Updated Environmental Impact Study (EIS)
2062 Shanly Road

Part Lots 7, Concession 2
Township of Edwardsburgh/Cardinal
United Counties of Leeds and Grenville

November 10, 2023

Prepared By:

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1.0. Introduction

As requested by Tim Markus an Environmental Impact Study (EIS) was completed to assess the environmental impacts of the creation of a landscaping business at 2062 Shanly Road, Cardinal, ON (Figure 1).

1.1. Site Context

The entire property parcel (Subject Lands) is approximately 3.8 ha in size and the legal land description is Part Lot 7, Concession 2, Township of Edwardsburgh/Cardinal, United Counties of Leeds and Grenville. The proponent wishes to utilise a portion of his property as a landscaping business (1.15 ha). The subject lands are bordered to the east by Shanly Road (Figure 1). The proponent wished to create access lanes for trucks, a truck turnaround/dumping area, and open storage area for landscaping supplies (soil, rock and mulch). Preliminary plans are available in Appendix C.

The subject lands were designated as Rural within the Township of Edwardsburgh/Cardinal zoning by-law No. 2012-35 and Rural Area with Significant Woodland in the Townships Official Plan. Additionally, within the United Counties of Leeds and Grenville Official Plan the subject lands are designated as Rural and Natural Heritage System.

Through a background review, potential environmental constraints have been identified as; Natural Heritage System, Significant Woodland, Potential Wetland and Potential Fish Habitat (Tributary to McLaughlin Creek). Additionally, the proposed development is located in Ecoregion 6E.

A watercourse draining to McLaughlin Creek has been identified within the northern edge of the subject lands. This creek can potentially support numerous types of aquatic habitat including fish and has been identified as being potential environmental constraints to future development.

The Provincial Policy Statement (PPS) states that natural heritage systems should be maintained, restored, or improved for the purpose of linkages between natural heritage features and areas. The PPS states that site development and alteration shall not be permitted in provincially significant wetlands in Ecoregion 6E and site development and alteration shall not be permitted in provincially significant woodlands in Ecoregion 6E unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions. Additionally, development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.

No portion of the subject lands appear to be within a South Nation Conservation Authority regulated areas.

2.0. Methodology

This report is prepared in accordance with the Official Plan for the United Counties of Leeds and Grenville (2021) and the Official Plan of the Township of Edwardsburgh/Cardinal (2019) Section 6.10 with guidance from the Natural Heritage Reference Manual (OMNR, 2010). This EIS includes an assessment of the identified environmental constraints and the potential for Species at Risk.

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This EIS will provide the methodology to mitigate, as required, negative impacts on significant features and functions. Potential Species at Risk in the general area were identified from the Ministry of Natural Resources and Forestry databases, the Department of Fisheries and Ocean databases, the Ontario Breeding Bird Atlas, Ontario Reptile and Amphibian Atlas, iNaturalist and the Global Biodiversity Information Facility.

Colour aerial photography was used to assess the natural environment features in the general vicinity of the proposed building.

A field survey of the subject and adjacent lands was completed by BCH Environmental (C.Fontaine/ S.St.Pierre) on May 17, 2022 from 0800h to 1100h (air temperature was 13°C, with a light breeze and overcast skies changing to light rain). Staff qualifications are available in Appendix B.

The area was extensively walked and surveyed for significant natural areas, potential species at risk and their associated habitat.

Upland vegetation communities were described utilising the Ecological Land Classification Southern Manual (Lee et al. 1998), while wetland communities if present were described utilising the Ontario Wetland Evaluation System Southern Manual (MNRF 2022).

Significant Wildlife Habitat was determined from the Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement (OMNRF 2010).

Observed plants were recorded for each individual community, the plants utilized in the descriptions are the most abundant specimens observed. A complete observed species list is provided in Appendix A. Plants that could not be identified in the field were collected for a more detailed examination. Nomenclature used in this report follows the Southern Ontario Vascular Plant List (Bradley, 2013) which aligns with the Integrated Taxonomic Information System (ITIS).

3.0. Field Surveys

A butternut survey was conducted along with a search for cavity trees by systematically moving through the subject lands and adjacent lands (discussed in section 4.3 and 4.4). Vegetation communities along with the pond and watercourse areas are described in section 3.1.

3.1. Existing Conditions

A large portion of the subject lands consisted of mowed/maintained area with a residential building and accessory buildings, two ponds were located within the mowed area. The remaining land within the subject lands consisted of a mosaic of deciduous/coniferous swamp and deciduous/coniferous forests. Within the northern portion there is a tributary to McLaughlin Creek.

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FIGURE 1: SUBJECT LANDS

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3.1.1. Mowed/Manicured Residential

Portions within the center of the subject lands consisted of residential and accessory buildings and manicured lawn. Some trees individually or in clumps were present; mostly green ash, white cedar, and white pine (average DBH: 25-35cm). The majority if the proposed development occurs within this community.

Located within the southeast portion of this area were two manmade ponds, they do not represent fish habitat. The ponds do not appear to be connected to each other; however, the east pond has an outlet which travels about 45m before draining into the black ash deciduous swamp. This swamp was thoroughly investigated and no channels or connections to other wetlands/watercourses were present.

The west pond is approximately 17m x 30m in size, and just 10m to the east, the east pond is approximately 15m x 20m in size. Both ponds and the watercourse were mowed around but contained a small natural shoreline buffer. The most dominant species were: willows, white cedar, narrowleaf cattail, and sensitive fern. The outlet contained an average wetted width and depth of 1m and 6cm, respectively. Much of the outlet was choked with cattail.

Both ponds are to remain.

Photo 1: Residential (May 15, 2022)

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Photo 2: West Pond (May 15, 2022)

Photo 3: East Pond (May 15, 2022)

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Photo 4: Pond Outlet (May 15, 2022)

3.1.2. Fresh-Moist White Cedar Coniferous Forest (FOC4)

This community was present within the northern portion of the subject lands. The average tree diameter was 20-30cm, maximum 90cm, and the majority provided 100% cover. This community consisted of coniferous trees with the occasional deciduous tree. The canopy was the dominant layer. The canopy (11-13m tall; 100% cover) was dominated by white cedar with the very occasional green ash and white birch present. The sub-canopy (8-9m tall; 30% cover) consisted of white cedar. The understory (1-2m tall; 5% cover) was dominated by alternate-leaved dogwood followed by tartarian honeysuckle, green ash, and common buckthorn. The ground layer varied in cover, along the north portion of this community there was very little cover. Moving towards the south there was some mowing/clearing activities and as such, the ground cover was greater (10%-100% cover). The ground layer included grasses, sensitive fern, ostrich fern, mosses, and red trillium.

Photo 5: Fresh-Moist White Cedar Coniferous Forest (May 15, 2022)

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3.1.3. Mosaic of Mixed Swamp (ch) and Fresh-Moist White Cedar Hardwood Mix Forest (FOM7)

This community was present within western side of the subject and adjacent lands. The average tree diameter was 20-30cm and the majority provided 100% cover. This community was highly variable and consisted of a mixture of coniferous and deciduous trees. This area can only be described as a mosaic of wetland and upland habitat. Individual communities have been delineated for constraint purposes but this area should really be described as a whole. A small portion of the Fresh-Moist White Cedar Hardwood Mix Forest is designated for use for the landscaping business. This area drains into the creek.

Within the low lying areas (wetland areas) dominate vegetation consisted of black ash, green ash, white cedar, American elm, and sensitive fern. Vernal pools were noted but fish habitat was not present.

Upland areas consisted of a fresh-moist white cedar hardwood mix forest. The canopy was the dominant layer. The canopy (10-13m tall; 100% cover) consisted of sugar maple, white cedar, green ash, and white pine. The sub-canopy (7-8m tall; 40% cover) consisted of the same species present in the canopy layer. The understory (1-2m tall; 40% cover) consisted of green ash, white cedar, Tartarian honeysuckle, and alternate-leaved dogwood. The ground layer provided 80-100% coverage and consisted of sensitive fern, wild sarsaparilla, field horsetail, ostrich fern, reed canary grass, and mosses.

