegetation clearing must be walked and visually surveyed for the presence of SAR snakes immediately prior to initiating these activities.

6. [illegible] along the limits of the construction footprint in order to exclude snakes from entering the project area. Refer to the attached *Reptile and Amphibian Exclusion Fencing* for installation specifications.

7. The use of mesh or netting type stabilization material [illegible] used for erosion control measures [illegible] to prevent the entanglement of SAR snakes. An alternative product such as burlap, [illegible] blanket or the use of other geotextile fabric is recommended.

8. Construction and vegetation clearing equipment that is left idle for over one hour or is parked overnight on the property should be searched [illegible]. This visual examination should include all lower components of the machinery including operational extensions and running gear.

9. Butler's Gartersnake will utilize small mammal and crayfish burrows to overwinter and escape extreme heat during the summer period. They will also utilize natural and artificial cover objects such as logs, rocks, brush piles, rubble piles and debris for thermoregulation and to forage under for earthworms, slugs, specific [illegible] and protected from all disturbances that could result in damage and destruction of their habitat functions.

10. [illegible] should be taken to [illegible] lumber, topsoil piles, other construction materials to ensure that no potential Eastern Foxsnake habitat is created during the construction period.

If the above recommendations are implemented, the activity will likely not contravene section 9 (species protection) and/or section 10 (habitat protection) of the ESA 2007.

[illegible]

Should any of the project parameters change, or if it is not possible to fully comply with all the above recommendations, please notify the MNRF [illegible] District office (<u>[illegible]ontario[illegible]</u>) immediately to obtain guidance on whether additional actions will need to be taken to remain in compliance with the ESA. [illegible] Also, if any SAR species and/or habitats are observed on the property, please contact the MNRF [illegible] District office as soon as possible to report the observation.

It is important to note that changes may occur in both species and habitat protection which could affect whether proposed projects [illegible] adverse effects on SAR [illegible] ESA [illegible] applies to

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April 23, 2018
SWW187089/SWW187112

Ministry of Natural Resources and Forestry
Aylmer District Office
615 John Street North, Aylmer, ON N5H 2S8
Phone: (519)-799-9241

Re: Information Request for Design and Construction of Two Pedestrian Bridges, Windsor, Ontario

To Whom It May Concern:

This request and the attached figure have been prepared by Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited (Wood), on behalf of the City of Windsor, as a formal request for Species at Risk (SAR) information for two (2) new pedestrian bridges in Windsor, Ontario (WFCU Pedestrian Bridge and Concrete Box Culvert (UTM 17T 341331.11 m E 4687068.31 m N) and Hawthorne Pedestrian Bridge (UTM 17T 341263.95 m E 4686177.94 m N)). Wood has been retained by the City of Windsor to undertake the detailed design and a site-specific environmental study for the construction of these pedestrian bridges across the Little River. The specific location of the project area is shown in the Project Location Map included as **Attachment 1**. Wood has also provided SAR information as sourced from the Ministry of Natural Resources and Forestry's (MNRF) Natural Heritage Information Centre (NHIC) and Land Information Ontario database as **Attachment 2**.

Based on the NHIC findings, two (2) potential endangered species were reported in the two (2) 1km NHIC squares encompassing the Project area (702651 & 702650). Occurrence records for these squares within the last 30 years include Butler's Gartersnake (*Thamnophis butleri*) and Northern Madtom (*Notorus stigmosus*). We request that you please review these findings and provide comment related to compliance with the *Endangered Species Act* (ESA), 2007.

Furthermore, we also request any relevant fisheries and aquatic information for the portion of the Little River within the project area, management objectives related to fisheries resources and sensitivity of the fish community. We are also requesting confirmation of a March 31st to July 1st fisheries timing window, where in-water work is restricted t protect critical life stages of fish.

This information will assist in avoiding and mitigating potential environmental impacts of this project. Wood will prepare a scoped Environmental Impact Assessment (EIA) to summarize the environmental study and to assist the City of Windsor in the successful delivery of the project. As previously mentioned, Wood is requesting that the MNRF review the project description and

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information provided and confirm if there are environmental concerns associated with the proposed project works.

If you should have any questions regarding the submittal or require further information, please contact the undersigned.

Sincerely yours,

Bradley A. Dufour, M.Sc., CAN-CISEC, CPESC
Senior Environmental Specialist

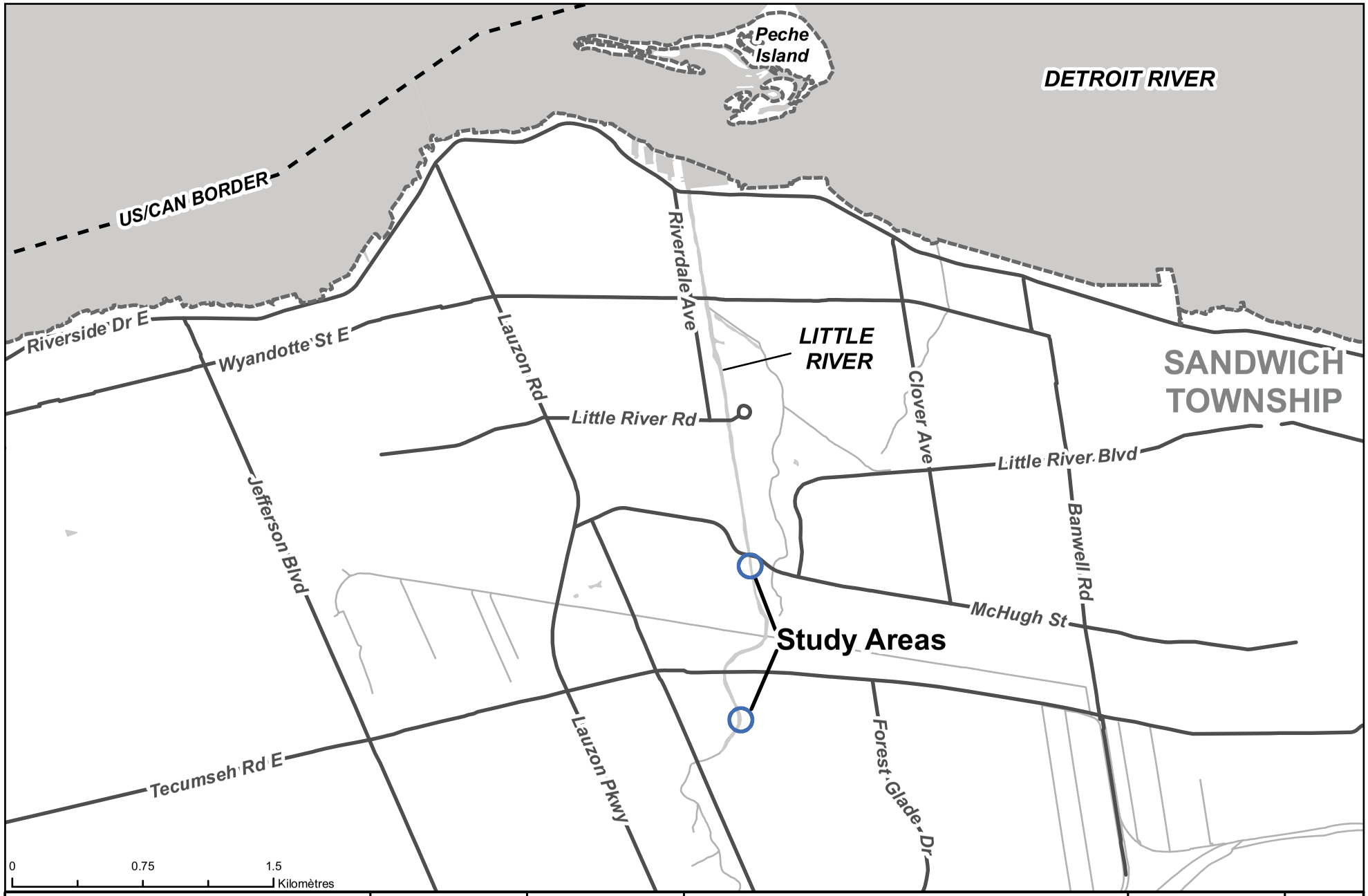
Wood Environment & Infrastructure Solutions
a division of Wood Canada Limited
Direct Tel.: 1-519-650-7109
E-mail: radley.dufour@woodplc.com

Enclosed: Attachment 1 - Project Key Map
Attachment 2 – Natural Heritage Features Map

cc: Shane MacLeod (Wood)
Peter Andrew-McBride (Wood)

ATTACHMENT 1

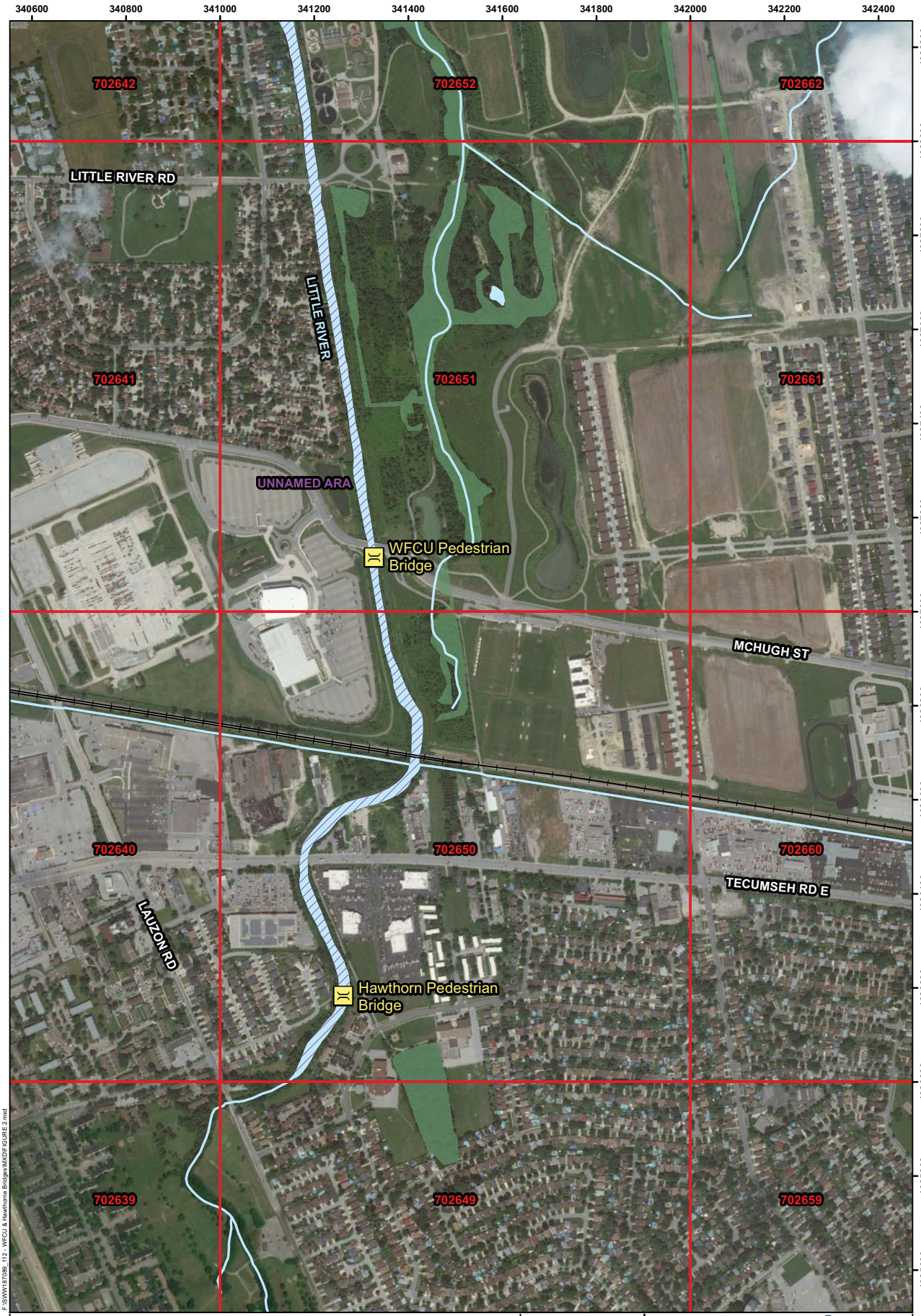
PROJECT KEY MAP



CLIENT CITY OF WINDSOR		DWN BY: S.FEWKES	PROJECT CITY OF WINDSOR PEDESTRIAN BRIDGES	REV. NO.: A	N
Wood Environment & Infrastructure Solutions 900 Maple Grove Rd, Unit 10 Cambridge, ON N3H 4R7	wood.	CHK'D BY: B.DUFOUR		DATE: Mar 29, 2018	
		DATUM: NAD83		PROJECT NO.: SWW187089 SWW187112	
		PROJECTION: UTM 17T	TITLE PROJECT LOCATIONS		
		SCALE: 1:30,000		FIGURE NO.: 1	

ATTACHMENT 2

NATURAL HERITAGE FEATURES MAP



F:\SWW187089_112 - WFCU & Hawthorne Bridges\MXD\FIGURE 2.mxd

LEGEND

- Bridge Location
- NHIC 1km Prvincially Tracked Species Grid (NAME)
- Aquatic Resource (NAME)
- Railway
- Watercourse (NAME)
- Waterbody
- Wooded Area

NOTES:
None of the following are found within the the study area(s):
- ANSI
- Conservation Reserves
- Crown Game Reserves
- FPA's
- DFO SAR
- First Nations Reserve
- NWA's
- Natural Heritage Systems
- Wetlands

Datum: NAD83
Projection: UTM Zone 17N

0 0.1 0.2 0.4 0.6 0.8 Kilometres

wood.

WINDSOR PEDESTRIAN BRIDGES

Natural Heritage Features

PROJECT N°: SWW187089 SWW187112	FIGURE: 2
SCALE: 1:7,500	DATE: Mar 2018

Dufour, Bradley

From: Cynthia Casagrande <CCasagrande@erca.org>
Sent: Wednesday, May 30, 2018 10:36 AM
To: Dufour, Bradley
Cc: Andrew-Mcbride, Peter; MacLeod, Shane D; Tom Dufour; Dan Lebedyk; Dan Jenner; Mike Nelson; Godo, Anna; Colucci, Sergio; Tim Byrne
Subject: RE: Information Request for Design and Construction of Two Pedestrian Bridges, Windsor, Ontario
Attachments: Little River Flood Risk Map - Sheet 6.pdf; Floodline Mapping - ER8-64b.pdf; Floodline Mapping - ER8-64a.pdf

Dear Bradley:

I acknowledge receipt of your email inquiry regarding Natural Heritage requirements for the proposed design and construction of two pedestrian bridges over the Little River. Several members of the ERCA staff have provided guidance and information regarding the Natural Heritage features and requirements for this project. I will now provide information and requirements regarding the Natural Hazard aspect of this proposed project.

A review of our floodplain mapping for the Little River indicates that this waterway is located within an area that is under the jurisdiction of the Essex Region Conservation Authority (ERCA) (Section 28 of the *Conservation Authorities Act*). Prior to undertaking works, a permit is required from this office.

In addition, the Little River is a municipal drain that is under the control of the City of Windsor. This proposed project should be addressed through the *Drainage Act* approval process. All inquiries regarding this proposed two new pedestrian bridges and *Drainage Act* approvals should be made with Ms. Anna Godo, Engineer III/Drainage Superintendent, City of Windsor (email address: agodo@citywindsor.ca).

As part of the *Drainage Act* approval process, the proposed project will be circulated to this office for our comments, review, approval, and issuance of a permit to the City of Windsor. Our comments regarding the proposed two new pedestrian bridge crossing installations will include the following:

The Little River is a modelled waterway. Please find attached the 1:100 year floodline mapping for these sites. The proposed structures must not adversely impact the flow regime of this waterway/drain for all storms up to and including the 1:100 year event. The proposed works cannot change the 1:100 year flood elevations.

Your submission for permit must include the following:

- letter/report describing the rationale behind the proposed design
- design drawings
- level of service of new bridge in comparison to existing bridges/culverts within the waterway/drain
- provide upstream and downstream bridge/culvert sizes
- a proposed sediment and erosion control plan
- a proposed water control plan – if needed
- a contingency plan for rain events that exceed the capacity of the proposed water control system – if needed
- restoration details
- details of the standard mitigation measures that are to be followed during construction

As part of the proposed work, the following mitigation measures shall be implemented to avoid any adverse effects and impacts to the waterway:

1. Work will not be conducted at times when flows are elevated due to local rain events, storms or seasonal floods. Work will be done in the dry.

