

# **Subject Lands Status Report: Byron Pits**

**PREPARED FOR**

**Harrington McAvan Ltd  
&  
The City of London, Ont.**

## **SLSR: Byron Pits**

**Part Lots 41 & 42, Concession 1, Westminster  
City of London,  
County of Middlesex**

**PREPARED BY**

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## 1 Introduction

A Subject Land Status Report (SLSR) is a natural heritage study undertaken as a background study component of a Secondary Plan in order to protect and sustain natural heritage areas and address the Environmental Policies of the London Plan. A SLSR identifies natural heritage features and functions and evaluates their significance, and includes a three season ecological inventory, following the City's Data Collection Standards for Ecological Inventory and other provincially and federally accepted protocols. As specific development and infrastructure proposals come in, those proposed to be located adjacent to natural heritage features including those identified in the Secondary Plan will be subject to all of the Environmental Policies of the London Plan (and the Provincial Policy Statement 2014), consistent with policy 1432\_ Environmental impact studies.

## 2 Study Works

### 2.1 Study & Site Lands

The natural heritage review study area was delineated by the City of London through its Secondary Plan process. For this technical report that study area is defined as the field 'Study Lands' delineated on Figure No. 2, being the outer Licence Boundary to the Byron Pits. To aid in addressing planning policies and surrounding natural features, a desk-top review has also been undertaken within the adjacent 120m lands, referred to as the 'Site Lands' which are also delineated on Figure No. 2.

### 2.2 Background Review

A broader literature review extending 5km from the Study Lands was undertaken of historical data records maintained by the Ministry of Natural Resources and Forestry (MNRF) for significant flora and fauna. A summary of record findings is provided under Appendix 1 which includes a provincial habitat description and on-site suitable habitat assessment within the Study Lands for each noted species. This background review was utilized to augment field data collection for the natural environment review.

Additional background literature reviews for natural heritage features was sourced through the City of London Official Plan and its figures- schedules, Upper Thames River Conservation Authority and the County of Middlesex Natural Heritage System Study, 2014.

### 2.3 Field Study Methodology

A qualified two-person team comprised of John Morton and Judith Jones from AWS Environmental Consulting Ltd. (AWS) completed the natural environment field inventory works within the Study Lands. Details of survey focus works and dates are provided in Table No. 1.

**Vascular Plant Surveys** were conducted during the growing season (spring and summer) of 2018, with a full species listing, ranking, status levels and Floristic Quality Scores provided within Appendix 2. During these surveys, significant species colony location mapping and

abundance estimates were recorded for all floral species of conservation concern, along with ELC vegetation community mapping for the Study Lands. Given the site disturbances within the Study Lands (post aggregate extraction) there was little natural or undisturbed lands of which were scattered around the periphery of the Study Lands. As such, flora survey works followed a random approach, covering all habitat types and vegetation communities.

**General Fauna Surveys** within the Study Lands included specific searches and/or investigation for amphibians, breeding birds, gestation and forage activity for snakes, turtle basking and nesting habitat, general searches for mammals and movement corridor functions. A full summary list of all recorded fauna species over the study period has been provided under Appendix 3 with current rankings, status levels and highest bird breeding codes observed.

**Bird Surveys** for the Subject Lands followed several standardized search methods:

- a) Monitoring activity included a 'Point Count' methodology for breeding activity in accordance to Bird Studies Canada for Woodland habitat. Point Count Locations were established to cover all habitat types within the Study Lands, with no point count location closer than 100m (limited overlapping of potential territories). Occurrences were recorded through both sightings and calling for a total of 5-10 minutes at each point count location in the early morning hours (dusk to 10:40am). Point Count data has been provided within Appendix 3.
- b) Additional bird observations of feeding adults and fledglings during summer site visits were also recorded and listed under Appendix 3 as observations outside the breeding season.

**Herpetofaunal Surveys** were conducted throughout the Study Lands but were focused within suitable habitat areas; wet areas, within and around fence lines, forest edges, rock piles and the pit pond perimeter.

- a) Amphibian-Salamander and Frog breeding activity was assessed through active searches for egg masses within suitable habitat, from early May through to late June 2018 with noted adult observations. Pit extraction ponds being deep-water and man-made (vegetation community 1) features are not 'natural' environments for significance determination purposes and the small breeding habitat area within vegetation community 4 was highly disturbed from recent vegetation cutting and fill. As such, no anuran night time calling surveys were undertaken as per the accepted initial project survey works proposal.
- b) Reptiles- Turtle activity was assessed through active searches for nesting/egg laying and adults basking within suitable habitat.
- c) Reptiles-Snake activity was assessed through active searches for activity during the active summer gestation period and forage periods, within suitable habitat areas.

**Mammal** sightings or observations of habitat use (tracks, scat) were recorded during all other flora and fauna investigations during site visits in 2018. Specific searches plus random coverage across the Study Lands focused on rock piles, woodlands, thickets, fence lines, downed woody debris, game trails and habitat/vegetation transition zones.

**Fish Community** assessment was not required as no watercourses or natural surface water features supporting fish occur within the Study Lands as defined under the Federal Fisheries Act. This was confirmed through on-site investigations.

## 2.4 Field Survey Dates and Focus of Works

Table No. 1: Field Survey Dates

Date	Search Time & Effort	Starting Weather Conditions	Survey Focus
May 9, 2018	0900 to 1530 For 6.5 hrs	Air Temp. = 18 C Wind Speed = 6-11 km/hr Cloud Cover = 25%, Precipitation = 0	Reptile forage activity, Amphibian egg mass search, Hydrology, General fauna, Stick Nests, Cavity trees
June 12, 2018	0700 to 1300 For 5.0 hrs	Air Temp. = 17 C Wind Speed = 12-19 km/hr Cloud Cover = 30%, Precipitation = 0	Breeding Bird survey, General Fauna, basking turtles, Amphibian egg mass search
June 21, 2018	0700 to 1500 2-person Team For 16.0 hrs	Air Temp. = 20 C Wind Speed = 6-11 km/hr Cloud Cover = 50%, Precipitation = 0	Spring season Flora inventory, Breeding Bird survey ,General fauna, Reptile & Amphibian egg laying activity search
August 22, 2018	0830 to 1430 2-person Team For 12.0 hrs	Air Temp. = 19 C Wind Speed = 6-11 km/hr Cloud Cover = 50% Precipitation = 0	Summer season Flora inventory, Vegetation Community & ELC delineation, Snake gestation activity and General Fauna.

Site investigations covered the spring and summer growing seasons of 2018, with four site visits, providing 39.5 hours of field inventory work within the Study Lands.

Herpetofaunal investigations provided: three daytime searches for amphibian egg masses, two daytime searches for turtle egg laying activity, emergence activity and two daytime searches for snake gestation activity. Bird inventory work included two surveys during the active breeding season, plus survey work during the early spring season for stick nest investigations and fledgling survey in mid-summer season.

### 3 Vegetation Community Characterization

Vegetation community boundaries within the Study Lands are depicted on Figure No. 5. They were mapped and defined in the field based upon the ‘Ecological Land Classification (ELC) for Southern Ontario, both First & Second Approximation’, with ELC types, ranking provided in Table No. 2.

Table No. 2: Vegetation Communities & ELC Codes

<b>Vegetation Comm. No.</b>	<b>1998 ELC Code</b> (SWH Criteria is based on 1998 ELC types)	<b>1998 Type</b>	<b>2008 ELC Code</b>	<b>2008 Type</b>	<b>Provincial Designation</b>
1	OAD	Open Aquatic	OAW	Open Water	S5
2	CUM1	Dry Mineral Cultural Meadow	OAGM2	Perennial cover crops	S5
3	CUM1-1	Dry Mineral Cultural Meadow	MEMM3	Dry-Fresh Mixed Meadow Ecosystem	S5
4	CUM1	Moist Mineral Cultural Meadow	MEMM4	Fresh-Moist Mixed Meadow Ecosystem	S5
5	CUS1	Cultural Savannah	SVDM3-5	Poplar Deciduous Savannah Type	S5
6	CUT1	Dry Cultural Black Locust Thicket	FODM4-11	Dry-Fresh Black Locust Deciduous Forest	S5
7	FOD5-5	Dry-Fresh Sugar Maple-Hickory Deciduous Forest	FODM5-5	Dry-Fresh Sugar Maple-Hickory Deciduous Forest	S5
8	FOD5-7	Dry-Fresh Sugar Maple-Black Cherry Deciduous Forest	FODM5-7	Dry-Fresh Sugar Maple-Black Cherry Deciduous Forest	S5

### 3.1 Vegetation Characterization

No. 1

- Open waters >2m in depth, below water table excavation area within the old pit floor. Periphery with some scattered rooted and emergent aquatic plants (<5%)

No. 2

- Anthropogenic site planted in white clover cover crop in 2018.

No. 3

- Anthropogenic site, dry with moderate slopes, dense forbs and graminoids with scattered tree saplings throughout.

No. 4

- Similar to community No. 2 but not planted in cash crop, and similar to community No. 3 but no pit excavation activity, area with moist soils and a small disturbed natural pond feature. Anthropogenic site delineated separate for distinction in potential rehabilitation measures due to soil moisture regimes.

No. 5

- Anthropogenic site with scattered regenerating- early successional trees (30% coverage) mix of Poplars, Maples & Ash. Abundant forbs and graminoids ground cover (50%). Average tree height of 4m and 8cm dbh.

No. 6

- Anthropogenic site. Mid-maturity aged stand with a high stem density, semi-closed canopy dominated with Black Locust (80% of tree cover) and dense ground cover of wild raspberry. Average tree height of 7m and 12cm dbh.

No. 7

- Mid-maturity aged stand with a closed canopy. Ground cover high (60%) dominated with graminoids. Average tree height of 14m and 18cm dbh.

No. 8

- Mature aged stand with a closed canopy. Ground cover was 35% being a mix of seedling and forbs. Average tree height of 21m and 32cm dbh.

## **Significant Feature Analysis**

The Natural Heritage Features have been researched on available reports, data banks, maps etc. currently available through Municipal, Provincial and Federal agencies for this Study Area. On-site field survey works assessment aided in confirmation and noted habitat for candidate species habitat.

### **4 Habitat of Endangered and Threatened Species**

On-site investigations confirmed that Bank Swallows a 'Threatened' species in Ontario were nesting and rearing young within a portion of the old pits extraction face in the southwest Study Lands corner, having an east facing exposure. It was estimated that the adult bird population was >100, were observed foraging activity throughout the entire Study Lands. The nesting colony was a congregation of 70 to 75 burrows about 6m below the crest of slope, of which 80% of the burrows appeared to be active during the 2018 nesting season. The nesting colony has been mapped on Figure No. 6.

In review of the background provincial records for significant flora and fauna (Appendix 1), six flora species and nine fauna species were noted within the 5km search coverage area. A review of provincial habitat description and suitable habitat areas for the Study Lands is included in this background review in Appendix 1 to aid in field investigations. Through on-site habitat assessment and detailed flora and fauna inventory works (Appendix 2 and Appendix 3), none of the historically recorded Flora Species-At-Risk were observed within the Study Lands during the 2018 site investigations. One fauna species, Bank Swallow, of the noted nine historical records was confirmed within the Study Lands during the 2018 site investigations.

### **5 Fish Habitat**

No natural water courses are identifiable on any Planning Maps or Provincial mapping or through air photo interpretation for the Site Lands, which has been confirmed through on-site investigations. The open water environment of vegetation community No. 1 situated within the old pits central lands, has been created through below-water table extraction, with no surface water linkages off-site, there is no potential for natural fish movement to or off the site. Additionally a drainage ditch bisects through vegetation community No. 4, carrying seasonal surface water run-off in a southwest direction to off-site lands, but does not link to any documented off-site Fish Habitat. As such, it has been confirmed there is no Fish Habitat as defined by the Federal Fisheries Act within the Study Lands.

### **6 Significant Valleylands**

The Significant Valleyland associated with the Thames River is situated north of Commissioners Rd. W., outside of the Study Lands.



## 7 Significant Wetlands

A review of Provincially Significant Wetland (PSW) features within the surrounding landscape has been provided on Figure No. 3. This provincially sourced mapping confirms that no evaluated significant wetlands occur within the Study or Site Lands. Of note, a small (14 ha) provincially significant wetland is situated approximately 140m southeast of the Study Lands southeast corner. The provincial evaluation record has titled this wetland as 'North Talbot Wetlands' (see Appendix 4), while it's local name goes by 'Buttonbush Wetland'. Though no surface water linkages were observed between this wetland feature and the Study Lands, the drainage ditch bisecting through vegetation community No. 4 may carry seasonal run-off waters to this feature.

In review of the City of London Official Plan Schedule B-1 and B-2 and London Plan Map 5, an unevaluated wetland and Significant Woodland feature have been identified along the Study Lands central-east boundary (upper end of the noted drainage ditch that bisects through vegetation community No.4). Ontario base mapping however, does not show a 'wetland' environment at this location. This area is in private land ownership, thus no direct on-site investigations could be undertaken to assess vegetation types. Though through property line observations, the lands were observed to be gently sloping away from the Study Lands and appeared to be dominated by upland-terrestrial vegetation with moist soils, not a wetland environment (additionally, if this was a forested swamp, it would have been included into the nearby PSW complex, only 200m away).

## 8 Significant Areas of Natural and Scientific Interest (ANSI)

A review of Provincial features mapping within the Site Lands and surrounding landscape has been provided on Figure No. 3, sourced from MNRF web site. This provincial mapping demonstrates that no significant ANSI designation, Life Science or Earth Science, occurs within the Site Lands or surrounding landscape.

## 9 Significant Woodlands

Figure No. 4 (excerpts from City of London Official Plan Schedules B-1 and B-2 and London plan Map 5) shows that Significant Woodlands and Unevaluated Vegetation Patches have been documented within the Study and Site Lands.

Based on the City's Guidelines for Assessing Ecological Boundaries of Vegetation Patches, the boundaries of the Significant Woodlands have expanded and London Plan Map 5 should be updated to include contiguous naturalized vegetation, specifically the thicket and forest communities.

For the Study Lands, the recommended Significant Woodland designation has been shown on Figure No. 7, associated with this technical reports vegetation community numbers (in whole or in part):

- All of community No. 8
- All of community No. 6 (this stand being dominated by aggressive Black Locust)
- Portion of community No. 5 along the southwest perimeter
- Portions of community No. 7 along the west perimeter and northeast corner

**Note:** currently vegetation community No. 4 is a moist meadow field, which has recently been cleared of trees and shrubs.

## 10 Significant Wildlife Habitat

The Ontario Ministry of Natural Resources and Forestry published in January 2015 “Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E” as a supplement document to the 2000 Significant Wildlife Habitat Technical Guide (SWHTG). This supporting document provides a listing of candidate and criteria or threshold levels to confirm the presence of significant wildlife habitat within Ecoregion 7E, noting that the subject lands are situated within Ecoregion 7E. Provided below is a review of Ecoregion 7E criteria for candidate SWH, a review of threshold levels and candidate or confirmed SWH for the Study Lands.

