Scoped Environmental Impact Study (sEIS)
Proposed Single Residential Development
1355 County Road 4 (Iron Woods Drive)
Township of Douro-Dummer,
County of Peterborough

FOR DIGITAL DISTRIBUTION ONLY

Prepared For:

Mr. Jason Riel
213 Lonsberry Lane
Douro-Dummer, Ontario
K0L 3A0

Project #: 19-2619

December 2019

ORE
Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

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December 17, 2019

213 Lonsberry Lane
Douro-Dummer, Ontario
K0L 3A0

Attention: **Mr. Jason Riel, Owner**

Re: *Scoped* Environmental Impact Study (*s*EIS)
Proposed Single Residential Development
1355 County Road 4 (Iron Woods Drive)
Part of Lots 10 & 11, Concession 1 (Dummer)
Township of Douro-Dummer, County of Peterborough
ORE File No. 19-2619

Dear Mr. Riel:

Oakridge Environmental Ltd. (ORE) is pleased to provide this *scoped* Environmental Impact Study (*s*EIS) for the above-referenced property located in Warsaw, Ontario. This study has been completed in support of a proposed single residential development.

The main Natural Heritage Feature(s) that could potentially be impacted by the proposed single residential development are the hydrologically sensitive features that occur on the property. The Indian River and associated Provincially Significant Wetland on the subject site represent Natural Heritage Features and watercourses under Otonabee Region Conservation Authority's Regulation.

It is our opinion that these features can be protected by implementing the setbacks imposed by the policies and also retaining the features in a natural state. Recommendations with respect to mitigation measures intended to limit the proposed development from imposing on these local environmental features have been included in this report. It is expected that the development can proceed, provided the recommendations in this report are implemented at the site.

We trust that this report will be sufficient for any agency reviews. Should you have any questions or require clarification, please do not hesitate to contact our office.

Yours truly,
Oakridge Environmental Ltd.

Original Signed By

Rob West, HBSc., CSEB
Senior Environmental Scientist

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1.0 Introduction

1.1 General

Oakridge Environmental Ltd. (ORE) is pleased to provide this *scoped* Environmental Impact Study (*s*EIS) completed in support of a proposed single residential development.

The subject site is located in the village of Warsaw, and the lands are zoned OSR-2 - Restricted Open Space-Two Holding, EC - Environmental Conservation and EC(P) - Environmental Conservation, Provincial Significant Wetland. The parcel fronts onto and contains portions of the Indian River, as well as a flood plain.

Given the presence of these sensitive environmental features, an *s*EIS has been completed to demonstrate that there will be no negative impacts to these features as a result of the proposed development. The scope of work was focussed on the proposed development area and nearby constraints, although a general review of the entire site was completed.

This *s*EIS also includes an assessment of Species at Risk (SAR) on and in the vicinity of the site, in accordance with the provincial Endangered Species Act (ESA) and the County of Peterborough Official Plan (OP).

1.2 Site Description, Location and Access

The subject site consists of approximately 70.6 acres (28.6 ha), situated on Part of Lots 10 & 11, Concession 1 (Dummer Ward), in the community of Warsaw, Township of Douro-Dummer, County of Peterborough (Figure 1). The eastern part of the parcel fronts onto (and contains portions of) the Indian River, including a large island.

The municipal address for the property is as follows:

1355 County Road 4 (804 Iron Woods Drive)
Warsaw, Ontario
K0L 3A0

The site is accessed directly from Iron Woods Drive through a gated gravel driveway.

1.3 Proposed Development / Site Alteration

Previous development included a 9-hole golf course which is no longer in operation,

although the site's trail system and fairways continue to be maintained (ie. cut). The current owners are proposing an Official Plan Amendment and Zoning By-Law Amendment to permit the construction of a new single residential dwelling and detached garage within the northwest portion of the site. Currently, no structures are located on the site.

The focus of this study is to determine whether the proposed development can accommodate the identified constraints. To accomplish this, the distance from the proposed development to any Natural Heritage Features (NHF) will be maximized.

2.0 Policy Framework

2.1 Provincial Policy Statement

The 2014 Provincial Policy Statement (PPS) was issued under Section 3 of the Planning Act and all decisions affecting land use planning matters at the County and Municipal levels "shall be consistent with" the Provincial Policy Statement. This document stresses the need for appropriate development while protecting resources of provincial interest, public health and safety, and the quality of natural heritage features. Section 3 of the Planning Act requires that planning authorities shall "have regard for" the PPS when exercising any authority that affects municipal planning matters.

ORE is knowledgeable of and has reviewed Section 2.1 (Natural Heritage) of the PPS (Appendix A) with specific regard to the applicability of the Policy to the subject site.

2.2 Otonabee Region Conservation Authority (ORCA)

The subject site contains portions of the Indian River, unevaluated wetland, and Indian River Warsaw South PSW in the southwest corner. In addition, certain areas of the property occur within the floodplain of the river. As a result, the property occurs within ORCA's jurisdiction with respect to the *Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*.

Ms. Alex Bradburn, Planner for ORCA, provided some initial comments by email on June 3rd, 2019 to Landmark Associates Ltd. and the County of Peterborough regarding the requirement for the study. The following was provided in her email:

> *"I think (given the previous use of this property) a Scoped EIS / Amendment to the existing information would be suitable to address the proposed development. I would say at this stage that it would be important that the consultant include a "Constraint Map" that clearly delineates the features and the applicable setbacks to accurately demonstrate the areas that will need to be re-zoned (Environmental Protection and*

Residential etc) and where development will occur.

Have the consultant reach out to our organization if they require clarity/once they have formulated the Scope (Terms of Reference) but I feel as though something like the mapping that you had brought to the pre-consultation meeting would be a helpful starting point."

To obtain further clarification on the requirements, ORE provided Ms. Bradburn with a recommended scope of work on July 16th, 2019. Ms. Bradburn responded with the following:

"I have confirmed with our Planning Ecologist and this approach is satisfactory from our perspective. We just want to highlight the importance of identifying the wetland boundaries and the required 30 metre setback associated with the features, as we would likely recommend that these areas be rezoned to EP when circulated the Planning application."

This report has been prepared to address the items outlined above.

2.3 Peterborough County Official Plan

The Official Plan (OP) of Peterborough County states the relevant requirements for all studies to be completed in support of any proposed development/building application. The OP lists certain criteria that must be met for an "Environmental Impact Assessment" (alternatively called an EIS).

This *s*EIS has been prepared to satisfy the requirements outlined by the County which are included in Appendix B.

3.0 Scope of Work

In completing this *s*EIS, the following tasks have been completed:

- Relevant background information regarding the site (air photos, topographic mapping, etc.) was compiled and reviewed. A query of the following databases was completed: Ministry of Natural Resources and Forestry's (MNRF) Natural Heritage Information Centre's (NHIC) database, the iNaturalist database, eBird database, and the Ontario Breeding Bird Atlas (OBBA) database. A review of a previous EIS completed for the site was conducted.

- One (1) detailed site inspection was completed in the early summer season. The investigation was focussed on the proposed envelope for the residential

development, however, also included a general overview of the entire site. A biological inventory of the flora and fauna was completed, and basic vegetation communities were identified in accordance with the Ecological Land Classification (ELC) system. Targeted surveys for Species at Risk (SAR) snake and turtle habitats were also conducted according to MNRF protocols. Any significant environmental features or important wildlife species were identified and their positions/boundaries were determined utilizing a differential Global Positioning System (dGPS).

- All data was analysed and interpreted. Species lists were compared to database entries for vulnerable, threatened and/or endangered species and Species at Risk (Provincial and Federally listed).

- This report was prepared.

4.0 Topography, Drainage and Geology

Most of the subject site occurs within the valley of Indian River (Figure 2). The site slopes from northwest to southeast, toward the river. The maximum relief on the site is approximately 14 m, as measured from the northwestern boundary to the southwestern corner. However, most of the site consists of comparatively flat, "bottom lands".

Along the valley floor, Indian River is somewhat bifurcated, forming a large island around which the river branches and recombines. Several small (unnamed) streams also cross the site, which appear to be minor tributaries of the river. Several small ponds occur along the westernmost leg of the river, some appearing to have been associated with the former golf course. Approximately 50% of the site consists of wetlands. Most of the wetlands are unevaluated, however, the southernmost wetlands (closest to the river) are part of the *Provincially Significant* Indian River (Warsaw South) Wetland.

Indian River is somewhat of a "misfit stream", having been a former glacial spillway (Figure 3). The majority of the subject site occurs within the spillway valley where the overburden consists of highly permeable glaciofluvial sand and gravel deposits. In the northwestern part of the site, the surficial geology consists of drumlinized Newmarket Till, a regional aquitard. The ancient spillway eroded its valley deep into the till, likely removing most (if not all) of the till and exposing the underlying limestone bedrock. Recent alluvium (and organic deposits) also occupy much of the valley bottom.

Published mapping indicates that a large area underlain by the Dummer Till Complex occurs on the east side of Indian River. The Dummer Till is similar in composition to the Newmarket Till, although it tends to be less consolidated and is very stony. This results in the Dummer Till being more permeable than the Newmarket Till. While the Dummer Till is not mapped on the property, its presence cannot be excluded.

The extreme northern edge of the property is mapped as containing the southern terminus of an esker that extends northward. The esker is an elevated ridge composed of highly permeable sand and gravel.

North of the site, the river valley bottom is mapped as an area of exposed limestone bedrock of the Verulam Formation. The outcrops extend close to the northeastern boundary of the site, although appear to be only present on the eastern side of the river. It is expected that the river likely traverses and flows within the incised bedrock. Although karstic features occur along Indian River (especially north of the site), related features have not been mapped at the subject site.

Based on the geological setting and our observations at and near the site, the lowland part of the site is expected to exhibit a near-surface water table condition.

5.0 Background Data

5.1 Natural Heritage Information Centre (NHIC)

The NHIC is an online database managed by the Ontario Ministry of Natural Resources and Forestry (MNRF). Within the database, Ontario has been divided into a grid consisting of 1 km^2 areas or *regional squares,* each given a unique identifier. The squares can be searched for historical *Species at Risk* (SAR) occurrences and for Areas of Natural and Scientific Interest (ANSI).

The 1 km square areas containing the subject site are 17QK2722 & 17QK2723. 17QK2823 abuts the eastern boundary. The NHIC query data are presented in Appendix C, which also includes an excerpt of the main map obtained from the NHIC database geographic query. The map provides the approximate locations of the Element Occurrences and Natural Areas discussed below.

The database includes one (1) Natural Area including the following:

- Indian River (Warsaw South) Wetland

Three (3) significant species were identified by the NHIC search. These include the following:

Common Name	**Scientific Name**	**Status**	**Date of Sighting**
Eastern Wood-Pewee	*Contopus virens*	Special Concern	N/A
Blanding's Turtle	*Emydoidea blandingii*	Threatened	2008
Wood Thrush	*Hylocichla mustelina*	Special Concern	N/A

A brief description of each species and its preferred habitat is included in Appendix C.

Site inspections included targeted searches for the listed species and for potential SAR habitat.

5.2 Ontario Breeding Bird Atlas (OBBA)

The OBBA provides up-to-date reliable information on birds within Ontario and is managed by Bird Studies Canada. This includes species descriptions, habitats, range, documented sightings, etc.

The site occurs within the 10 km^2 area mapped as 17QJ22, Region 1, Peterborough. According to the OBBA website, significant breeding species that could potentially be associated with habitats in the area of the site include the following:

Common Name	**Scientific Name**	**Status**
Chimney Swift	*Chaetura pelagica*	Special Concern
Eastern Wood-Pewee	*Contopus virens*	Special Concern
Bank Swallow	*Riparia riparia*	Threatened
Barn Swallow	*Hirundo rustica*	Threatened
Wood Thrush	*Hylocichla mustelina*	Threatened
Bobolink	*Dolichonyx oryzivorus*	Threatened
Eastern Meadowlark	*Sturnella magna*	Threatened
Canada Warbler	*Cardellina canadensis*	Special Concern
Eastern Whip-poor-will	*Antrostomus vociferus*	Threatened
Olive-sided Flycatcher	*Contopus cooperi*	Special Concern
Black Tern	*Chlidonias niger*	Special Concern
Common Nighthawk	*Chordeiles minor*	Special Concern
Grasshopper Sparrow	*Ammodramus savannarum*	Special Concern
Least Bittern	*Ixobrychus exilis*	Threatened
Red-headed Woodpecker	*Melanerpes erythrocephalus*	Special Concern

The Summary Sheets for the OBBA Summary Square are provided in Appendix D, as well as brief descriptions of each of the listed species and associated preferred habitats. The site inspections included a review of potential SAR habitat and targeted searches for the above listed species. All species observed on-site were recorded and compiled into a list provided in Appendix E.

