

**Addendum to the Scoped EIS Report: Aqueduct x Gadsby City of Welland**  
**Final prepared by 8Trees Inc.**  
**Jan 5, 2022**



**Seasonal pool June 4, 2021**

## Table of Contents

INTRODUCTION: .....	1
Summary Environmental Planning Context City of Welland.....	1
Summary Environmental Planning Context Province and Region .....	3
City of Welland Parks Master Plan .....	5
EXISTING CONDITIONS .....	6
Ecological Land Classification (ELC) update.....	6
Woodland Aster Community .....	7
Ecological Assessment of the Seasonal Pool .....	11
Woodland Existing Conditions .....	19
Observations of Impacts to Woodland feature.....	23
Value of Reference Sites in Ecological Planning .....	28
ECOLOGICAL BASIS FOR DEVELOPMENT PLANNING .....	28
Niagara Region Planning Constraints Analysis .....	32
IMPACT ANALYSIS .....	34
Proposed Development .....	34
Mitigation of Impacts .....	38
WOODLAND RESTORATION OPPORTUNITIES.....	41
Post Construction Woodland Monitoring .....	42
LITERATURE CITED .....	43
APPENDIX A: 8Trees Inc. Staff and Associates (2021).....	45
APPENDIX B: Detailed Response to Peer Review and RMON Review .....	60
APPENDIX C: ELC Data Sheets.....	88
APPENDIX D: Data 2021 .....	95
APPENDIX E: Additional Correspondence .....	105

### List of Tables

Table 1. Summary of the soil core investigation completed in May 2020 and Oct 2021	7
Table 2. Distinctive characteristics for each woodland aster species	9
Table 3. Summary of Breeding Bird Surveys completed in May, June 2020, and July 2021	29
Table 4. Summary of Constraints analysis for identifying Significant Woodlands within Urban areas Niagara Region Policy 7. B .1.5	33
Table 5. Impacts of Development on Ecological Land Classification Community (ELC)	36
Table 6. Relative Elevation Survey of Seasonal Pool	96
Table 7. Birds identified from survey 3	101
Table 8. Summary of ELC Community and soils investigation 2020, 2021	102

## List of Figures

Figure 1. Current land use zoning for the subject lands	2
Figure 2. Earliest publicly available aerial image of the woodland is 1921	4
Figure 3. City of Welland Parks Master Plan 2019	5
Figure 4. Natural Areas in the City of Welland In the vicinity of the Subject lands	6
Figure 5. Ecological Land Classification (ELC) vegetation community mapping for the subject lands and adjacent areas.	8
Figure 6. Woodland Aster field data 2020 and 2021	11
Figure 7. Relative Elevation of Seasonal Pool Area	13
Figure 8. Photographic Records of the seasonal pool area.	14
Figure 9. Panoramic View of Seasonal Pool area April 14, 2020, view north	15
Figure 10. Panoramic View of Seasonal Pool area April 14, 2020, view south	15
Figure 11. Panoramic view of Seasonal Pool area August 11, 2020, view north	15
Figure 12. Typical water levels in fall and summer	16
Figure 13. Combination of relative survey elevation mapping and photographic records of seasonal water levels.	16
Figure 14. Roof top water is an extraneous addition of storm water into the seasonal pool area within the subject lands.	17
Figure 15. Leaning Tree example found in the vicinity of the seasonal pool area	18
Figure 16. Oak tree cross section June 10, 2021, showing the extensive root decay	18
Figure 17. Tree size measured as diameter at breast height (dbh) cm	20
Figure 18. Tree Decay Class for subject lands and city lands (Aqueduct Park)	20
Figure 19. Tree Health Classification	21
Figure 20. Comparison of Age Estimates based upon standard vs ring-interval methods	22
Figure 21. Recommended Development Constraint to protect the seasonal pool feature	34
Figure 22. The combined development constraints to protect confirmed ecological functions supporting species at risk bats	35
Figure 23. The combined buffer and two added constraint areas.	36
Figure 24. Proposed development area overlaid onto the most recent publicly available aerial imagery of the subject lands with combined buffer and additional constraints added to protect ecological functions confirmed within the remaining woodland with Aqueduct Park and the Subject lands.	40
Figure 25. The proposed development plan and combined buffer with the tree locations ( $\pm$ 5-10m GPS error) from data collected during the tree inventory (Dec 2019 and May 2020; EIS FEB 2021). This data was used to estimate the number of trees removed within the development footprint	105

*Cover photograph taken on June 4, 2021, looking north at the seasonal pool area.*

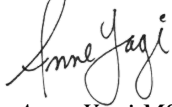
## Photo Records

Photo 1A and 1B Hazardous trees	24
Photo 2A and 2 B Dumping of extraneous organic matter	24
Photo 3 New east-west drainage ditch first observed in Nov 2019	25
Photo 4 Conversion of woodland to housing with mowed back yards	25
Photo 5 Raking woodland ground cover, adding wood piles.	25
Photo 7A to 7F. Instances of using woodland as a dump for extraneous organic waste and soil.	26
Photo 8 A and B. Dumping Plastics	27
Photo 9. Trampling of ground cover	27
Photo 10. Dumping extraneous soil into woodland	27
Aster Images Sent to NHIC	116

## Declaration

*Data collected from the scoped EIS, and the addendum report were completed using appropriate scientific methods, during optimal field conditions and during the appropriate biological seasons for finding Species at Risk and other rare species and by experts in their respective fields. We found no rare, or SAR species occupying or using habitat features within the subject lands. However, we did confirm that the air space above the seasonal pool area was used by flying SAR bats during the maternity roosting season likely for the purpose of feeding on flying insects. We also confirmed SAR bats roosting within the tall Aqueduct Park Oak trees adjacent to the Subject lands. In addition, Schreber's Aster (S2) was confirmed within Aqueduct Park only. No White Wood Aster was found after two seasons of searches within the subject lands. Therefore, our preferred mitigations include the protection of important ecological functions such as Aqueduct Park maternity roosting SAR bat trees, and the seasonal pool feature. In addition, we noted many instances of human impacts on the woodland including the recent conversion of nearly 0.5 ha into housing and back yards. Human Impacts also involve the remaining woods within Aqueduct Park and the subject lands. We recommend a woodland restoration and stewardship project to ameliorate these harmful effects. Further, and to promote sustainability of the remaining woodland we recommend gifting the undeveloped portion of the woods to the city with the ongoing management by the City of Welland Parks. Details are provided through the EIS (Feb 2021) and this addendum report.*

Sincerely,



Anne Yagi MSc., EP, CERP

## INTRODUCTION:

This addendum reported was compiled to address peer review comments (April 28, 2021), public comments (May 4, 2021), and Niagara Regional Staff review comments (Email May 14, 2021) of the February 2021 EIS. Detailed comments are within (Appendix B). From November 2019 to October 2021, we undertook a scoped EIS targeting surveys to define ecological functions within the subject lands with respect to rare species. We have all the necessary professional expertise at 8Trees Inc. to conduct an Environmental Impact Study (EIS; Appendix A) and we have undertaken ecologically appropriate studies over two field seasons and have not identified any natural heritage features as defined by the provincial policy statement and the Region of Niagara policies, within the subject lands.

The purpose of this addendum is to provide added ecological context for the existing conditions of the woodland within the subject lands, characterizing and delineating the seasonal pool feature and completing an ecological impact assessment for the proposed development as provided (Figure 22; EIS Feb 2021).

### Summary Environmental Planning Context City of Welland

Most of the subject lands was owned by Lucchetta Builders since 1999 and is currently zoned low density residential (Schedule B1; City of Welland Official Plan- May 2010). The subject lands and Aqueduct Park are not included as part of the Core Natural Heritage System (Schedule B; City of Welland Official Plan). In 2019, a small parcel including the adjacent Gadsby lot was purchased from the City of Welland by Lucchetta Builders Inc. The parcel consists of two legal parts, Part 1 and Part 2. The City of Welland acquired Part 1 in tax arrears in 1969, and acquired Part 2 from Dorothy May Baldwin in 1990 for a market value consideration. This parcel is currently zoned “Open Space Recreation.” The Aqueduct Park is also currently zoned “Open Space Recreation”. Therefore, the subject lands currently zoned “low residential” are sandwiched between two areas of land zoned “open space recreation” (Fig. 1). The Planning Act, provincial and regional policy review and EIS are triggered because there is a need for rezoning the subject lands to accommodate a higher density development plan (RMON, 2008, 2018, 2020).

Open space recreation permits a variety of passive leisure activities such as picnic areas, swings, golf courses, arenas, curling rinks, sports fields, trails, and benches. Most of these uses do not fit within a natural area or woodland management policy. Even though a natural feature is included within the open space zoning and low density residential, it has no environmental protection or environmental conservation overlay at the present time. The City’s official plan and zoning bylaw does not recognize this woodland as a natural area for Environmental Protection or Conservation even though it was once a much larger woodland extending northward toward Seaway Mall (1921 and 1934 aerial imagery; Fig. 2).



Today the woodland is divided into multiple land use zoning designations (low residential and open space), therefore, only a building permit is required to build within residential zoned lands. In addition, there is no tree cutting bylaw in place for the City of Welland and the Niagara Region Tree Bylaw does not apply due to the small woodland size (< 2ha; RMON, 2020). The Niagara Peninsula Conservation Authority regulations also do not apply (NPCA 2020; Appendix E; EIS Feb 2021). Therefore, there are no regulations in place preventing the landowner from tree clearing and applying for a building permit within the privately owned woods, except the mandatory timing restrictions to protect breeding migratory birds (Migratory Birds Convention Act) and SAR bats protected under the Endangered Species



Figure 1. Current land use zoning for the subject lands (outlined in black)

Act. The total combined timing restriction to protect migratory birds and SAR bats is March 1 to Sep 30 (Fig. 1).

The City of Welland’s Official Plan also includes broad references to ecosystem health, climate change and environmental sustainability. There is even a target for 30% of the land area as forest or wetland cover (City of Welland, 2019; page 111; 6.1.3.2.A). However, the city has not put into action a proactive restoration or development planning approach to achieve these goals. A proactive approach would be to designate extant woodlands for protection, stewardship, and restoration to meet the 30% natural forest cover goal. One way to start now is to swap land

parcels of privately owned woodlands for non sensitive developable lands. An example of non sensitive lands would be maintained grassed lots owned by the city. According to the Official Plan, developers are “intended to contribute to the environment through the provision of funds or green space and vegetation” (City of Welland, 2019; page 119; City Official Plan). Provision of green space may be a possible approach to resolve possible conflict at the Aqueduct and Gadsby Site and will help meet the broad environmental goals set out in the City and Region’s official plans and policies.

### Summary Environmental Planning Context Province and Region

Natural Heritage Features are under provincial and regional protection to guide development planning in Ontario. Natural heritage features are provincially significant wetlands (PSW), provincially significant Life Science Areas of Natural and Scientific Interest (ANSI), significant habitat of endangered and threatened species, key natural heritage features within the Greenbelt Natural Heritage System, significant woodlands, significant wildlife habitat, significant habitat of species of concern, fish habitat, significant valleylands, key hydrologic features and other evaluated wetlands (Ch. 7, Table 1; RMON,2008). The Niagara Region (RMON) defines the criteria for defining what is and what is not a key natural heritage feature. However, not all natural areas on the landscape are scientifically evaluated (i.e., Ontario Wetland Evaluation System- OWES; Area of Natural and Scientific Interest; Species at Risk Habitat) as natural heritage features. An Environmental Impact study is used, in part to evaluate species at risk habitat and other rare species habitat which is not mapped but suspected to occur.

In the case of the subject lands, the small, wooded area with a seasonal pool (i.e., slough feature) are natural features that do not meet the planning definitions of a natural heritage feature (ch. 7, RMON, 2008). These small remnant natural areas may have once been part of a larger natural heritage system but now have been reduced in size, quality, and ecological functions because they became smaller, more impacted, and more isolated by urban development overtime (Fig. 2).

Small urban woodlands have inherent social and ecological values that can be retained for a long time with proper management. These areas also have potential development value as urban “in fill” within a provincial mandate to increase the density of housing within urban boundaries and reduce urban sprawl. Therefore, our recommendations reflect a balanced social-ecological approach by evaluating rare species ecological functions within the remaining woodland feature and protecting those functions.



**Figure 2. Earliest publicly available aerial image of the woodland is 1921. A larger woodland extends north with small gaps between next sparsely forested areas surrounded by active agriculture fields and an orchard. Brock University Map library**



## City of Welland Parks Master Plan

We reviewed the latest City of Welland Park Master Plan (City of Welland, 2019; page 53; Figure 7; 2019). We did not find any specific reference to Aqueduct Park other than a conceptual public trail along Hilda St. (Fig.3). There are no specific management recommendations for city owned natural areas parks. In fact, the document classifies the former Welland Shipping Canal now referred to as the “Welland Recreational Corridor” and not the Welland River as a natural area (Page 37; Fig. 4). There seems to be a broad application of the term “natural area”, with an emphasis on making public use of these areas instead of putting programs and policies in place to restore and foster stewardship of natural areas to achieve the broad goals of 30% natural cover, “ecosystem health and environmental sustainability”. Natural woodland areas are not trees with underlying lawns- that is a treed park with minimal biodiversity. A woodland is an integrated natural feature of biological, physical, and chemical properties acting above and below the ground surface that are linked through natural processes.

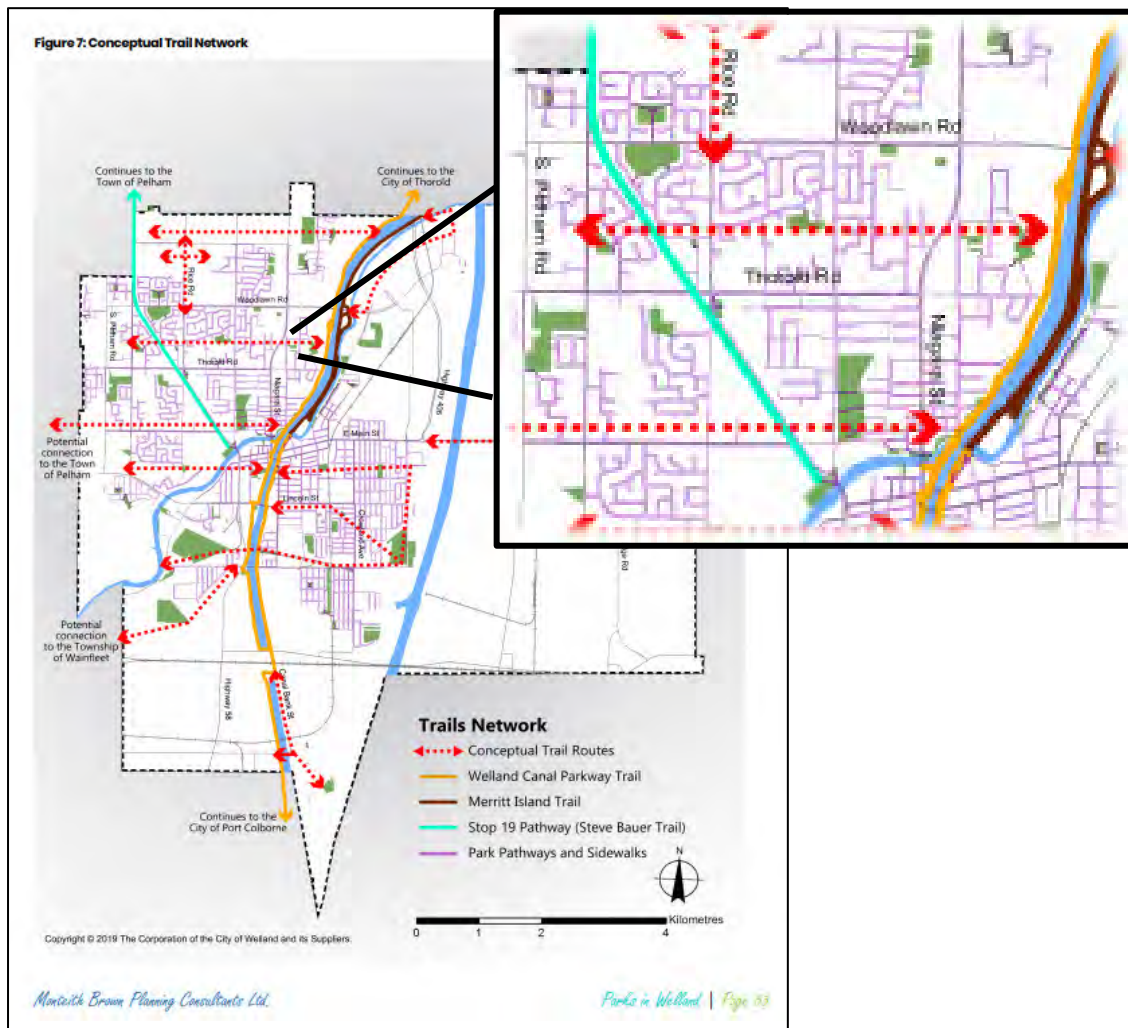
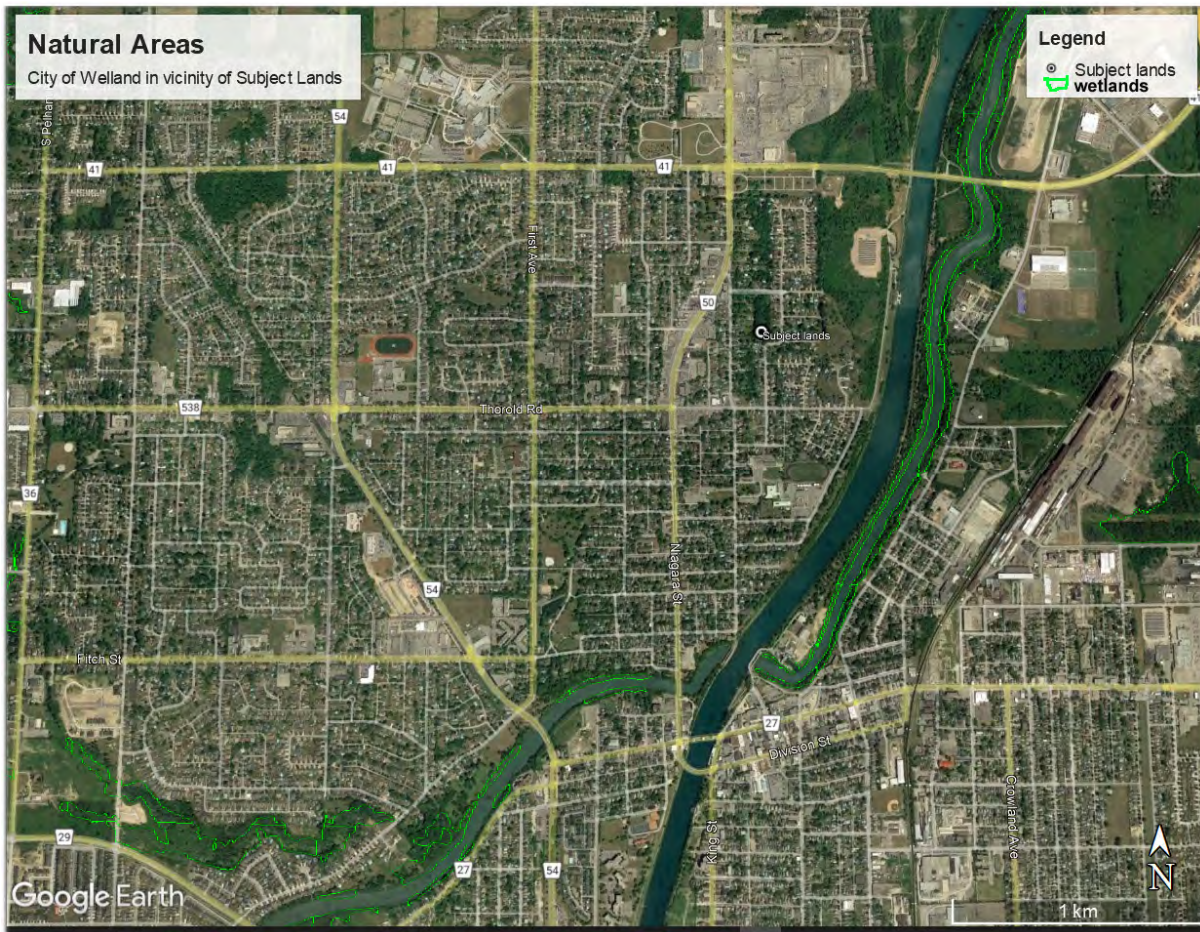


Figure 3. City of Welland Parks Master Plan 2019



**Figure 4. Natural Areas in the City of Welland In the vicinity of the Subject lands. Only the Welland River and Draper’s Creek are provincially significant wetlands (key natural heritage features). Aerial image July 2018 courtesy of Google Earth.**

## EXISTING CONDITIONS

### Ecological Land Classification (ELC) update

Based upon the peer review and peer review comments, we expanded our soil investigation and completed a surface relative elevation survey to further define the vegetation community boundaries and the seasonal pool within the woodland (Fig. 5). The subject lands are characterized by a change in surface topography that is higher along the north and western boundaries and gradually tapers to a small low-lying area in the east (approx. 0.041 ha). The ground surface is also higher along Gadsby Rd and surrounding developed lots and drops down with sudden elevation changes adjacent to the Gadsby lot then tapering to the same seasonal pool (Fig. 5). Soils are silty clay over heavy clay throughout the woodland except for the northern portion in Aqueduct Park that has an upper sandy lens layer (variable depth 0-40cm; Table 1). This sandy soil layer supports a mixed woodland aster community dominated by Large-leaved

Aster (*Eurybia macrophylla*) with a dominant Red Oak-American Beech treed canopy. In contrast, a thick growth of poison ivy blankets the woods within the Subjects lands which have a mixed oak-maple canopy (Fig. 5).

**Table 1. Summary of the soil core investigation completed in May 2020 and Oct 2021. Survey details are in Appendix B.**

Vegetation Community	Soil Description	Upper sandy lens	Silty Clay over Clay	Depth to Mottles (cm)
FODM2-4	sandy/silty clay/clay	Yes (0-40cm)	yes	40-57
FODM9-2	Silty clay/clay	No	yes	17-22
Gadsby Rd. Lot FODM9-2	Silty clay/clay	No	yes	27

ELC vegetation community mapping follows the provincial conventions that use a combination of soil moisture and dominant vegetation species (Irvine, 2003; Lee et al., 1998; Lee 2008; Crins et al., 2009; Webster et al., 2018). There is an obvious southerly drop in elevation from the Aqueduct Park woods towards the Subject Land woods. This is the divide between the FODM2-4 and FODM9-2 vegetation communities (Fig. 5). The surface elevation survey confirmed the presence of a small, shallow low-lying area (approx. 0.041ha) along the eastern portion of the subject lands and north of the Gadsby Rd. lot (Fig. x). This area is a swamp (SWDM1-3) inclusion within the FODM9-2 vegetation community also known as a seasonal or vernal pool (Fig. 5).

### Woodland Aster Community

Aster species are generally widespread in Ontario, occupying a broad range of habitats such as fields, meadows, ditches, shorelines, swamps, marshes, bogs, and fens as well as disturbed areas. The woodland aster group including members of the genus *Eurybia* sp., tend to occupy a unique niche because they are tolerant to shade, well-draining sites and dry soil conditions and are therefore predominantly found within the forest floor of upland forests with a partial or closed canopy (MECP, 2019). Woodland asters generally bloom from July to October and have distinctive leaves, stems and flowers (Table 2). The Large-leaved Aster (*Eurybia macrophylla*) is a common species; however, the White Wood Aster (*Eurybia divaricata*) is a threatened species in Ontario and protected under the Endangered Species Act (ESA). Woodlawn Park, Ricelawn Park and Aqueduct Park woods in the City of Welland were confirmed as supporting populations of White Wood Aster (*Eurybia divaricata*) a threatened species in Ontario (MECP, 2019). Another woodland aster, Schreber’s Aster (*Eurybia schreberi*) status S2, is considered rare in Ontario but has no status under the Endangered Species Act (ESA 2008). Typically, White Wood Aster (WWA) is the last species to bloom beginning later in August through to October (Table 2).



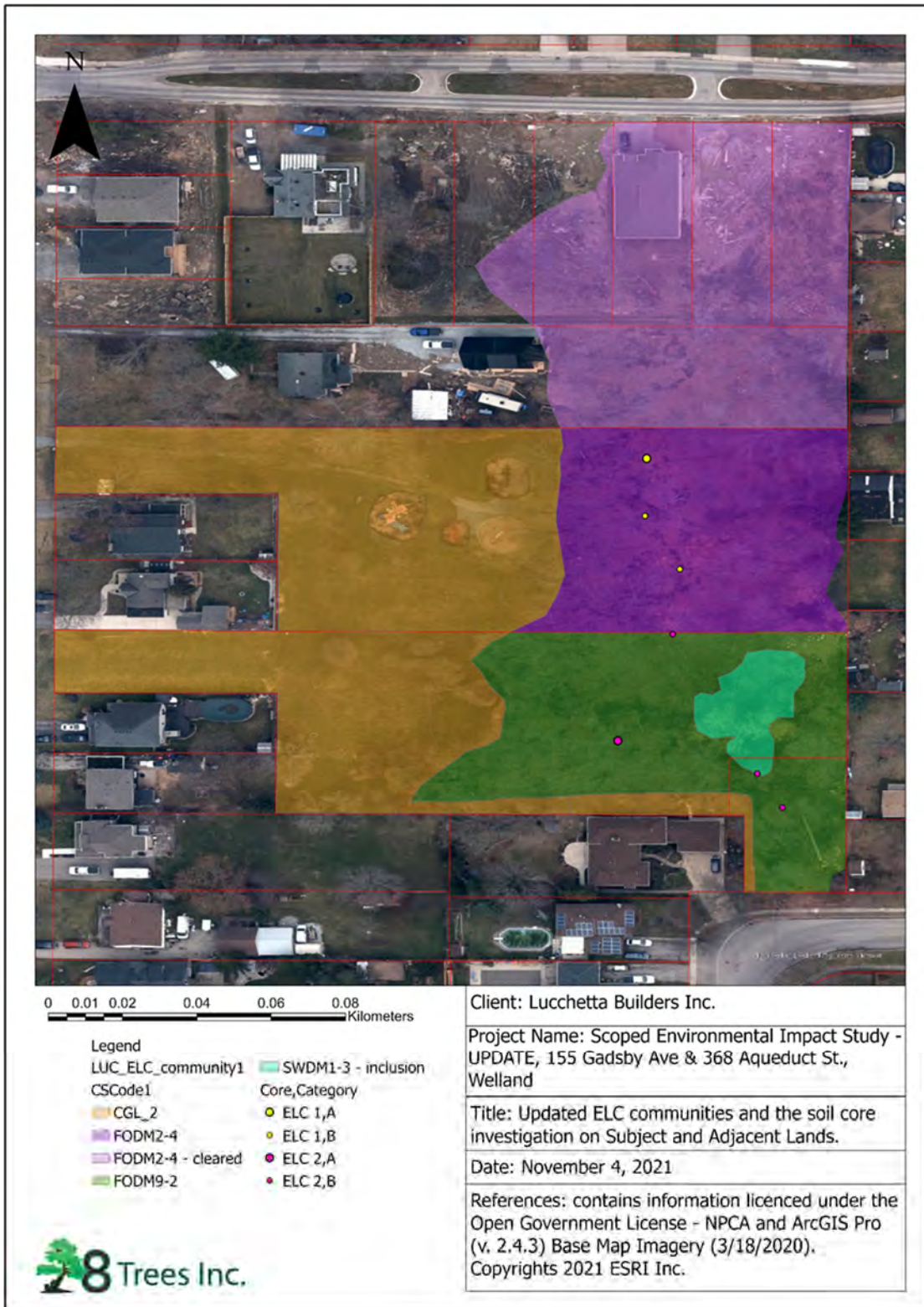


Figure 5. Revised Ecological Land Classification (ELC) vegetation community mapping and expanded soils investigation for the subject lands and adjacent areas.

Table 2. Distinctive characteristics for each woodland aster species. Details and photographs available in Appendix E (<https://uwaterloo.ca/astereae-lab/research/asters/eurybia/>).

Name		Flowers	Leaves	Stems
Large-leaved Aster (Common species)	July to Oct	White-Blue-Violet, flat top cluster 8 to 90 flowers, 9 to 20 florets/flower; phyllaries round to blunt tip, glandular hairs present on flower stalks (peduncles) and phyllaries	Large basal leaves heart-shaped, notch at base; basal leaves wither at flowering	No zig-zag
Schreber's Aster (S2)	Aug to Sep	White-Yellow; flat topped cluster many flowers; large cylindrical involucre of appressed eglandular linear oblong-lanceolate phyllaries	Upper stem leaves different from lower leaves; leaves alternate, petiole changes from base to upper plant	Very slight zig zag
White Wood Aster (Threatened THR)	Aug to Oct	White- flat top cluster, not dense, 5 – 10 florets; central disc yellow changing to red-purple, eglandular phyllaries rounded to pointed tip white to green at point < 15mm, eglandular peduncles	Ovate, sharp - coarse teeth along margins, pointed tip slight twist, basal leaves drop at flowering time, leaves only on flowering stem	Slight zig zag pattern, stems with hair near flower array; reddish colour late in season

### Methods

Woodland asters are visible as basal leaf clusters in June and July. Therefore, we mapped the occurrences of woodland asters (patches and individuals) throughout the subject lands and Aqueduct Park during the growing season of 2020 and 2021 (Fig. 6). Then returned later in the season (Aug - Oct) to photograph and discern species. Albert Garofalo was the local expert who investigated both years as well as our own field staff. Digital photographs were also sent to NHIC and the University of Waterloo Aster Lab (Fig. 20; Appendix E). Two pressed samples of suspected Schreber's or WWA were sent to local experts at Brock University for identification (Appendix E) and others collected by Albert were sent to the Waterloo Aster Lab. During the 2020 investigation we also observed woodland asters within the woods to the north of Aqueduct Park but did not investigate further onto private lands.

### Subject Lands Investigation

In August and September 2020 (repeated in 2021), we searched the subject lands for the White Wood Aster and found only Large-leaved aster along the northern edge limit. We sent digital images of asters found within the subject lands to the provincial natural heritage information centre (NHIC), who confirmed the common species, Large-leaved aster (EIS 2021). We also asked a local botanical expert, Albert Garofalo to check for the presence of White Wood



Aster (WWA) during the appropriate blooming season (September) and he also did not find any WWA within the subject lands in 2020 or 2021. Large-leaved Aster was confirmed, as present within the subject lands along the northern boundary edge where the sand soil lens transitions into silty-clay soils (Fig. 6; Appendix E).