### 10.1 Seasonal Concentration Areas of Animals

A summary review of the Table 1.1 Criterion is provided below for the Study Lands:

- Waterfowl Stopover and staging (Terrestrial)
  - No criteria waterfowl species were observed in 2018
  - ELC criteria codes : CUM1 and CUT1 are present however no evidence of annual spring flooding (slopes) or suitable habitat.
  - Criteria species or aggregate numbers or identifiable suitable habitat not met.
  - No confirmed SWH.
- Waterfowl Stopover and staging (Aquatic)
  - One criteria waterfowl species: Canada Goose, was observed in 2018 but no evidence of great numbers during migration period
  - No ELC criteria codes are present.
  - Criteria species or diversity or aggregate numbers or suitable habitat not met.
  - No Confirmed SWH.
- Shorebird Migratory Stopover
  - One criteria shorebird species: Spotted Sandpiper was observed in 2018.
  - No ELC criteria codes present.
  - Criteria species diversity or aggregate numbers or suitable habitat not met.
  - No confirmed SWH.
- Raptor Wintering Area
  - Two criteria raptor species: Red-tailed Hawk and American Kestrel were observed perching in the summer season within the Study Lands in 2018.
  - ELC forest criteria code FOD is present and Open upland codes: CUM, CUS, and CUT present

- No documented winter activity. Past land use activities would constrain habitat use. Future activity under ideal lands may provide favorable over wintering habitat.
  - Criteria species diversity or aggregate numbers presently not met
  - No confirmed SWH, but noted future potential as suitable habitat types and minimum area size is on-site.
- Bat Hibernacula
    - No bat species or criteria species were observed in 2018.
    - No ELC criteria codes present.
    - No confirmed SWH.
- Bat Maternity Colonies
    - No bat species or criteria species were observed in 2018.
    - ELC criteria code: FOD is present
    - East portion of Vegetation community No. 8 noted suitable habitat with standing snags in early decay and several live large diameter trees with cavities.
    - **Candidate SWH area delineated on Figure No. 8.**
- Turtle Wintering Areas
    - No criteria turtle species observed during the 2018 site investigations.
    - No ELC criteria codes present. Pit floor pond as no organic substrate required for turtle overwintering survival.
    - Species criteria numbers or diversity or suitable habitat not met.
    - No confirmed SWH.
- Reptile Hibernaculum
    - Two criteria snake species: Eastern Gartersnake and Northern Brownsnake were observed within the Study Lands, however all sightings were recorded during the 2018 summer season investigations during the active foraging period. Given the extensive overburden disturbances within the Study Lands (former pit operations) no candidate Hibernaculum habitat was identified.
    - Species diversity, numbers, congregations not met.
    - No confirmed SWH.
- Colonially-Nesting Bird Breeding Habitat: Bank and Cliff
    - No criteria bird species were observed in 2018.
    - ELC criteria codes: CUM1 and CUT1 are present and steep slopes present.
    - Species criteria numbers or diversity or suitable habitat not met.
    - No confirmed SWH.
- Colonially-Nesting Bird Breeding Habitat: Tree/Shrub
    - No criteria bird species were observed in 2018.
    - No ELC criteria codes are present and no nesting activity noted.
    - Species criteria numbers or diversity or suitable habitat not met.
    - No confirmed SWH.

- Colonially-Nesting Bird Breeding Habitat: Ground
  - One criteria bird species: Herring Gull was observed in 2018.
  - ELC criteria codes: CUM, CUT and CUS are present however, no nesting activity noted.
  - Species criteria numbers or diversity or suitable habitat not met.
  - No confirmed SWH.
  
- Migratory Butterfly Stopover Areas
  - One criteria butterfly species: Monarch was observed in 2018.
  - Forest ELC criteria code: FOD and Field ELC criteria code: CUM, CUT and CUS are present however; the Site Lands are not located within 5km of Lake Ontario or Lake Erie (criteria site locations).
  - No confirmed SWH.
  
- Landbird Migratory Stopover Areas
  - Several migratory songbird species confirmed within the Study Lands, see Appendix 3.
  - ELC criteria code: FOD is present however; the Site Lands are not located within 5km of Lake Ontario or Lake Erie (criteria site locations).
  - No confirmed SWH.
  
- Deer Winter Congregation Areas
  - Criteria species observed within the Study Lands during the summer season.
  - ELC criteria code: FOD is present however woodland parcels are well below threshold size criteria of 50 ha.
  - No wintering deer congregation habitat identified on mapping for the Study Lands woodlands by MNRF.
  - No confirmed SWH.

## 10.2 Rare Vegetation Communities

A summary review of the Table 1.2.1 Criterion is provided below:

- Cliffs and Talus Slopes
  - No ELC criteria code types present within the Study Lands.
  - No confirmed SWH.
  
- Sand Barren
  - No ELC criteria code types present within the Study Lands.
  - No confirmed SWH.
  
- Alvar
  - No ELC criteria code types present within the Study Lands.
  - No confirmed SWH.
  
- Old Growth Forest
  - ELC criteria code: FOD is present however, Provincial Habitat description of 'Old Growth Forest' community is not present (tree sizes, density, etc) within the Study Lands. Stands have been disturbed in the past.
  - No confirmed SWH.

- Savannah
  - No natural ELC criteria code types present within the Study Lands (cultural only).
  - Vegetation community No. 5 is on an anthropogenic/cultural site with maturing tree growth in size and density, not a natural savannah habitat.
  - No confirmed SWH.
- Tallgrass Prairie
  - No ELC criteria code types present within the Study Lands.
  - No confirmed SWH.
- Other Rare Vegetation Communities
  - No identified vegetation communities with an S1, S2 or S3 ranking present within the Study Lands.
  - No confirmed SWH.

### 10.3 Specialized Habitat for Wildlife

A summary review of the Table 1.2.2 Criterion is provided below:

- Waterfowl Nesting Area
  - One criteria waterfowl species: Mallard was observed in 2018 however; only 2 breeding pairs recorded.
  - ELC criteria code: SWT2 is present however, no observation of waterfowl nesting activity within this community (below functional habitat size).
  - Species diversity, nesting pair's numbers for criteria thresholds not met.
  - No confirmed SWH
- Bald Eagle and Osprey Nesting, Foraging and Perching Habitat
  - No criteria species observed in 2018.
  - ELC criteria code: FOD is present however, Study Lands are within an Urban environment and not directly adjacent to a river or lake.
  - Species and numbers for criteria thresholds not met.
  - No confirmed SWH.
- Woodland Raptor Nesting Habitat
  - No criteria species observed in 2018.
  - ELC criteria code: FOD is present, however no current or historical nesting activity within the Study Lands noted.
  - Species and numbers for criteria thresholds not met.
  - No confirmed SWH.
- Turtle Nesting Areas
  - No criteria species were observed in 2018.
  - No ELC criteria codes present.
  - Species diversity or numbers for criteria thresholds or suitable habitat not met.
  - No confirmed SWH.

- Seeps and Springs
  - Criteria species were observed in 2018 within the Study lands.
  - **No** groundwater upwelling features of 'springs or seeps' were identified within the Study Lands.
  - Criteria thresholds for seep/spring numbers are not met.
  - No confirmed SWH.
  
- Amphibian Breeding Habitat (Woodland)
  - One criteria species: Gray Treefrog was observed in 2018 however, only 1 adult was observed (Appendix 3) with no functional breeding habitat identified within any of the woodland vegetation features.
  - ELC criteria code: FOD is present however; no ephemeral ponds were identified within the woodlands.
  - Adult numbers do not meet the provincial criteria threshold of 20 or more breeding individuals.
  - Species diversity and numbers for criteria thresholds are not met.
  - No confirmed SWH
  
- Amphibian Breeding Habitat (Wetlands)
  - Three criteria species: Gray Treefrog (1 adult), Northern Leopard Frog (7 to 10 adults) and Green Frog (2 to 3) were observed in 2018.
  - ELC criteria code: OA is present however this is man-made with very little aquatic vegetation growth (excavated pond) present and no functional natural wetland habitat.
  - Species diversity and numbers for criteria thresholds are not met.
  - No confirmed SWH
  
- Woodland Area-Sensitive Bird Breeding Habitat
  - No criteria bird species were recorded during the 2018 site investigations.
  - ELC criteria codes: FOD is present.
  - Species diversity (criteria threshold of 3 or more) not met and no forest interior habitat.
  - No confirmed SWH

#### **10.4 Habitat for Species of Conservation Concern**

(Not including Endangered or Threatened Species)

A summary review of the Table 1.3 Criterion is provided below:

- Marsh Breeding Bird Habitat
  - No criteria bird species were observed in 2018.
  - No ELC criteria codes are present.
  - Species diversity or nesting numbers or suitable habitat not met.
  - No confirmed SWH.
  
- Open Country Bird Breeding Habitat
  - No criteria bird species were observed in 2016.
  - One ELC criteria code: CUM1 is present but below threshold criteria level of 30ha.
  - Species diversity or nesting numbers or minimum suitable nesting habitat not met
  - No confirmed SWH.

- Shrub/Early Successional Bird Breeding Habitat
  - One indicator bird species: Brown Thrasher and One common species: Field Sparrow both observed in 2018.
  - ELC criteria codes: CUT1 and CUS of >10ha present however the criteria for the habitat to have a history of longevity to sustain these species not met in disturbed pit area.
  - Criteria threshold for nesting or breeding evidence of 3 or more required criteria species is not met.
  - No confirmed SWH.
  
- Terrestrial Crayfish
  - No criteria species (no crayfish chimneys observed) were observed in 2018.
  - No ELC criteria codes present.
  - Species diversity and nesting numbers for criteria thresholds not met
  - No confirmed SWH.
  
- Special Concern and Rare Wildlife Species
  - No provincially rare or 'Special Concern' flora having an S1 to S3 ranking, were recorded in 2018.
  - One provincially rare or 'Special Concern' fauna having an S1 to S3 ranking was recorded in 2018: Monarch.
  - Historical data records noted numerous 16 Flora species and 9 Fauna species. See Appendix 1 for detailed review of each with no special concern or provincially rare flora and only one fauna (Monarch) recorded within the Study Lands during the 2018 site investigations
  - **Confirmed SWH for Monarch.**

## 10.5 Animal Movement Corridors

A summary review of the Table 1.4.1 Criterion is provided below:

- Amphibian Movement Corridors
  - No confirmed SWH for amphibian breeding identified within the Study Lands.
  - As per the guidelines, no movement corridor delineation is required.
  - No confirmed SWH.
  
- Bat Migratory Stopover Area
  - No bat species or criteria species were observed in 2018.
  - No historical documentation or suitable habitat identified.
  - Confirmation criteria and habitat areas still being determined by MNRF.
  - No confirmed SWH.

In summary Ecoregion 7E criterion schedule for Significant Wildlife Habitat has been confirmed within the Study Lands with mapping provided on Figure No. 6, for:

- Monarch butterfly habitat (Special Concern and Rare Wildlife Species)

## 11 Natural Heritage Recommendations

### 11.1 Habitat of Endangered and Threatened Species

- Bank Swallows have been confirmed within the Study Lands, with a large nesting colony (70-75 burrows) within the steep east facing slope of the southwest Study Lands corner, delineated on Figure No.6.
  - Recommendation
    - Consultation with the Ministry of the Environment, Conservation and Parks to ensure protection of the species and their habitat in compliance with the Endangered Species Act, 2007 is recommended prior to any site alterations for the rehabilitation of the pit.

### 11.2 Significant Woodland

- Currently portions of vegetation community No. 8 are designated Significant Woodland under the London Plan. Based on the City's Guidelines for Assessing Ecological Boundaries of Vegetation Patches the boundaries of the Significant Woodlands are recommended to be expanded for the London Plan Map 5 to include contiguous naturalized vegetation. For the Study Lands, the Significant Woodlands designation is associated with this technical report's vegetation community numbers shown on Figure No. 5 and includes portions of vegetation community No. 8., located in the southern part of the Study Area. The London Plan also identifies the triangular area shown as No. 8 located along the south east boundary of the Study area, and on the southwest side of the existing pit berm, as an "unevaluated vegetation patch". This area is also identified in the London Plan as "Environmental Review" Place Type.
- Recommendations:
  - Within the south portion of the Study Lands, polygons of vegetation community No. 8 should all be designated Significant Woodland as they meet evaluation criteria for ecological significant woodlands under the City of London guideline document.
  - Given the ongoing rehabilitation of the gravel pit site, changes in the vegetation may occur through rehabilitation or natural succession. Future development proposals should evaluate vegetation communities and woodland significance through an Environmental review as part of a development application.



### 11.3 Significant Wildlife Habitat

- Habitat for Monarch Butterfly, a Special Concern status species, has been documented within the Study Lands, with point observations mapped on Figure No. 6. Only 7 to 9 adult Monarchs were recorded during the site investigations of 2018, as such the local population is considered to be negligible given the extent of the land base area within the Study Lands. Vegetation community No. 2 and community No. 4 supported minor forage species, given recent and on-going site alterations.
- Monarch Habitat Recommendation:
  - Restoration plantings within the Study Land should include native milkweed species for enhanced monarch habitat.
- Candidate Bat maternity roosting habitat has been delineated on Figure No. 7, situated within the east portion of vegetation community No. 8 along the south Study Lands boundary.
- Candidate Bat maternity habitat Recommendation:
  - In accordance to the provincial SWHM guidelines and SWH criteria, all of this polygon for vegetation community No. 8, should be considered Significant Wildlife Habitat, with no site alterations. If site development alterations are considered within 50m to this polygon, further investigation of bat presence/absence and habitat use should be undertaken in accordance to MNRFP guidelines.

### 11.4 Future Studies

As specific development or site alteration proposals come in, those proposed to be located adjacent to natural heritage features including those identified in the Secondary Plan will be subject to all of the Environmental Policies of the London Plan (and the Provincial Policy Statement 2014), consistent with policy 1432\_ Environmental impact studies (see below).

- London Plan, “policy 1432\_ Environmental impact studies are required where development or site alteration is proposed within or adjacent to components of the Natural Heritage System. The City will require that an environmental impact study be completed to its satisfaction, and in accordance with provincial policy, in consultation with the relevant public agencies prior to the approval of a planning and development application, where development or site alteration is proposed entirely or partially within the distances adjacent to Natural Heritage System components set out in Table 13 – Areas Requiring Environmental Study.”

Respectfully Submitted



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John Morton, President  
AWS Environmental Consulting Inc.

## 12 References

City of London , Environmental Management Guidelines, 2007

Environment Canada, Federal Committee on the Status of Endangered Wildlife in Canada (COSEWIC), 2018, [www.cosewic.gc.ca](http://www.cosewic.gc.ca)

Lee, H.T., W.D. Bakawsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray 1998. Ecological Land Classification for Southern Ontario: First Approximation and its Application. Ontario Ministry of Natural Resources, South central Science Section, Science Development and Transfer Branch. SCSS Field Guide FG-02

London Plan-2018 Official Plan and Schedules

Natural Environment Study Report, Commissioners Road Corridor, Golder Associates, 2016.