5.3 eBird

The eBird website consists of a database whereby citizen science individuals provide site level birding data for locations known as “hot-spots”. The bird species data are entered

into the database and can be visited several times throughout the year by individuals that consistently return to the site.

The nearest eBird hotspot is Warsaw Caves Conservation Area, which is approximately 4 km northeast of the site. Due to the distance from the subject site, the data associated with this hotspot is not entirely relevant.

5.4 iNaturalist Database

ORE staff conducted a search of the iNaturalist website database to determine if this database has any significant species occurrences in the vicinity of the subject property.

The nearest record to the subject site is Snapping Turtle (*Chelydra serpentina*), reported approximately 400 m the southeast of the site on May 11, 2012.

Snapping Turtle is listed as "Special Concern" by *Species at Risk Ontario* (SARO) and is not protected under the ESA. Snapping Turtles are predominantly aquatic species. They prefer shallow water features so they can hide under the soft mud and leaf litter, with only their noses exposed to the surface to breathe. During the nesting season, from early to mid summer, females travel overland in search of a suitable nesting site, usually gravelly or sandy areas along streams. Snapping Turtles often take advantage of man-made structures for nest sites, including roads (especially gravel shoulders), dams and aggregate pits.

The next closest record includes Eastern Milksnake (*Lampropeltis triangulum*), reported approximately 2.7 km northwest of the site on July 28, 2017. This species is not considered a Species at Risk in Ontario by SARO.

5.5 Previous Study

As part of the proposed golf course development application in 2002 by the previous owner, the following study was completed for the subject site:

> *Environmental Report, Warsaw Golf Course, Lot 11, Conc.1, Township of Douro-Dummer, County of Peterborough*; Niblett Environmental Associates Inc (NEA).; April 2002.

The study was triggered due to the golf course's proximity to the Provincially Significant Indian River (Warsaw South) Wetland, and included a review of various literature and databases, as well as a detailed autumn inventory of the property. The wetland boundary was also confirmed.

A total of nine (9) vegetation communities were confirmed. The community related to the

proposed development area appeared to consist of remnant stands and cut fairways. The wetland boundary was delineated along the northern edge of a Silver Maple Mineral Deciduous Swamp in the southern portion of the property.

The inspection did not identify any SAR or significant vegetation communities. However, three (3) provincially significant species and one regionally significant species were identified in their background data review. These include the Sedge Wren, Loggerhead Shrike, Marsh Wren and Green Heron. The site was identified as having potential habitat for Green Heron.

A series of recommended setbacks were provided within the EIS that were applicable to the proposed golf course at the time the report was drafted. However, ORCA's Regulation currently provides new setback requirements for sensitive hydrological features and floodplain areas.

6.0 Inspection Methodologies

6.1 Vegetation

The site has been characterized by its various vegetation communities using the methodologies included in the *Ecological Land Classification (ELC) - First Approximation and It's Applications* (1998). The 1998 Ecological Land Classification - First Approximation is a guide used by Ecologists to standardize the classification of different vegetation community types across Ontario. The classification system enables an ecologist to identify vegetation communities based on the species present, soil materials and moisture regimes.

There have been a number of updates to the ELC scheme to further refine the classification of Ecosites throughout Ontario. As a result, the 2008 *Draft* ELC Guide provides a further breakdown of the 1998 ELC Guide - First Approximation communities and includes many new communities to index from. The 2008 ELC scheme also provides a cross-reference to the 1998 guide communities. This report uses a combination of both the 1998 ELC communities (which are considered the primary vegetation communities) and the 2008 Draft ELC to supplement the vegetation community lists.

Prior to conducting the site inspection, aerial photography of the subject site was analysed to roughly delineate communities based on recognizable vegetation differences. Each identified community was subsequently inspected. Dominant vegetation types were recorded and boundaries of the various communities mapped using a dGPS.

In addition to identifying and mapping the ELC communities, ORE staff assessed each vegetation community from the perspective of whether they are hydrologically sensitive, a provincially rare vegetation community according to the NHIC list, and/or whether they

may represent Species at Risk habitat.

6.2 Avifauna Surveys

ORE staff attended the site once during the early summer season and endeavoured to detect all available avian species by sight, calls and notes, within and proximal to the site. In some instances, bird calling devices and "pishing and squeaking" were used to attract bird species from within the wooded areas after the typical morning chorus hours passed and avian are less vocal.

All species overheard or observed during the survey were recorded. The surveys were conducted in the early morning chorus hours approximately between 4:30 AM and 10:30 AM which was ideal for the season. The majority of birds were very active in the early morning, foraging, singing, and with dominant males defending their territories.

6.3 Mammals

Mammals were detected utilizing the methodologies outlined in the MNRF's March 1998 - Wildlife Monitoring Programs and Inventory Techniques for Ontario. Mammals were generally identified by either direct observation or via their tracks and/or scat droppings at the site.

No live traps were set/installed at the site as a permit is necessary to trap mammals. This was deemed unnecessary as there are no known SAR mammals within the area. Tracking, visual encounters and other signs to detect mammals were sufficient for the purpose of this study.

According to the Land Information Ontario (LIO) database, the subject site does not contain any deer wintering habitat or any other significant mammal wildlife habitat for those species outlined in the MNRF's October 2000 - Significant Wildlife Habitat Technical Guide. The NEA EIS stated that the wooded areas on the subject site would represent seasonal cover for deer and ORE staff agrees with this assessment.

6.4 Fish

A permit to collect fish was not obtained from the local MNRF office. Visual inspections were deemed sufficient to detect any species present in the on-site watercourse.

The NEA EIS report provided a list of common fish species that they obtained from the OMNRF. Among the species detected in the River by the OMNRF, none are Species at Risk. Some of the fish, for instance, Muskellunge, the Bass species and the Yellow Perch would be considered sport fish that anglers may seek. Therefore, the river has some

significance with respect to maintaining these stocks and the fish for which these sportfish forage upon.

6.5 Herpetiles

The protocol employed for detection of Herpetiles followed MNRF's March 1998 - Wildlife Monitoring Programs and Inventory Techniques for Ontario was utilized. Furthermore, the December 2016 Survey Protocol for Ontario's Species at Risk Snakes was implemented on-site. The surveys of basking habitats within the river area were completed during the summer season, when most herpetiles are active. The survey was conducted during warm, low wind conditions, which were ideal for detecting basking snakes and lizards. However, no evening inspections were completed to detect amphibians according to Marsh Monitoring Protocols (MMP) as this was not a requirement by ORCA.

During the inspections, ORE staff conducted visual encounter surveys while searching through brush piles, rolled over lumber and deadfall within the woodland to determine whether any significant species of herpetile could be detected. The visual encounter surveys extended from Iron Woods Road to County Road 4 to identify any/all dead-on-road herpetiles.

7.0 Site Inspection Data

7.1 General

For this *s*EIS, ORE staff conducted one (1) site inspection on the following date:

Date of Inspection	**Time of Inspection**	**Temp. ^{O}C**	**Beaufort (Wind) Index**	**Conditions**
July 17, 2019	4:30 AM- 10:30 AM	26	1 - Light Air	Clear Sky, Humid, early morning birding and searches for other flora and fauna. Wetland ID/ELC work.

From the site inspection data, a map of the general vegetation communities and habitats occurring on the property has been prepared (Figure 4).

7.2 Ecological Land Classification (ELC)

Based on our site observations, we have determined that there are nine (9) types of habitat associated with the subject site. As per the Ecological Land Classification for Southern Ontario (FG-02), 1998, these include:

Upland Communities:

1. Constructed Greenlands - Golf Course (CGL_1)
2. Remnant Stands - Coniferous & Mixed Treed Stands
3. Dry-Fresh Sugar Maple Deciduous Forest (FOD5)
4. Mineral Cultural Meadow (CUM1)

Wetland Communities:

5. White Cedar Mineral Coniferous Swamp (SWC1-1)
6. Silver Maple Mineral Deciduous Swamp (SWD3-2)
7. Pussy Willow Mineral Deciduous Thicket Swamp (SWTM3-5)
8. Red-osier Dogwood Mineral Deciduous Thicket Swamp (SWT2-5)
9. Open Water Aquatic (OAO)

Figure 4 illustrates the distribution of vegetation communities on the sites. These habitats and their associated vegetation and environmental characteristics are discussed below. Appendix E contains the list of floral species that were identified during the inspection dates. Representative photos of the various vegetative communities are found in Figure 5.

Upland Communities:

1. Constructed Greenlands - Golf Course (CGL_1)

The 2008 Draft ELC does not provide an explanation of this type of ELC community, however, the name is likely sufficient.

The property contained a former golf course and nine (9) holes, including fairways, roughs, and putting areas occur within these elongated segments on the property. The nine (9) hole course has been somewhat maintained by the current owner and early pioneer species have not take over the property.

The holes are visible within the aerial photography and have been outlined on Figure 4.

2. Remnant Stands - Coniferous & Mixed Treed Stands

The remnant stands possess mixtures of trees that do not meet the minimum criteria for any particular woodland community outlined in the ELC. They are often mixtures of woodlands that were once present on the property and remained after the golf course holes were cut through the woodlands.

The woodlands possess both coniferous dominated Eastern White Cedar *(Thuja occidentalis*) remnants and Trembling Aspen (*Populus tremuloides*)/Paper Birch (*Betula papyrifera*) mixtures that occur upgradient of the eastern white cedar stands west of the

river. Some minor White Pine (*Pinus strobus*) occur interspersed within this community and along the fencerows.

To the east of the river, the remnant stands between the golf fairways consist of Sugar Maple (*Acer saccharum*), American Basswood (*Tilia americana*), White Ash (*Fraxinus americana*), Paper Birch type FOD5 remnants, similar to the trees listed in the following community.

3. Dry-Fresh Sugar Maple Deciduous Forest (FOD5)

According to the ELC manual, a Dry-Fresh Sugar Maple Deciduous Forest (FOD5) must have a Dry (0,1)) to Fresh (2, 3) moisture regime. This ecosite must possess a canopy of more than 75% deciduous species. FOD5 is dominated by Sugar Maple (*Acer saccharum*). Other associate species are White Ash (*Fraxinus americana*), Hop Hornbeam (*Ostrya virginiana*), Red Maple (*Acer rubrum*), White Elm (*Ulmus americana*), White Birch (*Betula papyrifera*), American Basswood (*Tilia americana*) and Beech (*Fagus americana*). This ecosite represents the upland terrestrial woodland on the east bank of the river.

Although, ORE staff made a concerted effort to identify Butternut (*Juglans cinerea*) in this stand, none were observed within 50 m of the fairways, nor did we hear or observe any woodland SAR birds in this stand.

4. Mineral Cultural Meadow (CUM1)

The ELC describes the CUM1 communities as resulting from cultural or anthropogenic-based disturbances/alterations to land. Tree cover is typically less than 25% and the presence of shrubs is also less than 25%.

This community is present in the northwest portion of the site, and consists of mostly non native herbaceous species.

Wetland Communities:

5. White Cedar Mineral Coniferous Swamp (SWC1-1)

The ELC (2008) describes a White Cedar Coniferous Swamp (SWC1-1) as having a mix of greater than 75% coniferous species which are almost entirely comprised of Eastern White Cedar (*Thuja occidentalis*). This ecosite will be dominated by hydrophytic species.

The SWC1-1 community occurs in the northeast corner of the site. There are also some minor pockets in the remnant stand areas in the western portion of the site. The SWC1-1 also parallels the edge of the river along the western shore.

6. Silver Maple Mineral Deciduous Swamp (SWD3-2)

This type of treed swamp habitat usually contains tree and shrub cover exceeding 25% of its total area. The species must be hydrophytic, being able to withstand a variable flooding regime whereby water levels can be up to 2 m deep. During the summer period, the wooded swamp is expected to possess vernal pools which can potentially desiccate between precipitation events.

The SWD3-2 community occurs as a stand in the most southerly tip of the property and is referred to as the Indian River (Warsaw South) PSW on Figure 4. Silver Maple (*Acer saccharinum*) swamps typically represent a very mature wooded swamp stand.