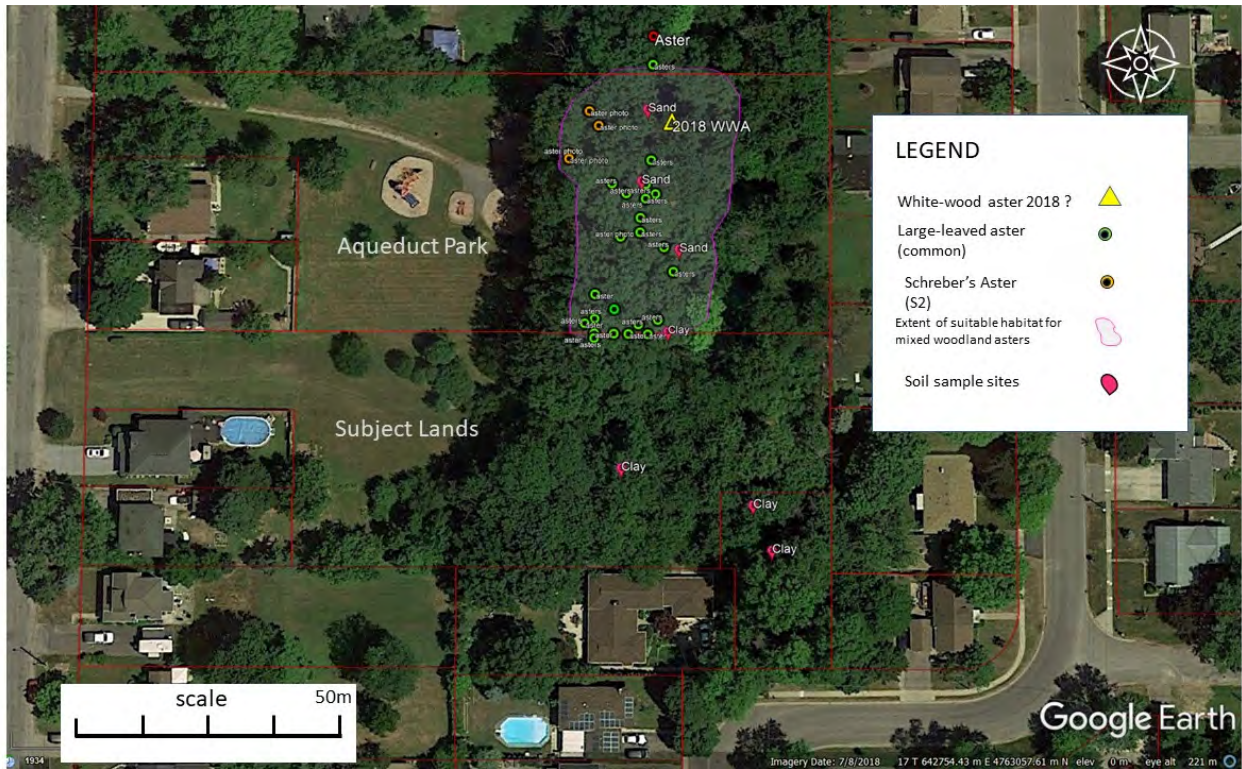
**Based upon the UTM from the recovery strategy (from Paul O’Hara; Fig. 6), the WWA was never confirmed within the subject lands during 2018 field surveys for the Recovery Strategy and during two seasons (2020 and 2021). Based upon the lack of a sand soil lens and lowland conditions with tight silty-clay soils and a preponderance of poison ivy within the subject lands, habitat within the subject lands is not suitable for the WWA (MECP, 2019). Suitable habitat for WWA is contained only within the upland woods in Aqueduct Park and the remaining private land upland woods north to Hilda St. that have well-draining sandy soils.**

#### Aqueduct Park Investigation

For Aqueduct Park, in 2020, Albert also collected a sample of aster taken as a suspected Schreber’s Aster (S2) and submitted the sample to the herbarium at Royal Botanical Gardens (RBG), however the results were not available at the time the EIS was submitted. In 2021, we repeated the same investigation with the same experts and sent digital photographs to NHIC for their opinion. The results of our second field investigation confirmed Schreber’s Aster and Large-leaved aster as present in the Aqueduct Park woods, by both NHIC (via digital pictures) and Albert Garofalo (via field investigation) and our own staff. In contrast, John Semple (Waterloo University Aster Lab) thought the digital pictures looked like WWA but also stated, “Someone seeing them up close might have a different opinion” (Appendix E). A field investigation allows viewing of the plants in hand to discern differences in characteristics such as size of peduncles, ray colour, and the absence of glands (eglandular) on peduncles and phyllaries of the flowering plants (Table 2). Both Schreber’s and WWA have eglandular phyllaries, Large-leaved Aster has glands on the peduncles and phyllaries and WWA has short glandless peduncles (Table 2). When all three species may be present in the same overlapping patch (EIS Feb 2021- Figure 8), identification is challenging and is best done in the field when WWA is flowering (late August to October).

Regarding Aqueduct Park woods, we suspect that site conditions may have changed since 2018 when WWA was first reported as present (MECP, 2019) or the WWA was misidentified. In 2018. Approximately 15 stems of WWA were counted in Aqueduct Park upland woods (O’Hara, 2018; MECP, 2019; Fig.6). Fifteen stems are a relatively small number compared to other local sites which have over 1000 stems reported (MECP, 2019). WWA, as well as the other woodland asters, are a perennial species and they are pollinated by a variety of insects and can grow from seed dispersed by wind or form colonies along rhizomes and may hybridize with other asters (MECP, 2019). We suspect WWA was not detected in the upland woods due to microhabitat changes since 2018 which may have lowered the abundances beyond detection. WWA may also grow beyond our survey limits into adjacent suitable habitat areas (Private

woodland to the north) and may show up again when favourable growing conditions return. However, recent woodland losses north of Aqueduct Park (Photo 4) including the addition of a ditch (Photo 3), and likely changes in the ground flora in 2020 to 2021 may reduce the likelihood of a favourable return (Fig. 6) which also puts into question the sustainability of a population at this site. It is also possible that the White wood Aster was misidentified during the 2018 field work. The specimens need to be looked at in hand to discern the presence or not of glandular phyllaries and peduncles (Table 2).



**Figure 6. Results of the Woodland Aster Community investigation during two field seasons (June to September 2020 and August-October 2021). The 2018 Recovery Strategy observation location is included as well and the soils survey results. Woodland aster occurrences are confined to the upland woods that are well draining with a sand soil lens profile from the northern limit of the subject lands through Aqueduct Park and northward into the private woodlands. Aerial image July 2018 courtesy of Google Earth.**

## Ecological Assessment of the Seasonal Pool

The RMON requested an assessment of the vernal pool feature and a “water balance” study, following the public meeting and regional review of the scoped EIS (Feb 2021; Appendix). This assessment was not required in the original terms of reference. A “water balance” study is also known as a water budget and is normally required when the amount of water entering and exiting a natural feature is expected to change and therefore possibly cause a series of negative effects on the natural feature because of the development. A wetland is in water balance when input = output on a seasonal basis and in isolated pools such as this site within clay soils, monitoring the surface water visually throughout the season, is a suitable method.

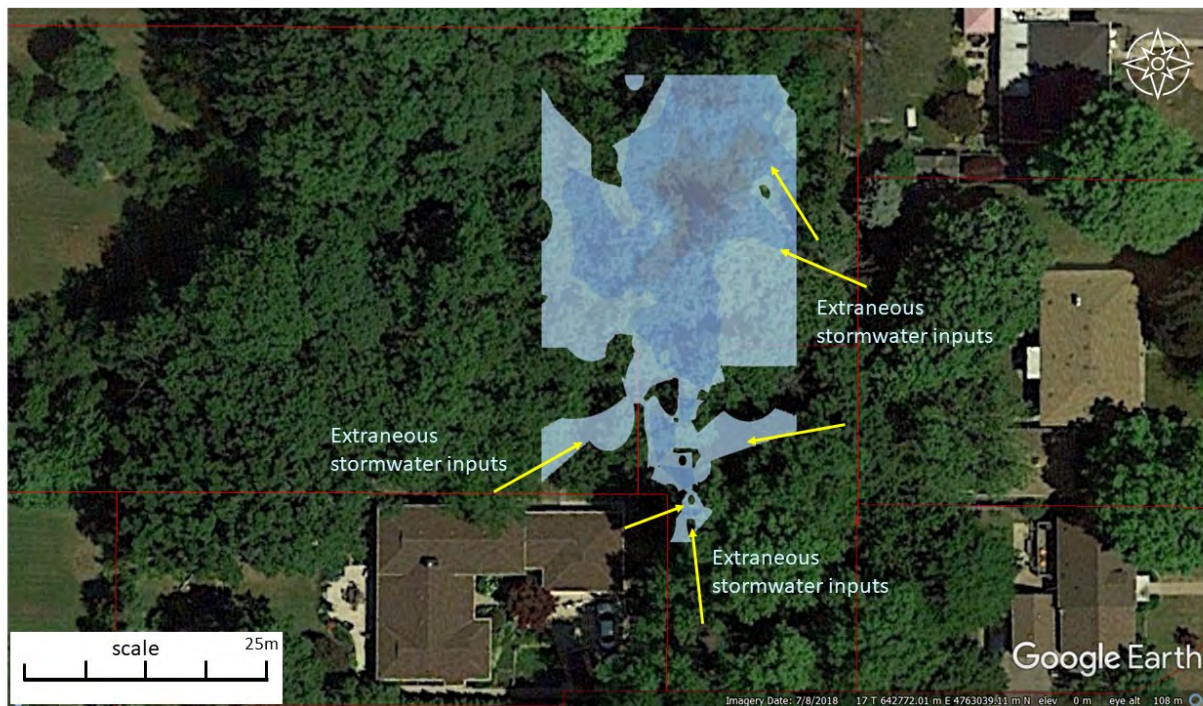
Precipitation (rain and snow) tends to pool in isolated depressional areas where the size of the catchment dictates the quantity of water (input). In clay soils surface water does not infiltrate into the bedrock groundwater table very fast. In fact, clay soil acts as an aquitard keeping seasonal water perched well above the underlying bedrock aquifer. Therefore, surface water, formed from precipitation events tends to accumulate in depressions on the landscape until it eventually evaporates (output). Trees increase the rate of surface water depletion through the evapotranspiration of surface water in these low areas during the growing season. Generally, water accumulates in the depressions in the spring and dries down in June-July-Aug and refills slowly in late fall/ winter. Therefore, the seasonal water balance of surface water in a wetland depression in clay soils is zero (input = output). However, trees and how well they are growing can provide signs of water budget imbalances such as the presence of root rot decay, slow annual growth, and the presence of hazardous and leaning trees. If higher than normal water levels exist in the woodland, and they exceed the species natural tolerances to water, then trees grow poorly and tend to lean toward the water feature in areas where water levels maybe exceeding natural duration tolerances of the species. Water imbalances cause growth and decay problems in trees. Higher than normal water levels cause the development of “root rot” decay, which also increases cavity formations and trunk decay at the base of the tree which initiates “tree fall” processes. Similar effects on tree species happen in sites that are artificially drained and wet tolerant species tend to exhibit canopy die off, poor growth and trunk decay. Since this site is not drained, if there were problems with excessive water levels, we would expect to find leaning and hazardous trees from root rot decay.



**Methods:** The shape of the land surface depression is fixed, and therefore dictates the size of the seasonal pool area. We conducted a relative elevation survey across the seasonal pool area into the adjacent uplands and documented instances of incomplete lot grading, tree leaning and looked for extraneous sources of stormwater (i.e., roof top spouts, and ditches). We used a laser level and stadia rod with a handheld GPS and recorded relative elevations along transects across the depression area. We recorded relative elevations along fixed transect lengths to correct GPS points error. We photographed the seasonal pool area during various site visits From Nov 2019 to 2021 and related the surface elevation mapping to the seasonal water levels.

### Results:

Our survey indicates that developed lots are at a higher grade than the surrounding woodlands and that there are likely 3- 6 extraneous sources of water inflows toward the seasonal pool from the surrounding developed lands and there is no outlet channel (Fig. 7). We also found steep changes in elevation between developed lots along Gadsby road and the woodland feature. Very likely the surrounding developed area was graded and filled to facilitate housing development and the woodland was not protected in a similar manner.



**Figure 7. Relative elevation surface. The darker blue represents the deepest areas that hold water the longest. The yellow areas are stormwater input channels from surrounding higher graded developed lots. We found no outlet channel. Aerial image July 2018 courtesy of Google Earth.**

We compiled photographic records and field notes since 2019 and confirm high water levels in the spring inundating tree root areas surrounding the shallow depression (Fig. 8, 9, 10). Water levels steadily decline through the early summer (Fig. 9 to 12) and the depression is completely

dry by mid/late July to October (Fig. 11). Water levels begin to refill the depression in November depending on precipitation events (Fig. 9). We then related these observations to the elevation survey mapping (Fig. 13).



**Figure 8. Photographic Records of the seasonal pool area. Top Left is March 2020. Bottom Left is April 2020 and Right is June 2020 during the bat survey.**

We also found roof top stormwater leaders directed toward the seasonal pool area from a house along Gadsby Rd (Fig. 14). The roof top connections very likely contribute an extraneous source of water into the seasonal pool (Fig. 7). The water discharging from eavestrough leaders, and the surrounding developed lands follows a foot path that was used as a public trail that extends toward the pool feature and is lower in elevation relative to surrounding lands (Fig. 7). The urban development surrounding the woodland is likely also contributing to extraneous water sources because the extant development areas are higher in elevation than the woodland and the elevation change is steep and not natural. We also found leaning trees in the vicinity of Gadsby Rd and the seasonal pool (Fig. 15). In July 2010 one of the leaning red oak trees was cut down and shows root rot and extensive trunk rot (Fig. 16).





**Figure 9. Panoramic view of seasonal pool area April 14, 2020, looking north toward Aqueduct Park.**



**Figure 10. Panoramic view of seasonal pool area April 14, 2020, looking south toward Gadsby Rd**



**Figure 11. Panoramic view of seasonal pool area August 11, 2020, looking north toward Aqueduct Park**





Figure 12. Typical water levels in fall and summer. Left Photo is Nov 2019 and Right Photo is June 2021



Figure 13. Combination of relative survey elevation mapping and photographic records of seasonal water levels. Aerial image July 2018 courtesy of Google Earth.





**Figure 14. Roof top water is an extraneous addition of water into the seasonal pool area within the subject lands. Pipes were found as above (top) and from the back of the house (bottom) that discharge overland into the woodland's seasonal pool feature.**





**Figure 15. Leaning tree example found in the vicinity of the Seasonal pool area is leaning toward the water feature and show signs of root rot.**



**Figure 16. Red Oak tree cross section June 10, 2021, showing the extensive root decay extending up trunk. This was a leaning tree near Gadsby Rd. lot.**

## Conclusion:

We conclude that stormwater from the surrounding urban development is discharged into the woodland creating higher than normal water levels in the subject lands. The seasonal pool very likely has been the recipient of extraneous storm water runoff since the houses and roads were constructed along Gadsby Rd. (est. 60 + years). Since there is no connected outlet channel for the seasonal pool, water would be retained at higher elevations in the lands surrounding the seasonal pool area. This means water would extend higher up the natural slope and saturate soils in root zones of upland tree species (Red oak) that cannot tolerate prolonged water inundation. This in turn would cause tree roots to decay, cavities to form especially at the base of trees causing trees to lean and become hazardous over time (Fig. 15 to 16). Therefore, even though the pool area is in seasonal balance in terms of water storage, the trees surrounding the feature are leaning. Trees tend to lean toward the water feature in areas where the water levels may be exceeding natural duration tolerances of the trees causing “root rot” decay, increasing cavity formations at the base of the tree and initiating “tree fall” processes.

## Woodland Existing Conditions

The woodland feature, located between Gadsby Rd. to the south and Hilda Street to the north, was 0.953 ha in size when we began our EIS studies in 2019. Since 2019, about one half (0.468 ha) was converted into housing with treed back yards and a mowed understory and is no longer a woodland (Fig. 5). We requested copies of the EIS(s) from the Hilda St. developments from the City of Welland and the Region of Niagara as background and found that, no EIS(s) were required because no natural heritage features were identified even though the woodland existed prior to 1921(Fig. 2; Appendix E). We also asked the province (MECP) whether an Endangered Species Act clearance was given for the Hilda St. development, and they also received no prior notice of this development along Hilda St. (Appendix E). Today the remaining woodland consists of 0.485 ha that is part city owned Aqueduct Park woods (0.254 ha) and part subject land woods (0.231 ha; Table 5).

**Methods:** We completed a tree inventory of all trees within the woodland > 4cm dbh and an inspection of tree quality (species, size, decay class, health) in Aqueduct Park and the Subject Lands woods during the winter 2019 and spring of 2020 (MNRF, 2017; EIS Feb 2021).

**Results:** The distribution of trees within the subject lands is skewed toward smaller sized trees with a peak at 15 cm dbh (mean 24.57 cm  $\pm$  SD 18.39 cm) compared to Aqueduct Park (mean 38.05 cm  $\pm$  SD 17.18 cm) indicating the distribution of smaller trees favour the subject lands (Fig. 17). The city land trees show a more even size distribution with fewer small trees and a slight peak at 40cm dbh (Fig. 17). In terms of tree decay status, both the subject lands and city lands had a similar distribution with most trees being decay class 1 which are healthy, live trees (Fig. 18). In terms of health status both city and subject lands also have a similar distribution of healthy, not healthy, and dead trees (Fig. 19). However, in terms of total number, there are more



trees within the subject lands exhibiting decay and are unhealthy compared to Aqueduct Park. Furthermore, eighteen trees within the subject lands were found leaning and no leaning trees were found within the city lands. Other than the differences in tree size (dbh), the presence of leaning trees within the subject lands and not within the city lands is the most significant difference between both properties.

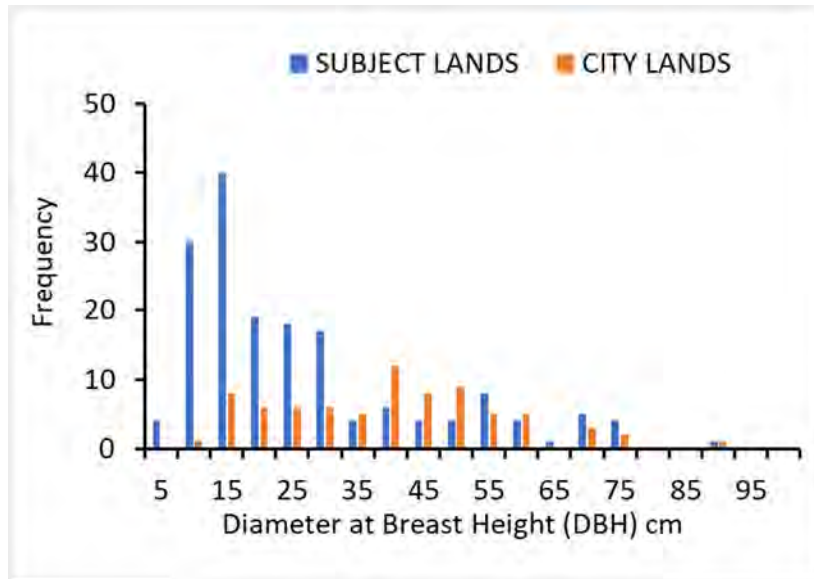


Figure 17. Tree size measured as diameter at breast height (dbh) cm of woodland within the subject lands and city lands. Data collect from Dec 2019 to May 2020.

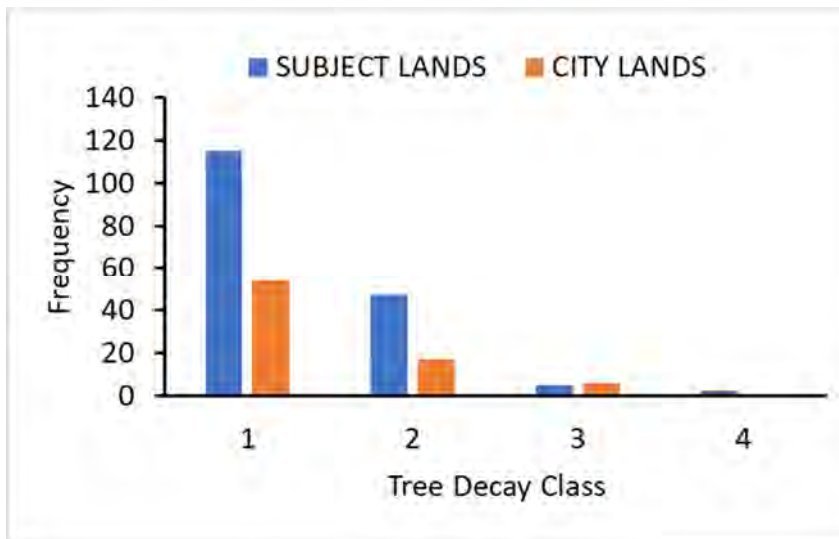
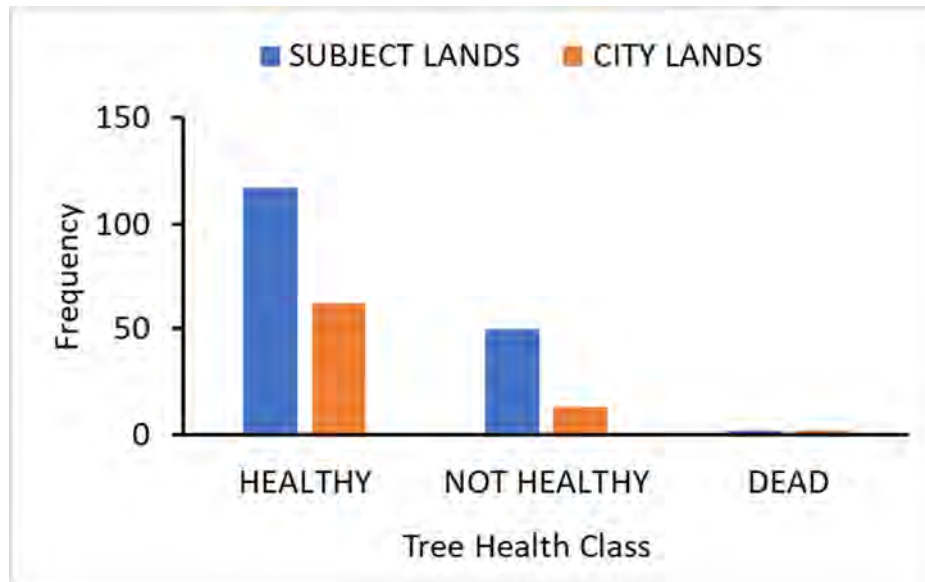


Figure 18. Tree Decay Class for subject lands and city lands. Decay class follows MNR 2017 methods (1 = healthy live, 2 = declining live with canopy loss, 3 = very recently dead with cavities, 4 = recently dead, bark peeling, large branches intact, 5 old dead tree no top, 6 = very old dead tree stem, no branches). Both subject lands and city land trees have a similar distribution but more trees with decay are within the subject lands.

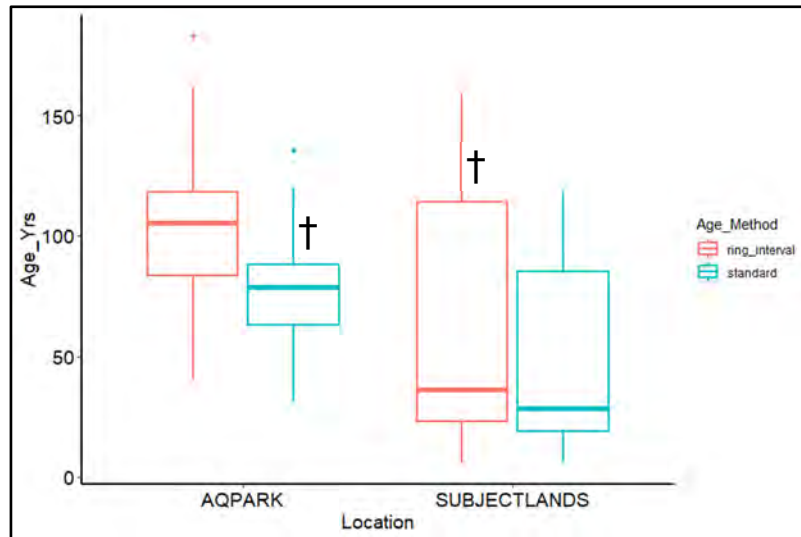


**Figure 19. Tree Health Classification as determined by our professional forestry expert. Healthy trees were living trees that did not lean or show signs of disease, sloughing bark, insect infestation or tree rot.**

The woodland in 1921 shows a dense treed canopy (Fig. 2) which suggests mature forest stand. There is a strong positive correlation between the size of the tree (dbh) and the tree's age (REF), with larger diameter trees being the oldest. We also know that different species grow at different rates (i.e., Growth Factors; REF) and the environment (temperature, season, climate, precipitation, nutrients, disturbances, soils etc..) also affects growth rate (REF). Therefore, within the same woodland with similar environmental factors, one would expect to find the same species and size (dbh) to be of similar age. Using Red Oak as an example species common across the woodland, we noticed that significantly larger individuals exist within Aqueduct Park than the subject lands ( $t(49) = 2.009$ ,  $p = 0.004$ ,  $\alpha = 0.05$ ). This significant difference suggests either that the trees are younger within the subject lands, or their growth rate is much slower.

We estimated the age of the red oak trees using two methods. One method is to count the rings from fallen or cut trees and apply the ring interval count (from cut tree stumps) to the radius measures of the remaining trees to estimate age (radius-interval method). Another method relates dbh and standardized growth factors to establish an age estimate (standard method). The radius-interval method takes into consideration the observed growth rate within the environment whereas the standard method applies a normal or expected growth rate factor. We then compared the interaction of two age methods for red oak trees both within and between sites in a linear model ( $\text{Age} \sim \text{Location} \times \text{Age Method}$ ). We found there is no difference in the standard age estimate for Aqueduct Park where we assume trees are growing normally and the ring-interval age estimate for the Subject lands where we observed environmental impacts ( $p = 0.526$ ). This means that we have statistical evidence that although trees are smaller within the subject lands they are of similar age as Aqueduct Park when we correct for growth rate differences. We then compared seven linear models including a null model to find the best fit age model for this

woodland (Akaike Model Selection). The best model includes the interaction of Age Method and Location plus the tree health factor (Age ~ Location X Age Method + Health). Finally, since we know the trees are significantly smaller within the subject lands, they are smaller in part because they are growing poorly which is likely due to environmental differences between each site and the most obvious difference is the extraneous accumulations of urban storm water into the seasonal pool area (Fig. 14 to 16).



**Figure 20. Box Plot of the Age Estimate of Red Oak trees using ring-interval and standard growth factor methods between Aqueduct Park (n= 50) and the Subject Lands (n= 35). The value “+” indicates no significant difference.**

**Conclusions:** Terrestrial ecosystems such as forests, woodlands and wetlands provide many ecological functions including water, nutrient and carbon cycling, species refugia and habitat. Carbon cycling is also referred to as carbon sequestration and functions best in uneven age class forests where there is periodic tree fall and ongoing recruitment of young trees through infilling of canopy gaps or through edge expansion (Norman and Kreve, 2020). In deciduous woodlands leaf litter, is in annual balance with decomposition rates equal to leaf accumulations in the fall. The annual water cycle in woodlands is also in seasonal balance providing flood storage, evapotranspiration, and temperature modification functions. However, in urban settings forest management is needed to maintain these ecological functions over time (Norman and Kreve, 2020). In the case of this woodland most of the larger trees are within Aqueduct Park woods which has poor natural recruitment of younger trees. The subject lands have smaller trees and leaning or hazardous trees, however the age of the red oak trees are similar across both sites once you correct for environmental differences (Fig. 20). Leaning trees include Pin Oak, Red Oak, Elm, Basswood, Hickory, Beech and Manitoba Maple. They range in size from 7 cm dbh to 68cm dbh which includes small and larger trees of which some have already been removed. We



counted 8 standing and many cut stumps with rotted stems nearby the seasonal pool and Gadsby Rd lot. The presence of hazardous trees indicate important deficiencies in how the woodland has been managed in both the Aqueduct Park and the subject lands. Urban woodlands need to be managed because natural “tree fall” is socially unacceptable. Therefore, there must be a willingness for society to support woodland management in the long-term before small woodlands can become sustainable natural features in urban landscapes.

### Observations of Impacts to Woodland feature

During our field surveys over the last two field seasons, we documented several occurrences of human impacts to this natural woodland feature compromising the ecological integrity of this woodland feature.

Photo 1 A and 1B. Formation of hazardous and unhealthy trees: this is especially evident in the Gadsby lot into the woods surrounding the vernal pool area. This area receives extraneous water from roof top leaders and from past lot development grading causing tree roots to rot, cavities to form at the base and trees to lean forming hazards.

Photo 2 A and 2B. Dumping of cut wood and leaf litter into the vernal pool: This action fills in the vernal pool feature decreasing quality, water depth and ecological functions. Normally in deciduous woods, leaf litter accumulations are in seasonal balance and there is no net increase in leaf litter. This is not the case here indicating there are impairments to this important ecological function.

Photo 3. Drainage, addition of swale into the upland woods: this action increases rate of drainage of the upland woods making the ground flora more vulnerable to drought. Drought stress was evident during our search for woodland asters in the fall of 2020.

Photo 4. Conversion of woodland into housing, back yards, side yards, gardens, and grassed areas, decreases biodiversity and ecological integrity of woodland. When the forest floor is converted to mowed grass the ecological sustainability of the deciduous woodlands is lost. The ground flora, tree seedlings, forest microbial community, seed bank and associated functions are gone north of Aqueduct Park woods there is no woodland.

Photo 5. Raking the woodland groundcover and adding wood piles into woodland aster habitat decreases ecological integrity and lowers biodiversity by covering up forest floor ecological functions.

Photo 6. Land squatting. Using subjects land by adjacent neighbors.

Photo 7 (A to F) Dumping of grass clippings, leaf litter, straw, extraneous organic matter beyond the natural composting capacity of the woodland such that organic matter is accumulating and increasing risk of disease and invasive species transfer into woodland and disrupting the forest ecology.

Photo 8. Dumping plastics and other human garbage into woodland.

Photo 9. Trampling of groundcover will decrease biodiversity and lower ecological integrity of woodland.

Photo 10. Dumping of soil fill into woodland decreases biodiversity, increases risk of disease transfer and invasive species and decreases the ecological integrity of woodland.



Photo 1A and 1B Hazardous trees.



Photo 2A and 2B Dumping of extraneous organic matter.





Photo 3. A new east-west drainage ditch along private woods increasing potential for the drainage of the upland woods first observed in Nov 2019.



Photo 4. Conversion of woodland to housing with mowed back yards.



Photo 6. Land Squatting in subject lands.



Photo 5. Raking woodland ground cover, adding wood piles.





Photo 7 A to F. Several instances of using woodland as a dump for extraneous organic waste and soil.





Photo 8 A and B. Dumping plastics.



Photo 9. Trampling of ground cover and garbage.



Photo 10. Dumping extraneous soil into woodland

## ECOLOGICAL BASIS FOR DEVELOPMENT PLANNING

### Value of Reference Sites in Species Presence Surveys

Reference sites are natural areas with the same eco-community and eco-site as the study area, but reference sites have retained a higher quality of ecological functions. Reference site sampling during similar time frames and methods helps place the species survey results into a local perspective, especially when we suspect limiting factors (i.e., habitat size, land management, localized disturbances, and weather variability) may affect the survey outcome. The reference site we identified for the greater Aqueduct Park woodland is nearby Woodlawn Park. Although also impacted by surrounding development, and roads that limit reptile and amphibians, the contiguous woodland size is much larger, and the entire area is managed by the City of Welland Parks and not by individuals with varying interests. Woodlawn Park has a similar vegetation community with rare species present, including the White Wood Aster (Threatened; confirmed 2020 and 2021), and the Eastern Flowering Dogwood (Endangered). WWA was not found either survey year within the subject lands or Aqueduct Park.

