Natural Environment Report
Lichty Pit

July 2024

Part of Lots 11 and 12, Concession 4, Centre Wellington, Ontario

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Table of Contents

1.0 INTRODUCTION

1.1 Background and Scope of Study

Stovel and Associates Inc. was retained by James Thoume Construction Ltd. ("Thoume") to prepare a Natural Environment Report "NER") for a proposed Class A Pit Licence application. The site is located on Lots 11 and 12, Concession 4 West, Township of Centre Wellington, ("former Township of Pilkington), County of Wellington. Map 1 illustrates the location of the subject lands.

The proposed pit (42.7 ha) involves extraction of mineral aggregate 1.5 m above the water table, including portions of three farm parcels. The licence sought will be a Class A Pit with extraction limited to 1.5 m above the water table. The new Technical Reports and Information Standards (August, 2023) for applications under the *Aggregate Resources Act* (ARA) set out several mandatory technical study requirements for Class A pit licence applications. The requirement for a *Natural Environment Report* is explained as follows:

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

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

Where any of the above features or areas have been identified, the report must identify and evaluate any negative impacts on the natural features or areas, including their ecological functions, and identify any proposed preventative, mitigative or remedial measures. The report must also identify if the site or any of the features, included in (a) through (g), are located within a natural heritage system that has been identified by a municipality in ecoregions 6E and 7E or by the province as part of a provincial plan."

The subject lands are located with A Place to Grow: Growth Plan for the Greater Golden Horseshoe ("Growth Plan"). Policy 4.2.2.3.1 indicates that: "*Provincial mapping of the Natural Heritage System for the Growth Plan does not apply until it has been implemented in the applicable upper- or single-tier official plan. Until that time, the policies in this Plan that refer to the Natural Heritage System for the Growth Plan will apply outside settlement areas to the natural heritage systems identified in official plans that were approved and in*

effect as of July 1, 2017." The County of Wellington has not updated the Official Plan to implement the provincial mapping of the Natural Heritage System. Note, water-related features and potential impacts are described and discussed in the Hydrogeological Study prepared by Groundwater Science Corp. ("GSC"), 2024.

2.0 METHODS

2.1 Background Data

A variety of background information sources were reviewed during this study. Among these sources were:

- *Physiography of Southern Ontario* (Chapman and Putnam 1984).
- *Soil Survey of County of Wellington*.
- on-line data base queries at the Ontario Natural Heritage Information Centre (NHIC) web site.
- on-line mapping provided by the Grand River Conservation Authority ("GRCA") of the subject lands and adjacent lands.
- Hydrogeological Study – Proposed Lichty Pit, Township of Centre Wellington (Groundwater Science Corp. 2024).
- aerial photography of the subject land and surrounding area.
- County of Wellington Official Plan.
- *Township of Centre Wellington Zoning By-law*.
- Selected Atlas sources: Butterfly, Reptile and Amphibian, Breeding Birds, Mammal and Odonates.

2.2 Operational Definitions

Within the context of this report, the lands proposed to be licensed are referred to as: "*Lichty Pit,* "subject land", "subject property", "subject site" or "site". The lands that are within 120 m of the site are referred to as "adjacent lands".

For the purposes of this study, the definitions of the significant natural heritage features referenced in Section 1.1 are taken from the *Provincial Policy Statement (2020)*. These are described as follows:

- *Wetlands and Significant Wetlands* - The term *wetland* means lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface. In either case the presence of abundant water has caused the formation of hydric soils and has favoured the dominance of either hydrophytic plants or water tolerant plants. *Significant wetlands* mean a wetland identified as provincially significant by the Ontario Ministry of Natural Resources and Forestry using evaluation procedures established by the Province, as amended from time to time.

- *Habitat of Endangered Species and Threatened Species* – means with respect to a species listed on the Species at Risk in Ontario List as an endangered or threatened species for which a regulation made under clause 55(1)(a) of the Endangered Species Act, 2007 is in force, the area prescribed by that regulation as the habitat of the species; or with respect to any other species listed on the Species at Risk in Ontario List as an endangered or threatened species, an area on which the species depends, directly or indirectly, to carry on its life process such as reproduction rearing, hibernation, migration or feeding, as approved by the Ontario Ministry of Natural Resources and Forestry; and places in the areas described in clauses a) or b) above, whichever is applicable, that are used by members of the species as dens, nests, hibernacula or other residences.

- *Fish Habitat* – as defined in the Fisheries Act, means spawning grounds and any other areas, including nursery, rearing, food supply, and migration areas on which fish depend directly or indirectly in order to carry out their life processes.

- *Woodlands and Significant Woodlands* - *woodlands* means treed areas that provide environmental and economic benefits to both the landowner and the general public, such as erosion prevention, hydrogeological and nutrient cycling, provision of clean air and the long-term storage of carbon, provision of wildlife habitat, outdoor recreational opportunities and the sustainable harvest of a wide range of woodland products. Woodlands include treed areas, woodlots or forested areas and vary in their level of significance at the local, regional and provincial level. Woodlands may be delineated according to the Forestry Act definition of the Province's Ecological Land Classification system definition for "forest". Significant Woodland is an area which is ecological important in terms of features such as species composition, age of trees and stand history, functionally important due to its contribution to the broader landscaped because of its location, size or due to the amount of forest cover in the planning area; or economically important due to the site quality, species composition, or past management history. These are to be identified using criteria established by the Ontario Ministry of Natural Resources and Forestry.

- *Significant* in regard to other features and areas in policy 2.1 of the PPS (2020), ecological important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system. Criteria for determining significance for the resources are recommended by the Province, but municipal approaches that achieve or exceed the same objective may also be used. While some significant resources may already be identified and inventoried by official sources, the significance of others can only be determined after evaluation.

- *Valleylands* - The term *valleyland* means a natural area that occurs in a valley or other landform depression that has water flowing through or standing for some

period of time.

- *Wildlife Habitat* means areas where plants, animals and other organisms live and find adequate amounts of food, water, shelter and spaces needed to sustain their populations. Specific wildlife habitats of concern may include areas where species concentrate at a vulnerable point in their annual or life cycle; and areas which are important to migratory or non-migratory species.

- *Significant Areas of Natural and Scientific Interest (ANSI's)* - The term *area(s) of natural and scientific interest* mean areas of land and water containing natural landscapes or features that have been identified as having life science or earth science values related to protection, scientific study or education.

2.3 Data Review and Fieldwork

Prior to undertaking fieldwork, a search of the NHIC database was completed. This data search provided information on natural and semi-natural features and species that have been reported within the general area.

Four site visits were made during 2021; April 23, May 21, July 9, and September 30. The primary purposes of these visits were to conduct breeding bird surveys and plant inventories and to complete a description of the vegetation communities using the second edition of the Ecological Land Classification System for Southern Ontario (Lee 2008). Site visits in 2022 occurred on May 20, June 29, July 9, and August 18. The purpose of these site visits was to conduct amphibian calling surveys. Observations of mammals, birds and snakes also occurred during these site visits. Stream survey was undertaken on June 13th, 2021. The wetland limits were also marked in 2022 and confirmed by the GRCA on October 12, 2022.

In 2023 (July 21 and December 05) and 2024 (July 18), the Area 2 portion of the proposed Lichty Pit was visited. The purpose of these visits was to document the offsite pond conditions and to provide a description of the anthropogenic features associated with the Area 2 lands.

LICHTY PIT - Field Survey Summary (Natural/Semi-Natural Features)

SURVEY TYPE	SURVEY PROTOCOL	DATES
Ecological Land Classification -	Lee et al., 1998 Lee, H., 2008	04_23_2021 05_21_2021 07_09_2021
Vegetation Inventories	Comprehensive Search by ELC Polygon	04_23_2021 05_21_2021 07_09_2021

Wetland Boundary Delineation	Ontario Wetland Evaluation System (Wetland Boundary Delineation)	09_30_2021 08_19_2022
Wetland Boundary Inspection and Confirmation by GRCA	Ontario Wetland Evaluation System (Wetland Boundary Delineation)	10_12_2022
Amphibian Calling Surveys	Marsh Monitoring Program – Bird Studies Canada (March 2, 2014)	05_20_2022 06_29_2022 07_09_2022
Snake Emergence Surveys	Casual Observation throughout Site	06_29_2022 07_09_2022
Breeding Bird Surveys	Bird Studies Canada	05_21_2021 07_09_2021

Breeding bird work was done in the mornings with no precipitation and light winds and was completed prior to 1000 h. For both wildlife and plant species, notes were made on whether the species occurred within the extraction area, setbacks, or on adjacent lands.

A conservative approach was taken when considering breeding birds. All species seen and heard were considered to be breeding unless there was conclusive evidence to the contrary. Any bird species observed in fencerows along the property boundary was considered to be breeding onsite if suitable habitat was present.

Because the site and environs are culturally influenced, some surveys were not completed. No nocturnal surveys were undertaken for crepuscular or nocturnal breeding birds such as the Eastern Whip-poor- will or Common Nighthawk.

Scientific names of species that were observed are presented in the appended lists of plant and wildlife species.

Incidental observations of other wildlife groups were made while completing the breeding bird surveys, i.e. amphibians, reptiles and mammals. These are listed in the appendices.

In general, field work on anthropogenic systems, including cultivated farm fields, was not conducted. The study team did not access lands located beyond the boundaries of the proposed development. The exception to this was along the Cox Creek stream corridor.

3.0 DESCRIPTION OF THE ENVIRONMENT

3.1 Terrain Setting

This section provides an overview of four aspects of the terrain setting: physiography,

geology, topography and surficial soils. The following description has been taken from the Hydrogeological Assessment of the Proposed Lichty Pit (Groundwater Science Corp. 2024).

> *"The published surficial geology mapping for the site and area indicates that the site is located within a gravelly glaciofluvial (river associated or outwash type) deposit. Ice-contact (kame type) sand/gravel deposits are located at surface northwest of the site and in the wider area. Based on the reported depositional sequence, the glaciofluvial and ice-contact sand/gravel deposits are likely underlain by the sandy silt to silty sand glacial Till (unsorted, diamicton type deposits).*
>
> *At the site Modern Alluvial deposits are mapped along Cox Creek, extending across the creek valley.*
>
> *The water well records generally confirm the sequence deposits, with sand and gravel occurring at surface (in some locations) underlain by a sequence of till and/or clay deposits. Deeper sand/gravel deposits also occur within the till sequence. This sequence extends to bedrock.*
>
> *Bedrock in the area of the site is reported to be Guelph Formation dolostone, described as sucrosic, fossiliferous, locally biohermal, which corresponds well with local water well records information. Based on the closest reported water well records, total overburden thickness (i.e. depth to bedrock) in the area of the site is between 24 and 28 mBGS.". (*page 6*)*

The property northwest of Sideroad 12 is relatively flat lying, with maximum and minimum topographic elevations of approximately 353 and 350 metres above sea level (mASL) respectively. Potential overland flow is either retained on-site (internally drained), directed to roadside ditches (flow to Cox Creek), or flows directly to the Cox Creek system (along the east site edge). Most of this property consists of agricultural field, however, also includes a residence and other farm buildings.

The property southeast of Sideroad 12 slopes moderately east to southeast, toward Cox Creek. Maximum and minimum topographic elevations within the proposed Licence are approximately 352 mASL (at Side Road 12) and 345 (near Cox Creek) mASL respectively. Potential overland flow runoff would move toward the Cox Creek valley system.

Background mapping illustrates two soil types on the subject lands: London and Guelph soil series. The London loam and Guelph loam soils cover most of the subject properties. These soils are pale brown, calcareous, loam soils developed on glacial till. The till is derived from grey and brown limestones of the underlying rock strata. The Guelph loam is the well-drained member of this catena and the London loam is the imperfectly drained member. The Guelph and London soils are important agricultural soils in Wellington County. The main crops grown are pasture, hay, mixed grains, oats, winter wheat and silage corn. Turnips for table use are grown commercially. Yields of most crops are well above the provincial average and could be economically increased by applying commercial fertilizers at

somewhat higher rates than are currently used. Artificial drainage of the London loam could have a higher potential than the Guelph series due mainly to their smoother topography.

On the subject lands, the London loam soils account for approximately 40.6 ha of the site with the remaining soils being Guelph loam (+/- 2.12 ha). On adjacent lands, two soil series were mapped: Bottom Lands (i.e. creek area) and Burford loam (small portion mapped at the northern limits of the Area 1 lands).

3.2 Water Table

Groundwater Sciences Corp. ("GWS") provided an interpretation of the shallow water table. GWS determined the groundwater surface within the proposed pit to range from 344 to 350.7 mASL.

3.3 Vegetation Communities

This description of ELC polygons in this report relies on both versions of ecological land classification in Ontario. These are the original Ecological Land Classification for Southern Ontario, First Approximation and Its Application, Lee et al, 1998 and the subsequent revision, Southern Ontario Ecological Land Classification, Vegetation Type List, Lee, H. May, 2008. Both documents have been considered. Map 3 illustrates the vegetation communities mapped on the subject lands and adjacent lands.

Overview

The subject lands, both Area 1 and Area 2, are comprised mainly of agricultural fields and agricultural buildings/farmhouses. The proposed extraction area is limited to the farm fields (Photo Nos. 1A, 1B and 1C). As a result, the site is not considered to include natural or semi-natural vegetation communities. The fence lines and hedgerows provide some native and non-native tree species and have been described in the following paragraphs.

Offsite lands, particularly north of the Area 1 lands, are natural and semi-natural vegetation communities. The dominant feature north of the site is Cox Creek and its narrow flood plain. A wetland and forest community are mapped north of the subject land and described below.

Cropland – OAGM1 (Coarse Annual Row Crop Type)

The cropland covers much of the property that is proposed to be extracted. A polygon designation of OAGM1 (Coarse Mineral Annual Row Crop Type) is made for the cropland which is in an agricultural rotation of soybeans, corn and small grains.

Farmstead – CVR_4 (Rural Property)

The farmstead on 8th Line E. is classified as CVR_4 (rural property). This polygon contains the principal residence and associated landscaped area, including a mowed lawn. Vegetation consists of Sugar Maple, Silver Maple and horticultural species.

Photo #1A: Subject Lands – Area 1 – Drone view looking North

Photo #1B: Subject Lands – Area 2 – Drone view looking North

Photo #1C: Subject Lands – Area 2 - Drone view looking West towards 8th Line

Farm Buildings and Yard – IAGM1 (Agricultural Buildings)

The farmstead and associated lands are classified as IAGM1 (Agricultural Buildings). On the Area 1 lands, this polygon contains barns, sheds and open areas for working with a herd of dairy cattle. On Area 2 lands, the IAGM1 unit includes storage buildings, internal roads (gravel base) and an outside storage area.

Mineral Hedgerows – TAGM5

A series of hedgerows (and fencerows) are mapped on the subject lands. These hedgerows follow the perimeter of the farm parcels abutting the municipal roads and internal lane system for the existing agricultural operations (Photo #2).

Along the municipal road right-of-ways are a series of Sugar Maples (in poor to fair condition). Understory growth is limited to weedy herbaceous species. Other tree species include Black Walnut, Staghorn Sumac, Common Buckthorn and Norway Spruce.

On Area 2 lands, a series of hedgerows and windbreaks have been planted along the perimeter of internal lanes and in landscaping areas. Species include White Spruce and Colorado Blue Spruce. To the north of the Area 2 lands are a several individual plantings of Sugar Maple, Silver Maple, Poplar and Willow.

Photo #2: Roadside View of Sugar Maples looking North-East on Sideroad 12

Holding Pasture – OAGM4 (Medium Mineral Open Pasture Type)

There is a small area of pasture that is a holding yard immediately adjacent and downslope from the farm building and residence (Area 1 lands). This polygon is contiguous with the floodplain of Cox Creek and the larger pasture lands which are vegetated with Crack Willow, shrub willows, dogwoods, pasture grasses, common wildflowers and various sedges including tussock sedge.

Northeast edge of the Site next to Cropland – FOD2 (Dry-Fresh Oak-Maple-Hickory Deciduous Forest Ecosite)

This transitional zone is both an old hedgerow and a remnant of woodland. This has been designated as FOD2 (Dry-Fresh Oak-Maple-Hickory Deciduous Forest Ecosite). Vegetation includes Bitternut Hickory, Sugar Maple, Black Cherry, Swamp Maple, Balsam Poplar, Chokecherry, Hawthorn, Red Osier Dogwood.

Dry-Fresh Deciduous Shrub Thicket Ecosite–THDM2

This is the area downslope from the edge of the cropland. This Thicket ecosite is a transitional zone between the edge of cropland and the Cox Creek floodplain. This area is dominated by shrubs and has the designation of THDM2 (Shrub Thicket). The plant community is resulting from or maintained by cultural or anthropogenic-based disturbances. This unit has been described as cultural because it is not a forest habitat or swamp habitat like the adjacent polygons. It appears that at some time past this area was over-cut Vegetation consists of Hawthorn, Red Osier Dogwood, Green Ash, Eastern White Cedar, feral Malus, Buckthorn.

Eastern Wetland – SWT / SWD (Thicket Swamp/Deciduous Swamp)

This landscape feature dominates the upper reaches of the Cox Creek floodplain east of the subject lands. This wetland is Provincially Significant and is part of the Speed Lutteral Swan Creek Wetland Complex. The site character is variable in proximity to the site. The site is a mix of thicket swamp and lowland deciduous forest. Vegetation includes Silver Maple, Red Ash, Black Walnut, Bebb's Willow, Sensitive Fern and Reed Canary Grass.

The designation applied to this polygon has leaned toward a swamp character with inclusions of deciduous forest. This polygon is an intermixture of Deciduous Swamp – SWD and Thicket Swamp which has a tree cover of 25% and hydrophytic shrubs comprising more than 25%.

The Deciduous Swamp has a tree cover of more than 25% that are greater than 5 m in height. Deciduous tree species make up 75 % of canopy cover. The Thicket Swamp is influenced by variable flooding regimes with a water depth of less than 2 meters. Standing water or vernal pooling make up more than 20% of the ground coverage.

PSW Extension – SWT2 (Mineral Thicket Swamp Ecosite)

The south facing wetland edge receives more light and is more densely forested. This area of the PSW has more large trees and inclusions of woodland. An ELC designation of FOD7

(Fresh-Moist Lowland Deciduous Forest Ecosite) applies here but it is noted that a designation of SWT2 (Mineral Thicket Swamp Ecosite) also applies to areas that are lesser forested. Species composition is similar to the SWT/SWD. This characteristic extends into the subject lands within the pasture lands and along the east edge of the cropland.