2. All disturbed soils on both banks and within the channel, including spoil, must be stabilized immediately upon completion of work. The restoration of the site must be completed to a like or better condition to what existed prior to the works. The spoil material must be spread an appropriate distance from the top of the drain bank to ensure that it is not washed back into the waterway/drain.

3. To prevent sediment entry into the waterway/drain, in the event of an unexpected rainfall, silt barriers and/or traps must be placed in the channel during the works and until the site has been stabilized. All sediment and erosion control measures are to be in accordance with related Ontario Provincial Standards. It is incumbent on the proponent and his/her contractors to ensure that sediment and erosion control measures are functioning properly and are maintained/upgraded as required.

4. Silt or sand accumulated in the barriers/traps must be removed and stabilized on land once the site is stabilized.

5. All activities, including maintenance procedures, should be controlled to prevent the entry of petroleum products, debris, rubble, concrete or other deleterious substances into the water. Vehicular refueling and maintenance should be conducted away from the water.

With respect to Department of Fisheries and Oceans (DFO) concerns and comments, the proposed works to the Little River will need to be self-assessed by you, the proponent, through the DFO website at http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html. Through the self-assessment process, you will be able to determine if these works require a formal authorization under the *Fisheries Act.* Please be advised that the Little River is listed as a Type 'E' drain.

The Little River may contain significant species (aquatic species at risk as well as plants, animals, habitat, etc.) that are protected under the provincial *Endangered Species Act.* The ERCA does not screen for species that are protected under the provincial *Endangered Species Act.* It is the proponent's responsibility to ensure all issues related to the provincial *Endangered Species Act* are addressed. All inquiries regarding the provincial *Endangered Species Act* should be made with the Aylmer office of the Ontario Ministry of Natural Resources and Forestry (MNRF) (ESA.Aylmer@ontario.ca).

Should any requirements and/or conditions regarding the proposed works be specified by the DFO and/or the MNRF, then these conditions and possible changes would need to be reflected in the ERCA authorization/approval. Please contact this office immediately if there are any changes and/or modifications to the proposed works necessitated by the DFO and MRNF review and clearance.

Based on the above information, we suggest that you provide our office with an opportunity to review your preliminary bridge proposals prior to completing the final design.

If you have any questions, please do not hesitate to contact our office.

Yours truly,

Cynthia Casagrande
Regulations Coordinator
Essex Region Conservation Authority
360 Fairview Avenue West, Suite 311
Essex ON N8M 1Y6
(519) 776-5209, Ext. 349

From: Dufour, Bradley <bradley.dufour@woodplc.com>
Sent: Monday, April 23, 2018 8:33 AM

To: Cynthia Casagrande <CCasagrande@erca.org>
Cc: Andrew-Mcbride, Peter <peter.andrew-mcbride@woodplc.com>; MacLeod, Shane D <shane.macleod@woodplc.com>; Candice Kondratowicz <CKondratowicz@erca.org>
Subject: Information Request for Design and Construction of Two Pedestrian Bridges, Windsor, Ontario

Good morning Cynthia,

Please find attached an information request to support the design and construction of 2 pedestrian bridges over the Little River in Windsor, Ontario.

If additional project information is required, please let me know.

Regards,
Brad

Bradley Dufour, M.Sc., CAN-CISEC, CPESC
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bradley.dufour@woodplc.com
www.woodplc.com

ESSEX REGION
CONSERVATION AUTHORITY

FLOOD RISK MAP
LITTLE RIVER
CARTE DE RISQUE D'INONDATION

LEGEND LÉGENDE

SHEET INDEX TABLEAU D'ASSEMBLAGE

GENERAL INFORMATION

RENSEIGNEMENTS GÉNÉRAUX

COMPILATION NOTE

PHOTOGRAMMÉTRIE

SCALE 1:5000 ECHELLE

CONTOUR INTERVAL 1 METRE
NORTH AMERICAN DATUM 1927

ÉQUIDISTANCE DES COURBES DE NIVEAU 1 MÈTRE
SYSTÈME DE RÉFÉRENCE GÉODÉSIQUE NORD-AMÉRICAIN 1927

Environment Canada Inland Waters Directorate

Environnement Canada Direction Générale des Eaux intérieures

Ontario Ministry of Natural Resources
Ministère des richesses naturelles

Sheet

05 I7 3400 46850

MacLaren

REGULATION No _____ No DU RÉGLEMENT

SCHEDULE No _____ CÉDULE No

PRODUCED BY KENTING EARTH SCIENCES LIMITED

MAP NO. ERI - 6

42141-A1

ESSEX REGION
CONSERVATION AUTHORITY

SCALE 1:5,000 — 1 acre — 1 hectare — 100 m — 0.1 mi

O. L. STRELCHUK — REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO

C.H. SMITH — REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO

KENTING EARTH SCIENCES LIMITED

- Base maps prepared and flood line compiled by Kenting Earth Sciences Limited from aerial photographs taken 1975 and 1978 in accordance with specifications for topographic mapping prepared by the Canadian Association of Aerial Surveyors.
- This map prepared Dec. 1980 as an extension to Essex County Fill and Floodline mapping completed for the Essex Region Conservation Authority by M.M. Dillon Ltd. dated 1976.
- Floodline based on 1:100 year flood level.
- Revised calculated flood level 1979-578.4

LEGEND

Fill line _ _ _ _ _ _

Flood line _____

ONTARIO REGULATION No.___
SCHEDULE No.___

ESSEX COUNTY
Fill and Flood Line Mapping

MAP
ER8-64b
LAKE ST. CLAIR

ESSEX REGION
CONSERVATION AUTHORITY

SCALE 1:5,000 — 1 cm = 1 hectare — 100 m. — 0.1 mi.

D. L. STRELCHUK — REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO

C. H. SMITH — REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF ONTARIO

KENTING EARTH SCIENCES LIMITED

- Base maps prepared and flood line compiled by Kenting Earth Sciences Limited from aerial photographs taken 1975 and 1978 in accordance with specifications for topographic mapping prepared by the Canadian Association of Aerial Surveyors.
- This map prepared Dec. 1980 as an extension to Essex County Fill and Floodline mapping completed for the Essex Region Conservation Authority by M.M. Dillon Ltd. dated 1976.
- Floodline based on 1:100 year flood level.

LEGEND

Fill line _____
Flood line _____

ONTARIO REGULATION No.___
SCHEDULE No.___

ESSEX COUNTY
Fill and Flood Line Mapping

MAP
ER8-64a
LAKE ST. CLAIR

Dufour, Bradley

From: Mike Nelson <MNelson@erca.org>
Sent: Friday, May 11, 2018 3:06 PM
To: bradley.dufour@woodplc.com
Cc: shane.macleod@woodplc.com; Andrew-Mcbride, Peter; Planning
Subject: RE: Information Request for Design and Construction of Two Pedestrian Bridges, Windsor, Ontario
Attachments: ERCA-ltr-Info-Request-May-11-2018.pdf

Good afternoon Brad,

Per our previous email conversation – please see attached letter. Good luck next week with your field sampling.

Mike

From: Tom Dufour
Sent: Friday, May 11, 2018 9:09 AM
To: Andrew-Mcbride, Peter <peter.andrew-mcbride@woodplc.com>
Cc: shane.macleod@woodplc.com; Cynthia Casagrande <CCasagrande@ERCA.org>; Dan Lebedyk <DLebedyk@ERCA.org>; bradley.dufour@woodplc.com; Mike Nelson <MNelson@ERCA.org>
Subject: RE: Information Request for Design and Construction of Two Pedestrian Bridges, Windsor, Ontario

Hi Peter –

Please find attached a PDF map of the fish data in your project area. The map shows fish sampling locations from our database. These locations correspond to the [Site#] field in the attached MS Excel spreadsheet. From this information, you can see from where each record was collected.

DFO Species at Risk Screening -
You will also notice on the map a qualifier for the data. This lets you know that you should contact the DFO (if not already done so) for the following reasons:

- There are species at risk (SAR) present adjacent to your project location. You will need to get these records from the DFO directly. ERCA is not authorized to disseminate SAR data.
- The data provided is only the data we (ERCA) have available in our database. The DFO may have more data for this region.

On November 25, 2013 (due to amendments to the *Fisheries Act* coming into effect) the existing partnership agreements between DFO and Conservation Authorities lapsed. DFO and Conservation Ontario are currently working to develop a new Memorandum of Understanding for a partnership under the new Fisheries Protection Program. As a result, ERCA currently does not review projects for issues related to Section 35 of the *Fisheries Act*. In the interim, projects will need to be self-assessed by the proponent through the DFO website at http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html. Through the self-assessment process, you will be able to determine if the proposed works require a formal authorization under the *Fisheries Act*.

MNR Species at Risk Screening -

It is the proponent's responsibility to ensure all issues related to the Endangered Species Act are addressed. All inquiries regarding the *Endangered Species Act* should be sent to ESAScreeningRequest.AylmerDistrict@ontario.ca. MNRF also has on-line information related to ESA reviews/approvals. Please refer to the MNRF website to find information related to the ESA review process.

ALSO – ERCA would very much appreciate if your company would forward any new fish records that result from your project, in any format (MS Excel, PDF Report). We are actively trying to collect as much fish data as possible for our database, and new records are always welcome!

TOM DUFOUR, GISP
Geomatics Technician
Essex Region Conservation Authority
Please consider the environment before printing this email

Follow us on Twitter: @essexregionca

From: Dan Lebedyk
Sent: Thursday, May 10, 2018 3:18 PM
To: Andrew-Mcbride, Peter <peter.andrew-mcbride@woodplc.com>; bradley.dufour@woodplc.com
Cc: Tom Dufour <TDufour@erca.org>; shane.macleod@woodplc.com; Cynthia Casagrande <CCasagrande@erca.org>
Subject: FW: Information Request for Design and Construction of Two Pedestrian Bridges, Windsor, Ontario

Dear Peter:

By way of CC, I am forwarding your request for information onto Tom Dufour, ERCA *Geomatics Technician*, who would be able to provide you with any fish/aquatic species datasets that we may have within our system, for the areas subject to the proposed pedestrian bridges.

With respect to terrestrial information, we do not currently have any data on file for the areas subject to the proposed works. Your field investigations should concentrate on identifying any species at risk, or their habitats, that may be potentially impacted by the proposed construction of the pedestrian bridges. If any are found, appropriate advice from the MNRF should be sought with respect to obtaining any required authorizations.

No other natural heritage issues would need to be addressed as part of our Permit approval process.

Please do not hesitate to contact me if you should have any questions or require any additional information.

Thank you.

Sincerely,

DAN LEBEDYK
Biologist/Ecologist
Essex Region Conservation Authority
360 Fairview Avenue West, Suite 311 • Essex, Ontario • N8M 1Y6
P. 519-776-5209 x 409 • F. 519-776-8688
dlebedyk@erca.org essexregionconservation.ca

From: Andrew-Mcbride, Peter <peter.andrew-mcbride@woodplc.com>
Sent: Thursday, May 10, 2018 2:51 PM
To: Dan Lebedyk <DLebedyk@erca.org>
Subject: FW: Information Request for Design and Construction of Two Pedestrian Bridges, Windsor, Ontario

Hi Dan,

I was just wondering if you'd be asked to weigh in on the attached? Our field team is trying to get out as soon as possible (next week), but we would prefer to have ERCA's input before we go out.

I understand you're quite busy, so I appreciate this is likely in the queue either for you or someone else on your team.

Thanks again,
Pete

Peter Andrew-McBride
M□□ □□□□□□□□□□□□□

From: Dufour, Bradley [mailto:bradley.dufour@woodplc.com]
Sent: May-08-18 10:11 AM
To: Andrew-Mcbride, Peter <peter.andrew-mcbride@woodplc.com>
Subject: FW: Information Request for Design and Construction of Two Pedestrian Bridges, Windsor, Ontario

Bradley Dufour, M.Sc., CAN-CISEC, CPESC
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From: Dufour, Bradley
Sent: Tuesday, May 08, 2018 9:49 AM
To: Shams, Aniqa <aniqa.shams@woodplc.com>
Subject: FW: Information Request for Design and Construction of Two Pedestrian Bridges, Windsor, Ontario

FYI

Bradley Dufour, M.Sc., CAN-CISEC, CPESC
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From: Dufour, Bradley
Sent: Monday, April 23, 2018 8:33 AM
To: 'ccasagrande@erca.org' <ccasagrande@erca.org>
Cc: 'Andrew-Mcbride, Peter' <peter.andrew-mcbride@woodplc.com>; 'MacLeod, Shane D' <shane.macleod@woodplc.com>; 'admin@erca.org' <admin@erca.org>
Subject: Information Request for Design and Construction of Two Pedestrian Bridges, Windsor, Ontario

Good morning Cynthia,

Please find attached an information request to support the design and construction of 2 pedestrian bridges over the Little River in Windsor, Ontario.

If additional project information is required, please let me know.

Regards,
Brad

Bradley Dufour, M.Sc., CAN-CISEC, CPESC
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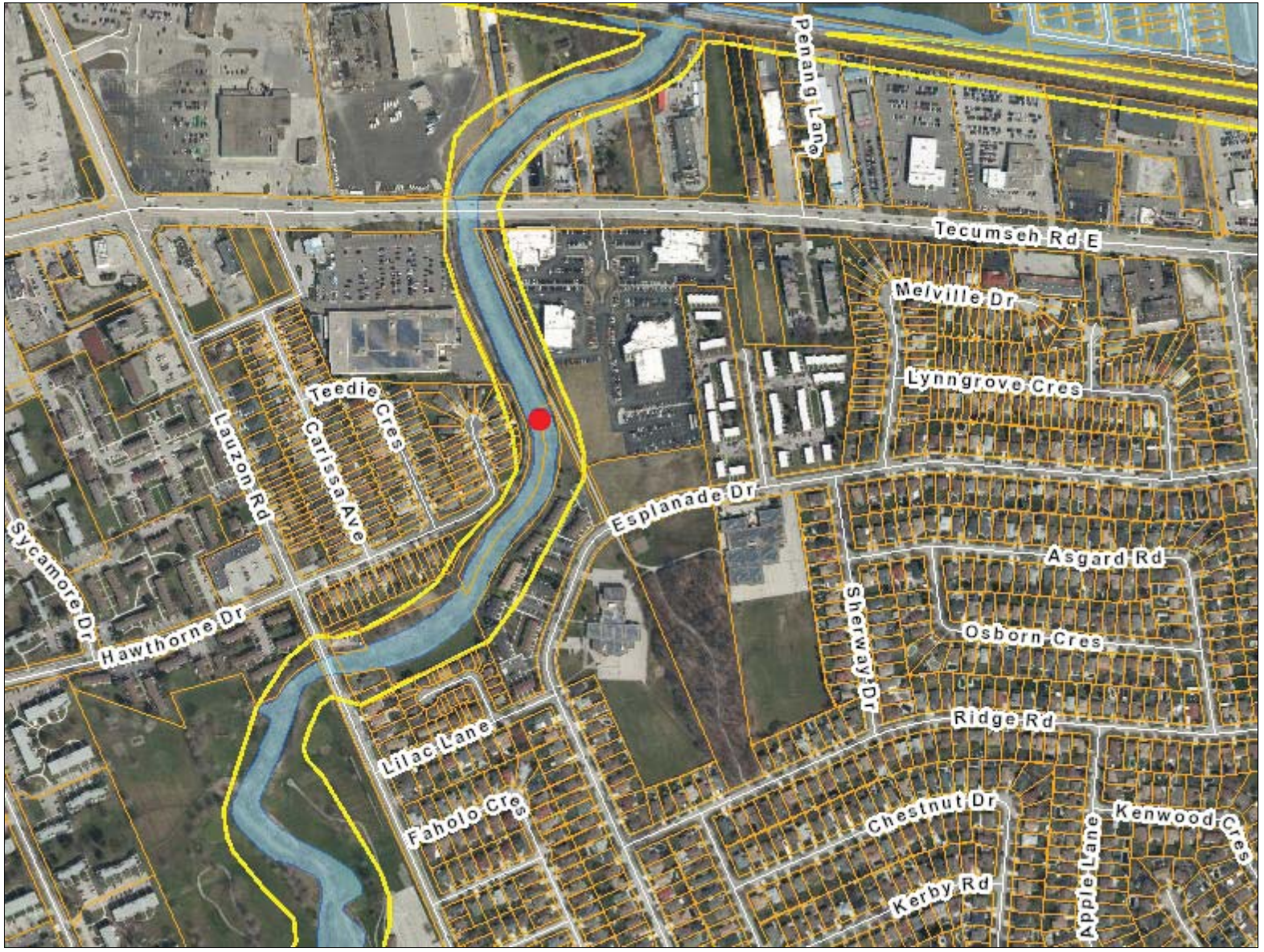
bradley.dufour@woodplc.com
www.woodplc.com

ERCA Public Internet Mapping



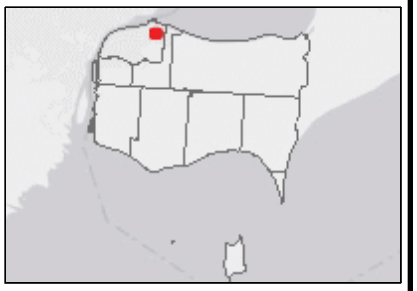
Essex Region Conservation Authority

Public Interactive Mapping

Legend

- Parcel Fabric
- 1:100 yr Flood Line
- Limit of Regulated Area

Location



ERCA Geomatics

THIS MAP HAS BEEN PRODUCED BY THE GENERAL PUBLIC AND NOT BY QUALIFIED ERCA STAFF.