Although we did not have the resources to complete all species surveys within Woodlawn Park- with the same level of effort as Aqueduct Park, the breeding point count bird surveys were completed with consistent effort and methods and incidental observations were also completed for amphibians at both sites. No reptiles were encountered at either site which is consistent with low densities of reptiles within fragmented urban natural areas. Two amphibian species were found within the reference site (Chorus frog and American toad) and only the Chorus frog was found in study area. Although adjacent landowners reported an American toad was present in previous years within the subject lands, however, we cannot confirm the date or location of the photograph (Feb 2021 EIS, Appendix B). In terms of bird species, most of the common species were found at both sites. The more unusual species encountered were the Great Fly Catcher (S4) and Sharp-shinned Hawk (S5) at Woodlawn Park, and the Tufted Titmouse (S4) and Tennessee Warbler (S5) calling within the subject lands. The Great-Crested flycatcher prefers dense leafy forests and nests in cavity trees. Whereas the Tufted Titmouse prefers deciduous forests with tall trees. The Tennessee Warbler (S5), Nashville Warbler (S5) and Northern Parula (S4) are known to migrate through this area and were heard calling from the Aqueduct Park woods. The three species breed further north, and the two warblers are ground nesters and would not have much success in urban areas due to a preponderance of predatory domestic cats. Therefore, these three species were either misidentified or were stopping over on their way to northern breeding sites.

A third bird survey was completed in the morning of July 10<sup>th</sup>, 2021, for the subject lands, Aqueduct Park and Woodlawn Park. An Eastern Wood Pewee (SC) was confirmed within the Woodlawn Park Reference site. Otherwise, all three survey sites yielded a similar number of bird species observations with 34 species recorded overall (species richness range 0.5 to 0.529). During the July 2021 bird survey, Grey Tree Frogs were also heard calling in Woodlawn Park woods, increasing amphibian diversity from the reference site to 3 species. In contrast only 1 amphibian species was confirmed over two years of field site visits within the subject lands and Aqueduct Park woods.



**Table 3: Summary of Breeding Bird Surveys completed in May, June 2020, and July 2021. Species detection was counted for each survey event (n=3). The reference site was Woodlawn Park woods.**

Common Name	Species Name	Number of Encounters (all surveys)		
		Subject Lands	AQ Park	Reference Site
American Crow	<i>Corvus brachyrhynchos</i>	0	3	1
American Redstart	<i>Setophaga ruticilla</i>	0	1	0
American Robin	<i>Turdus migratorius</i>	3	2	3
American Goldfinch	<i>Spinus tristus</i>	0	1	1
Blackcapped Chickadee	<i>Poecile atricapillus</i>	0	1	0
Blue Jay	<i>Cyanocitta cristata</i>	2	2	2
Brown-headed Cowbird	<i>Molothrus ater</i>	0	1	0
Carolina Wren	<i>Thryothorus ludovicianus</i>	1	0	0
Chipping Sparrow	<i>Spizella passerina</i>	0	0	1
Common Grackle	<i>Quiscalus quiscula</i>	2	2	0
Downy Woodpecker	<i>Picoides pubescens</i>	2	1	1
Eastern Wood-pewee (SC)	<i>Contopus virens</i>	0	0	1
European Starling	<i>Sturnus vulgaris</i>	0	1	0
Great-crested Flycatcher	<i>Myiarchus crinitus</i>	0	0	3
House Wren	<i>Troglodytes aedon</i>	2	0	1
Mallard	<i>Anas platyrhynchos</i>	0	0	1
Mourning Dove	<i>Zenaida macroura</i>	2	2	1
Nashville Warbler (?)	<i>Leiothlypis ruficapilla</i>	0	1	0
Northern Cardinal	<i>Cardinalis cardinalis</i>	3	2	2
Northern Flicker	<i>Colaptes auratus</i>	0	1	0
Northern Parula	<i>Setophaga americana</i>	0	1	0
Red-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	0	0	2
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	1	0	1
Red-eyed Vireo	<i>Vireo olivaceus</i>	2	0	1
Red-tailed Hawk	<i>Buteo jamaicensis</i>	0	0	0
Red-winged black bird	<i>Agelaius phoeniceus</i>	1	0	1
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	1	0	0
Sharp-shinned Hawk	<i>Accipiter striatus</i>	0	0	1
Song Sparrow	<i>Melospiza melodia</i>	2	2	0
Tennessee Warbler	<i>Leiothlypis peregrina</i>	0	1	0
Tufted Titmouse	<i>Baeolophus bicolor</i>	1	0	0
Warbling Vireo	<i>Vireo gilvus</i>	1	0	0
White-breasted Nuthatch	<i>Sitta carolinensis</i>	1	0	0
Yellow Warbler	<i>Setophaga petechia</i>	1	1	0
<b>Total Species by site</b>		<b>17</b>	<b>18</b>	<b>17</b>

## Ecological Functions:

There are good ecological reasons why the size of a natural feature is a criterion used to establish significance within the Ontario Wetland Evaluation System (OWES) or the Area of Natural and Scientific Interest (ANSI) methods. The Provincial Policy Statement was based upon these standardized and science-based evaluation methods. The original 1985 wetland evaluation system had seven levels of significance and latest version has now been overly simplified to either provincially significant or not significant. In addition to the two wetland significance classifications used in Ontario, there are wet areas of land that may meet a broad definition of “wetland”, but they are not evaluated because they are less than 0.5ha in size (i.e. the subject lands), except when they have a unique and confirmed significant ecological function (e.g., hibernation or breeding habitat for rare species) that is established following scientific based studies. Small wet areas that lack unique ecological functions are often impacted by past land use such as drainage (i.e., shortened hydroperiod), soil compaction (flattens microtopography), nutrient enrichment (increases invasive species), isolation (interferes with dispersal mechanisms for complex life histories), and fragmentation (habitat features intercepted by transportation corridors, housing developments and canals) - making these small areas more apt to be ecological traps for wildlife. Ecological traps are habitats that attract certain life stages when the quality of habitat is good, but the habitat changes causing excessive mortality and populations decline (Battin, 2004; Yagi et al., 2020). Ecological traps need to be properly recognized and evaluated on the landscape, and restored, or removed, or they will continue to operate on local populations increasing risk of localized species extirpations (Battin, 2004).

Habitat size and ecological functions matter in sustaining ecological systems (Knowlton 2001; Tjørve 2002; Steinmann et al., 2011; Fahrig et al., 2019; Greig et al., 2021). Once an area is whittled down below its critical functional size or important habitat features (niches) and linkages are lost, biodiversity declines (Hutchinson 1957; Wilson and MacArthur, 1967; Tews et al., 2004; Kadman and Alloche 2007; Thompson et al., 2017). For example, ecological functions such as “tree fall” and edge expansion are not allowed to occur uncontrolled in urban woodlands. Natural “tree fall” processes involving root decay act to pull the tree over at the roots which forms surface depressions in the woods resulting in seasonal pool formation. Mowing keeps woodlands from growing and tree cutting keeps new woodland pools from forming. Raking of the forest floor disrupts the seed bank, and seed germination function. Expansion and “tree fall”, and seed germination are examples of natural processes that must occur for woodlands to sustain ecological functions overtime.

In terms of species habitat function, the most vulnerable species are habitat specialists with complex life cycles (i.e., some plants, some insects, some fish, all amphibians, and all reptiles; Pineda and Halfpeter, 2004; Kim et al., 2007; Schuler et al., 2017; Thompson et al., 2017; Lawrence et al., 2018). Once specialists are gone, they will not likely return on their own although random occurrences are theoretically possible. For reptiles and amphibians, many individuals of a single species must be able to complete their life cycle successfully on an annual basis to maintain a population over time. This is called population sustainability. This may also

be true for some plant species. Although some plants may also have the benefit of air dispersal, rhizome expansion and prolonged seed dormancy, wildlife do not. Once a species is gone from an area, the only way to get them back is to identify, stop and reverse the limiting factors affecting their decline and once the habitat is back on a track towards recovery- then people can help by assisting their dispersal via planting (rarer plants), managing their habitat, and headstarting-release (reptiles and amphibians). These are the necessary actions needed to achieve the broader goals discussed in RMON and City of Welland Policies including environmental “health” and sustainability.

There is a difference in species at risk recovery planning when addressing the habitat needs of plants, reptiles and amphibians verses aerial species such as birds and bats, because plants, some mammals, reptiles, and amphibians do not migrate to avoid seasonal changes and have a complex annual life cycle that is intrinsically tied to specialized habitat features (i.e. seasonally occupied niches) that remain within and between nearby natural areas. On the other hand, some migratory birds and most resident bats are seasonal users of forested natural areas and do not have to travel along the ground to find suitable niches meet their life cycle needs. Therefore, birds and bats will be present in small, forested areas and will persist longer than reptiles, amphibians, and some plant specialists. Species at Risk bats are in decline due to non-sustainable mortality events within their hibernacula (i.e., White Nose Syndrome) and not because maternity roosting habitat is limited in the Niagara Region. Species at Risk migratory birds are in decline because of factors that are not necessarily related to their breeding habitat, such as pesticide load within their food supply (most insectivorous birds) and uncontrolled harvest along their migratory route (e.g., waterfowl, some raptors). Therefore, when considering the potential for rare species to inhabit small urban remnant woodlands the most likely occurrences are aerial species (birds and bats) as well as aerial dispersing plants or plants planted from seed caches made by rodents (e.g., squirrels and mice).

In the case of the subject lands, we found no occurrences of rare species other than the indirect use of *Myotis* sp. flying over the vernal pool area in June 2020 during the maternity roosting season. Our data provides evidence that the Little Brown Bat (*Myotis lucifugus*) was present flying around the subject lands during the month of June 2020 and since they were also detected using maternity roosting trees within Aqueduct Park woods, we assumed the bats were flying between the vernal pool area and the Aqueduct Park roosting trees. Since bats are good fliers, and the vernal pool area is unusual for an urban area, the bats may be attracted to the area because of the persistence of this feature which produces insects, and they may be roosting elsewhere beyond the study area. We can only confirm that SAR bats were present in these two locations during maternity roosting season. A bat box was also observed attached to a tree nearby the seasonal pool. However, we cannot confirm roosting within the bat box. We can only confirm our observations of bats flying which also coincided with the detection of a *Myotis* sp. echolocation. The occurrence of maternity roosting coincides with the presence of large oak trees in Aqueduct Park that are in close association with a forest opening over the vernal pool within the subject lands where bats can fly, protected by wind and feed on flying insects. Flying insects



are also not limited to the vernal pool area. They also accumulate in the openings above houses and in the woodland edge surrounding the park. In our opinion if rare bats are still present on the regional landscape, they will continue to use the remaining large trees with or without development of the subject lands. The occurrence of SAR bats in June 2020 means there are likely good hibernation sites for SAR bats somewhere in the region and that the SAR bats have not all been killed by White-nose syndrome. Further, if SAR bats continue to survive their winter hibernation, they may also continue to use the woodland feature following development because suitable trees are still present within Aqueduct Park. We have now completed our “roving bat survey” technique at five sites in the Niagara Region and we have confirmed species at risk bats using maternity roosting trees at all but one site (80% occurrence).

### Niagara Region Planning Constraints Analysis

A planning constraints analysis was requested using Policy 7.B.1.5 from the Niagara Region’s Environmental Policy Chapter 7- natural environment section as a requirement of the pre-consultation meeting between the landowner and agency staff held in November 2019. 8Trees Inc. was hired by the landowner in December 2019 to conduct a pre-liminary screening report and to address the pre-consultation environmental requirements (8Trees Jan. 20, 2020). Due to the time of year, a constraints analysis using the information available from agencies and on-line sources only, concluded the woodland did not meet criteria for designation as significant in any category except for the potential for species at risk and other rare species. This preliminary screening analysis was not accepted as complete by the Region and a Terms of Reference was developed to address this deficiency. The Terms of Reference outlined a Scoped EIS approach targeting rare species, that was accepted by the Niagara Region, landowner and 8Trees Inc.

Based upon our field studies and investigations, we have updated the constraints analysis (Table 4) and it is our position that the woodland portion within the subject lands **is not suitable habitat for the White Wood Aster (WWA)**, because the soil does not contain the sand lens- which is found only within the upland woods (ELC community FODM 2-4) which is only within Aqueduct Park. This also restricts the recovery planning area for the WWA to be contained within the upland woodland feature as the only suitable habitat remaining for the WWA. Therefore, the 50m or 80m recovery planning buffer as suggested in the Recovery Strategy was not applied because WWA was not confirmed, and the site is too small to contain this buffer area within habitat that is suitable for this species (Fig. 5 and 6). Further, the feeding habitat use by the Little Brown Myotis was due to the presence of the seasonal pool feature that supports indirect habitat for the bats because the presence of standing water helps to maintain an open canopy space, protection from the wind and flying insect production which is also nearby the confirmed maternity roosting trees within Aqueduct Park (Table 1). We did not confirm SAR bats using the remaining potential roosting trees identified within the subject lands despite a purposeful search effort in this area (8Trees EIS Feb 2021). Schreber’s Aster (S2) was confirmed in Aqueduct Park woods in 2021 by NHIC plant experts and local plant expert Albert Garofalo (Appendix E). The woodland aster community is confined to the FODM2-4 community where

habitat conditions are suitable (Fig. 6). The only woodland aster species within the subject lands is the common species Large-leaved aster (S5) and is located within the northern edge of the subject lands. No other species at risk or rare species were identified within the subject lands, notwithstanding a concerted effort (beyond minimum sampling standards) to identify and confirm their presence.

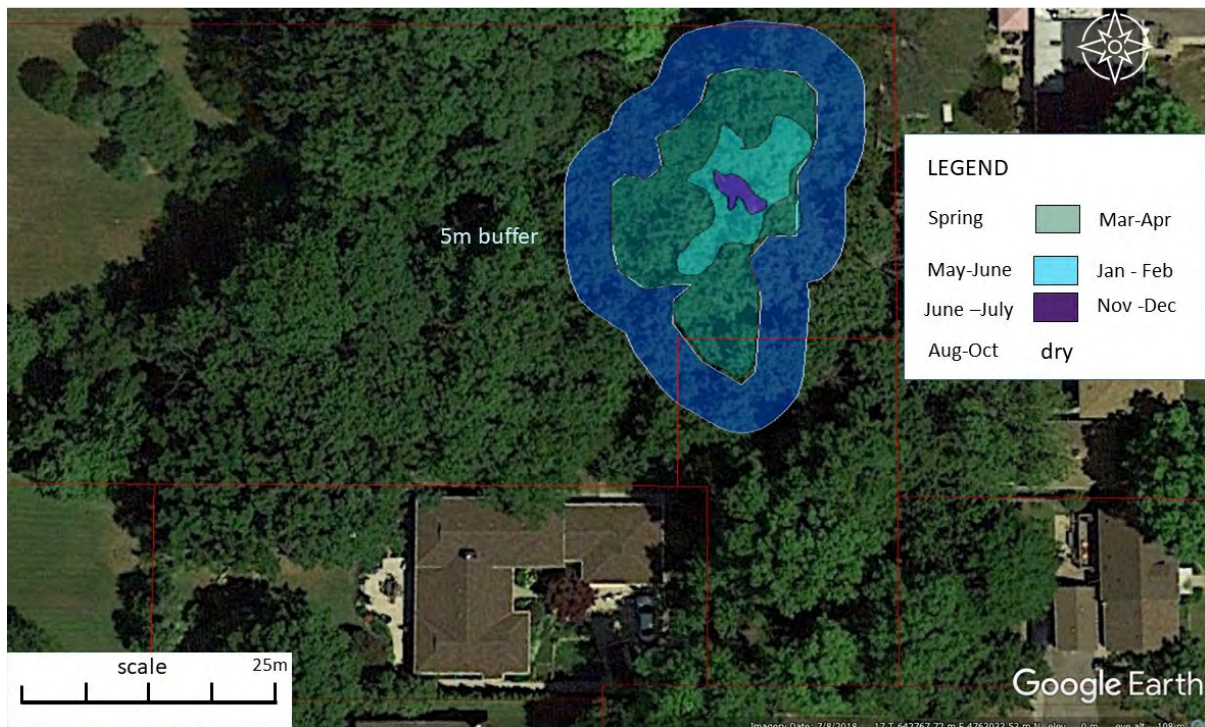
**Table 4: Summary of Constraints analysis for identifying Significant Woodland within Urban areas Niagara Region Policy 7.B.1.5**

7.B.1.5	Criteria	Subject lands	Adjacent Woodland	Does feature meet criteria?
a)	<u>Contain</u> threatened or endangered species or species of concern	no  Myotis sp. not identified using trees within Subject Lands, only confirmed feeding above vernal pool area	Yes White Wood Aster (2018 record)-not found in 2020 or 2021 Yes Myotis sp. identified using AQ park oak trees during maternity roosting season	Possibly within AQ park. Habitat is not suitable within subject lands Within AQ park only. NB. province did not recommend habitat protection for Myotis sp.
b) i.	Size 2 ha within urban boundaries	Entire remaining woodland < 1 ha		no
c)	Contain interior woodland habitat at least 100m from edges	No entire woodland contains edge habitat		no
d)	Contain older growth forest <u>and</u> be 2 hectares or greater	No definition “older growth forest” in RMON. entire remaining woodland < 1 ha. Sought clarification with MNR Forestry. No Quantitative analysis completed by MNR because the “lack of old growth conditions in forest stands in Southern Ontario” (page 24 and 42; Uhlig et al., 2001); suggest Age of Onset 120years for FOD and stand duration 200-300+years		No (see Email from MNR Forester) Policy applies to Crown Forests (MNR 2003). Definitions (Uhlig et al., 2001)
e)	Overlap with other significant natural heritage policies 7.B.1.3 or 7. B.1.4	No linkage or overlap to other identified Natural Heritage features, i.e., Environmental Conservation Areas, ANSIs, wetlands, valleylands, public conservation lands, <u>significant habitat for species of concern</u> , No significant wetlands- swamp feature does not meet minimum size criteria (0.5) for OWES evaluation.		No (see Email correspondence from MECP, MNR and Albert Garofalo- local plant expert)
f)	Crossed by a watercourse or waterbody <u>and</u> be 2ha	No watercourse present		no

## IMPACT ANALYSIS

### Development Constraints

The woodland feature does not meet any planning policy criteria for automatic woodland protection in an urban area (RMON, 2008). Nor does the woodland meet any criteria for regulation under the Conservation Authorities Act (Appendix E; EIS Feb 2021). The only criteria the woodland meets for ecological evaluation is with respect to the potential for White Wood Aster (threatened) and Species at Risk Bat- maternity roosting habitat use within the subject lands (EIS, Feb 2021). From our bat survey work, we confirmed SAR bat maternity roosting within large oak trees within Aqueduct Park woods. In addition, we observed bats and confirmed with their echolocation signatures that SAR bats were flying over the seasonal pool feature within the subject lands during the month of June 2020. We did not confirm SAR bat roosting within the trees of the subject lands during the survey period. In the EIS addendum we further defined the seasonal pool spatial limits with a relative elevation survey and mapped that feature (Fig. 13) and correlated the elevations to seasons (Fig. 21). Therefore, to conserve SAR bat habitat use in this area we protected the spring limits and applied a 5m buffer to the seasonal pool feature (Fig 22) and a 15m setbacks to protect the confirmed maternity roosting trees within



**Figure 21. Recommended Development Constraint to protect the seasonal pool feature is a 5 m setback from the expected spring water level estimated from the relative elevation survey data once the exogenous stormwater is controlled through restoration action. Aerial image July 2018 courtesy of Google Earth.**

Aqueduct Park and (Fig. 22).

After two field seasons, none of the experts we consulted confirmed White Wood Aster is present within the subject lands or Aqueduct Park. The experts now speculate that the species thought to be White Wood Aster (Field Observation 2018; MECP, 2019; Appendix E) is likely



Schreber’s Aster which is rare (S2) but not regulated under the Endangered Species Act. Given the 2018 WWA was not confirmed either year we applied a precautionary approach. We mapped the maximum potential limits of suitable habitat for a woodland aster community (*Eurybia* sp.) which is entirely within the FODM2-4 dry upland woods (Fig. 22). We then applied a 15m set back from Aqueduct Park Trees and a 5m setback from the estimated spring water level of the seasonal pool. The combined buffers overlay the entire extant habitat for the woodland aster community and provides a minimum of 10m setback from development. We also defined two additional constraint areas. One in the northeast edge which is a no digging or filling disturbance area to protect the groundcover seed bank and tree root zones of Aqueduct Park trees. The second constraint area is in the southeast to allow for re-grading the slough edge and mitigating the extraneous stormwater impacts from adjacent lands (Fig. 23). The step-by-step process of applying cumulative development constraints setbacks results in a combined buffer area of approximately 0.16 – 0.17 ha (Fig. 23). Communications from MECP staff following their review of the original EIS did not result in any additional habitat constraint recommendations (Appendix E: EIS Feb 2021). Additional correspondence is expected following their review of the addendum report.



Figure 22. A combined buffer is proposed to protect identified important features. They include the extant area of suitable habitat for woodland asters *Eurybia* sp. as defined by presence of dry sandy soils in the upland woods, Aqueduct Park trees and seasonal pool feature. Aerial image July 2018 courtesy of Google Earth.



Figure 23. The combined buffer and two added constraint areas. Aerial image July 2018 courtesy of Google Earth.

## Proposed Development

Most of the condominium townhouses are proposed to be built outside of the woodland within the CGL-2 community which has low biological diversity and low overall ecological sensitivity (units 1 to 6; Fig. 24). Whereas units 7 and 8 are located entirely within the woods (FODM9-2) and therefore within an area of higher biodiversity and ecological sensitivity. A single-family home is planned for the Gadsby lot which contains fewer trees, because several leaning hazardous trees were removed over the years. The units with the greatest impact on the woodland are within Block A, units 7 and 8 (Fig. 24). The development as proposed will necessitate the removal of 55 to 58 trees including 16 large oak (dbh 49 to 86cm) and 8 to 10 smaller oak trees (dbh 4 to 48 cm) plus any hazardous trees within the setback areas (Fig. 25; Appendix D).

**Table 5. Impacts on Ecological Land Classification Community (ELC) types revised based upon addition soils and relative elevation survey of the seasonal pool area. Area measured before and after development.**

ELC	Location	2019 (ha)	2021 (ha)	After Development (ha)	Percent Change
FODM2-4	Aqueduct Park	0.254	0.254	0.254	0%
CGL_2	Aqueduct Park	0.359	0.359	0.359	0%
FODM2-4	North AQ Park	0.468 est.	0	0	-100 %
FODM9-2	Subject Lands	0.231	0.231	0.16 (Block B)	-31 %
SWDM1-3 inclusion	Subject Lands	0.041	0.041	0.041	0 %
CGL_2	Subject Lands	0.281	0.281	0	-100 %
Total woodland	All	0.953	0.485	0.414	-57%
Total Other (mowed areas + housing)	All	0.64	1.11	1.42	+ 145 %



**Conclusions:** The tree locations used in this analysis came from our tree inventory dataset collected in Dec 2019 and May 2020. The data was collected using handheld GPS units with an accuracy of 5 to 10m. All data points were overlaid onto digital imagery and manually ortho corrected before we completed our analysis, and their locations represent a good site approximation only. Therefore, should this plan move forward, we recommend a professional registered forester or certified arborist provide the final determination of tree health with respect to preserving or removing individual trees for the final approved development plan.

When we began our work in 2020, we mapped the suitable habitat for the woodland aster community which was within the Aqueduct Park woods and north on private lands to Hilda St and not within the subject lands (EIS, Feb 2021). In this amendment report, we also evaluated the ecological integrity of the woodland and documented the existence of ongoing urban impacts on the woodland within the Subject lands. We also documented the recent loss of the woodland north of Aqueduct Park. We requested copies of the EIS(s) for the developments north of Aqueduct Park from the planning agencies and we were told that no EIS was required because “no natural heritage feature was identified”. Since this development is occurring within the same connected woodland feature, there was a difference in the interpretation and need to evaluate “natural heritage features” and the requirements for an EIS to assess for rare species. Therefore, development plans were treated differently for each development within the same woodland feature during a similar time frame.

### Mitigation of Impacts

- Mowed grass areas are the least ecological sensitive lands. Moving the town house units that are proposed within the woods into adjacent grassed areas as a land swap between the developer and the city would protect the woods from most of the potential direct loss.
- Reducing the footprint of the development within the woodland as much as possible will mitigate impacts to general woodland functions. Options to reduce woodland loss are to place the larger units (7 and 8) outside the woods or to make these units smaller.
- Eliminating basements with alternative engineering designs such as helical piles or concrete pads or reducing the size of the basement area that intersects the woodland will also reduce impacts to tree root horizons and protect more trees.
- Back yard decks instead of grassed lawns would also mitigate impacts to the ground flora and would help to keep natural woodland functions intact.
- We recommended a development constraint area added to the Northwest area of the subject lands to protect adjacent large oak trees within Aqueduct Park and ground cover flora seed bank generated from Aqueduct Park.
- Any tree removal must consider the MECF timing restriction to protect SAR maternity roosting bats (April 1 to Sep 30<sup>th</sup>). This timing window will also protect nesting migratory birds provided March is also avoided. Therefore, tree and other woody vegetation removal can begin Oct 1<sup>st</sup> and continue to the end of February in any given year.

- Several large healthy trees and several medium sized trees located in the proposed back yards outside the excavation area may be protected following standard setbacks and mitigation to protect root zones up to the drip line of the tree (Appendix D; EIS Feb 2021).
- Harvested trees are a good source of wood products and can be sold and repurposed.
- Young trees can be moved and transplanted within suitable areas within the remaining woods. Additional native trees can also be planted within the woodland feature.
- Desirable groundcover plants (Trilliums, Jack-in the pulpit, Trout Lilly, Spring Beauties, asters, goldenrod) can be rescued and moved away from the development envelope and into suitable areas within the remaining woods.
- We recommend no grading within the remaining woodland except for restoring the perimeter of the seasonal pool feature (0.41 ha). This feature must be suitably corrected and shaped around the perimeter to physically correct the catchment area to match the natural site conditions and to ensure there are no excessive sources of stormwater. Since there will be a natural seasonal variation in the height of water, we recommended a 5m buffer setback (Fig. 22). We have added a development constraint area behind the Gadsby lot for the purpose of regrading the edge of the seasonal pool (Fig. 23).
- The remaining woodland should be restored (hazardous trees removed, young trees planted, garbage removed, excessive soil and compost removed) and a trail construction for public use. The remaining woodland may be gifted to the city to manage overtime as it is naturally continuous with the Aqueduct Park woods and contains complementary features and younger trees.
- A limit of work fence along the combined buffer edge should be installed prior to any tree removal, be maintained and remain in place until the development is complete and groundcover restored.



Figure 24. Proposed development area overlaid onto the most recent publicly available aerial imagery of the subject lands with combined buffer and additional constraints added to protect ecological functions confirmed within the remaining woodland with Aqueduct Park and the Subject lands. Arrows are pointing to the woodland boundary. Imagery courtesy of Google Earth July 2018.



## WOODLAND RESTORATION OPPORTUNITIES

Human Impacts on this woodland feature include, mowing, raking, dumping of garbage, adding extraneous storm water, draining the upland woods, trampling the ground cover, dumping extraneous organic matter, and soil. These impacts have likely been ongoing for over 60 years coincidental with the urbanization of the area and therefore have cumulatively impacted the ecological integrity of this woodland. Hazardous tree removal, the regrading of the woodland slough feature as well as the control of harmful adjacent land use practices are necessary actions to keep the woodland feature on the landscape, whether development occurs here or not. Development of the areas offers an opportunity to correctly manage the woodland for the longer term by possibly placing the natural area into ownership of the City. In this manner, the human impacts can be managed through an outreach education stewardship approach and restoration of important ecological functions can be targeted to improve functionality over time.

We recommend restoring as much of the entire woodland feature as possible by restoring the hydroperiod of the seasonal pool, removing garbage, extraneous organic debris piles (i.e., dumping of organic waste), removing mowed lawns, which were once woodlands, reestablishing younger trees and a natural woodland ground flora north of the Aqueduct Park to Hilda Street. This means removing mowed lawns beneath the original woodland trees, stop raking the leaves and to allow for the restoration of the natural ground flora, the natural expansion of the woodland aster community and to allow for some minor edge expansion along the western edge of the park and to reduce the amount of park area mowed and increase the number of younger trees. The addition of bat roosting boxes and bird nesting boxes will also continue to help keep aerial insectivorous wildlife using the woodland in the long-term.

We are proposing to reform and reshape the seasonal pool edge and replant this area with suitably tolerant tree and ground cover species and remove the garbage and accumulations of excessive organic matter in a restoration plan approach (timing to be determined). While implementing restoration actions, the grading can be extended around the eastern edge property line to completely define the area for the seasonal pool catchment with consideration of adjacent land grade levels. This restoration project should be supervised by a Certified Ecological Practitioner (CERP) and possibly completed by young professionals seeking certification by the Society for Ecological Restoration (SER) and other community volunteers.

We recommend rescuing small saplings and ground flora (trilliums, jack-in the pulpit, white snake root, Trout lily, Spring beauties, Solomon seal etc..) from within the development envelope and replanting younger trees in the remaining woodland surrounding the SWDM1-3 feature to offset losses of older trees within the building footprint. Younger trees will better adapt to the site conditions and will help increase ecological integrity and sustainability of the remaining woodland feature by lowering the overall mean tree age. Replanting will complement the Aqueduct Park woods which is older. The ground flora within the developed area can also be rescued and transplanted within the remaining area and used in the area that was once woodland in the north of the park. The restored shape of the pool feature may also allow for a winter ice

rink to form like those found in Woodlawn Park. The woodland restoration should begin asap with the removal of extraneous garbage and organic debris. Once the remaining woodland is restored, we recommend a donation to the city as a woodland with conservation zoning to allow for protection of the woods from human impacts, while allowing woodland management, a woodland public trail and community stewardship opportunities.

### Post Construction Woodland Monitoring

We recommend monitoring the seasonal pool using a seasonal photographic record, three times a year (spring, summer and fall) for three years post development. This will provide a good indication that the pool is maintaining a seasonal water cycle as expected (i.e., Fig. 9 to 12).

We also recommend monitoring the saved trees, transplanted trees, rescued groundcover, and newly planted trees for changes in health and vigor for three seasons post development. Measuring increasing DBH of existing trees, the natural regeneration of a restored seed bank and increases in native species diversity are positive indications the development did not affect the remaining woods. New occurrences of root rot, leaning or new cavities or other signs of hazardous tree formation within young trees is not expected and if they occur this would be a sign that the restoration plan implementation was not successful.

Changes to the rare species of woodland aster within Aqueduct Park are not expected provided the proposed development provided setbacks (i.e., development constraint areas) and full mitigation measures are applied. A comparison to reference sites such as Woodlawn Park may help explain natural variation between years which is expected. The ongoing presence of Schreber's Aster would be a good overall indicator of a successful woodland restoration and community stewardship project.

Finally, woodland management and stewardship are necessary to maintain the health and vigor of any urban woodland community. Increases in foot traffic, raking, drainage, dumping of garbage, extraneous organic matter and soil will continue to damage the ecological integrity of this woodland feature and negates the restoration measures proposed by this development plan. Therefore, securing the remaining woods within the city park control is highly recommended.