Photo 6: Fresh-Moist White Cedar Hardwood Mix Forest (May 15, 2022)

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Photo 7: Mixed Swamp (May 15, 2022)

3.1.4. Black Ash Deciduous Swamp (h)

A small portion of the subject lands and adjacent lands have been identified as black ash deciduous swamp (figure 1). This swamp presented one form: deciduous tree (black ash). The canopy consisted entirely of black ash however, all trees were dead (7-8m tall; 0% cover). The sub-canopy (5-6m tall; 85% cover), and understory (2-3m tall; 50% cover) also consisted entirely of black ash. The ground layer provided 100% cover and consisted entirely of reed canary grass. A small cattail/reed canary grass marsh was located within the north western portions of this community. This area drains into the roadside ditch.

Photo 8: Deciduous Swamp (May 15, 2022)

3.1.5. Tributary to McLaughlin Creek

Running along the northern border of the subject lands and adjacent lands was a watercourse which originates onsite and continues offsite, flowing to McLaughlin Creek and represents fish habitat. The

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watercourse flowed in a westerly direction and contained substantial flow during the May 15, 2022 visit. The average wetted width and water depths were 1.2m and 7cm, respectively. A ponded area (approximately 12m x 8m in size) with surrounding vernal pools draining into the watercourse was noted within the adjacent lands. Small woody debris and organics were the only in-water cover present. The substrate consisted of fines. Much of the watercourse contained full canopy cover and bank vegetation. The most common species were: sugar maple, white cedar, green ash, sensitive fern, and ostrich fern.

Photo 9: Tributary to McLaughlin Creek (May 15, 2022)

4.0. Potential Species at Risk

The Make a Map: Natural Heritage online database (OMNRF) was reviewed on April 28, 2022. This database provides sightings of provincially tracked species including Threatened and Endangered species covered by the 2008 Endangered Species Act in 1 km squares across most of Ontario. A search was conducted on the site and adjacent lands (18VQ6861, 18VQ6761, 18VQ6760, and 18VQ6860). The following species were identified for these squares:

- Eastern Meadowlark (Threatened)
- Bobolink (Threatened)
- Snapping Turtle (Special Concern)
- Henslow's Sparrow (Endangered)

The Ontario Breeding Bird Atlas provides a searchable database in the form of a 10km square grid. A query revealed the following Species at Risk and species of special concern identified within the 10km square that encompasses the site and adjacent lands (18VQ66):

- Chimney Swift (Threatened)
- Eastern Wood-Pewee (Special Concern)
- Barn Swallow (Special Concern)

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- Wood Thrush (Special Concern)
- Bobolink (Threatened)
- Eastern Meadowlark (Threatened)

Similar to the Ontario Breeding Bird Atlas, the Ontario Reptile and Amphibian Atlas provides a searchable database in the form of a 10km square grid. A query revealed the following species of special concern was identified within the 10km square that encompasses the subject lands and adjacent lands (18VQ66):

- Snapping Turtle (Special Concern)

iNaturalist and the Global Biodiversity Information Facility provides a searchable database. A query revealed no Species at Risk in the vicinity of the Subject Lands.

The Department of Fisheries and Oceans provide species at risk sightings via their online map tool. A query found no results in the vicinity of the site.

In addition to the above potential Species at Risk, other endangered and threatened species may potentially occur in the general area:

- Little Brown Myotis (Endangered)
- Northern Myotis (Endangered)
- Tri-coloured Bat (Endangered)
- Eastern Small-footed Myotis (Endangered)
- Butternut (Endangered)
- Black Ash (Endangered)

4.1. Turtles and Reptiles

Snapping turtles are designated as special concern under the Ontario Endangered Species Act (ESA). The habitat of species of special concern is not regulated under the Ontario ESA. Although the ponds may be used by turtles, they lack size, depth and cover, and it is highly unlikely to be utilised by snapping turtles. Additionally the ponds will remain as is, and any indirect impacts on turtles as a result of the proposed development can be mitigated provided the mitigation measures in this report are properly implemented.

4.2. Birds

Eastern wood-pewee, barn swallow, and wood thrush are designated special concern under the Ontario Endangered Species Act (ESA). The habitat of species of special concern is not regulated under the Ontario ESA. The eastern wood-pewee is mostly associated with the mid-canopy layer of forest clearings and edges of deciduous and mixed forests (COSEWIC 2012a). The on-site forests did not contain this forest type. Barn swallow nest sites are commonly found along the interior or exterior of building structures, under bridges and wharves, and in road culverts (Heagy et al. 2014.). No barn swallow or barn swallow nests were observed. Nesting structures were present (accessory buildings), no nests were observed. The wood thrush nests mainly in second-growth and mature deciduous and mixed forests, with saplings and well-developed understory layers (COSEWIC 2012b). The on-site forests do not support this forest type.

Chimney swift, bobolink, and eastern meadowlark are designated as threatened under the Ontario Endangered Species Act (ESA). Henslow's sparrow is designated as endangered under the Ontario

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Endangered Species Act (ESA). Chimney swift are aerial foragers, associated with water where insects are abundant and urban and rural areas where chimneys are available for nesting and roosting (COSEWIC 2007). No suitable chimneys were observed for this species use. Henslow's Sparrow, bobolink, and eastern meadowlark are associated with native and non-native larger grassland habitats such as hayfields (COSEWIC 2010, and COSEWIC 2011). No suitable habitat for either species were present.

4.3. Mammals

Little brown Myotis, northern Myotis, Eastern Small-footed Myotis, and tri-coloured bat are designated endangered under the Ontario Endangered Species Act (ESA). All four bats may forage in open areas on-site and may roost in trees or buildings on or adjacent to the Site. The Atlas of Mammals of Ontario (Dobbyn, 1994) suggests that the tri-colored bat is not present within this part of Ontario however, the NatureServe mapping in the COSSARO (2015) includes all of southeastern Ontario. Based on this information, this species is considered to have a very low potential of occurring. To prevent impacts to bats, no clearing of trees greater than 10cm on-site should take place between March 15 and November 30 (inclusive) without a qualified biologist first confirming the absence of bats (i.e., open work timing window from December 1 to March 14). If tree clearing is conducted between December and March 14, no interactions with bats are anticipated, and therefore, significant negative impacts to SAR bats would be avoided.

Maternity colonies are established by females in the summer, often in buildings, or large-diameter trees with suitable cavities (COSEWIC 2013b). No caves, bedrock fissures, mining shafts, abandoned buildings, or other features which may function as bat hibernacula habitat were noted within the subject lands. No suitable cavity trees that may be used by bats were observed within the subject lands.

4.4. Vegetation

Butternut (designated as endangered by the ESA) tends to reach greatest abundance in rich well-drained mesic loams in floodplains, streambanks, terraces and ravine slopes, but can occur in a wide range of other situations (COSEWIC 2017). No butternuts were observed within the subject lands or adjacent lands (50m).

Black ash (designated as endangered by the ESA) occurs most frequently in floodplain forests, basin, seepage and lacustrine swamp forests, shoreline forest margins, and fens (COSEWIC 2017). The ministry temporarily suspended protections for Black Ash for a period of two years from the time the species was added to the Species at Risk in Ontario List (Ontario Regulation 230/08). During this time, proponents will not need to seek authorizations for activities that impact Black Ash and its habitat. Black ash was present within the deciduous swamp.

4.5. Species at Risk Summary

In summary, based on the habitat present within the buildable area and the field visit, no Species at Risk are anticipated to be present within the development area. Indirect impacts on potential species as a result of the proposed development can be mitigated provided the mitigation measures in this report are properly implemented.

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5.0. Natural Heritage System

A Natural Heritage System (NHS) has been identified in accordance with the direction of the Provincial Policy Statement. Its intent is to reinforce the conservation, restoration and enhancement of identified natural heritage features and areas and promote the overall diversity and interconnectivity of natural heritage features and areas.