The ELC polygons in this area generally fall within moist (4, 5, 6) to fresh (2, 3) moisture regimes. Soils are loams and occasionally sands and clays; all soils have finer silt and clay components. There is well (3) to poor (6) soil drainage. Lower slopes (4, 5) typically have bottom lands (5, 6) especially flood plains as found here where perennially wet areas exist. The areas that are forested are typically in rich areas where deposition due to flooding occurs yet drying occurs by mid- to late summer.

Flood Plain Pasture – OAGM4 (FP) (Medium Mineral Open Pasture Type)

The Cox Creek floodplain on Area 1 lands is a cattle pasture that has been used (and is currently used) for agriculture for many years (Photo #3). These pasture lands are found on both sides of Cox Creek. Due to low relief most of the pasture is seasonally flooded and occasionally flooded following storm events. Soils mapping for this area indicates that this unit is Bottom Land soils, primarily consisting of alluvium deposited by periodic flooding of the watercourse. The texture of the soil is variable. This area was inspected by the GRCA and determined not to be wetland. Pasture grasses are abundant in this unit.

Photo #3: Flood Plain Pasture – Drone View looking North-East

Recreational Pond (OAW)

A dugout pond was noted north of the Area 2 lands (west side of Sideroad 12), just south of Cox Creek (Photo #4). This pond is not online with the Creek. The pond is controlled by an overflow device, located near Sideroad 12. The pond is more than 2 m deep and is not considered to be a wetland. The lands surrounding the pond are landscaped and mowed. Scattered plantings of Silver Maple, Poplar, Norway Spruce and Willow were noted.

Photo #4: Recreational Pond – Drone View looking North

3.4 Plant Species

A list of the plant species that were observed is presented in Appendix 2. As previously noted, the plants recorded are indicative of cultural landscapes dominated by cultivated agricultural lands. 121 plant species were recorded. No threatened or endangered species were identified.

3.5 Wildlife Species

A total of 57 wildlife species were observed (see Appendix 3). This is a low diversity due predominantly to the highly disturbed nature of the study area. The wildlife observed consisted of 1 butterfly, 43 birds, 5 amphibians, 1 bumblebee, and 7 mammals.

3.6 Fish Species

Background information indicates the following fish species associated with Cox Creek:

Blacknose Dace (*Rhinichthys atratulus*), Brassy Minnow (*Hybognathus hankinsoni*), Creek Chub (*Semotilus atromaculatus*), Emerald Shiner (*Notropis atherinoides*), Fathead Minnow (*Pimephales promelas*), Mottled Sculpin (*Cottus bairdii*) and Northern Redbelly Dace (*Chrosomus eos)*. Based on background data, it was determined that Cox Creek should be considered potential cool water fish habitat. A summary of stream habitat is provided in Appendix 5.

4.0 SIGNIFICANT NATURAL HERITAGE FEATURES

4.1 Significant Wetlands and Significant Coastal Wetlands

There are no significant wetlands or coastal wetlands on site, however there is a significant wetland north of the subject site (Appendix 6). The closest location of the wetland to the proposed pit extraction area is approximately 30 m. The Speed Lutteral Swan Creek Wetland Complex runs along the north-northeastern limits of the subject site.

4.2 Habitat of Endangered and Threatened Species

The Species at Risk screening determined that four endangered and threatened species had the potential to occur on the subject lands. These were: Butternut, Barn Swallow, Bobolink, and Bobolink and Eastern Meadowlark. These species were not observed onsite, with the exception of Barn Swallow. Barn Swallow was observed on the site within the Lichty Farmstead at 5999 Eighth Line. It is recognized that potential habitat for this species exists at the remaining barns/sheds associated with the agricultural operations on the subject lands.

4.3 Fish Habitat

There is no fish habitat onsite. Fish habitat exists in Cox Creek, north of the subject lands. Photo No. 5 illustrates Cox Creek (July 23, 2024). At this location, substrate is a mix of cobble, gravel, sand and silt with silt alluvium along the bank edges. Vegetation along the banks is a mix of shrubs and trees that overhang portions of the creek.

Photo #5: Cox Creek – Approx. 20 m North of the Site, Looking Southeast

4.4 Significant Woodlands

There are no significant woodlands onsite. Background mapping (Appendix 6) illustrates that there is a significant woodland associated with the Cox Creek valley land system. This significant woodland is located offsite, north of the subject lands.

4.5 Significant Valleylands

There are no significant valleylands on or within 120 m of the site.

4.6 Significant Wildlife Habitat

There is no significant wildlife habitat onsite. There is significant wildlife habitat (Woodlands/Wetlands) associated with the Cox Creek floodplain on adjacent lands, north of the subject property.

The Natural Heritage Reference Manual (NHRM) (OMNR 2010) and the Significant Wildlife Habitat Technical Guide (SWHTG) (OMNR 2000) identify four main types of significant wildlife habitat: seasonal concentrations of animals; rare and specialized habitats for wildlife; habitats of species of conservation concern; and animal movement corridors. These are examined in Appendix 4 in relation to the natural features on and adjacent to the site.

It is concluded that the subject lands support no significant wildlife habitat. No seasonal concentrations of animals, rare habitats, specialized habitats, species of conservation

concern, or animal movement corridors are present.

4.7 Significant Areas of Natural and Scientific Interest

There are no areas of natural and scientific interest (ANSI) onsite or within 120 m of the site.

4.8 Summary of Significant Natural Heritage Features

The NER determined the following significant natural heritage features on adjacent lands:

- Significant wetland,
- Significant woodland,
- Fish habitat,
- Habitat for threatened or endangered species.

Based on this finding, an impact assessment is required.

5.0 DESCRIPTION OF PROPOSED DEVELOPMENT

The stages and form of the proposed operation methods are described in the Site Plans. A synopsis of the proposed development is provided below:

- the area proposed for the pit is approximately 42.7 ha in size, and the area proposed to be extracted is approximately 28.4 ha in size. The proposed extraction area will focus on the existing agricultural fields;

- the pit will be operated in two Areas: Area 1 is located east of Sideroad 12 and Area 2 is located west of Sideroad 12;

- extraction at the pit will not result in the removal of agricultural buildings. These areas will remain zoned Agricultural. The area to be extracted is comprised of agricultural lands;

- access to the pit will be through proposed entrances on Sideroad 12;

- hydraulic power equipment, including loaders and excavators will be used to extract the site;

- soil will be progressively stripped and piled in perimeter berms or the pit floor. Berms will not be established in the northern portion of Area 1 (next to the woodland/creek system) unless required for noise attenuation purposes;

- extraction will not occur below the water table. The effective limit of excavation will be set at a depth of 1.5 m above the water table;

- aggregate will be extracted progressively and processed using portable processing plants, e.g. portable crusher and screening plant;

- fuel will not be permanently stored on the site;

- perimeter berming has been designed by an acoustic engineer to ensure that impacts on adjacent residences are minimized;

- the site has been designed to promote phased extraction and progressive rehabilitation of the site to an agricultural condition.

The Site Plan has been developed to address the specifications of the ARA. Extraction should be viewed as interim land use. The remainder of the subject land will be rehabilitated to an agricultural end use. The northern limits of Area 1 can be revegetated using native trees and shrubs to enhance the ecological functions (linkages and corridors) associated with the forested stream valley adjacent to the site.

6.0 POTENTIAL IMPACTS AND MITIGATION

6.1 Significant Wetland

The limits of the wetland community associated with the Speed Lutteral Wetland Complex were inspected by the GRCA. The wetland is not mapped on the subject property.

The proposed licence limit avoids the wetland. Extraction has been setback well over 30m from the wetland limits. The estimated separation distance is approximately 80 m. Therefore, there will be no direct impact on wetland communities.

Indirect impacts focus on the following types of impacts:

- Sedimentation from erosion, and
- Water related impacts.

There will be no impacts on the wetland due to increased rates of sedimentation because a setback has been established. The extraction limits will be demarcated with heavy duty silt fence. The silt fence will be regularly monitored and repaired/replaced as necessary to ensure no offsite sedimentation. The status of the sediment fence will be reported in the annual compliance reports. No development will occur within this setback area.

In terms of water-related impacts, the pit will be restricted in depth to an elevation that is 1.5m above the established seasonally high-water table. The Hydrogeology report establishes a water monitoring program to ensure that water-related impacts are avoided.

6.2 Significant Woodland

A significant woodland was mapped north of the site, in proximity to the Speed-Lutteral Wetland Complex. This woodland is over 30 m from the proposed extraction area. There will be no direct impact on the significant woodland as the proposed licence limits are setback over 10 m from the dripline of the adjacent woodland. No additional mitigation measures are required to ensure no impact on the adjacent woodlands.

6.3 Fish Habitat

There is no fish habitat onsite but fish habitat exists in Cox Creek, north of the subject site. Cox Creek is located over 30 m from the proposed extraction limits.

There will be no direct impact on fish habitat as a result of the proposed development. The proposed extraction limit is well setback from Cox Creek. No vegetation will be removed in proximity to Cox Creek.

Indirect impacts related to increased erosion and sedimentation are addressed through the inclusion of heavy-duty silt fencing along the extraction limits in areas adjacent to the Cox Creek.

Water-related impacts on fish habitat are addressed by GWS (2024).

> *"The proposed above water table extraction will slightly increase overall groundwater recharge volumes and groundwater flow potential toward the creek system. This is expected to offset any potential changes in runoff. Overall (combined) water contributions to Cox Creek and wetland systems in the area are expected to be maintained. In addition, based on the setting there is no significant potential for thermal impacts to Cox Creek". (Page 18)*

6.4 Habitat for Threatened or Endangered Species

A Barn Swallow was noted at the existing farmstead (Area 1). Barn Swallows are commonly found in the vernacular rural landscape due to traditional animal husbandry and older barns and sheds associated with dairy cattle. They are known to fly freely between farms and may not be associated with any farm on any given day. The barns associated with the farmstead are included in the proposed licence but not in the proposed extraction area. The barns (and farmstead) will remain in the Agricultural zone. The onsite barns will not be removed. Therefore, there is no impact anticipated.

6.5 Significant Wildlife Habitat

There is no Significant Wildlife Habitat within the area proposed to be extracted. Significant Wildlife Habitat is associated with the adjacent lands, north of the proposed licence in the Area 1 area. No impacts on Significant Wildlife Habitat are anticipated, given the 30 m setback to the adjacent woodland/wetland features. No trees will be removed and no habitat functions will be impacted.

6.6 Mitigation and Monitoring

The mitigation measures include the following:

- 30 m setback to wetland limits.
- 10 m setback to the dripline of woodland limits.
- The use of heavy-duty silt fence to mark the extraction limits in areas next to wetland/woodland systems.
- Unless required for noise attenuation, limit the establishment of berms in the northeastern limits of Area 1 next to Cox Creek and the associated wetland/woodland system.

The 30 m setback in northeast portion of Area 1 will be re-vegetated using native shrubs and trees. This re-vegetation program will enhance the connectivity and corridor function

associated with the adjacent wetland/valley system.

GWS sets out standard water monitoring measures to ensure that the 1.5 m separation (above the established water table) is maintained. No additional environmental monitoring is recommended.

Progressive and final rehabilitation will be to an agricultural condition that is consistent with the surrounding adjacent lands.

Additional mitigation measures are not necessary to ensure that there will be no negative impact on the adjacent natural heritage features.

7.0 CONCLUSION

As part of the licensing process, a Natural Environment Report is a mandatory documentation requirement. This study has been prepared based on relevant background information and field reconnaissance. Field surveys to document ecological features and functions associated with the subject land were conducted as part of this project.

The proximity of *significant wetlands, habitats of endangered or threatened species, fish habitat, significant woodlands, significant valley lands, significant wildlife habitat and significant areas of natural and scientific interest* to the subject land was considered.

As a result of the preceding evaluation, it was concluded that:

1. There are no *significant wetlands* located on the site, but a significant wetland was located within 120 m of the site.

2. There is *significant habitat for endangered or threatened species* located on the site.

3. There is no *fish habitat* located on the site, but *fish habitat* is located within 120 m of the site.

4. There is no *significant woodlands* located, but significant woodland is located within 120 m of the site.

5. There are no *significant valley lands* located on the subject land, or within 120 m of the site;

6. There is no *significant wildlife habitat* located on the site, or within 120 m of the site;

7. There are no provincially significant *areas of natural and scientific interest* located on the site, or within 120 m of the site; and

8. Since there are significant natural heritage features located onsite and within 120 m of the subject land, the *Natural Environment Report.* The report must identify and evaluate any negative impacts on the natural features or areas, including their ecological functions, and identify any proposed preventative, mitigative or remedial measures.

9. The *Natural Environment Report* provides documentation that summarizes how potential impacts on significant natural heritage features are protected. The proposed extraction area is well separated from adjacent significant natural heritage features. The main mitigation measures include extraction setbacks (i.e. minimum of 30 m from the wetland and 10 m from the dripline of the woodland), the use of heavy-duty silt fencing and groundwater monitoring (as set out by a qualified hydrogeologist). The 30 m setback along the northeast portion of Area 1 is to be revegetated with native shrubs and trees. This revegetation program will result in an enhancement of the habitat adjacent to Cox Creek, including improved connectivity.

Robert Stovel

Robert P Stovel, M.Sc., R.P.P., P.Ag. July 31, 2024

Christopher J. Hart, M.SC., M.L.A. July 31, 2024

8.0 SELECTED REFERENCES

Chapman, L. J. and D.F. Putnam. 1984. The Physiography of Southern Ontario. Third Edition. Ontario Geological Survey Special Volume No. 2, Toronto. 270 pp Map No. 2226 Physiography of South-Central Portion of Southern Ontario.

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Oldham, M.J. 1993. Distribution and status of the vascular plants of southwestern Ontario. Draft. Aylmer District, Ontario Ministry of Natural Resources. 149 pp.

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Ontario Ministry of Natural Resources. 2010. Natural Heritage Reference Manual for natural heritage policies of the Provincial Policy Statement, 2005. Second edition. Toronto, ON: Queen's Printer for Ontario. 248 pp.

Ontario Ministry of Natural Resources. 2012. Categorizing and protecting habitat under the Endangered Species Act. Peterborough, ON: Ontario Ministry of Natural Resources. 8 pp.

Ontario Ministry of Natural Resources and Forestry. 2013. General habitat description for the Barn Swallow (*Hirundo rustica*). Peterborough, ON: Ontario Ministry of Natural Resources and Forestry. 4 pp.

Ontario Ministry of Natural Resources and Forestry. 2015. Significant wildlife habitat criteria schedules for ecoregion 7E. Peterborough, ON: Ontario Ministry of Natural Resources and Forestry.

Ontario Ministry of Natural Resources and Forestry. 2016. Bank Swallow General Habitat Description. Peterborough, ON: Webinar presentation by the Ontario Ministry of Natural

Resources and Forestry in conjunction with the Ontario Stone, Sand & Gravel Association. 22 pp.

Provincial Policy Statement. 2020.

Stovel and Associates Inc. 2024. Site Plans for the Proposed Lichty Pit – James Thoume Construction Ltd.

Township of Centre Wellington Zoning Bylaw.