Oldham, Michael J. 2017. List of the Vascular Plants of Ontario's Carolinian Zone (Ecoregion 7E). Carolinian Canada and Ontario Ministry of Natural Resources and Forestry, Peterborough, ON.

Oldham, M.J., W.D. Bakowsky and D.A. Sutherland, (1995). Floristic Quality Assessment for Southern Ontario. Ontario Ministry of Natural Resources, Natural Heritage Information Centre

Ontario Ministry of Natural Resources, 2000 Significant Wildlife Habitat Technical Guide and Supplement Ecoregion Criteria Schedule 7E, January 2015

Ontario Ministry of Natural Resources, Natural Heritage Information Centre (NHIC), 2018. Provincial status of Plants, Wildlife and Vegetation Communities database, OMNR, Peterborough. [http://nhic.mnr.gov.on.ca/nhic\\_cfm](http://nhic.mnr.gov.on.ca/nhic_cfm)

Ontario Ministry of Natural Resources and Forestry, Significant Wildlife Habitat Mitigation Support Tool, version 2014

Ontario Ministry of Municipal Affairs and Housing, 2014 Provincial Policy Statement

Ontario Ministry of Natural Resources March 2010  
Natural Heritage Reference Manual for the Provincial Policy Statement

Ontario Ministry of Natural Resources, 2018, Committee on the Status of Species at Risk in Ontario (COSSARO), [www.mnr.gov.on.ca/mnr/speciesatrisk](http://www.mnr.gov.on.ca/mnr/speciesatrisk)

Tree Inventory and Assessment: Commissioners Road West Realignment, CIMA +, 2016

## 13 Figures

Figure No. 1.....	Byron Pits - Location
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Figure No. 4B.....	London Official Plan- Natural Resources & Hazards
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Figure No. 5.....	Vegetation Communities
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Figure No. 7.....	Recommended Significant Woodlands

## **APPENDIX 1**

- MNRFC: Natural Heritage Information Centre data search for Significant Flora and Fauna historical records extending 5km's from the Study Lands and UTM Search Coverage Map



Ministry of Natural Resources and Forestry  
Make-a-Map: Natural Heritage Areas

# Historical Records Search for Significant Flora and Fauna, Search Coverage Area Extends 5 km's from Study Lands

Byron Pits  
Study Lands



**Legend**

- Assessment Parcel
- Woodland
- Conservation Reserve
- Provincial Park
- Natural Heritage System
- Ecoregion
- Wetland
- Provincially Significant Wetland Evaluated
- Non-Provincially Significant Wetland Evaluated
- Unrated Wetland
- Area of Natural Heritage & Scientific Interest (ANHS)
- Provincially Significant Life Science (PLS)
- Provincially Significant Earth Science (PES)
- Greenbelt Plan
- Boundary
- River Valley Connections
- Land Use Designations
- Protected Countryside
- Towns and Villages
- Hamlets
- Urban River Valley
- Specialty Crop Area
- Niagara Escarpment Plan (NEP)
- Boundary
- Parks and Open Space System
- Land Use Designations
- Escarpment Natural Area
- Escarpment Protection Area
- Escarpment Rural Area
- Mineral Resource Extraction Area
- Escarpment Recreation Area
- Urban Area
- Minor Urban Centre
- Oak Ridges Moraine Conservation Plan (ORM)
- Boundary
- Land Use Designations
- Natural Core Area
- Natural Linkage Area
- Countryside Area
- Rural Settlement
- Palgrave Estates Residential Community Settlement Area



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 Natural Resources and Forestry (OMNRF) shall not be liable in any way for the use of, or reliance upon, this map or any information on this map.

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## **Byron Pit-City of London**

Ontario Ministry of Natural Resources and Forestry – NHIC historical records search for Significant Flora and Fauna within 5 km of the Study Lands

### Source:

OMNRF – Natural Heritage Information Center data in the Land Information Ontario on-line databases with six species records.

**FLORA: 23 species records, of which suitable habitat occurs for 11 species within the Study Lands. Flora investigations of 2018 did not confirm the presence of any noted SAR species.**

#### American Chestnut (*Castanea dentate*)

- Provincial Ranking = S1S2, Provincial Status = Endangered
- Last recorded in the search area 1993
  - Habitat Description: *Can be found within Carolinian Zone deciduous forests having moist to dry soil conditions, even to rocky soils, full sun to full shade.*
  - Study Lands Habitat: Suitable habitat within vegetation community numbers 3, 7 and 8

#### False Hop Sedge (*Carex lipuliformis*)

- Provincial Ranking = S1, Provincial Status = Endangered
- Last recorded in the search area 2005
  - Habitat Description: *This plant most often grows in riverine swamps and marshes, and around temporary forest ponds. It prefers open areas and areas under forest canopy openings, with lots of sunlight*
  - Study Lands Habitat: No suitable habitat confirmed on-site.

#### Eastern Flowering Dogwood (*Cornus florida*)

- Provincial Ranking = S2?, Provincial Status = Endangered
- Last recorded in the search area 1992
  - Habitat Description: *Grows under taller trees in mid-age to mature deciduous or mixed forests. It most commonly grows on floodplains, slopes, bluffs and in ravines, and is also sometimes found along roadsides and fencerows.*
  - Study Lands Habitat: Suitable habitat within vegetation community numbers 3, 5 and 7

#### Stiff Gentian (*Gentianella quiquefolia*)

- Provincial Ranking = S2, Provincial Status = Endangered
- Last recorded in the search area 1898
  - Habitat Description: *occurs in wet to dry-mesic prairies, fens, primarily in loamy soils, but it can also be found in sandy areas, such as near Great Lakes shorelines*
  - Study Lands Habitat: No suitable habitat confirmed on-site.

Blue Ash (*Fraxinus qudranqulata*)

- Provincial Ranking = S2?, Provincial Status = Threatened
- Last recorded in the search area 1994
  - Habitat Description: *Confined to small patches on the islands and northern shores of Lake Erie, and the floodplains of the Thames and St. Clair rivers. Moisture: Moist to dry soil moisture, adaptable except to wettest sites, prefers full sun but tolerates partial shade*
  - Study Lands Habitat: No suitable habitat confirmed on-site.

Smooth Yellow False Foxglove (*Aurelaria flava*)

- Provincial Ranking = S2, Provincial Status = Threatened
- Last recorded in the search area 1993
  - Habitat Description: *Are few individuals remaining in a small number of locations within oak savannas and woodlands. Declines have been observed in its distribution and quality of habitat.*
  - Study Lands Habitat: No suitable habitat confirmed on-site.

Broad Beech Fern (*Phegopteris hexagonoptera*)

- Provincial Ranking = S3, Provincial Status = Special Concern
- Last recorded in the search area 1988
  - Habitat Description: *Grows in rich soils in deciduous forests, often in areas dominated by maple and beech trees. It requires moist soil and usually grows in full shade.*
  - Study Lands Habitat: Suitable habitat within vegetation community No. 8

Green Dragon (*Arisaema dracontium*)

- Provincial Ranking = S3, Provincial Status = Special Concern
- Last recorded in the search area 1983
  - Habitat Description: *Grows in somewhat wet to wet deciduous forests along streams, particularly maple forest and forest dominated by Red Ash and White Elm trees.*
  - Study Lands Habitat: No suitable habitat confirmed on-site.

Hoary Tick-trefoil (*Desmodium canescens*)

- Provincial Ranking = S2, Provincial Status = Rare
- Last recorded in the search area 1982
  - Habitat Description: *Anthropogenic (man-made or disturbed habitats), forests, meadows and fields, woodlands.*
  - Study Lands Habitat: Suitable habitat within vegetation community No. 3, 4, 5 and 7

Rigid Sedge (*Carex tetanica*)

- Provincial Ranking = S3, Provincial Status = Rare
- Last recorded in the search area 1993
  - Habitat Description: *Fens, marshes and wet fields*
  - Study Lands Habitat: No suitable habitat confirmed on-site.

Large-bracted Tick-tefoil (*Desmodium cuspidatum*)

- Provincial Ranking = S3, Provincial Status = Rare
- Last recorded in the search area 1993
  - Habitat Description: *Anthropogenic (man-made or disturbed habitats), forests and woodlands.*
  - Study Lands Habitat: Suitable habitat within vegetation community No. 3 and 7

Deer-tongue Panicgrass (*Dichantherium clandestinum*)

- Provincial Ranking = S2, Provincial Status = Rare
- Last recorded in the search area 1992
  - Habitat Description: *Anthropogenic (man-made or disturbed habitats), floodplains, marshes, meadows and fields, shores of rivers or lakes and wetlands*
  - Study Lands Habitat: Suitable habitat within vegetation community No. 3, 4, and 9

Eastern Burning Bush (*Euonymus atropurpureus*)

- Provincial Ranking = S3, Provincial Status = Rare
- Last recorded in the search area 1982
  - Habitat Description: *Grows in low meadows open slopes, open woodland, stream and prairies, in moist soils, especially thickets, valleys, and forest edges.*
  - Study Lands Habitat: Suitable habitat within vegetation community No. 4, 5, 7 and 8

Smith's Bulrush (*Schoenoplectiella smithii*)

- Provincial Ranking = S2S3, Provincial Status = Rare
- Last recorded in the search area 1989
  - Habitat Description: *Fresh tidal marshes, flats, shores of rivers or lakes*
  - Study Lands Habitat: No suitable habitat confirmed on-site.

Atlantic Sedge (*Carex atlantica*)

- Provincial Ranking = S1S2, Provincial Status = Rare
- Last recorded in the search area 1991
  - Habitat Description: *Bogs, swamps, wetland margins*
  - Study Lands Habitat: No suitable habitat confirmed on-site.

Large Yellow Pond-lily (*Nuphar advena*)

- Provincial Ranking = S3, Provincial Status = Rare
- Last recorded in the search area: no date
  - Habitat Description: *Lacustrine wetlands (in lakes or ponds), Riverine wetlands (in rivers or streams), shores of rivers*
  - Study Lands Habitat: No suitable habitat confirmed on-site.

Shining Bedstraw (*Galium concinnum*)

- Provincial Ranking = S1, Provincial Status = Rare
- Last recorded in the search area 1990
  - Habitat Description: *Habitats include rich mesic woodlands, upland woodlands, open rocky woodlands, sandy woodlands, upper slopes and tops of bluffs, shaded cliffs, and woodland edges. Generally, this bedstraw is found in upland wooded areas where deciduous trees, especially oaks, are present*
  - Study Lands Habitat: Suitable habitat within vegetation community No. 3, 5, 7 and 8



Weak Bluegrass (*Poa saltuensis* ssp. *languide*)

- Provincial Ranking = S3, Provincial Status = Rare
- Last recorded in the search area 1990
  - Habitat Description: *Cliffs, ledges, forests, meadows and fields, ridges, swamps, woodlands*
  - Study Lands Habitat: Suitable habitat within vegetation community No. 3, 4, 5, 7 and 8

Striped Cream Violet (*Viola striata*)

- Provincial Ranking = S3, Provincial Status = Rare
- Last recorded in the search area 1990
  - Habitat Description: *Floodplains, wet forests, shores of rivers or lakes*
  - Study Lands Habitat: No suitable habitat confirmed on-site.

Hairy-fruited Sedge (*Carex trichocarpa*)

- Provincial Ranking = S3, Provincial Status = Rare
- Last recorded in the search area 1991
  - Habitat Description: *Anthropogenic (man-made or disturbed habitats), floodplains, marshes, meadows and fields, shores of rivers or lakes and wetlands*
  - Study Lands Habitat: No suitable habitat confirmed on-site.

Brainerd's Hawthorn (*Crataegus brainerdii*)

- Provincial Ranking = S2, Provincial Status = Rare
- Last recorded in the search area 1997
  - Habitat Description: *Anthropogenic (man-made or disturbed habitats) forest edges, meadows and fields.*
  - Study Lands Habitat: Suitable habitat within vegetation community No. 3, 4, 5, 6 and 7

Eastern Stiff-leaved Goldenrod (*Solidago rigida* ssp. *Rigida*)

- Provincial Ranking = S3, Provincial Status = Rare
- Last recorded in the search area 1935
  - Habitat Description: *Forest Edges*
  - Study Lands Habitat: Suitable habitat within vegetation community No. 3 and 4

**FAUNA: 18 species records, of which suitable habitat occurs for 8 species within the Study Lands. Fauna investigations of 2018 confirmed 1 species: Bank Swallow, presence and functional habitat within the Study Lands.**

American Badger (*Taxidea taxus*)

- Provincial Ranking = S2, Provincial Status = Endangered
- Last recorded in the search area 2009
  - Habitat Description: *Badgers are found in a variety of habitats, such as tall grass prairie, sand barrens and farmland. These habitats provide badgers with small prey, including groundhogs, rabbits and small rodents.*
  - Study Lands Habitat: Suitable habitat within vegetation community No. 3, 4, 5 and 7

Henslow's Sparrow (*Icteria virens*)

- Provincial Ranking = SHB, Provincial Status = Endangered
- Last recorded in the search area 1975
  - Habitat Description: *found in abandoned farm fields, pastures, and wet meadows. It tends to avoid fields that have been grazed or are crowded with trees and shrubs. It prefers extensive, dense, tall grasslands where it can more easily conceal its small ground nest.*
  - Study Lands Habitat: Suitable habitat within vegetation community No. 3 and 4

Yellow-breasted Chat (*Icteria virens*)

- Provincial Ranking = S1, Provincial Status = Endangered
- Last recorded in the search area 1931
  - Habitat Description: *Lives in thickets and scrub, especially locations where clearings have become overgrown.*
  - Study Lands Habitat: Suitable habitat within vegetation community No. 6 and 7

Salamander Mussel (*Simpsonaias ambigua*)

- Provincial Ranking = S1, Provincial Status = Endangered
- Last recorded in the search area 1998
  - Habitat Description: *Prefers waterbodies with a soft bottom and a swift current and is often found burrowed in sand or silt under large rocks in shallow areas, on gravel bars, or in mud.*
  - Study Lands Habitat: No suitable habitat confirmed on-site.

Spiny Softshell (*Apalone spinifera*)

- Provincial Ranking = S2, Provincial Status = Endangered
- Last recorded in the search area 2008
  - Habitat Description: *Highly aquatic turtles that rarely travel far from water. They are found primarily in rivers and lakes but also in creeks and even ditches and ponds near rivers. Key habitat requirements are open sand or gravel nesting areas, shallow muddy or sandy areas to bury in, deep pools for hibernation, areas for basking, and suitable habitat for crayfish and other food species.*
  - Study Lands Habitat: No suitable natural habitat confirmed on-site.