Notes

Hawthorne Bridge

0 151.31 302.6

Meters

1: 6,808

10/23/2018

ERCA Public Internet Mapping

Essex Region Conservation Authority

Public Interactive Mapping

Legend

- Parcel Fabric
- Limit of Regulated Area

Location

ERCA Geomatics

THIS MAP HAS BEEN PRODUCED BY THE GENERAL PUBLIC AND NOT BY QUALIFIED ERCA STAFF.

Notes

Hawthorne Bridge - Zoom Aerial

0 9.46 18.9

Meters

1: 425

10/23/2018

April 23, 2018
SWW187089/SWW187112

Essex Region Conservation Authority
360 Fairview Avenue West, Suite 311
Essex, ON N8M 1Y6
Phone: (519)-776-5209

Re: Information Request for Design and Construction of Two Pedestrian Bridges, Windsor, Ontario

To Whom It May Concern:

This request and the attached figure have been prepared by Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited (Wood), on behalf of the City of Windsor, as a formal request for natural heritage information for two (2) new pedestrian bridges in Windsor, Ontario (WFCU Pedestrian Bridge and Concrete Box Culvert (UTM 17T 341331.11 m E 4687068.31 m N) and Hawthorne Pedestrian Bridge (UTM 17T 341263.95 m E 4686177.94 m N)). Wood has been retained by the City of Windsor to undertake the detailed design and a site-specific environmental study for the construction of these pedestrian bridges across the Little River. The specific location of the project area is shown in the Project Location Map included as **Attachment 1**. Wood has also provided Species at Risk (SAR) information as sourced from the Ministry of Natural Resources and Forestry's (MNRF) Natural Heritage Information Centre (NHIC) and Land Information Ontario database as **Attachment 2**.

Please provide any aquatic or fisheries information for the portion of the Little River within the project area, which should be of consideration for the project. Additionally, please provide any terrestrial information which may be of consideration for the project.

This information will assist in developing a Terms of Reference (ToR) with your office to plan for future field surveys. As the project progresses, the information will also be used to avoid and mitigate potential environmental impacts. Wood will prepare a scoped Environmental Impact Assessment (EIA) to summarize the environmental study and to assist the City of Windsor in the successful delivery of the project. As previously mentioned, Wood is requesting that the Conservation Authority review the project description and information provided and confirm if there are environmental concerns associated with the proposed project works.

If you should have any questions regarding the submittal or require further information, please contact the undersigned.

Sincerely yours,

Bradley A. Dufour, M.Sc., CAN-CISEC, CPESC
Senior Environmental Specialist

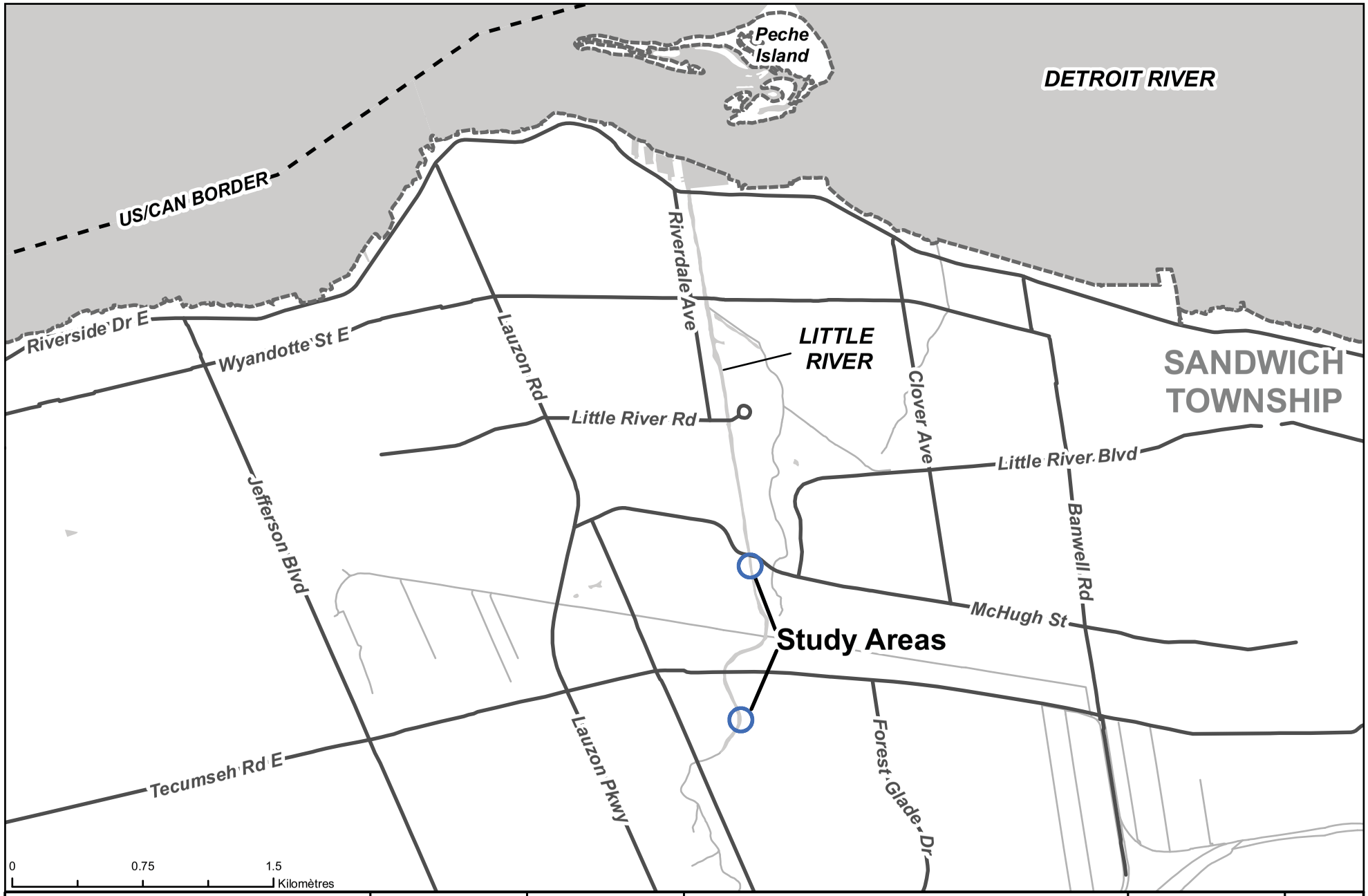
Wood Environment & Infrastructure Solutions
a division of Wood Canada Limited
Direct Tel.: 1-519-650-7109
E-mail: radley.dufour@woodplc.com

Enclosed: Attachment 1 - Project Key Map
Attachment 2 – Natural Heritage Features Map

cc: Shane MacLeod (Wood)
Peter Andrew-McBride (Wood)

ATTACHMENT 1

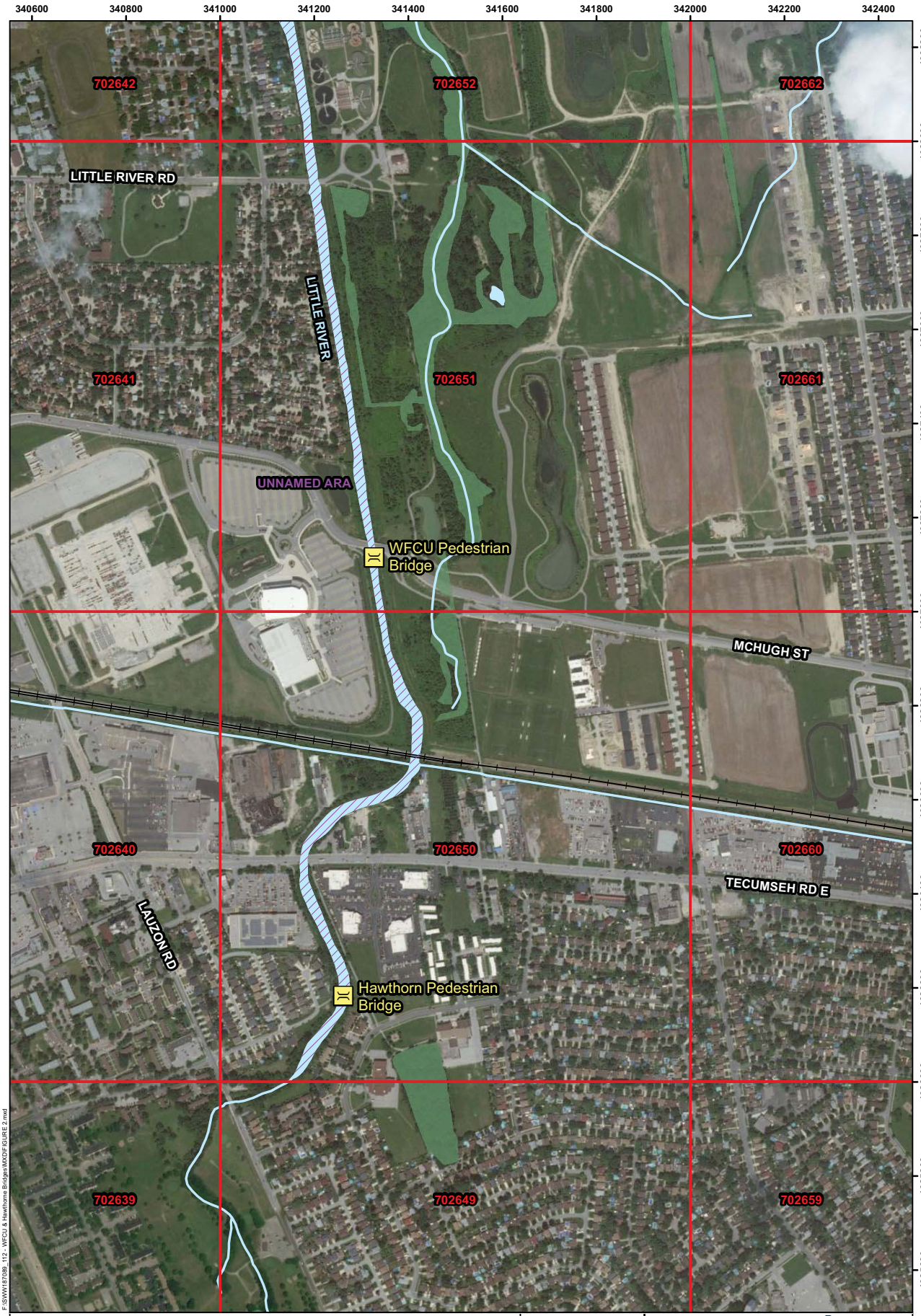
PROJECT KEY MAP



CLIENT CITY OF WINDSOR		DWN BY: S.FEWKES	PROJECT CITY OF WINDSOR PEDESTRIAN BRIDGES	REV. NO.: A	N
Wood Environment & Infrastructure Solutions 900 Maple Grove Rd, Unit 10 Cambridge, ON N3H 4R7	wood.	CHK'D BY: B.DUFOUR		DATE: Mar 29, 2018	
		DATUM: NAD83		PROJECT NO.: SWW187089 SWW187112	
		PROJECTION: UTM 17T	TITLE PROJECT LOCATIONS		
		SCALE: 1:30,000		FIGURE NO.: 1	

ATTACHMENT 2

NATURAL HERITAGE FEATURES MAP



F:\SWW187089_112 - WFCU & Hawthorne Bridges\MXD\FIGURE 2.mxd

LEGEND

- Bridge Location
- NHIC 1km Prvincially Tracked Species Grid (NAME)
- Aquatic Resource (NAME)
- Railway
- Watercourse (NAME)
- Waterbody
- Wooded Area

NOTES:
None of the following are found within the the study area(s):
- ANSI
- Conservation Reserves
- Crown Game Reserves
- FPA's
- DFO SAR
- First Nations Reserve
- NWA's
- Natural Heritage Systems
- Wetlands

Datum: NAD83
Projection: UTM Zone 17N

0 0.1 0.2 0.4 0.6 0.8 Kilometres

wood.

WINDSOR PEDESTRIAN BRIDGES

Natural Heritage Features

PROJECT N°: SWW187089 SWW187112	FIGURE: 2
SCALE: 1:7,500	DATE: Mar 2018

APPENDIX C

Aquatic Habitat Survey Sheets

Ministry of Transportation
Environmental Guide for Fish and Fish Habitat

Section 4: Field Investigations
Appendix 4.A: Watercourse Field Record Form

GENERAL INFORMATION

PROJECT #:	PROJECT DESCRIPTION:	DAY:	MONTH:	YEAR:
SWW187012 SWW187089	Pedestrian Bridge	28	MAY	2018

Is STREAM REALIGNMENT required for this section:

O Yes O No Q Unknown

COLLECTORS:	WEATHER CONDITIONS:	TIME STARTED:	TIME FINISHED:
R Dibbley S. Buthar	Sunny	~13:00	

AIR TEMP:	WATER TEMP:	CONDUCTIVITY (µS/cm):
	21.5°C	1247

PHOTO NUMBERS AND DESCRIPTIONS:
PHOTOS OF SITE DOWNLOADED ON PROJECT DRIVE

LOCATION

NAME OF WATERBODY:	DRAINAGE SYSTEM:	CROSSING #:	STATION #:
LITTLE RIVER			HAWTHORNE BRIDGE

LOCATION OF CROSSING:
E of Hawthorne Dr, S of Tecumseh Rd E, N of Esplanade Dr

GPS COORDINATES:	MTO CHAINAGE:
17T 341261 4686244	
TOWNSHIP: CITY OF WINDSOR ESSEX COUNTY	**MNR DISTRICT:** AYLMER

LAND USE AND POLLUTION

SURROUNDING LAND USE:	SOURCES OF POLLUTION:
pedestrian path on both sides residential on west side grass, commercial on east side	surrounding development

EXISTING STRUCTURE TYPE

Bridge O	Box Culvert O	Open Foot Culvert O	CSP O	N/A O

Other O Describe: pedestrian bridge to be built

Size (w x h) m^2

SECTION TYPE AND MORPHOLOGY

SECTION IDENTIFIER:	SECTION LOCATION: (include on habitat map)
Hawthorne Bridge	Potential pedestrian bridge location

TYPE:	Stream / river	Channelized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:
	O	O	O	O	O	

TOTAL SECTION LENGTH (m):	CURRENT VELOCITY (m/s):

SUB-SECTION(S)	Run	Pool	Riffle	Flats	Inside culvert	Other
	O	O	O	O	O	
Percentage of area				100		
Mean depth wetted (m)				0.9		
Mean width wetted (m)				0.8 0.95 max		
Mean bankfull width (m)						
Mean bankfull depth(m)						
Substrate				Sa, Gr, Co, Concrete		

Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D

Hawthorne Bridge location
SWW187089, SW1870112

BANK STABILITY

	Stable	Slightly Unstable	Moderately Unstable	Unstable
Left Upstream Bank	●	O	O	O
Right Upstream Bank	●	O	O	O

HABITAT

IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Woody Debris	Organic debris	Vascular Macrophytes	None
no visibility below water surface	<5	—	5	Instream <5 Overhanging O	—	Instream O Overhanging O	

SHORE COVER (% stream shaded):	100 – 90 %	90 – 60%	60- 30%	30 – 1%	None
	O	●	O	O	O