7. Pussy Willow Mineral Deciduous Thicket Swamp (SWTM3-5)

A Thicket Swamp community typically has 25% or less tree or shrub cover which is predominantly hydrophytic species. During flood conditions, the water depth is typically less than 2 m. During dry periods, depressions can host vernal pools comprising 20% or more of the total area of the swamp.

This community occurs just outside of the Eastern White Cedar rim along the eastern and western banks of the river. The willows occur in the areas that likely possessed cedar but were impacted by the golf course. These regenerating thicket swamp areas possess both Pussy Willow (*Salix discolor*) and Red-osier Dogwood (*Conus sericea*) which is discussed in the following section. Typically, the base layer is a meadow marsh type habitat consisting of rushes, bulrushes, and sedges.

8. Red-osier Dogwood Mineral Deciduous Thicket Swamp (SWT2-5)

The ELC describes the Red-osier Dogwood Mineral Deciduous Thicket Swamp (SWT2-5) as having 75% trees being less than 5 m in height. This ecosite is typically fern and sedge rich but dominated by Red-osier Dogwood.

This thicket swamp habitat occurs interspersed within the patchy cedars that line the edges of the river and are also interspersed with Pussy Willow dominated areas associated with the meadow marsh already described above. The dogwoods also dominate the small patchy islands/tufts of organics within the river, and occur in areas where the golf course removed the eastern white cedar rim. Red-osier Dogwood is often the first thicket species that occurs within the impacted wooded swamp habitats.

9. Open Water Aquatic (OAO)

The ELC (2008) describes OAO as an environment containing no macrophyte vegetation and no tree or shrub cover. This ecosite tends to be dominated by plankton and has a lake trophic status.

The OAO community corresponds to the Indian River system that crosses the eastern portion of the subject site. Typically, this feature is less than 2 m deep even during the spring freshet period. However, unlike the OAO description, it does not possess macrophyte vegetation nor does it contain plankton and/or a trophic status. The river consists of bare bedrock and braided sand and gravel sections. There is very little shallow aquatic (floating-leaved or submerged) vegetation type wetland vegetation that corresponds to this community, therefore the OAO is the best fit. There are some minor sections of cattail marsh along the edge, however, the cattails transition to more the thicket swamp habitats described above. The river can also possess thicket swamp tufts where there is insufficient base to grow a tree, but sufficient soils are able to support Red-osier Dogwood or some minor meadow marsh species.

7.3 Fauna

All faunal species identified during the site inspections were recorded. The list of faunal species observed at the site is presented in Appendix E. Relevant observations of faunal activities on and adjacent to the site are briefly discussed below.

7.3.1 Avifauna

ORE staff completed one (1) inspection during the early summer.

The inspection included an early morning chorus hour survey between 4:30 AM and 10:30 AM. Although all species were detected and recorded according to their vocalizations and/or sightings, the focus was on detecting Species at Risk avian, either on or directly adjacent to the site. Even though the early morning survey was conducted outside the breeding bird period, the majority of woodland or field related SAR still call in the summer period, especially those detected within the OBBA and NHIC databases.

No avian SAR were detected on-site.

ORE staff attended five (5) point count locations on the property to detect all potential bird species in the wide variety of habitats on-site. The locations are illustrated on Figure 4.

7.3.2 Herpetiles

Herpetiles includes amphibians, salamanders, lizards, turtles and snakes species.

ORE staff searched areas beneath wood debris, scanned the watercourse to detect aquatic herpetiles and inspected the roadways for road-kill, in order to determine which herpetile species are present on or near the subject site. The main focus of the surveys was to

detect those herpetiles listed within the ESA.

ORE staff searched the river from the embankments using binoculars.

A total of two (2) herpetile species were detected/observed on-site consisting of the Common Painted Turtle (*Chrysemys picta*) and Common Watersnake (*Nerodia sipedon*). One other species was observed off-site on Iron Woods Drive, Common Gartersnake (*Thamnophis sirtalis*). The Gartersnake was dead-on-road. ORE also observed the following amphibian species on-site: Leopard Frog (*Lithobates pipiens*), American Toad (*Anaxyrus americanus*) and Green Frog (*Rana clamitans*). No SAR herpetiles were observed on-site.

7.3.3 Mammals

Mammals include species such as fox, coyote, white-tailed dear, racoon, skunk, bats, etc.

The ESA lists very few species of mammal within south-central Ontario as either Endangered, Threatened, or Special Concern. The majority of the listed mammals that possess a status occur within Northern and Southern Ontario regimes. Very few of those mammal species listed within the ESA occur in the Peterborough region, other than bat species.

ORE staff observed tracks of White-tailed Deer (*Odocoileus virginianus*), Northern Raccoon (*Procyon lotor*), Striped Skunk (*Mephitis mephitis*), Deer Mouse *(Peromyscus maniculatus*), and Eastern Coyote (*Canis latrans x Canis lycaon*). None of the mammals observed on-site are listed species. The tracks of White-tailed Deer were often sets of single deer tracks and no concentrated deer areas were observed on-site suggesting the property is likely a migration route around the village of Warsaw and the wooded areas and swamp are only used for cover.

7.3.4 Fish

ORE staff examined the wetlands, Indian River and tributaries for fish, however only a few species were detected at the time of the surveys. These include Creek Chub *(Semotilus atromaculatus*), Rockbass (*Ambloplites rupestris*), Pumpkinseed (*Lepomis gibbosus*), and Logperch (*Percina caprodes*). None of these are SAR.

7.4 Endangered - Threatened or Provincially Rare Species

ORE staff completed a thorough search of all potential SAR on the subject property when completing the inspections. This included efforts to identify Butternut and any of the OBBA, NHIC, and provincially rare species.

ORE staff also reviewed the species list in the April 2002 NEA Report for the Archie Kidd Golf Course and did not observe any SAR that had been detected on-site but listed between 2002 and the present. No SAR were detected by NEA during their surveys.

No SAR were detected during ORE staff's inspection.

8.0 Impact Assessment

8.1 Sensitive Features

The main receptor with respect to potential impacts associated with the subject site are the wetlands, Indian River and it's tributaries. The following have been considered with respect to potential impacts:

- River's flood plain;
- Indian River Warsaw South PSW;
- Water quality from erosion and sedimentation during the construction phase;
- Removal of riparian or transitional vegetation along the river front for vistas (i.e., loss of buffer);
- Importation of fill to the site to raise areas of the lot during the construction stage;
- Introduction of invasive non-native species in the post construction era, and
- Disruption or degradation of significant fisheries habitat within the river and via the pocket wetlands and overland drainage on-site.

Specific recommendations for mitigating potential impacts to sensitive features on and adjacent to the site are provided in a following section.

8.2 Database Species

No SAR outlined in the databases were detected on-site.

8.3 Identified SAR/SAR Habitat

The deciduous wooded area on the west bank represents suitable habitat for Eastern Wood-Pewee and Wood Thrush. Although these species were not detected, they could have been present in the early spring period, nested, laid eggs, and fledged their young.

The river could also be utilized by SAR herpetiles such as Common Snapping Turtle (*Chelydra serpentina*), Blanding's Turtle (*Emydoidea blandingii*), and Eastern Musk Turtle (*Sternotherus odoratus*) to migrate through to nesting sites and/or other wetlands that would be suitable for these species to reside. Therefore, impacts to the river could

disrupt the use of the river as a migration corridor. In addition, the lawnspace/fairways could be ideal habitat for turtles to nest. ORE staff did observe nesting sites for Common Painted Turtle at the edge of the meadow marsh area and the SAR turtles listed above would also consider the meadow to be favourable for nesting purposes.

8.4 Fisheries

Potential impacts to fisheries within the tributaries or Indian River would mainly be in the form of the following:

- de-stabilization of the shoreline embankments;
- removal or degradation of the existing riparian vegetation;
- insertion of fill materials for the purpose of creating lawnspace and vistas of the Indian River, and
- noise related to the construction of the site during spawning period.

No SAR fish species were detected within the waterways during the shoreline assessments; only common species were detected. However, the river represents an important fisheries resource and supports a relatively diverse population of fish species.

Recommendations to mitigate impacts to any fish and fish habitat are presented in a following section.

8.5 Construction

General potential impacts related to eventual construction activities are listed below:

- noise and vibration from operation of equipment;
- habitat damage/disturbance or vegetation loss;
- erosion and sedimentation generated by exposed unconsolidated soils during excavation and grading activities;
- mismanagement of excess materials and presence of construction debris or waste materials in the post construction era, and
- importation of materials containing invasive species.

To mitigate the potential for impacts associated with the above, appropriate construction scheduling will need to be considered. In addition, careful attention to the limits associated with the building envelope and maintaining buffers will also be required.

Specific recommendations for mitigation of impacts associated with construction activities are provided in Section 10.

9.0 Conclusions

9.1 A single residential development should be permitted on-site provided the following recommendations regarding the natural environment are adhered to.

The proposed development is to be situated within one of the existing fairways and therefore natural vegetation losses will not be an issue provided the landowner remains outside of the constraint areas outlined on Figure 6.

By restricting the development to the specified area outside of the defined constraints, this will effectively result in the following:

- Development will be situated such that it retains the better quality wooded remnants in the area;
- Limit the sprawl of the development towards the river; and
- Be situated well outside any hydrologically sensitive areas (including the Indian River Warsaw South PSW mapped by OMNRF) and outside of the river's flood zone.

Provided the development is allocated to the specified area in the property owner's drawing which remains outside the constraint area identified in Figure 6, and the mitigation in the following sections are adhered to, the risk to any natural area on-site will be inconsequential.

9.2 One (1) avian survey was conducted during the early morning period that would detect any significant species. No SAR species were observed or overheard within the habitats on-site.

The woodland across the Indian River on the west bank possesses good habitat for Eastern Wood-Pewee and Wood Thrush which are SAR. That being said, no development is proposed to occur within the dry-upland woodlands in this area and consequently the woodlands will remain entirely intact for future use by these SAR.

Furthermore, the tree-line on the east and west banks provide a buffer to the better quality woodland habitat on the west bank that these SAR may prefer. The only potential impact from the development would be disturbances/alterations during the breeding bird and migration period.

10.0 Recommendations

10.1 ORE recommends that the proponent obtain a building permit to construct a single residence on the property in the location outlined on Figure 6. It is in this location that

the proponent will not impact the natural areas on-site nor the Indian River flood plain. Provided any/all development is situated outside the constraints area on Figure 6, and the following recommendations are adhered to, there will be no risk to native flora and fauna on-site.

10.2 The Township of Douro-Dummer and County of Peterborough require a 30 m setback for new development to any wetland (including the Indian River Warsaw South PSW and any unevaluated wetlands) or watercourse. ORCA also requires a 30 m setback to any watercourse/wetland. ORE recommends the development footprint area outlined in Figure 6, as it represents the least impact approach with respect to the Indian River (its floodplain, riparian zone and associated wetlands on-site.

Provided the following mitigation is applied to the proposed development, impacts to the sensitive features can be mitigated:

- The property owner and their contractor shall apply standard provincially approved erosion and sedimentation protocols on-site prior to any filling or construction (further details are provided in 10.3);

- If it is the intent of the property owner to increase the overall square footage of the new permanent dwelling, then this should be achieved by building additional upper floors. No new buildings/structures can be introduced into the flood plain. However, there appears to be sufficient area outside of the wetland VPA and the floodplain that could potentially be used by the property owner;

- No alterations shall occur outside of the footprint other than to create a road access from Iron Woods Drive to the residential area.

- The proponent should take a proactive approach to rehabilitating disturbed areas by sowing native grass seed and planting any native trees or shrubs on the property. Native species should be used to replace non-native groundcovers associated with the golf course areas.

- No structures shall be constructed within the wetland VPA or the floodplain defined on Figure 6.

Figure 6 illustrates the development footprint limitation/constraint that would be associated with the proposed development, provided it is approved.

10.3 Proper erosion/sedimentation controls will be required at all times while heavy equipment is in operation at this site. Silt fencing (double-row) must be installed to identify the boundaries of the approved development envelope (i.e., work areas) and to serve as

barriers to prevent construction activities from occurring outside the envelope's limit.

The first row of silt fence shall be installed directly on the boundary of the development footprint and the second row shall be installed within 2 m of the first row on the downgradient side of the first row of fence.

The majority of conservation authority staff have indicated to ORE staff that straw bales on their own, are not an effective sediment filter medium. Therefore, bales of straw wrapped and staked with suitable geotextile filter cloth should be used in areas where heavier sediment loads persist. Bales without filter cloth can be used for structural purposes at the corners of the silt fence to improve stability. Construction should not continue during heavy precipitation events. After any such events, the fence and bales should be checked to ensure their effectiveness. Ultimately, it is the property owners responsibility to ensure any unconsolidated materials are contained in the construction zone and do not enter the floodplain, the VPA or the river.