Bank Swallow (*Riparia riparia*)

- Provincial Ranking = S4, Provincial Status = Threatened
- Last recorded in the search area 2015
  - Habitat Description: *Nest in burrows in natural and human-made settings where there are vertical faces in silt and sand deposits. Many nests are on banks of rivers and lakes, but they are also found in active sand and gravel pits or former ones where the banks remain suitable. The birds breed in colonies ranging from several to a few thousand pairs.*
  - Study Lands Habitat: Suitable habitat within vegetation community No. 5 and side slopes to open pit faces. **Confirmed on-site, 2018**

Eastern Meadowlark (*Sturnella magna*)

- Provincial Ranking = S4, Provincial Status = Threatened
- Last recorded in the search area 2011
  - Habitat Description: *Breed primarily in moderately tall grasslands, such as pastures and hayfields, but are also found in alfalfa fields, weedy borders of croplands, roadsides, orchards, airports, shrubby overgrown fields, or other open areas. Small trees, shrubs or fence posts are used as elevated song perches*
  - Study Lands Habitat: Suitable habitat within vegetation community No. 3, 4 and 5

Lake Sturgeon (*Acipenser fulvescens*)

- Provincial Ranking = S2, Provincial Status = Threatened
- Last recorded in the search area: pre-2011
  - Habitat Description: *Lives almost exclusively in freshwater lakes and rivers with soft bottoms of mud, sand or gravel. They are usually found at depths of five to 20 metres. They spawn in relatively shallow, fast-flowing water (usually below waterfalls, rapids, or dams) with gravel and boulders at the bottom.*
  - Study Lands Habitat: No suitable habitat confirmed on-site.

Silver Shiner (*Notropis photogenis*)

- Provincial Ranking = S2S3, Provincial Status = Threatened
- Last recorded in the search area 1985
  - Habitat Description: *Prefer moderate to large size streams with swift currents that are free of weeds and have clean gravel or boulder bottoms. They live in schools and feed on crustaceans and adult flies that fall in the water or fly just above the surface. In June or July, they spawn by scattering their eggs over gravel riffles.*
  - Study Lands Habitat: No suitable habitat confirmed on-site.

Eastern Wood-pewee (*Contopus virens*)

- Provincial Ranking = S4, Provincial Status = Special Concern
- Last recorded in the search area: no date
  - Habitat Description: *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.*
  - Study Lands Habitat: Suitable habitat within vegetation community No. 7 and 8

#### Northern Map Turtle (*Graptemys geographica*)

- Provincial Ranking = S3, Provincial Status = Special Concern
- Last recorded in the search area 1987
  - Habitat Description: *Inhabits rivers and lakeshores where it basks on emergent rocks and fallen trees throughout the spring and summer. In winter, the turtles hibernate on the bottom of deep, slow-moving sections of river. They require high-quality water that supports the female's mollusc prey. Their habitat must contain suitable basking sites, such as rocks and deadheads, with an unobstructed view from which a turtle can drop immediately into the water if startled.*
  - Study Lands Habitat: No suitable habitat confirmed on-site.

#### Wood Thrush (*Hylocichla mustelina*)

- Provincial Ranking = S4, Provincial Status = Special Concern,
- COSEWIC Status = Threatened
- Last recorded in the search area: no date
  - Habitat Description: *Lives in mature deciduous and mixed (conifer-deciduous) forests. They seek moist stands of trees with well-developed undergrowth and tall trees for singing perches. These birds prefer large forests, but will also use smaller stands of trees. They build their nests in living saplings, trees or shrubs, usually in sugar maple or American beech.*
  - Study Lands Habitat: Suitable habitat within vegetation community No. 7 and 7

#### Blue-tipped Dancer (*Argia tibialis*)

- Provincial Ranking = S4, Provincial Status = Special Concern
- Last recorded in the search area: no date
  - Habitat Description: *Is found at small wooded sandy streams with a slow to moderate current and with or without riffles, less often larger rivers. More tied to forest streams than other Argia in its range but also has been found at degraded and urban streams. Larvae live among detritus.*
  - Study Lands Habitat: No suitable habitat confirmed on-site.

#### Snapping Turtle (*Chelydra serpentina*)

- Provincial Ranking = S3, Provincial Status = Special Concern
- Last recorded in the search area 1997
  - Habitat Description: *They prefer shallow waters so they can hide under the soft mud and leaf litter, with only their noses exposed to the surface to breathe. During the nesting season, from early to mid summer, females travel overland in search of a suitable nesting site, usually gravelly or sandy areas along streams.*
  - Study Lands Habitat: No suitable natural habitat confirmed on-site.

#### Azure Bluet (*Enallagma aspersum*)

- Provincial Ranking = S3, Provincial Status = Rare
- Last recorded in the search area 1964
  - Habitat Description: *Fishless lakes and semi permanent ponds and bogs*
  - Study Lands Habitat: No suitable habitat confirmed on-site.

Painted Skimmer (*Libellula semifasciata*)

- Provincial Ranking = S2, Provincial Status = Rare
- Last recorded in the search area 1965
  - Habitat Description: *Occurs at boggy ponds and ditches with much emergent vegetation, usually associated with woodland. Larvae live on mud bottom among detritus.*
  - Study Lands Habitat: No suitable habitat confirmed on-site.

Amber-winged Spreadwing (*Lestes eurinus*)

- Provincial Ranking = S3, Provincial Status = Rare
- Last recorded in the search area: no date
  - Habitat Description: *Occurs in a variety of permanent lakes and ponds with at least some emergent vegetation. It has been found in everything from bog lakes to pasture ponds, but usually considered characteristic of fishless wetlands. Larvae live among aquatic vegetation.*
  - Study Lands Habitat: No suitable habitat confirmed on-site.

White-eyed Vireo (*Vireo griseus*)

- Provincial Ranking = S2, Provincial Status = Rare
- Last recorded in the search area 1985
  - Habitat Description: *The thicket-dwelling white-eyed vireo breeds in extreme southern Ontario, frequent scrubby areas including overgrown pastures, forested edges, streamside thickets, second-growth forests, and bramble-filled fields.*
  - Study Lands Habitat: Suitable habitat within vegetation community No. 5, 6, 7 and 8.

Restricted Species

- EO ID = 93770

Restricted Species

- EO ID = 16483

## **APPENDIX 2**

- Flora Inventory Listing: Ranking, Status & Floristic Quality Assessment Scoring

## Byron Pits : Flora Listing

with current Ranking, Status and S. Ontario Floristic Quality Scoring and Ecological Land Classification  
 South of Byron Baseline Road and East of Colonel Talbot Road, City of London, Ontario

Highlighted species are reconginzed as "Invasive Species in Ontario"

### 1) Shoreline-Littoral Zone of the pit floor open water area: Vegetation Community No. 1

Latin Name	Common Name	Native or Introduced	Rank		Status			FQA	
			Nat.	Prov.	Nat.	Prov.	Local	CC	CW
<i>Bidens frondosa</i>	Beggar's Ticks	N	N5	S5	NAR	NAR	Common	3	-3
<i>Cornus racemosa</i>	Grey Dogwood	N	NNR	S5	NAR	NAR	Common	2	-2
<i>Cornus stolonifera</i>	Red Osier Dogwood	N	NNR	S5	NAR	NAR	Common	2	-3
<i>Equisetum arvense</i>	Field Horsetail	N	N5	S5	NAR	NAR	Common	0	0
<i>Erigeron philadelphicus</i>	Philadelphia Fleabane	N	N5	S5	NAR	NAR	Common	1	-3
<i>Nasturtium officinale</i>	Watercress	I	NNA	SNA	Exotic	Exotic	Exotic	0	-5
<i>Plantago major</i>	Common Plantain	N	NNA	S5	NAR	NAR	Common	0	-1
<i>Populus deltoides</i>	Cottonwood	N	NNR	S5	NAR	NAR	Common	4	-1
<i>Ranunculus longirostris</i>	White Water Crowfoot	N	N5	S4S5	NAR	NAR	Common	5	-5
<i>Salix lucida</i>	Shining Willow	N	NNR	S5	NAR	NAR	Common	5	-4
<i>Scirpus atrovirens</i>	Dark Green Bulrush	N	N5	S5	NAR	NAR	Common	3	-5
<i>Stuckenia pectinata</i>	Sago Pondweed	N	N5	S5	NAR	NAR	Common	0	-5
<i>Symphotrichum cordifolium</i>	Heart-leaved Aster	N	N5	S5	NAR	NAR	Common	5	-5
<i>Symphotrichum lanceolatum</i>	Paniced Aster	N	N5	S5	NAR	NAR	Common	3	-3
<i>Symphotrichum novae-angliae</i>	New England Aster	N	N5	S5	NAR	NAR	Common	2	-3
<i>Typha angustifolia</i>	Narrow-leaf Cattail	I	N5	SNA	Exotic	Exotic	Exotic	3	-5
MEAN									

Total number of Native species =

14 or 93%

Total number of Introduced or Non-Native species =

1 or 7%

15

2) Cultural Meadows: Vegetation Community No. 2, 3 and 4

Latin Name	Common Name	Native or Introduced	Rank		Status			FQA	
			Nat.	Prov.	Nat.	Prov.	Local	CC	CW
Acer negundo	Manitoba Maple	N	NNR	S4	NAR	NAR	Common	7	3
Acer saccharum	Sugar Maple	N	N5	S5	NAR	NAR	Common	4	3
Achillea millefolium	Yarrow	I	NNA	SNA	Exotic	Exotic	Exotic	0	3
Acinos arvensis	Basil Thyme	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
Agrimonia gyrosepala	Agrimony	I	NNR	S5	NAR	NAR	Common	2	2
Agrostis gigantea	Red Top Grass	I	NNA	SNA	Exotic	Exotic	Exotic	0	0
Asclepias syriaca	Common Milkweed	N	N5	S5	NAR	NAR	Common	0	5
Allanthus altissima	Tree-of-Heaven	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
Alliaria petiolata	Garlic Mustard	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
Amaranthus retroflexus	Redroot Pigweed	I	NNA	SNA	Exotic	Exotic	Exotic	0	2
Ambrosia artemisiifolia	Ragweed	N	N5	S5	NAR	NAR	Common	0	3
Anemone virginiana	Thimbleweed	N	N5	S5	NAR	NAR	Common	4	5
Apocynum cannabinum	Indian Hemp	N	N5	S5	NAR	NAR	Common	3	0
Asclepias syriaca	Common Milkweed	N	N5	S5	NAR	NAR	Common	0	5
Carex granularis	Meadow Sedge	N	N5	S5	NAR	NAR	Common	3	-4
Carya ovata	Shagbark Hickory	N	NNR	S5	NAR	NAR	Common	6	3
Celastrus scandens	Bittersweet	N	N5	S5	NAR	NAR	Common	3	3
Centaurea nigra	Black Knapweed	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
Circaea lutetiana	Enchanter's Nightshade	N	N5	S5	NAR	NAR	Common	3	3
Cirsium arvense	Canada Thistle	I	NNA	SNA	Exotic	Exotic	Exotic	0	3
Cirsium vulgare	Bull Thistle	I	NNA	SNA	Exotic	Exotic	Exotic	0	4
Convolvulus arvensis	Black Bindweed	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
Dactylis glomerata	Orchard Grass	I	NNA	SNA	Exotic	Exotic	Exotic	0	3
Danthonia spicata	Poverty Grass	N	N5	S5	NAR	NAR	Common	5	5
Daucus carota	Queen Anne's lace	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
Dipsacus fullonem	Teasel	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
Echinops sphaerocephalus	Large Globe-thistle	I	NNA	SNA	Exotic	Exotic	Exotic	0	0
Echium vulgare	Bugloss	I	NNA	SNA	Exotic	Exotic	Exotic	0	5



<i>Elymus repens</i>	Twitch Grass	I	NNA	SNA	Exotic	Exotic	Exotic	0	3
<i>Equisetum arvense</i>	Field Horsetail	N	N5	S5	NAR	NAR	Common	0	0
<i>Erigeron annuus</i>	Daisy-leaf Fleabane	N	N5	S5	NAR	NAR	Common	0	1
<i>Erigeron strigosus</i>	Rough Fleabane	N	N5	S5	NAR	NAR	Common	0	1
<i>Erucastrum gallicum</i>	Dog Mustard	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
<i>Euphorbia cyparissias</i>	Cypress Spurge	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
<i>Festuca pratensis</i>	Tall Fescue	I	NNA	SNA	Exotic	Exotic	Exotic	0	4
<i>Festuca trachyphylla</i>	Sheep Fescue	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
<i>Fragaria virginiana</i>	Wild Strawberry	N	NNR	S5	NAR	NAR	Common	2	1
<b>Frangula alnus</b>	<b>Glossy Buckthorn</b>	I	NNA	SNA	Exotic	Exotic	Exotic	0	0
<i>Hemerocallis fulva</i>	Orange Day-lily	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
<i>Hesperis matronalis</i>	Dame's Rocket	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
<i>Hordeum jubatum</i>	Foxtail Barley	I	N5	SNA	Exotic	Exotic	Exotic	0	0
<i>Hordeum vulgare</i>	Barley	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
<i>Hypericum perforatum</i>	Common St. John's Wort	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
<i>Juglans nigra</i>	Black Walnut	N	N4	S4	NAR	NAR	Common	5	3
<i>Juncus dudleyi</i>	Dudley's Rush	N	N5	S5	NAR	NAR	Common	1	0
<i>Juniperus virginiana</i>	Red Cedar	N	N5	S5	NAR	NAR	Common	4	3
<i>Lathyrus sylvestris</i>	Everlasting Pea	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
<i>Lepidium campestre</i>	Field Pepper-grass	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
<b>Leucanthemum vulgare</b>	<b>Ox-eye Daisy</b>	I	NNA	SNA	Exotic	Exotic	Exotic	0	0
<b>Lonicera tatarica</b>	<b>Tatarian Honeysuckle</b>	I	NNA	SNA	Exotic	Exotic	Exotic	0	-3
<i>Lotus corniculatus</i>	Bird's-foot Trefoil	I	NNA	SNA	Exotic	Exotic	Exotic	0	1
<i>Malus pumila</i>	Apple	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
<i>Matricaria discoidea</i>	Pineapple Weed	I	NNR	SNA	Exotic	Exotic	Exotic	0	0
<b>Medicago lupulina</b>	<b>Black Medick</b>	I	NNA	SNA	Exotic	Exotic	Exotic	0	1
<i>Medicago sativa</i>	Alfalfa	I	NNA	SNA	Exotic	Exotic	Exotic	0	0
<b>Mellilotus albus</b>	<b>White Sweet Clover</b>	I	NNA	SNA	Exotic	Exotic	Exotic	0	3
<b>Mellilotus officinalis</b>	<b>Yellow Sweet Clover</b>	I	NNA	SNA	Exotic	Exotic	Exotic	0	3
<i>Monarda fistulosa</i>	Wild Bergamot	N	NNR	S5	NAR	NAR	Common	6	3
<i>Morus alba</i>	White Mulberry	I	NNA	SNA	Exotic	Exotic	Exotic	0	0
<i>Nepeta cataria</i>	Catnip	I	NNA	SNA	Exotic	Exotic	Exotic	0	1
<i>Oenothera biennis</i>	Evening Primrose	N	N5	S5	NAR	NAR	Common	0	3