United Counties of Leeds and Grenville Official Plan identified natural heritage system features (NHS) as covering the subject lands. A refined search identified the following NHS (discussion below): Significant Woodland, Unevaluated Wetlands and Tributary to McLaughlin Creek.

5.1. Significant Woodland

The woodland within the subject lands is part of a larger woodland that totals 24.39ha in size. Clearing within the potential development area would result in the removal of approximately 0.34ha. The significance of this woodland was evaluated using the criteria in the Natural Heritage Reference Manual (OMNR, 2010). The PPS does not permit development in significant woodlands south and east of the Canadian Shield unless it has been demonstrated that there will be no negative impacts on the natural features or the ecological functions. Woodlands are significant if they meet the criteria presented in the NHRM: size, ecological function, uncommon characteristics, and economical and social functional values. If the woodland meets any one of these criteria, then it could be deemed to be significant. Table 1 demonstrates the factors determining significance pre and post construction as per the NHRM.

Within the portion proposed to be removed there were no seasonal concentration areas of animals, rare vegetative communities, raptor overwintering sites, caves, or suitable tree cavities.

TABLE 1: WOODLAND ANALYSIS

CRITERIA	PRE CONSTRUCTION	POST CONSTRUCTION	DISCUSSION
WOODLAND SIZE	DOES NOT MEET THE CRITERIA		The woodland is located within the Uppper South Nation Subwatershed where the percent forest cover is 39%. The NHRM states that where woodland cover is about 30-60% of the land cover, woodlands 50 ha in size or larger should be considered significant. The woodland size is 24.39ha ha before removal and 24.05ha after removal therefore does not meet this criteria.

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CRITERIA		PRE CONSTRUCTION	POST CONSTRUCTION	DISCUSSION
ECOLOGICAL FUNCTION CRITERIA	Woodland Interior	DOES NOT MEET THE CRITERIA		Where woodlands cover about 30-60% of the lands; when 8 ha or more of interior habitat is present, they are considered significant. Therefore, this forest does not meets the criteria. Forest interior is 1.19ha before forest removal and 1.12ha after removal.
	Proximity to other woodlands or other habitats	MEETS THE CRITERIA		Outside of the subject lands this woodland connects with wetlands and watercourses (fish habitat) and they are likely receiving ecological benefit from the woodland.
	Linkages	MEETS THE CRITERIA		Woodland is located within a defined natural heritage system.
	Water protection	DOES NOT MEET THE CRITERIA		Watercourses are present (outside of the subject lands and the adjacent lands), but are not located within a sensitive or threatened watershed or a specified distance (e.g., 50 m or top of valley bank if greater) of a sensitive groundwater discharge, sensitive recharge, sensitive headwater area, sensitive watercourse or sensitive fish habitat.
	Woodland diversity	DOES NOT MEET THE CRITERIA		Within the subject lands this forest did not contain any declining natural communities or a high variety of native diversity through composition or terrain.
UNCOMMON CHARACTERISTICS CRITERIA		DOES NOT MEET THE CRITERIA		Within the subject lands there are no uncommon species composition,

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CRITERIA	PRE CONSTRUCTION	POST CONSTRUCTION	DISCUSSION
			cover type, age or structure.
ECONOMIC AND SOCIAL FUNCTIONAL VALUES CRITERIA	DOES NOT MEET THE CRITERIA		Within the subject lands the woodlands did not have high economic or social values through particular site characteristics or deliberate management.

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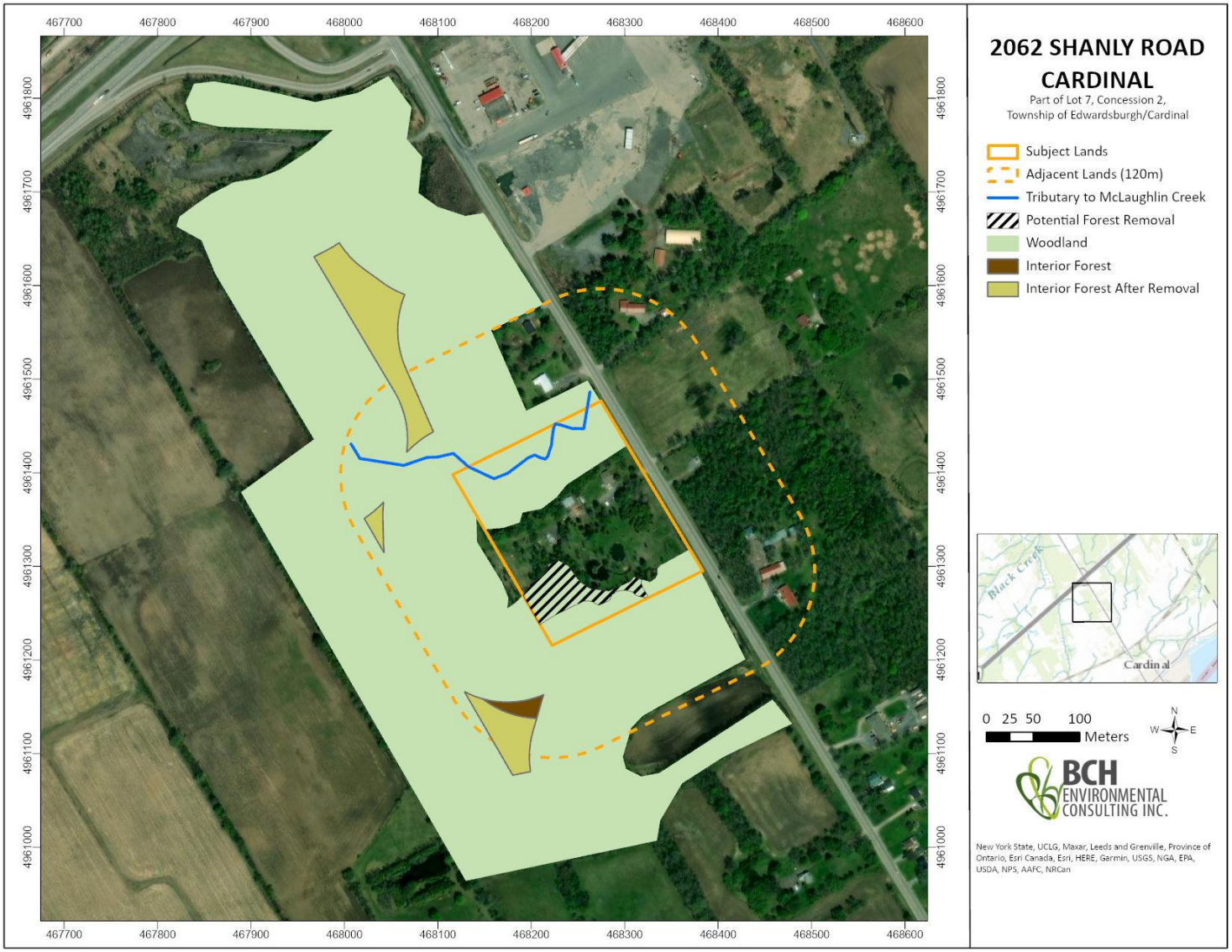
FIGURE 2: WOODLAND ANALYSIS



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As per the criteria set out in the NHRM this woodland should be considered significant, furthermore the woodland retains this designation of significant even after construction is completed. This woodlands significance was established from the following criteria: proximity to other habitats, and linkages. After removal (0.34ha), the woodland (24.05ha after removal) still meets the criteria for significance (Table 1). Removal of 0.34ha of the forest at this location will not negatively impact this feature or its ecological functions. Woodland significance is retained.

5.2. Unevaluated Wetland / Tributary to McLaughlin Creek

The wetland/watercourse has been taken into account while establishing the developable area. A 30m setback has been established along the watercourse.