Maps

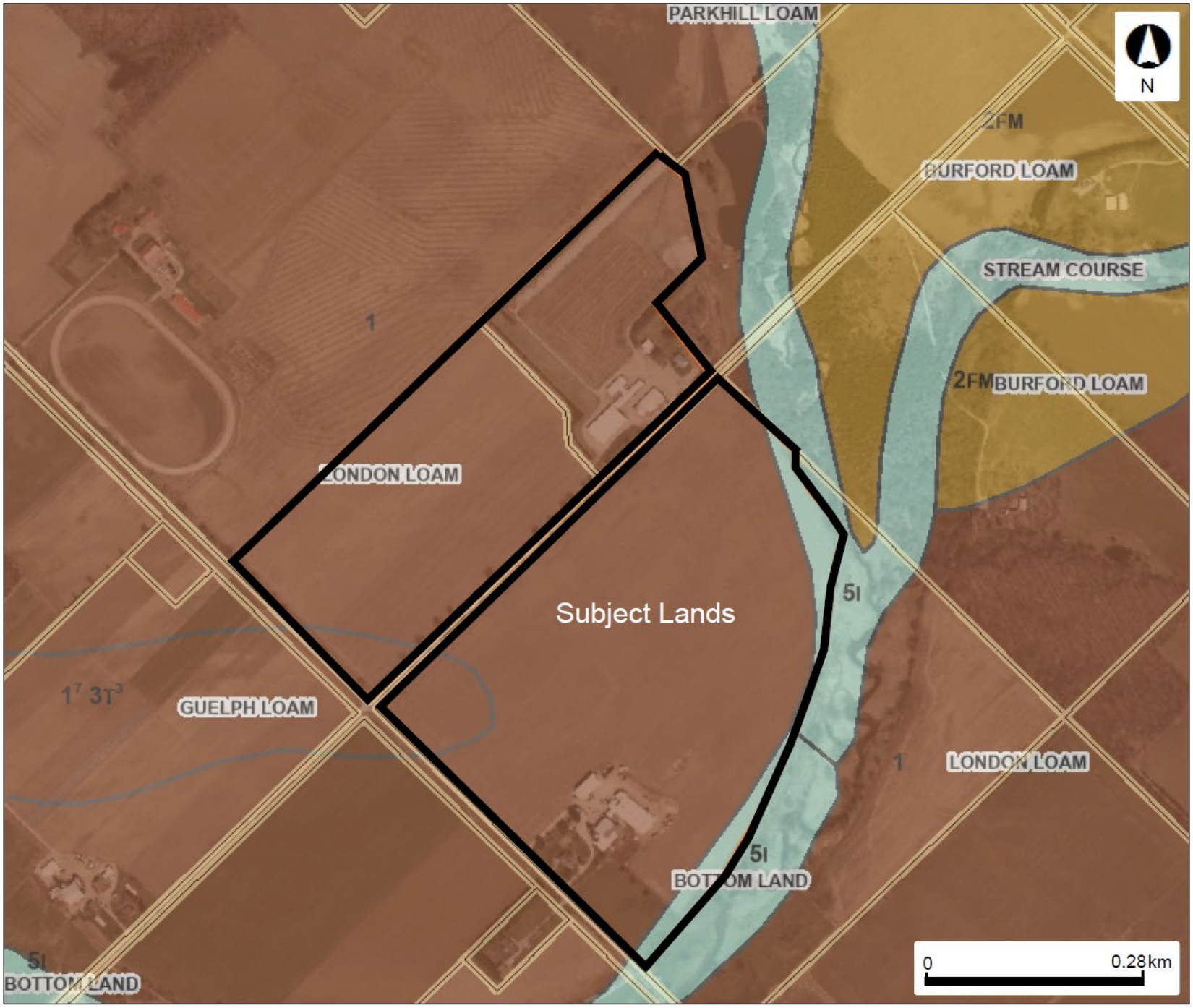
Map 1: Location of Subject Lands

7/26/2024

1:16,496

0 0.15 0.3 0.6 mi

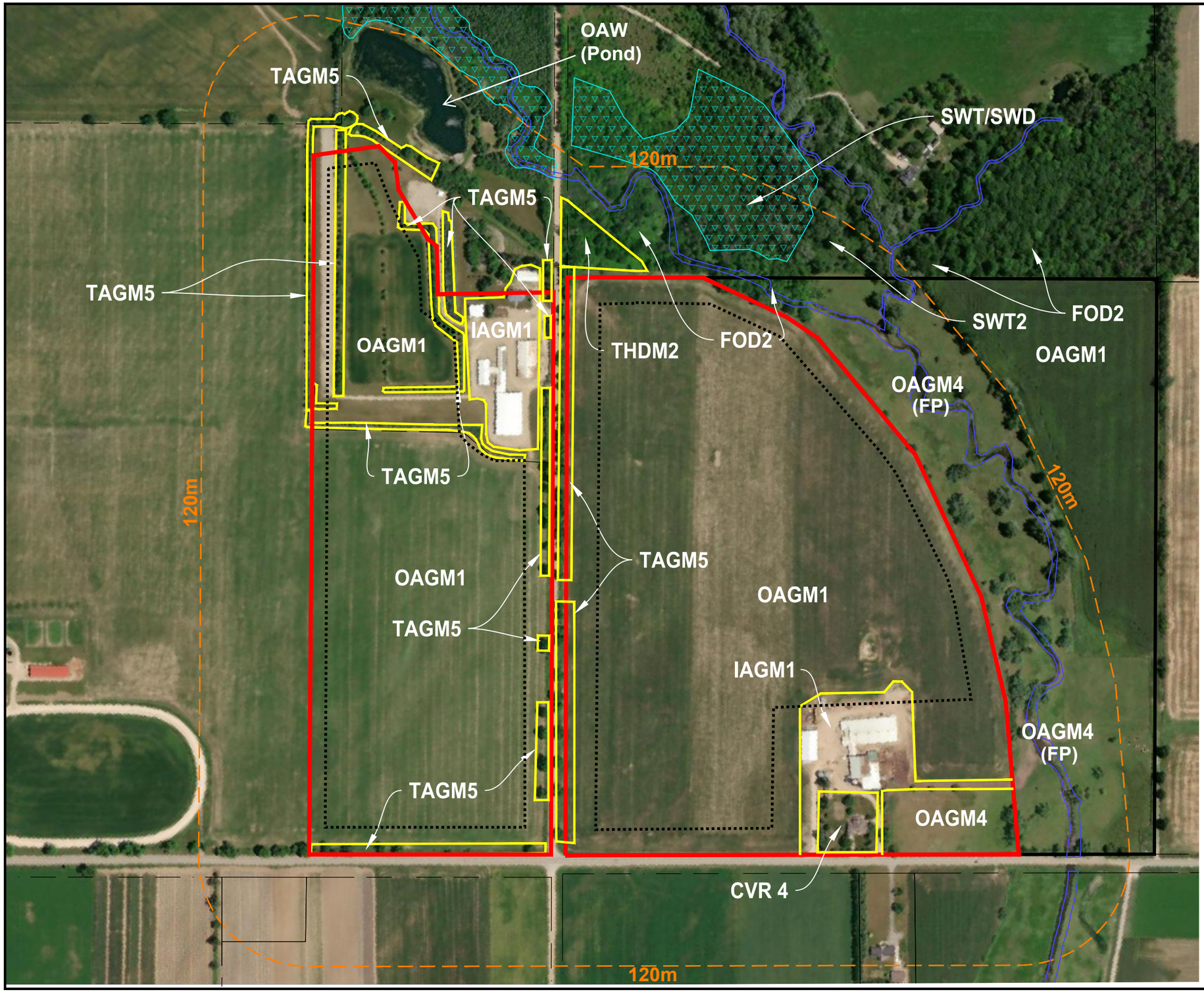
0 0.25 0.5 1 km



Legend

- Assessment Parcel
- Soil Name Label
- Soil Capability for Agriculture
  - Unclassified
  - Class 1
  - Class 2
  - Class 3
  - Class 4
  - Class 5
  - Class 6
  - Class 7
  - Organic Soil
  - Water

This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) shall not be liable in any way for the use or any information on this map. of, or reliance upon, this map.



Vegetation Community Descriptions

CVR 4 - Rural Property

FOD2 - Dry - Fresh Oak - Maple - Hickory Deciduous Forest Ecosite

IAGM1 - Agriculture Infrastructure

OAGM1 - Annual Row Crop

OAGM4 - Open Pasture

SWT/SWD -Thicket Swamp and Deciduous Swamp

SWT2 - Mineral Thicket Swamp Ecosite

TAGM5 - Medium Mineral Fencerow Type

THDM2 - Dry-Fresh Deciduous Shrub Thicket Ecosite

OAW - Pond

Legend

- Subject Lands
- Regulated Watercourse
- 120m Site Boundary
- Limit of Vegetation Unit
- Wetland (GRCA)
- Extraction Limit

Vegetation Communities

5999, 6043, 8TH LINE EAST & 7190 SIDEROAD 12
PART OF LOTS 11 & 12, CONCESSION 4 WEST
TOWNSHIP OF CENTRE WELLINGTON
(GEOGRAPHIC TOWNSHIP OF PILKINGTON)
COUNTY OF WELLINGTON

Stovel and Associates Inc.
651 Orangeville Road,
Fergus ON
N1M 1T9
P: 519-766-8042
E: stovel.associates@outlook.com

SAI
PLANNING. AGROLOGY. ENVIRONMENTAL.

Date : 12/12/2023

0 100 200 Meters

Scale 1:4250

APPENDIX 1 – QUALIFICATIONS

ROBERT P. STOVEL, M.Sc., RPP, MCIP, P.Ag.

EDUCATION

M.Sc, Rural Planning, University of Guelph, 1988.

B.A. Geography, (Resources Management), Wilfrid Laurier University, 1986.

MEMBERSHIPS

Member of the Ontario Institute of Agrologists.
Member of the Ontario Professional Planners Institute and the Canadian Institute of Planners.
Member of the Ontario Stone, Sand and Gravel Association.

POSITIONS HELD

1995 - Present: Stovel and Associates Inc., Fergus, Ontario - President.

1993 - 1995: Ecological Services For Planning Ltd., Guelph, Ontario - Senior Project Manager.

1988 - 1992: Ecological Services For Planning Ltd., Guelph, Ontario - Environmental Planner.

1986 - 1987: Environmental Consultant. Waterloo, Ontario.

EXPERIENCE

- extensive project experience in environmental assessments, environmental management plans and ecological enhancement plans in Ontario. These projects have required considerable government and non-government agency liaison, interdisciplinary team coordination and the integration of a variety of scientific disciplines.

Aggregate Applications

- certified to prepare Class A site plans under the Aggregate Resources Act.

- prepared site plans for over 50 licensed pits and quarries in Ontario including: Ospringe Pit, Mallet Pit, Flamboro Quarries, Henderson Pit, Holman Pit, Looby Pit, Albion Pit, Puslinch Pit and Extension Properties, SAMI North Pit Extension and Peyton Pit.

- assisted in the preparation of environmental plans and agricultural rehabilitation plans for the proposed Batterman Pit (Grey County), Puslinch Pit, Caledon Sand & Gravel Inc. Pit and the proposed Shoemaker Pit.

- retained by Town of Mono and Township of East Garafraxa to peer review natural heritage studies

and ecological enhancement plans for proposed aggregate operation.

- retained by Township of Puslinch to peer review pit applications and Town of Caledon to review an AIA in support of pit and quarry application.

- conducted environmental evaluations and agricultural appraisals for various aggregate operations in southern Ontario.

- assisted in the preparation of the Section 9 report for the proposed expansions of the Ospringe Pit, the Darrington Pit and Flamboro Quarries.

- prepared Level 1 & 2 Natural Environment and Environmental Impact Statements for aggregate developments in Simcoe County, Perth County, Huron County, Grey County, Bruce County, Oxford County, Wellington County and the Regional Municipalities of York, Halton, Waterloo and Hamilton-Wentworth. These reports were prepared in accordance with the policy requirements of the Aggregate Resources Act (Technical Study Requirements), Wetland Policy Statement, Provincial Policy Statement and/or local/regional Official Plans.

- Assisted in the preparation of applications for Environmental Compliance Approvals for pit and quarry operations in southern Ontario.

Environmental Assessments

- prepared the ecological and agricultural components for municipal road projects in King Township and the City of Stratford.

- prepared agricultural impact assessments for provincial road projects in the County of Essex and the County of Peterborough.

- coordinated environmental assessment projects for waste management master plans in Victoria County, Essex County, Peterborough County and the Regional Municipality of Haldimand-Norfolk (agricultural component).

- prepared route selection reports for the proposed development of an 8" pipeline in Orillia. This project received provincial approval at the Ontario Energy Board in 1994.

- managed the environmental constraint mapping and geotechnical selection component of Ontario Hydro's construction of a 500 kV transmission line from Lennox to Bowmanville. This transmission line was constructed in 1992.

Environmental Inventories and Monitoring

- designed and implemented wetland vegetation monitoring programs for proposed aggregate and estate residential developments.

- designed a transplanting and propagation plan for Carex jamesii.

- completed the required seminar on the Ontario Wetland Evaluation System (3rd ed.) and the Wetland Environmental Impact Study; Technical Manual.

- completed surveys for the following wetlands: Orangeville Reservoir Wetland Complex, Hayesland-Christie Wetland Complex, Dalrymple Lake Wetland Complex, Star Wetland Complex, Eramosa River-Blue Springs Creek Wetland Complex, Orillia Filtration Swamp, Philips Lake Wetland Complex, Mossington Park Wetland Complex, Cranberry/Oil Well Bog, Humber River Marshes Wetland Complex, Mill Creek Wetland Complex, Speed River Wetland Complex and the Beaverton River Wetland Complex.

- managed deer wintering surveys in Ramara Township, Carden Township, Erin Township and Puslinch Township.

- coordinated fisheries inventories for coldwater and warmwater systems in Ontario (e.g. Eramosa River, Speed River, West Credit River, Dalrymple Lake, Warnock Lake, Caledon Creek, Greenock Creek and Spencer Creek).

- prepared terrestrial enhancement plans for a deer wintering area in Puslinch Township.

- completed forestry evaluations for woodland areas in Wellington County, Simcoe County and the Regional Municipalities of York, Peel and Hamilton-Wentworth.

- managed bird surveys in various Southern Ontario municipalities.

- coordinated vegetation surveys for alvar communities in Simcoe County, Victoria County and the Regional Municipality of Hamilton-Wentworth.

- completed vegetation management plan for alvar communities and upland forest communities for a proposed quarry in the Regional Municipality of Hamilton-Wentworth.

Subwatershed Planning

- participated in subwatershed planning studies in Laurel Creek, Grindstone Creek and Nichol Drain No. 2.

- completed historic vegetation mapping programs in Caledon Creek Subwatershed.

Agricultural Impact Assessment

- completed several agricultural assessments in Wellington County, Simcoe County and the Regional Municipalities of Peel, Halton, York and Hamilton-Wentworth. These studies addressed the potential impacts of proposed aggregate operations, residential developments, urban expansions and golf courses (Mad River, Chestnut Hill and Cardinal Golf Courses) on the local agricultural community.

- prepared impact assessment and alternate site evaluation study for a proposed new town site in the Town of East Gwillimbury.

- retained by Town of Mono to review applications to import fill for the purpose of improving agricultural lands.

- Retained by Township of Clearview and Town of Mono to provide expert opinion evidence at Normal Farm Practices Protection Board hearings.
- retained by Town of Mono, Township of Amaranth and Township of East Garafraxa to review the Provincial Agricultural System and implications of draft provincial mapping.

- calculated minimum distance separation requirements for various types of livestock operations.
- managed the agricultural component of the Victoria County Waste Management Master Plan.

CHRISTOPHER J. HART, M.Sc., M.L.A., OALA, CSLA

204-470 Wellington St
Kitchener, Ontario N2H 5L5
Tel: 519-574-5357
Email: hart.c3j@gmail.com

BIOGRAPHICAL INFORMATION: ECOLOGIST/LANDSCAPE ARCHITECT

Chris Hart is an Ecologist/Landscape Architect who has worked with Conservation Authorities, Ministry of Natural Resources & Forestry and Environmental Consultants for over 20 years. Chris has experience with both qualitative and quantitative botanical field studies for scientific research (phytogeography and species typing) and habitat characterization for environmental planning projects and restoration projects. Chris is a specialist in the use of native plants and the management of natural areas for environmental restoration and habitat mitigation for a wide range of habitat types; he has specialized in wetland habitat.

Chris has experience with land development planning and design and N.E.C. Plan Amendment Applications as well as development peer reviews for conservation authorities and municipalities.

Chris has worked with E.A., E.I.S. and N.E.T.R. projects as a proponent and reviewer for 15 years. He has undertaken many field studies of both aquatic and terrestrial environments using recognized scientific protocols and those of the MNRF for S.A.R. He is primarily a botanist but can undertake wildlife studies for Breeding Birds, small mammals, bats, amphibians and reptiles for the provision of full E.I.S. reports. He has experience with radio-telemetry tracking of S.A.R. turtles, use of PIT Tags and data loggers. While not certified as an arborist Chris undertakes tree inventories and writes tree management plans.

Chris has a keen interest in natural heritage systems and natural areas management. He has experience with Environmental Restoration, Eco-Hydrology, Conservation Biology, Landscape Ecology, Ecological Land Classification (E.L.C.), Wetland Delineation (O.W.E.S.) and GIS analysis (ArcGIS). Chris is recognized for his writing ability, for every level of comprehension from the lay public to government scientists and managers. He is an able presenter and is comfortable meeting the public as well as providing presentations at conferences and large public open houses.

WORK EXPERIENCE:

Present) **<u>Independent Environmental Consultant</u>**

(12_2021 Chris provides consulting services for natural heritage assessment, management and environmental planning projects. He undertakes ELC Studies, Wetland Delineation, Woodland Delineation, Breeding Birds, Wetland Birds, Amphibian call monitoring and Botanical inventories. He works as a sub-consultant on consulting teams to provide technical support as an ecologist and environmental planner. He provides design services for environmental restoration, habitat mitigation and enhancement. Chris is affiliated with SAI Planning Consultants and provides scientific support to them on an ongoing basis.

12_2021) **<u>Lincoln Environmental Consulting – Ecologist</u>**

(12_2020 Chris provided management support to the Environmental Science and Planning group at LEC. This group provides consulting services for natural heritage assessment / management and environmental planning. Chris undertook landscape analysis, natural habitat assessment and planning policy analysis. Chris worked on consulting teams to provide technical support as an

ecologist and environmental planner for EA. EIS and NETR (aggregate license) projects. He contributed design services for environmental restoration, habitat mitigation and enhancement.

12_2020) Independent Environmental Consultant

(12_2015 Chris provided consulting services for natural heritage assessment, management and environmental planning projects. He undertook ELC Studies, Wetland Delineation, Woodland Delineation, Breeding Birds, Wetland Birds, Amphibian call monitoring, Botanical inventories. He worked as a sub-consultant on consulting teams to provide technical support as an ecologist and environmental planner. He provided design services for environmental restoration, habitat mitigation and enhancement.

2017 Professor at Fanshawe College, London - 2017)

Chris was a part-time Professor in the School of Design at Fanshawe College. He taught courses in Professional Practice and Presentation Skills.

12_2015) Senior Ecologist/Project Manager - Manager of Natural Science Services (AET Group Inc.)

(03_2011- Provided consulting services for natural heritage assessment and management, recreational systems, parkland development, cultural heritage resources, sustainable communities and social marketing practices. Chris worked with green infrastructure projects that provided recreation opportunities through trail access and linear corridors that linked SWM facilities with ESAs, parkland and other public lands. Chris was involved in all phases of project management and contract administration. Other project work included renewable Energy, ARA License Natural Environment Studies, Land Development EIS and monitoring of environmental effects. Other responsibilities included report writing, junior staff supervision and business development. (*Position was terminated when Environmental Group was closed by AET Group Inc*. in 2016)

10_2010) Planning Ecologist – Project Coordinator (Greenlands Centre Wellington – Contract)

(08_2008- Development of a Landscape Analysis for the Township of Centre Wellington incorporating urban green infrastructure, cultural heritage features, trails and recreational greenways. This project involved thesourcing and analysis of all relevant policy with respect to municipal and environmental planning at local, watershed and provincial levels. This project included a study of all urban and near-urban natural heritage features in detail with recommendations for planting and other habitat enhancement including management of invasive species, retirement of cultural landscapes, enhancement and restoration of stream corridors and strategic reforestation. Also produced was a set of "Development Guidelines for Sustainable Rural Communities".

06_2008) Area Biologist (Ontario Ministry of Natural Resources & Forestry- Contract)

(04_2007- Management and participation in a wide range of conservation programs involving fish and wildlife, species at risk, and land stewardship for rural lands. Coordinated the Canada Ontario Agreement program funding for environmental enhancement projects oriented to Great Lakes water quality enhancement. Undertook environmental restoration projects in rural and urban environments with private landowners and volunteers for municipal lands. Supervised and trained seasonal staff in field and administrative procedures. Represented MNRF on technical and management committees involving regional municipalities and local conservation authorities. Field work included botanical studies, mapping and assessment of SAR habitat, radio-telemetry tracking of S.A.R.turtles and creation, maintenance and monitoring of turtle nesting habitat. Design projects included gravel pit restoration with S.A.R. turtle nesting habitat, pilot wetland creation and enhancement and stream corridor erosion control and reforestation.