The silt fence and cloth wrapped hay bales provide a solution to mitigate sheet runoff, not concentrated flows. Therefore, if a concentrated flow results from the construction on-site, this may require another type of erosion/sedimentation control such as a rock check dam with geotextile filter cloth to ensure any sediment laden runoff is contained within the construction area. The proponent should incorporate any erosion controls in their Site Plan/Grading Plan at the building permit stage to ensure the existing transition woodland, riparian areas and river are not impacted by sediment laden runoff during construction.

Although not anticipated, no new drainage swales or channels shall be constructed around the edge of the residential area for the purpose of draining on-site runoff to the wetlands. An isolated swale feature can be constructed for collection and infiltration purposes, provided a drawing is submitted to ORCA for their approval.

10.4 Any fill materials imported to the site should not contain organic materials such as plant debris or topsoil that may carry with it exotic or invasive species that could out-compete native species in the woodland. If imported topsoil is required, then screened topsoil should be the only material applied as top dressing within the development zone. Any loose unconsolidated material on-site shall be seeded or sodded with native grass species to cover the ground surface and stabilize the soils.

10.5 During tree removal and/or land clearing, the noise levels can be elevated by continued use of certain machinery that can impact bird species during their nesting, breeding and fledging stages. Furthermore, the vegetation clearing can result in removal of the nesting habitat for many birds.

To mitigate the potential for impacts resulting from land clearing and/or tree removal

during these sensitive avian life cycle stages, the property owner must not conduct either of these alterations between April 15th and August 31st, corresponding to the main Breeding Bird period in the Migratory Bird Convention Act.

This no construction/tree removal window also mitigates for any spawning fish that could potentially be utilizing the river corridor during the same period as the breeding birds.

Similarly, nesting turtles utilizing the river corridor could lay their eggs and allow the hatchlings to journey back to the river without interference from large construction vehicles on-site.

10.6 Following the construction, any/all disturbed areas shall be quickly seeded or sodded with native grass species to re-establish the root structure within the upper soils. Once the seeding or sodding is determined to be a success and the soils are stable, the erosion/sedimentation controls can be removed.

Native grass seed is available at certain retail outlets in Peterborough, and Pickseed in Lindsay also possesses blends for both dry, damp and wet regimes.

10.7 To ensure that equipment and/or any part of the development does not encroach within the flood plain area, an Ontario Land Surveyor (OLS) shall attend the site and demarcate the flood elevation on the property in the area of the proposed development. Similarly, the 30 m setback as identified in this *s*EIS, shall be demarcated by an OLS in the area of the proposed development prior to any construction occurring on-site.

The development footprint is proposed to occur outside of any/all wetlands identified on-site and the flood plain, however both limits shall be clearly defined on the property.

10.8 The following post-construction considerations are relevant to the site:

- The property possesses riverine habitat which includes light sensitive species such as fish, turtles and nocturnal avian such as owls. The property owner should refrain from directing excessive lighting towards the river/wetland areas to the south and east. It is recommended that only low wattage lighting be used to light driveways, paths and any rear yard recreational areas. In doing so, the natural integrity of these habitats and river corridor setting for these fauna will be retained.

- Only a handful of trees are expected to be removed from the small stand in the area of the proposed garage. Considering the VPA will become natural corridors a variety of trees and shrubs will likely succeed in this area that will counteract the minor tree loss. ORE staff expects that the VPA areas will be zoned Environment

Protection or some other zoning that will inhibit continual clearing of these land. This will effectively widen the vegetation buffer on each side of the river.

10.9 Provided the proponent integrates the above mentioned mitigation practices into the single residential development on-site, it could proceed with no perceptible impacts on the river, fisheries, and other fauna utilizing the river corridor.

10.10 As a means of reducing emissions/greenhouse gasses on-site, the property owner should consider allowing those areas outside of the development footprint that are currently golf course to return to a natural state. This will reduce lawn cutting/maintenance and also reinstate the large vegetated buffers that at one time occurred next to the river. The existing trail network can be maintained allowing the property owner access to the other parts of the property. This will also minimize maintenance costs and improve the watershed quality of the Indian River system.

10.11 The property owner is ultimately responsible for unnecessary impacts to natural features on-site. Therefore, it is up to the property owner to ensure any/all construction/work on-site incorporates the mitigation outlined in this sEIS.

* end of report *

Yours truly,
Oakridge Environmental Limited

Original Signed By

Rob West, HBSc. CSEB.
Senior Environmental Scientist

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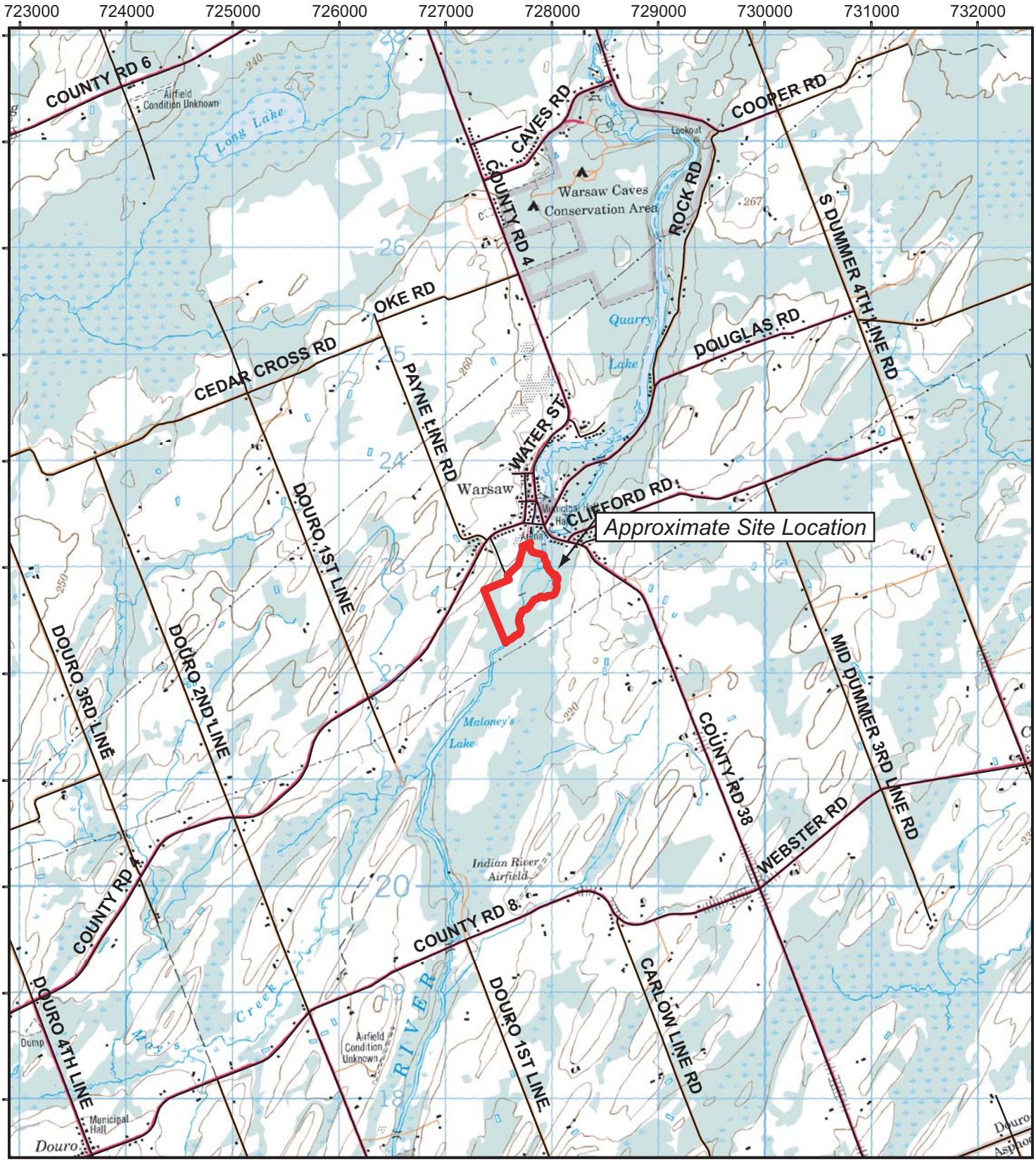
Figures



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North American Datum 1983 - UTM Zone 17

N

0 500 1,000 2,000 m

Scoped Environmental Impact Study (sEIS)
Proposed Single Residential Development

1355 County Road 4 (Iron Woods Drive)
Part of Lots 10 & 11, Concession 1 (Dummer)
Township of Douro-Dummer, County of Peterborough

TITLE
General Location

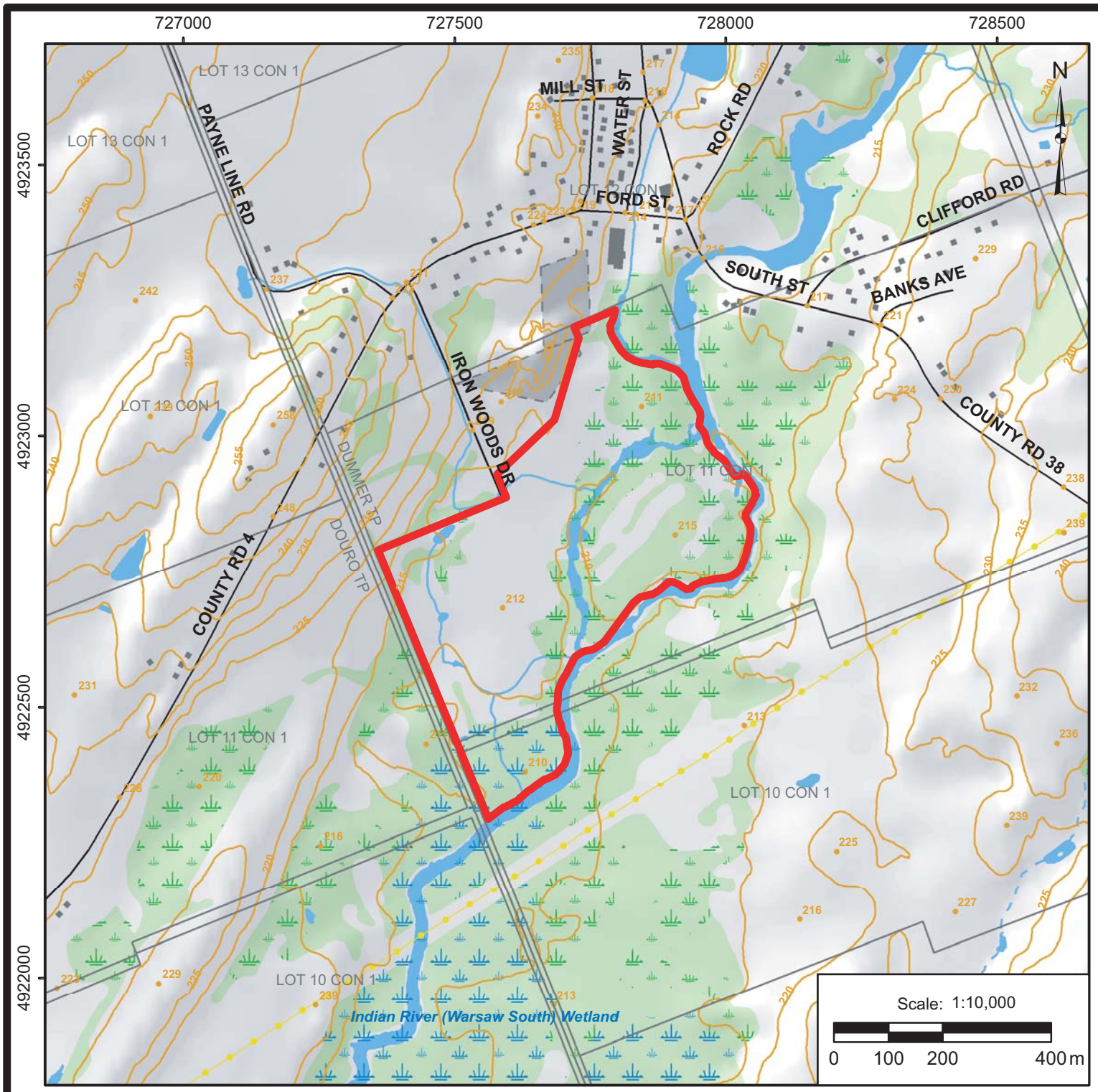
ORE
Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

PROJECT # 19-2619

FIGURE NO. **1**

DATE December 2019

Notes: Base map from Natural Resources Canada (1999), National Topographic System map 31/D-8. Optimized for Oakridge Environmental Ltd. (ORE) printing.