The west wetland drains into the creek and within the vicinity of the development area we are proposing a 10m setback from this wetland. A small 0.001394ha portion of the southern wetland is proposed to be removed. Except at the location of wetland removal there will be a 10m setback in place for the remaining of the southern wetland. The southern wetland drains towards the road ditch. These wetlands lack the size and diversity to ever be considered significant (no formal evaluation has been undertaken). As they are not to be considered PSW, they are not protected under the PPS or Official Plan.

Potential impacts to the wetland due to this type of development includes: changes in hydrology, sedimentation, and changes in the quality of water entering the system. None of these potential impacts are anticipated if mitigation measures provided below are properly followed.

Additionally, the stormwater management plan will provide/design a berm. Stormwater will collect and be stored in front of the berm. The berm will be designed in such a way as that stormwater can then infiltrate through the berm and then sheet drain into the the wetland.

To provide further protection to the wetland after completion of construction, native grasses, shrubs and trees will be planted within the setback area. As much of this area consists of manicured lawn these plantings should be viewed as an enhancement to the area. Planting densities should achieve full coverage with shrubs planted at 1 metre on centre. Examples of acceptable species include but are not limited to: red-osier dogwood (Cornus stolonifera), Willows (Salix discolor and Salix bebbiana), nannyberry (Viburnum lentago), common elder (Sambucus canadensis), staghorn sumac (Rhus typhina), red maple (Acer rubrum), green ash (Fraxinus pennsylvanica) and black ash (Fraxinus nigra). Contact the Conservation Authority to inquire about their seedling program.

During construction sediment erosion control measure prescribed in section 8, must be in place.

As these features represent surface water features, additional authorization from the conservation authority may be required.

No impact to the watercourse is anticipated. Removal of 0.001394ha portion of the southern wetland will not negatively affect the overall health and function of the wetland. Mitigation measures provided below will limit the potential for indirect impacts on the wetland. For a description of the wetland/watercourse present within the adjacent lands see section 3.1

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5.3. Significant Wildlife Habitat

The potential for significant wildlife habitat was assessed using the guidance in OMNR (2010) and MNRF (2015). Potential components which may lead to a designation of significant wildlife habitat include seasonal concentration areas of animals, rare vegetation communities or specialized habitat for wildlife, habitat for species of conservation concern, and animal movement corridors. No rare vegetative communities, raptor overwintering sites, or caves were located within the subject or adjacent lands.

No significant wildlife habitat will be negatively impacted. Prescribed mitigation measures in section 8.0 will limit the potential for indirect impacts.

6.0. Development Constraints and Cumulative Impacts

Constraints that have been identified are discussed below:

Tributary to McLaughlin Creek/Wetlands: See section 5.2

The Canadian Environmental Assessment Agency (CEAA) defines cumulative effects as…"the effects on the environment caused by an action in combination with other past, present, and future human actions…" They occur when two or more project-related environmental effects, or two or more independent projects, combine to produce an augmented effect. These cumulative effects may be positive or negative.

There are no significant natural heritage features within the proposed developable area. Given that the proposed location consists of mowed/manicured lawn this project in no way contributes to any cumulative effect. This EIS directed development away from all natural heritage features (woodland, wetlands and watercourse) and through the mitigation measures protected these lands from future development.

With proper implementation of the mitigation measures described in this report it is anticipated that the construction of the proposed landscaping business will not increase the potential for cumulative effects in the general landscape.

7.0. Tree Protection

Tree removal will occur as needed within the developable area, a reasonable effort will be made to retain a majority of the trees. Potential impacts during construction of the proposed facility and associated removal of trees and other vegetation includes impacts on wildlife, increased erosion and release of sediments and other potential contaminants from truck traffic and construction activity, harm to wildlife remaining in the work area during construction, and impacts associated with an increase in noise, dust and light. The proposed works are within a manicured lawn and only the occasional tree will need to be removed.

Removal of tree cover within the developable area is not anticipated to result in significant negative impacts to the environmental features and functions of the general area. Any tree in the vicinity of works but not slated for removal will have its critical roots zone protected by temporary fencing (snow

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fencing) to ensure it is not affected. Prescribed mitigation measures in section 8.0 will limit the potential for indirect impacts.

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FIGURE 3: ENVIRONMENTAL CONSTRAINTS