03_2007) Ecologist/Project Manager (Maitland Valley Conservation Authority - Contract)

(12_2006- Developed and delivered a program for the promotion and implementation of environmental conservation projects for rural municipalities involving parks, natural areas and water courses. Encouraged the protection, conservation, enhancement and restoration of these features. Also provided a new focus to promote energy efficient and sustainable landscapes with private rural landowners. Sourced funding and managed a wide variety of community environmental enhancement and environmental restoration projects.

09_2006) Ecologist/Project Manager (Grand River Conservation Authority - Contract)

(01_2006- Coordinated a project involving the development of Grand River watershed regional trail systems. Responsibilities included renewing the administrative structure of the Grand Valley Trail Association, developing a feasible 5-year strategic plan, promoting new trails and trail linkages within the Grand Valley and to other external regional trail systems. Maintained liaison with planners and recreational specialists in all municipalities involved including Ministry of Health Promotion and Trail Groups.

01_2006) Sustainable Landscape Specialist (Maitland Valley Conservation Authority - Contract)

(02_2005- Developed and delivered educational materials and program workshops to teach the principles of environmental stewardship of natural areas and wildlife habitat enhancement on rural lands. Conducted farm tours and created environmental farm plans based on current best management practices and the principles of conservation biology and restoration ecology.

02_2005) Ecologist/Project Manager (Ecoplans Ltd. - Contract)

(02_2004 As a Biologist and Environmental Planner provided project management on development related projects by providing landscape analysis, field studies and planning solutions.

- Project management, Environmental Assessment and Environmental Impact Studies
- Biological field studies (ELC, G.I.S.), sub-watershed analysis, wetland delineation
- Design for environmental restoration and mitigation of development impacts

01_2004) Ecologist/Project Manager (Conestoga-Rovers & Associates - Full Time)

(12_1999- Provided design and management solutions on a project basis for the environmental cleanup of contaminated sites, design of mitigation and treatment wetlands at landfill sites and for agricultural runoff, stream channel bioengineering and erosion control.

- Project management, natural science field studies (ELC,G.I.S.), monitoring studies for Conformance reports, Environmental Assessment, Environmental Impact Studies

12_1999) Independent Ecologist/Project Manager and Contractor

(06_1996- Independent consulting Ecologist and specialty landscape contractor for environmental restoration, site reclamation, stream geomorphic analysis for fisheries habitat and bioengineering design, stream channel and ravine stabilization with bioengineering design, and conservation lands master planning. Continued many ongoing projects for Cumming Cockburn Ltd.

06-1996) Senior Environmental Scientist Architect (Cumming Cockburn Ltd. - Full Time)

(11_1995- Project management for a wide variety of projects involving new residential development throughout Ontario, urban infrastructure, storm water management and erosion control.

- Project management, Environmental Assessment, Environmental Impact Studies
- Bioengineering designs, urban storm water naturalization design, tree saving plans
- Water quality monitoring net design, data analysis, report writing, public information centers
- Sub-watershed planning

11_1995) **Ecologist (Maitland Valley Conservation Authority - Full Time)**

(05_1991- Ecologist with a focus on landscape restoration and rural community development for the creation of

public greenways, naturalized parks, wetland/wildlife pilot projects in Huron and Perth Counties (swamp restoration, agricultural drain habitat enhancement, millpond habitat enhancement).

- Coordinated public planting programs for parks, greenway reforestation and renaturalization
- Secured grant funding, scheduled projects, sourced and requisitioned plants and supplies
- Conservation lands master planning including design for reforestation and renaturalization
- Large river channel manipulation for construction of fisheries habitat and stone placement

EDUCATION

M.L.A. University of Guelph, S.E.D.R.D., (Landscape Architecture/Planning) - 1991

M.Sc. University of Waterloo, Ecology (Ecology / Botany) - 1983

B.E.S. University of Waterloo, Joint Honors Geography / Biology - 1979

Courses: Low Impact Development - design course by Credit Valley Conservation, 2015

O.B.B.N. – Benthic Invertebrate Identification, 2014

O.M.N.R. - Aboriginal Relations Management Consultation, 2008

St. John's Ambulance – CPR / First Aid Level II, 2023, (Certificate)

O.M.N.R. - Ecological Land Classification System for Ontario, 2002, (Certificate)

O.M.N.R. - Ontario Wetland Evaluation System Training, 2001, (Certificate)

Wilfrid Laurier School of Business & Economics – Small Business Management, 1999

MEMBERSHIPS

- Ontario Association of Landscape Architects, Full Member (1992-current), Councilor (2013-2017); Secretary (2015-16); Treasurer (2016-17)
- Ontario Nature
- Field Botanists of Ontario
- Society of Canadian Ornithologists

PRESENTATIONS

- "Green Infrastructure and Active Lifestyles in Rural Ontario"
  Presented at the Grey to Green Conference
  Toronto, August 2014

- "Planning for Green Infrastructure in Rural Communities"
  A tour presented for the Ontario Association of Landscape Architects in Elora and Fergus, ON
  August 2014

- "A Landscape Analysis of the Township of Centre Wellington"
  Presented to Heritage Elora,
  November 2009

- "Sustainable Landscape Management"

A workshop prepared and presented under contract to the Ecological Farmers Association of Ontario, Winter 2006

- "The Milton Mill Pond – Historic Mill Pond Restoration"
  Presented at the 14th Annual Conference of the Society for Ecological Restoration
  October, 2002, Niagara Falls, Canada.

- "Completing Ontario's Greenways"
  Presented jointly with Bryan Howard, Ontario Ministry of Natural Resources, at the Ontario Parks Heritage Symposium, Heritage Resources Center
  March, 1994, University of Waterloo, Canada.

- "Wooded Swampland Restoration with Hydroperiod Control"
  Presented jointly with Jane Bowles, Ph.D., University of Western Ontario, at the 54th Midwest Fish and Wildlife Conference – "In Pursuit of Ecosystem Integrity"
  December, 1992, Toronto, Canada

- "Wooded Swampland Restoration"
  Presented at the 4th Annual Conference of the Society for Ecological Restoration
  August, 1992, University of Waterloo, Canada

Appendix 2 – Vascular Plants

APPENDIX "2" – THOUME PIT		VEGETATION COMMUNITY										CONSERVATION STATUS 1				WETNESS 2	SENSITIVITY 3
PLANT LIST - 2021												Global	National	Provincial			
Scientific Name	COMMON NAME	OAGM4	SWT 2	OAGM4 (FP)	OAGM1	IAGM1	CVR_4	FOD2	THDM2	SWD	SWT	GRANK	COSEWIC	SRANK	SARA		
Acer saccharinum	Silver Maple	X	X				X	X		X	X	G5T5		S5		-3	5
Acer saccharum ssp. saccharum	Sugar Maple		X		X		X	X		X	X	G5T5		S5		3	4
Achillea millefolium	Common Yarrow											G5T5		SNA		3	0
Alliaria petiolata	Garlic Mustard		X					X	X	X	X	GNR		SNA		0	0
Amaranthus albus	White Pigweed					X						GNR		SNA		1	0
Ambrosia artemisiifolia	Common Ragweed					X						G5		S5		-3	5
Anemone canadensis	Canada Anemone	X	X					X	X	X	X	G5		S5		-3	3
Angelica atropurpurea	Angelica	X										G5		S5		-5	6
Arctium minus ssp. minus	Common Burdock	X				X		X	X			GNRTNR		SNA		5	8
Asclepias incarnata	Swamp Milkweed	X	X	X						X	X	G5		S5		5	0
Asclepias syriaca	Kansas Milkweed	X	X	X						X	X	G5		S5		5	0
Asplenium platyneuron	Ebony Spleenwort		X	X						X	X	G5		S4		3	6
Aster novae-angliae	New England Aster	X	X	X	X	X		X		X	X	G5		S5		-3	2
Aster puniceus var. puniceus	Purple-stem Aster	X		X	X			X				G5T		S5		-5	6
Brassica rapa	Field Mustard	X		X								GNR		SNA		0	0
Bromus inermis ssp. inermis	Awnless Brome					X						GNR		SNA		-5	0
Bromus latiglumus	Flange-sheathed Brome	X	X							X	X	G5		S5		-2	7
Capsella bursa-pastoris	Shepherd's Purse					X						GNR		SNA		1	0
Carex aurea	Golden Sedge	X								X	X	G5		S5		-4	4
Carex flava	Yellow Sedge	X		X						X	X	G5		S5		-5	5
Carex muhlenbergia var. muhlenbergia	Muhly's Sedge	X	X							X	X	G5T5		S4S5		5	7
Carex stricta	Tussock Sedge	X	X	X						X	X	G5		S5		-5	4
Carex utriculata	Beaked Rush	X										G5		S5		-5	7
Chenopodium album var. album	Lamb's Quarters							X				G5TNR		SNA		1	0
Cicorium intybus	Common Chicory	X				X		X				GNR		SNA		5	0
Cirsium arvense	Canada Thistle	X										GNR		SNA		3	0
Cornus amomum	Silky dogwood	X	X			X		X	X	X	X	G5		S5		-4	5
Cornus stolonifera	Red-osier Dogwood	X						X	X			G5		S5		-3	2
Crataegus sp	Hawthorn Species	X						X	X			na		na		na	na
Crataegus mollis	Downy Hawthorn	X						X	X			G5		S5		-2	4
Dactylis glomerata	Orchard Grass	X		X		X		X				GNR		SNA		3	0
Daucus carota	Wild Carrot		X	X				X		X	X	GNR		SNA		5	0
Diervilla lonicera	Bush Honeysuckle							X	X			G5		S5		5	5
Digitarria sanguinalis	Large Crabgrass							X				G5		SNA		3	0
Dipsacus fullonum	Teasel	X		X		X						GNR		SNA		5	0
Echium vulgare	Common Viper's Bugloss				X	X						GNR		SNA		5	0
Elymus sp.	Horticultural Rye					X						na		na		5	0
Erigeron annuus	Daisy Fleabane	X	X		X	X		X		X	X	G5		S5		1	0
Eupatorium perfoliatum	Common Boneset	X	X	X	X			X		X	X	G5		S5		-2	2
Euthamia graminifolia	Grass-leaved Goldenrod	X	X	X						X	X	G5		S5		-2	2
Festuca ovina	Sheep Fescue											GNR		SNA		5	0
Fragaria virginiana ssp. virginiana	Wild Strawberry	X	X					X	X	X	X	G5		S5		1	0

VEGETATION COMMUNITY		VEGETATION COMMUNITY										CONSERVATION STATUS 1				WETNESS 2	SENSITIVITY 3
PLANTLIST - 2021												Global	National	Provincial			
Scientific Name	COMMON NAME	OAGM4	SWT 2	OAGM 4 (FP)	OAGM1	IAGM1	CVR_4	FOD2	THDM2	SWD	SWT	GRANK	COSEWIC	SRANK	SARA		
Fraxinus pennsylvanica	Red Ash	X						X	X	X	X	G5		S5		-3	3
Galium aparine	Common Bedstraw	X	X							X	X	G5		S5		3	4
Galium asprellum	Rough Bedstraw	X	X							X	X	G5		S5		-5	6
Gaillardia aristata	Brown-eyed Susan	X		X						X	X	G5		SNA		5	0
Geum rivale	Purple Avens		X	X						X	X	G5		S5		-5	7
Heracleum mantegazzianum	Giant Hogweed											GNR		SNA		-3	3
Hypericum perforatum	Common St. John's-wort	X	X		X	X				X	X	GNR		SNA		5	0
Iris versicolor	Blue Flag	X	X	X				X		X	X	G5		S5		-5	5
Juglans nigra	Black Walnut							X		X		G5		S4		3	5
Juncus acuminatus	Sharp-fruited Rush	X	X							X	X	G5		S3		-5	6
Juncus effusus	Soft Rush	X	X							X	X	G5		S5		-5	4
Juncus tenuis	Path Rush			X						X	X	G5		S5		0	0
Leersia oryzoides	Virginia Cutgrass			X						X	X	G5		S5		-5	3
Leonurus cardiaca	Common Motherwort	X	X		X	X				X	X	GNR		SNA		5	0
Leucanthemum vulgare	Ox-eye Daisy	X	X	X					X	X	X	G?		SE5		5	0
Lilium martagon	Turks' Cap Lily		X								X	G5		S5		5	0
Lolium arundinaceus	Tall Fescue	X						X				GNR		SNA		2	0
Malus sp.	Feral Apple	X			X			X				NA		NA		0	5
Medicago lupulina	Black Medick	X			X	X						GNR		SNA		1	0
Medicago sativa ssp. sativa	Alfalfa					X						GNR		SNA		1	0
Morus alba	White Mulberry	X										GNR		SNA		0	0
Onoclea sensibilis	Sensitive Fern		X							X	X	G5		S5		-3	4
Panicum capillare	Witch Panic Grass	X	X	X						X	X	G5		S5		0	0
Panicum virgatum	Panic Switch Grass	X		X				X	X			G5		S4		-1	6
Parthenosis vitaceae	Virginia Creeper		X					X		X	X	G5		S5		1	6
Persicaria hydropiper	Marshpepper Smartweed	X								X		GNR		SNA		0	5
Phalaris arundinacea	Reed Canary Grass	X	X	X				X		X	X	G5		S5		-4	0
Phleum pratense	Timothy									X	X	GNR		SNA		3	0
Picea abies	Norway Spruce						X					GNR		SNA		3	5
Pilosella caespitosa	Yellow Hawkweed	X			X	X		X	X			GNR		SNA		5	0
Pinus sylvestris	Scotch Pine						X					GNR		SNA		3	5
Plantago major	Common Plantain	X						X				G5		SE5		-1	0
Poa annua	Annual Blue Grass	X		X	X							GNR		SNA		1	0
Polygonum hydropiper	Common Smartweed	X										GNR		SNA		-5	4
Potentilla recta	Rough-fruited Cinquefoil	X		X								GNR		SNA		5	0
Prunus virginiana ssp. virginiana	Choke Cherry	X						X		X	X	G5		S5		1	2
Quercus alba	White Oak	X						X	X	X	X	G5		S5		3	6
Ranunculus acris	Tall Buttercup	X	X	X						X	X	G5		SNA		-2	0
Ribes americanum	Wild Black Currant		X					X	X	X		G5		S5		-3	4
Ribes cynosbati	Prickly Gooseberry							X	X			G5		S5		5	4
Rhamnus cathartica	Common Buckthorn		X					X	X	X	X	GNR		SNA		3	0
Rhus typhina	Staghorn Sumac							X	X			G5		S5		5	1

APPENDIX "2" – THOUME PIT		VEGETATION COMMUNITY										CONSERVATION STATUS 1				WETNESS 2	SENSITIVITY 3
PLANT LIST - 2021												Global	National	Provincial			
Scientific Name	COMMON NAME	OAGM4	SWT 2	OAGM4 (FP)	OAGM1	IAGM1	CVR_4	FOD2	THDM2	SWD	SWT	GRANK	COSEWIC	SRANK	SARA		
Rhynchospora capillacea	Capillary Beak-rush	X		X								G4		S4?		-5	10
Rubus idaeus ssp. Idaeus	Wild Red Raspberry								X			G5T5		SE5		-2	0
Rubus occidentalis	Black Raspberry								X			GNR		SNA		5	2
Rumex crispus	Curly Dock	X		X								G?		SE5		-1	0
Rumex orbiculatus	Water Dock	X		X								G5		S4S5		-5	6
Salix alba var. alba	White Willow	X										G5TNR		SNA		-3	0
Salix bebbiana	Bebb's Willow	X	X	X						X	X	G5		S5		-4	4
Salix discolor	Pussy Willow	X	X	X						X	X	G5		S5		-3	3
Salix eriocephala	Missouri Willow	X		X								G5		S5		-3	4
Salix fragilis	Crack Willow	X										GNR		SNA		-1	0
Salix lucida	Shining Willow	X	X	X						X	X	G5		S5		-4	5
Sambucus canadensis	Common Elderberry			X				X	X	X	X	G5T5		S5		-2	5
Schoenoplectus validus	Soft-stemmed Bulrush	X	X	X							X	G?		S5		-5	5
Scirpus atrovirens	Dark-green Bulrush	X										G5?		S5		-5	3
Scirpus cyperinus	Marsh Woolgrass	X	X	X						X	X	G5		S5		-5	4
Silene latifolia	Bladder Campion	X		X		X		X				GNR		SNA		5	0
Sium suave	Hemlock Water-parsnip	X										G5		S5		-5	4
Soncha arvensis ssp. arvensis	Sow thistle	X			X	X						GNRTNR		SNA		1	0
Solanum nigrum	Black Nightshade	X	X		X	X		X		X	X	G?		SNA		0	0
Solidago caesia	Blue-stem Goldenrod	X	X	X				X		X	X	G5		S5		3	5
Solidago canadensis	Canada Goldenrod	X	X	X				X		X	X	G5		S5		3	1
Solidago flexicaulis	Zig zag Goldenrod								X			G5		S5			
Solidago nemoralis ssp. nemoralis	Gray Goldenrod	X	X	X				X		X	X	G5T5		S5		5	2
Sonchus arvensis ssp. arvensis	Field Sow-thistle	X	X	X		X				X	X	GNRTNR		SNA		1	0
Symphyotrichum lanceolatum ssp. Lanceolatum var lanceolatum	Panicled Aster	X	X	X				X		X	X	G5T5		S5		-3	3
Syringa vulgaris	Common Lilac							X	X			GNR		SNA		5	0
Taraxacum officinale	Common Dandelion	X	X	X	X	X		X		X	X	G5		SNA		3	0
Thelypteris palustris	Marsh-Fern	X		X								G5		S5		-4	5
Thuja occidentalis	E. White Cedar	X						X	X			G5		S5		-3	4
Tilia americana	Basswood							X				G5		S5		3	4
Tragopogon pratensis ssp. pratensis	Meadow Goat's-beard	X						X				GNR		SNA		5	0
Trifolium pratense	Red Clover	X				X						GNR		SNA		2	0
Trifolium repens	Dutch White Clover					X						GNR		SNA		2	0
Triticum aestivum	Cultivated Wheat				X							GNR		SNA		5	0
Typha latifolia	Broad-leaved Cattail	X		X								G5		S5		-5	3
Vicia cracca	Cow Vetch	X		X				X	X			GNR		SNA		5	0
Vitis aestivalis	Summer Grape	X	X					X	X			G5		S4		3	7