VEGETATION TYPE (%):	Submergent	Floating	Emergent	None
				✓
Predominant Species				

MIGRATORY OBSTRUCTIONS:	None	Seasonal	Permanent
	None observed		

POTENTIAL CRITICAL HABITAT LIMITING:	Spawning	Evidence of Groundwater	Other

POTENTIAL ENHANCEMENT OPPORTUNITIES:

July 10, 2019 at 8:30am
21.85°C
1629 µs/cm^c
1437 µs/cm
31.2% D.O.
2.72 mg/L D.O.
7.83 pH, 9.20 ORP

COMMENTS:

water
21.46°C
1340 µs/cm^c
1249 µs/cm
49.3 DO%
4.34 DO mg/L
7.76 pH
157.5 ORP

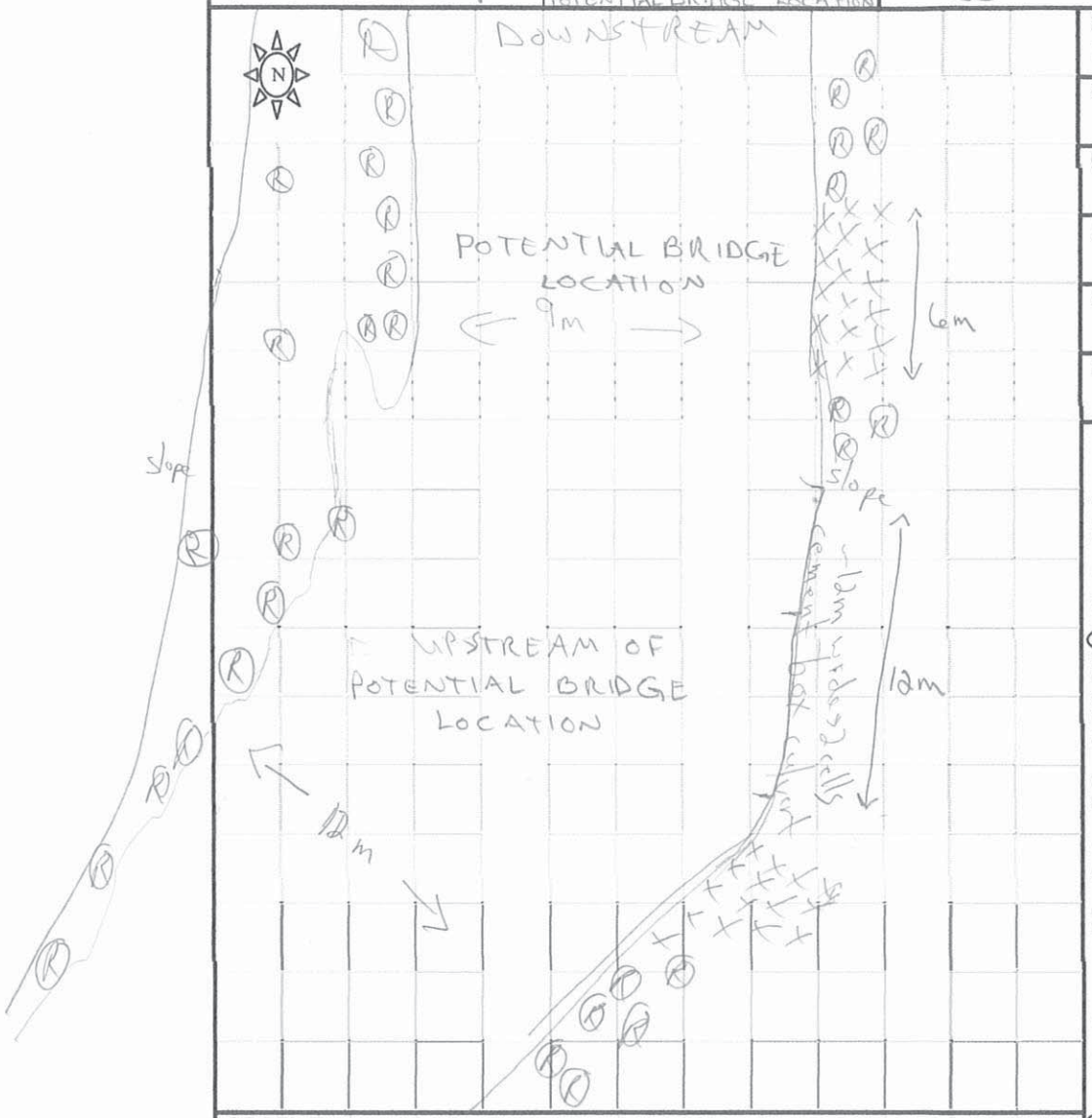
- on east bank the slope is artificial → concrete(?), which by foot, continues into river substrate
- east bank height ~2 m above water
- west bank, herbaceous ground with deciduous trees (floodplain)
- 0.4 m above water ~10 m wide then slopes up ~3m high.

No visibility below water surface

Additional Notes Appended? ● No O Yes number of pages _____

originally I had river flowing south, but it flows north

SECTION IDENTIFIER:	SECTION LOCATION:	SECTION LENGTH (m):	SCALE (cm / m):
Hawthorne Bridge	17T 341261 4686244 POTENTIAL BRIDGE LOCATION	~50	



PROFILE: Horz. Scale Vert. Scale

shows potential bridge location & upstream & downstream

PROJECT #: SW187 0112 SWW187089

MAPPER: R. DIBBLEY

NAME OF WATERBODY: LITTLE RIVER

CROSSING #:

STATION #:

DATE: DD-MMM-YY 28-MAY-2018

LEGEND

10d depth (cm)
6w width

➡ Riffle
⇨ Run/Glide
⬭ Pool
▇ Island/Bar

⁘ Fine Substrate
Gravel Substrate
oOooO Cobble /Boulder
*** * *** Debris

CT Cattail
SV/FV Submerg/Float Veg

EV Emergent Vegetation
W Watercress

Fe Iron Staining
/////// Eroded Bank

XXX Riprap / Other Stabilization

⊂⊃ Instream Log/Tree
^^^ Dam/Weir/Obstruction

® Riparian Tree

⊢▸ Seep/Spring
——— Undercut Bank

▬ Barrier to Fish Movement
-S- Seasonal Barrier

-x--x- Fence line
⊔ Culvert

GENERAL INFORMATION

PROJECT #:	PROJECT DESCRIPTION:	DAY:	MONTH:	YEAR:
SW1870112 SWW187089	PEDESTRIAN BRIDGE	28	MAY	2018

Is STREAM REALIGNMENT required for this section:

O Yes ● No O Unknown

COLLECTORS:	WEATHER CONDITIONS:	TIME STARTED:	TIME FINISHED:
ROXANNE DIBRLEY	SUNNY	~13:30	

AIR TEMP:	WATER TEMP:	CONDUCTIVITY (µS/cm):

PHOTO NUMBERS AND DESCRIPTIONS:
D/S of Bridge

LOCATION

NAME OF WATERBODY:	DRAINAGE SYSTEM:	CROSSING #:	STATION #:
LITTLE RIVER			HAWTHORN D/S OF BRIDGE

LOCATION OF CROSSING:
E of Hawthorne Dr, S of Tecumseh Rd, N of Esplanade Dr

GPS COORDINATES:	MTO CHAINAGE:
50m DS of 17T 341261 4686244	
TOWNSHIP: CITY OF WINDSOR ESSEX COUNTY	**MNR DISTRICT:** AYLMER

LAND USE AND POLLUTION

SURROUNDING LAND USE:	SOURCES OF POLLUTION:
Res/Agr/al, public trail	surrounding development

EXISTING STRUCTURE TYPE

Bridge O	Box Culvert O	Open Foot Culvert O	CSP O	N/A ●

Other O Describe: Box culvert on east bank ~12m wide, not across river — Size (w x h) m^2

SECTION TYPE AND MORPHOLOGY

SECTION IDENTIFIER:	SECTION LOCATION: (include on habitat map)
Downstream of Hawthorne Bridge	

TYPE:	Stream / river	Channelized	Permanent	Intermittent	Ephemeral	ASSOCIATED WETLAND:
	●	O	●	O	O	

TOTAL SECTION LENGTH (m):	CURRENT VELOCITY (m/s):

SUB-SECTION(S)	Run	Pool	Riffle	Flats	Inside culvert	Other
	O	O	O	●	O	
Percentage of area				100		
Mean depth wetted (m)				~1.0 max >1.2		
Mean width wetted (m)				12		
Mean bankfull width (m)				16		
Mean bankfull depth(m)						
Substrate				Gr, Sa, Si, Co Concrete		

Bedrock Br	Boulder Bo	Cobble Co	Gravel Gr	Sand Sa	Silt Si	Clay Cl	Muck Mu	Detritus D

D/s of Hawthorne bridge

SW1870119, SWW187089

BANK STABILITY

	Stable	Slightly Unstable	Moderately Unstable	Unstable
Left Upstream Bank	O	O	O	O
Right Upstream Bank	O	O	O	O

HABITAT

IN-STREAM COVER (% surface area):	Undercut banks	Boulders	Cobble	Woody Debris Instream Overhanging	Organic debris	Vascular Macrophytes Instream Overhanging	None
See comments	<5 Right bank						

SHORE COVER (% stream shaded):	100 – 90 %	90 – 60%	60- 30%	30 – 1%	None
	O	O	O	O	O

VEGETATION TYPE (%):	Submergent	Floating	Emergent	None
	cannot see	O	O	
Predominant Species				

MIGRATORY OBSTRUCTIONS:	None	Seasonal	Permanent

POTENTIAL CRITICAL HABITAT LIMITING:	Spawning	Evidence of Groundwater	Other

POTENTIAL ENHANCEMENT OPPORTUNITIES:

COMMENTS:

No visibility into water
Majority of river too deep to wade
gravel/sand substrate, with some cobble. Concrete, presumably from slope work adjacent to areas where it is present on the slope

2 shopping carts in river
Dense tree cover on east slope & west floodplain & slope

when stating right or left bank, that is when facing upstream

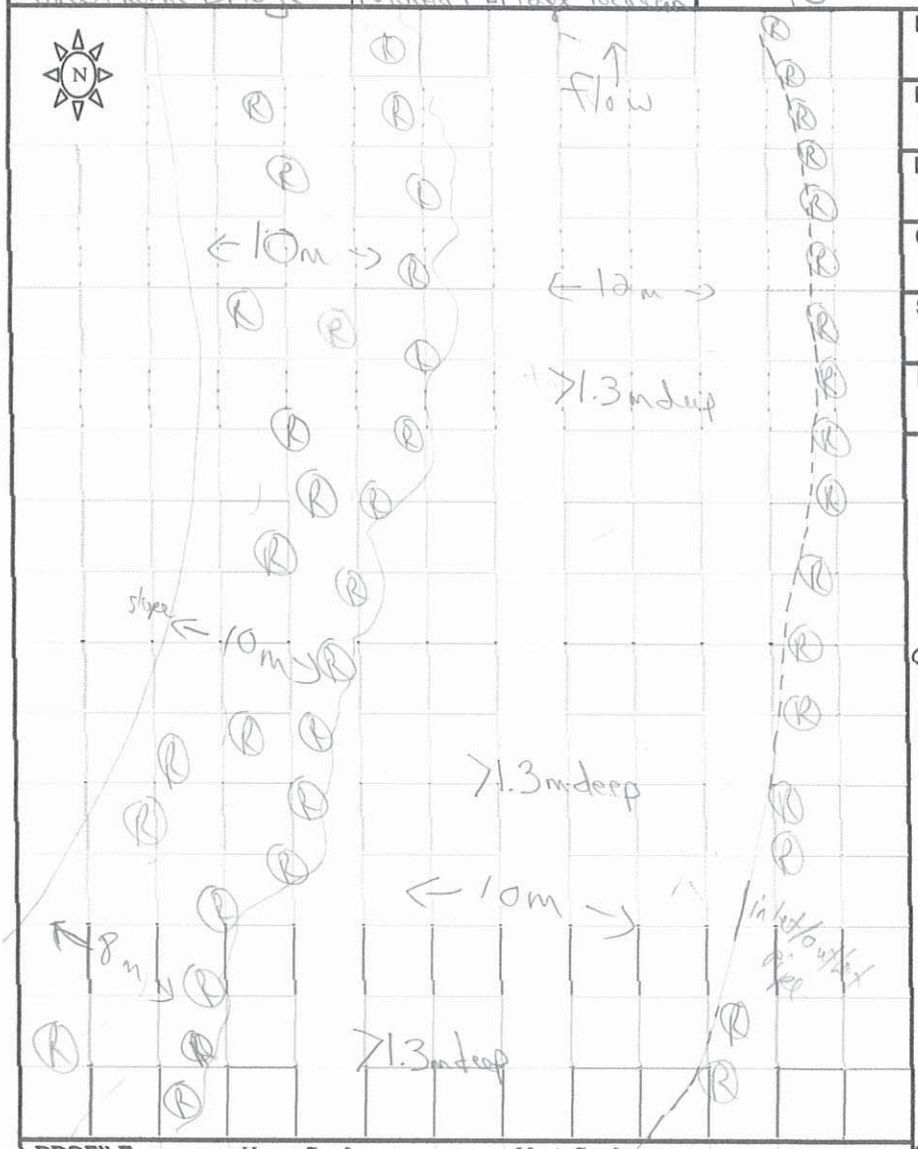
Additional Notes Appended? O No O Yes **number of pages** _____

Form & map also filled out for Hawthorne Bridge location

page 6 of 6

SW1870112
SWW187089

SECTION IDENTIFIER:	SECTION LOCATION:	SECTION LENGTH (m):	SCALE (cm / m):
Downstream of Hawthorne Bridge	STARTS ~ 35 m D/S of Potential bridge location	40	



PROJECT #: SWW187089 SW1870112

MAPPER: R DIBBLEY

NAME OF WATERBODY: LITTLE RIVER

CROSSING #:

STATION #: BRIDGE D/S OF HAWTHORNE

DATE: DD-MMM-YY 28-MAY-18

LEGEND

10d depth (cm)
6w width

➡ Riffle
⇨ Run/Glide
⬭ Pool
▮ Island/Bar

▒ Fine Substrate
Gravel Substrate
oOooO Cobble /Boulder
*** Debris

CT Cattail
SV/FV Submerg/Float Veg

EV Emergent Vegetation
W Watercress

Fe Iron Staining
/////// Eroded Bank

XXX Riprap / Other Stabilization

⊂⊃ Instream Log/Tree
^^^ Dam/Weir/Obstruction

® Riparian Tree

├► Seep/Spring
——— Undercut Bank---

— Barrier to Fish Movement
-S- Seasonal Barrier

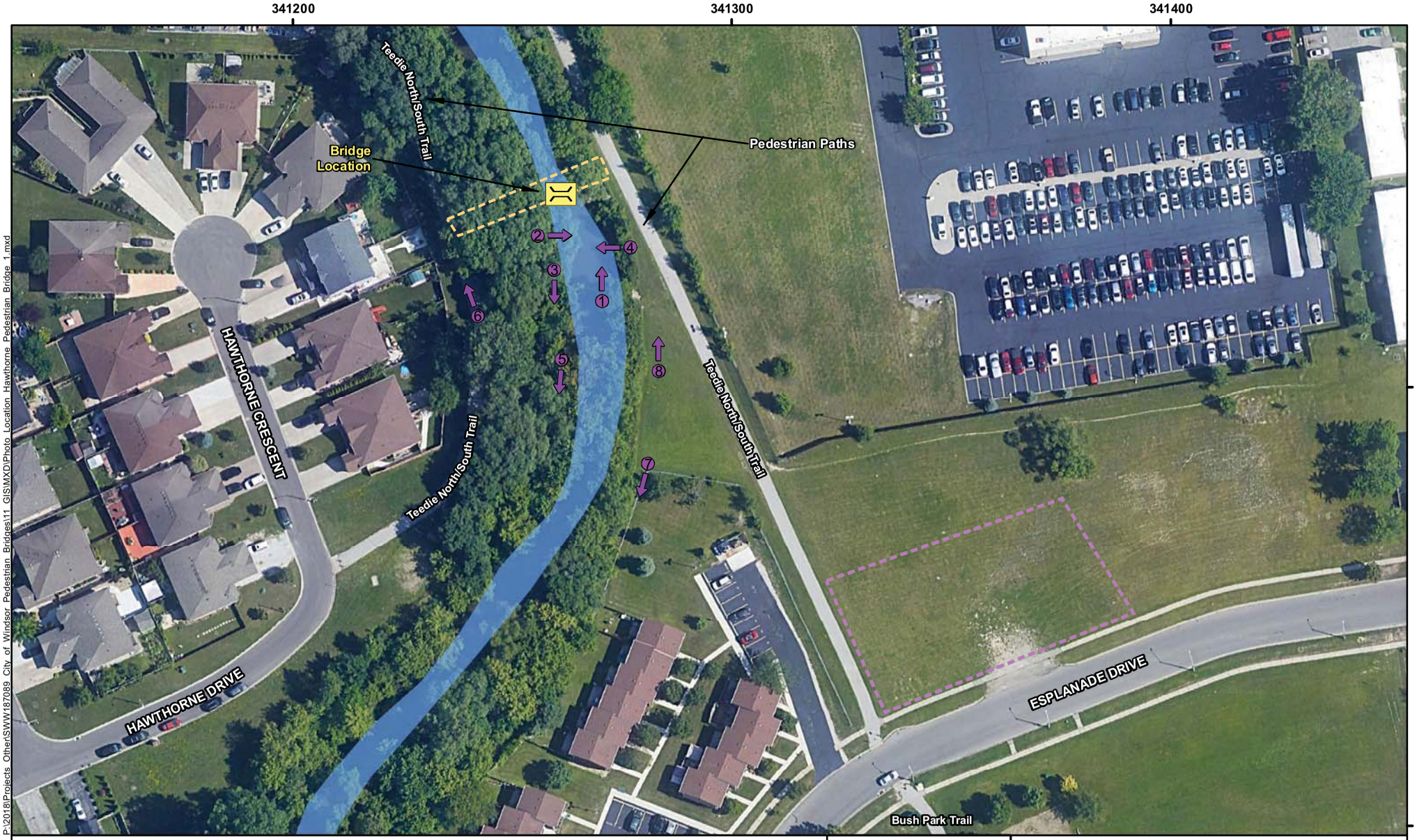
-x--x- Fence line
⊔ Culvert

PROFILE: **Horz. Scale** **Vert. Scale**

- too deep to walk the majority of the river in this section
- riparian cover on east & west slopes & floodplain west of water

APPENDIX D

Photographic Record



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LEGEND

- Potential Bridge Location
- Project Footprint Impact
- Temporary Work Space
- Waterbody
- Photo Location (Labelled with ID; arrow displays direction of photo)

NOTES:
- Aerial imagery extacted from Google Earth, 2017.