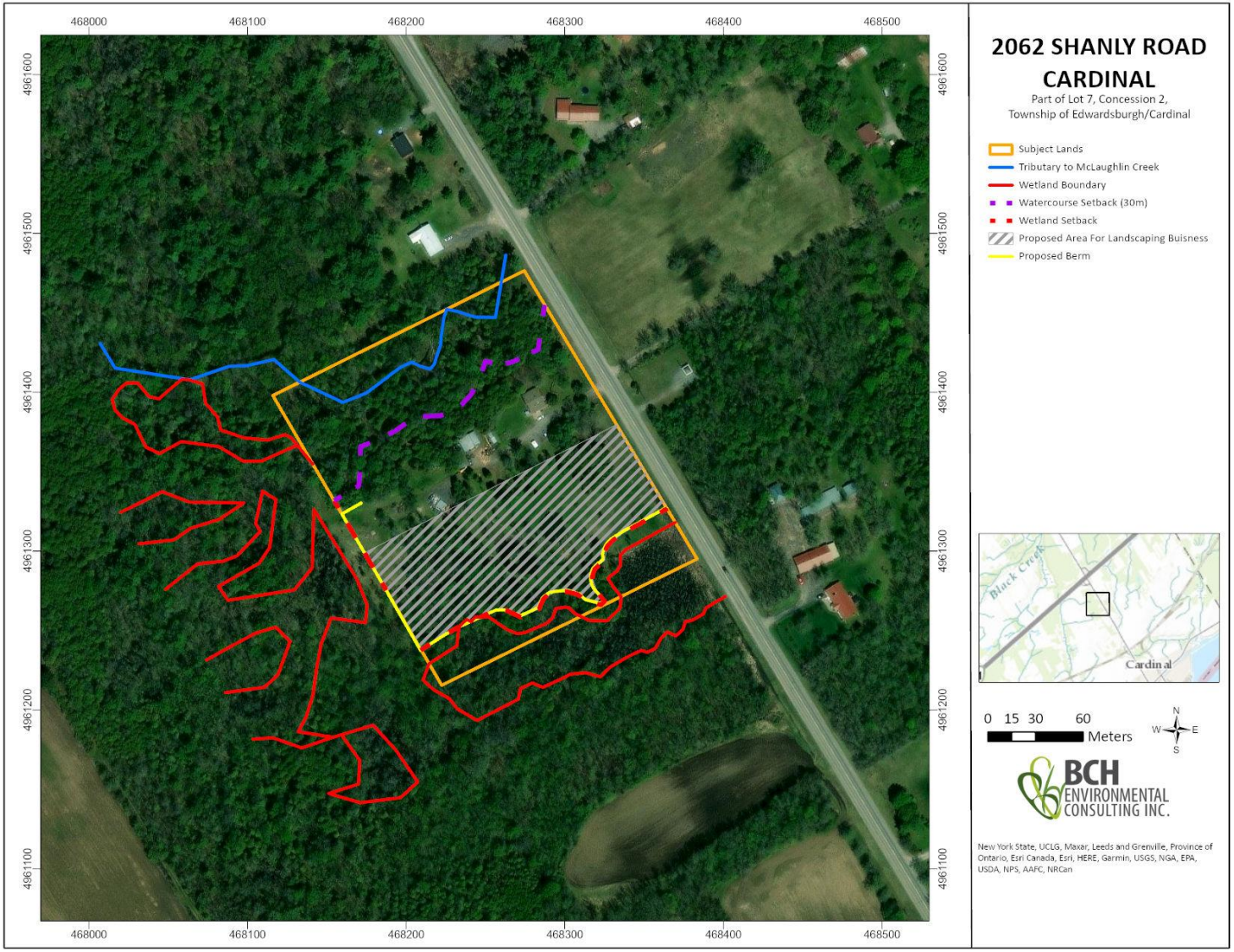

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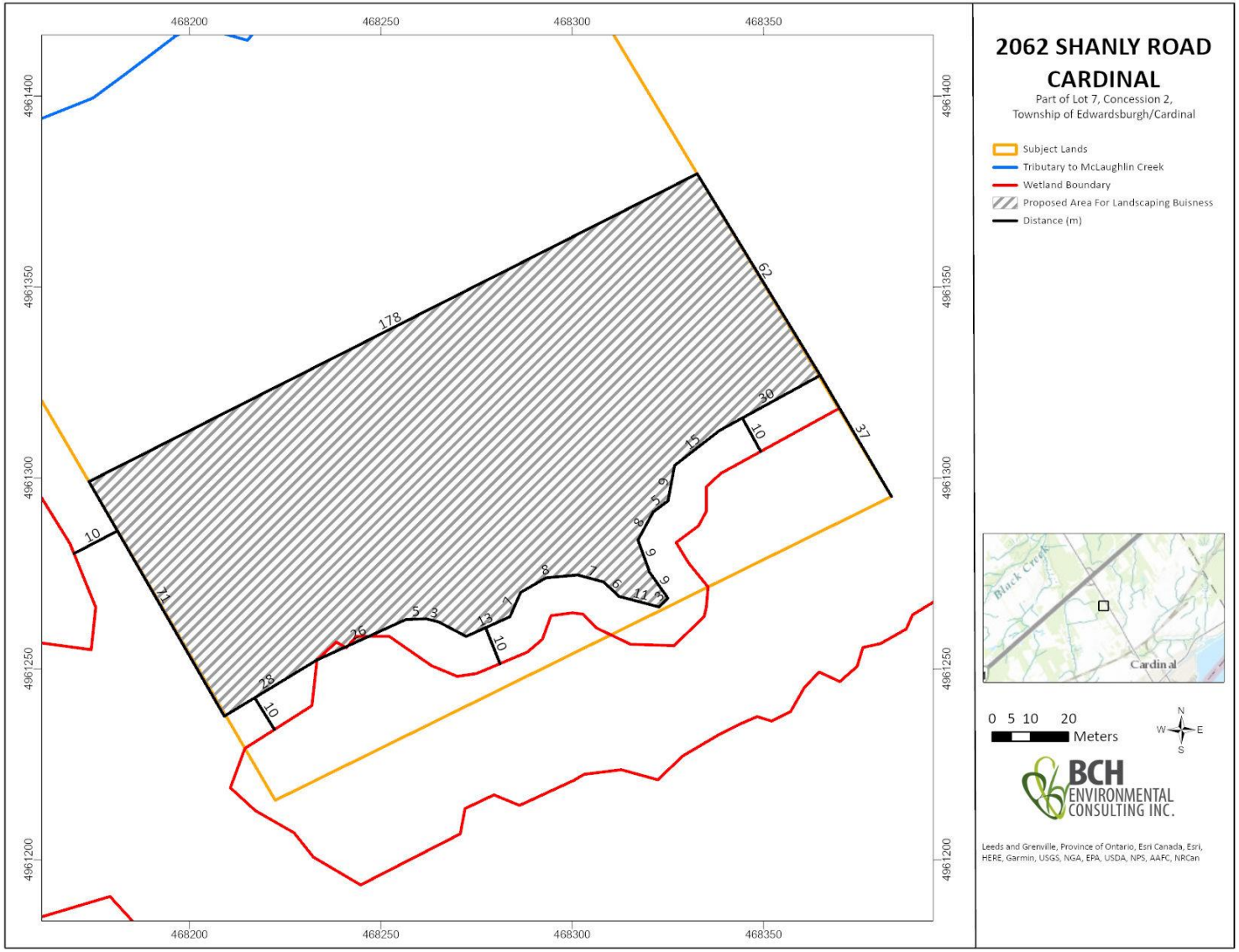
FIGURE 4: DISTANCES



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8.0. Recommendations and Conclusion

This study's recommendations are intended to mitigate potential negative impacts due to the proposed creation of a landscaping facility and should be implemented through a development agreement between the owners and the municipality in order to control development of the site. Properly implemented controls within this agreement are deemed sufficient to mitigate the potential impacts of the proposed development on the natural heritage features present.

8.1. Mitigation for the Species at Risk and Migratory Birds Convention Act

1- To protect breeding birds, no tree or shrub removal should occur between April 1th and August 30th, unless a breeding bird survey is completed by a qualified biologist within two days of the woody vegetation removal and identifies no nesting activity.
2- With regard to turtles, clearing of vegetation should be undertaken between October 15th and April 15th, which is outside of the more active season for turtles.
3- To prevent impacts to bats, no clearing of trees greater than 10cm on-site should take place between April 1 and September 30 (inclusive) without a qualified biologist first confirming the absence of bats (i.e., open work timing window from October 1 to March 3). If tree clearing is conducted between October and April, no interactions with bats are anticipated, and therefore, significant negative impacts to SAR bats would be avoided.
4- Construction staff is to be made aware of the characteristics of species at risk and in the event that any Species at Risk (SAR) are encountered during site clearing, work in the area will be stopped immediately. Measures will be undertaken to ensure the animal is not harmed and the project biologist and the Ministry of the Environment, Conservation and Parks contacted to discuss how to proceed.

8.2. Wetland Protection Recommendations and Mitigation Measures

1- The hydrology and quality of the wetlands should not be impacted and should be maintained.
2- All lands within 30m of any watercourse are to be maintained in a natural vegetated state.
3- Except at the location of proposed wetland removal there will be a 10m setback in place for the remaining wetland.
4- It is the landowner's responsibility to make sure all material stocked onsite is kept contained and no material is permitted to enter the wetlands.
5- A stormwater management plan will provide/design a berm. Stormwater will collect and be stored in front of the berm. The berm will be designed in such a way as that stormwater can then infiltrate through the berm and then sheet drain across the setback area towards the wetland. Location of the berm is provided in Figure 3.
6- To provide further protection to the wetland after completion of construction, native grasses, shrubs and trees will be planted within the setback area. As much of this area consists of manicured lawn these plantings should be viewed as an enhancement to the area. Planting

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densities should achieve full coverage with shrubs planted at 1 metre on centre. Examples of acceptable species include but are not limited to: red-osier dogwood (Cornus stolonifera), Willows (Salix discolor and Salix bebbiana), nannyberry (Viburnum lentago), common elder (Sambucus canadensis), staghorn sumac (Rhus typhina), red maple (Acer rubrum), green ash (Fraxinus pennsylvanica) and black ash (Fraxinus nigra). Contact the Conservation Authority to inquire about their seedling program.

7- Install and maintain the erosion control measures during construction. No work will occur until the appropriate sediment and erosion control measures have been designed and implemented prior to any work. At a minimum these will include:
    a. Provide regular maintenance to the sediment and erosion control measures during construction. Contractor shall be responsible for ensuring that the sediment and erosion control measures are maintained. No turbid water is permitted to leave the work area.
    b. Additional materials (i.e. rip rap, filter cloth and silt fencing) will be readily available in case they are needed promptly for erosion and/or sediment control.
    c. Any stock piles of soil or fill material will be stored as far as possible from the wetland/creek and protected by silt fencing.
    d. Sediment fencing will be installed at the edge of the work area, and kept in good working condition. The sediment fencing will not be removed until the area has stabilized.

8.3. Mitigation for Tree Protection

1- Any tree in the vicinity of works but not slated for removal will have its critical roots zone protected by sturdy temporary fencing at least 1.3 metres in height installed from the tree trunk to a distance of ten times the retained tree's diameter where possible.
2- No grading, heavy machinery traffic, stockpiling of material, machinery maintenance and refueling, or other activities that may cause soil compaction are to occur within three metres of the critical root zone of the trees to be protected.
3- The root system, trunk, and branches of the trees to be protected are to be protected and not damaged. If any roots of trees to be retained are exposed during site alterations, the roots shall be immediately reburied with soil or covered with filter cloth, burlap or woodchips and kept moist until the roots can be buried permanently. A covering of plastic should be used to retain moisture during an extended period when watering may not be possible. Any roots that must be cut are to be cut cleanly to facilitate healing and as far from the tree as possible. Overhanging branches from protected trees that may be damaged during construction are to be pruned by a qualified arborist prior to construction.
4- Exhaust fumes from all equipment during construction will not be directed towards the canopy of the adjacent protected trees.