TERMS AND DEFINITIONS FOR PLANT SPECIES LIST:

1. RARITY/POPULATION STATUS

National		Provincial		Regional
SARA (Species At Risk Act)	**G-rank**	**ESA** (Endangered Species Act)	**S-rank** Provincial Rarity	
END - Endangered	**GX** - Presumed Extinct	**END** - Endangered	**S1** - Critically imperiled	Rare in county or regional municipality as determined by municipality
THR - Threatened	**GH** - Possibly Extinct	**THR** - Threatened	**S2** - Imperiled	
EXP - Extirpated	**G1** - Critically Imperiled	**EXP** - Extirpated	**S3** - Vulnerable	
SC - Special Concern	**G2** - Imperiled	**SC** - Special Concern	**S4** - Apparently secure	
NAR - Not at Risk	**G3** - Vulnerable	**NAR** - Not at Risk	**S5** - Secure	
DD - Data Deficient	**G4** - Apparently Secure	**DD** - Data Deficient	**SE** - Exotic (non-native)	
	G5 - Secure		**?** - uncertain about status	

2. WETNESS*

-5	Obligate Wetland	occurs almost always in wetlands under natural conditions (>99% probability)
-2 to -4	Facultative Wetland	usually occurs in wetlands, but occasionally found in non-wetlands (67-99% probability)
1 to -1	Facultative	equally likely to occur in wetlands or non-wetlands (34-66% probability)
2 to 4	Facultative Upland	occasionally occurs in wetlands, but usually occurs in non-wetlands (1-33% probability)
5	Obligate Upland	occurs alomost never in wetlands under natural conditions (<1% probability)

** Based on Floristic Quality Assessment System (MNR 1995)*

3. PLANT SPECIES SENSITIVITY*

0 - 3	Plants found in a wide variety of communities, including disturbed sites
4 - 6	Plants typically associated with a specific plant community, but tolerate moderate disturbance
7 - 8	Plants associated with a community in an advanced successional stage that has undergone minor disturbance
9 - 10	Plants with a high degree of fidelity to a narrow range of specific habitats or ecological conditions

** Values and terminology derived from Floristic Quality Assessment (MNR 1995)*

4. WEEDINESS*

-1	Non-native plants with little or no impact on natural areas
-2	Non-native plants that sometimes cause problems, but only infrequently or in localized areas
-3	Non-native highly invasive plants that can become serious problems in natural areas by displacing native flora

** Based on Floristic Quality Assessment (MNR 1995)*

5. RELATIVE ABUNDANCE OF PLANT SPECIES ACCORDING TO VEGETATION COMMUNITY*

D - dominant	Represented by large numbers of individuals or clumps; visually more abundant than other plant species
A - abundant	Represented in the vegetation community by large numbers of individuals or clumps
O - occasional	Present as scattered individuals or represented by one or more large clumps of many individuals
R - rare	Represented in the vegetation community by less than three to five individuals or small clumps

** Based on Ecological Land Classificaton for Southern Ontario (MNR 1998)*

Appendix 3 – Wildlife

THOUME - AGGREGATE PIT - CENTRE WELLINGTON					ELC -Wildlife Occurrence									
WILDLIFE SPECIES LIST - 2022		Conservation												
Common Name	***Scientific Name***	**S-RANK**	**COSEWIC**	**SARA**	**CVR3**	**IAGM1**	**OAGM1**	**SWD**	**SWT**	**OAGM4**	**SWT 2**	**FOD 2**	**THDM2**	**OAGM4 (FP)**
MAMMALS														
Eastern Cottontail Rabbit	*Sylvilagus floridanus*	S5						X	X	X			X	X
Eastern Grey Squirrel	*Sciurus carolinensis*	S5						X	X			X	X	
Muskrat	*Ondatra zibethicus*	S5								X				
Raccoon	*Procyon lotor*	S5						X	X	X		X	X	X
Red Squirrel	*Tamiasciurus hudsonicus*	S5						X	X					
White-tailed Deer	*Odocoileus virginianus*	S5					X	X	X	X				X
Groundhog	*Marmota monax*	S5								X				X
BIRDS														
American Crow	*Corvus brachyrhynchos*	S5B						X	X	X	X			X
American Goldfinch	*Spinus tristus*	S5						X	X	X				X
American Redstart	*Setophaga ruticilla*	S5B						X	X					
American Robin	*Turdus migratorius*	S5			X					X	X	X	X	X
Baltimore Oriole	*Icterus galbula*	S4B						X	X					
Barn Swallow	*Hirundo rustico*	S4B	SC	THR	X	X				X				
Blue Jay	*Cyanocitta cristata*	S5						X	X	X	X	X		
Brown Thrasher	*Toxostoma rufum*	S4B						X	X			X		
Canada Goose	*Banta canadensis*	S5								X				X
Black-capped Chickadee	*Poecile atricapillus*	S5						X		X	X	X	X	X
Chipping Sparrow	*Spizella passerina*	S5B,S3N								X	X			X
Common Grackle	*Quiscalus quiscula*	S5			X	X		X		X	X			X
Common Yellowthroat	*Geothlypis trichas*	S5B,S3N						X	X	X	X			X
Downy Woodpecker	*Picoides pubescens*	S5						X	X			X		
Eastern King Bird	*Tyrannus tyrannus*	S4B						X	X	X			X	X
Eastern Wood-Pewee	*Contopus virens*	S4B	SC	SC				X	X					
European Starling	*Sturnus vulgaris*	S5			X	X								
Field Sparrow	*Spizella pusilla*	S4B,S3N						X	X	X		X		X
Gray Catbird	*Dumetella carolinensis*	S5B.S3N						X	X		X			
Great Blue Heron	*Ardea herodius*	S4								X				X
Great Crested Flycatcher	*Myiarchus crinitus*	S5B						X	X					
Hairy Woodpecker	*Picoides villosus*	S5						X	X		X	X		

House Wren	*Troglodytes aedon*	S5B						X	X					
Indigo Bunting	*Passerina cyanea*	S5B						X	X					
Kildeer	*Charadrius vociferus*	S4B								X				X
Mourning Dove	*Zenaida macroura*	S5						X	X			X	X	
Northern Cardinal	*Cardinalis cardinalis*	S5						X	X		X			
Oven Bird	*Seiurus novaboracensis*	S5B						X		X				X
Red-bellied Woodpecker	*Melanerpis caolinus*	S5						X	X					
Red-eyed Vireo	*Vireo olivaceus*	S5B						X	X					
Red-tailed Hawk	*Buteo jamaicensis*	S5	NAR					X	X					
Red-winged Blackbird	*Agelaius phoeniceus*	S4						X	X	X		X	X	X
Rock Pigeon	*Columba livia*	SNA			X	X	X			X				X
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	S5B						X	X	X		X		
Ruby Throated Hummingbird	*Archilochus colubris*	S5							X	X				X
Song Sparrow	*Melospiza melodia*	S5						X	X			X	X	
Spotted Sandpiper	*Actitis macularius*	S5B								X				X
Tree Swallow	*Tachycineta bicolor*	S4,S5B						X	X			X		
White Breasted Nuthatch	*Sitta carolinensis*	S5						X	X					
Wild Turkey	*Meleagris gallopavo*	S5						X	X	X				X
Willow Flycatcher	*Epidonax traillii*	S4B						X	X	X				X
Yellow-billed Cuckoo	*Coccyzus americanus*	S4B						X	X					
Yellow Warbler	*Dendroica petechia*	S5B						X	X			X	X	
AMPHIBIANS														
American Toad	*Bufo americanus*	S5						X		X				X
Bullfrog	*Rana catesbeiana*	S4								X				X
Green Frog	*Rana clamatans melanota*	S5								X				X
Northern Leopard Frog	*Rana pipiens*	S5	NAR							X				X
Gray Tree Frog	*Dryophytes versicolor*	S5						X	X					
BUTTERFLIES														
Monarch	*Danaus plexippus*	S2N, S4B												X
INSECTS														
Bumblebee	Megabombus maculifrons	S5								X				

Appendix 4: Significant Wildlife Habitat

A site review of landscape features and species of conservation concern has considered both the direction of the Significant Wildlife Habitat Technical Guide (Ontario Ministry of Natural Resources, October 2000) and the Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E, January, 2015 (Ontario Ministry of Natural Resources and Forestry).

SIGNIFICANT WILDLIFE HABITAT

A review of data from the OMNRF NHIC make a map function was used along with site investigations at the study area to determine if significant wildlife habitat exists within or adjacent to the proposed development lands. Wildlife habitat was investigated in the study area to identify candidate Significant Wildlife Habitat (SWH). The ELC community mapping completed for this study was used as the basis for determining the presence (or absence) of candidate SWH.

The OMNR Significant Wildlife Habitat Technical Guide (OMNR 2000) and Significant Wildlife Ecoregion Criteria Schedules (OMNR, January, 2015) were the primary documents used to identify and evaluate wildlife habitat. The Significant Wildlife Habitat Technical Guide describes five broad categories of wildlife habitat which includes: (1) seasonal concentration areas; (2) rare vegetation communities; (3) specialized habitat for wildlife; (4) habitat for species of conservation concern; and (5) animal movement corridors.

A review of these documents as well as technical monographs for individual species were used to determine if there is potential habitat for species of conservation concern.

SEASONAL CONCENTRATION OF ANIMALS

The Significant Wildlife Habitat Technical Guide (OMNR) 2000 has identified 14 potential types of seasonal concentration areas:

WINTER DEER YARDS

There is no habitat within these subject lands or adjacent lands which are under intensive agricultural usage.

MOOSE LATE WINTER HABITAT

Not applicable in south Wellington County

COLONIAL BIRD NESTING SITES

No observations of colonial nesting birds were made during the site field visits. Landscape use, terrain characteristics and habitat types are not conducive to colonial bird nesting within the study area.

WATERFOWL STOPOVER AND STAGING AREAS

The OMNRF, Canadian Wildlife Service and Ducks Unlimited Canada have jointly undertaken historical land reviews for potential significant waterfowl stopover and staging

areas in Wellington County. The subject lands have not been identified nor do they have suitable habitat to support this ecological function within the proposed license boundary or adjacent lands.

WATERFOWL NESTING HABITAT
Waterfowl nesting habitat is not present within the subject lands or the adjacent lands.

SHOREBIRD MIGRATORY STOPOVER SITES
Shorebird migratory stop over is not present within the subject lands or the adjacent lands.

LAND BIRD MIGRATORY STOP OVER AREAS
There are no habitat opportunities within the subject lands or the adjacent lands.
Woodland areas nearby provide opportunities for seasonal migrants and these areas will remain as they are and will not be impacted by the proposed development.

RAPTOR WINTERING AREAS
There is potential for hawks such as Red-tailed hawk, Coopers Hawk and American Kestrel to find habitat at this site. All birds favor a landscape habitat mix of open fields, scrub land and woodlands. In this case with regional land use dominated by agriculture opportunities are limited and will be the same in a developed state. It is noted that a Red-tailed Hawk was seen flying over the site in 2021. Since the surrounding regional landscape is largely rural and natural it is expected that raptors are commonly seen.

WILD TURKEY WINTERING AREAS
There is no potential for Wild Turkey to winter on the subject lands or the adjacent lands.

TURKEY VULTURE SUMMER ROOSTING AREAS
No suitable habitat or surrounding habitat features to support this ecological function were found within the subject lands or adjacent lands. A Turkey Vulture was seen flying overhead of the subject property.

REPTILE HIBERNACULA
No suitable habitat or surrounding habitat features to support this ecological function were found within the subject lands or adjacent lands.

BAT HIBERNACULA
No suitable habitat or surrounding habitat features to support this ecological function were found within the area proposed to be extracted. No tree removal is anticipated to permit the proposed development.

BULLFROG CONCENTRATION AREAS
One Bullfrog was heard north of the subject lands (north of Area 1) however, this area is not considered to be a Bullfrog Concentration Area. No suitable habitat or surrounding habitat features to support this ecological function were found within the subject lands or adjacent lands.

MIGRATORY BUTTERFLY STOPOVER AREAS
There is no suitable habitat to support this ecological function within the subject lands. Potential habitat exists offsite, in proximity to the Cox Creek pasture land area.

WILDLIFE MOVEMENT CORRIDORS
No provincially or regionally significant wildlife movement corridors are designated for this area of Ontario. There is evidence of White-tailed Deer tracks along the edges of farm fields but these are incidental and localized. Field investigations confirmed that no significant wildlife corridor functions occur within the subject lands or adjacent lands.

RARE VEGETATION COMMUNITIES OR SPECIALIZED HABITAT
No rare or unusual vegetation communities are found within the proposed development lands. Most of the land use is for agricultural purposes and the vegetation and ELC units within the subject lands and adjacent lands have been described as not significant in the foregoing.

SPECIALIZED HABITAT FOR WILDLIFE
The Significant Wildlife Habitat Technical Guide (OMNR, 2000) identifies 12 categories for the evaluation of specialized habitat for wildlife:

Sites supporting area sensitive species:
No suitable habitat or surrounding habitat features were observed to support this ecological function within the subject lands or the adjacent lands. The majority of current land use within the subject lands and adjacent lands is predominantly agricultural.

Forest stands providing a diversity of habitat:
The results of field studies indicate that there are no forest stands of significance on the development lands or on adjacent lands.

Old Growth or mature forest stands:
There were no old growth characteristics, as defined by the Province for Old Growth Forests. Mature forest stands were found within the woodlands on adjacent lands.

Seeps and Springs:
There are no seeps or clear springs on the development lands or on adjacent private lands.

Woodlands Supporting Amphibian Breeding Ponds:
As noted earlier no open water was found within the development lands or on adjacent lands.

Special Woodland Feeding Habitat:
There is no special woodland feeding habitat found in the subject lands or adjacent lands.

Osprey and specialized raptor nesting habitat:
No suitable habitat was found within the subject lands.

Turtle Nesting Habitat:
No suitable habitat or evidence of turtle nesting was found within the subject lands or adjacent lands.

Special Moose Habitats:
Not applicable in south Wellington County.

Mink and Otter Feeding/Denning Sites; Marten and Fisher Denning Sites:
No suitable habitat for Otter was found at the subject lands or adjacent lands.
Mink feeding and denning habitat was not found at the subject lands or adjacent lands.

Areas of High Diversity:
No areas of high diversity or specialized microhabitat were found or recognized within the subject lands.

Cliffs and Caves:
No geological features of this nature were identified within the subject lands or the adjacent lands.

HABITAT OF SPECIES OF CONSERVATION CONCERN FLORA
Field investigations of the subject lands and adjacent lands included plant surveys which were used to complete Ecological Land Classification inventories and habitat descriptions. Plants are described in Appendix “2” – Plant Species List.

FAUNA
The results of the background information review, ELC mapping and field surveys showed that the subject lands do not contain significant wildlife habitat features. During the Breeding Bird surveys, 2 bird species of conservation concern were detected, Eastern Wood-Pewee and Barn Swallow.

A single Eastern Wood-Pewee was heard during the field survey. This species was heard north of Cox Creek on offsite lands. The Eastern Wood-Pewee lives in the mid-canopy layer of forest clearings and edges of deciduous and mixed forests. It is most abundant in intermediate-age mature forest stands with little understory vegetation. Possible threats to the Eastern Wood-Pewee are poorly known but may include:

- loss and degrading of habitat due to urban development and/or changes in how forests are managed
- reductions in the availability of the flying insects they eat, the cause of which is not known
- loss of eggs and fledgling birds from increasing numbers of predators such as blue jays and red squirrels

- changes to the make-up of forests due to white-tailed deer over-browsing, which may reduce the number of insects available to eat.

These birds may also face other threats during their migration and in their wintering habitat in South America.
No impacts are anticipated because the proposed extraction area is well setback from the area/habitat for this species.

A Barn Swallow was identified in proximity to the agricultural structures located on Area 1 lands, however a nest was not observed. The farmstead includes one wood bank barn with unpainted, rough-cut wood siding. This building could provide nesting habitat for the Barn Swallow. This building is used for storage of equipment, feed and housing of cattle. The proposed pit application does not include the farmstead within the area proposed to be extracted and the potential habitat for this species is not anticipated to be affected.

Barn Swallow is found across Canada and has been documented breeding in every province and territory, primarily south of the treeline. Barn Swallow is a migratory bird that travels long distances to overwinter in the southern United States, parts of Mexico and Central/South America. Barn Swallows often live in close association with humans, building their cup-shaped mud nests almost exclusively on human-made structures such as open barns, under bridges and in culverts. The species is attracted to open structures that include ledges where they can build their nests, which are often re-used from year to year. They prefer unpainted, rough-cut wood, since the mud does not adhere as well to smooth surfaces. Threats to the species that result in lower reproductive success and increased mortality include:

- changes to the environment that result in a decrease in the number and quality of flying insects, which are the prey of Barn Swallow
- increased use of pesticides
- changes in agriculture practices
- residential and commercial development
- transportation infrastructure
- climate change
- pollution

FISHERIES HABITAT
Section 34 of the Fisheries Act notes that, "…" fish habitat" means spawning grounds and nursery, rearing, food supply and migration areas on which fish depend on directly or indirectly in order to carry out their life processes. There is no fisheries habitat on the subject lands. Fish habitat is located on adjacent lands.

NATURAL HERITAGE INFORMATION CENTRE
A search of the 1 km square information in the "Make A Map" function of the NHIC website revealed no species of conservation concern at the subject lands, on adjacent lands site or within any area that might be impacted by site operations.

Appendix 5: LICHTY PIT – STREAM SURVEYS (June 13/2021)

Cox Creek was sampled in that area which falls within the 120-meter setback from the proposed aggregate license boundary. This area encompasses the ELC polygon SWT2 where the creek leaves the forest and enters the open floodplain. At this point the narrow stream has a gravel bed as it emerges from the forest and enters the broad open floodplain where it widens out and deepens.

The focus of aquatic surveys was on fish and benthic invertebrates. Surveys were undertaken on May 13, 2021. Weather was overcast with an air temperature of 17 C. Staff included Chris Hart, Philippa Aukett, and Timothy Hain.