Datum: NAD83
Projection: UTM Zone 17N

0 25 50 100 150 200 Metres

HAWTHORNE PEDESTRIAN BRIDGE

Photo Appendix

PROJECT N°: SWW187089 SWW187112

SCALE: 1:1,200

DATE: October 2018

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APPENDIX E

Terrestrial Habitat Survey Sheets

DESIGN MEMORANDUM (METRIC)

amec foster wheeler

CLIENT

PROJECT LITTLE RIVER PED BRIDGES - HAWTHORNE

SUBJECT

PROJECT NO.	PAGE
PREPARED BY S. BATNARI	FILE NO
CHECKED BY	DATE MAY 28, 2018

Note: This form must be used for project calculations and original to be filed in project files.

PLANTS

SILVER MAPLE
MAN MAPLE
BLACK? WILLOW
PHRAG
GREEN ASH
WATER DOCK
STINGING NETTLE
PURPLE LOOSESTRIFE
JEWELWEED
BINDWEED
GARLIC MUSTARD
SIBERIAN ELM
GROUND IVY
MONEYWORT
GEUM SP. / SANICULA
BEGGARS TICKS
LANCELEAF ASTER
EUR. BUCKTHORN
DANDELION
CIRSIUM ARV.
MULTIFLORA
HIGHBUSH CRAN.
VIR CREEPER
GREY DOGWOOD
SILKY DOGWOOD
PURPLE VIOLET?
WHITE MULBERRY
ORCHARD GRASS
VIA PRATENS
HAWTHORN SP.
WILD GRAPE
HONEYSUCKLE
BURDOCK
NORWAY MAPLE
SILVERWEED
WILD CARROT
CANADA FLEABANE
HONEY LOCUST (PLANTED)

WILDLIFE

AM ROBIN
BL. TH. BL. WARBLER
CANADA GOOSE
CARDINAL
STARLING
RW BLACKBIRD

BANKS OF LITTLE RIVER
↳ CULTURAL WOODLAND AND THICKET W/ MAINLY NON-NATIVE AND EARLY SUCCESSIONAL SPECIES WITHIN THE FLOODPLAIN OF RIVER
↳ SIMILAR HABITAT ABOVE BANKS W/ MORE UPLAND GROUNDCOVER LAYER STILL CONSISTING OF NON-NATIVE/ EARLY SUCCESSIONAL SPECIES

JULY 10, 2018
LITTLE RIVER RED CROSSINGS
ON SITE @ 7:45 am
HAWTHORNE BRIDGE

PLANTS

CHICKORY
GRAY DOGWOOD
SIB ELM
ELYMUS REPENS
WILD GRAPE
MAN. MAPLE
HONEYSUCKLE
FROST ASTER
Green Ash
White Mulberry
Wild Carrot
Sweet White Clover
English Plantain
HAWTHORN
Common Milkweed
Crown Vetch
Silver Maple
Willow
Orchard grass
Multiflora
Silverweed

WILDLIFE

Am. Robin
Song Sparrow
Canada Goose
Green Frog
RW Blackbird

Lanceleaf Aster
Dandelion
N.E. Aster
Heath Aster
Black Walnut
Tall Goldenrod
Potentilla recta
Common apple
Burdock
Virginia creeper
Day Lily
Smooth Brome
Honey Locust
Deadly nightshade
Waterdock
Birdweed
Norway Maple
Ladys Thumb
Staghorn Sumac
E. Cottonwood
Jewelweed
Ground Ivy

APPENDIX F

Compiled Wildlife Species List

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Element Type	Common Name	Scientific Name	SRank	SARO Status	COSEWIC Status	Last Obs Date	EO ID	Details URL
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Reptile and Amphibialn Atlas of Ontario 10 km x 10 km square 17LG48 - referenced June 10 2018

Common Name	Number of Individuals	Year of Observation	Month of Observation	Calendar Day of Observation	Observation Id
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□	**Barn Swallow**	□	□□□□un□□□	□it M□□□nn
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□	**European Starling**	□	□□□□un□□□	□it M□□□nn
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□□	**Baltimore Oriole**	□	□□□□un□□□	□it M□□□nn
□□	**Red-winged Blackbird**	□	□□□□un□□□	□it M□□□nn
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□□	**Tree Swallow**	□	□□□M□□□□□	□it M□□□nn
□□	**Black-capped Chickadee**	□	□□□M□□□□□	□it M□□□nn
□□	**House Wren**	□	□□□M□□□□□	□it M□□□nn
□□	**Carolina Wren**	□	□□□M□□□□□	□it M□□□nn
□□	**Blue-gray Gnatcatcher**	□	□□□M□□□□□	□it M□□□nn
□□	**Swainson’s Thrush**	□	□□□M□□□□□	□it M□□□nn
□□	**Gray Catbird**	□	□□□M□□□□□	□it M□□□nn
□□	**American Goldfinch**	□	□□□M□□□□□	□it M□□□nn
□□	**Eastern Towhee**	□	□□□M□□□□□	□it M□□□nn
□□	**Orchard Oriole**	□	□□□M□□□□□	□it M□□□nn
□□	**Brown-headed Cowbird**	□	□□□M□□□□□	□it M□□□nn
□□	**Northern Cardinal**	□	□□□M□□□□□	□it M□□□nn
□□	**Wood Duck**	□	□□□□□r□□□	□it M□□□nn
□□	**Red-tailed Hawk**	□	□□□□□r□□□	□it M□□□nn
□□	**Red-bellied Woodpecker**	□	□□□□□r□□□	□it M□□□nn
□□	**American Crow**	□	□□□□□r□□□	□it M□□□nn
□□	**Ruby-crowned Kinglet**	□	□□□□□r□□□	□it M□□□nn
□□	**Common Grackle**	□	□□□□□r□□□	□it M□□□nn
□□	**Palm Warbler**	□	□□□□□r□□□	□it M□□□nn
□□	**Yellow-rumped Warbler**	□	□□□□□r□□□	□it M□□□nn
□□	**Black-throated Green**	□	□□□□□r□□□	□it M□□□nn
□□	**Ring-necked Pheasant**	□	□□□□□r□□□	□it M□□□nn
□□	**Pied-billed Grebe**	□	□□□□□r□□□	□it M□□□nn

[illegible]	**Blue Jay**	[illegible]	[illegible]	[illegible]
[illegible]	**Bufflehead**	[illegible]	[illegible]	[illegible]
[illegible]	**Hooded Merganser**	[illegible]	[illegible]	[illegible]
[illegible]	**Herring Gull**	[illegible]	[illegible]	[illegible]
[illegible]	**Bald Eagle**	[illegible]	[illegible]	[illegible]
[illegible]	**Dark-eyed Junco**	[illegible]	[illegible]	[illegible]
[illegible]	**American Woodcock**	[illegible]	[illegible]	[illegible]
[illegible]	**Rock Pigeon**	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	**Sharp-shinned Hawk**	[illegible]	[illegible]	[illegible]
[illegible]	**Cooper's Hawk**	[illegible]	[illegible]	[illegible]
[illegible]	**Snowy Owl**	[illegible]	[illegible]	[illegible]
	[illegible]			
[illegible]	**White-crowned Sparrow**	[illegible]	[illegible]	[illegible]
[illegible]	**Chimney Swift**	[illegible]	[illegible]	[illegible]
[illegible]	**House Finch**	[illegible]	[illegible]	[illegible]
[illegible]	**White-throated Sparrow**	[illegible]	[illegible]	[illegible]
[illegible]	**Swamp Sparrow**	[illegible]	[illegible]	[illegible]
[illegible]	**Wilson's Warbler**	[illegible]	[illegible]	[illegible]
	[illegible]			
[illegible]	**Ruddy Duck**	[illegible]	[illegible]	[illegible]
[illegible]	**American Tree Sparrow**	[illegible]	[illegible]	[illegible]
[illegible]	**Great Blue Heron**	[illegible]	[illegible]	[illegible]
[illegible]	**Great Egret**	[illegible]	[illegible]	[illegible]
[illegible]	**Blue-winged Teal**	[illegible]	[illegible]	[illegible]
[illegible]	**American Kestrel**	[illegible]	[illegible]	[illegible]
	[illegible]			
	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	**Horned Lark**	[illegible]	[illegible]	[illegible]

□nt□rio □utt□rfl□ □tl□s □□ □□ □ □□ □□ s□u□r□ □□□□ □□ □□□□ss□d □u□ust □□□□

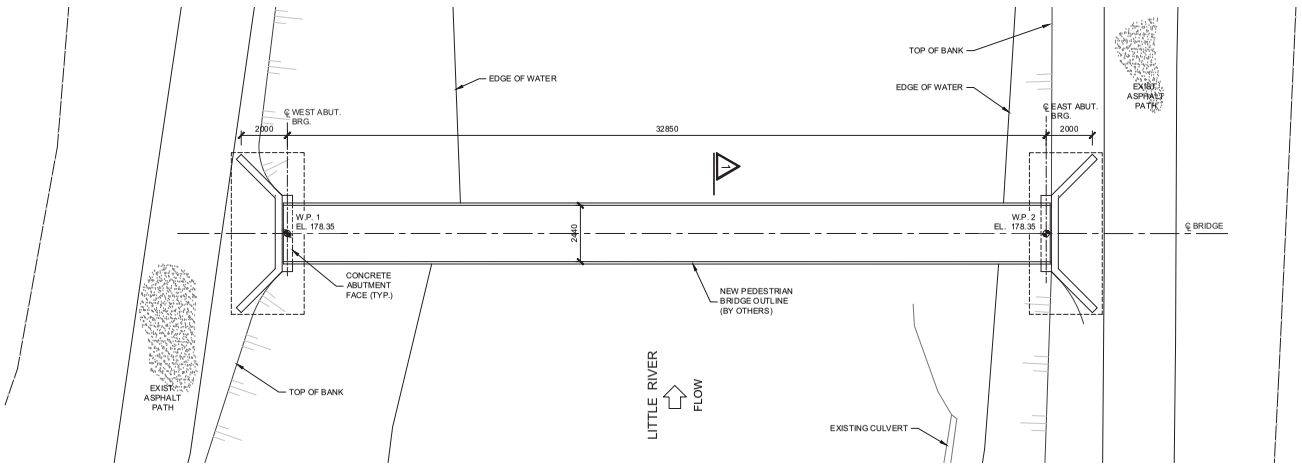
Common Name	Sci Name	Month	Day	Year	Adult Count	Record type
Mon□r□□	*Danaus plexippus*	□u□	□□	□□□□	□	i□□tur□list □□oto lin□
□□□□□□□W□it□	*Pieris rapae*	□u□	□□	□□□□	□	i□□tur□list □□oto lin□
□l□□□S□□llo□t□il	*Papilio polyxenes*	□ul	□	□□□□	□	i□□tur□list □□oto lin□
□□□□□□□W□it□	*Pieris rapae*	□□□	□□	□□□□	□	□□ □□oto □□□lin□□lo□in □irst
□l□□□S□□llo□t□il	*Papilio polyxenes*	□ul	□□	□□□□	□	i□□tur□list □□oto lin□
Mournin□ □lo□□	*Nymphalis antiopa*	M□r	□□	□□□□	□	i□□tur□list □□oto lin□
□□ur□s□□	*Celastrina sp.*	□ul	□□	□□□□	□	i□□tur□list □□oto lin□
□ittl□Wood□S□t□r	*Megisto cymela*	□un	□	□□□□	□	i□□tur□list □□oto lin□
□□□st S□i□□□r	*Ancyloxypha numitor*	M□□	□□	□□□□	□	si□□t
Mournin□ □lo□□	*Nymphalis antiopa*	M□□	□□	□□□□	□	si□□t
□o□ □on □□□□□r□d S□i□□□r	*Pyrgus communis*	M□□	□	□□□□	□	□□oto
□□st□rn □i□nt S□□llo□t□il	*Papilio cresphontes*	□un	□□	□□□□	□□□	si□□t
□i□□or□ □□irstr□□□	*Satyrium caryaevorus*	□un	□□	□□□□	□	si□□t
Mournin□ □lo□□	*Nymphalis antiopa*	M□r	□□	□□□□	□	si□□t
□□st□rn □i□nt S□□llo□t□il	*Papilio cresphontes*	□u□	□□	□□□□	□r□s□nt	Si□□t
□□□st S□i□□□r	*Ancyloxypha numitor*	□u□	□□	□□□□	□r□s□nt	Si□□t
□□□st S□i□□□r	*Ancyloxypha numitor*	□u□	□□	□□□□	□r□s□nt	Si□□t
□□d□s□ott□d □ur□l□	*Limenitis arthemis astyanax*	□u□	□□	□□□□	□r□s□nt	Si□□t
□o□ □on □in□l□t	*Coenonympha tullia*	□un	□	□□□□	□	Si□□t
□□st□rn □i□□r S□□llo□t□il	*Papilio glaucus*	□un	□	□□□□	□	Si□□t
Mournin□ □lo□□	*Nymphalis antiopa*	□un	□	□□□□	□	Si□□t
□□st□rn □o□ □ □	*Polygonia comma*	□ □t	□	□□□□	□	Si□□t
Mon□r□□	*Danaus plexippus*	□ □t	□	□□□□	□	Si□□t
□□d□s□ott□d □ur□l□	*Limenitis arthemis astyanax*	□un	□	□□□□	□	
□□d□s□ott□d □ur□l□	*Limenitis arthemis astyanax*	□u□	□□	□□□□	□r□s□nt	
□o□ □ton □ortois□s□□ll	*Nymphalis l-album*	□u□	□	□□□□	□r□s□nt	
□u□stion M□r□	*Polygonia interrogationis*	□u□	□	□□□□	□r□s□nt	
□ron□□ □o□□□r	*Lycaena hyllus*			□□□□	□	

□on □S□nd□□□o□□□n□□tl□s o□t□□ M□□ □ □ls o□□nt□rio □□□□□□□□□□□□ss□d S□□t□□ □□r □□□□
□□ □□ □ □□□ □□ s□u□r□s