## Literature Cited

- 8Trees. 2020. Draft Preliminary Screening Report for 368 Aqueduct X 155 Gadsby Ave. City of Welland. Jan 20, 2020.
- 8Trees. 2021. Scoped Environmental Impact Study for 368 Aqueduct X 155 Gadsby Ave. City of Welland, Feb 2021.
- Battin, J. 2004. When good animals love bad habitats: ecological traps and the conservation of animal populations. *Conservation Biology* 18:1482–1491.
- Britton, N.L. and Brown, A., 1913. *An Illustrated Flora of the Northern United States, Canada and the British Possessions: Gentianaceae to compositae* (Vol. 3). C. Scribner's Sons. Cadotte, M.W., 2006. Dispersal and species diversity: a meta-analysis. *The American Naturalist*, 167(6), pp.913-924.
- City of Welland. 2018. The Corporation of the City of Welland Official Plan. Revised Nov 4, 2019.
- Cramer, M.J. and Willig, M.R., 2005. Habitat heterogeneity, species diversity and null models. *Oikos*, 108(2), pp.209-218.
- Crins, W.J., P.A. Gray, P.W.C. Uhlig, and M. C. Webster. 2009. *The Ecosystems of Ontario, Part 1: Ecozones and EcoRegions*. Ontario Ministry of Natural Resources, Peterborough Ontario, Inventory, Monitoring and Assessment SIB TER IMA TR-01, 71pp.
- Environment and Climate Change Canada. 2018. Recovery Strategy for the White Wood Aster (*Eurybia divaricata*) in Canada, Species at Risk Act Recovery Strategy Series. Environment and Climate Change Canada, Ottawa, viii + 67 pp
- Fahrig, L., Arroyo-Rodríguez, V., Bennett, J.R., Boucher-Lalonde, V., Cazetta, E., Currie, D.J., Eigenbrod, F., Ford, A.T., Harrison, S.P., Jaeger, J.A. and Koper, N., 2019. Is habitat fragmentation bad for biodiversity? *Biological Conservation*, 230, pp.179-186.
- Greig, H.S., McHugh, P.A., Thompson, R.M., Warburton, H.J. and McIntosh, A.R., 2021. Habitat size influences community stability. *Ecology*, p.e03545.
- Halpern, B.S., Gaines, S.D. and Warner, R.R., 2005. Habitat size, recruitment, and longevity as factors limiting population size in stage-structured species. *The American Naturalist*, 165(1), pp.82-94.
- Humphrey, C. and H. Fotherby. 2019. Recovery Strategy for the Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*) and Tri-colored Bat (*Perimyotis subflavus*) in Ontario. Ontario Recovery Strategy Series. Prepared by the Ministry of the Environment, Conservation and Parks, Peterborough, Ontario. vii + 35 pp. + Appendix. Adoption of the Recovery Strategy for the Little Brown Myotis (*Myotis lucifugus*), the Northern Myotis (*Myotis septentrionalis*), and the Tri-colored Bat (*Perimyotis subflavus*) in Canada (Environment and Climate Change Canada 2018).
- Hutchinson, G.E. (1957) Concluding Remarks. *Cold Spring Harbor Symposia on Quantitative Biology*, 22, 415-427. <http://dx.doi.org/10.1101/SQB.1957.022.01.039>
- Kadmon, R. and Allouche, O., 2007. Integrating the effects of area, isolation, and habitat heterogeneity on species diversity: a unification of island biogeography and niche theory. *The American Naturalist*, 170(3), pp.443-454.
- Kim, J., Chae, J. and Koo, T.H., 2007. Variation in bird diversity in relation to habitat size in the urban landscape of Seoul, South Korea. *Acta Ornithologica*, 42(1), pp.39-44.
- Norman and Kreye, 2020. "How forests store carbon, Penn State Extension Notes" <https://extension.psu.edu/how-forests-store-carbon>
- Knowlton, N., 2001. Coral reef biodiversity--habitat size matters. *Science*, 292(5521), pp.1493-1495.
- Lawrence, A., O'Connor, K., Haroutounian, V. and Swei, A., 2018. Patterns of diversity along a habitat size gradient in a biodiversity hotspot. *Ecosphere*, 9(4), p.e02183.
- MacArthur, R.H. and MacArthur, J.W., 1961. On bird species diversity. *Ecology*, 42(3), pp.594-598.
- Ministry of the Environment, Conservation and Parks. 2019. Recovery Strategy for the White Wood Aster (*Eurybia divaricata*) in Ontario. Ontario Recovery Strategy Series. Prepared by the Ministry of the Environment, Conservation and Parks, Peterborough, Ontario. iv + 7 pp. + Appendix. Adoption of the Recovery Strategy for White Wood Aster (*Eurybia divaricata*) in Canada (Environment and Climate Change Canada 2018).



- Ministry of Natural Resources and Forestry. 2003. Old Growth Policy for Ontario's Crown forests. Forest Policy Series Version 1. Queens Printer for Ontario, Peterborough, ON.
- Ministry of Natural Resources and Forestry. 2017. Survey Protocol for Species at Risk Bats Within Treed Habitats, Little Brown Myotis, Northern Myotis, Tri-Colored Bat. April 2017. Ministry of Natural Resources and Forestry, Guelph District.
- NPCA. 2020. NPCA Policy Document: Policies for the administration of Ontario Regulation 155/06 and the Planning Act. May 21, 2020 Consolidation.
- O'Hara, P. 2018. 2018 White Wood Aster (*Eurybia divaricata*) Survey. Interim Report completed for Ontario Species at Risk Stewardship Fund. Blue Oak Native Landscapes, Hamilton.
- Pineda, E. and Halffter, G., 2004. Species diversity and habitat fragmentation: frogs in a tropical montane landscape in Mexico. *Biological conservation*, 117(5), pp.499-508.
- RMON. 2008. Natural Environment Policies Chapter 7.
- RMON. 2018. Environmental Impact Study Guidelines version 2
- RMON. 2020. The Regional Municipality of Niagara By-Law 2020-79: A Bylaw to prohibit or regulate the destruction or injuring of Trees in woodlands in the Regional Municipality of Niagara.
- Rybicki, J., Abrego, N. and Ovaskainen, O., 2020. Habitat fragmentation and species diversity in competitive communities. *Ecology letters*, 23(3), pp.506-517.
- Seiple, J.C. and Brouillet, L., 1980. A synopsis of North American asters: the subgenera, sections and subsections of Aster and Lasallea. *American Journal of Botany*, 67(7), pp.1010-1026.
- Schuler, M.S., Chase, J.M. and Knight, T.M., 2017. Habitat patch size alters the importance of dispersal for species diversity in an experimental freshwater community. *Ecology and evolution*, 7(15), pp.5774-5783.
- Spiesman, B. J., A. P. Stapper, and B. D. Inouye. 2018. Patch size, isolation, and matrix effects on biodiversity and ecosystem functioning in a landscape microcosm. *Ecosphere* 9(3):e02173. 10.1002/ecs2.2173
- Steinmann, K., Eggenberg, S., Wohlgemuth, T., Linder, H.P. and Zimmermann, N.E., 2011. Niches and noise—Disentangling habitat diversity and area effect on species diversity. *Ecological Complexity*, 8(4), pp.313-319.
- Thompson, P.L., Rayfield, B. and Gonzalez, A., 2017. Loss of habitat and connectivity erodes species diversity, ecosystem functioning, and stability in metacommunity networks. *Ecography*, 40(1), pp.98-108.
- Tjørve, E., 2002. Habitat size and number in multi-habitat landscapes: a model approach based on species-area curves. *Ecography*, 25(1), pp.17-24.
- Tews, J., Brose, U., Grimm, V., Tielbörger, K., Wichmann, M.C., Schwager, M. and Jeltsch, F., 2004. Animal species diversity driven by habitat heterogeneity/diversity: the importance of keystone structures. *Journal of biogeography*, 31(1), pp.79-92.
- Uhlig, P., A. Harris, G. Craig, C. Bowling, B. Chambers, B. Naylor and G. Beemer. (2001). Old growth forest definitions for Ontario. Ont. Min. Nat. Res., Queen's Printer for Ontario, Toronto, ON. 53 p.
- Webster, M.C., B.L. Henson, W.J. Crins, P.W.C. Uhlig, and P.A. Gray. 2018. The Ecosystems of Ontario Part 2: Ecodistricts, Ontario Ministry of Natural Resources and Forestry, Science and Research Branch, Peterborough, ON, Science and Research Technical Report TR-26.474p. +appendices
- Wilson E.D. & R.H. MacArthur (1967, reprinted 2001): *The Theory of Island Biogeography*. Princeton University Press, pp. 224.
- Yagi, A. R., Planck, R.J., Yagi, K.T. and Tattersall, G.J., 2020. A Long-Term Study on Massasaugas (*Sistrurus catenatus*) Inhabiting a Partially Mined Peatland: A Standardized Method to Characterize Snake Overwintering Habitat. *Journal of Herpetology*, 54(2), pp.235-244.

## APPENDIX A: 8Trees Inc. Staff and Associates



### Anne R. Yagi

#### President, 8Trees Incorporated

November 2016 - Present

MSc. Biological Sciences (Ecology and Evolution) Brock University

BSc. Honours Zoology University of Guelph

ECO Canada Certified Environmental Professional (EP)

Certified Ecological Restoration Professional (CERP)

Certified Ontario Wetland Evaluator (OWES)

Certified Ecological Land Classification (ELC)

Chair of the Fowler's Toad Recovery Implementation Team

[anne.yagi@8trees.ca](mailto:anne.yagi@8trees.ca)

(P) 905.892.1780

(C) 289.213.8609

[www.8trees.ca](http://www.8trees.ca)

[https://www.linkedin.com/in/anne-yagi-3a490361?trk=nav\\_responsive\\_tab\\_profile](https://www.linkedin.com/in/anne-yagi-3a490361?trk=nav_responsive_tab_profile)

8Trees Inc. is a non-government environmental consulting company that aims to carry out innovative approaches to ecological restoration, ecological based development planning, data collection, enhance science-communication, and mentor students in the fields of biological conservation, ecology, invasive species control, environmental policy, and environmental impact studies.

Go to Google Play store or Apple store and download 8Trees newly developed free software; “My Field App” and contribute to citizen science biological data collection in your neighborhood. Now available, “My Fish App” which measures and organizes your fish catch data into a digital angler diary.

#### Current 8Trees Projects:

Formed a multi-stakeholder delegation of experts in support of the removal of the Biederman Municipal Drain from within the nationally significant Wainfleet Bog wetland (2021 to present).

“Managing an ecological trap on the reptile community inhabiting a partially mined peatland in Southern Ontario”; OSARF 2017 to 2024; CWS winter 2018 and 2019.

“Monitoring the human impact on Fowler’s toad at Niagara Beaches”; OSARF 2018 to 2021  
Science Advisor “Haldimand County Gray Ratsnake (*Pantherophis spiloides*) population recovery project”; OSARF 2017 to 2020

“Building on Success: Using Habitat Modeling and outreach to confirm presence of Gray ratsnake and Foxsnake in Niagara-Hamilton”, OSARP 2020

Science Advisor “Pelee Island Blue Racer (*Coluber constrictor foxii*) Hibernation habitat investigation and restoration project”; OSARF 2018 to 2024

PhD committee member for J. Choquette 2019-2023 “Managing translocations for Massasauga Recovery in Ojibway Prairie” Laurentian University

Fowler’s toad Recovery Implementation Team Chair (2009 to present).

Massasauga Recovery Team Member (1998 to 2010)

Massasauga Recovery Implementation Team Member (2021 to present)

Forested Wetland Trail creation, woodland enhancement, Invasive Species Control and mitigation of amphibian ecological traps at QEW and Netherby Rd. (2018 to present)

Lowbanks Backshore Wetland Complex- Invasive Species Control and mitigation of amphibian ecological traps (2018 to present)

Differentiating “true” ecological core areas from regenerated farm-lands within the Niagara Region (2017 to present) for ecological based development planning  
Forested Wetland Restoration Reference Site for Fort Erie regenerated farmlands, Fort Erie ON

**8Trees Staff:** (5 to 15) One full-time biologist, five part-time seasonal, summer students, interns and full-time Habitat Biologist associate.

**M.Sc. Thesis 2020:** “Flood survival strategies of overwintering snakes”.

**Memberships:** Canadian Herpetological Society (CHS), Society for the Study of Amphibians and Reptiles (SSAR) and Society for Ecological Restoration (SER). Past member of American Fisheries Society (AFS)- Ontario Chapter.

Canadian Herpetological Society 2019 award recipient: “Blue Racer Award” in recognition of significant contributions to the conservation of amphibians and reptiles in Canada.

### **Environmental Impact Studies**

Scoped Environmental Impact Study for 00 Townline Rd. Town of Fort Erie  
Environmental; Impact Study for QEW X Netherby Rd. Town of Fort Erie  
Scoped Environmental Impact Study for 368 Aqueduct X Gadsby Ave, City of Welland. Feb. 2021 And Amendment with completion of other field studies Nov 2021  
Environmental Impact Study 495 Bernard Ave., Town of Fort Erie  
Environmental Impact Study for 12260 Lakeshore Rd. Township of Wainfleet  
Scoped Environmental Impact study for 14621 Niagara Parkway, NOTL

### **Management Biologist (Retired Sep 30, 2016, after 35 years’ public service)**

#### **Ministry of Natural Resources and Forestry (Vineland Field Office, Guelph District)**

My career at MNR began in 1981 as a summer student conducting a creel survey. After eight years of “back-to-back” contracts I was hired as the Fisheries Enhancement Officer and then as the Fish and Wildlife District Biologist. I continued in this position for 26 years until I retired in 2016. Although retired from government, my interest in fish and wildlife resources and mentoring continues within my graduate studies, pursuit of research, development of citizen science products, planning and development, proactive projects in natural resource management and ecosystem restoration.

### ***Career Highlights:***

Identified, examined, and accepted as an expert witness (Federal, Provincial Court and OMB hearings) in the areas of fish biology and habitat, wetlands, deer biology, freshwater turtles, Massasauga rattlesnakes and general wildlife biology.

Provincial Wetland Evaluations Niagara- Hamilton-Haldimand (est > 200 OWES evaluations)

Fish Community Monitoring Project Niagara River Watershed (1997 to 2016)

Peregrine Falcon Recovery and Master Bander (1996 to present)

Winter Habitat Use by Wildlife: via Helicopter Surveys (White-tailed deer, wild turkeys, raptors, swans, ducks, geese)

Niagara River Remedial Action Plan- Fish population Impairment- Determination of Delisting Criteria  
Field Investigation of Headwater Channel Erosion and related impacts on the Fenwick Regional ANSI, Provincially Significant Wetlands and Species at Risk

Welland River Fish Passage White Sucker and Walleye Telemetry Project at Old Welland Canal Junction (2000, 2013 to 2015)

Navy Island Deer Exclosures project and management recommendations (1990 to 2010)

Restoration of a Walleye population in the Welland – Niagara River system

Grand River Fisheries Management Plan and advocate for the removal of the Dunnville Dam



Species at Risk Habitat Stewardship and Education projects (Fowler's toad, Massasauga, Spotted turtle, Blanding's turtle, Gray Ratsnake, Allegheny Mountain Dusky and Northern Dusky salamander) included managing field technicians and summer students and external funding sources annually since 2000 with an operating budget \$50K to \$100K. All projects included surveys and monitoring, habitat enhancement, restoration, and design and creation of outreach and educational products. These projects also included mentoring and liaison with partners including universities, agencies, landowners and other interested stakeholders.

As part of this species at risk team we were the first to identify Allegheny Mountain Dusky Salamander in the Niagara Gorge

Ecosystem restoration project (1998 to present) - managing two species at risk populations Massasauga and Spotted turtle before, during and after water levels were increased in the central historically peat mined area. This included mark-recapture (> 200) massasaugas and (>400) spotted turtle observations since 1998. Radio telemetry technique for both species was used to confirm habitat use. With increasing conservation concerns raised about massasaugas and the potential that the mined peatland to become an ecological trap on the population. Radio telemetry was abandoned in favour of my innovative and successful coverboard design and survey technique to continue to monitor massasaugas and the resident snake community. During this time, I designed and implemented a hibernation habitat study where I introduced the "life zone" hypothesis. A "life zone" is a subterranean space where snakes successfully overwinter. This space does not freeze or flood completely and is the focus of my graduate studies. "Overwintering behaviour and survival of temperate neonatal snakes" and the development of the "forced hibernation technique". This technique is a biological test of the life zone to confirm snakes can survive within the associated habitat. It is only used in areas where physical measures have confirmed a physical space is maintained in harsh and mild winters. Once a habitat is biologically tested using neonate gartersnakes (model species), species at risk neonates can be forcibly hibernated in these good habitats. This technique will aid in repopulating good habitat because snakes use homing behaviour to return to previously occupied burrows thus removing the ecological trap associated with the mined peatland. Fowler's toad Recovery Team Chair, Ontario Dusky Salamander Recovery Team Co-Chair, Gray Ratsnake and Massasauga rattlesnake and Ontario SAR turtle Recovery Team member

***Other Highlights include:***

Provincial Amethyst Award: Grand River Fisheries Management Plan (1999)

OMNR Pride Award: Recovery of Peregrine Falcon (2000)

NPCA: Welland River Restoration Committee Recognition Award (2002)

NPCA Conservation achievement awards (2002 to 2008)

Niagara River Bathymetry, Habitat Mapping, and habitat creation projects

Niagara Region Fish Habitat Types with Management Rationale for municipal planning

Binbrook Reservoir Electrofishing, and live trap netting projects

Adult Walleye transfer from Bay of Quinte, Lake Ontario to Binbrook Reservoir

Spring thermal flux studies Niagara River and Upper Niagara River Tributaries

Long term thermal monitoring of last remaining Brook trout fishery Upper Twelve Mile Creek

Upper Twelve Mile Creek Brook Trout Population Assessment 1984, 2000, 2008

Upper Twelve Mile Creek Restoration Projects (1989 to 1995)

Frenchman's Creek Grass Roots Watershed Restoration Project (1991 to 1995)

Point Abino Drain Fisheries Study- Pre and Post Drainage Works 2001 – 2002

Welland River Fish Community Assessment 1997

Walleye Restoration Project, Grand River, Welland River and Community Involvement

Lake Ontario Littoral Zone, Lake Gibson, Martindale Pond and Old Welland Canal Fish Community

Wild turkey reintroduction, trap and transfer international project (1986 to 1996)

Ontario Conservation Fishing and Hunting Licence, Pleasure Boat Certificate, Class 1 Electrofishing Certificate (all types), Standard First Aid and CPR, ROM Fish ID, Wetland Evaluation Certifications, Active golf enthusiast

## Publications (chronological order)

- Yagi, A. R., Planck, R.J., Yagi, K.T. and Tattersall, G.J., 2020. A Long-Term Study on Massasaugas (*Sistrurus catenatus*) Inhabiting a Partially Mined Peatland: A Standardized Method to Characterize Snake Overwintering Habitat. *Journal of Herpetology*, 54(2), pp.235-244.
- Yagi A. R. 2020. Flood Survival Strategies of Overwintering Snakes. Master of Science Thesis. Brock University, Canada.
- Yagi A. R. and G. Tattersall (In Prep) Forced Hibernation- A Technique to ensure overwinter survival of endangered temperate neonatal snakes
- Yagi, A. R. and Tattersall, G. J. 2018. "Please Don't Step on the Hummocks": Summer Refugia for Massasauga Rattlesnakes." *The Canadian Herpetologists/L'Herpetologiste Canadien* 8(1): 22-24.
- Yagi, A. R., Abney, C., Bukovics, T., Breton, B., Blott, C., Yagi, K. 2018. "The Young and the Restless: Postpartum Breeding and Early Onset Sexual maturity in an Isolated Northern Population of Massasauga Rattlesnakes." *The Canadian Herpetologists /L'Herpetologiste Canadien* 8(1): 24-26
- Hileman E T. ... and A.Yagi, 2017. Climatic and geographic predictors of life history variation in Eastern Massasauga (*Sistrurus catenatus*): A range-wide synthesis *PLOS ONE* | DOI:10.1371/journal.pone.0172011 February 14, 2017
- Jones P.C., R.B.King, R.L.Bailey, K.Bissell, H.Campa,III, (+25) and A.Yagi.2012. Population Ecology Range-Wide Analysis of Eastern Massasauga Survivorship. *J. Wild. Man.* 76(8):1576-1586; DOI:10.1002/jwmg.418
- Yagi A. R. 2010. Game Birds of Niagara In *Niagara Birds: A compendium of articles and species accounts of the birds of the Niagara Region in Ontario* editors Black, J.E. and K.J. Roy.
- Yagi A.R, R.J. Planck and P. Hache. 1999a. Post Assessment of the Shriner's (Branch W-5-1) Creek Ecological Design, Niagara Falls Ontario: Did Past Planning Goals meet the Public Expectations? Proceedings of the Second International Conference on Natural Channels. March 1999. Niagara Falls, Ontario. Canada.
- Yagi A. R., Harrington .G. 1999b. Combining a Golf Course Re-Design with Natural Channels-Lessons learned from a St Catharines Urban Stream. Proceedings of the Second International Conference on Natural Channels. March 1999. Niagara Falls Ontario, Canada.
- Yagi A. R. and Frohlich K. 1998a. An Interim Report on Wainfleet Bog Restoration: Challenges and Future Direction, Second Inter Global symposium for the Conservation of Eastern Massasauga rattlesnakes, Toronto Zoo p. 164 to 169
- Fraser, J. Z., Yagi, A. R., Planck, R. J. 1994. A Natural Approach to Watercourse Modification in Urbanizing Watersheds: Shriners Creek Case Study, proceedings of the First International Conference on Rivers and Guidelines for Natural Channel Systems, Jan 1994. Niagara Falls Ontario, Canada.

## Government Publications and Reports

- Yagi, A. R., et al. 2019. Managing an Ecological trap in a Partially Mined Peatland on the Resident Reptile Community which includes Five Species at Risk; Massasauga; Eastern Ribbon; Spotted turtle; Snapping turtle and Blanding's turtle. Final Report for 2019-20. Species at Risk Stewardship Fund, Ontario Ministry of Natural Resources and Forestry.
- Yagi, A. R., et al. 2018. Managing an Ecological trap in a Partially Mined Peatland on the Resident Reptile Community which includes Five Species at Risk; Massasauga; Eastern Ribbon; Spotted turtle; Snapping turtle and Blanding's turtle. Final Report for 2018-19. Species at Risk Stewardship Fund, Ontario Ministry of Natural Resources and Forestry.
- Yagi A.R., et al. 2017. Managing an Ecological trap in a Partially Mined Peatland on the Resident Reptile Community which includes Five Species at Risk; Massasauga; Eastern Ribbon; Spotted turtle; Snapping turtle and Blanding's turtle. Final Report for 2017-18. Species at Risk Stewardship Fund, Ontario Ministry of Natural Resources and Forestry.
- Yagi, A.R., A. Brant, S. Meyer, D.M. Green, S. Dobbyn, B. Johnson, and R. Tervo†. 2017. The Fowler's toad Stewardship Guide. prepared for Environment Canada Habitat Stewardship Program 61pp.
- Yagi A.R, K.T. Yagi and A.Brant. 2017. The Spotted Turtle Stewardship Guide, prepared for Environment Canada Habitat Stewardship Program 25pp.
- Yagi A.R. [updated 2016]. Niagara Region Fish Habitat Types with Management Rationale, Ontario Ministry of Natural Resources unpublished manuscript.
- Yagi A.R and C.Blott. 2015. Niagara River RAP- Fish Population- Beneficial Use Impairment Delisting Criteria. Prepared for OMNR and NRRAP Advisory Committee.
- Markle, T.M., A.R. Yagi and D.M. Green. 2013. Recovery Strategy for the Allegheny Mountain Dusky Salamander (*Desmognathus ochrophaeus*) and the Northern Dusky Salamander (*Desmognathus fuscus*) in Ontario. Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. vi + 30 pp.
- Blott C., A.R.Yagi and V. Crombie. 2013. Niagara River (Ontario) Remedial Action Plan Interim Assessment of *Degradation of Fish Populations* Beneficial Use Impairment for the Niagara River Remedial Action plan (DRAFT) 51pp + Appendices
- Yagi A.R. and R. Jon Planck . (2012) Identification, Characterization and Subterranean Delineation of Critical Eastern Massasauga Hibernation Habitat in a Partially Mined Peatland for the Purposes of Species Recovery, Poster Ontario Nature Conference, Toronto 2012.
- Yagi A.R and C. Blott. 2012. Niagara River Watershed Fish Community Assessment (1997 to 2011) Ontario Ministry of Natural Resources unpublished report 168pp + appendices

Yagi A.R. 2012. Field Investigation of Channel Erosion and related impacts on the Fenwick Regional ANSI, Provincially Significant Wetlands and Species at Risk, unpublished report for OMNR 20pp+appendix

Green D.M., A.R. Yagi and Hamel S. Green, David M., Anne R. Yagi, and Stewart E. Hamill. 2011. Recovery Strategy for the Fowler's Toad (*Anaxyrus fowleri*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. vi + 21pp.

Yagi A.R., T. Markle, A. Brant and R. Tervo. 2010. Quebec and Ontario Stream Salamander Stewardship Guide, prepared for Environment Canada Habitat stewardship Program 37 p + iii

Yagi A.R., A.Brant and R.Tervo. 2009. Niagara Region Natural Areas Inventory Reptile and Amphibian Study 2006 to 2008. Ontario Ministry of Natural Resources and Land Care Niagara unpublished report for the Natural Areas Inventory prepared for the Niagara Peninsula Conservation Authority 78pp incl. separate Map Appendix.

Yagi A.R. and A. Timmerman. 2009. Ancaster Wintering Deer Survey 2009 - with Management Recommendations, unpublished report for the Hamilton Conservation Authority 37pp + iii.

Denyes D., A.R. Yagi, A. Brant, K.Wright. 2009. American Water- willow Stewardship Guide. prepared for Environment Canada Habitat stewardship Program 21p +ii

Yagi A.R and R. Tervo. 2008a. Species at Risk Habitat Mapping for the Allegheny Mountain Dusky Salamander (*Desmognathus ochrophaeus*) - a Test of Draft Habitat Mapping Guidelines. Unpublished report for Ontario Ministry of Natural Resources Species at Risk, Peterborough, Ontario 12pp.

Yagi A.R and R. Tervo. 2008b. Species at Risk Habitat Mapping for the Northern Dusky Salamander (*Desmognathus fuscus*)- a Test of Draft Habitat Mapping Guidelines. Unpublished report for Ontario Ministry of Natural Resources Species at Risk, Peterborough, Ontario 12pp.

Yagi A.R and R. Tervo. 2008c. Species at Risk Habitat Mapping for the Fowler's toad (*Bufo fowleri*)- a Test of Draft Habitat Mapping Guidelines. Unpublished report for Ontario Ministry of Natural Resources Species at Risk, Peterborough, Ontario

Yagi A.R and C. Blott. 2008d. Niagara River Watershed Fish Community Assessment (2003 to 2007) Ontario Ministry of Natural Resources unpublished report 197pp.

Yagi A.R. and M. Esraelian. 2008e. White-tailed Deer (*Ondocoileus virginianus*) Management Recommendations for the Niagara Parks Botanical Gardens - School of Horticulture Final Report. Ontario Ministry of Natural Resources 34pp.

Yagi A.R., A. Brant, S. Meyer, D.M. Green, S. Dobbyn, K. Frohlich, K. Hayes, B. Johnson, M. Oldham and R. Tervo.2007. The Fowler's toad Stewardship Guide. prepared for Environment Canada Habitat Stewardship Program 60pp.

Yagi A.R. and R. Tervo. 2006a. Black Ratsnake (*Elaphe obsoleta*) Telemetry Project 2001 to 2002: Oriskany Sandstone Area-Carolinian Population Final Report unpublished for Ontario Ministry of Natural Resources Species at Risk, Peterborough, Ontario. 25pp.

Yagi A.R. and R. Tervo. 2006b. Distribution of Fowler's toad (*Bufo fowleri*) in Aylmer District Based upon field surveys conducted in 2004 and 2005 with notes on Habitat for Recovery Planning Purposes, unpublished report prepared for Ontario Ministry of Natural Resources Aylmer District and OMNR SAR. 21pp.

Yagi A.R. and R. Tervo. 2006c. Guelph District Fowler's Toad (*Bufo fowleri*) - Historic Elemental Occurrence Verification, Current Presence/Absence information with notes on Preliminary Habitat Characterization for Recovery Planning Purposes, unpublished report prepared for the Ontario Ministry of Natural Resources Species at Risk, Peterborough, Ontario. 10pp.

Yagi A.R and R. Tervo. 2005a. [Data Sensitive]Massasauga (*Sistrurus catenatus*) Population- Interim Report; unpublished report prepared for the Ontario Ministry of Natural Resources Species at Risk, Peterborough, Ontario 11pp.

Yagi A.R., R. Drabick, J. Radford and K. Spence. 2005b. Lower Frenchman's Creek: Wetland Evaluation, and Fisheries Assessment-Between Niagara Parkway and Bowen Rd. Allowance

Yagi A.R. and D.Mills.2004. Niagara Glen Species at Risk Inventory Final Report 2004 (Data Sensitive) Ontario Ministry of Natural Resources unpublished report for the Niagara Parks Commission 30 pg.

Yagi A.R. and D.Mills.2003a. Interim Report: Fowler's Toad (*Bufo fowleri*) Abundance and Habitat Use at Morgan's Point Conservation Area with Habitat Enhancement Recommendations, Summer 2003, unpublished report prepared for the Niagara Peninsula Conservation Authority and OMNR SAR Peterborough, Ontario. 7pp.

Yagi A.R and R. Tervo. 2003b [Data Sensitive]Eastern Massasauga Rattlesnake (*Sistrurus catenatus*), Ministry of Natural Resources unpublished report.7pp.

Yagi A.R. 2003c. Point Abino Fisheries Drain Fisheries Study- Pre and Post Drainage Works 2001 – 2002, Ontario Ministry of Natural resources unpublished report, updated March 2010 11pp.

Yagi A.R. 2000. Niagara Region Fish Habitat Types with Management Rationale, Ontario Ministry of Natural Resources unpublished manuscript.4pp.

Yagi A.R. 1998b. Old Welland Canal Fisheries Assessment. City of Welland. Ontario Ministry of Natural Resources unpublished manuscript.

Yagi A.R. 1997. Martindale Pond Fisheries Assessment with Notes on Richardson's Creek Fisheries Habitat Compensation Project. OMNR unpublished manuscript.

Yagi A.R., R.J Planck and P. Hache. 1996 "An Approach to Ecosystem Restoration" – Presented at 57th U.S. Midwest Fish and Wildlife Conference, Dec 5 1996, Detroit Michigan

Yagi A.R. 1997. Welland River Fisheries Study with Management Recommendations. Ontario Ministry of Natural Resources unpublished manuscript.

Sarvis, A.R. 1985. Brook Trout Distribution and Abundance within Upper Twelve Mile Creek. Ont. Min. Nat. Res. unpublished manuscript, 45pp.





## Dr. Katharine T. Yagi

Department of Biological Sciences, Brock University  
St. Catharines, Ontario, Canada

*Mobile:* 1-905-328-2450,

*Email*<sup>1</sup>: [katharine.yagi@8trees.ca](mailto:katharine.yagi@8trees.ca),

*Email*<sup>2</sup>: [kyagi2@brocku.ca](mailto:kyagi2@brocku.ca)

ORCID: 0000-0002-9044-0143, *Nationality:* Canadian

### Background

I am an applied ecologist, conservation biologist, and a passionate teacher/mentor. I believe that good foundations in our students' knowledge and applied skills will lead to better environmental leadership and a brighter future for our natural environment, and species at risk. I am interested in understanding how rare or cryptic wildlife adapt to environmental change, and how to implement management actions to affect recovery of degraded ecosystems. My investigations are designed within the framework of animal behaviour, population ecology, and ecological restoration.