8.4. Additional Mitigation Measures

1- The extent of any vegetation removal is to be minimized were possible and limited to the proposed development area.
2- All rules governing septic systems and wells must be followed and be kept in good operational order.
3- There will be no use of herbicides in clearing of vegetation.

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4- Municipal by-laws and provincial regulations for noise will be followed.
5- To discourage wildlife from entering the work areas during construction, the site should be kept clear of food wastes and other garbage. Proper drainage should be provided to avoid accumulation of standing water, which could attract amphibians, birds, and other wildlife to the work areas.

To conclude this EIS, it is the professional opinion of the authors that with proper implementation and maintenance of the mitigation measures (see above), the proposed development will not negatively impact any natural heritage features, or any habitat of species at risk.

Thank you for the opportunity to work with you. If you have any questions or comments please do not hesitate to contact our office.

Shaun St.Pierre, B.Sc. Biology

Cody Fontaine, Wildlife Technologist

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APPENDIX A: OBSERVED SPECIES LIST

COMMON NAME	SCIENTIFIC NAME	SRANK	SARA STATUS	SARO STATUS	COEFF. CONSERVATISM
Field Horsetail	*Equisetum arvense*	S5			0
Ostrich Fern	*Matteuccia struthiopteris var. pensylvanica*	S5			5
Sensitive Fern	*Onoclea sensibilis*	S5			4
White Spruce	*Picea glauca*	S5			6
Eastern White Pine	*Pinus strobus*	S5			4
Eastern White Cedar	*Thuja occidentalis*	S5			4
Narrowleaf Cattail	*Typha angustifolia*	SNA			
Common Reed	*Phragmites australis*	S4?			0
Wild Lily-of-the-valley	*Maianthemum canadense*	S5			5
Large False Solomon's Seal	*Maianthemum racemosum*	S5			4
Red Trillium	*Trillium erectum*	S5			6
White Trillium	*Trillium grandiflorum*	S5			5
Trembling Aspen	*Populus tremuloides*	S5			2
Bebb's Willow	*Salix bebbiana*	S5			4
Bitternut Hickory	*Carya cordiformis*	S5			6
White Birch	*Betula papyrifera*	S5			2
Bur Oak	*Quercus macrocarpa*	S5			5
Northern Red Oak	*Quercus rubra*	S5			6
American Elm	*Ulmus americana*	S5			3
Canada Anemone	*Anemonastrum canadense*	S5			3
Field Mustard	*Brassica rapa*	SNA			
Wild Red Raspberry	*Rubus idaeus ssp. strigosus*	S5			2
Black Medic	*Medicago lupulina*	SNA			
Common Prickly-ash	*Zanthoxylum americanum*	S5			3
Staghorn Sumac	*Rhus hirta*	S5			1
Manitoba Maple	*Acer negundo*	S5			0
Red Maple	*Acer rubrum*	S5			4
Sugar Maple	*Acer saccharum*	S5			4
Common Buckthorn	*Rhamnus cathartica*	SNA			
Riverbank Grape	*Vitis riparia*	S5			0
Wild Carrot	*Daucus carota*	SNA			
Alternate-leaved Dogwood	*Cornus alternifolia*	S5			6
White Ash	*Fraxinus americana*	S4			4
Black Ash	*Fraxinus nigra*	S4			7
Green Ash	*Fraxinus pennsylvanica*	S4			3
Common Plantain	*Plantago major*	SNA			

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COMMON NAME	SCIENTIFIC NAME	SRANK	SARA STATUS	SARO STATUS	COEFF. CONSERVATISM
Smooth Bedstraw	*Galium mollugo*	SNA			
Tartarian Honeysuckle	*Lonicera tatarica*	SNA			
Maple-leaved Viburnum	*Viburnum acerifolium*	S5			6
Common Yarrow	*Achillea millefolium*	SNA			
Common Ragweed	*Ambrosia artemisiifolia*	S5			0
Common Burdock	*Arctium minus*	SNA			
Common Sow-thistle	*Sonchus oleraceus*	SNA			
Common Dandelion	*Taraxacum officinale*	SNA			
Black Cherry	*Prunus serotina var. serotina*	S5			3
Common Mullein	*Verbascum thapsus ssp. thapsus*	SNA			
Reed Canary Grass	*Phalaris arundinacea var. arundinacea*	S5			0
Eastern Poison Ivy	*Toxicodendron radicans var. radicans*	S5			2
Currant sp.					
Goldenrod sp.					
Willow sp.					
Mosses					
Eastern Phoebe	*Sayornis phoebe*	S5B			
Blue Jay	*Cyanocitta cristata*	S5			
American Crow	*Corvus brachyrhynchos*	S5B			
Black-capped Chickadee	*Poecile atricapilla*	S5			
Ovenbird	*Seiurus aurocapillus*	S4B			
Common Grackle	*Quiscalus quiscula*	S5B			

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APPENDIX B: QUALIFICATIONS

SHAUN M. ST.PIERRE, B.Sc. Biology

EDUCATION

B.Sc. Biology, Trent University 2007
Fisheries and Wildlife Technology, Frost Campus, Sir Sandford Fleming College, 2005
Fisheries and Wildlife Technician, Frost Campus, Sir Sandford Fleming College, 2004

LANGUAGES

Fluent in French and English

POSITIONS HELD

2018 -	:	BCH Environmental Consulting Inc., Biologist / Owner
2006-2017:		Bowfin Environmental Consulting Inc., Biologist / GIS Specialist / Environmental Site Inspector
2005:		St. Lawrence River Institute of Environmental Sciences, Field Research Assistant
2004:		MNR Kawartha Lakes, Field Research Assistant
2003:		DFO- Experimental Lake Area, Field Research Assistant
2001:		Resource Stewardship S, D &G, Stewardship Ranger

CERTIFICATIONS / PROFESSIONAL AFFILIATIONS

MTO/DFO/OMNR Fisheries Protocol, Ecological Land Classification, Certified in Inventory and Identification Methods for Ontario's Reptiles and Amphibians, North American Benthological Society (NABS) Certified Family Level Taxonomist, Ontario Benthos Biomonitoring Network (OBBN), Ontario Stream Assessment Protocol (OSAP), Certified Ontario Wetland Evaluator (OWES), Butternut Health Assessor (BHA), first aid, CPR, Pleasure Craft Operator Card, Marine Radio Operator, WHMIS, WHSA, Hazard Identification, Assessment and Control, All Terrain Vehicle Riders Course (issued by the Manitoba Safety Council), Water Safety Training (Bronze Cross), Possession / Acquisition Firearms Licence, Ontario Hunter Education Course Certificate, Ontario Trapper Education Course Certificate, Wildlife Chemical Immobilization, Vaccination, and Euthanasia- Certificate of Knowledge, South Lancaster Fish and Game Club (SLFGC; president 2012 and 2013; executive member 2014-2018), Ontario class G driver's license, and Snowmobile License.

EXPERIENCE

Experience in environmental impact assessments, environmental monitoring, environmental assessments, terrestrial habitat assessment, species at risk surveys, amphibian surveys, avian surveys, freshwater habitat assessment, collection and identification of plants, collection and identification of aquatic invertebrate, collection and identification of fish, fish salvage, fish behavioral studies, winter bat hibernaculum inventories and fisheries inventories including habitat mapping, electroshocking, FWIN and RIN. Other experience include GIS mapping.