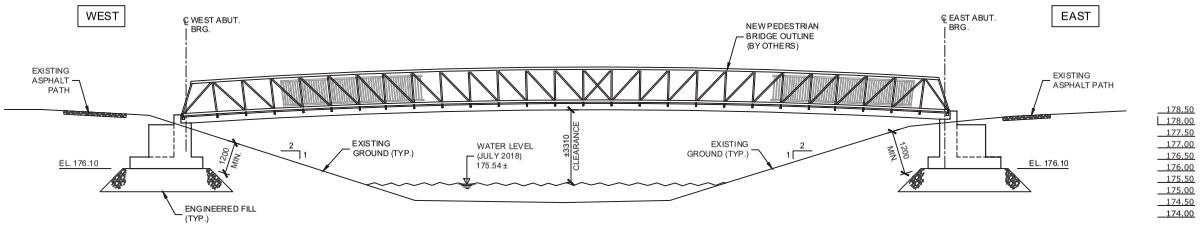
Common Name	Scientific Name	Within Site Square	pre-1900	1900 to 1969	1970 to 1993
□ir□ini□ □□ossu□	*Didelphis virginiana*	□□s			□
□ort□□rn S□ort□t□il□d S□r□□	*Blarina brevicauda*	□□s			□
Sil□□r□□□ir□d □□t	*Lasionycteris noctivagans*	□□s			□
□i□ □ro□n □□t	*Eptesicus fuscus*	□□s			□
□□st□rn □□d □□t	*Lasiurus borealis*	□□s			□
□□st□rn □ottont□il	*Sylvilagus floridanus*	□□s			□
□r□□S□uirr□l	*Sciurus carolinensis*	□□s			□
□r□□S□uirr□l □l□□□ □□□s□	*Sciurus carolinensis*	□□s			□
□r□□S□uirr□l □r□□ □□□s□	*Sciurus carolinensis*	□□s			□
□□d S□uirr□l	*Tamiasciurus hudsonicus*	□□s	□		
M□□do□ □ol□	*Microtus pennsylvanicus*	□□s			□
Mus□r□t	*Ondatra zibethicus*	□□s			□
□or□□□ □□t	*Rattus norvegicus*	□□s			□
□ous□ Mous□	*Mus musculus*	□□s			□
□o□ot□	*Canis latrans*	□□s			□
□□d □o□	*Vulpes vulpes*	□□s			□
□□□□oon	*Procyon lotor*	□□s			□
Min□	*Mustela vison*	□□s		□	
Stri□□d S□un□	*Mephitis mephitis*	□□s			□

APPENDIX G

Detail Design Drawings

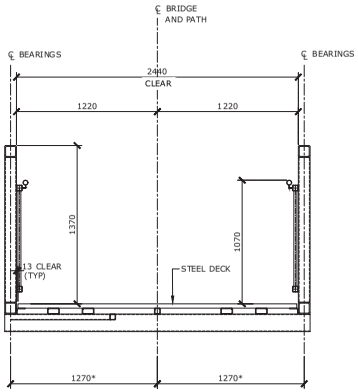


PLAN
SCALE: 1:100



ELEVATION
SCALE: 1:100

WORKING POINT DATA		
	NORTHING	EASTING
WP.1	4679036.249	326677.126
WP.2	4693583.842	356130.310



SECTION 1
SCALE: 1:20

NOTE:
★ DENOTES DIMENSIONS TO BE REVIEWED WITH PRE-ENGINEERED BRIDGE SHOP DRAWING

GENERAL NOTES:

CODE: CSA S6-14
LIVE LOAD: PEDESTRIAN LOAD

1. CONCRETE

- ALL CONCRETE CONSTRUCTION TO BE CARRIED OUT IN ACCORDANCE WITH CSA STANDARD A23.1-14/ A23.2-14.
- MINIMUM CONCRETE STRENGTH TO BE 35MPa (AT 28 DAYS) CLASS C-1, UNLESS OTHERWISE NOTED.
- CLEAR COVER TO CONCRETE:
  CONCRETE CAST AGAINST EARTH
  AND PERMANENTLY EXPOSED TO EARTH.....100mm ± 25
  REMAINDER, UNLESS OTHERWISE NOTED..... 70mm ± 20
- ALL EXPOSED CONCRETE EDGES TO BE CHAMFERED 20mm UNLESS OTHERWISE NOTED.

2. REINFORCING STEEL

- REINFORCING STEEL SHALL BE GRADE 400W UNLESS OTHERWISE NOTED.
- TENSION LAP SPLICES SHALL BE CLASS 'B' UNLESS OTHERWISE NOTED.
- BAR HOOKS SHALL BE STANDARD LENGTH UNLESS OTHERWISE NOTED.

3. STRUCTURAL STEEL

- STRUCTURAL STEEL FOR TRUSS MEMBERS SHALL CONFORM TO CAN/CSA G40.20/G40.21 GRADE 350 AT. HOLLOW STRUCTURAL SECTIONS TO CONFORM TO CAN/CSA G40.2G/40.21 GRADE 350AT, CLASS 'C'. THE CHARPY IMPACT ENERGY REQUIREMENTS SHALL BE 27 JOULES AND THE TEST TEMPERATURE SHALL BE -30°C
- ALL OTHER STRUCTURAL STEEL SHALL CONFORM TO CAN/CSA G40.20/G40.21 GRADE 350 A.
- BOLTS ON WEATHERING STEEL SHALL BE ASTM A325M, TYPE 3. BOLT THREADS SHALL BE EXCLUDED FROM THE SHEAR PLANE.
- BOLTS SHALL BE INSTALLED BY THE TURN OF NUT METHOD.
- WELDING SHALL CONFORM TO CSA CAN3-W59-13 AND AWS D.1.5.
- UNLESS OTHERWISE NOTED, THE MINIMUM FILLET WELD SHALL BE AS FOLLOWS:

MATERIAL THICKNESS OF THICKER PART JOINED (mm)	MINIMUM SIZE OF SINGLE PASS FILLET WELD (mm)
TO 12mm INCLUSIVE	5
OVER 12 TO 20	6
OVER 20 TO 40	7
OVER 40 TO 60	10
OVER 60 TO 120	12

- ALL ELEMENTS OF THE BEARING TO BE DESIGNED BY EAGLE BRIDGE OR THE PRE-ENGINEERED BRIDGE SUPPLIER.
- BRIDGE SUPERSTRUCTURE SHALL BE CAMBERED TO THE VALUE SHOWN ON THE DEVELOPED ELEVATION ON THE CONTRACT DRAWINGS AND SHALL INCLUDE AN ALLOWANCE FOR SUPERSTRUCTURE SELF-WEIGHT AND SUPERIMPOSED DEAD LOADS.

4. GEOTECHNICAL:

LOAD BEARING CAPACITY:

ULS = 210 KPa
SLS = 140 KPa

- ABUTMENT FOOTINGS ARE TO BE CONSTRUCTED ON 1m ENGINEERED FILL AS SHOWN ON THE CONTRACT DRAWINGS.
- GEOTECHNICAL REPORT #SWW187112 DATED AUGUST 29TH, 2018 COMPLETED BY WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS.

Notes:

1. PONY TRUSS BRIDGE SUPERSTRUCTURE DESIGN IS PROVIDED SCHEMATICALLY ONLY. THE CONTRACTOR SHALL DESIGN, SUPPLY AND INSTALL THE PONY TRUSS BRIDGE SUPERSTRUCTURE. STAMPED SHOP DRAWINGS SHALL BE SUBMITTED TO THE CONTRACT ADMINISTRATOR FOR REVIEW PRIOR TO FABRICATION.
2. PONY TRUSS BRIDE SHALL BE DESIGNED IN ACCORDANCE WITH THE CANADIAN HIGHWAY BRIDGE DESIGN CODE CAN/CSA S6-14.
3. THE ABUTMENT ARRANGEMENT AND DESIGN ARE BASED ON A PRE-ENGINEERED SUPERSTRUCTURE DESIGN BY EAGLE BRIDGE. THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL COSTS FOR THE CONSULTANT TO REDESIGN THE ABUTMENTS AND AMEND THE CONTRACT DOCUMENTS SHOULD ANOTHER PRE-ENGINEERED BRIDGE SUPPLIER BE UTILIZED.
4. ALL WORK SHALL CONFORM TO CHBDC AND ALL STANDARDS REFERENCED WITHIN LOCAL REGULATIONS AND BYLAWS AND THE OCCUPATIONAL HEALTH AND SAFETY ACT FOR CONSTRUCTION PROJECTS. THE LATEST VERSIONS OF THE STANDARDS SHALL APPLY.
5. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, DETAILS, ELEVATIONS AND UTILITIES SHOWN ON STRUCTURAL DRAWINGS. ANY DISCREPANCIES SHALL BE REPORTED TO THE CONTRACT ADMINISTRATOR BEFORE PROCEEDING WITH THE WORK.
6. THE CONTRACTOR SHALL ENSURE THE STABILITY OF ALL COMPONENTS DURING HANDLING, TRANSPORTATION AND ERECTION.
7. THE ABUTMENT FOOTING BEARING SURFACE MUST BE INSPECTED BY A COMPETENT GEOTECHNICAL ENGINEER OR THEIR REPRESENTATIVE TO CONFIRM THE BEARING SURFACE. THE FOOTING SHALL BEAR ON THE ENGINEERED FILL AS SHOWN ON THE CONTRACT DRAWINGS.
8. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ADEQUATE PROTECTION OF THE UTILITIES, SERVICES, STRUCTURES, ROADWAYS, ETC. DURING CONSTRUCTION OPERATIONS AT NO COST TO THE CITY. THE CONTRACTOR'S METHOD OF PROTECTION ARE TO BE SUBMITTED TO THE CONTRACT ADMINISTRATOR FOR REVIEW.
9. THE CONTRACTOR SHALL PROVIDE A THOROUGHLY PLANNED DEBRIS CONTAINMENT SYSTEM TO BE INSTALLED PRIOR TO START OF WORK, TO PREVENT DEBRIS FROM FALLING INTO THE WATERCOURSE. THE DEBRIS CONTAINMENT SYSTEM SHALL BE INSTALLED TO THE SATISFACTION OF THE CONTRACT ADMINISTRATOR.
10. GRADES SHOWN ARE APPROXIMATE. FINISHED GRADE IS TO BE APPROVED IN THE FIELD BY THE ENGINEER.
11. WHERE EXISTING CONDITIONS ARE SHOWN AND THEY ARE NOT NECESSARILY ACCURATE OR COMPLETE, THE CONTRACTOR SHALL CONFIRM ALL EXISTING DIMENSIONS AND LOCATIONS.

REV. #	DESCRIPTION	DATE	APP.BY

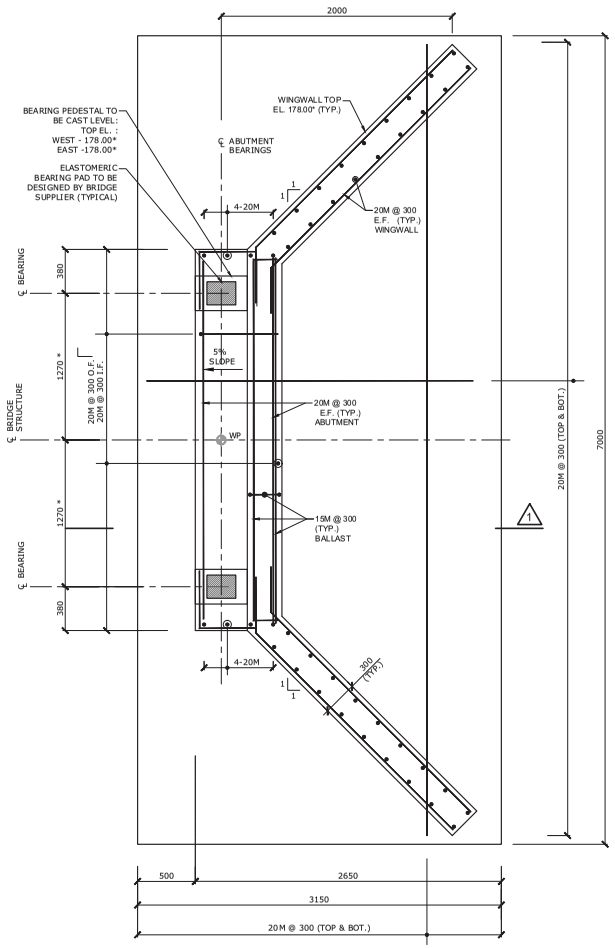
wood.
11965 County Road 42
Tecumseh, ON N8N 2M1
(P) 519-735-2699

CLIENT: WINDSOR

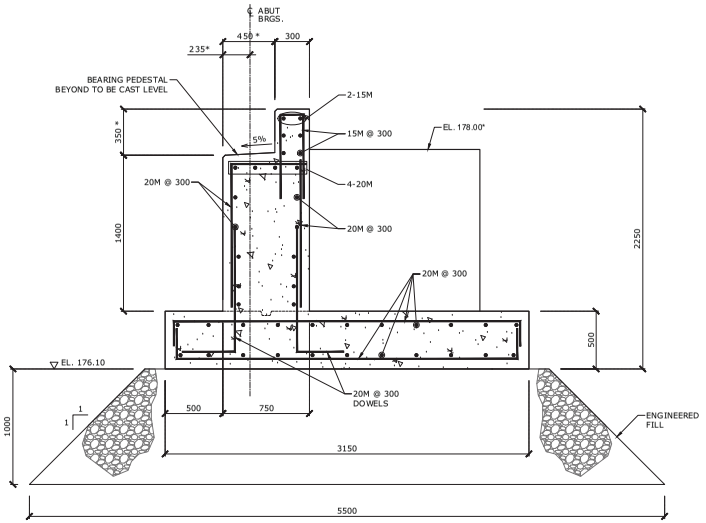
PROJECT: HAWTHORNE PEDESTRIAN BRIDGE
CITY OF WINDSOR, ONTARIO

TITLE: GENERAL ARRANGEMENT & NOTES

DWN BY:	PROJECTION:	DATE:
TC	UTM Zone 17	16/11/2018
CHK'D BY:	DATUM:	PROJECT NO:
SV	NAD83	SWW187112 - S1-Hawthorne
REV. NO.:	SCALE:	FIGURE No.
NA	As Noted	S1