### Education

- 2012-2018:* **PhD**, Renewable Resources, *Supervised by Dr. David M. Green*  
Redpath Museum, McGill University, Canada
- 2008-2010:* **M.Sc.**, Biology, *Supervised by Dr. Jacqueline D. Litzgus*  
Laurentian University, Canada
- 2004-2008:* **B.Sc.**, Biological Sciences  
Guelph University, Canada

### Professional Work Experience

- Jan 2021 – present:* Applied Ecology Program Development Consultant  
Brock University, Canada
- Aug 2020 – Dec 2020:* Post-Doctoral Fellow, *Supervised by Dr. Glenn Tattersall*  
Brock University, Canada
- May 2020 – Jul 2020:* Course Instructor (Ecology of a Changing Planet #BIOL 3P85)  
Brock University, Canada
- Sep 2019 – Dec 2019:* Course Instructor (Principles of Ecology BIOL 2Q04)  
Brock University, Canada
- May 2019 – present:* Research Associate  
8Trees Inc., Canada
- Aug 2017 – May 2019:* Post-Doctoral Fellow, *Supervised by Dr. Glenn Tattersall*  
Brock University, Canada  
(*maternity leave from Jan 2018-Jan 2019*)

*Jun 2011* – Species at Risk Biologist  
*Dec 2011:* Ontario Ministry of Natural Resources, Guelph District, Canada

*Nov 2010* – Habitat Stewardship Technician  
*Jun 2011:* Land Care Niagara, Canada

*May 2005* – Field Technician  
*Sep 2008* Ontario Ministry of Natural Resources, Guelph District, Canada  
(*seasonally*):

### **Certifications**

Certified Ecological Restoration Practitioner-in-training/CERPIT (authorized by the *Society of Ecological Restoration*)  
Wetlands 101 (authorized by *Ducks Unlimited Canada*)

### **Awards and Achievements**

*2010:* Runner-up, Best Student Presentation, Turtle Survival Alliance

*2003:* Niagara Peninsula Conservation Authority Conservation Achievement Award

*1998:* Women in Science Award

### **Professional Services**

I am currently a member on the COSEWIC Amphibians and Reptile Specialist Subcommittee and have served as a peer reviewer on multiple publications across several journals and have served as an academic reviewer on several project proposals for permits, and grant/funding proposals. More information can be provided upon request.

### **Professional Appointments**

*July 2020 – July 2023:* **Adjunct Professor**, Brock University, Department of Biological Sciences

*Jan 2021 – Dec 2024:* **COSEWIC Amphibians and Reptiles Specialist Subcommittee (A&R SSC)** member

*2012 – present:* Fowler's Toad Recovery Implementation Team member

### **Authorships**

#### **Published Articles**

Giacometti, D., **K.T. Yagi**, C.R. Abney, M.P. Jung, and G.J. Tattersall. 2021. Staying warm is not always the norm: Behavioural differences in thermoregulation of two snake species. *Canadian Journal of Zoology*. (In Press).

Yagi, A.R., R.J. Planck, **K.T. Yagi**, and G. Tattersall. 2020. A Long-term Study on Massasaugas (*Sistrurus catenatus*) Inhabiting a Partially-mined Peatland: A Standardized Method to Characterize Snake Overwintering Habitat. *Journal of Herpetology*.

Green, D.M., and **K.T. Yagi**. 2018. Ready for bed: pre-hibernation movements and habitat use by Fowler's Toads, *Anaxyrus fowleri*. Canadian Field-Naturalist 132(1):46-52.

**Yagi, K.T.** and D.M. Green. 2018. Post-metamorphic carry-over effects in a complex life history: behaviour and growth at two life stages in an amphibian. Copeia 106(1):77-85.

**Yagi, K.T.** and D.M. Green. 2017. Performance and Movement in Relation to Post-metamorphic Body size in a Pond-breeding Amphibian. Journal of Herpetology 51(4):482-489.

**Yagi, K.T.**, and D.M. Green. 2016. Mechanisms of density-dependent growth and survival in Fowler's toads, (*Bufo*) *Anaxyrus fowleri*: volume vs. abundance. Copeia 104(4):942-951.

**Yagi, K.T.** and J.D. Litzgus. 2013. Thermoregulation and Behavior of Spotted Turtles (*Clemmys guttata*) in a beaver-flooded bog in Southern Ontario, Canada. Journal of Thermal Biology 38(5): 205-213.

**Yagi, K.T.** and J.D. Litzgus. 2012. The Effects of Flooding on the Spatial Ecology of Spotted Turtles (*Clemmys guttata*) in a Partially Mined Peatland. Copeia 2012(2):179-190.

#### ***Published Notes***

Yagi, A.R., C. Abney, and **K. Yagi**. 2018. The Young and the Restless: Postpartum Breeding and Early Onset Sexual Maturity in an Isolated Northern Population of Massasauga Rattlesnake. The Canadian Herpetologist 8(1):24-26.

**Yagi, K.T.** 2014. Toad Tales from Long Point, Ontario Part 1. The Canadian Herpetologist 4(2): 11-12.

#### ***Published Dissertations***

**Yagi, K.T.** 2017. Density-dependence and dispersal mechanisms in a pond breeding amphibian. PhD Thesis. McGill University.

**Yagi, K.T.** 2010. The effects of flooding on the spatial ecology and thermoregulation on Spotted turtles (*Clemmys guttata*) in a southern Ontario population. MSc Thesis. Laurentian University.

#### ***Technical Reports (not published – a full list can be provided upon request)***

**Yagi, K.T.**, B. Breton, T. Bukovics, C. Blott, and A.R. Yagi. 2021. Fowler's toad recovery project: Assessing Human Impacts at Niagara Beaches. Final report for 2018-20, Ministry of Environment, Conservation and Parks, 32pp.

8Trees Inc. 2020. Environmental Impact Study for Black Creek Center, Town of Fort Erie, Ontario. Prepared for the Region of Niagara. 64pp.

8Trees Inc. 2020. Scoped Environmental Impact Study for 368 Aqueduct St. and 155 Gadsby Ave, City of Welland, Ontario. Prepared for the Region of Niagara. 184pp.

8Trees Inc. 2020. Environmental Impact Study for 495 Bernard Ave, Town of Fort Erie, Ontario. Prepared for the Region of Niagara, 75pp.



Yagi, A.R., **K.T. Yagi**, et al. 2020. Building on Success: Investigating the presence of Gray Ratsnake and Eastern Foxsnake using Habitat Suitability Modelling, and occurrence information to initiate standardized monitoring in priority Niagara-Hamilton areas. Final report for 2019-20, Ministry of Environment, Conservation and Parks, 29pp.

Yagi, A.R., **K.T. Yagi**, C. Blott, T. Bukovics, and B. Breton. 2020. Managing an Ecological trap in a Partially Mined Peatland on the Resident Reptile Community which includes Five Species at Risk; Massasauga; Eastern Ribbon; Spotted turtle; Snapping turtle and Blanding's turtle. Final Report for 2019-20. Species at Risk Stewardship Fund, Ministry of Environment, Conservation and Parks, 79pp.

### **Conference Presentations**

I have given over 25 presentations about my research to academic audiences. My academic presentations have been at regional, national and international conferences, like the World Congress of Herpetology, Joint Meeting of Ichthyologists and Herpetologists, Canadian Herpetological Society, and the Quebec Center for Biodiversity Science. A full list can be provided upon request.

### **Teaching and Supervisory Experience**

Throughout my academic experiences, I have had the opportunity to work with a variety of undergraduate and graduate students conducting research in the field of ecology, conservation, and restoration. I have also had the opportunity to teach both laboratory and field components of several classes, teach two full Ecology courses, and guest lecture for a few courses. A full list can be provided upon request.

### **Volunteer Experience**

Over the years, I have had the opportunity to deliver a variety of informal education through public outreach and community science programs. I have given presentations to elementary and high schools on various topics in ecology, conservation, herpetology, and local species at risk, and I was a judge for local science fairs on multiple occasions. More information can be provided upon request.

### **Skills**

***Leadership***

***Teamwork***

***Mentorship***

***Communication***

***Organization & Time Management***

***Technical Expertise (knowledge background)*** – General Biology, Population Ecology, Community Ecology, Conservation, Restoration Ecology, Zoology, Herpetology, Ichthyology, Mammalogy, Ornithology, Animal Behaviour, Animal Physiology, Biostatistics, GIS Mapping.

***Technical Expertise (software)*** – Word, Excel, Outlook, PowerPoint, R, Vortex, ArcGIS Pro.

**Technical Expertise (research & writing)** – designing projects, collecting data, organize, manage, and analyze datasets, conduct statistical analyses, write reports, publish manuscripts in peer-reviewed journals.

### **Noteworthy Accomplishments**

Organized the integration of 8Trees Inc. into the Co-op and Internship program in Geography and Environmental Geoscience at Brock University

Initiated the development of a Co-op program in Biology at Brock University

Established a new graduate student society called GRAMSS (“Graduate Math & Science Students”) within the Faculty of Math & Science at Brock University during the covid-19 pandemic.

Initiated and continue to develop a new program in Applied Ecology at Brock University – a collaboration between the Department of Biological Sciences, and Department of Geography & Tourism Studies.

Assist in the development of new applied ecology teaching modules for the Lab Links program at Brock University.

### **Interests and Hobbies**

photography, reading, hiking, archery, music (piano), visual arts (dance & sketching)

### **References**

**David M. Green** (Professor, Redpath Museum, McGill University)

Email: [david.m.green@mcgill.ca](mailto:david.m.green@mcgill.ca), Tel: (514) 398-4086 ext. 4088

**Jacqueline D. Litzgus** (Professor, Department of Biology, Laurentian University)

Email: [JLitzgus@laurentian.ca](mailto:JLitzgus@laurentian.ca), Tel: (705) 675-1151 ext. 2314

**Glenn J. Tattersall** (Professor, Department of Biological Sciences, Brock University)

Email: [gtattersall@brocku.ca](mailto:gtattersall@brocku.ca), Tel: (905) 688-5550 ext. 4815

**Christina Davy** (Research Scientist (Species at Risk Branch), Ontario Ministry of Natural Resources and Forestry; Adjunct Professor, University of Trent; Adjunct Professor, University of Queens)

Email: [christina.davy@ontario.ca](mailto:christina.davy@ontario.ca), Tel: (705) 755-5220

## Cathy Blott, B.Sc. (Hon)

### SUMMARY OF QUALIFICATIONS

---



Cathy Blott is currently an Associate Habitat Restoration Biologist with 8Trees Inc, specializing in hydrological system monitoring. She graduated with an Honours B.Sc. majoring in Biology from the University of Waterloo in 1993 and has 27 years of experience working on fish and wildlife restoration and conservation projects. Some of her responsibilities at 8Trees Inc. include conducting field work, analyze data, prepare reports and proposals, and help younger staff, students, and volunteers in the field. Cathy also conducts outreach events and builds partnerships with landowners, municipalities, and agencies to gain support for several ongoing projects.

---

Cathy is currently working with 8Trees Inc. on several projects. She is managing the hydrological monitoring of groundwater levels in the Wainfleet Bog including liaison with public and agencies. She also collects winter hibernation habitat data for the snake survival studies in Wainfleet bog. Cathy conducts the hydrology, soils, vegetation, amphibian, bird, fisheries, and fish habitat assessments for each EIS.

---

#### *Work Experience*

Managing Environmental restoration projects for Lower Grand River Land Trust (2017 to present).

Fisheries Biologist and Acting Management Biologist MNR (2007 – 2010; 2012 – 2017)

Consulting Biologist for Limnoterra Ltd., Waterloo ON 1993 – 2007

---

Coauthored Niagara Fish Community and Niagara River RAP reports

Analyzed and managed MNR's digital fish database

Managed fish telemetry data collection at Welland River Syphons

Managed thermal studies of Upper Niagara River and Upper 12 Mile Creek

Completed bathymetry, substrate, aquatic vegetation surveys and velocity studies of the Upper Niagara River and tributaries

Great Lakes Acoustic (GLATOS) monitors in the Niagara River watershed

Fish Crew Leader Welland River Fish Assessment (Seine, Back-Pack, E-Boat)

Fish Crew Leader MNR Zone 8, 10 & 11 North Bay, ON. (2009) Sault Ste Marie/Blind River (2008) and Gill net surveys from (Broad Scale Fisheries Management Program).

In Kamloops BC fish community habitat assessments & impacts for 5 rivers for proposed Independent Power Production hydro-electric projects. I also monitored impacts to river habitat during Ministry of Transportation riverbank repairs. I also conducted fish passage culvert inspections for the Ministry of Forests and prioritized Ministry of transportation culvert replacement candidates based upon fish community and habitat parameters.

Assisting Habitat Haldimand in restoring of brook trout stream on Grand River

Draft Environmental Resource Study document for impending Class C Environmental Assessment of brown trout stocking in Lake Huron. (2010)

Sturgeon sampling and commercial catch sampling, Nottawasaga Bay, southern Georgian Bay MNR Owen Sound District (2010)

---



**Theresa A. Bukovics, M.Sc.**

**SUMMARY OF QUALIFICATIONS**

---



Theresa Bukovics worked for 8Trees Inc. as a Habitat Stewardship Biologist and Volunteer Coordinator until July 2021. She graduated with her B.Sc. in Ethnobotany, minoring in Anthropology, from the University of Hawaii in 2010, and completed her M.Sc. in Biological Sciences (Ecology and Evolution) at Brock University in 2016.

Her M.Sc. research focused using photographic time series to quantify age-specific changes in morphology and survival in *Rhizocarpon geographicum* over a 4-yr period at Illecillewaet Glacier, BC. Theresa has since taken an avid interest in the field of herpetology. During her time in the field, Theresa enjoys familiarizing herself with the native flora including rare plants, lichen, and fungi of the Niagara region.

---

**8 Trees Inc., Fonthill, ON**

**May 2017 – July 2021**

*Habitat Stewardship Biologist*

Permitted lab and field work on species at risk, including Spotted Turtle and Eastern Massasauga Rattlesnake, Fowler's toad, Fox Snake and Gray ratsnake.  
Completed Data collection (vegetation, ELC, birds, soils, trees, bat surveys and habitat) and GIS mapping for Environmental Impact Studies and summary reports  
Conducted road surveys and worked with two municipalities to install animal crossing signs.  
Assisted in preparing proposals and reports and analyzing and managing different types of data.

**Brock University, St. Catharines, ON**

**Sept 2012 – Dec 2017**

*Lab Demonstrator & Teaching Assistant*

Instructed university students at all levels in complex principles in biology, botany, and ecology;  
Updated and refined lab material, created biweekly power points, constructed and administered marking schematics.  
Provided verbal and written evaluations on in-class assignments, take-home assignments, and presentations.

**University of Hawaii Botany Department, Honolulu**

**Aug 2009 – Mar 2010**

*Ethnobotany Research Assistant:*

Established and managed a database comprised of texts in 6 foreign languages focusing on 18<sup>th</sup> & 19<sup>th</sup> Century European expeditions throughout Southeast Asia;  
Collaborated with and oversaw fellow researchers from various academic departments;  
Collected, translated, and evaluated quantitative and qualitative data.  
Developed research methodologies and assisted in restoration projects;  
Conducted and led field surveys, identified plant species in the field, and recorded and collected voucher specimens of Hawaiian native and invasive flora;  
Prepared a variety of technical reports weekly both independently and as part of a team.

## Marcie Jacklin

### SUMMARY OF QUALIFICATIONS

---



Marcie is our bird identification expert. Retired from Brock University after 25 years of service, achieving the title 'Librarian Emeritus'. Marcie now has a bit of time available to mentor our biologists.

Marcie began birding in 1989 in Ottawa. She has given multiple nature presentations to the Niagara community and leads many bird watching hikes. She has served as a compiler for many years for Christmas Bird Counts and as a director for the Buffalo Ornithological Society and the Ontario Field Ornithologists.

---

Marcie wrote four chapters in Niagara Birds edited by John Black and Kayo Roy. She is currently Chair of the Niagara Birding Conservation and Tourism Collaborative which is hoping to improve conditions for birds and birders visiting Niagara.

She is proud to be the recipient of the Bert Miller Nature Club Award and the R.W. Sheppard Award (Niagara Falls Nature Club).

---



## **HELEN HERMANSEN BSc. F**

5670 Morse Ave, Niagara Falls, ON L2G 4G2

(C) 289-407-7265 (H) 905-935-3173

hhermansen@zoho.com



---

## **Education and Certifications**

---

### **Bachelor of Science in Forestry (B.Sc.F.) University of Toronto: 1996**

- Certified Treemarkers Level 1
  - Butternut Health Assessor
  - Ontario Wetland Evaluation System (OWES)
  - Electrofishing, and ROM Fish ID course
  - Ontario Driver's Licence, Class G
  - Standard First Aid and CPR Level C
- 

## **Employment Experience**

---

### **Field Technician, March 2020 – Feb 2021 (part-time)**

8Trees Inc. Environmental Services, Fonthill

- Supporting field projects, including data collection, plant identification and tree inventories.
- Conducting wetland boundary verification, general field work, and report writing.
- Preparing Forest Management Plans and Applications for Regional Forestry Permits

### **Integrated Resource Management Technical Specialist September 2014 - February 2020 (on leave)**

Vineland Field Office, Southern Region, Ministry of Natural Resources and Forestry

- supporting field projects, including forest values collection, fish surveys, water temperature monitoring, aquatic vegetation surveys, and reptile and amphibian surveys
  - providing technical review, guidance and advice on provincially significant wetlands
  - implementing the district compliance program by developing the Annual Compliance Operations Plan for the fish & wildlife, lands & waters and aggregate program activities, and ensuring consistent application of legislation and policies through field inspections
  - delivering customer service to members of the public, consultants, other agencies, and colleagues
-



### **Resource Management Technician; Acting Management Forester March 2004 – August 2014**

Pembroke District Office, Southern Region, Ministry of Natural Resources

- involved with all aspects of forestry including forest management planning on Crown land, compliance inspections, natural values surveys (such as hawks' nests, stream mapping, rare plants), public consultation, and auditing tree regeneration success.
- served as a technical representative on the Forest Stewardship Committee of Renfrew County to provide expertise and guidance for a number of partnership initiatives such as a demonstration forest project, an on-going tree planting program, and a landowner 'success stories' publication

#### **Technical skills:**

- collecting data
- working outdoors
- computers
- ecology & soils

As part of my responsibilities at the MNRF, I verify wetland boundaries to support municipal planning and natural heritage protection. As a qualified wetland evaluator, my role is to review the background documentation and aerial photographs, communicate with landowners and consultants, and conduct site visits to identify the trees and plants and describe the soils. I use ArcGIS to map my findings and Word to write clear, descriptive summary reports. I track all of my contacts, site visits and outcomes in Excel.

#### **Communication skills:**

- communication
- interpersonal
- teamwork

At my previous position with MNR in Pembroke, I was the district representative on a regional Learning & Leadership team. This involved collaboration with others to set targets and goals, develop project plans and take on tasks. I consolidated the results of a staff survey to use as a source of direction for the team and ensured that a diverse range of viewpoints were represented on this committee. I led a sub-group to design a training module for staff; this involved facilitating meetings, determining action items and next steps, assigning tasks and managing deadlines.

#### **Self-motivational skills:**

- independence
- organization
- multiple assignments

For two years, I was the local coordinator (for Vineland and Guelph MNRF offices) for the Forest Values Collection Project. This is to support a region-wide collaborative project to field survey rare plants, turtles and fish. This involved evaluating equipment needs and making purchases, developing a centralized file to ensure that all safety information, resources, and maps are accessible to staff, as well as communicating with other coordinators to organize the workload and field crews. I pooled resources with two other districts to set up sessions for bear encounter training.

## APPENDIX B: Detailed Response to Peer Review and RMON Review

Note to Reader: 8Trees response to highlighted sections immediately follows each highlighted section (ANSWER:...)

### **LCA Environmental Consultants**

1 LCA Environmental Consultants, 104-155 Main St. E. Suite 136, Grimsby, ON

April 28, 2021

Gabrielle Parent-Doliner

153 Gadsby Avenue

Welland, ON L3C 1B1

Dear Ms. Parent-Doliner,

**Re: Peer Review of the Scoped Environmental Impact Study (EIS)**

**368 Aqueduct Street and 155 Gadsby Avenue, City of Welland**

### **1.0 Introduction**

LCA Environmental was retained by the landowners at 153 Gadsby Avenue in the City of Welland to complete a peer review of the Scoped Environmental Impact Study for 368 Aqueduct Street and 155 Gadsby Avenue, prepared by 8Trees Inc. (February 10, 2021). The peer review focused on the protocols used for field studies, the completeness of the EIS report, and compliance of the proposed development with Provincial, Regional, and Municipal policies and legislation. In order to obtain adequate background information for the study area, the following reports were reviewed:

- Parks, Recreation and Culture Plan – September 2006, *City of Welland*.
- Planning Justification Report for 368 Aqueduct Street & 155 Gadsby Ave – December 2020, *Joseph M. Tomaino, MCIP, RPP*.
- Scoped Environmental Impact Study for 368 Aqueduct St. x 155 Gadsby Ave – February 10, 2021, *8Trees Inc.*

In addition to the above-mentioned studies prepared for the Aqueduct Park development, LCA also reviewed The Niagara Region EIS Guidelines (2018), Regional and Municipal Official Plan documents, The Provincial Policy Statement (2020), and the Endangered Species Act (2007).

This report has been organized to follow the steps of the Region of Niagara EIS Guidelines (January 2018) to allow a fulsome assessment of the Scoped EIS Report (8Trees Inc.) in terms of completion and satisfaction of the requirements laid out by the Region. Any deficiencies in the report will be identified, as well as any inconsistencies between the findings of the field studies and recommendations identified in the report.

**ANSWER: we reviewed the updated 2019 City report (See EIS Addendum).**

### **Step 1: Determining EIS Requirements**

#### **1.2 Pre-consultation and Scoping**

According to the Pre-consultation Meeting, completed on November 7, 2019, with City of Welland, Region of Niagara, and NPCA planning staff, and Environmental Impact study was not identified in the checklist of required studies. However, the additional notes section identified that the Region of Niagara would require an Environmental Constraints report. Constraints reports are to be completed prior to development of a detailed draft plan and are guided by field studies and existing policies in order to best inform the type or form of suitable development relative to the existing natural heritage features and applicable policies.

An initial Environmental Constraints assessment was completed by 8Trees Inc. through desktop review and was submitted on January 13, 2020 to the Region of Niagara and NPCA. The Region reviewed the Constraints report and provided comment that it was insufficient due to a lack of field studies.

**ANSWER: Yes, this was expected, we were hired in December 2019 and submitted a preliminary screening (desk top work) to the Region in January 2020. The wildlife field season started in March, 2020.**

The final Scoped EIS report states that the preliminary constraints analysis and a site visit with the Region in January 2020 provided the framework for the scoped EIS. It is noted that the preliminary constraints report was not included in the Final Scoped EIS and it is unknown what the findings and recommendation of that report were.

**ANSWER: Yes, it was not included in the EIS as we thought it was a stand-alone document. Please see attached.**

Scoping of the EIS was completed by the Region of Niagara on January 22, 2020, following a site visit and provided the basis for a Terms of Reference (Step 2, below)

### **Step 2: Terms of Reference**

A site visit was completed with the landowner, 8Trees Inc. and Niagara Regional staff on January 22, 2020 to identify the existing natural features on the subject property and identify the requirements for the completion of an EIS. The Region identified the potential for the woodland on and adjacent to the study area to be designated as Significant Woodlands and to contain significant habitat of Threatened or Endangered species, species of Special Concern and/or bat maternity habitat.

Field studies identified as a requirement included Ecological Land Classification, single season vegetation survey, breeding bird survey, bat surveys and a Tree Saving plan, as applicable. The Terms of Reference provided by the Region also included completion of a Species at Risk screening and assessment of Significant Wildlife Habitat, a map illustrating natural heritage features and associated constraints on the property, an impact analysis and mitigation measures.

As identified in Regional correspondence, the EIS Checklist provided by the Region satisfied the requirements for Step 2 of the EIS Guidelines and directed the consultant to follow Steps 3 – 5 for completion of the EIS report as detailed below.

### **Step 3: Constraints Analysis**

#### **3.1 Policy and Legislative Framework**

Discussion of the policy and legislative framework was included in study Appendix D, but there was minimal discussion of their application or the implications these policies may have on development potential within the body of the EIS report.

Discussion of the Regional Policies were limited to Policies 7.B.1.3, 7.B.1.4, and 7.B.1.5 which define the natural heritage system but do not discuss how the natural heritage features limit development.

Policy 7.B.1.3 defines those features which are designated as Environmental Protection Areas (EPA), but Policy 7.B.1.6 prohibits development within features which have been designated as EPA. Similarly, policy 7.B.1.4 describes natural features which are to be designated as Environmental Constraints Areas (ECAs) including Significant Woodlands which are further defined in 7.B.1.5. However, the report does not discuss the impacts of policy 7.B.1.11 which states that unless an EIS demonstrates no negative impacts on the Core Natural Heritage system, development and site alteration are not permitted within ECAs.

Appendix D (Policies and Regulations) does not provide any Municipal planning policy context. Section 6.1.2.1 of the City of Welland Official Plan (2011) provides definitions of Core Natural Heritage features which are consistent with Regional policies 7.B.1.3 and 7.B.1.4. Welland policy 6.1.2.2 provides clarification of the application of the natural heritage policies by stating that if a previously unmapped core natural feature is identified during a study, the appropriate natural heritage policies do apply, including the presence of SAR habitat being subject to EPA policies. Policy 6.1.2.3.C prohibits development in EPA lands and restricts development in ECA lands unless no negative impacts are demonstrated.

**ANSWER: Yes, we did not review municipal planning policies only the official zoning bylaw which was in the pre-liminary screening report. The Zoning change request is the subject for this planning act application. We relied on the planning consultant to provide that context. Our understanding is that most of the woodland is currently zoned residential and the remaining small portion including Gadsby lot is zoned as open space recreation- there is no recognition within zoning bylaw for this woodland to be protected as a natural area in the City's official plan (Attached Screening report Fig. 2). And according to the LCA peer review, the Official**



Plan was not updated to include previous recommendations made in 2007 by City Staff and their consultants to expand the Aqueduct Park to include the entire woodland.

Most of the woodland within the subject lands is zoned residential and therefore only requires a building permit. There is also no tree cutting bylaw for the City of Welland and the Niagara Region's bylaw does not apply either due to small woodland size. Currently there is nothing stopping the landowner from clear cutting the woodland portion currently zoned residential, except for a restriction on timing of tree removal imposed by the province (MECP) and the Migratory Bird's Convention Act which protects migratory bird habitat during the breeding season. There is also the incentive for municipalities to complete "infill" developments as part of the provincial Growth Plan initiative. The Niagara Region's Environmental policies reflect the Provincial Policy Statement; however, I could not find any definition for "Old Growth" forest for southern Ontario woodlands (See additional correspondence with MNR).

Sufficient summary of the Provincial Policy Statement (2020) and the Endangered Species Act (ESA, 2007) were provided in Appendix D.

### 3.2 Literature Review

This section should provide a collection and discussion of existing information including previous studies completed for the area. The report provided an extensive list of studies and online resources which were reviewed to acquire historical and baseline information for the scoped EIS. The list included background reports such as the Niagara Areas Inventory (NPCA, 2009). However, resources which had been prepared by the City of Welland, including the Parks, Recreation and Culture plan, which provide information and strategic objectives for Aqueduct Park, were not reviewed. Further, there was no summary of the information obtained through the review of literature, such as previously identified enhancement opportunities. If no information was gained through the literature review, the EIS report should note that previous studies have not provided extensive evaluations of the study area.

**ANSWER: We have requested a copy of the City's report since the peer review brought it to our attention and have requested but did not receive a copy. We had searched for city reports and did not find it ourselves. This may be an outdated report that is no longer supported by the city (See correspondence with City of Welland).**

### 3.2 Baseline Data Assessment

The purpose of reviewing existing natural heritage information is to identify any gaps in data that need to be assessed through field work. The baseline assessment typically includes review of existing natural heritage mapping to determine significance and online species databases to identify potential SAR which may be present in the vicinity of the property.

The review of natural heritage features identified the presence of a non-significant woodland and noted that, while it did not satisfy 2ha criteria to be considered Significant Woodlands based on size, there was potential for rare species or Species at Risk (SAR) which could result in designation as an ECA Significant Woodland.

SAR or rare birds present in the woodland would satisfy the criteria for significance. Although a review of historical bird data for the site was completed, the source used was not a complete or verified source. The consultant referred to the records found on the e-bird database, which can be useful but cannot be considered a complete source of birds present in the area as citizen-science resources are often not verified and do not require the use of standardized protocols. The Ontario Breeding Bird Atlas should be reviewed as a credible source for birds present within the area.

**ANSWER: Yes, the presence of rare birds (in part) are used to determine woodland significance. Local birding experts use e-bird to report their observations in a seasonally timely manner. This information is the most recent up to date information anywhere and very suitable for screening purposes. And if it is not part of the normal screening process- it should be added. The NHIC data is very often outdated and incomplete and should not be the only source used for pre-screening purposes.**

### 3.5 Existing Conditions

This section will be divided into the four sections to discuss the methodology and results of the studies completed as part of the Scoped EIS, including Ecological Land Classification, Vegetation Survey, Bird Surveys, and Bat Maternity Roost surveys.

### 3.5.1 Ecological Land Classification

The Scoped EIS report describes using Ecological Land Classification (ELC) protocols for Southern Ontario to assess the vegetation communities present on the subject property. According to Appendix B, these surveys were completed in December 2019 and May 2020. Although the ELC manual does not specify a timeframe for completion of studies, they are typically done during summer leaf on conditions so that all vegetation species present can be observed and properly identified.

Field notes in Appendix C for December 2019 describe completing tree surveys, while notes for May 22, 2020 describe completing soil cores, but neither mention the use of ELC evaluations protocols. In addition, ELC field sheets have not been provided or summarized in the Appendix and it is not clear how the vegetation communities were defined.

The report identifies three polygons, including an FODM2-4 forest in Aqueduct park, an FODM9-2 forest within the boundary of the subject property and an SWDM1-3 polygon along the east side of the property. However, the according to ELC protocols, as noted in email communication from Anne Yagi to the NPCA dated January 13th, the minimum size for definition of a unique polygon is 0.5 hectares. The size of the FODM9-2 forest polygon mapped on the subject property was only 0.1742 hectares, while the FODM2-4 polygon in Aqueduct park was 0.4064 hectares. Based on the ELC protocol, the forest would appropriately be defined as one forested polygon with swamp inclusion (SWDM1-3, 0.2316 h).

The report uses the two soil cores as justification for the delineation of a second forested ecosite (FODM9-2) because the water table was higher at the location of soil core #2. However, the field notes describe selection of the soil core locations, noting soil core #1 was taken in the driest Oak forest, while core #2 was in a Pin Oak forest. Based on our interpretation of the current aerial imagery, as well as the presence of a Pin Oak Swamp (SWDM1-3) located adjacent to the upland forest, it is our assumption that soil core #2 was located in a low area which may have been part of the SWD1-3 inclusion, and not represented of the remainder of the upland forest on the subject property. An additional soil core should have been taken to verify soil conditions.

**ANSWER: We did a complete tree inventory for the subject lands. This the absolute percentage not the relative abundance method (See ELC methods; Lee et al., 1998). We used the relative abundance for plant groundcover as a 1m plot adjacent to the soil core. This data was used to inform the ELC. All data is present in the Appendix B(EIS Feb 2021)- we did not attach ELC forms. For soils we did two cores- given the site woodland is < 1ha, and consists of 2 communities- two cores is enough for broad soil categorization and the site communities are defined by changes in elevation. However, a swamp inclusion around the vernal pool makes sense due to small size and we completed additional soil investigation. Please see Addendum report for mapping changes.**

### **3.5.2 Single Season Vegetation Survey**

The report states that tree and shrub surveys were completed in December 2019 and May 2020. The May survey fits the appropriate timing windows for a single season vegetation survey which was required by the Region in the Terms of Reference.

The Region also requested that screening for White Wood Aster, which is a fall-blooming species, be completed for the property. The report states that additional White Wood Aster surveys were completed in accordance with Regional Terms of Reference, but it is unclear when and how the surveys were completed. The table in Appendix B indicates that vegetation surveys were completed in June, July, and August of 2020, but the report text (*Additional Field Note*) indicates that several site visits were completed in September.