Parthenocissus inserta	Virginia Creeper	N	NNR	S5	NAR	NAR	Common	3	3
Phleum pratense	Timothy	I	NNA	SNA	Exotic	Exotic	Exotic	0	3
Phragmites australis	European Common Reed	I	NNA	SNA	Exotic	Exotic	Exotic	0	0
Physocarpus opulifolius	Ninebark	N	NNR	S5	NAR	NAR	Common	5	-2
Pilosella caespitosa	Yellow Hawkweed	I	NNA	SNA	Exotic	Exotic	Exotic	0	0
Pinus sylvestris	Scotch Pine	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
Plantago lanceolata	English Plantain	I	NNA	SNA	Exotic	Exotic	Exotic	0	0
Poa compressa	Canada Bluegrass	I	NNR	SNA	Exotic	Exotic	Exotic	0	2
Poa pratensis	Kentucky Bluegrass	N	N5	S5	NAR	NAR	Common	0	1
Fallopia japonica	Japanese Knotweed	I	NNA	SNA	Exotic	Exotic	Exotic	0	0
Populus deltoides	Cottonwood	N	NNR	S5	NAR	NAR	Common	4	-1
Potentilla simplex	Old Field Cinquefoil	N	N5	S5	NAR	NAR	Common	3	4
Prunella vulgaris	Heal-all	N	N5	S5	NAR	NAR	Common	5	5
Pyrus communis	Pear	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
Quercus alba	White Oak	N	N5	S5	NAR	NAR	Common	6	3
Quercus velutina	Black Oak	N	NNR	S4	NAR	NAR	Common	8	5
Rhamnus cathartica	Common Buckthorn	I	NNA	SNA	Exotic	Exotic	Exotic	0	3
Rhus typhina	Staghorn Sumac	N	N5	S5	NAR	NAR	Common	1	5
Robinia pseudoacacia	Black Locust	I	NNA	SNA	Exotic	Exotic	Exotic	0	4
Rosa multiflora	Multiflora Rose	I	NNA	SNA	Exotic	Exotic	Exotic	0	3
Rosa rugosa	Rugosa Rose	I	NNA	SNA	Exotic	Exotic	Exotic	0	3
Rubus alleghaniensis	Blackberry	N	N5	S5	NAR	NAR	Common	2	2
Rubus occidentalis	Black Raspberry	N	N5	S5	NAR	NAR	Common	2	5
Rumex crispus	Curly Dock	I	NNA	SNA	Exotic	Exotic	Exotic	0	-1
Salix amygdaloides	Peach-leaved Willow	N	NNR	S5	NAR	NAR	Common	6	-3
Salix fragilis	Crack Willow	I	NNA	SNA	Exotic	Exotic	Exotic	0	0
Salix lucida	Shining Willow	N	NNR	S5	NAR	NAR	Common	5	-4
Scirpus atrovirens	Dark Green Bulrush	N	N5	S5	NAR	NAR	Common	3	-5
Securigera varia	Crown Vetch	I	NNA	SNA	Exotic	Exotic	Exotic	0	0
Sedum acre	Mossy Stonecrop	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
Silene vulgaris	Bladder Campion	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
Solidago altissima	Tall Goldenrod	N	NNR	S5	NAR	NAR	Common	1	3
Solidago canadensis	Canada Goldenrod	N	N5	S5	NAR	NAR	Common	1	3

<i>Symphytotrichum laevum</i>	Smooth Aster	N	N5	S5	NAR	NAR	Common	0	0
<i>Symphytotrichum lanceolatum</i>	Panicled Aster	N	N5	S5	NAR	NAR	Common	3	-3
<i>Symphytotrichum lateriflorum</i>	Calico Aster	N	N5	S5	NAR	NAR	Common	-3	-2
<b><i>Tanacetum vulgare</i></b>	<b>Common Tansy</b>	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
<i>Thlaspi arvense</i>	Pennycress	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
<i>Tragopogon dubius</i>	Goat's Beard	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
<i>Trifolium hybridum</i>	Alsike Clover	I	NNA	SNA	Exotic	Exotic	Exotic	0	1
<i>Trifolium pratense</i>	Red Clover	I	NNA	SNA	Exotic	Exotic	Exotic	0	2
<i>Trifolium repens</i>	White Clover	I	NNA	SNA	Exotic	Exotic	Exotic	0	2
<i>Tusselago farfara</i>	Colt's Foot	I	NNA	SNA	Exotic	Exotic	Exotic	0	3
<i>Urtica dioica</i>	Nettle	N	N5	S5	NAR	NAR	Common	2	-1
<i>Verbascum thapsus</i>	Mullein	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
<b><i>Vicia cracca</i></b>	<b>Cow Vetch</b>	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
<i>Viola pubescens</i>	Yellow Violet	N	N5	S5	NAR	NAR	Common	5	4
<i>Vitis riparia</i>	Wild Grape	N	N5	S5	NAR	NAR	Common	0	-2
MEAN									
									1
									2

Total number of Native species = 43 or 39%

Total number of Introduced or Non-Native species = 66 or 61%

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3) Early Successional Hardwoods : Vegetation Community No. 5

Latin Name	Common Name	Native or Introduced	Rank		Status			FQA	
			Nat.	Prov.	Nat.	Prov.	Local Status	CC	CW
<i>Acer negundo</i>	Manitoba Maple	N	N5	S5	NAR	NAR	Common	0	-2
<i>Acer saccharum</i>	Sugar Maple	N	N5	S5	NAR	NAR	Common	4	3
<i>Actaea pachypoda</i>	Doll's Eyes	N	NNR	S5	NAR	NAR	Common	6	5
<i>Alliaria petiolata</i>	Garlic Mustard	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
<i>Apocynum androsaemifolium</i>	Spreading Dogbane	N	N5	S5	NAR	NAR	Common	3	5
<i>Carex gracillima</i>	Graceful Sedge	N	N5	S5	NAR	NAR	Common	4	3
<i>Carex leptonevia</i>	Fine-nerved Sedge	N	NNR	S4	NAR	NAR	Common	5	0
<i>Carya ovata</i>	Shagbark Hickory	N	NNR	S5	NAR	NAR	Common	6	3
<i>Circaea lutetiana</i>	Enchanter's Nightshade	N	N5	S5	NAR	NAR	Common	3	3
<i>Clematis virginiana</i>	Virgin's Bower	N	NNR	S5	NAR	NAR	Common	3	0
<i>Convolvulus arvensis</i>	Black Bindweed	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
<i>Dactylis glomerata</i>	Orchard Grass	I	NNA	SNA	Exotic	Exotic	Exotic	0	3
<i>Erigeron annuus</i>	Daisy-leaf Fleabane	N	N5	S5	NAR	NAR	Common	0	1
<i>Erigeron philadelphicus</i>	Philadelphia Fleabane	N	N5	S5	NAR	NAR	Common	1	-3
<i>Fragaria virginiana</i>	Wild Strawberry	N	NNR	S5	NAR	NAR	Common	2	1
<i>Fragula alnus</i>	Glossy Buckthorn	I	NNA	SNA	Exotic	Exotic	Exotic	0	0
<i>Fraxinus americana</i>	White Ash	N	NNR	S4	NAR	NAR	Common	4	3
<i>Galium aparine</i>	Common Bedstraw	N	N5	S5	NAR	NAR	Common	4	3
<i>Geranium maculatum</i>	Spotted Geranium	N	NNR	S5	NAR	NAR	Common	6	3
<i>Geum canadense</i>	White Avens	N	NNR	S5	NAR	NAR	Common	3	0
<i>Hesperis matronalis</i>	Dame's Rocket	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
<i>Hylodesmum glutinosum</i>	Large Tick-trefoil	N	NNR	S4	NAR	NAR	Common	0	0
<i>Hypericum perforatum</i>	Common St. John's Wort	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
<i>Juglans nigra</i>	Black Walnut	N	N4	S4	NAR	NAR	Common	5	3
<i>Leonuris cardiaca</i>	Motherwort	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
<i>Leucanthemum vulgare</i>	Ox-eye Daisy	I	NNA	SNA	Exotic	Exotic	Exotic	0	0

<b>Lonicera tatarica</b>	<b>Tatarian Honeysuckle</b>	I	NNA	SNAE	Exotic	Exotic	Exotic	0	-3
<i>Maianthemum racemosum</i>	Spikenard	N	N5	S5	NAR	NAR	Common	4	3
<i>Monarda fistulosa</i>	Wild Bergamot	N	NNR	S5	NAR	NAR	Common	6	3
<i>Morus alba</i>	White Mulberry	I	NNA	SNA	Exotic	Exotic	Exotic	0	0
<i>Parthenocissus inserta</i>	Virginia Creeper	N	NNR	S5	NAR	NAR	Common	3	3
<i>Poa compressa</i>	Canada Bluegrass	I	NNR	SNA	Exotic	Exotic	Exotic	0	2
<i>Podophyllum peltatum</i>	Mayapple	N	N5	S5	NAR	NAR	Common	5	3
<i>Populus deltoides</i>	Cottonwood	N	NNR	S5	NAR	NAR	Common	4	-1
<i>Prunus pennsylvanica</i>	Pin Cherry	N	NNR	S5	NAR	NAR	Common	3	4
<i>Prunus serotina</i>	Black Cherry	N	N5	S5	NAR	NAR	Common	3	3
<b>Rhamnus cathartica</b>	<b>Common Buckthorn</b>	I	NNA	SNA	Exotic	Exotic	Exotic	0	3
<b>Robinia pseudoacacia</b>	<b>Black Locust</b>	I	NNA	SNA	Exotic	Exotic	Exotic	0	4
<b>Rosa multiflora</b>	<b>Multiflora Rose</b>	I	NNA	SNA	Exotic	Exotic	Exotic	0	3
<i>Rubus occidentalis</i>	Black Raspberry	N	N5	S5	NAR	NAR	Common	2	5
<i>Silene vulgaris</i>	Bladder Campion	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
<i>Solidago altissima</i>	Tall Goldenrod	N	NNR	S5	NAR	NAR	Common	1	3
<i>Symphotrichum cordifolium</i>	Heart-leaved Aster	N	N5	S5	NAR	NAR	Common	5	5
<i>Toxicodendron rydbergii</i>	Poison Ivy	N	N5	S5	NAR	NAR	Common	0	0
<i>Verbascum thapsus</i>	Mullein	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
<i>Viola pubescens</i>	Yellow Violet	N	N5	S5	NAR	NAR	Common	5	4
<i>Vitis riparia</i>	Wild Grape	N	N5	S5	NAR	NAR	Common	0	-2
MEAN									2

Total number of Native species =

31

or 66%

Total number of Introduced or Non-Native species =

16

or 34%

47

4) Early Successional Cultural Thicket: Vegetation Community No. 6

Latin Name	Common Name	Native or Introduced	Rank		Nat.	Status		FQA	
			Nat.	Prov.		Prov.	Local	CC	CW
<i>Acer negundo</i>	Manitoba Maple	N	N5	S5	NAR	NAR	Common	0	-2
<i>Agrimonia gyosepala</i>	Agrimony	I	NNR	S5	NAR	NAR	Common	2	2
<i>Elymus repens</i>	Twitch Grass	I	NNA	SNA	Exotic	Exotic	Exotic	0	3
<i>Erigeron strigosus</i>	Rough Fleabane	N	N5	S5	NAR	NAR	Common	0	1
<i>Fragaria virginiana</i>	Wild Strawberry	N	NNR	S5	NAR	NAR	Common	2	1
<i>Hesperis matronalis</i>	Dame's Rocket	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
<i>Juglans nigra</i>	Black Walnut	N	N4	S4	NAR	NAR	Common	5	3
<i>Leucanthemum vulgare</i>	Ox-eye Daisy	I	NNA	SNA	Exotic	Exotic	Exotic	0	0
<i>Lotus corniculatus</i>	Bird's-foot Trefoil	I	NNA	SNA	Exotic	Exotic	Exotic	0	1
<i>Phragmites australis</i>	European Common Reed	I	NNA	SNA	Exotic	Exotic	Exotic	0	0
<i>Poa compressa</i>	Canada Bluegrass	I	NNR	SNA	Exotic	Exotic	Exotic	0	2
<i>Potentilla simplex</i>	Old Field Cinquefoil	N	N5	S5	NAR	NAR	Common	3	4
<i>Rhus typhina</i>	Staghorn Sumac	N	N5	S5	NAR	NAR	Common	1	5
<i>Robinia pseudoacacia</i>	Black Locust	I	NNA	SNA	Exotic	Exotic	Exotic	0	4
<i>Rosa multiflora</i>	Multiflora Rose	I	NNA	SNA	Exotic	Exotic	Exotic	0	3
<i>Securigia varia</i>	Crown-vetch	I	NNA	SNA	Exotic	Exotic	Exotic	0	0
<i>Solidago canadensis</i>	Canada Goldenrod	N	N5	S5	NAR	NAR	Common	1	3
<i>Toxicodendron rydbergii</i>	Poison Ivy	N	N5	S5	NAR	NAR	Common	0	0
<i>Vicia cracca</i>	Cow Vetch	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
<i>Vitis riparia</i>	Wild Grape	N	N5	S5	NAR	NAR	Common	0	-2
MEAN								1	2