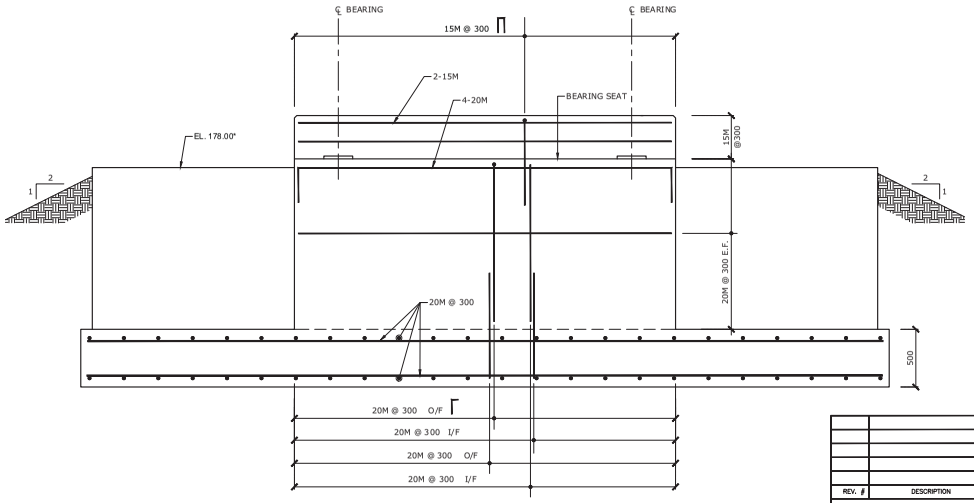


PLAN
SCALE: 1:20



SECTION 1
SCALE: 1:20

NOTE:
* DENOTES DIMENSIONS TO BE REVIEWED WITH PRE-ENGINEERED BRIDGE SHOP DRAWING



ELEVATION
SCALE: 1:20

REV. #	DESCRIPTION	DATE	APP.BY

wood.
11865 County Road 42
Tecumseh, ON, N8N 2M1
(P) 519-735-2699

CLIENT: City of Windsor

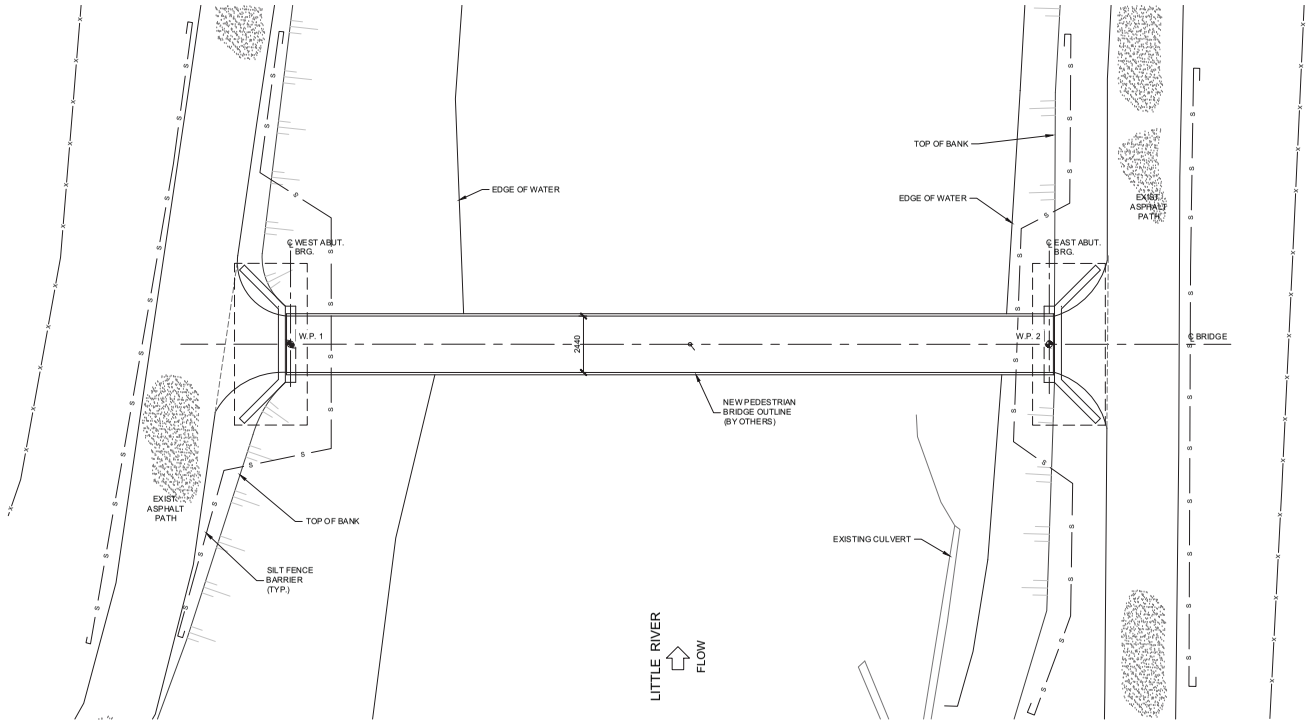
PROJECT: HAWTHORNE PEDESTRIAN BRIDGE
CITY OF WINDSOR, ONTARIO

TITLE: GENERAL ARRANGEMENT & NOTES

DWN BY: TCC	PROJECTION: UTM Zone 17	DATE:	16/11/2018
CHK'D BY: SV	DATUM: NAD83	PROJECT NO:	SWW18.7112 - S2-Hawthorne
REV. NO.: NA	SCALE: As Noted	FIGURE No.	S2

NOTE:

TO BE READ IN CONJUNCTION WITH CONTRACT PACKAGE & ENVIRONMENTAL MITIGATION IDENTIFIED THEREIN.



GENERAL NOTES:

1. NO ACCESS TO THE NATURAL SHORELINE AND AREAS ADJACENT TO THE LITTLE RIVER BEYOND THE ABUTMENT EXCAVATION.
2. OPERATE, STORE, AND MAINTAIN EQUIPMENT, VEHICLES, AND ASSOCIATED MATERIALS IN A MANNER THAT PREVENTS THE ENTRY OF ANY DELETERIOUS SUBSTANCE FROM ENTERING THE LITTLE RIVER.
3. IMPLEMENT DRIP PANS UNDER MACHINERY (I.E. GENERATORS, PUMPS, ETC.) IN OPERATION WITHIN THE WORK AREA.
4. ANY RE-FUELING IS TO BE UNDERTAKEN AT LEAST 30 M FROM THE LITTLE RIVER AND ANY OTHER SURFACE DRAINAGE FEATURE.
5. TEMPORARILY STORE, HANDLE AND DISPOSE OF ALL MATERIALS USED OR GENERATED (E.G. ORGANICS, SOILS, CONSTRUCTION WASTE AND DEBRIS, ETC.) DURING SITE PREPARATION, CONSTRUCTION, AND CLEAN-UP IN A MANNER THAT PREVENTS THEIR ENTRY TO WATERCOURSE AND NATURAL ENVIRONMENT.
6. ENSURE A SPILL MANAGEMENT PLAN (INCLUDING SPILL KIT MATERIALS, INSTRUCTIONS REGARDING THEIR USE, EDUCATION OF STAFF , AND EMERGENCY CONTACT NUMBERS) IS PRESENT ON-SITE AT ALL TIMES FOR IMPLEMENTATION IN THE EVENT OF AN ACCIDENTAL SPILL. ALL SPILLS ARE TO BE REPORTED TO THE ONTARIO MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS (MECP) SPILLS ACTION CENTRE (SAC) AT 1, 800-268-6060.
7. ENSURE THAT MACHINERY ARRIVES ON SITE IN A CLEAN CONDITION AND IS MAINTAINED FREE OF FLUID LEAKS, INVASIVE SPECIES AND NOXIOUS WEEDS.

EROSION AND SEDIMENT CONTROL:

1. LIGHT-DUTY SILT FENCE BARRIER TO BE INSTALLED AS SHOWN ON THE DRAWING. SILT FENCE TO ALSO BE INSTALLED AROUND ANY TEMPORARY STAGING/STORAGE AREA(S). SILT FENCE TO BE INSTALLED AS PER OPSS 805 AND OPSD 219.110. THE LAYOUT OF THE SILT FENCE AS DEPICTED ON THE DRAWING IS A MINIMUM ONLY AND MAY REQUIRE ADJUSTMENT TO SUIT SITE SPECIFIC CONDITIONS OR CHANGES TO WORK OPERATIONS.
2. ALL DEWATERING DISCHARGE SHALL BE DIRECTED TO A FILTER BAG TO REMOVE SUSPENDED SEDIMENT. THE FILTER BAG SHALL BE LOCATED IN AN AREA THAT IS SUFFICIENTLY VEGETATED , STABLE AND DOES NOT DISPLAY ANY EVIDENCE OF EROSION OR INSTABILITY. THE FLOW DISCHARGE PATH SHALL BE MONITORED FOR EVIDENCE OF EROSION DURING ACTIVE DEWATERING. ADDITIONAL MEASURES TO BE IMPLEMENTED AS REQUIRED TO ENSURE WATER QUALITY IMPACTS TO THE LITTLE RIVER ARE MINIMIZED.
3. MEASURES ARE TO BE IMPLEMENTED TO CONTAIN AND STABILIZE WASTE MATERIAL (E.G., EXCAVATION SPOILS, CONSTRUCTION WASTE AND MATERIAL S). THE LOCATION OF ANY SUCH AREA SHALL BE ABOVE THE ORDINARY HIGH WATER MARK (OHWM) OF THE LITTLE RIVER AND NOT WITHIN OR ADJACENT TO ANY SURFACE DRAINAGE FEATURE.
4. REGULAR INSPECTION AND MAINTENANCE OF PROTECTION MEASURES ARE TO BE UNDERTAKEN. MAINTENANCE AND CORRECTION ACTION TO BE COMPLETED AS REQUIRED TO MEET OPSS 805. ADDITIONAL MEASURES TO PROTECT THE WATERCOURSE AND NATURAL ENVIRONMENT MAY BE REQUIRED BASED ON SITE CONDITIONS.
5. ALL NON-BIODEGRADABLE PROTECTIONS MEASURES ARE TO BE REMOVED ONCE THE SITE HAS BEEN STABILIZED WITH A DEVELOPED VEGETATIVE COVER.
6. STABILIZATION WILL INCLUDE THE APPLICATION OF TOPSOIL AND NATIVE SEED MIX IN AGREEMENT WITH OPSS 804.

FISH AND FISH HABITAT:

1. TO PROTECT THE LOCAL FISH COMMUNITY DURING CRITICAL LIFE STAGES (I.E. SPAWNING AND REARING), NO IN-WATER WORK WILL BE PERMITTED FROM MARCH 31ST TO JULY 1ST IN ANY GIVEN YEAR. IN-WATER WORK IS DEFINED AS *'ALL WORKS FOLLOWING EARTH DISTURBANCE ALONG THE EMBANKMENT IN PREPARATION FOR ABUTMENT EXCAVATION TO BACKFILL, GRADING AND EMBANKMENT STABILIZATION WITH TOPSOIL AND SEED'*. THE ERECTION OF THE BRIDGE SUPERSTRUCTURE CAN BE COMPLETED OUTSIDE OF THE TIMING RESTRICTION AS THIS WORK DOES NOT POSE ANY SIGNIFICANT RISK OF IMPACTING FISH.
2. ALL CONCRETE WASHOUTS SHALL BE UNDERTAKEN WITHIN A DESIGNATED AREA AND SECURED AREA IN THE TEMPORARY STAGING/STORAGE AREA. CONCRETE WASHOUT WILL NOT BE PERMITTED ADJACENT TO OR WITHIN PROXIMITY TO THE WATERCOURSE.
3. ALL PROJECT RELATED WORKS ARE TO BE UNDERTAKEN IN COMPLIANCE WITH OPSS 182.

WILDLIFE:

1. REMOVAL OF WOODY VEGETATION IS TO OCCUR OUTSIDE OF THE MIGRATORY BIRD NESTING PERIOD (APRIL 1 TO AUGUST 15) AND ACTIVITIES WILL OCCUR IN ACCORDANCE WITH THE *MIGRATORY BIRDS CONVENTION ACT* (MBCA) AND *MIGRATORY BIRD REGULATIONS*. THESE TIMING CONSTRAINTS SHOULD NOT BE PERCEIVED AS ABSOLUTES.
2. FOR ACTIVITIES WHICH MAY OCCUR DURING THE BIRD NESTING SEASON, SURVEYS TO IDENTIFY NESTING ACTIVITY WILL BE COMPLETED BY A QUALIFIED AVIAN BIOLOGIST WITHIN 48 HOURS OF SCHEDULED WORK ACTIVITIES. THE AVIAN BIOLOGIST CONDUCTING THE SURVEYS MUST BE ABLE TO IDENTIFY BIRDS BY SPECIES AND BE KNOWLEDGEABLE OF NESTING SEASONS AND ACTIVITIES FOR APPROPRIATE SPECIES.
3. IF NESTING ACTIVITY IS DETECTED WITHIN THE WORK AREA, ACTIVITIES WHICH MAY POTENTIALLY IMPACT THE NEST WILL NOT BE UNDERTAKEN.

SPECIES AT RISK.

1. IF A SAR SPECIES IS ENCOUNTERED , IT SHOULD BE GIVEN ADEQUATE TIME TO LEAVE THE AREA BEFORE STARTING WORK. IF A SAR SPECIES MUST BE MOVED, A QUALIFIED BIOLOGIST SHOULD BE CONTACTED FOR ADVICE/HELP BEFORE IT IS MOVED.
2. ANY SAR INDIVIDUAL THAT IS PRESENT AT THE PROJECT SITE SHOULD BE REPORTED TO THE MNRF AYLMER DISTRICT STAFF (519-773-4751 OR ESA.AYLMER@ONTARIO.CA) WITHIN 48 HOURS OF THE OBSERVATION OR THE NEXT WORKING DAY, WHICHEVER COMES FIRST.
3. IF AN INJURED OR DECEASED SAR IS FOUND OR A SAR INDIVIDUAL IS ACCIDENTALLY UNEARTHED FROM OVERWINTERING, THE SPECIMEN MUST BE PLACED IN A NON-AIRTIGHT CONTAINER THAT IS MAINTAINED AT AN APPROPRIATE TEMPERATURE AND A WILDLIFE CUSTODIAN SHOULD BE CONTACTED. MNRF MUST BE CONTACTED IMMEDIATELY AFTER THE OCCURRENCE.
4. DIGGING/EXCAVATION ACTIVITIES AND VEGETATION CLEARING SHOULD BE CONDUCTED BEFORE MARCH 30TH OR AFTER JUNE 1ST. IF THIS IS NOT POSSIBLE, THE AREA TO BE EXCAVATED/CLEARED OF VEGETATION MUST BE WALKED AND VISUALLY SURVEYED FOR THE PRESENCE OF SAR SNAKES EACH DAY PRIOR TO (RE)INITIATING THESE ACTIVITIES.
5. TEMPORARY SNAKE BARRIER FENCING (SILT FENCE) SHOULD BE INSTALLED AS DEPICTED ON THE DRAWING AND ALONG THE LIMITS OF THE CONSTRUCTION FOOTPRINT IN ORDER TO EXCLUDE SNAKES FROM ENTERING THE AREA. FENCING MUST ALSO BE PLACED AROUND THE FULL PERIMETER, INCLUDING ACCESS POINTS, OF ANY TEMPORARY STAGING AND STORAGE AREA(S). FENCING AT ACCESS POINTS CAN BE TEMPORARILY REPOSITIONED DURING THE DAY WITH FULL CLOSURE TO BE RE-INSTATED AT THE END OF THE WORKING DAY.
6. FENCING MATERIAL, INSTALLATION AND MAINTENANCE SPECIFICATIONS ARE TO ADHERE TO *MNRF SPECIES AT RISK BRANCH - BEST PRACTICES TECHNICAL NOTE - REPTILE AND AMPHIBIAN EXCLUSION FENCING, VERSION 1.1* (JULY 2013).
7. FENCING, INCLUDING LIGHT-DUTY SILT FENCE BARRIER, MUST NOT INCLUDE ANY SUPPORTIVE MESH OR NETTING MATERIAL.
8. CONSTRUCTION EQUIPMENT THAT IS LEFT IDLE FOR OVER ONE (1) HOUR OR IS PARKED OVERNIGHT ON THE PROPERTY SHOULD BE SURVEYED FOR THE PRESENCE OF SAR SNAKES BEFORE (RE)IGNITION. THIS VISUAL EXAMINATION SHOULD INCLUDE ALL LOWER COMPONENTS OF THE MACHINERY, INCLUDING OPERATIONAL EXTENSIONS AND RUNNING GEAR.

APPLICABLE STANDARD DRAWINGS:

ALL ESC MEASURES SHALL BE IMPLEMENTED IN AGREEMENT WITH THE RELEVANT OPSS/OPSD.