**ANSWER: Yes, three site visits were completed in September 2020 in attempts to locate and confirm the presence of the White Wood Aster. This species was not confirmed extant by our staff or by a local expert Albert Garofalo who accompanied us during the September 2020 survey. Albert was one of the biologists who**

**first reported White Wood Aster in Aqueduct Park in 2018 (please correspondence in EIS- Appendix E). We also completed surveys in Sep 2021 and did not find WWA in the woodland. Albert Garofalo also repeated his search in September 2021 and did not find WWA.**

Conclusions of this section of the report indicated that White Wood Aster is likely present within the subject lands but may not have bloomed due to dry weather conditions through the summer. Further studies were recommended in 2021 to confirm presence or absence of White wood Aster. It is important to identify the location of White Wood Aster in the study area because according to the Recovery Strategy, a 50-80m radius of habitat is protected by the Endangered Species Act (2007).

**ANSWER: No, we did not conclude WWA was ever present within the subject lands. We concluded habitat is not suitable within the subject lands because the soils do not contain a sand lens which is only found in Aqueduct Park. The species needs well draining soils. We agree it might be still present in Aqueduct Park only. We have not found it in the woodland in 2020 or 2021 and an independent search also conducted did not find it in the remaining woodland. Please see addendum report.**

### 3.5.3 Breeding Bird Surveys

While the breeding bird surveys completed for the subject property were completed within the appropriate timing windows (May – July), the methodology used for the study was not consistent with the standard accepted protocols from Bird Studies Canada (BSC). The report describes completing surveys in the “evening and/or morning”, indicating that the surveys were not consistent. The BSC protocol specifies that surveys for breeding birds should be completed within the first five hours following dawn. While some protocols require evening surveys, such as the protocol for crepuscular breeding birds, these protocols are mutually exclusive from the breeding bird protocols.

In addition, the methods describe making audio recordings of bird activity on the site and sending them to the avian specialist for verification of species not identified in the field. This method does not follow the point count protocol accepted for breeding bird surveys as audio recordings are not reliable to identify all species present, especially in a highly urbanized area. Surveys should be completed on site by the avian specialist so that no calls are missed and that visual confirmation can be made as necessary.

**ANSWER: There are no absolutes in biology- therefore we call it sampling. Overlapping bird calls happen- this is a reality- especially in early morning- which is why we exceeded the minimum survey requirements by surveying at 10-minute intervals- instead of 5 minute intervals and we also recorded the 10 minute sample period so we can check our results and keep a record and have them reviewed independently by an birding expert. The Ontario Breeding Bird Atlas (Bird Studies Canada) states “There are two ways of doing point counts in Atlas-3. The first is the “Standard Point Count”, in which surveyors must be able to identify local birds by sight and song/call. The second, the “Recorded Point Count”, is new to Atlas-3 and involves using a hand-held or autonomous recording device to record the bird song at a point for a 5-minute period. The recordings are then uploaded to the Internet and “interpreted” by experts. Skilled birders who know their songs and calls well, can also help with interpreting recording point counts - a great way to contribute to the atlas!” <https://www.birdsontario.org/atlassing/1.-introduction>”. Therefore, this is an acceptable method to use a hand-held recording device.**

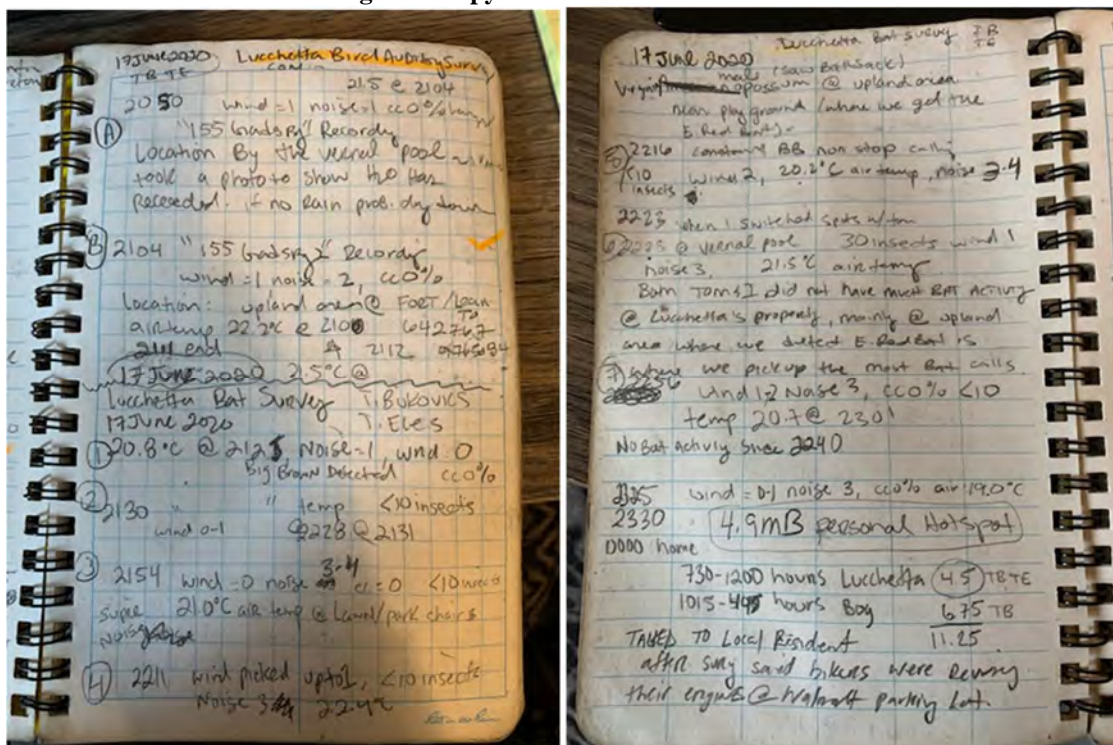
Frequent sampling throughout the day into the evening are the recommended approach to identify rare species- which was the primary objective of this scoped EIS. We completed two targeted surveys with 3 sampling stations for an area < 1 ha in size. We also completed 6 incidental visits from March to Aug (EIS Appendix B; Table B1) plus 3 extra visits in September to the site at a variety of time periods where we include all observations of wildlife (auditory or visual). We also included nearby reference site bird count surveys to put our data into local context as bird observations vary from month to month and year to year and due to disturbances, such as clear-cutting woodlands that recently happened along Hilda St. By including local birding data, neighbor observations and our site surveys we provided more than ample coverage of the

0.8 ha study area to determine the breeding presence of rare birds as per the Terms of Reference set out by the Region and agreed to by the landowner.

In addition, in July 2021 we completed another point count survey (see addendum report).

The specific dates of the bird surveys were not identified in the report however, Table B8 in Appendix B indicates that the first survey was completed on May 22, 2020, and the second survey was completed on June 17, 2020. Upon review of the field notes from those dates, the first breeding bird survey (May 22) was conducted in the morning by taking 10-minute recordings at each survey station. Notes from the second survey date (June 17) indicate that the survey was completed in the evening concurrently with the bat surveys. The surveyors made note that they "... heard incessant car noise all night" and that they were informed that local bikers had been revving their engines nearby. Such conditions would not be conducive to obtaining high quality recordings for thorough identification of bird species in the area.

**ANSWER:** A common convention in report writing is to refer to a table for detailed information. Regarding the "revving of engines" as noted in the detailed field notes. Breeding birds in urban areas are adapted to these human noises. Indicating that sensitive rare birds, which are those species that do not tolerate noise disturbances are not likely present- which is likely why the information was recorded in their field notes in a general context. Specifically, the field notebooks were reviewed and my staff provided additional context to the noise statement. "The revving did not start until 21:54 and continued to 22:26 PM- this was after the last bird count survey (21:11)". Therefore, there was no overlap with the bird recording and the noise encountered later in the evening". See copy of field notes below.



### 3.5.4 Bat Maternity Roost Surveys

The report provides a very thorough criticism of the existing MNRF bat survey protocols for treed habitats and goes into extensive detail on the development of a new protocol which was presented to MNRF for approval. The MNRF indicated that they would require pieces of literature to support the adapted protocol and cautioned that they may not be able to accept the protocols used and substantiate results if no SAR bats were identified. However, the methodology used resulted in 8Trees Inc. confirming the presence of Little Brown Bat, as SAR with endangered designation.



The confirmation of the presence of Little Brown Bat was based on a small sample size and a probability of only 40%. Using the currently approved MNRF protocol obtains a larger sample size which provides more data and increases the accuracy of the probability calculations.

**ANSWER: This is mathematically an incorrect statement. By increasing the sample period length (the denominator) after confirming a SAR bat is present you decrease the probability of occurrence calculation (numerator). There is no guarantee that there will be an increase in number of occurrences of a rare animal after the first encounter- there is only the guarantee that the denominator will get larger with each sample point. Therefore, the highest probability of occurrence for SAR bats during the June roosting season for this site is 40%.**

As detailed in the report, many species of bats have call frequencies which can overlap, resulting in a false positive. However, audio files recorded from the surveys completed by 8Trees were sent to the MNRF, who confirmed that they were likely SAR bats.

In the discussion of the bat survey results, the report states that identifying bat habitat based on snag density criteria skews the identification of significant habitat in small woodlands and that quality habitat should be based on proximity to water, mature oak trees and other suitable habitat. Based on these criteria, the report identifies the vernal pool and the FODM2-9 polygon north of the subject property as significant habitat, but not the FODM9-2 polygon on the property.

The exclusion of the FODM9-2 as significant habitat for SAR bats is contradictory to the criteria defined by the report, as it contains 16 large oaks (Table 4 of the report) and is located adjacent to the large vernal pool. Additionally, in the background information for the bat maternity section, **the report states that SAR bats are more susceptible to the loss of maternity habitat because of the impacts of White Nose Syndrome causing declines in SAR populations and site fidelity, emphasizing the importance of "...remnant habitat such as mature forest communities"**.

**ANSWER: The highlighted area above is a misquote. See EMail from A. Yagi to Jennifer (Niagara Region) "Given the declining number of endangered bats is entirely due to White Nose Syndrome and not due to cavity tree loss, the likelihood of detecting SAR bats is low even though the habitat maybe suitable for seasonal use." To explain the biology - White-Nose Syndrome is a fungal infection of the respiratory tract in bats that causes death during hibernation. Evidence suggests bats become infected in hibernacula and die over winter. Therefore, hibernation survivors are important to protect during vulnerable times of their life cycle such as maternity roosting season (1 month of the year) because sites may be shared with multiple species and individuals. This is why the focus is on protecting individuals and not the tree habitat which is not a limiting factor in Niagara.**

Further, the exclusion of the FODM9-2 as significant habitat for SAR bats is stated as such due to the information gained from the roving bat survey. We were able to detect areas of high activity, and more specifically areas of SAR activity, which highlights the vernal pool area and the FODM2-4 community north of the subject lands and did not highlight FODM9-2(Figure 9).

Also, if one were to look at any woodlands throughout the Niagara region, they could argue that every single woodlot with a mature oak tree or even individual mature oaks and maple trees are suitable habitat for bat maternity roosting and therefore every mature tree is potentially significant maternity roosting habitat for SAR bats, since the provincial criteria is so broad. Using this logic, no development would be possible beside any large tree.

So why do we do bat surveys?

Bat surveys using a roving method helps to narrow down the broad scope of potential suitable habitat into specific areas by tracking bats using their echolocation intensity, and confirming habitat use by the bats during their vulnerable life stages. With this knowledge, more meaningful development planning can take place.

Finally, the responsibility for providing habitat protection constraints and direction after SAR maternity roosting is confirmed, is the Ministry of Conservation and Parks (MECP). The direction provided from MECP was to not take trees down during the active season (April to September) and to add maternity roosting bat structures (See Email Correspondence MECP). Instead, we argued for protection of ecological functions which includes protecting the vernal pool area and the large oaks within Aqueduct Park. During our surveys we confirmed these two areas of bat echolocation intensity within the trees at Aqueduct Park and the feeding behaviour of *Myotis* sp. above the vernal pool during the month of June – which is when bats are maternity roosting.

### 3.6 Assessment of Features and Functions

This section of the report should provide a summary of field results and characterization of any natural heritage features present on the subject property as well as an assessment of the size, quality, significance and sensitivity of natural heritage features.

There is, however, no discussion of the significance of results from the study area. According to the results of the studies completed, as well as provincial documentation of the Threatened White wood Aster on the adjacent public land, the presence of Species at Risk (SAR) within the woodland satisfies Regional criteria for designation of the woodland as an Environmental Conservation Area (ECA) Significant Woodland. Since the entire woodland is one feature, the full extent of the existing woodland receives ECA designation and should be delineated in the field through dripline surveys. The woodland is therefore subject to Regional policy 7.B.1.11 and Municipal policy 6.1.2.3.C. Additionally, it will be subject to the Regional Woodland Conservation By-law No. 2020-79.

**ANSWER: The Discussion of significance of the results occurs in the “Conclusion” sections within each survey study. Please read EIS.**

The presence of amphibian breeding within the vernal pool identified on Gadsby lot confirms that the woodland area meets the criteria as seasonal breeding habitat which, in turn, defines this area as significant woodland. There were no amphibian studies completed for this report and no documentation of incidental sightings or auditory verification.

**ANSWER: Amphibian studies or the assessment of the vernal pool hydroperiod or quality to support an amphibian population was not required in the SCOPED EIS TOR despite the identification of a seasonal pool area in the original screening report (See Attached).**

Nevertheless, the Western Chorus Frog was heard calling on two site visits within the Study Site and once an American toad was heard (Page 96; Appendix B Table B10). Hearing amphibians call does not confirm successful breeding to metamorphosis. Nor does it confirm a viable population exists here. There are reasons the size of contiguous habitat area is an important habitat evaluation criterion for assessing population sustainability in pond breeding amphibians. The single seasonal pool is too small and is not likely to support a sustainable Chorus Frog population. Pond breeding amphibian populations, such as the Chorus Frog require sufficient hydroperiod and proximity of other pool habitats in order to be self-sustaining. There are no other pools for Chorus Frogs to disperse. Therefore, even with no development within the woods, it is only a matter of time, before the Chorus frogs disappear from this woodland entirely due to predation, disease, direct road mortality or random effects. Please see addendum report for addition information.

Further, the presence of Endangered and Threatened species on and adjacent to the subject property is subject to Regional policy 7.B.1.3 and policy 6.1.2.2 of the City of Welland Official plan and shall receive designation of Environmental Protection Area (EPA). Verification of the location of White Wood Aster and justification of the Little Brown Bat habitat must be completed to accurately map these areas prior to approval of any zoning amendments, as the species and their habitats are protected by the Endangered Species Act (2007).

**ANSWER: As stated before the determination of constraints regarding confirmation of Species at Risk is determined in consultation with MECP (See Email MECP). City of Welland did not identify any constraints for this site during the pre-consultation. Only a pre-screening and a tree preservation report were required. An EIS was not required by the planning authorities. The city’s official plan only requires a building permit application for most of the woodland area because it is currently zoned residential. The requirement for an**

**EIS was determined by the Niagara Region who then looks for direction from the Species at Risk experts from the province when SAR have been identified. See Email correspondence from the province, MECP.**

In addition to not adequately identifying the habitat of the SAR present on the subject property, there is no discussion of Significant Wildlife Habitat (SWH) within or adjacent to the study area. The Terms of Reference provided by the Region of Niagara requested that an assessment of Significant Wildlife Habitat potential on the subject land and included in the final report (email communication from Jennifer Whittard, dated June 8, 2020). The screening does not appear to have been completed and there is no discussion of SWH as part of the assessment of significance.

**ANSWER: We more than adequately identified the potential habitat for the White Wood Aster (WWA). Let's be clear, the WWA has never been identified within the subject lands. It was only found in 2018 in the City's Aqueduct Park. Aqueduct Park is an upland site having a sand lens component to the soil profile. The Subject land is lower in elevation in clay soils and without the sand lens component and is not suitable habitat for the WWA. Since 2018, half the wooded area was removed during a housing development along Hilda St. and a swale drain was added into Aqueduct Park to surface drain the woods. In addition, a large tree was removed from the centre of Aqueduct Park. All of these factors together with a dry summer likely contributed to the disappearance of the White Wood Aster in the summer of 2020. Despite repeated searches in September and enlisting the help of a local expert the White Wood Aster was not confirmed as present in Aqueduct Park in September 2020 or September 2021.**

The real biological question to answer is there enough habitat to support a sustainable population? Suitable habitat for the White Wood Aster is limited to Aqueduct Park and possibly the remaining woods to the north- however most of the remaining trees in the backyards along Hilda St. are now mowed (2021 obsv). Suitable habitat areas for WWA are confined by mowed grasses and urban developed lands. This means the site cannot grow outward through woodland restoration or regeneration processes under the current regime. The maximum suitable habitat is 80m X 60m which is under 0.5 ha. The entire buffer area whether we use 80m or 50m overlaps unsuitable habitat (Recovery Strategy). The question of long-term viability of the Aqueduct population of WWA (if present) remains in question.

Nevertheless, we recommend in our EIS that Aqueduct Park receive the highest level of planning protection possible (EP Zone). This type of protection should apply to the remaining northern sections of woodlands within private land as well. Therefore, the portion of woodlands from the subject lands that are proposed to be dedicated to the City which includes a northern strip of woods adjacent to the Aqueduct Park would also receive the same designation because it would be contiguous lands following the land transfer. However, that has also disappeared in recent housing development. The City now has the ecological justification to provide a level of Environmental protection to the remaining woods and seasonal pool area for the first time in the history of the woodland. **However, given the existing condition is highly degraded by the surrounding land use, a woodland restoration approach is recommended first before planning constraints are added. This can be accomplished during the development planning of this site (EIS Addendum Report).**

One of the categories of SWH includes the presence of rare vegetation communities. The Pin Oak Swamp (SWDM1-3) identified on the subject property is provincially identified as a rare community, with a status ranking of S2S3. While this community is common within the Region of Niagara, the limited northern range of Pin Oak makes the community less common throughout the province. It is important to provide this context, as the community meets the Provincial criteria for SWH, but does not necessarily represent SWH in a Regional context.

**ANSWER: For clarification as this may not have been clear in the EIS, we did a complete tree inventory for the subject lands- to meet the needs of the provincial protocol for bat maternity roosting habitat and ELC. Therefore, we know the true N or population size of trees, and their spatial distribution. Tree species were first identified in the winter then verified in the spring season. This information was used to inform the ELC community and site type. However, when you put the species into the context of abundance, Pin Oak species is a small component of a mixed deciduous forest community. A true rare Pin Oak Swamp community (S2S3)**

would have an exclusive pin oak dominant canopy and the trees would be healthy and thriving. This is not the case here as the swamp areas is probably better described as an inclusion within a Red oak- Red maple forest community. We have corrected this in our addendum report. In addition, we have collected new elevation data to define the natural seasonal pool and swamp community limits. Please see addendum report for more details.

This section of the Scoped EIS report appears to follow the steps of a Tree Preservation Plan and identifies that tree protection is recommended for all “important” trees. However, there is no clear definition of what qualifies as an important tree.

It goes on to state that the trees worthy of protection include trees on adjacent private and public lands, large Oak and Maple trees, and those within the SWD habitat. However, it appears that the desired development plan is guiding the identification of important trees as all of the mitigation scenarios presented result in removal of at least half a dozen large Oak trees. In the opening paragraph the author also states “Since the woodland communities comprise about 60% of the Subject Lands, protecting every tree would significantly affect the viability of the development project (Table 1).”

This section of the report does not adequately identify the natural heritage features present or provide an assessment of their functions. Instead, the report focuses on an inventory of trees and development scenarios which may minimize, but not exclude removal of important trees.

**ANSWER: Yes, a tree preservation approach was a consideration from the pre-consultation meeting with agencies. But it is more than a tree preservation approach. In the EIS, important trees are defined as adjacent trees located on private and public lands - trees not within the subject lands, and the private land or city trees receive the highest level of protection 15m set back. Then the seasonal pool area was delineated and a 10m setback (now 5m setback see EIS addendum) was applied to encompass the seasonal high water elevation and was proposed to define the important feeding area and associated trees for Myotis sp. during maternity roosting season. In addition, the large oak trees where bat maternity roosting was confirmed using, were protected along the northern edge of the lands with a 15m setback buffer and two additional constraints areas defined.**

### **3.7 Constraints Map**

In accordance with the Niagara Region EIS Guidelines and the Terms of Reference, a constraints map should identify all natural heritage features, corridors and linkages, any established minimum buffer requirements or regulated areas.

A constraints map has not been provided which identifies clear limits to development based on the natural heritage features.

**ANSWER: The woodland did not meet criteria for automatic protection under Niagara Region’s policies because it was too small (< 1ha) once the northern portion of the woods was removed for housing development along Hilda St and most recently the remaining position north of Aqueduct park is now mowed grass (Sep 2021 obsv). The original development proposal provided to 8Trees Inc. was assessed against the important ecological functions as identified by expert biological surveys within the wooded area and a compromised reduced development plan was put forward as presented in the final figure of the EIS (Page 43; Figure 23).**

The development as proposed removes several large DBH trees within the western edge of the subject lands and at Gadsby Rd. These trees have inherent biological and social values; however, their protection would reduce the development footprint substantially. Protection of these trees would require support by the local municipality to manage the woodland into the future. The trees are large and potentially hazardous to the neighborhood when they fall. “Tree fall” is a natural process in woodlands and there is limited space in urban areas for natural woodland processes to occur, which is why the woodland requires a consistent stewardship and management approach to thrive. To protect these trees and the neighborhood from hazards means a greater societal commitment is needed. We observed instances that the neighbouring developed lands are harming the health of this woodland by increasing the amount of extraneous organic matter and extraneous



**stormwater into the seasonal pool area. The extra water comes from roof top leaders and backyard swales that enter the woodland pool area. This increases the water elevations and duration of water in the woodland causing root rot, root cavity formation and leaning which increases the risk of tree fall and public hazards. Please see addendum report for details.**

### **3.8 Constraints Analysis and Recommendations**

The constraints analysis should be presented prior to any proposed development plans, as they are meant to guide the development of a draft plan which will preserve the ecological integrity of the natural heritage features. However, the development plan was presented in the introduction of the report.

The recommendations presented include protection of important trees, the seasonal pool and the associated flora. The extent of the seasonal pool and fauna were not described or mapped and the trees which were identified as important were also not mapped as part of constraints map.

The constraints analysis is also supposed to include any established buffers, including those which are regulated by policy and those which have been established based on the findings and scientific analysis. The three scenarios for protection of important trees were all mapped, but none of the options presented protected all important trees and do not identify the required buffer to protect root zones of the trees.

Identification of a single scenario (constraint) for development must be established based on protection of the ecological integrity of the woodland and must include identification of a minimum buffer to ensure those features which are identified as important are protected in the long term, in accordance with Regional and Municipal policies.

**ANSWER: Mapping of the seasonal pool has been verified with elevation data and additional constraints areas were provided in EIS. See addendum report.**

### **Step 4: Ecological Impact Assessment**

#### **4.1 Description of Proposed Development**

The proposed development for the subject property was presented in the introduction, on Page 2 of the report. While changes were made to the draft plan based on the recommendations of the report, the final draft plan was presented at the end of the report and showed only a reduction in the number of lots from 14 to 9, reducing the footprint within the woodland.

However, the plan, as it was presented, does not satisfy the requirements of section 4.1 of the Niagara Region EIS Guidelines, because it does not provide the level of detail necessary to identify all of the expected impacts from development. According to the Guidelines, the description of the development should include the exact location of the proposed lot boundaries, locations of the buildings and any amenity areas, roads and parking, servicing, and stormwater management plans.

**ANSWER: After initial plan review by agencies in Jan 2021, we were provided a site plan as shown in EIS (page 42; Fig. 22). The EIS in circulation dated Feb 2021, is a revised version of our EIS based upon agency plan review.**

Site grading plans also provide important information on the degree of disturbance that can be expected to the root zones of adjacent trees.

The detailed drawing, as described above, should also be overlaid on a map of the constraints to determine where the impacts are expected to occur in relation to the natural heritage features identified.

**ANSWER: No grading plan was provided.**

#### **4.2 Impact Assessment**

The assessment of impacts does not address the impacts of the final development plan, but rather the plan presented at the beginning of the report, and prior to modification based on results of constraints analysis. Impacts are described at a very general level, focusing on the number of trees which would need to be removed to accommodate the development and some of the general impacts which can be expected from development within a woodland.

There is some consideration in the assessment of impacts given to the habitat of SAR which have been identified on and adjacent to the study area. It is noted that the initial proposed development would result in 100% loss of trees within the site and the vernal pool habitat, impacting SAR trees. However, it is suggested that the application of the habitat protection zone would reduce these impacts. While some impacts may be reduced, there would still be impacts to consider with the habitat protection zone scenario.

When portions of a woodland are removed and replaced with housing, there can be longer term impacts expected on significant species and their habitat. Impacts of increased occupancy can further degrade the woodland and changes in hydrology resulting from stormwater management may still result in loss of the vernal pool, having significant impacts on SAR bats. The impacts associated with the final design layout are important to characterize.

**ANSWER: This is a scoped EIS to address potential for rare species habitat and Species at Risk. That is why the surveys and analysis and correspondence with agencies focused on rare species. The terms of reference reflect this aspect and were followed.**

#### **4.3 Design Changes and Mitigation Measures**

Three options are again presented for design change and mitigation. However, this section of the report provides an overview of the change in development space with the different scenarios applied. All designs result in a decrease in development area, but none of the options will eliminate or further mitigate impacts which can be expected from development and the removal of a portion of the woodland or loss of the vernal pool and bat habitat identified on the single lot on Gadsby.

**ANSWER: The natural vernal pool delineation has now been mapped. See addendum report.**

#### **4.4 Ecological Restoration or Enhancement Opportunities**

Ecological Restoration or enhancement opportunities that were identified include providing a brochure to adjacent landowners which provides guidance on stewardship, protection and enhancement of the park. We agree that education of the general public on the importance of the woodland and its features may help reduce negative impacts of use by the general public. Signs and development of a trail may help protect the significant species present.

#### **4.5 Residual Environmental Impacts**

No summary of residual impacts has been provided. Impacts from the initial proposed development were described and some mitigation measures were presented, however the EIS must identify what impacts can still be expected after the mitigation measures have been applied.

**ANSWER: This aspect has been further addressed in the Addendum Report.**

#### **4.6 Monitoring**

The report states that both sites (368 Aqueduct Street and 155 Gadsby Ave) should be monitoring during and after construction. However, a description of what features or functions should be monitored is not provided. A description of the goals of the monitoring, the traits being monitored, and length of a monitoring program post-construction should be provided.

**ANSWER: The EIS recommends tree marking by an arborist, or environmental professional and tree fencing to protect root zones (see Appendix F). Additional monitoring recommendations has been addressed in Addendum Report.**

#### **Step 5: Recommendations and Conclusion**

The recommendations and conclusion of the report identifies the recommended designations of EPA in the north, publicly owned portion of the woodland, and an ECA designation for the remainder of the woodland on the subject property. These designations should have been identified in assessment of features so that the correct policies could be applied to the proposed development.

It was stated in the Recommendations (Page 41) that the subject lands receive “...an environmental conservation designation which will permit some development while protecting the seasonal pool functions and associated large trees to maintain habitat for the Little Brown Bat”. However, designation of ECA lands in the southern portion of the woodland is not consistent with the findings of the study which states that the seasonal pool on the subject property provides important habitat for SAR bats. In accordance with Regional and Municipal policies, the area identified as seasonal pool should also receive EPA designation as SAR habitat.

The recommendations and conclusion of the Scoped EIS Report do not provide any discussion on whether the proposal is in compliance with the applicable policies and legislations. This is essential to provide rationale for a final recommendation as to whether the proposal can proceed as planned, or whether it should be subject to conditions. The policy table (attached) details all the relevant policies that should have been addressed as part of the EIS.

**ANSWER: The seasonal pool area has now been mapped following an elevation survey. The natural seasonal pool area is distinguishable from the anthropogenic influences from the adjacent lands. Bats are not an aquatic species. They are aerial insectivorous species. Therefore, the sky above the natural pool area was confirmed as endangered species feeding habitat due to the presence of a canopy opening with less wind and a concentrated area of insect production which was also nearby roosting sites within Aqueduct Park. If the insect production continues, park retains the roosting trees, and the opening remains overtime, so should the function of SAR bat feeding. Please see attached addendum.**

#### **Summary**

LCA Environmental has reviewed the Scoped EIS Study for 368 Aqueduct Street and 155 Gadsby Avenue in the City of Welland and have identified several deficiencies in the field studies completed, the assessment of significance, and the assessment of impacts. Specifically, field several field studies did not follow the accepted standard protocols, and the assessment of significance and impacts do not integrate the applicable policies or legislation.

**ANSWER: Disagree. The province who is the legal authority for the Endangered Species Act was consulted and there were no additional constraints provided. The Region takes their direction for designation of significance regarding species at risk, from the province. We provided zoning recommendations for EP within Aqueduct Park, protection of a natural heritage feature “seasonal pool” and associated woodland by potential dedication the area back to the city which would then include that feature as part of EP designation as the lands are contiguous, which also reflects the provincial policy. There is to be no development within EP designated lands that is the highest level of protection offered in the PPS.**

Additionally, the report did not satisfy all the requirements of the EIS guidelines including the provision of a detailed constraints map, an assessment of impacts expected from the final development plan, or a summary of policy compliance. The lack of impact assessments and statements confirms that the report does not meet the test of no net negative impacts to the natural feature form and function. The descriptions detailed in the executive summary are contradictory to the report conclusions which state that the proposed development meets most of the EIS recommendations with no mention of the loss of significant habitat or non-compliance with local, regional, provincial (PPS) and federal policies (ESA).

A table detailing the applicable policies at the municipal, regional, provincial and federal levels has been attached to this report for your convenience.

**ANSWER: The deficiencies are provided in the Amended report. Thank you for your peer review.**

We trust that the information provided in this report meets your needs. If you have any questions regarding the above information or require additional information, please contact us.

Sincerely, Lisa Price, M.Sc.  
Project Manager

Anne McDonald, BSc, EPt  
Project Coordinator

<b>Policy Document</b>	<b>Policy Section</b>	<b>Policy Summary</b>	<b>Compliance</b>	<b>8TREES Response</b>
Provincial Policy Statement, 2020	2.1 Natural Heritage	<b>2.1.2</b> Diversity, connectivity, and function of natural systems should be maintained, restored, or improved.	No assessment provided in the EIS	Disagree: There is no connectivity to KNHF see LIO map on pg. 4 of EIS report
		<b>2.1.5</b> Unless no negative impacts have been demonstrated, development and site alteration are not permitted in significant wetlands, woodlands, valleylands, wildlife habitat, or areas of natural and scientific interest.	Woodlands qualify as significant based on presence of two documented Species at Risk (SAR).	Disagree: First WWA may have been documented in the past but only in Aqueduct Park-not the subject lands-and it was not confirmed in 2020 or 2021. Only a portion of the woodland is suitable habitat for the WWA- not all the woodland. All the potentially suitable habitat has been identified and recommended for EP designation. This was a suitable approach confirmed by the province.
		<b>2.1.6</b> Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.	Not applicable	No Further Comment
		<b>2.1.7</b> Development and site alteration shall not be permitted in habitat of endangered and threatened species, except in accordance with provincial and federal requirements	Development proposal and EIS report recommendations do not comply. Habitat is defined as any area directly or indirectly depended on for life processes. Based on documentation of SAR bats, proposed development does not	Yes, the discretion on imposing further development planning restrictions was left to the provincial expert reviewers- who did not recommend anything further. This proposal exceeds the usual level of protection required by the province by protecting the roosting trees and the seasonal pool area where we confirmed SAR bats were using in 2020. Roosting trees are used for 1 month of the year and feeding occurs in the air above the vernal pool- not in the vernal pool. Provided the pool remains, the feeding function will continue. This is an ecological function analysis.