North American Datum 1983 - UTM Zone 17

Scoped Environmental Impact Study (sEIS)
Proposed Single Residential Development

1355 County Road 4 (Iron Woods Drive)
Part of Lots 10 & 11, Concession 1 (Dummer)
Township of Douro-Dummer,
County of Peterborough

LEGEND

- Approximate Site Boundary
- Wetland (Unevaluated)
- Wetland (Provincially Significant)
- Watercourse
- Watercourse (Intermittent)
- Waterbody
- Wooded Area
- Spot Height
- Topographic Contour (5 m interval)
- Building (Symbol; to scale)
- Road
- Utility Line
- Aggregate Site (Inactive)
- Lot Fabric

Notes: Base map provided by the Ministry of Natural Resources and Forestry (2019).

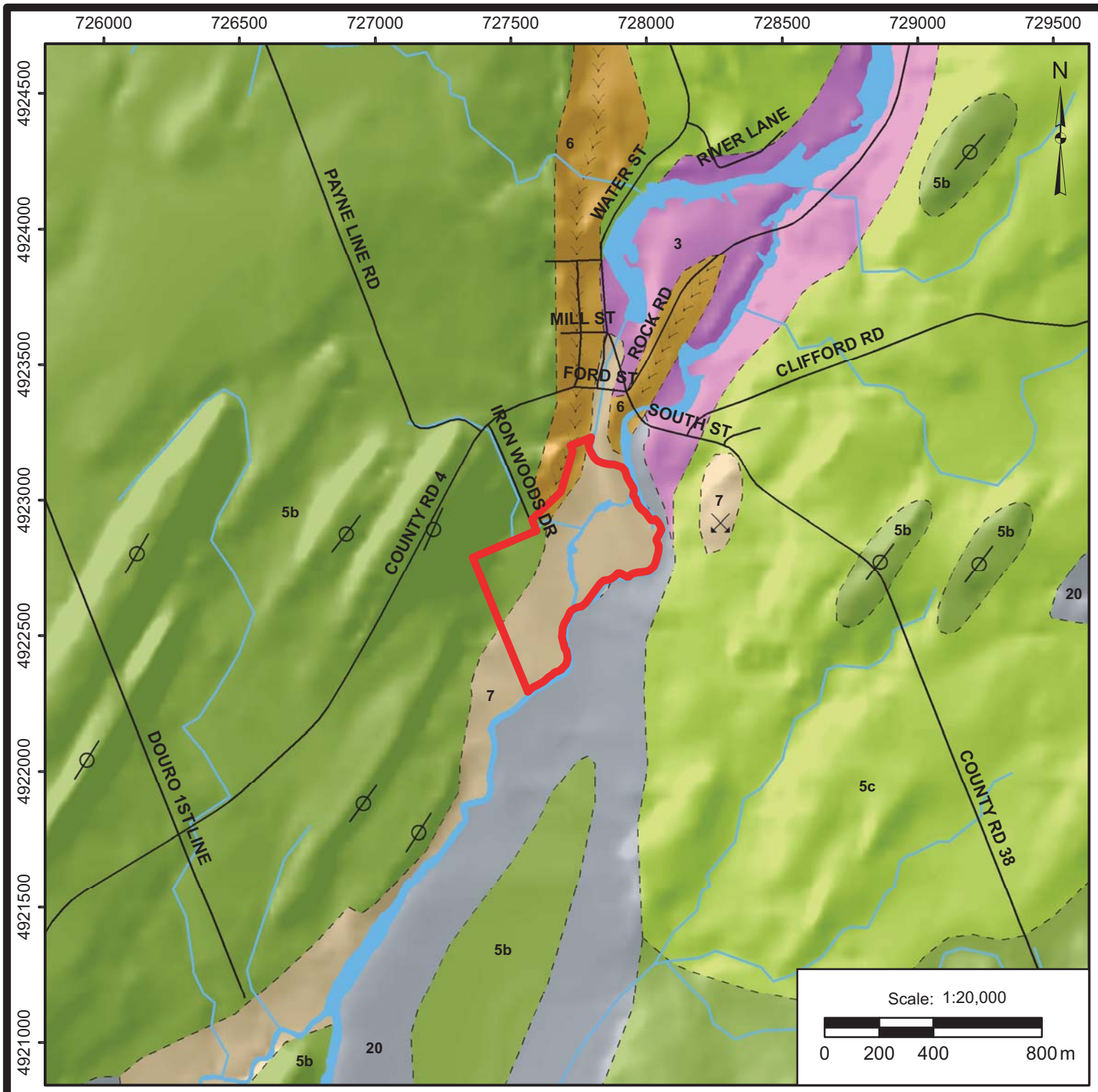
Optimized for Oakridge Environmental Ltd. (ORE) printing.

TITLE

Topography and Drainage

ORE Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

PROJECT #	FIGURE NO.
19-2619	2
DATE	
December 2019	



North American Datum 1983 - UTM Zone 17

Scoped Environmental Impact Study (sEIS)
Proposed Single Residential Development

1355 County Road 4 (Iron Woods Drive)
Part of Lots 10 & 11, Concession 1 (Dummer)
Township of Douro-Dummer,
County of Peterborough

LEGEND

- Approximate Site Boundary
- Sand and Gravel Pit
- Drumlin or Drumlinoid Ridges
- Esker (direction of flow known)
- Geological Contact (approximate/assumed)
- 3 — Paleozoic Bedrock

Glacial Deposits (Till)

- 5b — Stone-poor, carbonate-derived silty to sandy till
- 5c — Stony, carbonate-derived silty to sandy till
- 6 — Ice-contact Stratified Deposits
- 7 — Glaciofluvial Deposits
- 20 — Organic Deposits

Notes: Base map from the Ontario Geological Survey (2010), Surficial geology of southern Ontario. Copyright the Queen's Printer for Ontario, 2010.

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TITLE

Surficial Geology

ORE Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

PROJECT #	FIGURE NO.
19-2619	3
DATE: December 2019	

727100 727200 727300 727400 727500 727600 727700 727800 727900 728000 728100 728200 728300

4923200 4923100 4923000 4922900 4922800 4922700 4922600 4922500 4922400 4922300

SOUTH ST

N

COUNTY RD 4

IRON WOODS DR

SWC1-1

CUM1

SWTM3-5/SWT2-5

Remnant Stand

SWC1-1

OAO

CGL_1

Remnant Stand

FOD5

SWC1-1

SWTM3-5/SWT2-5

CGL_1

Remnant Stand

SWD3-2

North American Datum 1983 - UTM Zone 17

Scoped Environmental Impact Study (sEIS)
Proposed Single Residential Development

1355 County Road 4 (Iron Woods Drive)
Part of Lots 10 & 11, Concession 1 (Dummer)
Township of Douro-Dummer,
County of Peterborough

LEGEND

- Approximate Site Boundary
- Constructed Greenlands - Golf Course (CGL_1)
- Mineral Cultural Meadow (CUM1)
- Dry - Fresh Sugar Maple Deciduous Forest (FOD5)
- Open Aquatic (OAO)
- Remnant Stands - Coniferous & Mixed Treed Stands
- White Cedar Mineral Coniferous Swamp (SWC1-1)
- Silver Maple Mineral Deciduous Swamp (SWD3-2)
- Pussy Willow Mineral Deciduous Thicket Swamp (SWTM3-5)/ Red-osier Dogwood Mineral Deciduous Thicket Swamp (SWT2-5)
- Contour (5 m interval)

Scale: 1:4,000

0 50 100 200 m

Notes: Imagery Provided by Peterborough County (2013).

Base map provided by the Ministry of Natural Resources and Forestry (2019).

Optimized for Oakridge Environmental Ltd. (ORE) printing.

TITLE

Vegetation

ORE Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

PROJECT # 19-2619

DATE December 2019

FIGURE NO. **4**

Photo A (Left): Looking south towards the proposed development area in the background.

Photo B (Right): Looking south at the north bridge crossing.

Photo C (Left): Looking east towards the river in the background.

Photo D (Right): Looking east from the north-west corner of the site. The wetland/pond that is present in the northern portion of the site is visible.

Photo E (Left): Looking southeast towards the wetland in the northeast corner of the site.

Site photos were taken on May 16, 2019.

Scoped Environmental Impact Study (sEIS)
Proposed Single Residential Development
1355 County Road 4 (Iron Woods Drive)
Part of Lots 10 & 11, Concession 1 (Dummer)
Township of Douro-Dummer, County of Peterborough

TITLE
Site Photos

ORE Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

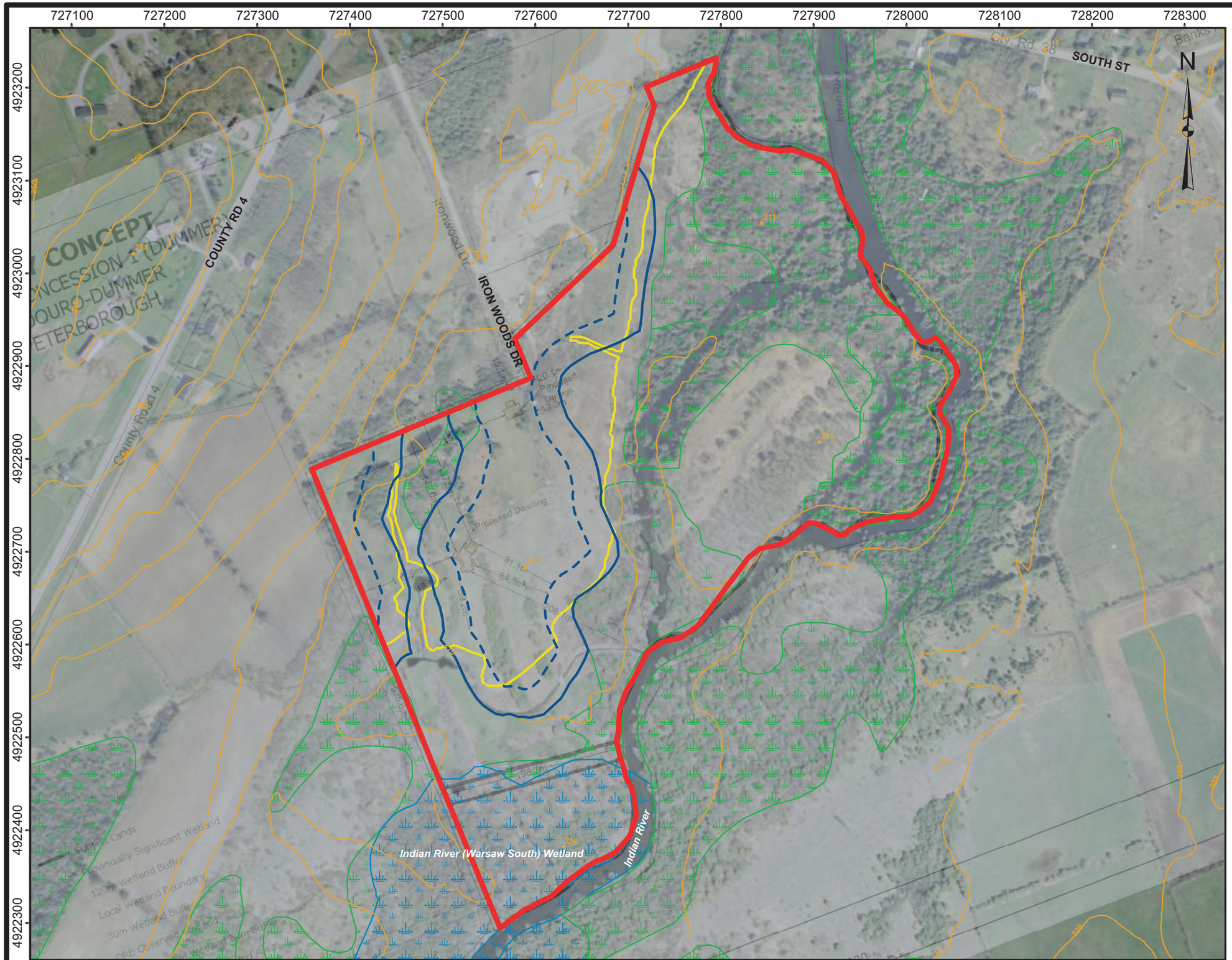
PROJECT # 19-2619

DATE December 2019

FIGURE NO. **5**

Scoped Environmental Impact Study (sEIS)
Proposed Single Residential Development

1355 County Road 4 (Iron Woods Drive)
Part of Lots 10 & 11, Concession 1 (Dummer)
Township of Douro-Dummer,
County of Peterborough



North American Datum 1983 - UTM Zone 17

LEGEND

- Approximate Site Boundary
- Wetland (ORE)
- Wetland (ORE) Setback (30 m)
- Limit of Floodplain
- Wetland
- Wetland (Provincially Significant)
- Contour (5 m interval)
- Spot Height

Scale: 1:4,000

0 50 100 200 m

Notes: Imagery provided by Peterborough County (2013).