Environmental and Fisheries Inspections

- Provided environmental and fisheries inspections for the construction of the Cataraqui Crossing HWY 401-MTO (Kingston, ON).
- Provided environmental and fisheries inspections for the construction of the Three Nations Bridge including surveys for nesting species at risk (Cornwall, ON).
- Provided environmental and fisheries inspections for construction (Ottawa, ON).
- Conducted nest surveys (Kemptville, ON.; Stittsville, ON.; Cornwall, ON.)
- Conducted environmental inspections for the construction of the Clarkson WWTP outfall, Lake Ontario.
- Conducted environmental inspections for the construction of a new bridge crossing Bearbrook Creek along the 417.

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- Provided environmental and fisheries inspections for the blasting and drilling operation for the Burloak Water Purification Tunnel project (Burlington, ON).
- Provided environmental and fisheries inspections for the construction of the Poole Creek Re-alignment/Huntmar Drive Crossing.

Species at Risk Inventories / Monitoring

- Butternut survey and assessment for proposed developments (Brockville, Carleton Place, Carp, Clarence-Rockland, Cornwall, Munster, Hawkesbury, Kemptville, Ottawa, South Lancaster, Smith Falls, Stittsville, Prospect, Vars, Moose Creek, Prescott, Westminster, Renfrew, Battersea, Jones Falls, and Millbrook).
- American Eel surveys using the boat electrofisher on the Mississippi River (Almonte, ON), South Nation River (Casselman, ON) and Ottawa River (Renfrew, ON; Ottawa, ON: Shawville, QC)
- American Eel collection on the St. Lawrence River for the St. Lawrence River Institute (Cornwall, ON)
- American Ginseng survey for proposed development (Kanata, South Lancaster and Renfrew).
- Whip-poor-will survey for proposed development (Navan, ON; Kemptville, ON; Stittsville, ON; Prescott, ON; Alexandria, ON) and quarries (Avonmore, Moosecreek, Prospect, Stittsville, Kanata, Ottawa)
- Assisted in a Least Bittern survey (Avonmore, ON)
- Conducted turtle surveys: Blanding's turtle, Eastern musk turtle (Carleton Place, ON; Ottawa, ON; Stittsville, ON; Kanata, ON, Prospect, ON)
- Conducted rapid clubtail surveys (Almonte, ON)
- Bat maternal nesting site surveys (Prescott, ON; Battersea, ON; Prescott, ON; Hawkesbury, ON; Russell, ON)

Aquatic Inventories

- Boat electrofishing along the shoreline of the Ottawa River (Chat Falls, ON) along the shoreline of the Cataraqui River (Kingston, ON), downstream of the Carillion Dam (Pointe-Fortune, QC), Lake St. Francis (South Lancaster, ON), South Nation River (Casselman, ON), Raisin River (Lancaster, ON), and the St. Lawrence River (Cornwall, ON)
- Collecting and data entry for benthic macroinvetebrate community surveys on several watercourses within Ontario including: Bonnechere River (Renfrew, ON), Montreal River (Latchford, ON), Jock River (Ottawa, ON), tributaries of the Bonnechere River (Renfrew, ON), tributaries to Feedmill Creek (Ottawa, ON), tributary to Chippewa Creek (North Bay, On) and tributary to the Beaudette River (Alexandria, ON).
- Collecting and data entry for several fish community surveys including: Black Creek (Westminster, ON), Bonnechere River (Renfrew and Douglas, ON), Butler's Creek (Brockville, ON), East Branch of Little Cataraqui Creek (Kingston, ON), Kehoe Ditch (Greely, ON), Lac Opemisca (Ouje-Bougoumou, QC), Marshall Seguin Municipal Drain (Vars, ON), Montreal River (Latchford, ON), tributaries of Lavalle Creek (Carleton Place), tributaries to Feedmill Creek (Ottawa, ON), tributaries to Lafontaine Creek (Clarence-Rockland), tributaries to Shirley's Brook (Kanata, ON), tributaries to the Beaudette River (Alexandria, ON), tributaries to the Bonnechere River (Renfrew, ON), tributaries to the Ottawa River (Carp, ON; Ottawa, ON; Wendover, ON; Clarence-Rockland, ON), tributaries to the South Nation River (Casselman, ON), tributaries to the South Nation River (Jessup Falls, ON), tributary to Hawkesbury Creek (Hawkesbury, ON), Hawkesbury Creek (Hawkesbury , ON), tributary to the St.Lawrence River (Prescott, ON) and tributary to the North Castor River (Greely, ON).
- Mapped fish habitat in many watercourses including: Black Creek (Westminster, ON), Bonnechere River (Renfrew and Douglas, ON), Butler's Creek (Brockville, ON), Kehoe Ditch (Greely, ON), Lac Opemisca/Lac Barlow Bypass channel (Ouje-Bougoumou, QC), Marshall Seguin Municipal Drain (Vars, ON), McKinnons Creek (Navan, ON), Montreal River (Latchford, ON), tributaries of Lavalle Creek (Carleton Place), tributaries of the Bonnechere River (Renfrew, ON), tributaries to Lafontaine Creek (Clarence-Rockland), tributaries to McKinnons Creek (Navan, ON), tributaries to Shirley's Brook (Kanata, ON), tributaries to the North Castor River (Greely, ON), tributaries to the Ottawa River (Ottawa, ON; Wendover, ON), tributaries to the South Nation River (Casselman, ON), tributaries to the South Nation River (Jessup Falls, ON), tributary to the St.Lawrence River (Prescott, ON) and tributary to Hawkesbury Creek (Hawkesbury, ON).
- Assisted in YOY sampling on the Raisin River (Lancaster, ON).
- Conducted riverine index netting on the Bonnechere River (Renfrew, ON).

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- Assisted in gill netting on Bonnechere River (Renfrew, ON), Lac Barlow (Ouje-Bougoumou, QC), Lac Opemisca (Ouje-Bougoumou, QC), Montreal River (Latchford, ON), and Raisin River (Lancaster, ON).
- Assisted in conducting larvae surveys on Bonnechere River, Hoople Creek, Montreal River and Raisin River,
- Collected walleye eggs from the spawning grounds on the Bonnechere River, Montreal River, Raisin River and Hoople Creek.
- Assisted in the monitoring of a new wetland channel created in the Little Cataraqui River.
- Marsh monitoring program breeding amphibian survey at Stittsville, ON; Cornwall, ON; Kanata, ON; Hoople Creek and the Bonnechere River.
- Assisted in conducting fall walleye index netting for the MNR in Kawartha Lakes
- Conducted turtle surveys (Carleton Place, ON; Ottawa, ON)
- Conducted headwater waters assessment (Kanata, ON; Navan, ON, Ottawa, ON)

Terrestrial Inventories

- Multiple Environmental Impact Assessments across Ontario
- Tree Inventory for construction of the light rail (LRT; Ottawa, ON)
- Winter white-tailed deer survey (Edwardsburgh, ON)
- Plant community inventories for proposed developments, quarries, sand pits and road extensions (Brockville, Carleton Place, Carp, Casselman, Elgin, Griffith, Hamilton, Jessup Falls, Navan, Ottawa, Stittsville, Rockland, Simcoe, Cornwall, Kemptville, Hawkesbury, Smith Falls, Wendover, Moosecreek, Westminster, Prescott, Renfrew, Jones Falls, Michipicoten Island and in Ouje-Bougoumou in QC)

Aquatic Habitat Mapping for Municipal, City Roads and Provincial Highways

- Conducted MTO habitat assessments at Galetta Side Road, Torbolton Road, Kinburn Side Road (Ottawa, ON)
- Conducted MTO habitat assessments at Prince of Wales, Fernbank Road, Fallowfield Road, HWY 115, Arbuckle drain, the Carp river, tributaries to the Carp river and tributaries to Mud creek (Ottawa, ON)
- Conducted MTO habitat assessments at Innes Road, Ottawa, ON.
- Conducted MTO habitat assessments at MacLaren Side Road, Ottawa, ON.