Key Plan

Notes:

REV. #	DESCRIPTION	DATE	APP.BY

wood.
11665 County Road 42
Tecumseh, ON, N8N 2M1
(P) 519-735-2699

CLIENT: WINDSOR

PROJECT: HAWTHORNE PEDESTRIAN BRIDGE
CITY OF WINDSOR, ONTARIO

TITLE: EROSION AND SEDIMENT CONTROL PLAN

DWN BY: TC	PROJECTION: UTM Zone 17	DATE: 16/11/2018	
CHK'D BY: SV	DATUM: NAD83	PROJECT NO: SWW18 7112 - S3-Hawthorne	
REV. NO.: NA	SCALE: As Noted	FIGURE No. S3	

APPENDIX H

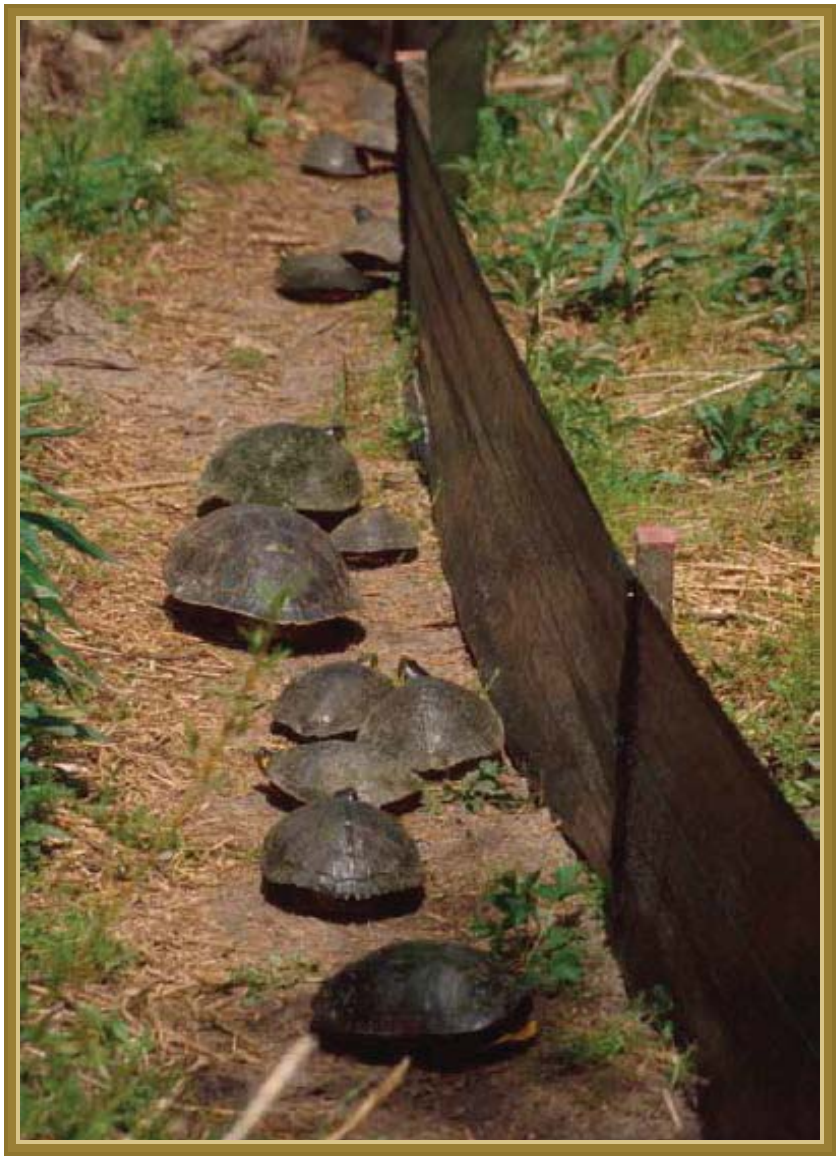
Species at Risk Branch Best Practices Technical Note – Reptile and Amphibian Exclusion Fencing

[illegible]

[illegible]M[illegible]

[illegible]r[illegible]

[illegible]



Ministry of Natural Resources

Ontario

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[illegible]

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Cette publication hautement spécialisée, Reptile and Amphibian Exclusion Fencing Best Practices n'est disponible qu'en anglais en vertu du Règlement 671/92 qui en exempte l'application de la Loi sur les services en français. Pour obtenir de l'aide en français, veuillez communiquer avec le ministère des Richesses naturelles au Pamela Wesley,705-755-5217.

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Ontario

[illegible]

The purpose of this guidance document is to provide an overview of proven design and installation techniques for reptile and amphibian exclusion fencing. Although this document points to site and species specific design requirements, it is important to recognize that every situation is different. This guidance is not meant to replace site specific advice obtained from local MNR staff or experienced exclusion fencing contractors. Moreover, exclusion fences are only effective when well planned, properly constructed, and maintained.

Exclusion fencing seeks to eliminate access to specific areas where activities that could harm animals are occurring (e.g., active aggregate operations, construction sites, and roads). The selection and installation of exclusion fencing can present some challenges, particularly if multiple species are being excluded (for example, some reptiles and amphibians are able to dig under fencing while others can climb over). Some may also take advantage of burrows dug by other animals. To maintain effectiveness, the bottom of the fence should be buried or secured firmly to the ground and minimum height recommendations (Table 1) should be considered.

Exclusion fence design should consider the target species as well as those that might be unintentionally impacted. Fencing material should not pose a risk of entanglement or permit individuals to pass underneath or between openings. Landscape features such as topography and substrate need to be considered as these may constrain fencing design.

Including plans for fencing in advance of a project can increase efficiency and fence effectiveness. For example, developers of road projects that will include a permanent sound barrier could design the sound barrier such that it also meets the specifications of the required exclusion fence.

[illegible]

Fence burial and height recommendations listed in Table 1 below have been compiled from scientific literature, established government practices and practitioner best advice. These are general recommendations and at times other specifications may be more appropriate. For instance, in areas where the substrate does not permit fence burial, weighing down the fence with heavy items (e.g., sand bags) or backfilling may be needed. Where needed, seek advice from your local MNR staff or experienced exclusion fencing contractor to develop site specific plans.

If multiple species are being excluded from the same area and the species-specific fencing specifications differ, the uppermost minimum height and greatest depth recommendation should be used (Table 1). If you are excluding both Blanding's Turtle and Gray Ratsnake, for example, the exclusion fence should be a minimum of [illegible] tall (see Gray Ratsnake section below for additional details).

Exclusion fences should be installed prior to the emergence from hibernation. A survey of the enclosed/excluded area should be conducted immediately following fence installation to ensure that no individuals have been trapped on the wrong side of the fence.

[illegible]

[illegible]	[illegible]	[illegible]
Turtles (general)	[illegible]	[illegible]
Eastern Musk Turtle, Wood Turtle	[illegible]	[illegible]
Massasauga, Eastern Hog-nosed Snake, Butler's Gartersnake, Queensnake	[illegible]	[illegible]
Gray Ratsnake, Eastern Foxsnake	[illegible]	[illegible]
Colubrids (...) [illegible]	[illegible]	[illegible]
Snakes (general)	[illegible]	[illegible]
Common Five-lined Skink	[illegible]	unknown
Salamanders	[illegible]	[illegible]

[illegible]

[illegible]

The type of disturbance, the proximity to disturbances and the planned fence longevity are factors that influence which type of exclusion fence is most effective. For short-term activities (up to [illegible] months) such as minor road repairs, light-duty geotextile fence is appropriate. For longer term or permanent fencing projects, more durable materials such as heavy-duty geotextile, wood, concrete, corrugated sheet metal, fine mesh panels or galvanized mesh.

[illegible]

Geotextile fences (e.g., silt fences) come in many types and qualities. These can be very effective for the temporary exclusion of reptiles and amphibians. For the purposes of this document, temporary use ranges from [illegible] months up to [illegible] years. Weather is generally damaging to geotextile materials and the cost of maintenance over the long term should be considered during the planning phase. Depending upon the quality, geotextile can be resistant to [illegible] degradation and the biological soil environment.

[illegible]

Light-duty geotextile fencing is made of nylon material and is typically purchased with wooden stakes pre-attached at [illegible] intervals (Table [illegible]). It can also come without pre-attached stakes. Light-duty geotextiles are largely intended for projects with shorter durations of only [illegible] months in duration and up to one season.

[illegible]

To use light duty geotextile fencing:

- Fencing fabric is effective if attached to wooden, rebar, plastic or metal stakes using heavy-duty wire staples or tie wire (Figure [illegible]).
- Secure the fence on posts that are placed at [illegible] to [illegible] apart; using the greater recommended distance between posts, additional maintenance may be required to maintain effectiveness.
- Securely drive the stakes into the ground to a recommended depth of [illegible]. The fencing fabric should be buried to the recommended specifications in Table [illegible] and [illegible] filled with soil.
- For snakes, supporting posts should be staked on the activity side ([illegible] on the side facing the aggregate stockpile or the road (Figure [illegible])).
- Light-duty geotextile fences are not effective where rocks or other hard surfaces prevent proper anchoring of fence posts and burial of the fence fabric.
- Light-duty geotextile fences are not effective where a large amount of concentrated runoff is likely or to cross streams, ditches or waterways without specific modifications.
- Contact your local MNR staff or experienced exclusion fencing contractor for advice and recommendations.
- See General Best Practices section below for additional details.

Generally, light-duty geotextile fences are not effective if they need to [illegible] weight unless purposely manufactured for greater weight with stakes placed at closer intervals or cross braces. If greater weight is required consider using heavy duty geotextile, hardware cloth or other fencing materials.

[illegible]

Heavy-duty Geotextile Fencing

Heavy-duty geotextile fencing is typically constructed of thick multi-layer fabric that can also be called double row or trenched fencing. For support this fencing uses a woven wire fence, chain link or some other structure. With this it is recommended that a minimum density of [illegible] or equivalent woven geotextile fabric is used.

Heavy-duty geotextile material can be effective for up to [illegible] or [illegible] years with proper maintenance. This type of fencing can be damaged by small animals chewing through or torn by [illegible] debris ([illegible] tree branches). Therefore it may be best suited to turtles, which are less likely to take advantage of holes or tears in the fabric.

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[illegible]

[illegible]

In certain circumstances, wood lath snow fencing can be effective at excluding turtles. This fencing is typically constructed from soft wood slats that have been woven together with galvanized wire and is then attached to steel fence posts which have been driven into the ground.

Wood lath fencing is cost effective and can easily be laid down during the winter to prevent damage. The durability of the material, however, is not meant for long-term use (more than 2 years) unless regular maintenance occurs.

To use wood lath snow fencing:

- The fencing should be attached to either plastic or metal stakes using heavy-duty wire staples or tie-wires.
- The stakes are recommended to be placed at 2 to 3 m intervals and securely driven into the ground 30 cm or more.
- Wood lath snow fencing across streams, ditches or watercourses should have site-specific modifications.
- Wood lath snow fencing lends itself well to being combined with other types of material to ensure complete exclusion.
- See General Best Practices section below for additional details.

[illegible]

[illegible]

Gray ratsnakes and Eastern foxsnakes are the largest snakes in Ontario, growing nearly 2 m in length. They are also excellent climbers. For this reason, fencing intended to exclude either of these species has additional recommended design specifications.

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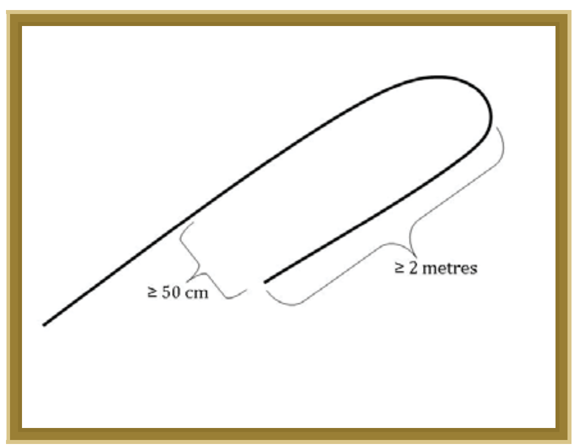

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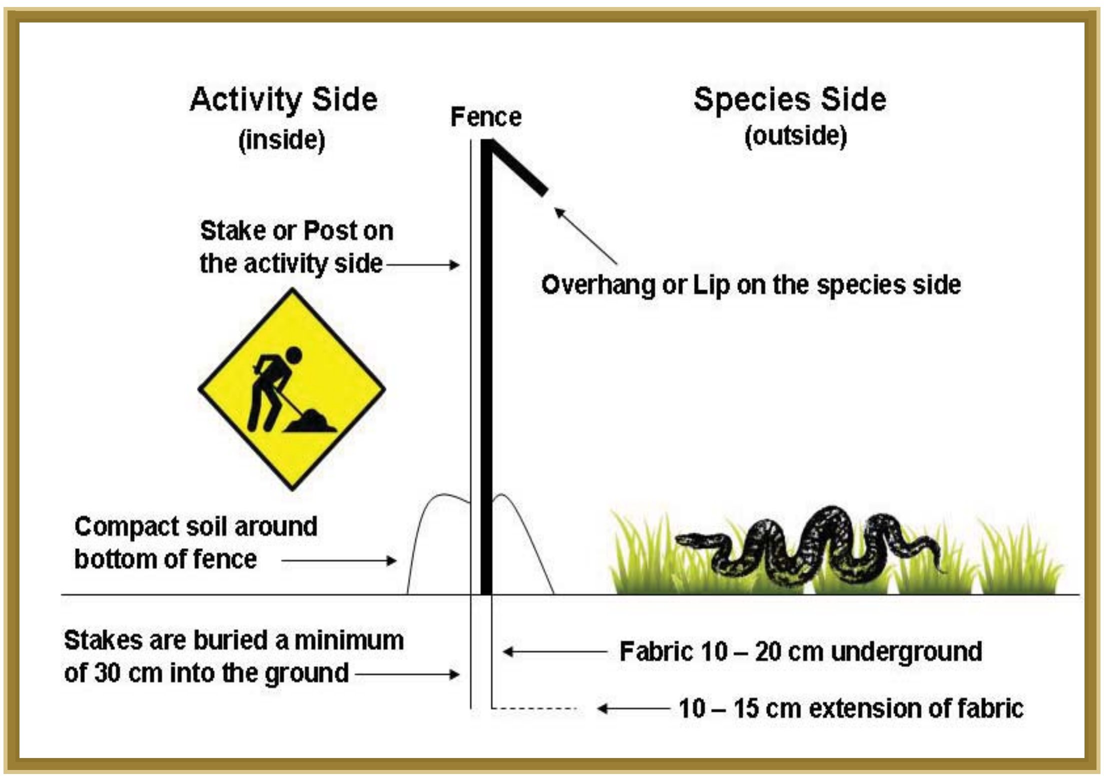

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APPENDIX H

DFO Request for Review Form

Request for Review

A) Contact information

Name of Business/Company:

City of Windsor

Name of Proponent:

Trevor Duquette

Mailing address:

2450 Dougall Avenue

City/Town:

Windsor

Province/Territory:

Ontario

Postal Code:

N8X 3N6

Tel. No. :

519-253-2300 x2772

Fax No.:

Email:

tduquette@citywindsor.ca

Select additional contact:
Contractor/Agency/Consultant *(if applicable)*:

Wood Environment & Infrastructure Solutions
Brad Dufour

Mailing address:

900 Maple Grove Road, Unit 10

City/Town:

Cambridge

Province/Territory:

Ontario

Postal Code:

N3H 4R7

Tel. No. :

519-650-7109

Fax No.:

Email:

bradley.dufour@woodplc.com

Is the Proponent the main/primary contact? ◯ Yes ◯ No

If no, please enter information for the primary contact or any additional contact.

☐ Ice Bridges

☐ Other Please Specify

Was your project submitted for review to another federal or provincial department or agency? ◯ Yes ◯ No

If yes, indicate to whom and associated file number(s).

MNRF provided Letter of Advice (LOA) dated October 5, 2018 (AYL-L-159-18) providing clearance with respect to the ESA (2007).

C) Location of the Project

Coordinates of the proposed project Latitude 42.312036 N Longitude -82.926133 W

OR UTM zone ; Easting

Northing

Include a map clearly indicating the location of the project as well as surrou

- [x] Excavation
- [ ] Fish passage issues
- [x] Grading
- [ ] Marine seismic surveys
- [ ] Organic debris management
- [x] Placement of marine finfish aquaculture site
- [ ] Use of explosives
- [x] Use of industrial equipment
- [x] Vegetation Clearing
- [ ] Wastewater management
- [x] Water extraction

Will there be changes (i.e., alteration) in the fish habitat*? ○ Yes ○ No ○ Unknown

If yes, provide description.

Will the fish habitat ○ Yes ○ No ○ Unknown

Is there likely to be destruction or loss of habitat used by fish?

○ Yes ○ No ○ Unknown

What is the footprint (area in square meters) of your project that will take place below the high water mark*?

7.41

Is your project likely to change water flows or water levels? ○ Yes ○ No ○ Unknown

If your project includes withdrawing water, provide source, volume, rate and duration.

Dewatering of excavation likely required. Pumping to be managed to be below 50,000 L/day.

If your project includes water control structure, provide the % of flow reduction.

N/A

If your project includes discharge of water, provide source, volume and rate.

Excavation dewatering to be treated to remove suspended sediments. Discharge to be directed to a filter bag situated in a vegetated area.

Will your project cause death of fish? ○ Yes ○ No ○ Unknown

If yes, how many fish will be killed (for multi-year project, provide average)? What species and lifestages?

Are there aquatic species at risk (http://www.sararegistry.gc.ca/species/aquatic_e.cfm)

No

What is the time frame of your project?

The construction will start on 01/07/2019 and end by 01/10/2019

If applicable, the operation will start on MM/DD/YYYY and end by MM/DD/YYYY

If applicable, provide schedule for the maintenance

N/A

If applicable, provide schedule for decommissioning

F) Signature

I, Bradley Dufour (print name) certify that the information given on this form is to the best of my knowledge, correct and completed.

Signature

23/11/2018
Date

Information about the above-noted proposed work or undertaking is collected by DFO under the authority of the *Fisheries Act Fisheries Act Privacy Act Privacy Act Access to Information Act*

**All definitions are provided in Section G of the Guidance on Submitting a Request for Review*