Total number of Native species = 9 or 45%

Total number of Introduced or Non-Native species =  $\frac{11}{20}$  or 55%

5) Mature Hardwoods : Vegetation Community No. 7 and 8

Latin Name	Common Name	Native or Introduced	Rank		Nat.	Status		FQA	
			Nat.	Prov.		Prov.	Local	CC	CW
<i>Acer saccharum</i>	Sugar Maple	N	N5	S5	NAR	NAR	Common	5	-3
<i>Actaea pachypoda</i>	Doll's Eyes	N	NNR	S5	NAR	NAR	Common	6	5
<i>Alliaria petiolata</i>	Garlic Mustard	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
<i>Arctium minus</i>	Burdock	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
<i>Carex cephalophora</i>	Oval-headed Sedge	N	N5	S5	NAR	NAR	Common	6	2
<i>Carex deweyana</i>	Dewey's Sedge	N	N5	S5	NAR	NAR	Common	6	4
<i>Carex laxiflora</i>	Loose-flowered Sedge	N	N5	S5	NAR	NAR	Common	5	0
<i>Carex leptonevria</i>	Fine-nerved Sedge	N	NNR	S4	NAR	NAR	Common	5	0
<i>Carex rosea</i>	Rosy Sedge	N	N5	S5	NAR	NAR	Common	5	5
<i>Carex spicata</i>	Spiked Sedge	I	NNA	SNA	Exotic	Exotic	Common	0	5
<i>Carya ovata</i>	Shagbark Hickory	N	NNR	S5	NAR	NAR	common	6	3
<i>Catalpa bignonioides</i>	Catalpa	I	NNA	SNA	Exotic	Exotic	Exotic	0	0
<i>Celtis occidentalis</i>	Northern Hackberry	N	NNR	S4	NAR	NAR	Common	8	1
<i>Circaea lutetiana</i>	Enchanter's Nightshade	N	N5	S5	NAR	NAR	common	3	3
<i>Cornus racemosa</i>	Grey Dogwood	N	NNR	S5	NAR	NAR	Common	2	-2
<i>Dactylis glomerata</i>	Orchard Grass	I	NNA	SNA	Exotic	Exotic	Exotic	0	3
<i>Erigeron strigosus</i>	Rough Fleabane	N	N5	S5	NAR	NAR	Common	0	1
<i>Festuca pratensis</i>	Tall Fescue	I	NNA	SNA	Exotic	Exotic	Exotic	0	4
<i>Festuca trachyphylla</i>	Sheep Fescue	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
<i>Fragaria virginiana</i>	Wild Strawberry	N	NNR	S5	NAR	NAR	Common	2	1
<i>Fraxinus americana</i>	White Ash	N	NNR	S4	NAR	NAR	Common	4	3
<i>Galium aparine</i>	Common Bedstraw	N	N5	S5	NAR	NAR	Common	4	3
<i>Galium circaezans</i>	Licorice Bedstraw	N	NNR	S5	NAR	NAR	Common	7	4
<i>Geum canadense</i>	White Avens	N	NNR	S5	NAR	NAR	Common	3	0
<i>Hylodesmum glutinosum</i>	Large Tick-trefoil	N	NNR	S4	NAR	NAR	Common	0	0
<i>Juglans nigra</i>	Black Walnut	N	N4	S4	NAR	NAR	Common	5	3
<i>Ligustrum vulgare</i>	Privet	I	NNA	SNA	Exotic	Exotic	Exotic	0	1
<i>Lonicera tatarica</i>	Tatarian Honeysuckle	I	NNA	SNA	Exotic	Exotic	Exotic	0	-3
<i>Maianthemum racemosum</i>	Spikenard	N	N5	S5	NAR	NAR	Common	4	3
<i>Melilotus albus</i>	White Sweet Clover	I	NNA	SNA	Exotic	Exotic	Exotic	0	3

Monarda fistulosa	Wild Bergamot	N	NNR	S5	NAR	NAR	Common	6	3
Ostrya virginiana	Ironwood	N	N5	S5	NAR	NAR	Common	4	4
Parthenocissus inserta	Virginia Creeper	N	NNR	S5	NAR	NAR	Common	3	3
Picea abies	Norway Spruce	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
Poa pratensis	Kentucky Bluegrass	N	N5	S5	NAR	NAR	Common	0	1
Podophyllum peltatum	Mayapple	N	N5	S5	NAR	NAR	Common	5	3
Polygonatum pubescens	Solomon's Seal	N	N5	S5	NAR	NAR	Common	5	5
Populus deltoides	Cottonwood	N	NNR	S5	NAR	NAR	Common	4	-1
Prunus serotina	Black Cherry	N	N5	S5	NAR	NAR	Common	3	3
Pteridium aquilinum	Bracken Fern	N	N5	S5	NAR	NAR	Common	2	3
Quercus alba	White Oak	N	N5	S5	NAR	NAR	Common	6	3
Quercus velutina	Black Oak	N	NNR	S4	NAR	NAR	Common	8	5
Rhamnus cathartica	Common Buckthorn	I	NNA	SNA	Exotic	Exotic	Exotic	0	3
Robinia pseudoacacia	Black Locust	I	NNA	SNA	Exotic	Exotic	Exotic	0	4
Rosa multiflora	Multiflora Rose	I	NNA	SNA	Exotic	Exotic	Exotic	0	3
Rubus occidentalis	Black Raspberry	N	N5	S5	NAR	NAR	Common	2	5
Silene latifolia	White Cockle	I	NNA	SNA	Exotic	Exotic	Exotic	0	5
Smilax herbacea	Smooth Carrion Flower	N	NNR	S4	NAR	NAR	Common	5	0
Solidago altissima	Tall Goldenrod	N	NNR	S5	NAR	NAR	Common	1	3
Solidago canadensis	Canada Goldenrod	N	N5	S5	NAR	NAR	Common	1	3
Symphoricarum cordifolium	Heart-leaved Aster	N	N5	S5	NAR	NAR	Common	5	5
Symphotrichum lateriflorum									
	Calico Aster	N	N5	S5	NAR	NAR	Common	3	-2
Tilia americana	Basswood	N	N5	S5	NAR	NAR	Common	4	3
Trifolium pratense	Red Clover	I	NNA	SNA	Exotic	Exotic	Exotic	0	2
Triosteum aurantiacum	Horse Gentian	N	NNR	S5	NAR	NAR	Common	7	5
Viburnum lentago	Nannyberry	N	NNR	S5	NAR	NAR	Common	4	-1
Viola rostrata	Long-spurred Violet	N	NNR	S5	NAR	NAR	Common	6	3
Vitis riparia	Wild Grape	N	N5	S5	NAR	NAR	Common	0	-2
	MEAN							3	2

Total number of Native species = 42 or 72%  
Total number of Introduced or Non-Native species = 16 or 28%  
58



6) Wetland Swale: Vegetation Community No. 9

Latin Name	Common Name	Native or Introduced	Rank		Status	FQA		
			Nat.	Prov.		CC	CW	
Carex bebbii	Bebb's Sedge	N	N5	S5	NAR	NAR	3	-5
Carex hystericina	Porcupine Sedge	N	N5	S5	NAR	NAR	5	-5
Carex stipata	Awl-fruited Sedge	N	N5	S5	NAR	NAR	3	-5
Carex vulpinoidea	Fox Sedge	N	N5	S5	NAR	NAR	3	-5
Circaea lutetiana	Enchanter's Nightshade	N	N5	S5	NAR	NAR	3	3
Cornus racemosa	Grey Dogwood	N	NNR	S5	NAR	NAR	2	-2
Cornus stolonifera	Red Osier Dogwood	N	NNR	S5	NAR	NAR	2	-3
Dactylis glomerata	Orchard Grass	I	NNA	SNA	Exotic	Exotic	0	3
Equisetum arvense	Field Horsetail	N	N5	S5	NAR	NAR	0	0
Juncus effusus	Soft Rush	N	N5	S5	NAR	NAR	4	-5
Plantago major	Common Plantain	N	NNA	S5	NAR	NAR	0	-1
Phragmites australis	European Common Reed	I	NNA	SNA	Exotic	Exotic	0	0
Rumex crispus	Curly Dock	I	NNA	SNA	Exotic	Exotic	0	-1
Salix lucida	Shining Willow	N	NNR	S5	NAR	NAR	5	-4
Scirpus atrovirens	Dark Green Bulrush	N	N5	S5	NAR	NAR	3	-5
Symphotrichum lateriflorum	Calico Aster	N	N5	S5	NAR	NAR	-3	-2
MEAN							1.875	-2

Total number of Native species = 13 or 81%  
Total number of Introduced or Non-Native species = 3 or 19%  
16

National and Provincial Rank: Based on current 2018 Ontario Natural Heritage Information Center (NHIC) listings

NNA/ NNR defined as: No Ranking	SNA defined as : Unranked
N5 defined as: Very common	S5 defined as: Secure
N4 defined as: Common	S4 defined as: Apparently Secure
N3 defined as: Rare to uncommon species	S3 defined as: Vulnerable
N2 defined as : Very Rare	S2 defined as: Imperiled
N1 defined as: Extremely Rare	S1 defined as: Critically Imperiled

NAR defined as : Not At Risk / END defined as : Endangered / THR defined as :Threatened / SC defined as : Special Concern

National Status based on: Species At Risk Act, COSEWIC 2018 Listings

Provincial Status based on: Endangered Species Act 2007, NHIC 2018 and 2018 COSSARO Listings

Local Status based on: Oldham, Michael J. 2017. List of the Vascular Plants of Ontario's Carolinian Zone (Ecozone 7E)

Ontario Ministry of Natural Resources and Forestry, 'Floristic Quality Assessment' (FQA) Scoring System:

CC = Coefficient of Conservatism, ranked 0 (grows anywhere) to 10 (very specific habitat requirements)

WI = Wetness Index, values from -5 (very wet) to 5 (very dry)

Note: CC scores of 8 or higher are indicator species of candidate Significant Woodlands

### **Ecological Land Classification Types**

Vegetation Community No. 1 =	OAO : Open Aquatic >2m in depth, shoreline-littoral zone vegetation only
Vegetation Community No. 2 =	CUM1 : Dry Mineral Cultural Meadow - Planted Clover
Vegetation Community No. 3 =	CUM1-1 : Dry Mineral Cultural Meadow - open grass/clover with regenerating scattered trees and shrubs
Vegetation Community No. 4 =	CUM1 : Moist Mineral Cultural Meadow - scattered shrubs with dense graminoids and forbs
Vegetation Community No. 5 =	CUS1: Cultural Savannah with regenerating early successional hardwoods
Vegetation Community No. 6 =	CUT1 : Dry Cultural Black Locust Thicket
Vegetation Community No. 7 =	FOD5-5 : Dry-Fresh Sugar Maple-Hickory Deciduous Forest
Vegetation Community No. 8 =	FOD5-7 : Dry-Fresh Sugar Maple-Black Cherry Deciduous Forest

### **APPENDIX 3**

- Fauna Inventory Listing with Rankings and Status Levels and Point Count Location Map

## Byron Pits: Fauna Inventory

Ranking, Status, estimated adult numbers and highest recorded breeding Bird codes

South of Byron Baseline Road and East of Colonel Talbot Road, City of London, ON

### Two species of conservation concern: Bank Swallow & Monarch

Latin Name	Common Name	Ranking		Status			Breeding Codes	Recorded in Point Counts	Observed Range of Adult Numbers
		Nat.	Prov.	Nat.	Prov.	Local			
<i>Actitis macularius</i>	Spotted Sandpiper	N5	S5	NAR	NAR	Common	Pr	1,4,5	7--9
<i>Agelaius phoeniceus</i>	Red-winged Blackbird	N5	S4	NAR	NAR	Common	Conf	4,7,12	>15
<i>Anas platyrhynchos</i>	Mallard	N5	S5	NAR	NAR	Common	Po-H	4	3
<i>Archilocho colubris</i>	Ruby-throated	N5	S5	NAR	NAR	Common	Pr	3,6,7,12,17	7
<i>Branta canadensis</i>	Canada Goose	N5	S5	NAR	NAR	Common	Po-H	4	12
<i>Bonasa umbellus</i>	Ruffed Grouse	N5	S4	NAR	NAR	Common	Conf	9, 10	3
<i>Buteo jamaicensis</i>	Red-tailed Hawk	N5	S5	NAR	NAR	Common	Ob	NA	1
<i>Cardinalis cardinalis</i>	Northern Cardinal	N5	S5	NAR	NAR	Common	Conf	3,8,10,11,13,17	>10
<i>Carduelis tristis</i>	American Goldfinch	N5	S5	NAR	NAR	Common	Conf	1,2,3,5,7,8,10,17	>25
<i>Carpodacus mexicanus</i>	House Finch	N5	SNA	NAR	NAR	Common	Po-H	10,13	3
<i>Cathartes aura</i>	Turkey Vulture	N5	S5	NAR	NAR	Common	Ob	NA	1
<i>Charadrius vociferus</i>	Killdeer	N5	S5	NAR	NAR	Common	Conf	2,4,16	3
<i>Colaptes auratus</i>	Northern Flicker	N5	S4	NAR	NAR	Common	Po-H	5,6,7,12	6
<i>Corvus brachyrhynchos</i>	American Crow	N5	S5	NAR	NAR	Common	Ob-X	9,17	5
<i>Cyanocitta cristata</i>	Blue Jay	N5	S5	NAR	NAR	Common	Conf	2,3,6,8,9,10,11,13	>20
<i>Dumetella carolinensis</i>	Gray Catbird	N5	S4	NAR	NAR	Common	Conf	6,7,14	5--7
<i>Falco sparverius</i>	American Kestrel	N5	S4	NAR	NAR	Common	Ob-X	8	1
<i>Geothlypis trichas</i>	Common Yellowthroat	N5	S5	NAR	NAR	Common	Po-H	4,12	4
<i>Icterus galbula</i>	Baltimore Oriole	N5	S4	NAR	NAR	Common	Po-H	10,11,13	5
<i>Larus argentatus</i>	Herring Gull	N5	S5	NAR	NAR	Common	Ob	NA	>12
<i>Meleagris gallopavo</i>	Wild Turkey	N5	S5	NAR	NAR	Common	Conf	6,9,14	>20
<i>Molothrus ater</i>	Brown-headed Cowbird	N5	S4	NAR	NAR	Common	Pr	3,6,15,17	5--6
<i>Passer domesticus</i>	House Sparrow	NNA	SNA	Exotic	Exotic	Exotic	Pr	2,10	3
<i>Picoides pubescens</i>	Downy Woodpecker	N5	S5	NAR	NAR	Common	Conf	2,9,10,11,13,15	>12
<i>Picoides villosus</i>	Hairy Woodpecker	N5	S5	NAR	NAR	Common	Po-H	11,13	3
<i>Poecile atricapillus</i>	Black-capped Chickadee	N5	S5	NAR	NAR	Common	Po-H	8,13,16	5
<i>Quiscalus quiscula</i>	Common Grackle	N5	S5	NAR	NAR	Common	Po-H	10, 16	2
<b>Riparia riparia</b>	<b>Bank Swallow</b>	N5	S4	Thr	Thr	Thr	Conf	9, 10	>60

### Birds

Sayornis phoebe	Eastern Phoebe	N5	S5	NAR	NAR	Common	Po-H	11,15	4
Sialia sialis	Eastern Bluebird	N5	S5	NAR	NAR	Common	Po-S	12	2
Spizella passerina	Chipping Sparrow	N5	S5	NAR	NAR	Common	Pr	1,2,4,12	8
Spizella pusilla	Field Sparrow	N4	S4	NAR	NAR	Common	Pr	3,12	5
Sturnus vulgaris	European Starling	NNA	SNA	Exotic	Exotic	Exotic	Po-H	5,6	3
Tachycineta bicolor	Tree Swallow	N5	S4	NAR	NAR	Common	Po-H	2,7	3
Toxostoma rufum	Brown Thrasher	N5	S4	NAR	NAR	Common	Conf	5,6,7,8,14	8--10
Troglodytes aedon	House Wren	N5	S5	NAR	NAR	Common	Po-S	9,14	3
Turdus migratorius	American Robin	N5	S5	NAR	NAR	Common	Conf	3,6,7,10,13,17	>25
Tyrannus tyrannus	Eastern Kingbird	N5	S4	NAR	NAR	Common	Po-H	4,7,12	7--8
Zenaidura macroura	Mourning Dove	N5	S5	NAR	NAR	Common	Po-H	3,4,16	6