			<p>comply. Insufficient justification on why portion of woodland on property proposed for removal is not considered habitat.</p> <p>Actual limits of defined habitat for WWA and SAR bats has been left to the discretion of MECP (?)</p>	
		<p><b>2.1.8</b> Unless no negative impacts have been demonstrated, development and site alteration are not permitted on lands adjacent to natural heritage features and those in 2.1.5.</p>	<p>No impacts have been assessed on final proposed development, so EIS has not demonstrated no negative impacts to natural features.</p>	<p>We suggested a 15m buffer as a protection zone for adjacent large trees. This exceeds the usual dripline protection zone approach.</p> <p>We also list some impacts on Pg 34 of EIS report “Construction within woodlands may result in direct or indirect impacts to woodland vegetation especially large or older trees. Direct impacts include physical harm (canopy, branches, bark, and root damage) and indirect effects caused by reduced oxygen from soil compaction by heavy machinery or the addition of soil fill, changes in water table or increased damage from wind exposure. Small trees (&lt; 1m height) can be transplanted to a suitable offsite location in the early spring season. However large and older trees require additional mitigation, and consideration of protecting the tree root zone which extends well beyond the canopy circumference or drip line.”</p>
Endangered Species Act 2007	Purpose	<p><b>Section 1.2</b> identify SAR, protect them and their habitats, and promote recovery of SAR</p>	<p>SAR bat and White wood aster identified on property.</p>	<p>WWA not confirmed present in 2020 or 2021.</p>
	Definitions	<p><b>Section 2</b> habitat is any area species depend, directly or indirectly on to carry out life processes, including, reproduction, rearing, hibernation, migration or feeding.</p>	<p>Habitat for bats would include entire woodlot based on presence of snags throughout.</p> <p>Habitat for White Wood Aster defined in Federal Recovery strategy as an 80m radial distance from existing population; or minimum 50m where suitable habitat doesn't extend 80m.</p>	<p>The provincial protocol broadly defines suitable maternity roosting habitat for SAR bats. The 8Trees sampling protocol confirmed two focal points of bat activity and also confirmed SAR presence in these two areas. Therefore, these two areas are protected from development. This was reviewed and accepted by the province.</p> <p>The entire potentially suitable habitat for WWA is recommended for EP protection and will not be developed (Aqueduct Park and upland woods) and no development of the vernal pool and adjacent large trees.</p> <p>The 50 or 80m buffer zone recommended in the WWA Recovery Strategy was not used, because the buffer would encompass NON-SUITABLE HABITAT. The remaining suitable habitat is confined by the limits of the upland woods. An additional buffer would not aid the recovery or protection of the WWA. The population of</p>

				WWA, <u>if still present</u> , is also limited to the suitable habitat areas which are all recommended for EP designation.
	Classification of Species	<b>Section 3</b> Committee on the Status of species at Risk Ontario (COSSARO) uses scientific-based assessments to determine SAR classification in Ontario and designated species as: extirpated, endangered, threatened, or special concern.		Yes, COSSARO is provincial and COSEWIC is federal. Often, they match - sometimes they do not match. When they do not match, we use both.
	Protection and Recovery of Species	<b>Section 9(1)</b> Prohibits interference or trafficking of species listed as SARO with the designation of endangered, threatened or extirpated.	Would apply to any potential removal or impact to the White Wood Aster as the actual area is not defined.  Reference in the report to MECP input as to the area of protection required.	See Figure 21, Page 40 EIS Report Eurybia sp Extant Area. (See above rationale) The limits of the upland woods are the only potentially suitable habitat for the WWA. See MECP correspondence Appendix E.
		<b>Section 10(1)</b> Prohibits damage or destruction to the habitat of any species listed as SARO with the designation of endangered, threatened or extirpated.	The radial distance of 50 – 80m is protected as critical habitat for the White Wood Aster according to federal recovery strategy adopted by Ontario.	The 50 or 80m buffer zone recommended in the WWA Recovery Strategy was not used, because the buffer would encompass NON-SUITABLE HABITAT. The remaining suitable habitat is confined by the limits of the upland woods. An additional buffer would not aid the recovery or protection of the WWA. The population of WWA, if still present, is also limited to the suitable habitat areas which are all recommended for EP designation.
Migratory Bird Convention Act, 1994	Prohibitions	<b>5</b> Prohibits the unlawful possession or trafficking of a migratory bird or nest.	Not applicable if work done outside of breeding season	No Further Comment

		<b>5.1.1</b> Prohibits all persons and vessels from depositing of harmful substances in water or areas frequented by migratory birds (exception: 5.1.3)	Not applicable if work done outside of breeding season	No Further Comment
		<b>5.1.2</b> Prohibits all persons and vessels from depositing of harmful substances in any place where the substance could potentially enter water or areas frequented by migratory birds (exception: 5.1.3)	Not applicable if work done outside of breeding season	No Further Comment
Niagara Region Official Plan, 2014	7.B The Core Natural Heritage System	<b>7.B.1.1</b> Core Natural Heritage consists of: a) Core Natural Area, classified as either EPA or ECA;  b) Potential Natural Heritage Corridors connecting the core Natural Areas;  c) Greenbelt Natural Heritage and Water Resources System; and  d) Fish Habitat	Report recommended forest be designated as ECA, which would make it core natural heritage and impacts to the feature should be assessed as such. It is not clear on how the EPA area and ECA area limits were determined other than state that an EPA designation would limit development potential.	See ABOVE Rationale
		<b>7.B.1.3</b> EPAs include PSWs, ANSIs, and significant habitat of threatened and endangered species	Woodland contains habitat for SAR including WWA and SAR bat and the areas identified as habitat should be considered EPA which	See ABOVE Rationale

			includes area described in federal recovery strategy as WWA critical habitat (50 – 80m radius).	
		<b>7.B.1.4</b> ECAs include significant woodlands, significant wildlife habitat, significant habitat of species of concern, regionally significant Life Science ANSIs, other evaluated wetlands, significant valleylands, savannahs or tallgrass prairies, and alvars	Whole woodland meets criteria for Significant. May meet further designation if vernal pool is utilized by amphibians for breeding and meets Significant Wildlife habitat criteria for amphibia breeding (woodland).	An amphibian study or hydrology study exceeds TOR. However, in our expert opinion, a few individuals calling from the seasonal pool does not mean they have successful breeding sufficient to support a sustainable population. Without other nearby pools to support dispersal function the sustainability of a few individuals is unlikely. Gradually the individuals will be lost from the area through attrition, predation, disease or road mortality.
		<b>7.B.1.5</b> significant woodlands must meet one or more of the following: a) Contain threatened or endangered species or species of concern b) In size, be equal to or greater than: i) 2ha within or overlapping Urban Area Boundaries; ii) 4ha outside Urban Areas and north of the Niagara Escarpment; iii) 10ha outside Urban Areas and south of the Escarpment; c) Contain interior woodland habitat at least 100m in from woodland boundaries, d) Contain older growth forest and be 2ha or greater in area	The woodlands on the property (and adjacent) contain threatened or endangered species and therefore meet criteria for significance. The woodland is significant as an entire unit, not the individual parts as described in the report. The recommendation in the report for vernal pool was to identify it as EPA. This satisfies criteria 7.B.1.5 e). Report fails to acknowledge this and the building lot on Gadsby would directly remove a portion of the identified feature.	To be clear, we did not confirm SAR within the trees or woodland on the subject lands. We recognize that WWA was previously confirmed in 2018 on city own parklands and we also confirmed roosting habitat use by bats within Aqueduct Park oak trees and we confirmed the air space above the seasonal pool located on subject lands was used by SAR bats for feeding. We mapped the extant and potential WWA habitat which is naturally confined to the limits of the upland woodland habitat, and recommend that are to be designated EP. These ecological functions will be protected using the EP designation for City owned woodlands, potential habitat limits for the WWA including the potential dedicated portion- if that transaction happens.



		e) Overlap or contain one or more other EPA or f) Abut or be crossed by a watercourse or water body and be 2 or more hectares in area.		
		Report recommend EP designation north of property; no development has been proposed within EP as designated in report. However, EP designations may extend onto property based on definitions of SAR habitat described above.	Report recommend EP designation north of property; no development has been proposed within EP as designated in report. However, EP designations may extend onto property based on definitions of SAR habitat described above.	Yes, no development proposed in EP
		<b>7.B.1.11</b> unless no negative impact on the Core Natural Heritage System component or adjacent land has been demonstrated, development and site alteration are not permitted within ECAs.	Report has not demonstrated no negative impact, as no assessment of impacts has been made for final proposed development.	EIS recommended areas for EP zoning to protect identified ecological functions supported by data and analysis. 1) WWA – max limits of potential habitat; 2) SAR bats- roosting trees in Aqueduct Park and natural seasonal pool within the subject lands.
		<b>7.B.1.13</b> development applications in or near Potential Natural Heritage Corridors, should be designed and constructed to maintain and, where possible, enhance ecological functions of the Corridor.	No discussion in report on whether the woodland provides any corridor function or not.	Page 5 of EIS report “there is no ecological or hydrological linkage to include this swamp community (undersized- 0.5ha minimum criteria OWES) within the PSW complex because the Welland Recreational Canal forms a break in connectivity, therefore it did not meet the criteria for evaluation or for complexing (Figure 4).

NPCA Land Use Policy Document, 2018	8.2.3 Development in Areas of Interference	<b>8.2.3.1</b> No development and site alteration permitted within 30m of a wetland (exception: 8.2.3.2)	No wetland identified on subject property. As described in report, vernal pool and swamp habitat does not meet size criteria for designation and evaluation under OWES protocol.	Yes (see correspondence with NPCA EIS- Appendix E)
	9.2.5 Watercourse Buffer Composition	<b>9.2.5.1</b> development and site alteration adjacent to a watercourse requires a natural buffer of 10-15m based on: a) 15m natural buffer for watercourses containing permanent flow, cool water, or coldwater systems or specialized aquatic or riparian habitat (not limited to fish spawning areas, habitat of SAR or species of concern, forested riparian areas or Type 1 Critical Fish Habitat); b) 10m natural buffer for watercourse containing intermittent flow, warmwater systems or general/impacts aquatic or riparian habitat, or Type 2 Important Fish Habitat or Type 3 Marginal Fish Habitat;  other considerations which may impact pollution or the conservation of land	No watercourse identified in report. Policy not applicable.	Yes

City of Welland Official Plan, 2011	6.1.2.1 Core Natural Heritage System	<b>6.1.2.1.E</b> Environmental Protection Areas include: provincially significant wetlands; provincially significant Life Science ANSIs; and significant habitat of threatened and endangered species.	<b>6.1.2.1.E</b> Environmental Protection Areas include: provincially significant wetlands; provincially significant Life Science ANSIs; and significant habitat of threatened and endangered species.	Yes
		<b>6.1.2.1.F</b> Environmental Conservation Areas include significant woodlands; significant wildlife habitat; significant habitat of species of concern; regionally significant Life Science ANSIs; other evaluated wetlands; significant valleylands; savannahs and tall grass prairies; alvars; and publicly owned conservation lands.	Woodland considered significant and therefore should be designated as ECA, as described in report and in accordance with Regional and Municipal policies,	The portions of the woodlot that are ecologically important have been recognized for EP protection based upon habitat suitability limits for WWA and habitat use by SAR bats within a portion of the woodland during the 1-month maternity roosting season in 2020. Review by provincial experts accepted the recommendations in the EIS for habitat protection which goes beyond the usual recommendations for tree removal time periods and replacement of trees lost with bat boxes.
	6.1.2.2 Delineation of the Core Natural Heritage System	<b>6.1.2.2.C</b> Where SAR habitat is identified, development is subject to EPA policies.	WWA habitat and SAR bat habitat subject to EPA policies.	SAR habitat protection is subject to the rules of the ESA and approval by the province.
		<b>6.1.2.2.D</b> If a previously unidentified Core Natural Heritage feature is identified on lands involved in an ongoing planning Application, the appropriate Core Natural Heritage System Policies apply.	Identified as EP and ECA; therefore, the appropriate policies apply.	SAR habitat protection is subject to the rules of the ESA and approval by the province. The significant features within the limits of this site were identified and protection measures applied. I would not consider this remnant woodland as part of a Natural Heritage system. There is no connecting system in an ecological or sustainable context- just fragmented, isolated features that still have identifiable ecological functions, - just features. There is no place to restore this site to a sustainable size even with buffers added as the buffers extend into non-suitable habitats especially for the WWA. SAR bats habitat use will be sustained if the insect production and woodland opening continues to be present. Maternity roosting habitat is not limiting SAR bats-

				White Nose Syndrome is- and this limiting factor is not related to woodland protection.
		<p><b>6.1.2.2.E</b> Significant woodlands have one or more of the following criteria:</p> <ul style="list-style-type: none"> <li>i. Contain threatened or endangered species or species of concern;</li> <li>ii. In size, be <math>\geq 2</math> ha, if located within the UAB;</li> <li>iii. Contain interior woodland habitat;</li> <li>iv. Contain older growth forest and be <math>\geq 2</math> ha;</li> <li>v. Overlap or contain one or more of the other significant natural heritage features; or,</li> <li>vi. Abut or be crossed by a watercourse or water body</li> </ul>	Contain threatened and endangered species and whole woodland is, therefore, significant.	SAR habitat protection is subject to the rules of the ESA and approval by the province. The entire potential habitat for the WWA has been identified and recommended for EP designation. The portion of habitat within the subject lands that was confirmed used by SAR bats (air space above the seasonal pool) may also be protected and dedicated to the city.
	6.1.2.3 Design, Development and Site Alteration	<p><b>6.1.2.3.A</b> New development should maintain, enhance or restore ecosystem health and integrity. No negative impacts should be prioritized however, if it can't be avoided, then mitigation measures shall be required.</p>	Development and EIS do not comply. Negative impacts can be avoided by reducing development footprint.	Yes, this is true. We have reduced the development footprint from original proposal. Not assessed in the context of the final proposal.
		<p><b>6.1.2.3.C</b> development prohibited in EPA. Development may be permitted without an amendment to this Plan in ECAs, Natural</p>	No impact assessment completed and therefore the test of no negative impact has not been demonstrated. Unclear if mitigation of tree removal	Yes, I agree with some of this. We did provide some impacts to the site pg 34. But clear mitigation needs to be explained to ensure that no impacts to the vernal pool or significant roosting trees impacted by development. Aka protective measures we need to take during the build.



		Heritage Corridors, and on all adjacent lands if no negative impacts demonstrated.	could offset negative impacts to the woodland, which contains old growth trees.	
Niagara Region EIS Guidelines (Jan 2018)	Step 3: Constraints Analysis	Constraints analyses should be prepared prior to identifying development layout.	Development layout presented at the beginning of report in the introduction. Regional correspondence in the Appendix indicated that the initial Constraints report completed for this site did not include field evaluations and was insufficient. The Region of Niagara required that the scoped EIS and TOR be developed for the EIS.	Yes, the first screening report- with woodland constraints- was not provided within the current EIS report. That would be a strange thing to do, to put one report inside another as they are separate reports. In future we will do that. (See attached initial report).
	3.1 Policy and Legislative Framework	Shall include discussion of applicable policies and regulations and their implications	No discussion of any specific PPS policies; EIS does not include all applicable Regional policies (missing 7.B.1.6, 7.B.1.11, 7.B.1.13); No discussion of municipal policies; No summary of Endangered Species Act.	Yes, the policies are listed but are not integrated into our assessment. The city policies were missed. The focus was on the official zoning bylaw. The Endangered species act was discussed within the context of each confirmed or suspected species only.
	3.7 Constraints Map; 3.8 Constraints analysis and Recommendations	Constraints mapping should identify all natural heritage features, all hydrologic features, corridors, and establish minimum buffer requirements	No constraints map or analysis provided. Did not provide a clear buffer requirement; provided 3 options to accommodate development, but no clear direction given.	Yes, no additional buffers outside of the key habitat features were applied to the site. See WWA rationale and SAR bat rationale described previously. Therefore, the landowner hires biologists to do the relevant studies to confirm habitat use or suitable habitat that actually needs protection verses applying broad non-specific planning policies.
	4.1 Description of proposed development	Should provide description of the nature, scale and purpose of proposed	No detailed description of development included. Limited to two photos (Figure 22 and Figure 23)	I agree, grading and servicing requirements are listed as a requirement to include as per the Niagara Region EIS guidelines. We did not receive this information for the revised development proposal.

		development. Should describe location of boundaries and proposed lots, buildings and other structures, amenity areas, parking, servicing, stormwater management. Must include any tree removal requirements.	which provide little detail, with no grading or servicing requirements.  Stated that 31 mature oak would be removed but no discussion of rationale or impacts and no discussion on the impacts of the surrounding mature trees. Recommend tree buffers set at a standard distance despite the requirements detailed in the report.	The rational is the environmental protection zone - buffer of 15m for adjacent – owned trees.
	4.2 Impact Assessment	Identify all potential impacts of proposed development to natural heritage or hydrologic features. Must integrate grading, servicing, and stormwater engineering and must describe impacts expected during, construction, and following construction over the short term and long term.	No impact analysis of final proposed development. Some impacts listed for initial plan presented, but they describe loss of 100% of the trees on the site and function of the vernal pool. No other, during or post-construction, impacts described. Options for mitigation of impacts included application of buffers, or a land swap with city. Neither of these options were adhered to entirely with final proposed development but EIS report described final plan as “good general adoption of EIS recommendations”	I agree. Our Analysis focused on the first development we had before us, not on the development that it was changed to after our findings. This can be expanded on.  However, we did address some indirect and direct impacts and some rational see Page 36 of EIS report below:  “The proposed development footprint including direct and indirect effects caused by disturbing, trenching, excavating, and draining the SWDM1-3 area within the woodland is expected to result in almost 100% loss of trees within site and loss of the seasonal pool habitat. This loss would directly impact existing ecological functions including maternity roosting habitat for Species at Risk bats and potential recovery area for White Wood aster. In addition, there are potential losses to adjacent private land trees. The environmental impact (direct loss of trees) is reduced by applying the recommended habitat protection zones (Figure 19). However, the development planning area is also significantly reduced (Table 5). By shifting the development location to the west and negotiating a land swap with the city, the area suitable for development increases almost back to the original development area (Figure 20). The configuration of the road, parking, housing, and gardens with innovative deck designs in the rear yards may further reduce loss of existing trees and maintain developable areas.”
	4.5 Residual Environmental Impacts	EIS shall identify and provide a detailed scientific analysis and assessment of all residual environmental impacts reasonably	No summary of residual impacts provided.	Yes. This can be expanded on.

		expected to remain and provide conclusions as to magnitude and significance of these residual impacts.		
	Step 5: Recommendations and Conclusion	EIS to review residual impacts of proposed development and indicate if it complies with plans, policies, and regulations. Inconsistences should be identified. Should conclude with recommendations whether proposal should proceed as planned, or whether it should be subject to conditions.	No summary or discussion of compliance with applicable policies. No clear conclusion on whether the EIS supports the proposed plan, or whether it should be subject to conditions.	We have presented a recommendations section. EP zoning recommendations and land swap recommendations. This can be expanded on. Conclusions can also be expanded on.

## **8Trees Response to Regional Planning Staff Comments: Email May 14, 2021**

**Prepared by Anne Yagi President 8Trees Inc.**

### **1. Core Natural Heritage System**

We agree there is no core natural heritage system identified in the vicinity of the subject lands. We also agree there are no mapped or identified natural heritage features on the subject lands. We also agree that the small remnant woodland was present as a larger mature woodland in the earliest aerial photo records (1921 and 1934) and was present in 2019 when we started our work (Brock University Map library and via Google Earth). However, the conditions of the past are not always reflected within the conditions of the present day. We note there has been a substantial loss of woodland area since we began our work in November 2019 and we question the integrity and fairness of the development planning process and whether any due diligence was completed here. Therefore, we request all copies of the Environmental Impact Studies completed for those developments which removed and altered over 0.4ha of urban woodland habitat that was also within the extant range of the White Wood Aster and maternity roosting habitat for SAR bats as determined by our EIS (Feb 2021).

At the Region's request, we have completed extra field work and studies this year to full fill an expanded term of reference requested by the Region, and to clarify our position. Although the information gathered added some context, we stand by our original recommendations for a compromised balanced development planning approach with the protection of adjacent woodland trees and their root system (Aqueduct Park) and the natural vernal pool area north of the Gadsby Road lot. We recommend a woodland restoration and stewardship approach to manage the remaining woodland into the future and have provided additional context in the amendment report.

#### **Specific Regional Comments:**

**a) An addendum report will be prepared as above and sent to MECP for review and comment [see addendum report]**

**b) Consistent with ROP Policy 7.B.1.3, the confirmed extent of SAR habitat is an Environmental Protection Area (EPA) feature and as a result must be placed into an appropriately restrictive environmental zone. [No SAR habitat was identified within the Subject lands- no EP Zoning recommended- see addendum report]**

**c) Report will include any additional correspondence with MECP regarding the results for WWA and Little Brown Myotis. [see addendum report]**

**2. Breeding Bird Surveys Minimum Standards Requirement.** We did not comply with minimum standards for breeding bird surveys, because minimal standards will not necessarily identify rare birds because they restrict sampling to the morning period. The morning period is the most intense time of the day for multiple birds singing with common species more apt to interfere with identifying rare birds. As per our Terms of Reference (TOR) we were requested by the Region to scope our field work to identify rare species and we more than adequately met the terms of our agreement. Frequent visits throughout the day and evening are required to provide more opportunity to identify rare breeding birds,



this is achieved during incidental surveys as well as point count surveys. The minimum point count approach is a 5-minute auditory and visual survey, twice within the breeding season. We completed 10-minute point count surveys twice in the breeding season including once in the evening and included nearby reference sites to place our results into local context. Evening surveys are valuable because for example the Eastern Wood-Pewee (SC) is one of the last birds to call at dusk- making it easier to discern from overlapping calls and noisy robins during the morning survey. We also audio recorded each point count survey so we can review overlapping calls and have our bird list verified by our birding expert. We provided all our data which is contained in the EIS including the dates and times for the point count surveys (Appendix B; Table Bx). We also searched e-bird records for the same time in case local birders found something we may have missed. A record of note was an older record for the Eastern Wood-Pewee (SC) from Hilda Street prior to the housing development in the northern portion of the woods in 2019. Our staff and birding expert are disclosed (Appendix A; EIS, Feb 2021). A question related back to Regional Staff: Is there evidence or are their suspicions that we missed a significant bird breeding species? A second morning survey was completed in July 2021 and is included in the addendum report [see EIS Addendum Report].

**3. Assessment of Significant Wildlife Habitat. There was no confirmed SAR habitat within the subject land woods.** The MECP did not require habitat protection measures for the Little Brown Myotis. MECP only requested to limit the time of year when trees are to be removed and whether any bat boxes will be added. Our recommendations to protect the seasonal pool area and associated trees are consistent with good ecological principles as the presence of water is a fundamental important consideration supporting habitat functions and our recommendation are above the minimal standards required by the province (Feb 2020; EIS).

4. In the Feb 2021 EIS we recommended that the northern half of the remaining woodland that contains the maximum potential recovery planning habitat for the White Wood Aster and the confirmed maternity roosting trees for the Myotis sp. within Aqueduct Park woods, receive the highest protection level which is Environmental protection (EP). Since then, more than half of this northern woodland has been removed to facilitate other development planning, very likely destroying White Wood Aster habitat. Our EIS also recommended protection of the seasonal pool feature within the subject lands because a feeding area for the Little Brown Myotis was confirmed above this feature. Our position remains that protecting these features will maintain the existing ecological functions within the woodland for species at risk and is consistent with the intent of the Provincial Policy Statement (2020), as verified during seasonally appropriate field surveys. Adding additional prohibitive policies such as buffer setbacks from the EP zone encompasses NON-SUITABLE HABITAT and habitat not required by the province for protection, therefore is an unnecessary added restriction to development planning.

5. **Water balance:** The site is localized and entirely within clay soils subject to precipitation limits and past urban grading. We do not see the need for a water balance study other than our seasonal photographic records [See Addendum Report].

6. **Staking of Woodland Boundary (Landowner to stake boundary with Regional Staff and STrees)** We are not clear as to the purpose of this request. Is it the boundary between Aqueduct Park and Subject lands? Please clarify rationale.

7. **Requested Updated Figures to be provided within the Addendum report**  
a) **MECP confirmed mapping for SAR habitat-** there is no SAR habitat within the subject lands. We will send addendum report to MECP for comment and in fairness we request copies of the EIS and ESA

clearances for all the developments north of Aqueduct Park to Hilda Street. Our findings indicate the potential habitat for the White Wood Aster (THR) and Schreber's Aster (S2) is entirely north of the subject lands.

**b) extent of woodland.** As the woodland is continually shrinking perhaps the Region should map this feature as it is a shrinking feature with no planning rationale provided by City or RMON.

**c) Location of all S1-S3 (i.e., Schreber's Aster).** We assume the Region means rare plants within the Subject Lands. We have not found any Schreber's Aster or any woodland asters within the subject lands with the exception of large-leafed aster within the north boundary edge. The species may be present within Aqueduct Park woods north of the subject lands. We are not mapping each individual aster. We will map the potential range for the general group "woodland aster" because the extent of the suitable soils with a sand lens defines the potential habitat for all rare woodland asters at this site [See addendum Report].

d) We assume the Region means mapping showing proposed setbacks for the seasonal pool feature as there is no core natural heritage system identified. There is just an isolated, small, wooded feature that does not meet the significance criteria- there is no connected system, the woodland feature continues to shrink from other developments that are continuing unchecked or regulated and therefore there is no system to support the ecological sustainability of this feature.

**7 e) Region Comment: "The proposed development envelope (which includes buildings, driveway/access, all grading, servicing, accessory structures, and all amenity space) included as an overlay to all-natural heritage features on site with the most recent available orthoimagery as the base layer. This should include a single development scenario, established based on protection of the ecological integrity of the woodland."**

**8 Trees requires additional clarification regarding 7e.**

- We have not identified natural heritage features- only a small remnant woodland feature that no longer meets the size criteria and a small seasonal pool that does not meet wetland evaluation criteria. In our professional opinion, the woodland functions are severely impacted due the small size, urbanization, and isolation factors.
- What does "ecological integrity of the woodland" mean, when the woodland is highly impacted by the surrounding land use and continues to shrink while we are completing our studies? The Region is misusing this term.

**8. Post Construction monitoring (see EIS Addendum Report)**

**9. Mitigation Measures (see EIS Addendum Report)**

**10. ELC data sheets required. (See EIS Addendum Report).**

# APPENDIX C: ELC Data Sheets

ELC Community Description & Classification	SITE: <i>Aqueduct / Gatsby, Welland</i>		POLYGON: <i>ELC# 1</i>		
	SURVEYOR(S): <i>T. Bukovics C. Blott</i>		DATE: <i>May 1 &amp; 22/20 Aug 2020 + 2021</i>	UTM E	<i>642759</i>
	START: <i>930</i>	END: <i>1100</i>	<i>17T</i>	UTM Z	UTM N <i>4763112 ± 3m</i>

## POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> Terrestrial <input type="checkbox"/> Wetland <input type="checkbox"/> Aquatic	<input type="checkbox"/> Organic <input checked="" type="checkbox"/> Mineral soil <input type="checkbox"/> Parent Min <input type="checkbox"/> Acidic Bedrock <input type="checkbox"/> Basic Bedrock <input type="checkbox"/> Carb. Bedrock	<input type="checkbox"/> Lacustrine <input type="checkbox"/> Riverine <input type="checkbox"/> Bottomland <input type="checkbox"/> Terrace <input type="checkbox"/> Valley Slope <input checked="" type="checkbox"/> Tableland <input type="checkbox"/> Roll. Upland <input type="checkbox"/> Cliff <input type="checkbox"/> Talus <input type="checkbox"/> Crevice / Cave <input type="checkbox"/> Alvar <input type="checkbox"/> Rockland <input type="checkbox"/> Beach / Bar <input type="checkbox"/> Sand Dune <input type="checkbox"/> Bluff	<input type="checkbox"/> Natural <input checked="" type="checkbox"/> Cultural	<input type="checkbox"/> Plankton <input type="checkbox"/> Submerged <input type="checkbox"/> Floating-LVD <input type="checkbox"/> Graminoid <input type="checkbox"/> Forb <input type="checkbox"/> Lichen <input type="checkbox"/> Bryophyte <input checked="" type="checkbox"/> Deciduous <input type="checkbox"/> Coniferous <input type="checkbox"/> Mixed	<input type="checkbox"/> Lake <input type="checkbox"/> Pond <input type="checkbox"/> River <input type="checkbox"/> Stream <input type="checkbox"/> Marsh <input type="checkbox"/> Swamp <input type="checkbox"/> Fen <input type="checkbox"/> Bog <input type="checkbox"/> Barren <input type="checkbox"/> Meadow <input type="checkbox"/> Prairie <input type="checkbox"/> Thicket <input type="checkbox"/> Savannah <input type="checkbox"/> Woodland <input checked="" type="checkbox"/> Forest <input type="checkbox"/> Plantation
<b>SITE</b>					
<input type="checkbox"/> Open water <input type="checkbox"/> Shallow water <input type="checkbox"/> Surficial Dep. <input type="checkbox"/> Bedrock					

## STAND DESCRIPTION

LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE
1 CANOPY	<i>1-2</i>	<i>4</i>	<i>Red oak, American Beech, Shagbark Hickory</i>
2 SUB-CANOPY	<i>3</i>	<i>3</i>	<i>Red oak, Sugar maple, beech, <sup>American</sup> Manitoba maple</i>
3 UNDERSTOREY	<i>4</i>	<i>3</i>	<i>Red oak, choke cherry, white ash</i>
4 GRD. LAYER	<i>5-7</i>	<i>4</i>	<i>Alison Ivy, large leaf aster, Solomon seal</i>

HT CODES: 1 = >25 m, 2 = 10 < HT ≤ 25 m, 3 = 2 < HT ≤ 10 m, 4 = 1 < HT < 2 m, 5 = 0.5 < HT 1 m, 6 = 0.2 < HT 0.5 m, 7 = HT < 0.2 m

CVR CODES: 0 = none, 1 = 0% < CVR, 2 = 10% < CVR < 25%, 3 = 25% < CVR < 60%, 4 = CVR > 60%

*dog tooth violet, wild grape, <sup>juvenile</sup> rattlesnake root*

STAND COMPOSITION: <i>Red Oak &gt;&gt; Sugar Maple - Shagbark Hickory</i>	BA: <i>22</i>
------------------------------------------------------------------------------	---------------

SIZE CLASS ANALYSIS:	<i>0</i>	< 10	<i>A</i>	10-24	<i>A</i>	25-50	<i>A</i>	> 50
STANDING SNAGS:		< 10	<i>R</i>	10-24	<i>R</i>	25-50		> 50
DEADFALL/LOGS:		< 10		10-24		25-50		> 50

ABUNDANCE CODES: N=none, R=rare, O=occasional, A=abundant

COMM. AGE	PIONEER	YOUNG	MID-AGE	<input checked="" type="checkbox"/> MATURE	OLD GROWTH
-----------	---------	-------	---------	--------------------------------------------	------------



SOIL ANALYSIS

Aqueduct/Gatsby, Welland.