Base map provided by the Ministry of Natural Resources and Forestry (2019).

Site plan provided by Landmark Associates Limited (2019).

Floodplain mapping provided by Peterborough County (2019).

Optimized for Oakridge Environmental Ltd. (ORE) printing.

TITLE

Constraints

ORE Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

PROJECT # 19-2619

DATE December 2019

FIGURE NO. **6**

Appendix A

Excerpt from the Provincial Policy Statement (PPS)

The following has been copied from the 2014 Provincial Policy Statement (PPS):

"2.1 Natural Heritage

2.1.1 Natural features and areas shall be protected for the long term.

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

2.1.3 Natural heritage systems shall be identified in Ecoregions 6E & 7E1, recognizing that natural heritage systems will vary in size and form in settlement areas, rural areas, and prime agricultural areas.

2.1.4 Development and site alteration shall not be permitted in:
a) significant wetlands in Ecoregions 5E, 6E and 7E1; and
b) significant coastal wetlands.

2.1.5 Development and site alteration shall not be permitted in:
a) significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E1;
b) significant woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River)1;
c) significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River)1;
d) significant wildlife habitat;
e) significant areas of natural and scientific interest; and
f) coastal wetlands in Ecoregions 5E, 6E and 7E1 that are not subject to policy 2.1.4(b) unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions. Ecoregions 5E, 6E and 7E are shown on Figure 1.

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

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

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

2.1.9 Nothing in policy 2.1 is intended to limit the ability of agricultural uses to continue."

Appendix B

Excerpt from County OP

County of Peterborough Official Plan (OP):

The following has been copied from the County of Peterborough Official Plan:

1. *"a description of the proposal and statement of rationale for the undertaking;*

2. *a description of the existing land use(s) on site and adjacent lands;*

3. *the land use designation on site and adjacent lands, as identified by the County and local municipal Official Plans;*

4. *a description of alternative development proposals for the site as well as the environmental impacts of the alternatives;*

5. *a comprehensive description of the proposal including its direct and indirect effect on the environment and considering both the advantages and disadvantages of the proposal;*

6. *an identification of environmental constraint areas;*

7. *an environmental inventory of the area under development consideration (plant life, land-based and aquatic wildlife, wetlands, natural landforms, surface waters, hydrogeological features);*

8. *a statement of environmental and ecological significance of the area affected by the proposed development;*

9. *a statement on how the development will establish or facilitate the establishment of linkages between natural areas within the watershed and adjacent watersheds and how these linkages will contribute to the preservation and enhancement of the natural areas;*

10. *a detailed description of mitigating effects;*

11. *any additional information requested by the local municipality;*

12. *an assessment of options for servicing the development with full municipal or communal water and sewage services as well as the environmental impacts of the servicing options.*

An environmental impact assessment for proposed development within or adjacent to a significant natural heritage feature will include as its study area the natural heritage feature plus the area surrounding that feature as follows:

13. *significant wetlands - all lands within 120 metres;*

14. *significant portions of the habitat of endangered and threatened species - all lands within 50 metres;*

15. *fish habitat - all lands within 30 metres of the high water mark of all watercourses;*

16. *significant wildlife habitat - all lands within 50 metres;*

17. *significant woodlands south of the southern limit of the Canadian Shield - all lands within 50 metres;*

18. *significant valleylands south of the southern limit of the Canadian Shield - all lands within 50 metres;*

19. *significant areas of natural and scientific interest (ANSI) - all lands within 50 metres.*"

Appendix C

NHIC Data

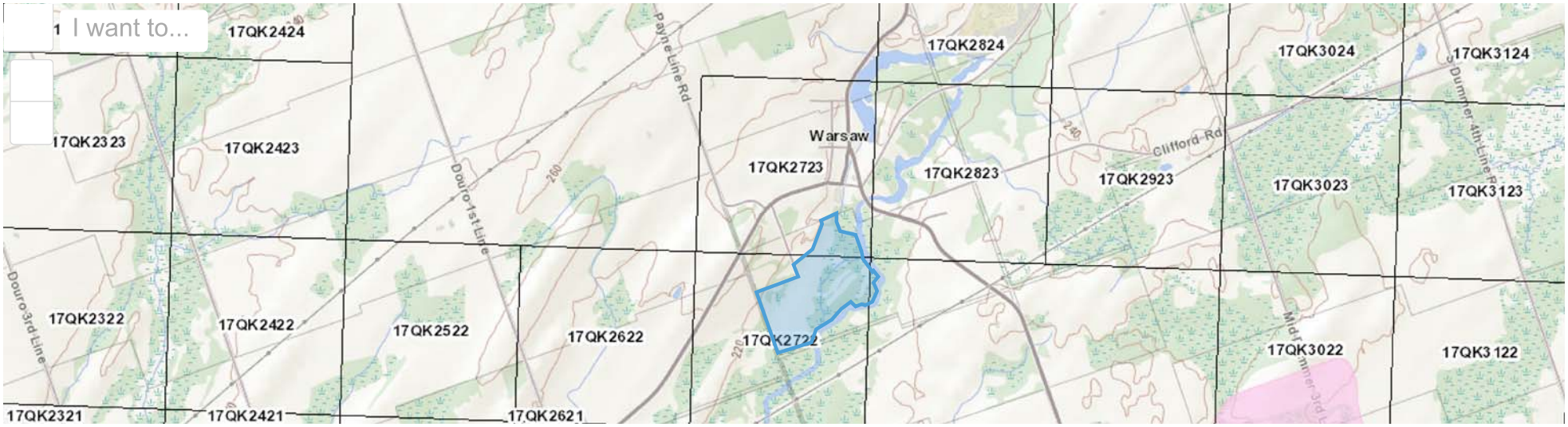
[Français]

Ontario **Ministry of Natural Resources and Forestry**
Make A Map: Natural Heritage Areas

Looking for a Park, Reserve or Wetland? Enter the name

About | Bookmarks | Map Layers | Find Information | Markup & Printing | Measure

Printing | Polygon | Styles | Edit | Erase | Clear All | Pan | Zoom In | Zoom Out | Initial View | Previous Extent | Next Extent | Help



NHIC Data -- Grid ID = 1062106

Element Type	Common Name	Scientific Name	SRank	SARO Status	COSEWIC Status	Last Obs Date	EO ID	Details URL
NATURAL AREA	Indian River (Warsaw South) Wetland						8195	http://nhic.mnr.gov.on.ca/natural_areas/areas.

NHIC Query

Square Number 17QK2722

Element Type	Common Name	Scientific Name	SRank	SARO Status	COSEWIC Status	Last Obs Date	EO ID
NATURAL AREA	Indian River (Warsaw South) Wetland						8195

Square Number 17QK2723

Element Type	Common Name	Scientific Name	SRank	SARO Status	COSEWIC Status	Last Obs Date	EO ID
SPECIES	Blanding's Turtle	Emydoidea blandingii	S3	THR	END	2008-00-00	112181
SPECIES	Eastern Wood-pewee	Contopus virens	S4B	SC	SC		180294
SPECIES	Wood Thrush	Hylocichla mustelina	S4B	SC	THR		180359

Square Number 17QK2823

Element Type	Common Name	Scientific Name	SRank	SARO Status	COSEWIC Status	Last Obs Date	EO ID
SPECIES	Eastern Wood-pewee	Contopus virens	S4B	SC	SC		180294

Eastern Wood-Pewee is listed as "Special Concern" by SARO and is not protected under the ESA. This species prefers mixed deciduous and coniferous woodlands which are open or considered edge habitat. Nesting occurs on a tree branch as the species catches insects from a perch.

Wood Thrush is listed as "Threatened" by SARO and is protected under the ESA. The Wood Thrush enjoys relatively undisturbed, mature woodlands. Nesting occurs low in the fork of a tree as this species forages for berries and insects at ground level. Similar to the Eastern Wood-Pewee, this species prefers large tracts of woodland.

Blanding's Turtle is listed as "Threatened" by SARO and is protected under the ESA. It tends to inhabit shallow waters within large wetlands or shallow lakes that have lots of aquatic plants. However, they have been known to travel hundreds of meters from a main body of water for nesting or mating. This species is most easily identified by its bright yellow throat and chin.

Appendix D

OBBA Database and Species Descriptions

Square Summary (17QK22)

#species (1st atlas)				#species (2nd atlas)				#hours		#pc done	
poss	prob	conf	total	poss	prob	conf	total	1st	2nd	road	offrd
31	43	26	100	49	34	38	121	39	36	25	0

Region summary (#16: Peterborough)

#squares	#sq with data		#species		#pc done	target #pc
	1st	2nd	1st	2nd		
60	60	60	171	185	1995	750

Target number of point counts in this square: 21 road side, 4 off road (2 in treed wetlands, 1 in coniferous forest, 1 in pasture/grassland). Please try to ensure that each off-road station is located such that the entire 100m radius circle is within the prescribed habitat.

SPECIES	Code		%		SPECIES	Code		%		SPECIES	Code		%	
	1st	2nd	1st	2nd		1st	2nd	1st	2nd		1st	2nd	1st	2nd
Canada Goose	H	FY	31	93	Cooper's Hawk		S	28	41	Great Horned Owl	S	AE	75	46
Mute Swan			0	1	Northern Goshawk			26	38	Barred Owl		FY	48	63
Wood Duck	H	V	90	96	Red-should Hawk †			35	63	Long-eared Owl		S	5	13
Gadwall ‡			1	3	Broad-winged Hawk		T	66	86	North Saw-whet Owl			53	30
American Black Duck	P	FY	63	41	Red-tailed Hawk	P	NB	78	68	Common Nighthawk	S	S	73	40
Mallard	P	T	93	100	American Kestrel	T	T	70	66	Whip-poor-will	T		75	53
Blue-winged Teal	P	P	48	40	Merlin		CF	3	46	Chimney Swift		H	76	21
Northern Shoveler ‡	H		3	3	Virginia Rail		S	21	71	Ruby-thr Hummingbird	T	P	98	96
Northern Pintail ‡			3	0	Sora	S	S	20	36	Belted Kingfisher	AE	CF	100	98
Green-winged Teal			0	18	Common Moorhen	D		23	15	Red-headed Woodpecker †	P		30	10
Ring-necked Duck		T	18	46	American Coot ‡			10	5	Yellow-bellied Sapsucker	NY	S	95	100
Hooded Merganser		FY	36	83	Coot/Moorhen			0	0	Downy Woodpecker	D	H	91	98
Common Merganser			30	50	Sandhill Crane ‡		FY	0	1	Hairy Woodpecker	P	H	95	100
Red-breast Merganser ‡			3	0	Killdeer	A	NE	90	85	Black-backed Woodpecker			13	21
Ruffed Grouse	P	D	91	100	Rock Dove	FY	P	61	73	Northern Flicker	D	P	100	98
Wild Turkey		H	0	56	Spotted Sandpiper	H	T	76	66	Pileated Woodpecker	S	T	93	100
Common Loon	FY	P	85	95	Upland Sandpiper	A	T	31	26	Olive-sided Flycatcher	H		53	28
Pied-billed Grebe		S	8	48	Common Snipe	D	T	63	78	Eastern Wood-Pewee	T	T	96	100
Double-crest Cormorant ‡§			3	1	American Woodcock	D	H	71	78	Yellow-bellied Flycatcher			21	16
American Bittern	NY	S	55	81	Wilson's Phalarope †			1	1	Alder Flycatcher	S	S	60	96
Least Bittern †	NE	H	18	25	Ring-billed Gull ‡§			1	8	Willow Flycatcher	T	S	35	50
Great Blue Heron §	NY	H	100	91	Herring Gull §			45	45	Least Flycatcher	S	S	98	100
Green Heron §	H	H	55	50	Caspian Tern †			1	1	Eastern Phoebe	T	P	96	100
Black-crown N.-Heron † §			3	0	Black Tern † §	NY	NY	30	21	Gr Crested Flycatcher	T	NE	100	100
Turkey Vulture	H	H	90	100	Common Tern §			18	5	Eastern Kingbird	NE	AE	100	100
Osprey	NY		78	80	Mourning Dove	T	D	75	96	Loggerhead Shrike †			13	1
Bald Eagle †			6	6	Black/Yell-billed Cuckoo			0	46	Yellow-throated Vireo			50	53
Northern Harrier	NY	H	63	46	Black-billed Cuckoo	H	CF	48	80	Blue-headed Vireo		S	35	68
Sharp-shinned Hawk	H	H	45	60	Eastern Screech-Owl			11	15	Warbling Vireo	S	S	98	98