Condensed Breeding Codes as per Bird Studies Canada Protocol

Ob = Observed bird outside of the Breeding Season

Po-S = Possible: Singing/Calls in suitable nesting habitat

Ob -X = Observed in breeding season but no evidence of breeding

Pr = Probable: pairs observed, nest building, courtship display

Po-H = Possible: Observed in suitable nesting habitat

Conf = Confirmed: active nest, egg shells, feeding young

Latin Name	Common Name	Ranking		Nat.	Prov.	Status		Observed Range of Adult Numbers
		Nat.	Prov.			Prov.	Local	
Canis latrans	Coyote	N5	S5	NAR	NAR	Common	Common	3
Marmota monax	Woodchuck	N5	S5	NAR	NAR	Common	Common	2
Mephitis mephitis	Striped Skunk	N5	S5	NAR	NAR	Common	Common	1
Odocoileus virginianus	White-tailed Deer	N5	S5	NAR	NAR	Common	Common	8--10
Peromyscus maniculatus	Deer Mouse	N5	S5	NAR	NAR	Common	Common	3
Procyon lotor	Raccoon	N5	S5	NAR	NAR	Common	Common	2
Sciurus carolinensis	Eastern Gray Squirrel	N5	S5	NAR	NAR	Common	Common	>12
Sylvilagus floridanus	Eastern Cottontail	N5	S5	NAR	NAR	Common	Common	7
Tamias striatus	Eastern Chipmunk	N5	S5	NAR	NAR	Common	Common	5

**Mammals**

Thamnophis sirtalis	Eastern Garter Snake	N5	S5	NAR	NAR	Common	Common	2
Storeria dekayi	Little Brown Snake	N5	S5	NAR	NAR	Common	Common	3

**Reptiles**

Hyla versicolor	Gray Tree Frog	N5	S5	NAR	NAR	Common	Common	1
Lithobates clamitans	Green Frog							2--3
Lithobates pipiens	Northern Leopard Frog	N5	S5	NAR	NAR	Common	Common	7--10

**Amphibians**

None Observed								
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**Fish**

Butterflies	Latin Name		Common Name		Ranking		Status			Observed Range of Adult Numbers
					Nat.	Prov.	Nat.	Prov.	Local	
	<i>Cercyonis pegala</i>		Common Wood-Nymph		N5	S5	NAR	NAR	Common	12--15
	<i>Pieris rapae</i>		Cabbage White		N5	S5	NAR	NAR	Common	5
	<b><i>Danaus plexippus</i></b>		<b>Monarch</b>		N4	S4	<b>SC</b>	<b>SC</b>	<b>SC</b>	7--9
	<i>Papilio glaucus</i>		Eastern Tiger Swallowtail		N5	S5	NAR	NAR	Common	3
	<i>Speyeria cybele</i>		Great Spangled Fritillary		N5	S5	NAR	NAR	Common	>20
	<i>Phycoides cocyta</i>		Northern Crescent		N5	S5	NAR	NAR	Common	4
	<i>Vanessa atalanta</i>		Red Admiral		N5	S5	NAR	NAR	Common	2

<b>Dragonflies &amp; Damselflies</b>	<i>Anax junius</i>	Common Green Darner	N5	S5	NAR	NAR	Common	>15
	<i>Erythemis simplicicollis</i>	Eastern Pondhawk	N5	S5	NAR	NAR	Common	7--8
	<i>Gomphus spicatus</i>	Dusky Clubtail	N5	S5	NAR	NAR	Common	5

#### National and Provincial Rank: Based on current 2018 Ontario Natural Heritage Information Center (NHIC) listings

NNA defined as: Not Ranked  
 N5 defined as: Secure  
 N4 defined as: Apparently Secure  
 N3 defined as: Vulnerable  
 N2 defined as: Imperiled  
 N1 defined as: Critically Imperiled

SNA defined as: Unranked  
 S5 defined as: Secure  
 S4 defined as: Apparently Secure  
 S3 defined as: Rare to Uncommon  
 S2 defined as: Very Rare  
 S1 defined as: Extremely Rare

NAR defined as: Not At Risk      END defined as: Endangered      THR defined as: Threatened      SC defined as: Special Concern

National Status based on: Species At Risk Act, and COSEWIC 2018 Listings

Provincial Status based on: Endangered Species Act 2007, NHIC 2018, COSSARO 2018 Listings

Regional Status lists based on:      Birds- Region No. 4 (London) 'Atlas Breeding Birds of Ontario 2001-2005'  
 Dragonflies & Damselflies (Middlesex) ' Regional Lists of Ontario Odonata'



Byron Pits Study Lands: Breeding Bird Survey Point Counts

SCALE 1:5000



#### **APPENDIX 4**

- MNRF: North Talbot Wetland-PSW Summary Sheet



## General Natural Areas Report

Area ID	19896		
Name	NORTH TALBOT WETLANDS (UT 57)		
Latitude	42.9379	GIS Area (ha)	14.0
Longitude	-81.3155	IUCN Category	
Area Type	Wetland		
Significance	Provincial		

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### General Description

Vegetation

Landform

Representation

Ecological Functions

Threats

Management Organization

### References

Reference ID	Citation
403328	Ontario Ministry of Natural Resources. 2011. Wetland Unit data class. Data received February, 7, 2011 from Land Information Data Subscription Service.

## **APPENDIX 5**

- Site Photographs

## **APPENDIX 6**

- AWS Qualifications and Experience



**AWS Environmental Consulting Inc.**  
(Operating as Aquatic and Wildlife Services)

242090 Concession Rd. 3 Keppel,  
R.R. # 1, Shallow Lake, Ontario, Canada, N0H 2K0

Office: 519-372-2303, Email: [aws@gbteel.ca](mailto:aws@gbteel.ca)

Web site: [www.awsenvironmental.ca](http://www.awsenvironmental.ca)

**C.V. Summary: John D. Morton**

**Education**

- 1985: Graduate Sault College, Forestry Technician
- 1986: Honors Graduate Sault College, Fish & Wildlife Technologist
- 15 years training and experience with Ontario Ministry of Natural Resources as a contract & full time employee for Natural Heritage Programs and Biology/Ecology

**Work Experience Summary**

- 1997 to August 2015: Sole Proprietorship of **Aquatic and Wildlife Services**, then Incorporated as **AWS Environmental Consulting Inc.** in August 2015 to Present, specializing in Natural Heritage Studies and Development Impact Assessments:
  - Over 300 Natural Heritage and Natural Environment Impact Study Reports for Land Use development proposals throughout Southwestern and Central Ontario in accordance to Legislation and Regulation for Federal and Provincial Agencies, Government and Niagara Escarpment Plan Policies and Conservation Authority Regulatory Lands.
    - Impact assessment technical reports ranging from: Single Residential Lot creations to Plan of Subdivisions for 100+ Lots, and Aggregate applications ranging from 5ha Wayside Gravel Pits to 120 ha Quarry Operations for both above and below groundwater table.
  - Design and Monitoring technical reports for Marina Development, , Water Crossings, Recreational Pond designs, Fish & Wildlife Habitat Restoration Plans and Managed Forest Plans.
  - Species At Risk Surveys for flora and fauna with study areas encompassing 20ha to 7000ha
  - **Ontario Municipal Board expert witness testimony on Natural Heritage Features, Ecology, Development Impacts and Mitigation Techniques.**
- 1986 to 1997 : Resource Technician with the Ontario Ministry of Natural Resources, responsibilities included:
  - Backfill positions for Owen Sound Area Office District Biologist (Fisheries and Wildlife), and District Fish & Wildlife Management Officer.
  - Review and commenting on Provincial interests through Planning Review for development proposals.
  - Deputy Conservation Officer with completion of 5-week Enforcement Training Program, Provincial Offences charges, court evidence presentation and convictions.
  - Fish & Wildlife Population and Habitat surveys and Rehabilitation Designs.

- Midhurst District Administrator and Program Coordinator of Wetlands and CFWIP Programs with annual budgeting and auditing roles.
- Fisheries Research Technician and Fish Culture Technician, Chatsworth Fish Culture Station.
- 1982 to 1986 : Contract Resource Technician With Ontario Ministry of Natural Resources, Grey-Sauble and Saugeen Conservation Authorities, responsibilities included:
  - Wetland Inventory Technician, Fish and Wildlife Population and Habitat Surveys.

### **Project Related Experience Summary**

- Fauna population and habitat surveys:
  - Salmonid biomass surveys through seining and Electro-fishing.
  - Stream/Watershed surveys for habitat quality/conditions, fish passage/barriers, water quality assessment including Benthic Macro Invertebrate sampling.
  - Genetic research survey work on Chinook Salmon, Saugeen Muskellunge, Backcross Lake Trout.
  - Inland Lake surveys for water quality, thermal regimes, fisheries qualitative assessments through seining, trap netting, creel survey.
  - Stream/River/Lake Fisheries habitat enhancement and rehabilitation Plans.
  - Wintering Deer Yard mapping, quality assessment, carrying capacity calculations, herd health monitoring and natural reproduction rates.
  - Genetic research work on Bruce Peninsula Eastern Massassagua Rattlesnake and Black Bears including radio telemetry.
  - Breeding Bird surveys including waterfowl nesting surveys and natural recruitment success, Bald Eagle monitoring and banding, mapping of Owen Sound area significant production/staging areas.
  - Amphibian qualitative assessment within sensitive environments and monitoring population trends for wetland habitat conditions.
  - Species At Risk Surveys with habitat mapping and Ecological Land Classification community mapping for Copeland Forest, Shallow Lake Wetland, Meaford National Defense Training Centre, Grey County Pretty River Forest Tract and Oliphant Fens
- Flora species and habitat surveys:
  - Provincially Certified Wetland evaluator to Book 2 and 3 standards, with over 150 wetland evaluations and desktop upgrades completed. Wetland Evaluation instructor to former book 2 standards with successful training of 30+ candidates.
  - Southern Ontario Ecological Land Classification- Vegetation Community Mapping for sensitive and/or rare habitat types including fens, bogs, natural beaches, and alvars plus common woodland community types.
  - Botanical qualitative inventory works including identification, mapping of species of conservation concern with status levels and habitat types/condition assessments.
  - Tree marking for sustainable harvesting and rotational management of fuel wood and/or saw logs.
  - Native tree and shrub nursery operation with annual seedling production and retail sales of deciduous and conifer seedlings and saplings.

## **Certification & Training Courses:**

- Provincially Certified Wetland Evaluator to Book 2 and Book 3 Standards
- Provincial Class 1 Electro-fishing Certification
- Provincial workshop training for Natural Heritage Environmental Impact Studies, Natural Hazard Studies and Non-Renewable (Aggregates) Impact Studies
- Level '1' OMNR Law Enforcement training
- Advanced Fish Habitat training and Habitat Impact Assessment
- Fluvial Geomorphology Workshop
- Stream Bioengineering Restoration training
- Cyprinidae Identification Workshop
- Wetland Restoration Techniques Training
- Provincial Managed Forest Tax Incentive Plan Approver
- Species-At-Risk Ontario Mussel Identification
- Bruce Peninsula Eastern Massassagua Rattlesnake Habitat Identification Training through Radio Telemetry work with Parks Canada
- Ecological Land Classification System for Southern Ontario
- Provincial Tree Making Course
- WHMIS
- Ontario Courts Evidence Collection and Presentation Training
- Department of Fisheries and Oceans South Georgian Bay Fish Habitat Issues Workshop
- Provincial Butternut Health Assessor
- Biotechnical Slope Stabilization Workshop.

Recipient of Provincial -OMNR Award for Fish Habitat Restoration Works & Stewardship

## C.V. SUMMARY: Judith Jones

### Education

B.S. Botany, University of Michigan, Ann Arbor 1980  
M.S. Cell Biology, University of Illinois, Chicago 1983  
Ontario Provincial Wetland Evaluator--certified 1999  
Canadian Environmental Assessment Agency—screening training, 2007  
Certificate of Proficiency in Spanish, Ryerson University, 2012

### Areas of Expertise

Plant identification and classification  
Vegetation identification and mapping (Ecological Land Classification; VSP; other protocols)  
Identification and mapping of Species at Risk and their habitats  
Life science inventories  
Field mapping of other natural features

**Judith Jones has been a consulting biologist since 1994. She has worked for AWS since 2005.**

### Highlights of Recent Projects

#### SURVEYS FOR ENVIRONMENTAL IMPACT

##### STUDIES (Subdivisions, Aggregates, etc.)

Aquatic and Wildlife Services since 2005  
Robin Craig Consulting since 2013  
M.K. Ince and Associates (2006)  
CEAA screening, Beausoleil First Nation (2007-8)

#### LIFE SCIENCE INVENTORIES

- 58 acres on Manitoulin Island for a species at risk farm plan.
- Ecological survey for an ecogift transfer.
- Copeland Forest
- Oliphant Shoreline
- Degrassi Point Prairie Remnant
- Carden Alvar ANSI
- 4 provincial parks on Manitoulin Island
- 4 conservation reserves on the Georgian Bay Coast
- Alvares of the Manitoulin District
- Manitoulin Island Escarpment ecosystem
- Field work: NCC's Ecological Survey of the Georgian Bay Coast.