The stream width at the sampling location is on average 5.28 meters width and 0.22 meters depth. Stream velocity derived by timing a floating orange through a discrete reach (6 meters) was 3.6 seconds/meter, 0.27meters/second or 16 meters/minute. The discharge at this time was 0.31 cubic meters/second.

Stream temperature was 15 C in both the woodland and the floodplain areas. This was also the temperature for a stream side spring at the edge of the woodland.

FISH

Fish were sampled for with the use of 2 minnow traps (45 cm) placed in the middle of the creek and about 5 meters from each other. These were baited with bread and sunk until resting on the creek bottom. They were anchored to the creek edge with cords.

The minnow traps were retrieved and emptied into buckets filled with stream water. Fish were incrementally placed from the buckets into shallow sorting trays filled with stream water for visual identification. Fish were quickly processed in order to lessen impact and then returned to the creek. The Ontario Bait Fish Primer (Fisheries and Oceans Canada, 2018) was used to assist in identification along with the Peterson Field Guide “Freshwater Fishes”, Page, L., 1991. Where fish were too small for field identification they were lumped into a general category of “Minnows”.

The following fish species were found:

Fish Species	L-rank	S-rank	Conservation Status
10 - Blacknose Dace (Rhinichthys atratulus)	L5	S5	- locally secure
56 - Brassy Minnow (Hybognathus hankinsoni)	L3	S5	- locally vulnerable
2 - Creek Chub (Semotilus atromaculatus)	L5	S5	- locally secure
3 - Emerald Shiner (Notropis atherinoides)	L5	S5	- locally secure
1 - Fathead Minnow (Pimephales promelas)	L5	S5	- locally secure
2 - Mottled Sculpin (Cottus bairdii)	L4	S5	- locally secure
3 - Northern Redbelly Dace (Chrosomus eos)	L4	S5	- locally secure

(Technical Report: Ranking local species of conservation concern in the Credit Water Watershed. Credit Valley Conservation, April 5, 2020)

BENTHIC INVERTEBRATES

Benthic invertebrates from the stream bottom were sampled using the “Travelling kick-sweep” technique. (Ontario Benthos Biomonitoring Network: Protocol Manual, January 2007) (Ontario Stream Assessment Protocol, Version 8, 2010 (ed. Les Stanfield)). Three sets of kick-sweeps were undertaken and a standard OBBN D-net was used to collect invertebrates dislodged from the stream substrate.

The D-net was emptied into a bucket after each sweep and samples were combined. Water was added to the buckets to submerge aquatic organisms in order to minimize impact of collection.

Sub-samples were taken incrementally from the bucket until all organisms had been censused. Coarse materials such as rocks and woody debris were initially removed after being rinsed with creek water from a wash bottle. Organisms were examined quickly and identified in shallow sorting trays before being returned to the creek in order to minimize the impacts of sampling. The reference used for identification was a visual sorting guide from the “Department of Environmental Protection, West Virginia.”

The following benthic invertebrates were found:

25 - Caddisfly (Tricoptera – Brachycentridae, Limnephilidae, Glossosomatidae)

1 - Cranefly (Diptera – Tipulidae)

2 - Crayfish (Crustacea – Decapoda)

1 - Dragonfly (Odonata – Anisoptera)

27 - Fingernail Clam (Bivalvia)

15 - Flies (Diptera – Simulidae)

4 - Leech (Annelida – Hirudinea)

4 - Red Worms (Annelida – Oligochaeta)

7 - Snails (Gastropda)

4 - Sow Bugs (Crustacea – Isopoda)

2 - Stonefly (Plecoptera – Perlidae)

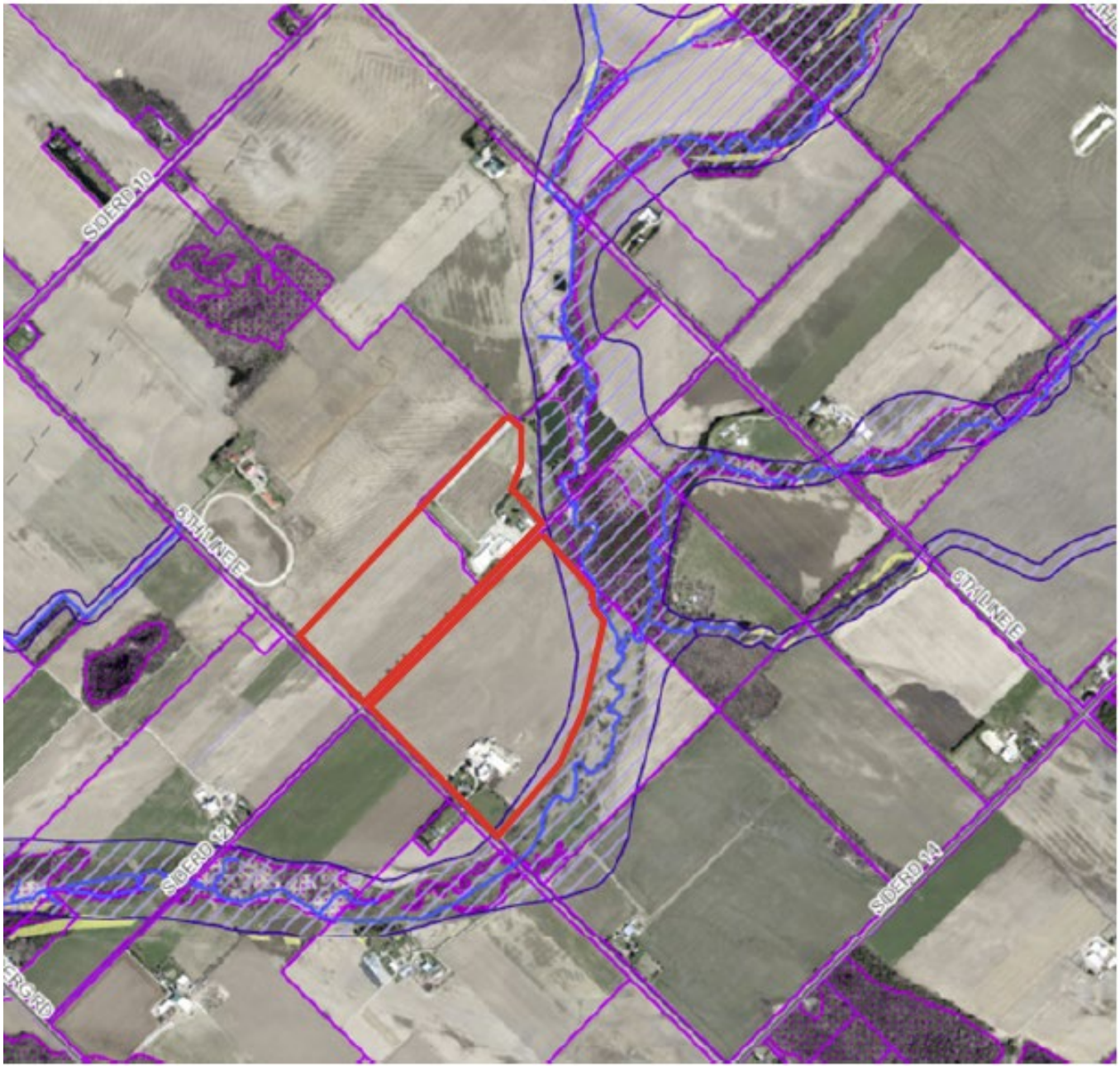
1 - Worms (Lumbricoides)

Appendix 6: Additional Mapping

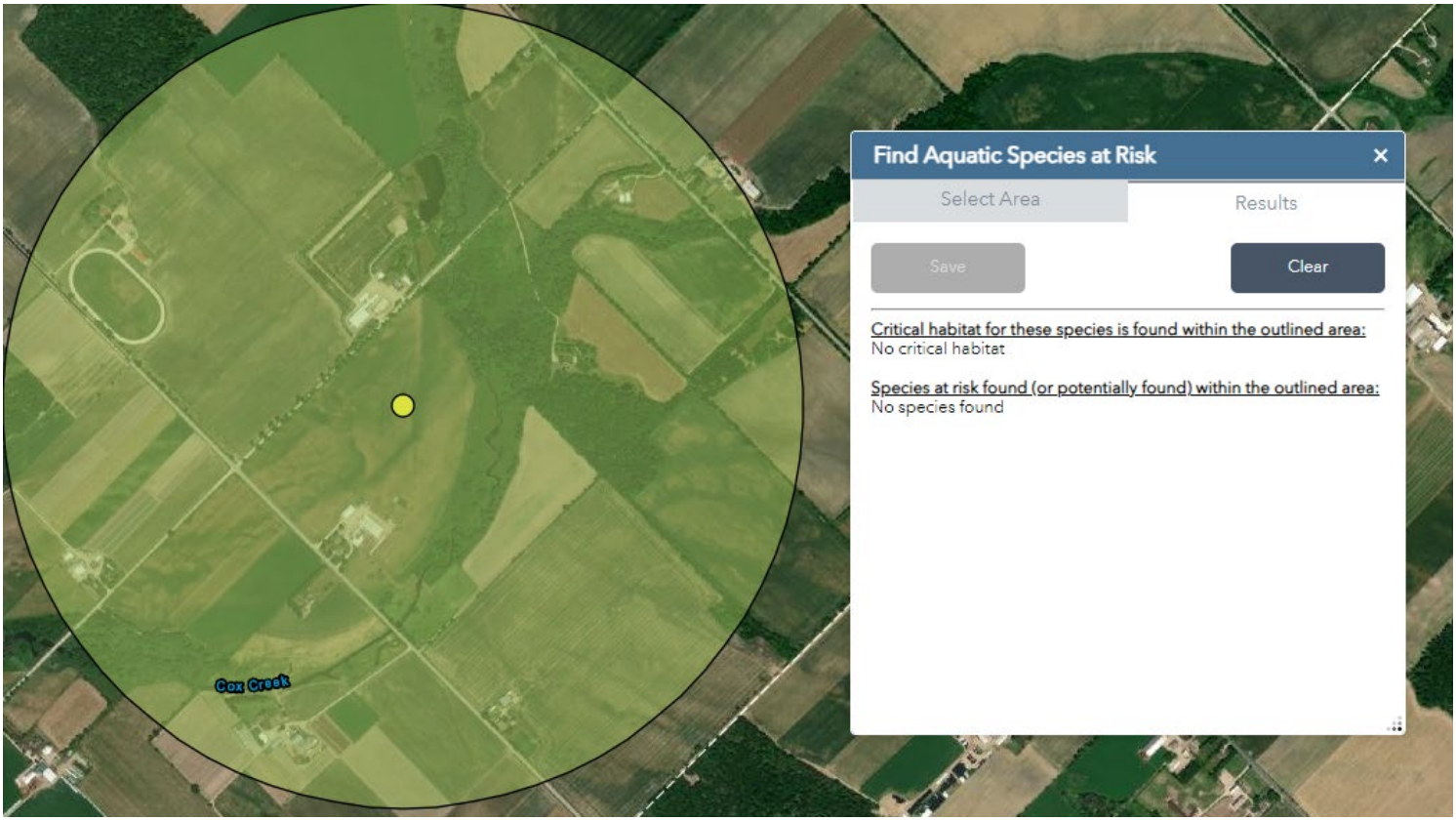
MNRF Woodland

MNRF Wetland

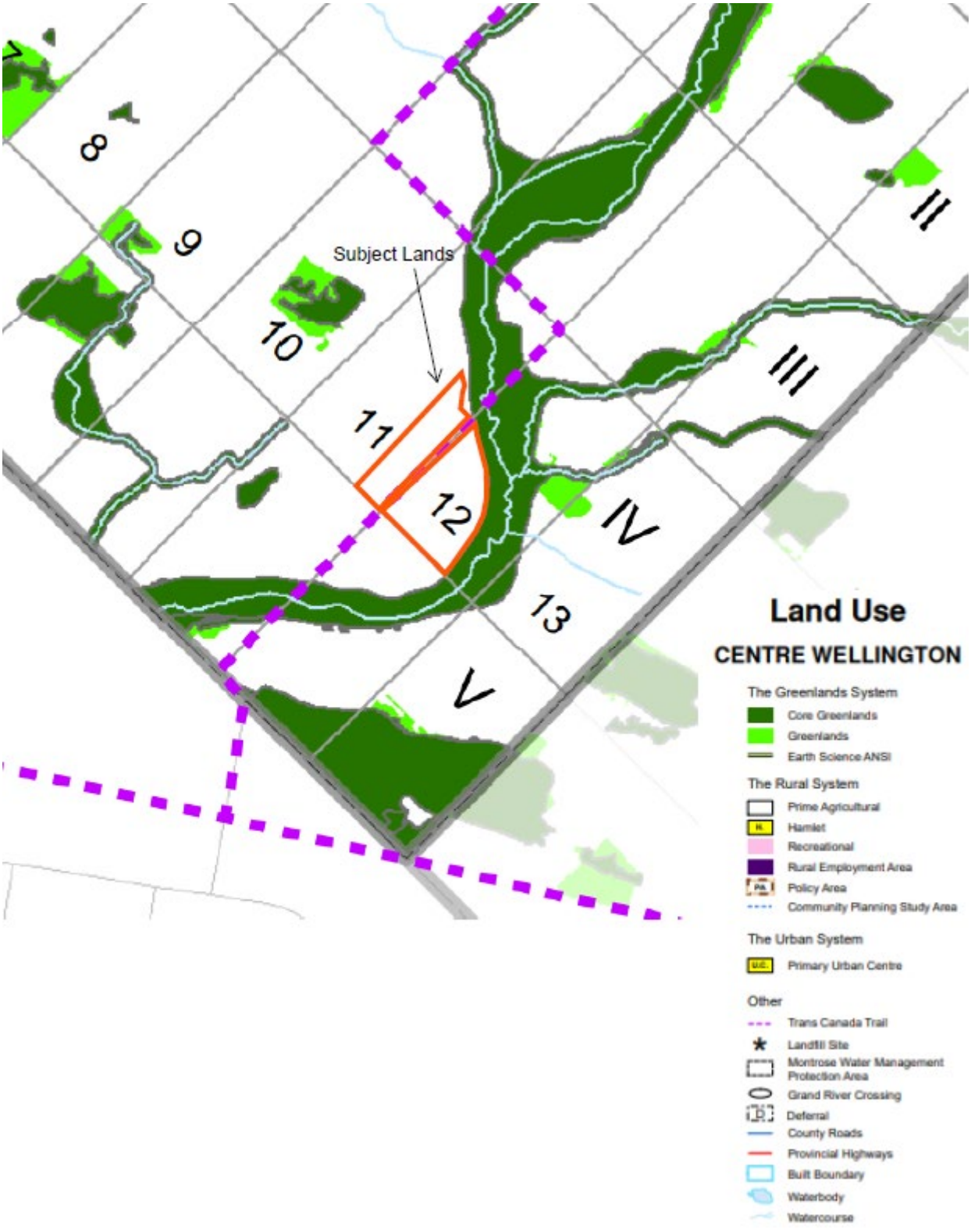
GRCA Map



DFO MAP and DATA SEARCH



County of Wellington Land Use Plan



AquaLogic Consulting • 324 St. Paul Street, Burlington, ON L7R 3J9 • (905) 637-1862 • bill.degeus@sympatico.ca

MEMO

To: **Stovel & Associates Inc.**

May 22, 2025

Re: **Geomorphic Corridor Analysis**
Cox Creek
Proposed Class A Pit for James Thoume Construction Ltd.
Township of Centre Wellington

As requested, please accept this report as a response to GRCA comments of December 18, 2024, with specific regard to: 2., Page 2 of 3, which reads as:

"The watercourse on the subject property appears to flow through an unconfined valley (i.e. steep and oversteep slopes are not present). A site-specific fluvial geomorphic, geotechnical or engineering assessment based on the Province's Technical Guide for the Erosion Hazard Limit (MNR, 2002) is recommended to establish more precise limits of any erosion hazards in proximity to the pit."

Topographic mapping confirms unconfined conditions (ToCW 2025, SAI 2025). The MNR guideline approach to defining erosion hazard limits for unconfined conditions is determination of the long-term historical meander belt allowance, with no added toe erosion or outside meander bank offset (MNR 2002). Standard industry practice, however, is to nonetheless consider site specific requirements for added factor of safety when meander apex locations are in proximity to proposed development.

This report is a scoped exercise using desktop analysis only. Based on initial background materials review, it was felt that the scale of effort necessary to confirm the geomorphic corridor relative to proposed pit extraction limits does not require site inspection.

Watershed and Watercourse Characterization

- Drainage area = 53.0 km^2 at the Cox Creek main branch downstream site limits at 8th Line East, 51.8 km^2 below the confluence of the main branch and an easterly tributary at mid property, and 29.4 km^2 above the confluence with the easterly tributary (MNRF 2025).

- Stream order = 3 above the confluence and 4 below the confluence.
- Physiographic region = Guelph drumlin field (Chapman & Putnam 1984).
- Watershed land use is dominantly agricultural and related amenities, with rural road and rural residential, one minor highway corridor, and natural area mix of forest and large riparian wetland blocks of swamp forest and wet meadow.
- Flow regime is expected to be well regulated, and sediment production and transport is expected to be low to moderate.
- The main branch shows regular and moderately tortuous meandering through former pasture land upstream of 8th Line East for an approximate distance of 900m. This transitions into swamp thicket forest riparian for approximately 300m to the Sideroad 12 crossing, which also continues on the upstream side through the study site boundary. The swamp forest is part of the Speed Lutteral Swan Creek Wetland Complex (ToCW 2025).
- Typical conditions *street view* photos at two time steps with different flow conditions at 8th Line East, are appended. Low gradient and stable conditions are seen, and the unconfined well connected flood plain transition is well represented.