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Ontario Breeding Bird Atlas - Summary Sheet for Square 17QK22 (page 2 of 3)

SPECIES	Code		%		SPECIES	Code		%		SPECIES	Code		%	
	1st	2nd	1st	2nd		1st	2nd	1st	2nd		1st	2nd	1st	2nd
Philadelphia Vireo ‡			6	8	American Robin	NY	NY	100	100	Common Yellowthroat	A	DD	100	100
Red-eyed Vireo	T	NY	100	100	Gray Catbird	A	CF	98	86	Canada Warbler			66	83
Gray Jay		P	20	21	Northern Mockingbird ‡			1	1	Eastern Towhee	P		45	45
Blue Jay	P	P	100	100	Brown Thrasher	T	P	95	81	Chipping Sparrow	S	CF	100	100
American Crow	FY	NB	98	100	European Starling	CF	CF	96	91	Clay-colored Sparrow ‡			1	20
Common Raven		CF	46	78	Cedar Waxwing	N	A	100	100	Field Sparrow	S	S	68	73
Horned Lark		S	30	28	Golden-winged Warbler			53	40	Vesper Sparrow	S	S	75	43
Purple Martin			53	28	Blue/Gold-wing Warbler			0	25	Savannah Sparrow	T	CF	78	73
Tree Swallow	AE	AE	100	100	Brewster's Warbler †			1	8	Grasshopper Sparrow	S	T	15	28
North Rgh-wing Swallow	NY	H	66	53	Tennessee Warbler ‡			1	1	Song Sparrow	CF	CF	100	100
Bank Swallow §	AE		76	36	Nashville Warbler	S	S	100	100	Swamp Sparrow	CF	FY	100	100
Cliff Swallow §		AE	81	36	Northern Parula			20	18	White-throat Sparrow	T	S	100	100
Barn Swallow	NE	V	96	95	Yellow Warbler	A	P	100	100	Dark-eyed Junco			30	35
Black-capped Chickadee	P	AE	100	100	Chestn-sided Warbler	T	CF	98	100	Scarlet Tanager	S	H	91	98
Red-breast Nuthatch		S	71	91	Magnolia Warbler		S	60	75	Northern Cardinal		S	23	48
White-breast Nuthatch	H	S	91	100	Cape May Warbler ‡			1	8	Rose-breast Grosbeak	T	S	100	100
Brown Creeper		S	55	83	Black-thr Blue Warbler			43	78	Indigo Bunting	S	S	100	98
House Wren	AE	AE	76	78	Yellow-rumped Warbler	S	NY	83	91	Bobolink	P	FY	85	68
Winter Wren	S	S	80	93	Black-thr Green Warbler	S	CF	73	100	Red-wing Blackbird	NE	CF	100	100
Sedge Wren			11	20	Blackburnian Warbler		S	66	78	Eastern Meadowlark	D	CF	70	63
Marsh Wren	A	S	25	51	Pine Warbler		T	40	88	Western Meadowlark ‡	T		1	1
Golden-crown Kinglet		S	33	55	Prairie Warbler †			3	6	Common Grackle	CF	CF	100	100
Ruby-crown Kinglet			20	15	Cerulean Warbler †			8	5	Brown-head Cowbird	H	S	98	95
Blue-gr Gnatcatcher ‡			11	1	Black-white Warbler	S	S	100	100	Orchard Oriole ‡			1	3
Eastern Bluebird	NY	CF	45	66	American Redstart	S	T	95	100	Baltimore Oriole	CF	P	100	90
Veery	T	T	100	100	Ovenbird	T	T	100	100	Purple Finch		P	88	100
Swainson's Thrush			36	40	North Waterthrush	S	S	96	100	House Finch		P	5	43
Hermit Thrush		S	66	78	Louis Waterthrush †			1	0	Red Crossbill			20	5
Wood Thrush	T	S	91	96	Mourning Warbler		S	75	83	White-winged Crossbill ‡		S	0	1

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SPECIES	Code		%	
	1st	2nd	1st	2nd
Pine Siskin		T	33	41
American Goldfinch	P	FY	98	100
Evening Grosbeak			48	71
House Sparrow	CF	V	70	50

This list includes all species found during the Ontario Breeding Bird Atlas (1st atlas: 1981-1985, 2nd atlas: 2001-2005) in the region #16 (Peterborough). Underlined species are those that you should try to add to this square. They have not yet been reported during the 2nd atlas, but were found during the 1st atlas in this square or have been reported in more than 50% of the squares in this region during the 2nd atlas so far. In the species table, "BE 2nd" and "BE 1st" are the codes for the highest breeding evidence for that species in square 17QK22 during the 2nd and 1st atlas respectively. The % columns give the percentage of squares in that region where that species was reported during the 2nd and 1st atlas (this gives an idea of the expected chance of finding that species in region #16). Rare/Colonial Species Report Forms should be completed for species marked: § (Colonial), ‡ (regionally rare), or † (provincially rare). Current as of 3/05/2019. An up-to-date version of this sheet is available from http://www.birdsontario.org/atlas/summaryform.jsp?squareID=17QK22

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Bank Swallow is listed as "Threatened" by *Species at Risk Ontario* (SARO), and is protected under the *Endangered Species Act* (ESA). This avian species nests in burrows into the banks of silt and sand deposits. Nests tend to be found on the shorelines of rivers and lakes. The Bank Swallow may also inhabit sand and gravel pits. Typically, this species forages on insects in flight, but will also glean insects off the water.

Barn Swallow is listed as "Threatened" by SARO and is protected under the ESA. The Barn Swallow inhabits open-rural and urban sites where buildings are situated near watercourses. Nesting is typically sporadic within loose colonies on building structures, bridges and other suitable overhanging structures. The cup-like mud nest is adhered to areas beneath the roof of the structure to conceal the nest from predators and keep it dry. The Barn Swallow feeds on insects by catching them on the wing.

Black Tern is listed as "Special Concern" by SARO, and is not protected under the ESA. The Black Tern prefers shallow, freshwater cattail marshes, wetlands, lake edges and sewage ponds with emergent vegetation. Nesting occurs on dead plant material piled upon aquatic floating vegetation. The Black Tern hunts small insects and minnows along the surface of lakes and ponds.

Bobolink is listed as "Threatened" by SARO and is protected under the ESA. The Bobolink prefers large tracts of tallgrass areas, either true prairies or hay fields, as it forages low to the ground in search of larvae and seeds.

Canada Warbler is listed as "Special Concern" by SARO, and is not protected under the ESA. It prefers large tracts of mixed forests on bottomlands within wetlands or drainage courses. The species nests within the upper extremities of the canopy in deciduous and coniferous trees. The Canada Warbler feeds on beetles, caterpillars and common insects. Typically, this species prefers creeks and mixed forests with a coniferous edge along a moving creek, tributary or river system.

Chimney Swift is listed as "Threatened" by SARO and is protected under the ESA. The Chimney Swift is a somewhat generalist species. It will utilize empty cavity nests found in dead trees within fencerows or may utilize unused chimneys as suggested by its common name. This species is most active in early morning and early evening (i.e., dawn and dusk). It will venture outside of the nesting area and feast on insects during those times. It then flies back to the nesting site, entering the nest one after another in an orderly funnel-shaped sequence.

Common Nighthawk is listed as "Special Concern" by SARO, and is not protected under the ESA. The Common Nighthawk is part of the Nightjar family which prefers forest openings, bogs and sometimes open field/meadow areas. Nesting is on

bare ground where both adults feed the young. Feeding can take place during day or night, while the species constantly forages for all types of insects.

Eastern Meadowlark is listed as "Threatened" by SARO and is protected under the ESA. The Eastern Meadowlark is similar to Bobolink, as this species also prefers large tracts of agricultural fields or tallgrass prairies to nest within. Eastern Meadowlark is a ground nester, thus requires the tallgrass to conceal its nest and eggs. Feeding includes beetles, crickets and spiders.

Eastern Whip-poor-will is listed as "Threatened" by SARO and is protected under the ESA. The Whip-poor-will prefers a combination of large natural tracts of secondary succession forest, watercourses and edge habitat consisting of meadow areas, with open deciduous and pine woodlands. The Whip-poor-will does not construct a nest, but rather uses the soft leaf litter on the ground to form a nest and lay the eggs directly on the ground. The Whip-poor-will is a nighttime hunter, calling its own name while searching for large flying insects, beetles, moths, mosquitos and sometimes grasshoppers. The Whip-poor-will often choose pine species adjacent to waterways to call from.

Eastern Wood-Pewee is listed as "Special Concern" by SARO and is not protected under the ESA. This species prefers mixed deciduous and coniferous woodlands which are open or considered edge habitat. Nesting occurs on a tree branch as the species catches insects from a perch.

Grasshopper Sparrow is listed as "Special Concern" by SARO and is not protected under the ESA. The Grasshopper Sparrow prefers large (greater than 5 ha) grassland habitats where it breeds. Grassland habitats include pastures, hayfields, natural prairies, alvars. Nests are typically hidden within the grassland and its preferred diet in the summer is large insects (i.e., Grasshoppers).

Least Bittern is listed as "Threatened" by SARO and is protected under the ESA. The Least Bittern inhabits freshwater marshes where tall, impenetrable stands of emergent vegetation are utilized for coverage. The Least Bittern may build up a hunting platform in search of small fish, insects, and amphibians.

Olive-sided Flylcatcher is listed as "Special Concern" by SARO and is not protected under the ESA. This species is typically found within natural forest edges and openings. Its preferred habitat is within coniferous or mixed forests adjacent to rivers or wetlands. It likes to inhabit conifers such as White/Black Spruce, Jack Pine, and Balsam Fir.

Red-headed Woodpecker is listed as "Special Concern" by SARO and is not protected under the ESA. It prefers a combination of deciduous forests and rural development areas, similar to a park-like setting. The deciduous species can be oak

or maple, however, the understorey must be meadow-like or maintained lawnspace in parklands. This species will either roost within cavities constructed by other woodpeckers, or create its own cavity. It feeds on beetles, caterpillars and common insects that are found within the bark of trees.

Wood Thrush is listed as "Threatened" by SARO and is protected under the ESA. The Wood Thrush enjoys relatively undisturbed, mature woodlands. Nesting occurs low in the fork of a tree as this species forages for berries and insects at ground level. Similar to the Eastern Wood-Pewee, this species prefers large tracts of woodland.