#### RESEARCH

- Life history of Hill's Thistle (threatened)
- Demographics of Pitcher's Thistle (thr.)
- Niagara Escarpment: 50 years of forest change, VSP and point-quarter sampling.
- Sustainable harvest levels for Canada Yew (*Taxus canadensis*)
- Fire history of Oak Savannah vegetation
- Fire history of Manitoulin alvars

#### SPECIES AT RISK SURVEYS

- SAR surveys & mapping: Wikwemikong First Nation, Serpent River First Nation, Beausoleil First Nation, United Chiefs and Councils of M'nidoo M'nissing.
- Trent-Severn Waterway (Parks Canada)
- Fort St. Joseph National Historic Site
- Sault Canal National Historic Site
- Survey and mapping of Pitcher's Thistle and dune grasslands on Lake Huron

#### RECOVERY OF SPECIES AT RISK

- Author of more than 25 recovery strategies, action plans, management plans, and COSEWIC reports for endangered, threatened, and special concern species.
- Monitoring design and implementation for several species at risk and for prairie and alvar habitats.
- Coordinator of SAR monitoring by volunteers on Manitoulin Island

#### OTHER

- Gathering traditional ecological knowledge (TEK): Wikwemikong, Sagamok Anishnaabek, and elsewhere.
- Workshops about SAR for schools, Christian Island, Manitoulin Island
- Spring flora courses for non-biologists
- Layout and construction of trails (Misery Bay Provincial Park; other locations)
- Nature and environment columnist for the Manitoulin Expositor (1992-2004)

## Natural Environment Technical Reports: Aggregate Resources Experience 1997-2017

Bruce County (40)		Grey County (42)	
<p>Johnston Bros. Colwell Pit                      Ferris Pit                      Hunter Albemarle Quarry                      Greenock Pit                      Culross Pit                      Gingerich Pit                      HSC Lindsay Quarry                      Bridge Wiarton Quarry                      Buckskin Wiarton Quarry                      Teeswater Concrete Pit                      Crigger Pit                      Arran Wayside Pit                      Elderslie Wayside Pit                      Vola Rock Quarry                      Hays Quarry                      Hunter Albemarle Pit                      DiPoce Quarry                      Cedarwell Hanover 'B' Pit                      Lang Farm Pit                      Ransome Construction-Arran Pit</p>	<p>Bester Pit                      Everest Quarry                      Bricker Pit                      Reich Pit                      Chepstow Pit                      Bridge Lindsay Quarry                      Nickason Pit                      Arran Wayside                      K.Jackson Pit                      Forbes Tara Pit                      South Bruce Pit                      Beirnes Pit                      Chamberlain Quarry                      Lang Farm 2 Pit                      Ebel Quarry                      Legerock Wiarton Quarry                      Hunter Albemarle Quarry                      Campbell Pit                      HSC Albemarle Quarry                      BIO- Quarry Road East Side</p>	<p>Kilsyth Wayside Pit                      Arnott Pit                      HSC Clavering Pit                      Kinghurst Taylor Pit                      Cedarwell Priceville Pit                      HSC Grant Pit                      Cedarwell Benett Pit                      Priceville Pit                      H. Bye Const. Rice Pit                      H. Bye Const. Atiken Pit                      J. Cook Pit                      S. Cook Pit                      West Grey Wayside Pit                      H. Bye Const. Flanagan Pit                      Gowenlock Pit                      Southgate Pit 2                      Winter Pit                      Hays Pit                      Shepherd Pit                      Best Pit                      Aberdeen Pit</p>	<p>Durham Stone &amp; Paving Arnill Pit                      H. Bye Const. Egremont Pit                      Feversham Pit                      HSC Durham Pit                      HSC Keppel Quarry                      HSC Bayview Quarry                      HSC Sarawak Clay Pit                      Southgate Pit                      HSC Pike Pit                      Aberdeen Exp. Pit                      Winters Quarry                      Blueland Farms Handy Pit                      O'Neil Pit                      Ellison Pit                      Becker Pit                      West Grey Wayside                      Fleshcon Croft Pit                      Ardiel Pit                      Southgate Pit                      Markdale Pit                      Cedarwell Hanover B Pit</p>
Region of Durham (3)		Dufferin County (1)	
<p>Vicdom S &amp; G North Sunder. Pit                      Vicdom S &amp; G Sunderland Pit                      Brock Aggregates Sunderland Pit</p>	<p>St.Mary's Cement Craig Pit</p>	<p><b>Peel Region (1)</b>                      Blueland Farms McCormick Pit</p>	<p><b>Elgin County (2)</b>                      Strickland Bulldozing Strickland Pit                      Walker Pit</p>
Huron County (4)		Simcoe County (1)	
<p>Open Valley Pit                      Handy Acres Pit                      Porter Pit                      Lavis Contr. Walter Pit</p>	<p>Demar Agg. Lagrou Pit                      L82 Const. Hill Pit                      Demars Fallan Pit                      Blythdale Leitch-Gover Pit                      D &amp; J Paton Bros. Trafalgar Road Pit                      Blythdale Szorenyi Pit</p>	<p>Aggregate Resource Suppliers Association</p>	<p><b>Manitoulin Island (1)</b></p>
Oxford County (12)		Middlesex County (7)	
<p>Matheson Farms Pit                      Twp of S.-W. Oxford Horely Pit                      Stubbe's Precast Sims Pit                      Forest City Agg.Arnold Pit                      Bedrock G &amp; S Boniface Pit                      Demar Agg. Granger Pit                      AAR-CON Baigent Pit                      Zorra Twp. Robinson Pit                      Smith Const. Pit                      Paton Peat Extraction                      Blythdale Ross Pit                      Stubbe's Precast Chapman Pit</p>	<p>Forest City Agg. II, VDV Pit</p>	<p><b>Simcoe County (1)</b>                      Croft Sunnidale Pit</p>	<p><b>Peel Region (1)</b>                      Blueland Farms McCormick Pit</p>
Region of Durham (4)		Dufferin County (1)	
<p>Open Valley Pit                      Handy Acres Pit                      Porter Pit                      Lavis Contr. Walter Pit</p>	<p>Forest City Agg. II, VDV Pit                      Demar Agg. Lagrou Pit                      L82 Const. Hill Pit                      Demars Fallan Pit                      Blythdale Leitch-Gover Pit                      D &amp; J Paton Bros. Trafalgar Road Pit                      Blythdale Szorenyi Pit</p>	<p><b>Manitoulin Island (1)</b></p>	<p><b>Dufferin County (1)</b>                      St.Mary's Cement Craig Pit</p>



## Natural Heritage Environmental Impact Studies and Experience 1997-2017

### Residential Subdivisions & Commercial Development

Grey County (16)	Bruce County (23)
Andpet 16th Ave Comm Deve.-Owen Sound Loucks Subdivision- Chatsworth Langen Subdivision-Shallow Lake Boulder Subdivision- Keppel Hilton Head Subdivision- Meaford Oak Meadows Subdivision-Meaford Mannerow Estates- Owen Sound Georgian Shores Subdivision-Sarawak Sutacriti Park Phase III- Sarawak Debrincat Subdivision- Holland Ferraro Subdivision- McCullough Lake Andpet Bothwells Corner Comm.- Owen Sound HSC Alvanley Comm. Cement Plant-Keppel MacKinnon-Smart Subdivision-Francis Lake Saugeen Cedar Heights-Hanover Sunvale Homes-Durham	Lakeside Woods Subdivision-Saugeen Weatherhead Development- Eastnor Maple Ridge Development-Amabel Good Acres Development-Eastnor Brown Subdivision- Kincardine Sundance Estates- Bruce Walker Estates Phase II-Amabel Mystic Cove Subdivision-Kincardine Black Subdivision-Kincardine Mary Rose Subdivision-Saugeen Gray Mildmay Development- Carrick Lake Huron Escape-Bruce MacKenzie Development-Saugeen Harkins Harbour Development- Lindsay
	Pegasus Trails-Saugeen Lorne Beach Development- Kincardine Mulholland Division St-Southampton Chippewa Golf & Country Club-Saugeen Leslie Subdivision-Saugeen McMillan Subdivision-Saugen Peacock's Meats and Groceries Inc-Tobermory Karen Investment Ltd-Port Elgin Dent Dubdivision-Mildmay
	<b>Wellington County (2)</b> Murphy Subdivision - Mount Forest South Saugeen Development-Mount Forest
	<b>Perth County (1)</b> Maitland River Estates - Listowel

### Infrastructure Projects & Industrial Development

Bruce County (16)	Grey County (19)
Barrow Bay North Shore Road Bruce Road 21-Stoney Creek Bruce Road 25 Kincardine-Park Street Bruce Road 9 Bruce Road 12 Southampton Sanitary Sewers Arran Landfill Expansion Calhoun Drain Bruce County Line Road Upgrades Otter Creek-Dam Removal McClure's Bridge Silver Creek Bridges-Walkerton Saugeen Shores 10th Line Drain Mildmay Elora Street Dam Removal South Bruce Carrick-Normanby Meux Cr Bridge	Owen Sound 7th Street Drain Highway 4 Hanover-Stream Crossing Owen Sound 6th Ave Stream Course Sarawak Carney Street SWM Southgate- Camp Creek Crossing Owen Sound 9th St. Bridge Owen Sound 10th St. Extension Grey County Line Greir Creek Bridge Chatsworth- Sewage Upgrade Southgate-Stream Realignment Mill Creek Crossing Dipple Drain West Grey-Traverston Creek Realignment Owen Sound-Sydenham River Stabilization Minnihill Creek Fish Habitat Improvements
	Town of Hanover Business Park Viking-Cives Ltd - Mount Forest Sydenham Heights-Owen Sound Servicing
	<b>Huron County (2)</b> Wingham Force main Goderich Pier Stabilization
	<b>Wellington County (2)</b> Town of Minto-Coon Creek 5-Year Monitoring Town of Minto-Palmerston Industrial Park

**Natural Heritage Environmental Impact Studies and Experience 1997-2017**

**Recreational and Energy Land Use Development**

<b>Grey County (29)</b>	<b>Bruce County (13)</b>	<b>Simcoe County (3)</b>
<p>Monterra Plateau Stream Realignment                      Devils Glen Ski Hill Expansion                      Morris Wetland Creation                      Rocky Saugeen Campground Expansion                      Sobiski Property Shoreline Stabilization                      Pesnail Property Shoreline Stabilization                      Carmicheal Pond Cleanout                      Overton Pond Design                      Beaver River Bank Stabilization                      Andrews Pond Design                      Hrodzicki Storage Building                      Klages Tree Retention Plan                      Cedar Run Horse Park Expansion                      Osler Bluff Shi Club-Storage Building                      Osler Bluff Ski Club-Water Reservoir                      Blue Mount. Orchard Run Ski Hill Expansion                      Walters Falls Hydro Facility Proposal                      Blue Mount Resort-Roller                      Blue Mount. Resort Stream Monitoring                      AndPet Commercial Development                      East West Exchange Retreat Camp                      Lahman Comm. Development                      Blue Mount. Resort SWMP Outlet Monitoring                      Lee Pond Design                      Morrison Marina                      Meaford-Cemetery Creek Realignment                      Goodyear-Effluent Monitoring                      Miller Group Ltd, -Owen Sound Indus. Park                      Parker-Nature Retreat Resort</p>	<p>Blue Heron Parking Lot                      Home Hardware-Sauble Beach                      Mystic Cove Stream Realignment                      Casey Property-Bank Stabilization                      Wells Trucking-Mildmay                      MacKenzie Marina Dredging                      Pike Bay Marina Dredging                      Chesley Lake Cottagers Assoc. Dredging                      Miller Property Shoreline Dredging                      Hood Property Shoreline Dredging                      Smith Com. Expansion                      LEED Tree Retention Plan                      Mildmay-Hamel's Pond and Elora Street Dam</p>	<p>Hamilton Brothers Ltd.-Stream Restoration                      Devils Glen Stream Realignment                      Devils Glen Club House Expansion                      Robitaille Wind Farm-Cedar Point</p> <p><b>Dufferin County (2)</b></p> <p>Bowman Comm. Development                      Cedar Highlands Ski Club</p> <p><b>Wellington County (1)</b></p> <p>White's Creek Restoration</p> <p><b>Manitoulin Island (2)</b></p> <p>Manitoulin Streams Association                      Municipality Official Plan</p>

Natural Heritage Environmental Impact Studies and Experience 1997-2017

**Lot Severances & Building Envelopes**

Grey County (91)		
Zaferis Building Envelope	Hughes Building Envelope	Wiley Severance
Clancy- 20th Street Building Envelope	Wilson Building Envelope	Davies Severance
Emmerson Building Envelope	Smith Severance	Stewart Severances
Shantz Building Envelope	Currie Building Envelope	Irwin Building Envelope
Fligg Building Envelope	Valette Building Envelope	Valent Building Envelope
Todd Severance	Robinson Severance	Barfoot Building Envelope
Underwood Building Envelope	Taylor Building Envelope	Voisin Building Envelope
Klages Severances	Low Building Envelope	Colborne Building Envelope
Beacock Building Envelope	Donavon Building Envelope	Tengler Building Envelope
McNeil Building Envelope	Lupia Building Envelope	Langerap Building Envelope
Gilbert Severances	Zeggil Severances	Wattie Building Envelope
Dillman Severance	McNeil Severance	Hall Severance
Thom Severances	Byers Building Envelope	Hrodzicki Building Envelope
DiFranco Severances	Gilmour Building Envelope	Nicholls Dwelling Expansion
Farnenhorst Building Envelope	Martindill Severance	NEC-Caframo Tree Preservation Plan
Biesinger Severances	Peach Severance	Elliott Building Envelope
Love Building Envelope	Ryan Severance	Spaleta Building Envelope
Braun Severances	J. Martin Building Envelope	Haslam Severance
Legge Building Envelope	Shrek Building Envelope	Bethune Severance
Wilcox Building Envelope	James Severance	O'Sullivan Building Envelope
HSC Clavering Severances	Maxwell Severance	McGlynn Building Envelope
Holmes Building Envelope	Harris Severance	Edgar Lot Severances
Brulette Severances	R. Martin Building Envelope	
Philipp Severances	Philipp Building Envelope	
Sheppard Severance	Bauman Building Envelope	
Pfaff Building Envelope	Berg Building Envelope	
Wilmer Severances	Shrek Severance	
Doherty Building Envelope	Yoder Severance	
Menaul Severance	Hollingshead Severance	
McNabb Building Envelope	McKay Building Envelope	
Toombs Building Envelope	Molner Severance	
McGowan Building Envelope	Detzier Severance	
Lobban Severance	Baragar Building Envelope	

## Natural Heritage Environmental Impact Studies and Experience 1997-2017

<b>Lot Severances &amp; Building Envelopes continued</b>	<b>Species At Risk and Biological Surveys</b>
<b>Bruce County (38)</b>	<b>Bruce County (12)</b>
Lee Building Envelopes	Rankin River-Sky Lake SAR Study
Hall Building Envelope	Rankin River-Boat Lake SAR Study
Vespasiano Severance	Rankin River-Isaac Lake SAR Study
Matheson Severances	Beatty Saugeen River-Thermal
Seeman Severance	Grey/Bruce Wetland Evaluation Upgrades
P. MacDonald Severances	Spring Creek Fish Habitat
Arcaro Building Envelope	Saugeen River-Muskellunge Habitat
Goetz Severances	Beatty Saugeen River-Smolt Passage
Chippewa Golf Course Severances	Chesley Lake Angling Winter Creel
S. MacDonald Severances	Peninsula Black Bear Radio Tag-Dens
Zepf Severances	Peninsula Winter Yard Deer Browse
Porto Severance	Denny's Dam Fishway Monitoring
B. Elliot Severances	
Royal Homes-Kincardine	<b>Grey County (3)</b>
Ferguson Point Severances	Shallow Lake SAR Study
CAW-Saugeen Beach Severances	Meaford National Defence SAR Study
Siekierski Building Envelope	Pretty River Valley County Forest SAR Study
Murray Severance	<b>Simcoe County (1)</b>
Walker Severances	Copeland Forest SAR Study
Janssen Building Envelope	<b>Region of Peel (1)</b>
Knight Building Envelope	Ratray Marsh SAR Study
Thorn Severance	
Kramer Building Envelope	
Smith Severances	
D. Elliot Severance	
O'Conner Severances	
McLay Severances	
Burley Building Envelope	

### **Natural Environment Impact Assessment Reports for Aggregate Applications**

Southern & Central Ontario: 100+ Technical Reports for Pits and Quarries, above and below water table with successful representation at Ontario Municipal Board Hearing, Niagara Escarpment Hearings, County and Municipal Council Presentation and Legal Court Proceedings