Corridor Limits Analysis

- Planform analysis using historic air photo comparisons is appended. Fixed location control points and georeferenced adjustments were made as needed to align 1954 and 2022 images with a supporting hillshade LIDAR image. The changes and increases in corridor vegetation are seen in the comparison, while surrounding agricultural land use is generally consistent. Construction of a pond (former pit?) and business buildings on the upstream side of Sideroad 12, adjacent to the corridor, are seen as the most distinct local land use change.
- Channel centreline overlays were made on the 2022 photo. The 2022 pattern shows some lateral and down valley adjustment compared to 1954, notwithstanding resolution distortion that might apply in the older photo. One distinct difference in the comparison is a large meander, just downstream of Sideroad 12, that appears to have transitioned upstream. A second distinct difference is recognized as the 8th Line East culvert crossing being relocated at some past point westerly from the former location, and this explains some overlay difference at the site limits. The former downstream alignment is apparent in the LIDAR image.
- The macroscale patterns between 1954 and 2022 are seen to be generally similar, despite localized differences noted above. There is no system wide adverse trend showing that the meander pattern footprint is expansive over time. There is no evidence that in the past the channel occupied a corridor pattern overlapping the proposed pit, nor is there evidence that the current pattern is laterally shifting or widening to impact the proposed pit.
- The LIDAR image, supported by contour details, shows some muted evidence of secondary or relief flow paths in the flood plain. Review of recent years air photo

sequencing (CoW 2025) also confirms relief flow areas based on post rain event conditions with some standing water in overbanks. None of these secondary paths are wider than, or topographically outside of, the apparent meander belt limits.

- The meander belt limits were plotted to encompass the largest compound amplitude pattern centred on interpretation of the meander belt axis (corridor centreline of amplitude inflection points). This results in two measurements reflecting the relative change of drainage area influence above and below the tributary confluence.
- The meander belt limits are scoped as 75m wide above the tributary confluence with transition to 90m wide below the confluence.
- A supporting check was made using a collated data base, of past AquaLogic projects, that shows regression analysis for meander belt width as a function of drainage area. The appended results predict a best fit belt width of approximately 70m above the confluence, changing to 90m below the confluence to the downstream site limits. The results are in good agreement with the site-specific plotted measurements. Conservatively adding a 10% factor of safety and rounding up would produce results of 80m and 100m respectively.
- Closest point setbacks to the proposed pit extraction line are ~20m to the meander belt and ~40m to the existing alignment of the creek. Using the conservative upsizing estimates for belt limits, setbacks would equal 15m to the meander belt and 35m to the creek. Setbacks increase to be substantially larger upstream and downstream from the closest point locations.
- Provincial guidelines also speak to an additional ‘access allowance’ consideration to accommodate maintenance and emergency ingress and egress to stream corridors. In standard industry practice this is rarely treated as an extra to other setbacks, or as a need for an absolute continuous zone. As long as sufficient routes can be identified from either the top of feature (unconfined corridor, in this case) or as barrier free on valley or flood plain floors, access is deemed to be provided. The relatively large proposed site plan setbacks and flood plain access at road right-of ways will not impede future ingress and egress opportunity to the Cox Creek system.

Conclusions

Analysis of the meander belt allowance for Cox Creek has confirmed that the long-term historical limits do not impact the proposed pit extraction line. Setbacks from the meander belt and closest existing creek alignment point are approximately 20m and 40m respectively, and increase over the rest of the study site.

Bill de Geus, B.Sc., CET, CPESC, EP
AquaLogic Consulting

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Representative Conditions
Cox Creek

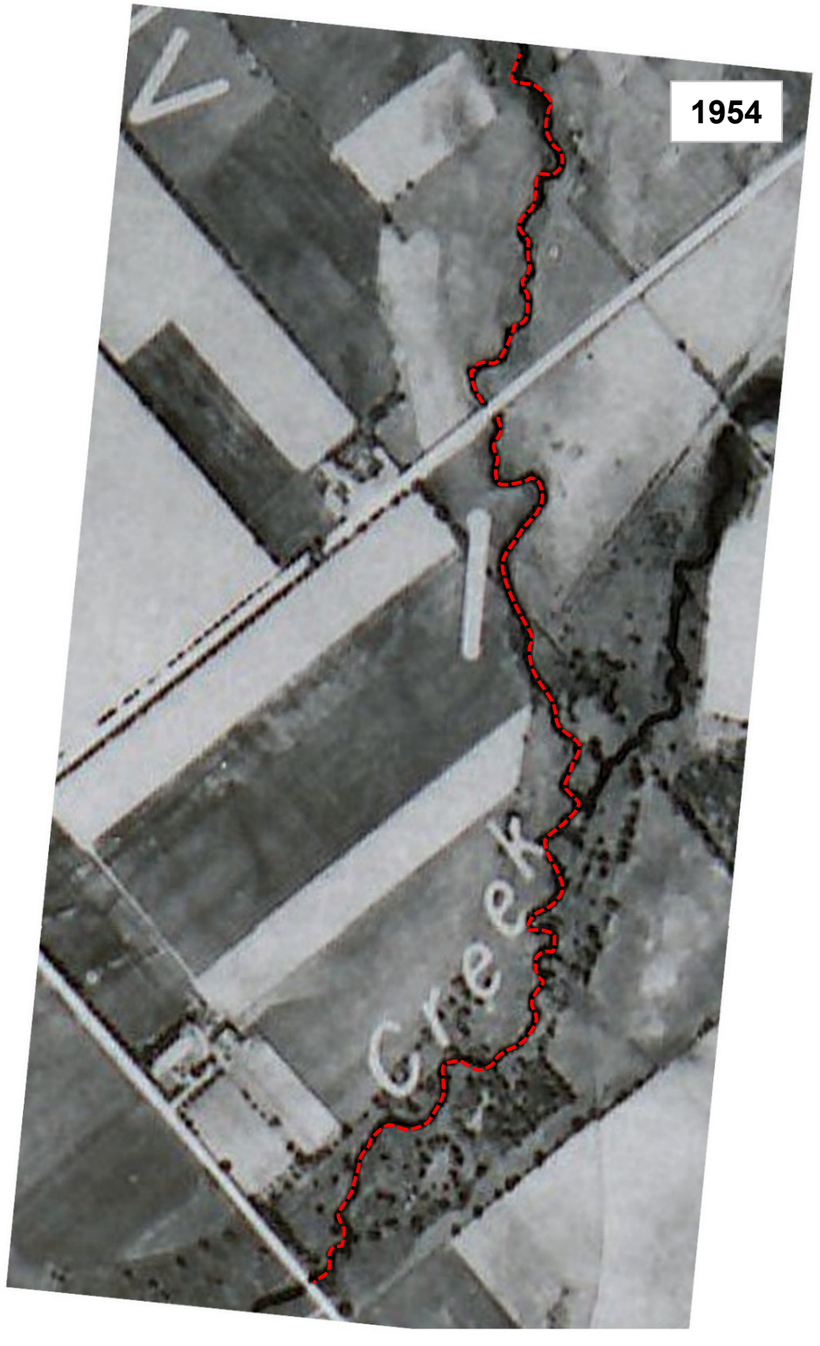
July 2023
- summer base flow, high density groundcover encroachment within the active channel, low gradient apparent, unconfined conditions apparent, creek appearance is very stable by biotechnical reinforcement

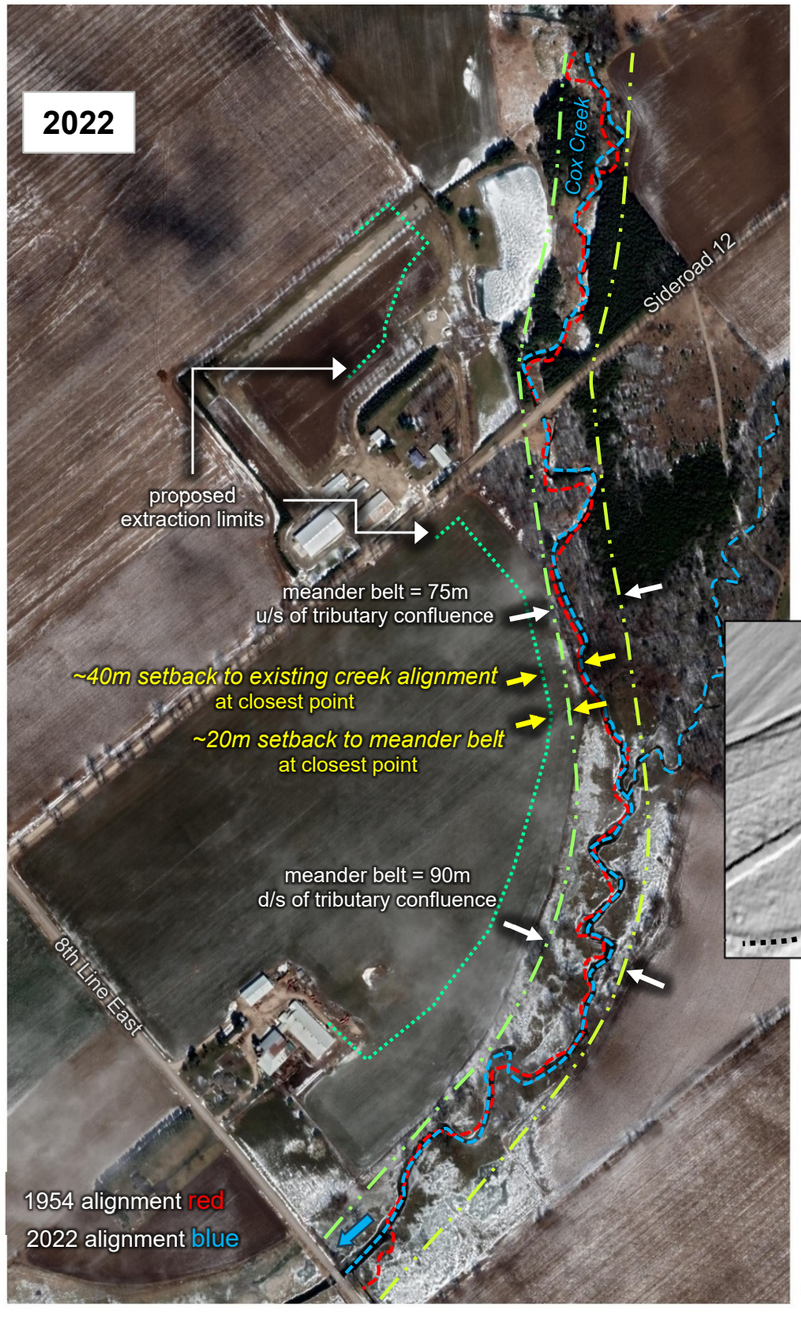
May 2018
- flows above bankfull at break point into flood plain, showing nonentrenched and unconfined flow spreading with very low erosion potential

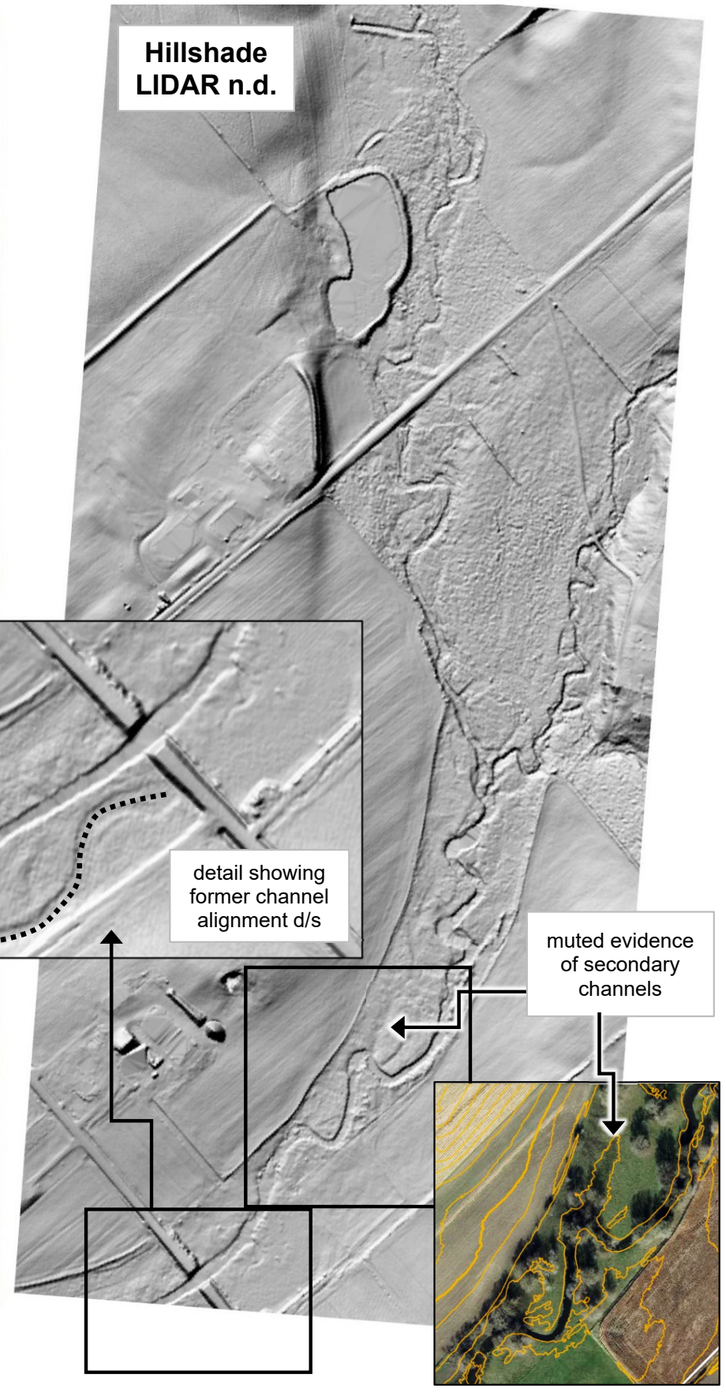
ref.: Google 2025b

Planform Analysis
Cox Creek

refs.: ToCW 2025, Google 2025a, NRCan 2025, SAI 2025, UoT 2025



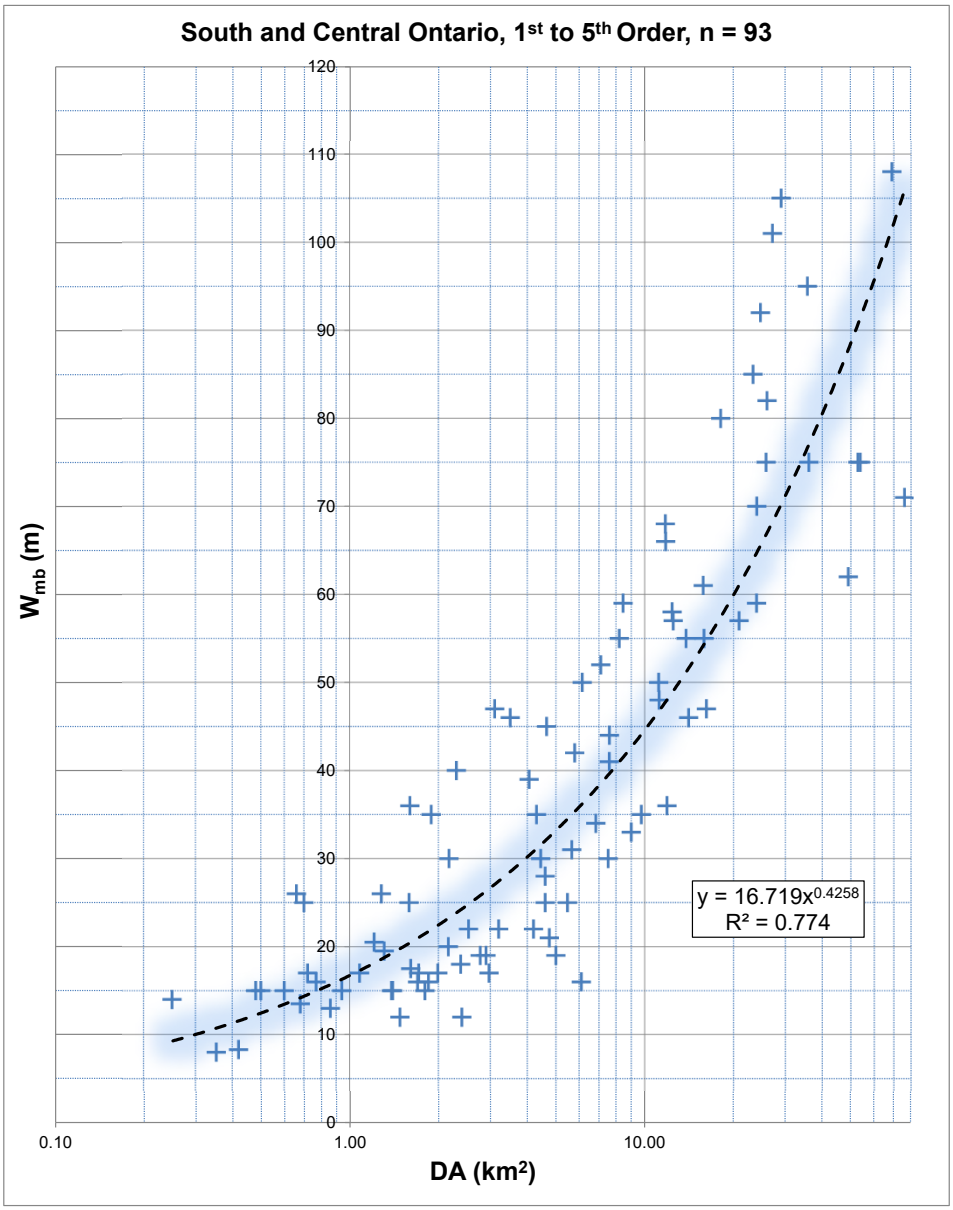


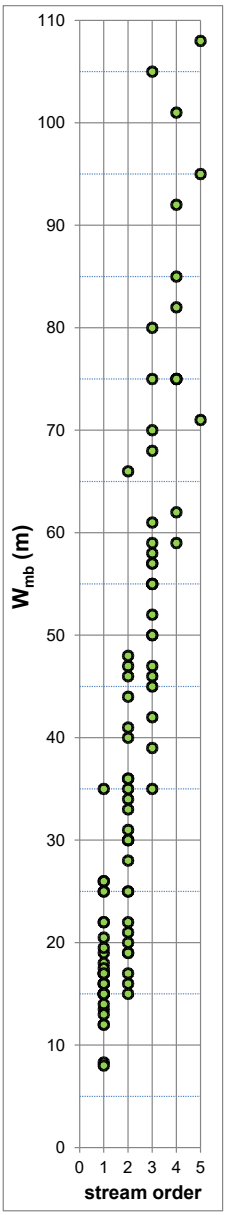


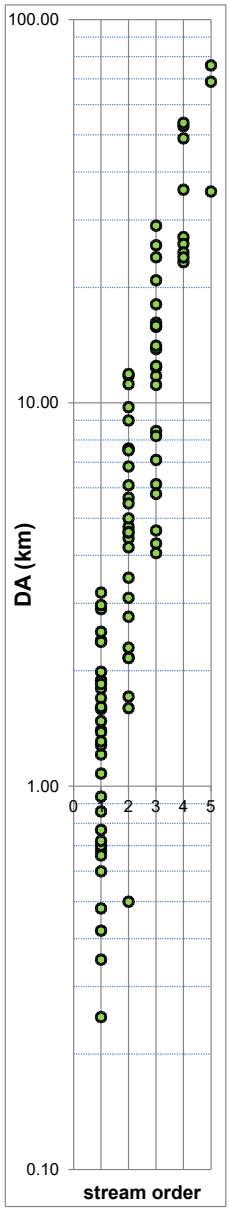
N▲ 100m

Cox Creek

Regional Regression Curve for Meander Belt Width







	DA (km^2)	W_{mb} (m)	x 1.1 FS (m)	ceil(x) (m) *or* ≈↑⑤ (m)
main branch u/s of tributary confluence	29.40	70.54	77.59	80
main branch d/s of tributary confluence	51.80	89.78	98.76	100
main branch at 8th Line East	53.00	90.66	99.72	100

Grand River Conservation Authority

Administration Centre: 400 Clyde Road, P.O. Box 729 Cambridge, ON N1R 5W6

Phone: 519-621-2761 Toll free: 1-866-900-4722 Fax: 519-621-4844 www.grandriver.ca

July 30, 2025

Ministry of Natural Resources
Integrated Aggregate Operations Section
300 Water Street
Peterborough ON K9J 3C7
ARAapprovals@ontario.ca

Re: Application for Class A Licence under the Aggregate Resources Act
5999 & 6043 8th Line East and 7190 Sideroad 12
Part of Lots 11 & 12, Concession 4 West
Centre Wellington Township, Wellington County
Jason Thoume Construction Ltd.