Other

- Fish salvage: Mississippi River (Almonte, ON), Monaghan Drain (Ottawa, ON), tributary to the Rideau Canal (Kemptville, ON), and tributary to Feedmill Creek (Ottawa ON), Bonnechere River (Renfrew, ON)
- Assisted in conducting a winter bat hibernaculum inventory (Plantagenet, ON)
- Field research assistant for the Metalicuus study and EDC study (Experimental Lakes Area, ON)
- Captured, pit tagged, telemetry tagged and tracked Northern Pike (Experimental Lakes Area, ON)
- Construction and maintenance of nature trail (the Cornwall Outdoor Recreational Area, ON)
- Conducted frog deformities surveys (Glengarry, ON)
- Organized youth fishing derbies through SLFGC (2011-2013; South Lancaster)
- Organized the St.Francis Walleye Tournament through SLFGC (2012-2013; South Lancaster)

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CODY J.C FONTAINE, Fisheries and Wildlife Technologist

EDUCATION
Fisheries and Wildlife Technology, Frost Campus, Sir Sandford Fleming College, 2012
Fisheries and Wildlife Technician, Frost Campus, Sir Sandford Fleming College, 2011

LANGUAGES
Fluent in English

POSITIONS HELD
2022: BCH Environmental Consulting Inc., Fisheries and Wildlife Technologist
2014: Bowfin Environmental Consulting Inc., Fisheries and Wildlife Technologist
2009: Raisin Region Conservation Authority, Field Research Assistant

CERTIFICATIONS / PROFESSIONAL AFFILIATIONS
MTO/DFO/OMNR Fisheries Protocol, Environmental Monitoring For Construction Projects Practitioner (EMCPP), Ontario Stream Assessment Protocol (OSAP), Class 2 Electroshocking, first aid, CPR, Pleasure Craft Operator Card, WHMIS, WHSA, Hazard Identification, Assessment and Control, Ice Safety Training, Possession / Acquisition Firearms License, Fish Identification Certificate, Radio Telemetry Certificate, Fish Hatchery Operations Certificate, Ontario Hunter Education Course Certificate, Ontario trapper Education Course Certificate, Ontario class G driver's license.

EXPERIENCE
Experience in environmental monitoring, environmental assessments, terrestrial habitat assessment, species at risk surveys, amphibian surveys, freshwater habitat assessment, collection and identification of plants, collection and identification of fish, fish salvage, bat hibernaculum inventories and fisheries inventories including netting and electroshocking. Other experiences include GIS mapping.

Aquatic Inventories
- Assisted with boat electrofishing along the shoreline of the Ottawa River (Chat Falls and Ottawa, ON), Lake St. Francis (South Lancaster, ON), Bonnechere (Renfrew, ON), Raisin River (Lancaster, ON), Buckhorn Lake (Peterborough, ON) and the St. Lawrence River (Cornwall, ON)
- Assisted in collecting and data entry for several fish community surveys including: Bonnechere River (Renfrew, ON), tributaries to Feedmill Creek (Ottawa, ON), tributaries to Shirley's Brook (Kanata, ON), tributaries to the Ottawa River (Ottawa, ON), tributaries to the Rideau River (Manotick, ON), tributaries to the Castor River (Vars, ON), tributaries to the Otonabee River (Lakefield, ON), tributary to the Madawaska River (Arnprior, ON), tributaries to Kemptville Creek (Kemptville, ON), tributary to Blairs Creek (Clarence Creek, ON), tributaries to South Indian Creek River (Russell, ON) tributaries to the South Nation River (Casselman, ON), tributaries to Fraser Clarke Drain (Nepean, ON), tributaries to the Raisin River (Long Sault, ON), Oliver-Magee drain (South Glengarry, ON) and tributary to Hawkesbury Creek (Hawkesbury, ON).
- Assisted in collecting walleye eggs from the spawning grounds on the Raisin River.
- Marsh monitoring program breeding amphibian surveys (Stittsville, Lakefield, Cornwall, Long Sault, South Glengarry, Bourget, Manotick and Kanata, ON).
- Conducted turtle surveys (Carleton Place, Ottawa, Cornwall and Lancaster, ON)
- Conducted Headwater Assessments (Ottawa, Stittsville and Manotick, ON)
- Invasive Species Survey (Ottawa, ON)

Species at Risk Inventories / Monitoring

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- Assisted in butternut surveys, inventories and assessments for proposed developments (Carleton Place, Casselman, Cornwall, South Glengarry, Long Sault, Kemptville, Smiths Falls, Ottawa, Stittsville, Peterborough, Lakefield, Brockville, Alfred, Orleans, Kanata and Prescott, ON).
- American Eel surveys using the boat electrofisher on the Ottawa River (Ottawa, ON)
- American Eel collection on the St. Lawrence River for the St. Lawrence River Institute (Cornwall, ON)
- Conducted tailrace surveys for hydro facilities regarding American eel and lake sturgeon fatalities (Almonte, Renfrew, Ottawa and Fitzroy Harbour, ON)
- Whip-poor-will survey for proposed development (Ottawa, Kemptville, Bourget, Stittsville, Alfred, South Glengarry and Alexandria, ON) and quarries (Ottawa and Cornwall, ON)
- Surveyor for Little Brown bat, Eastern Small Footed Bat and Northern Long Eared Bat surveys at Ernestown Windpark (Ernestown, ON)
- Gray Ratsnake Survey (Smiths Falls and Lakefield, ON)
- Bat Cavity Survey (Lakefield, Smiths Falls, Bourget, Clarence Creek, Casselman, Orleans, Kanata, South Glengarry and Embrun, ON)
- Conducted Least Bittern surveys (Prospect, Alexandria, and Lancaster, ON)
- Conducted Black Tern nest surveys (Alexandria, and Cornwall, ON)
- Conducted turtle surveys: Blanding's turtle, Musk turtle and Northern Map turtle, Painted turtle and Snapping turtle (Carleton Place, Ottawa, Stittsville, Kanata, Rockland, Cornwall, Lakefield, Alfred, Clarence Creek and Lancaster, ON)
- Conducted American Ginseng Survey (Alfred, ON)
- Conducted rapid clubtail surveys (Almonte, ON)
- Conducted Osprey nest surveys (Cornwall, ON)

Terrestrial Inventories

- Assisted plant community inventories for proposed developments (Ottawa, Cornwall and Prescott, ON)
- Assisted in ELC inventories (Ottawa, Lakefield, Alfred, Kanata, Long Sault, South Glengarry and Peterborough ON)
- Nesting Bird Survey (Stittsville and Brockville ON)
- Large Tree Survey (Carp, Kanata and Orleans, ON)
- Deer and Moose Overwintering Survey (Alfred, ON)

Environmental and Fisheries Inspections

- Assisted in providing environmental and fisheries inspections for construction (Ottawa, ON)
- Assisted in turtle salvage during construction at the Cavanagh Snow Dump (Kanata, ON)

Fish Salvage

- Highway 401 Fish Salvage – Brockville, ON and Prescott, ON (Cruikshank, MTO Contract)
- Other fish salvages: Cardinal Creek (Ottawa, ON), Monaghan Drain (Ottawa, ON), tributary to the Rideau Canal (Kemptville, ON), tributary to Feedmill Creek (Ottawa ON), Bonnechere River (Renfrew, ON), Mississippi River (Almonte, ON), Ottawa River (Ottawa, ON), Tributary to Fraser Clarke Drain (Nepean, ON), tributary to St.Lawrence River (Newington, ON), Davidson Pond (Ottawa, ON),. Hazeldean tributary (Ottawa, ON), tributary to Jock River (Richmond, ON), culvert on Thunder Road (Gloucester, ON), culvert on Dunning Road (Cumberland, ON)

Other

- Organized fishing derby through RRCA (2008-2012; Cornwall, ON)
- Conducted environmental education presentations to many school groups (Cornwall, and Lancaster, ON)
- Tree Planting (2008-2012; Cornwall, ON)

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APPENDIX C: PRELIMINARY PLANS