Appendix E

Species List

Species Occurrences

Amphibians

COMMON NAME	SCIENTIFIC NAME	SRANK	COSEWIC	SARO
American Toad	Anaxyrus americanus	S5		
Northern Leopard Frog	Lithobates pipiens	S5	NAR	NAR
Green Frog	Lithobates clamitans	S5		
Spring Peeper	Pseudacris crucifer	S5		
Eastern Red-backed Salamander	Plethodon cinereus	S5		

Birds

COMMON NAME	SCIENTIFIC NAME	SRANK	COSEWIC	SARO
Broad-winged Hawk	Buteo platypterus	S5B		
Turkey Vulture	Cathartes aura	S5B		
Mallard	Anas platyrhynchos	S5		
Canada Goose	Branta canadensis	S5		
Wood Duck	Aix sponsa	S5		
Ruby-throated Hummingbird	Archilochus colubris	S5B		
American Woodcock	Scolopax minor	S4B		
Ring-billed Gull	Larus delawarensis	S5B,S4N		
Killdeer	Charadrius vociferus	S5B,S5N		
Mourning Dove	Zenaida macroura	S5		
Rock Pigeon	Columba livia	SNA		
American Kestrel	Falco sparverius	S4		
Wild Turkey	Meleagris gallopavo	S5		
Red-winged Blackbird	Agelaius phoeniceus	S4		
Least Flycatcher	Empidonax minimus	S4B		
Indigo Bunting	Passerina cyanea	S4B		
Savannah Sparrow	Passerculus sandwichensis	S4B		
Rose-breasted Grosbeak	Pheucticus ludovicianus	S4B		
Pine Siskin	Spinus pinus	S4B		
Great Crested Flycatcher	Myiarchus crinitus	S4B		
Eastern Kingbird	Tyrannus tyrannus	S4B		
Tree Swallow	Tachycineta bicolor	S4B		
Gray Catbird	Dumetella carolinensis	S4B		
Brown Thrasher	Toxostoma rufum	S4B		

Veery	Catharus fuscescens	S4B
Ovenbird	Seiurus aurocapilla	S4B
Brown-headed Cowbird	Molothrus ater	S4B
Baltimore Oriole	Icterus galbula	S4B
Eastern Towhee	Pipilo erythrophthalmus	S4B
Scarlet Tanager	Piranga olivacea	S4B
Black-capped Chickadee	Poecile atricapillus	S5
Blue Jay	Cyanocitta cristata	S5
Northern Cardinal	Cardinalis cardinalis	S5
Red-breasted Nuthatch	Sitta canadensis	S5
Chestnut-sided Warbler	Setophaga pensylvanica	S5B
American Robin	Turdus migratorius	S5B
Northern Waterthrush	Parkesia noveboracensis	S5B
Black-and-white Warbler	Mniotilta varia	S5B
Common Yellowthroat	Geothlypis trichas	S5B
Yellow Warbler	Setophaga petechia	S5B
Yellow-rumped Warbler	Setophaga coronata	S5B
Black-throated Green Warbler	Setophaga virens	S5B
Common Grackle	Quiscalus quiscula	S5B
Chipping Sparrow	Spizella passerina	S5B
Song Sparrow	Melospiza melodia	S5B
American Goldfinch	Spinus tristis	S5B
American Redstart	Setophaga ruticilla	S5B
Cedar Waxwing	Bombycilla cedrorum	S5B
Willow Flycatcher	Empidonax traillii	S5B
Red-eyed Vireo	Vireo olivaceus	S5B
House Wren	Troglodytes aedon	S5B
European Starling	Sturnus vulgaris	SNA
Eurasian Jackdaw	Corvus monedula	SNA
Great Blue Heron	Ardea herodias	S4
Green Heron	Butorides virescens	S4B
Northern Flicker	Colaptes auratus	S4B
Pileated Woodpecker	Dryocopus pileatus	S5
Hairy Woodpecker	Picoides villosus	S5

Fish

COMMON NAME	SCIENTIFIC NAME	SRANK	COSEWIC	SARO

Creek Chub	Semotilus atromaculatus	S5		
Finescale Dace	Chrosomus neogaeus	S5		
Common Shiner	Luxilus cornutus	S5		
Rock Bass	Ambloplites rupestris	S5		
Pumpkinseed	Lepomis gibbosus	S5		
Logperch	Percina caprodes	S5		

Insects

COMMON NAME	SCIENTIFIC NAME	SRANK	COSEWIC	SARO
Red Admiral	Vanessa atalanta	S5		
Juvenal's Duskywing	Erynnis juvenalis	S5		
Cabbage White	Pieris rapae	SNA		
Northern Bluet	Enallagma annexum	S4		
Northern Spreadwing	Lestes disjunctus	S5		
River Jewelwing	Calopteryx aequabilis	S5		
Common Baskettail	Epitheca cynosura	S5		
Calico Pennant	Celithemis elisa	S5		
Cherry-faced Meadowhawk	Sympetrum internum	S5		
Common Green Darner	Anax junius	S5		
Eastern Forktail	Ischnura verticalis	S5		

Mammals

COMMON NAME	SCIENTIFIC NAME	SRANK	COSEWIC	SARO
White-tailed Deer	Odocoileus virginianus	S5		
Northern Raccoon	Procyon lotor	S5		
Striped Skunk	Mephitis mephitis	S5		
Red Fox	Vulpes vulpes	S5		
Coyote	Canis latrans	S5		
Eastern Cottontail	Sylvilagus floridanus	S5		
Beaver	Castor canadensis	S5		
Meadow Vole	Microtus pennsylvanicus	S5		
Red Squirrel	Tamiasciurus hudsonicus	S5		
Eastern Chipmunk	Tamias striatus	S5		
Eastern Gray Squirrel	Sciurus carolinensis	S5		
Porcupine	Erethizon dorsatum	S5		
Muskrat	Ondatra zibethicus	S5		
Star-nosed Mole	Condylura cristata	S5		

Reptiles and Turtles

COMMON NAME	SCIENTIFIC NAME	SRANK	COSEWIC	SARO
Northern Watersnake	Nerodia sipedon sipedon	S5	NAR	NAR

Vascular Plants

COMMON NAME	SCIENTIFIC NAME	SRANK	COSEWIC	SARO
Smooth Sweet Cicely	Osmorhiza longistylis	S5		
Wild Sarsaparilla	Aralia nudicaulis	S5		
Giant Goldenrod	Solidago gigantea	S5		
Early Goldenrod	Solidago juncea	S5		
Gray-stemmed Goldenrod	Solidago nemoralis ssp. nemoralis	S5		
Flat-top White Aster	Doellingeria umbellata var. umbellata	S5		
White Heath Aster	Symphyotrichum ericoides var. ericoides	S5		
Calico Aster	Symphyotrichum lateriflorum var. lateriflorum	S5		
Zigzag Goldenrod	Solidago flexicaulis	S5		
Annual Fleabane	Erigeron annuus	S5		
Common Boneset	Eupatorium perfoliatum	S5		
Canada Goldenrod	Solidago canadensis var. canadensis	S5		
Black-eyed Susan	Rudbeckia hirta	S5		
Annual Ragweed	Ambrosia artemisiifolia	S5		
Large-leaved Aster	Eurybia macrophylla	S5		
Spotted Joe Pye Weed	Eutrochium maculatum var. maculatum	S5		
Water-marigold	Bidens beckii	S5		
Chicory	Cichorium intybus	SNA		
Yellow Chamomile	Cota tinctoria	SNA		
Canada Thistle	Cirsium arvense	SNA		
Common Burdock	Arctium minus	SNA		
Fern-leaved Yarrow	Achillea filipendulina	SNA		
Bull Thistle	Cirsium vulgare	SNA		
Oxeye Daisy	Leucanthemum vulgare	SNA		
Meadow Hawkweed	Pilosella caespitosa	SNA		
Field Sow-thistle	Sonchus arvensis ssp. arvensis	SNA		
Common Dandelion	Taraxacum officinale	SNA		
Yellow Goat's-beard	Tragopogon dubius	SNA		

Colt's-foot	Tussilago farfara	SNA
Orange Hawkweed	Pilosella aurantiaca	SNA
Jerusalem Artichoke	Helianthus tuberosus	SU
Field Chickweed	Cerastium arvense ssp. arvense	SNA
Maiden Pink	Dianthus deltoides	SNA
Bladder Campion	Silene vulgaris	SNA
White Goosefoot	Chenopodium album	SNA
Climbing Bittersweet	Celastrus scandens	S5
Gray Dogwood	Cornus racemosa	S5
Red-osier Dogwood	Cornus stolonifera	S5
Old Switch Panicgrass	Panicum virgatum	S4
Porcupine Sedge	Carex hystericina	S5
Dark-green Bulrush	Scirpus atrovirens	S5
Bebb's Sedge	Carex bebbii	S5
Inland Sedge	Carex interior	S5
Hard Fescue	Festuca trachyphylla	SNA
Smooth Crabgrass	Digitaria ischaemum	SNA
Red Fescue	Festuca rubra ssp. rubra	SNA
Canada Bluegrass	Poa compressa	SNA
Meadow Brome	Bromus erectus	SNA
Common Timothy	Phleum pratense	SNA
Common Canary Grass	Phalaris canariensis	SNA
Orchard Grass	Dactylis glomerata	SNA
Smooth Arrowwood	Viburnum recognitum	S4
Maple-leaved Viburnum	Viburnum acerifolium	S5
Nannyberry	Viburnum lentago	S5
Tartarian Honeysuckle	Lonicera tatarica	SNA
Field Horsetail	Equisetum arvense	S5
Marsh Horsetail	Equisetum palustre	S5
Alfalfa	Medicago sativa ssp. sativa	SNA
Tufted Vetch	Vicia cracca	SNA
White Clover	Trifolium repens	SNA
Red Clover	Trifolium pratense	SNA
White Sweet-clover	Melilotus albus	SNA
Low Hop Clover	Trifolium campestre	SNA
American Beech	Fagus grandifolia	S4

Northern Red Oak	Quercus rubra	S5
Bur Oak	Quercus macrocarpa	S5
Paper Birch	Betula papyrifera	S5
Speckled Alder	Alnus incana	S5
White Oak	Quercus alba	S5
Sensitive Fern	Onoclea sensibilis	S5
Ostrich Fern	Matteuccia struthiopteris	S5
Spinulose Wood Fern	Dryopteris carthusiana	S5
Bracken Fern	Pteridium aquilinum	S5
Common Milkweed	Asclepias syriaca	S5
Spotted Jewelweed	Impatiens capensis	S5
Canada Rush	Juncus canadensis	S5
Blue Vervain	Verbena hastata	S5
Self-heal	Prunella vulgaris ssp. vulgaris	SNA
Common Viper's-bugloss	Echium vulgare	SNA
Wild Lily-of-the-valley	Maianthemum canadense ssp. canadense	S5
White Trillium	Trillium grandiflorum	S5
Garden Asparagus	Asparagus officinalis	SNA
American Basswood	Tilia americana	S5
Common Evening Primrose	Oenothera biennis	S5
Purple Loosestrife	Lythrum salicaria	SNA
Fragrant Water-lily	Nymphaea odorata ssp. odorata	S5?
Eastern White Pine	Pinus strobus	S5
Common Juniper	Juniperus communis	S5
Eastern Red Cedar	Juniperus virginiana	S5
Eastern White Cedar	Thuja occidentalis	S5
White Spruce	Picea glauca	S5
American Larch	Larix laricina	S5
Rugel's Plantain	Plantago rugelii	S5
Spotted Lady's-thumb	Persicaria maculosa	SNA
Curly Dock	Rumex crispus	SNA
Whorled Loosestrife	Lysimachia quadrifolia	S4
Bird's-eye Primrose	Primula mistassinica	S4S5
Early Meadow-rue	Thalictrum dioicum	S5
Yellow Marsh Marigold	Caltha palustris	S5
Round-lobed Hepatica	Anemone americana	S5

Red Baneberry	Actaea rubra	S5
Tall Buttercup	Ranunculus acris	SNA
Virginia Creeper	Parthenocissus quinquefolia	S4?
Common Buckthorn	Rhamnus cathartica	SNA
Black Cherry	Prunus serotina	S5
Black Chokeberry	Aronia melanocarpa	S5
Old-field Cinquefoil	Potentilla simplex	S5
Creeping Cinquefoil	Potentilla reptans	SNA
English Hawthorn	Crataegus monogyna	SNA
Common Red Raspberry	Rubus idaeus ssp. idaeus	SNA
European Mountain-ash	Sorbus aucuparia	SNA
Wild Strawberry	Fragaria virginiana ssp. virginiana	SU
Trembling Aspen	Populus tremuloides	S5
Pussy Willow	Salix discolor	S5
Meadow Willow	Salix petiolaris	S5
Crack Willow	Salix euxina	SNA
Manitoba Maple	Acer negundo	S5
Sugar Maple	Acer saccharum	S5
Red Maple	Acer rubrum	S5
Staghorn Sumac	Rhus typhina	S5
Eastern Poison Ivy	Toxicodendron radicans var. radicans	S5
Silver Maple	Acer saccharinum	S5
Norway Maple	Acer platanoides	SNA
White Ash	Fraxinus americana	S4
Black Ash	Fraxinus nigra	S4
Common Lilac	Syringa vulgaris	SNA
Butter-and-eggs	Linaria vulgaris	SNA
Field Speedwell	Veronica agrestis	SNA
Common St. John's-wort	Hypericum perforatum	SNA
Broad-leaved Cattail	Typha latifolia	S5
Narrow-leaved Cattail	Typha angustifolia	SNA
American Elm	Ulmus americana	S5
Woolly Blue Violet	Viola sororia	S5