Grand River Conservation Authority (GRCA) staff have reviewed the above-noted application for a Class A Above Water Pit.

Documents Reviewed by Staff:

GRCA staff have reviewed the following documents submitted with this application:

- Response to GRCA Comments (Prepared by Stovel and Associates Inc., dated April 8, 2025).
- (GRCA Copy) Operations Plan (Prepared by Stovel and Associates Inc., Revised March 7, 2025).
- Existing Features Plan (Prepared by Stovel and Associates Inc., Revised March 10, 2025).
- Operations Plan (Prepared by Stovel and Associates Inc., Revised March 10, 2025).
- Final Rehabilitation Plan (Prepared by Stovel and Associates Inc., Revised March 10, 2025).
- Geomorphic Corridor Analysis (Prepared by Aqualogic Consulting, dated May 22, 2025).

GRCA Comments

The GRCA has reviewed this application under Ontario Regulation 686/21, acting on behalf of the Province regarding natural hazards identified in Section 5.2 of the Provincial Planning Statement (PPS, 2024), as well as a public body under the Planning Act. Activities approved under the Aggregate Resources Act are exempt from GRCA permissions under Section 28 of the Conservation Authorities Act, and therefore these comments are provided as advice to the Ministry of Natural Resources. We are also copying the County of Wellington and Township of Centre Wellington on this letter for consideration during subsequent municipal Planning Act applications.

Information currently available at our office indicates that the subject lands contain Cox Creek, its associated floodplain, and parts of the Provincially Significant Speed Lutteral Swan Creek Wetlands. A copy of our resource mapping is attached for reference.

GRCA previously commented on the first submission of the above-noted application in December 2024. Since then, additional information and responses to GRCA's previous comments have been provided. Please see GRCA's updated comments below.

Original GRCA Comment #1:

The GRCA does not have supporting hydrology or hydraulics to fully inform the extent of the flooding hazard on this site. A conservative estimate of the regulatory floodplain elevation is 347.6 metres (CGVD 28) north of Sideroad 12, and 346.3 metres (CGVD 28) south of Sideroad 12 to 8th Line. We recommend that these elevations are shown on the plans, and extraction limits and grading for the pit are kept outside of them to avoid potential flooding impacts. Alternatively, we would welcome further refinement of the floodplain through a hydraulic assessment by the applicant.

SAI Response:

- We acknowledge the estimated regulatory floodplain elevations of 347.6 metres (CGVD 28) north of Sideroad 12 and 346.3 metres (CGVD 28) south of Sideroad 12 to 8th Line. The lands north of Sideroad 12 are not impacted by the 347.6 m contour. The lands south of Sideroad 12 include a small portion within the area to be extracted that was impacted by the 346.3 m contour. We have revised the Site Plan (red line on Page 2 – Operations) accordingly to ensure extraction limits and grading remain outside these elevations.
- It is our opinion that further refinements are not necessary.
- We will not be conducting a hydraulic assessment of the floodplain.

Current GRCA Comment: GRCA has reviewed the revised operations plan, which now shows the regulatory floodplain elevation of 346.3m (CGVD28) previously provided by GRCA south of Sideroad 12 and demonstrates that the extraction limits will be outside of the floodplain boundary. Additionally, we understand the extraction limits will not be impacted by the floodplain for the north of Sideroad 12. As such, our previous comment has been addressed.

Original GRCA Comment #2:

The watercourse on the subject property appears to flow through an unconfined valley (i.e. steep and overstep slopes are not present). A site-specific fluvial geomorphic, geotechnical or engineering assessment based on the Province's Technical Guide for the Erosion Hazard Limit (MNR, 2002) is recommended to establish more precise limits of any erosion hazards in proximity to the pit.

SAI Response:

- We will not be commissioning a site-specific fluvial geomorphic, geotechnical, or engineering assessment.
- We have included a silt fence along the Cox Creek corridor for Area 1.

Current GRCA Comment: GRCA received the Geomorphic Corridor Analysis (Prepared by Aqualogic, dated May 22, 2025) submitted to GRCA by Stovel and Associates. GRCA has reviewed the report, and the analysis satisfies our previous comment.

Original GRCA Comment #3:

GRCA staff are unable to confirm that a site visit was completed to verify wetland boundaries. We ask that the applicant confirms the name of the attending GRCA ecologist and other information regarding the visit.

a) The natural environment report states that the floodplain pasture (OAGM4) is not a wetland. However, the report lists several wetland vegetation species (e.g. silver maple, swamp milkweed, purple-stem aster, sedges, and rushes) which are growing within this area. We recommend that a new site visit is arranged during the 2025 growing season (May to September) to, at minimum, conduct further review of this area.

b) The GRCA requests that a digital file depicting surveyed wetland boundaries is provided after confirming GRCA's previous visit to the site, and/or subsequent to a 2025 site visit.

SAI Response:

The wetland boundary survey was conducted with Mr. Richard Baxter of the GRCA on October 12, 2022 as set out in the following table (which was included in the Natural Environment Report). The survey was limited to the lands associated with the pit licence application. There is no need for a follow-up site visit in 2025.

Current GRCA Comment: We acknowledge that a wetland review was completed by GRCA ecology staff in October of 2022 for lands within the license pit application. The digital shapefiles have since been provided to GRCA staff. As such, our previous comment has been addressed.

Original GRCA Comment #4:

Setbacks from natural hazard and wetland features are not clear on the plans, and should be made explicit.

SAI Response:

As per the recommendations of the Natural Environment Report, a minimum setback of 30 m from the creek or wetland will be regarded. A 10 m setback from the dripline of the trees in the adjacent woodland is also stated but the 30 m wetland setback is greater than the dripline setback. We are of the opinion that no additional documentation on the setbacks to environmental features is needed.

Current GRCA Comment: We acknowledge that a 30m setback from the wetland boundary is being implemented and has now been added to the operational and site plans. The plans demonstrate that the extraction limits will be located outside of the 30m setback. As such, our previous comment has been addressed.

Original GRCA Comment #5:

Native plantings within the northern portion of the Area 1 extraction area are supported. As this planting area will be located within a modified floodplain, the vegetation species selected must tolerate wetter soil conditions. We recommend that a detailed landscaping plan, including a list suitable tree / shrub species and quantities, be added to the plans or detailed in supplementary reports.

SAI Response: We have identified an area on the eastern portion of Area 1 that will be set aside for native plantings. The Rehabilitation Plan identifies the location and sets out direction for native plantings.

Current GRCA Comment: Acknowledged. We have no further comment.

Original GRCA Comment #6: Continuous groundwater monitoring is recommended to ensure that extraction remains 1.5 metres above the water table during both operational phases.

SAI Response: Page 2 – Operations sets out Technical Recommendations for the groundwater monitoring program to ensure that extraction remains 1.5 metres above the water table during all operational phases. It is our Hydrogeologist's opinion that no further modifications to the Technical Recommendations are required with respect to ground water monitoring.

Current GRCA Comment: Acknowledged. We have no further comment.

Review Fee:
Consistent with GRCA's approved 2023-2025 fee schedule, this is an above water table aggregate application with features of interest within 30 metres of the proposed licence limit. We wish to acknowledge receipt of payment in the amount of $10,230.00 for the GRCA's review.

We trust this information is of assistance. If you have any questions or require additional information, please contact me at 519-621-2763 ext. 2230 or jconroy@grandriver.ca.

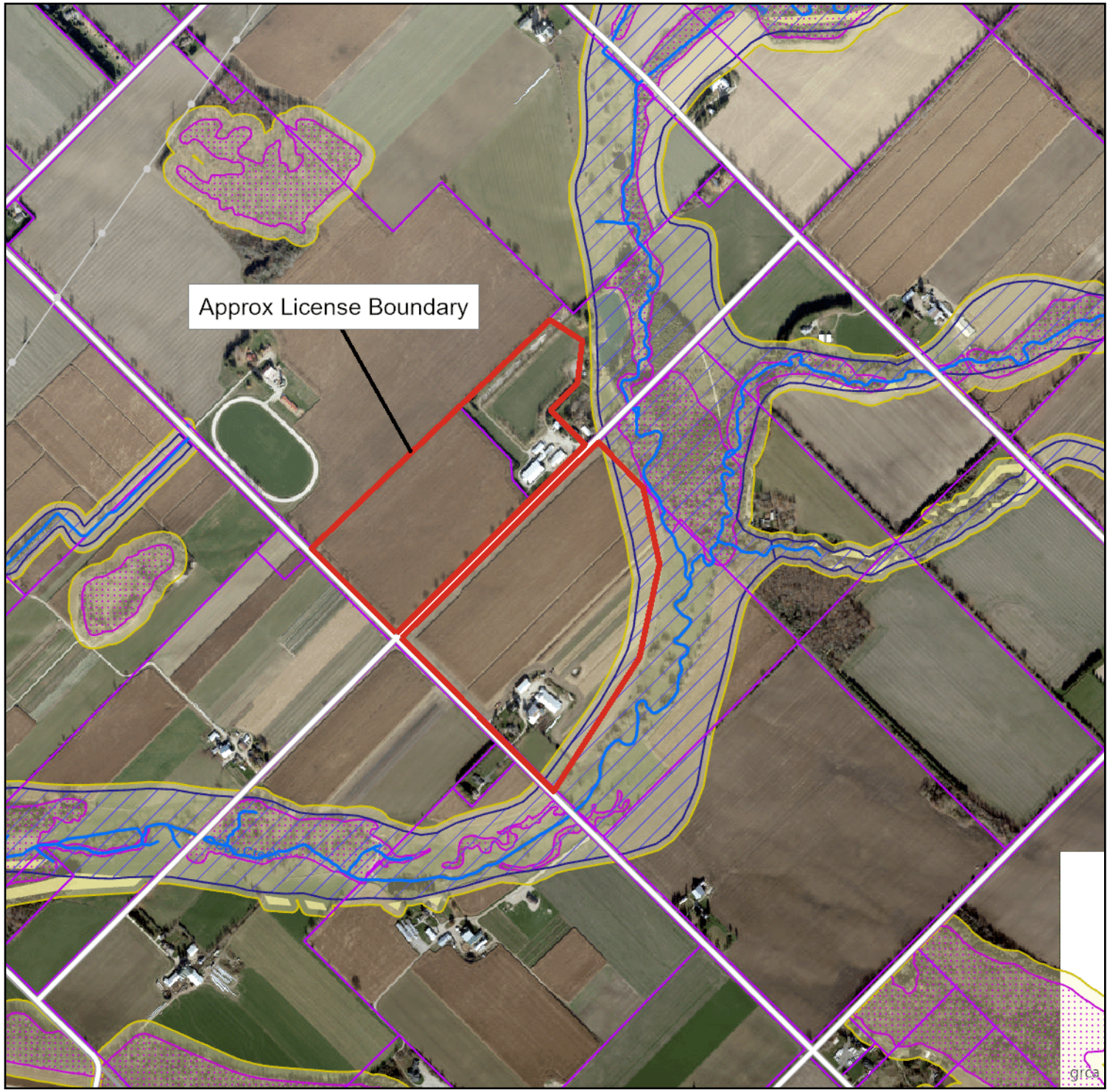
Sincerely,

Jessica Conroy

Jessica Conroy
Resource Planner
Grand River Conservation Authority

Enclosed: GRCA Map of Subject Lands

Copy: Stovel and Associates
Simon Thoume, James Thoume Construction
Sarah Wilhelm, Wellington County
Mariana Iglesias, Township of Centre Wellington
Chantalle Pellizzari, Township of Centre Wellington



Grand River Conservation Authority

Date: Jul 30, 2025
Author: JC

Proposed Lichty Pit, Centre Wellington

Legend

- Regulation Limit (GRCA)
- Floodplain (GRCA)
  - Engineered
  - Estimated
  - Approximate
- Floodplain - Special Policy Area (GRCA)
- Slope Erosion (GRCA)
  - Steep
  - Oversteep
  - Toe
- Slope Valley (GRCA)
  - Steep
  - Oversteep
- Regulated Watercourse (GRCA)
- Regulated Waterbody (GRCA)
- Wetland (GRCA)
- Lake Erie Flood (GRCA)
- Lake Erie Shoreline Reach (GRCA)
- Lake Erie Dynamic Beach (GRCA)
- Lake Erie Erosion (GRCA)
- Parcel (Wellington)
- Conservation Area Boundary (GRCA)

Scale 1:12,571

NAD83 UTM zone 17 (EPSG:26917)

Map Centre (X,Y): 547863.75, 4827689.72 | Map Link

This map is not to be used for navigation | 2022 Ortho (CW)

Appendix 9 – Update

Since the preparation of the Natural Environment Report (NER), the Province of Ontario has adopted two updates that impact the findings of the NER:

- On January 28, 2024, barn swallow was down listed to special concern. Therefore, it is recognized that barn swallow should not be considered as endangered and threatened species habitat but significant wildlife habitat. The onsite barn structures (where the barn swallows are suspected of nesting) will not be impacted by the proposed mineral aggregate operation. No mitigation measures are required to protect habitat for barn swallows and no impacts on significant wildlife habitat are anticipated.
- The Provincial Planning Statement was issued under section 3 of the *Planning Act* and came into effect October 20, 2024. The Provincial Planning Statement (PPS), 2024 is a streamlined province-wide land use planning policy framework that replaces both the Provincial Policy Statement, 2020 and A Place to Grow: Growth Plan for the Greater Golden Horseshoe, 2019 while building upon housing-supportive policies from both documents. Therefore, the references to provisions in PPS 2020 should now be PPS 2024 (including the specific policy references within the Natural Heritage (4.1) policy section. These policy changes result in modifications to 7.0 Conclusions primarily related to 7.2 and 7.6. These sections should now read:

  7.2 There is no significant habitat for endangered or threatened species located on the site or within 120 m of the site.

  7.6 There is significant wildlife habitat located on the site.

- The definitions section in the NER (Section 2.2) is updated to reflect minor wording changes in PPS 2024:

  Areas of natural and scientific interest: *means areas of land and water containing natural landscapes or features that have been identified as having life science or earth science values related to protection, scientific study or education.*

  Wetlands*: means lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface. In either case the presence of abundant water has caused the formation of hydric soils and has favoured the dominance of either hydrophytic plants or water tolerant plants. The four major types of wetlands are swamps, marshes, bogs and fens.*

Habitat of Endangered Species and Threatened Species: *means habitat within the meaning of section 2 of the Endangered Species Act, 2007.*

Fish Habitat: *as defined in the Fisheries Act, means water frequented by fish and any other areas on which fish depend directly or indirectly to carry out their life processes, including spawning grounds and nursery, rearing, food supply, and migration areas.*

Woodlands: *means treed areas that provide environmental and economic benefits to both the private landowner and the general public, such as erosion prevention, hydrological and nutrient cycling, provision of clean air and the long-term storage of carbon, provision of wildlife habitat, outdoor recreational opportunities, and the sustainable harvest of a wide range of woodland products. Woodlands include treed areas, woodlots or forested areas and vary in their level of significance at the local, regional and provincial levels. Woodlands may be delineated according to the Forestry Act definition or the Province's Ecological Land Classification system definition for "forest."*

Significant: *means*

a) in regard to wetlands, coastal wetlands and areas of natural and scientific interest, an area identified as provincially significant using evaluation criteria and procedures established by the Province, as amended from time to time;
b) in regard to woodlands, an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history. These are to be identified using criteria and procedures established by the Province;
c) in regard to other features and areas in policy 4.1, ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system; and
d) in regard to mineral potential, an area identified as provincially significant through provincial guidance, such as the Provincially Significant Mineral Potential Index.
e) in regard to cultural heritage and archaeology, resources that have been determined to have cultural heritage value or interest. Processes and criteria for determining cultural heritage value or interest are established by the Province under the authority of the Ontario Heritage Act.

Criteria for determining significance for the resources identified in section c) - d) are provided in provincial guidance, but municipal approaches that achieve or exceed the same objective may also be used.
While some significant resources may already be identified and inventoried by official sources, the significance of others can only be determined after evaluation.

***Valleylands**: means a natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of the year.*

***Wildlife habitat:** means areas where plants, animals and other organisms live, and find adequate amounts of food, water, shelter and space needed to sustain their populations. Specific wildlife habitats of concern may include areas where species concentrate at a vulnerable point in their annual or life cycle; and areas which are important to migratory or non-migratory species.*