May 1/20 EIC#1  
 May 22/20 May 1/20  
 Aug 2/20

TEXTURE: <i>Sandy loam over clay loam over</i>	DEPTH TO MOTTLES/GLEY	g = 57cm	G = <i>not found</i>
MOISTURE: <i>4</i>	DEPTH OF ORGANICS:	0 (cm)	
HOMOGENOUS/VARIABLE	DEPTH TO BEDROCK:	>120 (cm)	

COMMUNITY CLASSIFICATION:

COMMUNITY CLASS: <i>Forest</i>	CODE: <i>F0</i>
COMMUNITY SERIES: <i>Deciduous Forest</i>	CODE: <i>F0D</i>
ECOSITE: <i>DRY-Fresh Oak-Maple-Hickory Deciduous Forest</i>	CODE: <i>F0DM</i>
VEGETATION TYPE: <i>DRY-Fresh Oak Hardwood Deciduous Forest</i>	CODE: <i>F0DM2-4</i>
INCLUSION	CODE:
COMPLEX	CODE: <i>X</i>

NOTES:

*Gypsy moth on the oak-trees*

---



---

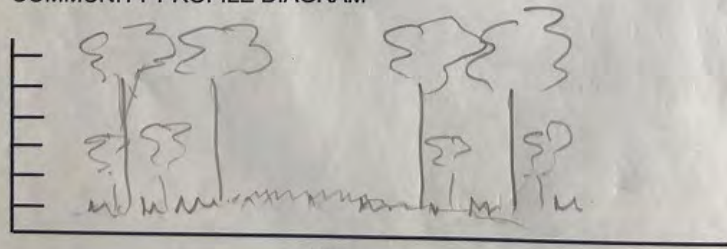


---



---

COMMUNITY PROFILE DIAGRAM



*flat with slight rise*

↑  
*opening from dead old American Beech.*



ELC STAND & SOIL CHARACTERISTICS	SITE: <i>Aqueduct / Catsbr, Welland</i>
	POLYGON: <i>ELC#1</i>
	DATE: <i>May 1 + 22 / 20</i>
	SURVEYOR(S): <i>T. Bulcovich + C. Blott</i>

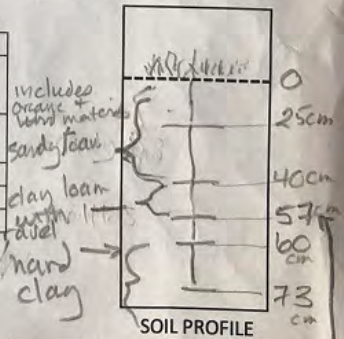
TREE TALLY BY SPECIES:

PRISM FACTOR: *2*

SPECIES	TALLY 1	TALLY 2	TALLY 3	TALLY 4	TOTAL	RELATIVE AVERAGE
<i>Red Oak</i>	<input checked="" type="checkbox"/>					
<i>Sugar Maple</i>						
<b>TOTAL</b>	<i>11</i>					<b>100</b>
<b>BASAL AREA (BA)</b>	<i>22</i>					<b>MEAN</b>
<b>DEAD</b>	<i>0</i>					

STAND COMPOSITION: *Red Oak >> Sugar Maple - Shagbark Hickory - elm*

SOIL ASSESSMENT:	1	2	3	4
DEPTH TO MOTTLES:	<i>g=57</i>	<i>g=</i>	<i>g=</i>	<i>g=</i>
DEPTH TO GLEY:	<i>G=</i>	<i>G=</i>	<i>G=</i>	<i>G=</i>
DEPTH OF ORGANICS	<i>0</i>			
DEPTH TO BEDROCK	<i>&gt;120cm</i>			
MOISTURE REGIME				



No water in hole but water started accumulating in hole  
 Water level at 67cm below grade at 10:00 hr  
 + came up slowly to 48cm below grade by 11:15 hr.

moisture dripping from sides  
 still filling clay slowly hole

but soils mucky  
 no know depth to bedrock is >120cm.

total depth of 73cm  
 too hard to dig further

Start of mottles





ELC Community Description & Classification	SITE: <i>Aqueduct/Gatsby, Welland</i>		POLYGON: <i>ELC#2</i>	
	SURVEYOR(S): <i>T. Bukovics C. Blott</i>		DATE: <i>Dec 2019 May 22/20 Aug 2020, Aug 2021</i>	UTM E <i>642755</i>
	START: <i>1100</i>	END: <i>1230</i>	<i>17T</i>	UTM Z <i>4763038</i>

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
<input checked="" type="checkbox"/> Terrestrial <input type="checkbox"/> Wetland <input type="checkbox"/> Aquatic	<input type="checkbox"/> Organic <input checked="" type="checkbox"/> Mineral soil <input type="checkbox"/> Parent Min <input type="checkbox"/> Acidic Bedrock <input type="checkbox"/> Basic Bedrock <input type="checkbox"/> Carb. Bedrock	<input type="checkbox"/> Lacustrine <input type="checkbox"/> Riverine <input type="checkbox"/> Bottomland <input type="checkbox"/> Terrace <input type="checkbox"/> Valley Slope <input type="checkbox"/> Tableland <input type="checkbox"/> Roll. Upland <input type="checkbox"/> Cliff <input type="checkbox"/> Talus <input type="checkbox"/> Crevice / Cave <input type="checkbox"/> Alvar <input type="checkbox"/> Rockland <input type="checkbox"/> Beach / Bar <input type="checkbox"/> Sand Dune <input type="checkbox"/> Bluff	<input type="checkbox"/> Natural <input checked="" type="checkbox"/> Cultural	<input type="checkbox"/> Plankton <input type="checkbox"/> Submerged <input type="checkbox"/> Floating-LVD <input type="checkbox"/> Graminoid <input type="checkbox"/> Forb <input type="checkbox"/> Lichen <input type="checkbox"/> Bryophyte <input checked="" type="checkbox"/> Deciduous <input type="checkbox"/> Coniferous <input type="checkbox"/> Mixed	<input type="checkbox"/> Lake <input type="checkbox"/> Pond <input type="checkbox"/> River <input type="checkbox"/> Stream <input type="checkbox"/> Marsh <input type="checkbox"/> Swamp <input type="checkbox"/> Fen <input type="checkbox"/> Bog <input type="checkbox"/> Barren <input type="checkbox"/> Meadow <input type="checkbox"/> Prairie <input type="checkbox"/> Thicket <input type="checkbox"/> Savannah <input type="checkbox"/> Woodland <input checked="" type="checkbox"/> Forest <input type="checkbox"/> Plantation
<b>SITE</b>					
<input type="checkbox"/> Open water <input type="checkbox"/> Shallow water <input type="checkbox"/> Surficial Dep. <input type="checkbox"/> Bedrock					
<b>COVER</b>			<input type="checkbox"/> Open <input type="checkbox"/> Shrub <input checked="" type="checkbox"/> Tree		

STAND DESCRIPTION

LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE
1 CANOPY	<i>1-2</i>	<i>4</i>	<i>Pin Oak, Red Oak, Shagbark Hickory, Am elm</i>
2 SUB-CANOPY	<i>3</i>	<i>3</i>	<i>Basswood, Shagbark hickory, sugar maple</i>
3 UNDERSTOREY	<i>4</i>	<i>3</i>	<i>Chokecherry, redstart dogwood, SWWO</i>
4 GRD. LAYER	<i>5-7</i>	<i>4</i>	<i>Poison Ivy, Jewelweed, Virginia Creeper</i>

HT CODES: 1= >25 m, 2= 10<HT 25 m, 3= 2<HT ≤ 10 m, 4= 1<HT<2 m, 5= 0.5<HT 1m, 6= 0.2<HT 0.5 m, 7= HT<0.2 m  
 CVR CODES: 0 = none, 1= 0%<CVR, 2= 10%<CVR<25%, 3= 25%<CVR<60%, 4=CVR>60%

*Jack in Pulpit*

STAND COMPOSITION: <i>Pin Oak - Red Oak → Shagbark Hickory</i>	BA:
----------------------------------------------------------------	-----

*BHD*

SIZE CLASS ANALYSIS:	<i>A</i>	< 10	<i>A</i>	10-24	<i>A</i>	25-50	<i>O</i>	>50
STANDING SNAGS:		< 10		10-24	<i>R</i>	25-50		>50
DEADFALL/LOGS:		< 10		10-24		25-50		>50

ABUNDANCE CODES: N=none, R=rare, O=occasional, A=abundant

COMM. AGE	PIONEER	YOUNG	MID-AGE	<input checked="" type="checkbox"/> MATURE	OLD GROWTH
-----------	---------	-------	---------	--------------------------------------------	------------

SOIL ANALYSIS

Site: Aqueduct/Gatsky, Welland, ELC#2  
 Dec/2019, Aug 2020  
 May 22/2020 Aug 2021

TEXTURE: clay loam over clay	DEPTH TO MOTTLES/GLEY	g = 22cm	G = 60cm
MOISTURE: 5	DEPTH OF ORGANICS:	0 (cm)	
HOMOGENOUS/VARIABLE	DEPTH TO BEDROCK:	> 120 (cm)	

COMMUNITY CLASSIFICATION:

COMMUNITY CLASS: Forest	CODE: FO
COMMUNITY SERIES: Deciduous Forest	CODE: FOD
ECOSITE: Fresh-Moist Oak-Maple Hickory Forest	CODE: FODM
VEGETATION TYPE: Fresh Moist Oak-Maple Deciduous Forest	CODE: FODM9-2
INCLUSION: Pin oak Mixed Deciduous Swamp	CODE: SNDM1-3
COMPLEX	CODE:

NOTES:

Gypsy Moth on Trees

---



---

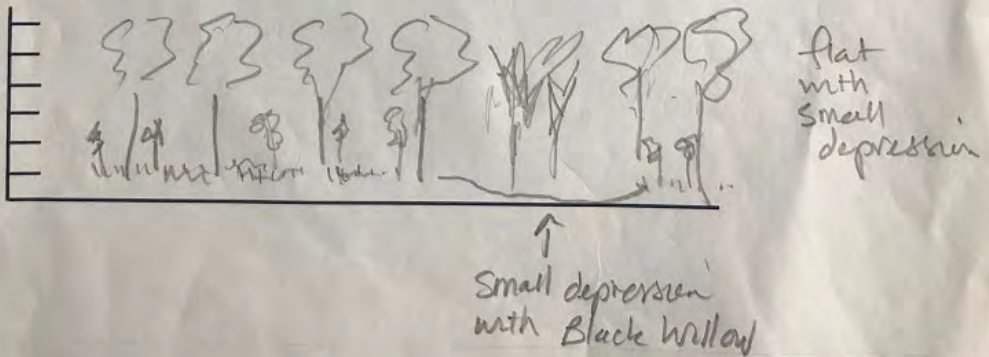


---



---

COMMUNITY PROFILE DIAGRAM





ELC STAND & SOIL CHARACTERISTICS	SITE: <i>Aqueduct Gatsby, Welland</i>
	POLYGON: <i>ELC # 2</i>
	DATE: <i>Dec 19, May 20, Aug 2020 + 2021</i>
	SURVEYOR(S): <i>T. Bukacins, C. Blott</i>

TREE TALLY BY SPECIES:

PRISM FACTOR: *2*

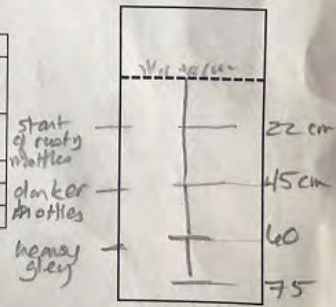
SPECIES	TALLY 1	TALLY 2	TALLY 3	TALLY 4	TOTAL	RELATIVE AVERAGE
<i>Red Oak</i>	<i>11</i>					
<i>Am Elm</i>	<i>22</i>					
<i>Shaybank Hickory</i>	<i>11</i>					
<i>Am Oak</i>	<i>11</i>					
<i>Am Birch</i>						
TOTAL	<i>11</i>					<b>100</b>
BASAL AREA (BA)	<i>22</i>					<b>MEAN</b>
DEAD	<i>11</i>					

Spacing to look site intermediately between  
 Red Oak + Am Oak

STAND COMPOSITION:  
*PINOAK/REDOAK > Shaybank Hickory/Am Elm*

SOIL ASSESSMENT:	1	2	3	4
DEPTH TO MOTTLES:	<i>g= 22</i>	<i>g=</i>	<i>g=</i>	<i>g=</i>
DEPTH TO GLEY:	<i>G= 60</i>	<i>G=</i>	<i>G=</i>	<i>G=</i>
DEPTH OF ORGANICS	<i>0</i>			
DEPTH TO BEDROCK	<i>&gt; 120</i>			
MOISTURE REGIME				

*no water in hole  
 but water started fully hole from upper layers  
 after 10 minutes filled to 15cm below grade*



*couldn't auger deeper  
 than 75 soil too hard*



## APPENDIX D: Data Collected Since EIS Feb 2021

**Table 6: Relative Elevation Survey of Seasonal Pool and pathway to Gadsby Rd., June 6, 2021, UTM accuracy  $\pm 4-6m$ . Equipment used was a laser level with stadia rod and handheld GPS. Notes: trees leaning on side that has water**

Occ#	easting	northing	elevation relative to laser beam 1.54m above grade (m)	elevation relative to ground surface at beam (m)	elevation relative to dry upland 0m =	surface water depth (cm)	Notes
1	642790	4763064	1.42	0.12	-0.01	0	dry duff, at edge of grape vine growth
2	642788	4763062	1.66	-0.12	-0.25	0	dry duff
3	642788	4763060	1.55	-0.01	-0.14	0	dry
4	642784	4763058	1.60	-0.06	-0.19	0	moist duff
5	642782	4763058	1.67	-0.13	-0.26	0	dry
6	642781	4763059	1.61	-0.07	-0.20	0	nothing written in notes
7	642782	4763060	1.57	-0.03	-0.16	0	nothing written in notes
8	642774	4763063	1.50	0.04	-0.09	0	hump
9	642773	4763061	1.41	0.13	0.00	0	dry upland
10	642785	4763053	1.84	-0.30	-0.43	11	surface water
11	642786	4763055	1.71	-0.17	-0.30	0	past logs
12	642789	4763055	1.59	-0.05	-0.18	0	dry logs
13	642791	4763059	1.49	0.05	-0.08	0	nothing written in notes
14	642785	4763056	1.85	-0.31	-0.44	6.5	surface water
15	642787	4763056	1.82	-0.28	-0.41	7	surface water
16	642780	4763056	1.73	-0.19	-0.32	1	surface water
17	642780	4763055	1.67	-0.13	-0.26	0	moist duff
18	642777	4763057	1.56	-0.02	-0.15	0	dry

Occ#	easting	northing	elevation relative to laser beam 1.54m above grade (m)	elevation relative to ground surface at beam (m)	elevation relative to dry upland 0m =	surface water depth (cm)	Notes
19	642772	4763055	1.47	0.07	-0.06	0	dry, with jewelweed
20	642772	4763051	1.49	0.05	-0.08	0	dry with poison ivy and red oak
21	642765	4763049	1.47	0.07	-0.06	0	hickory growing
22	642768	4763051	1.57	-0.03	-0.16	0	dry duff
23	642771	4763050	1.64	-0.10	-0.23	0	moist duff
24	642775	4763054	1.66	-0.12	-0.25	0	moist duff
25	642780	4763053	1.84	-0.30	-0.43	11	surface water
26	642779	4763053	1.94	-0.40	-0.53	18	surface water
27	642780	4763054	1.95	-0.41	-0.54	17	surface water, the field notes say elevation was 5' 4-3/4" but it looks like it should be 6' + so I changed it.
28	642782	4763061	1.81	-0.27	-0.40	10	surface water
29	642787	4763055	1.65	-0.11	-0.24	0	moist duff
30	642789	4763053	1.56	-0.02	-0.15	0	dry vines
31	642791	4763051	1.56	-0.02	-0.15	0	dry vines
32	642787	4763050	1.64	-0.10	-0.23	0	moist duff
33	642784	4763050	1.71	-0.17	-0.30	0	wet duff, near willow, north side of willow
34	642782	4763051	1.86	-0.32	-0.45	7	surface water
35	642783	4763051	1.86	-0.32	-0.45	13	surface water
36	642780	4763049	1.85	-0.31	-0.44	9	surface water
37	642781	4763049	1.70	-0.16	-0.29	0	moist duff at willow
38	642777	4763048	1.54	0.00	-0.13	0	dry side of willow
39	642776	4763041	1.53	0.01	-0.12	0	dry duff



Occ#	easting	northing	elevation relative to laser beam 1.54m above grade (m)	elevation relative to ground surface at beam (m)	elevation relative to dry upland 0m =	surface water depth (cm)	Notes
40	642773	4763043	1.56	-0.02	-0.15	0	dry duff, red oak
41	642772	4763042	1.59	-0.05	-0.18	0	dry duff
42	642776	4763043	1.71	-0.17	-0.30	0	wet duff, dogwood
43	642778	4763046	1.78	-0.24	-0.37	5	surface water
44	642780	4763046	1.81	-0.27	-0.40	6	surface water
45	642782	4763048	1.77	-0.23	-0.36	3	surface water
46	642785	4763051	1.71	-0.17	-0.30	0	moist duff
47	642786	4763049	1.59	-0.05	-0.18	0	dry duff, ash tall shrub
48	642788	4763052	1.47	0.07	-0.06	0	dry duff, ash tall shrub
49	642786	4763044	1.52	0.02	-0.11	0	dry, leaf litter pile
50	642784	4763044	1.51	0.03	-0.10	0	willow & pile of leaf litter
51	642782	4763042	1.67	-0.13	-0.26	0	dry duff, elm silky dogwood
52	642779	4763043	1.66	-0.12	-0.25	0	moist duff
53	642776	4763038	1.64	-0.10	-0.23	0	dry duff
54	642774	4763039	1.54	0.00	-0.13	0	maple (2)
55	642772	4763039	1.49	0.05	-0.08	0	dry duff, poison ivy, jewelweed
56	642771	4763036	1.50	0.04	-0.09	0	dry duff, elm (2)
57	642772	4763042	1.48	0.06	-0.07	0	dry hump, tree root, jewelweed
58	642773	4763044	1.59	-0.05	-0.18	0	moist duff
59	642779	4763041	1.63	-0.09	-0.22	0	dry duff
60	642780	4763045	1.59	-0.05	-0.18	0	dry duff
61	642781	4763045	1.63	-0.09	-0.22	0	dry, silky dogwood

Occ#	easting	northing	elevation relative to laser beam 1.54m above grade (m)	elevation relative to ground surface at beam (m)	elevation relative to dry upland 0m =	surface water depth (cm)	Notes
62	642786	4763045	1.50	0.04	-0.09	0	dry duff
63	642784	4763042	1.54	0.00	-0.13	0	dry duff, hickory tall shrub
64	642782	4763038	1.63	-0.09	-0.22	0	dry duff, silky dogwood
65	642781	4763034	1.63	-0.09	-0.22	0	moist duff
66	642778	4763035	1.55	-0.01	-0.14	0	dry duff
67	642775	4763036	1.50	0.04	-0.09	0	dry, yard waste
68	642774	4763035	1.42	0.12	-0.01	0	dry, jewelweed
69	642775	4763034	1.53	0.01	-0.12	0	dry, red oak leaning & with root rot, poison ivy
70	642778	4763037	1.62	-0.08	-0.21	0	moist duff
71	642782	4763041	1.59	-0.05	-0.18	0	dry duff
72	642785	4763040	1.51	0.03	-0.10	0	dry duff, elm & 2 dead elm
73	642785	4763037	1.50	0.04	-0.09	0	dry duff
74	642782	4763029	1.45	0.09	-0.04	0	dry duff, jewelweed
75	642780	4763030	1.64	-0.10	-0.23	0	dry duff, center of path depression
76	642779	4763030	1.42	0.12	-0.01	0	dry, red oak tree leaning, this is other side of same leaning tree mentioned before
77	642772	4763032	1.45	0.09	-0.04	0	dry, jewelweed
78	642775	4763026	1.4	0.14	0.01	0	dry, yard waste, Virginia creeper, red oak, black locust, wild grape
79	642774	4763027	1.54	0	-0.13	0	dry, stick piles, grey dogwood
80	642778	4763027	1.64	-0.1	-0.23	0	moist duff
81	642780	4763031	1.5	0.04	-0.09	0	dry

Occ#	easting	northing	elevation relative to laser beam 1.54m above grade (m)	elevation relative to ground surface at beam (m)	elevation relative to dry upland 0m =	surface water depth (cm)	Notes
82	642785	4763031	1.47	0.07	-0.06	0	dry, elm
83	642783	4763027	1.52	0.02	-0.11	0	dry, grey dogwood, dead elm
84	642780	4763027	1.52	0.02	-0.11	0	moist duff, middle of path depression
85	642780	4763024	1.45	0.09	-0.04	0	dry, day lilies
86	642780	4763023	1.67	-0.13	-0.26	0	moist, no duff, middle of path depression
87	642782	4763020	n/a	n/a	n/a	0	red oak root rot
88	642782	4763023	1.5	0.04	-0.09	0	dry
89	642781	4763020	1.46	0.08	-0.05	0	lawn grass
90	642779	4763019	1.38	0.16	0.03	0	lawn
91	642781	4763019	1.63	-0.09	-0.22	0	moist, algae slime, pin oak, ash
92	642783	4763021	1.43	0.11	-0.02	0	dry, logs, grape vine, elm
93	642781	4763019	1.56	-0.02	-0.15	0	dry duff
94	642779	4763018	1.45	0.09	-0.04	0	lawn, not at top of slope. +8" to get to height of lawn at property boundary, + 1' 6" above where we are to be at height of land at house foundation
95	642780	4763018	1.54	0	-0.13	0	dry duff
96	642784	4763022	1.45	0.09	-0.04	0	dry duff, log, grey dogwood
97	642783	4763016	1.47	0.07	-0.06	0	dry, grey dogwood, elm swamp white oak
98	642781	4763018	1.45	0.09	-0.04	0	height of land
99	642779	4763021	1.45	0.09	-0.04	0	

**Table 7. Birds identified during survey 3**

Date	Route	Approx. Start Time	Species	Status	Observation Type	In study or reference area
10-Jul-21	L3	05:59:00	American Crow	S5	Auditory	Aqueduct Park
10-Jul-21	L3	05:59:00	American Goldfinch	S5	Auditory	Aqueduct Park
10-Jul-21	L3	05:59:00	American Robin	S5	Auditory	Aqueduct Park
10-Jul-21	L3	05:59:00	Blue Jay	S5	Auditory	Aqueduct Park
10-Jul-21	L3	05:59:00	Mourning Dove	S5	Auditory	Aqueduct Park
10-Jul-21	L3	05:59:00	Northern Cardinal	S5	Auditory	Aqueduct Park
10-Jul-21	L3	05:59:00	Song sparrow	S5	Auditory	Aqueduct Park
10-Jul-21	L1	06:13:00	American Robin	S5	Auditory	Subject Lands
10-Jul-21	L1	06:13:00	Blue Jay	S5	Auditory	Subject Lands
10-Jul-21	L1	06:13:00	Carolina Wren	S5	Auditory	Subject Lands
10-Jul-21	L1	06:13:00	Downy Woodpecker	S5	Auditory	Subject Lands
10-Jul-21	L1	06:13:00	House Wren	S5	Auditory	Subject Lands
10-Jul-21	L1	06:13:00	Mourning Dove	S5	Auditory	Subject Lands
10-Jul-21	L1	06:13:00	Northern Cardinal	S5	Auditory	Subject Lands
10-Jul-21	L1	06:13:00	Red-eyed Vireo	S5	Auditory	Subject Lands
10-Jul-21	L1	06:13:00	Ruby-throated Hummingbird	S5	Auditory	Subject Lands
10-Jul-21	L1	06:13:00	Song Sparrow	S5	Auditory	Subject Lands
10-Jul-21	L1	06:13:00	White-breasted Nuthatch	S5	Auditory	Subject Lands
10-Jul-21	W1	05:32:00	American Goldfinch	S5	Auditory	Woodlawn Park
10-Jul-21	W1	05:32:00	Northern Cardinal	S5	Auditory	Woodlawn Park
10-Jul-21	W1	05:32:00	American Robin	S5	Auditory	Woodlawn Park
10-Jul-21	W1	05:32:00	House Wren	S5	Auditory	Woodlawn Park
10-Jul-21	W1	05:32:00	Red-eyed Vireo	S5	Auditory	Woodlawn Park
10-Jul-21	W1	05:32:00	Blue Jay	S5	Auditory	Woodlawn Park
10-Jul-21	W1	05:32:00	Mourning Dove	S5	Auditory	Woodlawn Park



Table 7. Birds identified during survey 3						
Date	Route	Approx. Start Time	Species	Status	Observation Type	In study or reference area
10-Jul-21	W1	05:32:00	Chipping Sparrow	S5	Auditory	Woodlawn Park
10-Jul-21	W1	05:32:00	Eastern Wood-pewee	SC	Auditory	Woodlawn Park

Table 8. Summary of ELC Community and soils investigation 2020 and 2021									
Date	Approx. Start Time	Location	ELC Community Class Code	Dominant Canopy Species	Ecosite	Site	Soils Description	Easting	Northing
22-May-20	09:23:00	Aqueduct Park	FODM2-4	Red Oak-Beech	dry-fresh, oak hardwood deciduous forest	1	ELC #1 - sandy lens over silty clay & clay	642759	4763112
22-May-20	09:23:00	Subject Lands	FODM9-2	Mixed Oak (red >> pin), hickory	fresh-moist oak- hickory deciduous forest	2	ELC #2 - silty clay & clay	642755	4763038
22-Oct-21	09:30:00	Aqueduct Park	FODM2-4	Red Oak-Beech	dry-fresh, oak hardwood deciduous forest	1.1	upper sandy lens 1	642758	4763097
22-Oct-21	09:30:00	Aqueduct Park	FODM2-4	Red Oak-Beech	dry-fresh, oak hardwood deciduous forest	1.2	upper sandy lens 2	642766	4763083

**Table 8. Summary of ELC Community and soils investigation 2020 and 2021**

Date	Approx. Start Time	Location	ELC Community Class Code	Dominant Canopy Species	Ecosite	Site	Soils Description	Easting	Northing
22-Oct-21	09:30:00	Subject Lands	FODM9-2	Mixed Oak (red >> pin), hickory	fresh-moist oak- hickory deciduous forest	2.1	silty clay & clay core 1	642764	4763066
22-Oct-21	09:30:00	Subject Lands	FODM9-2	Mixed Oak (red >> pin), hickory	fresh-moist oak- hickory deciduous forest	2.2	silty clay & clay core 2	642782	4763031
22-Oct-21	09:30:00	Subject Lands	FODM9-2	Mixed Oak (red >> pin), hickory	fresh-moist oak- hickory deciduous forest	2.3	silty clay & clay core 3	642786	4763022

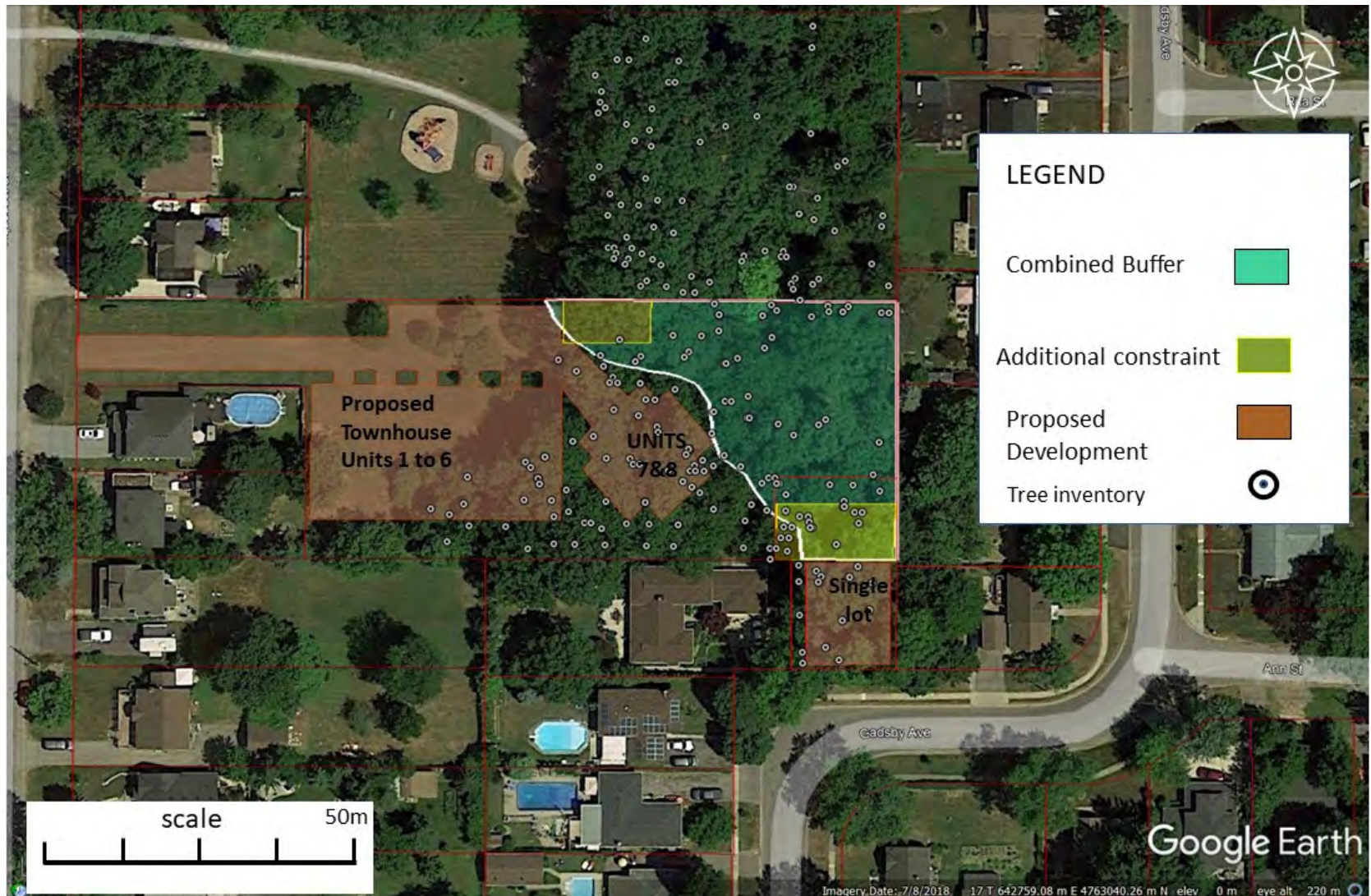


Figure 25. The proposed development pan overlay and combined buffer with the tree locations ( $\pm$  5-10m GPS error) from data collected during the tree inventory (Dec 2019 and May 2020; EIS FEB 2021). This data was used to estimate the number of trees removed within the development footprint. Aerial image July 2018 courtesy of Google Earth.



## APPENDIX E: Additional Information and Correspondence

### ASTEREAE LAB

## *Eurybia divaricata*

### White Wood Aster , aster à rameaux étalés

*Eurybia divaricata* (L.) G.L. Nesom is native to dry to mesic, eastern deciduous and mixed deciduous woods, edges and clearings, and woodland roadsides (Brouillet 2006 FNA) in the Appalachian Mountains and Piedmont from Ontario and Québec south to Georgia and Alabama. It is introduced in Europe (Netherlands). The species is the smaller headed member of the *Biotia* group of *Eurybia* and has glandular peduncles < 15 mm long and glandular phyllaries. The species is diploid ( $2n=18$ ).

The species is often confused with *E. chlorolepis* (longer peduncles), *E. schreberi* (bigger heads), *E. macrophylla* (bigger heads, phyllaries glandular, rays usually violet-purple) and sometimes with *Symphotrichum cordifolium* (panicked array of heads, usually violet rays).



Last updated 13 February 2014 by J.C. Semple

© 2014 J.C. Semple, including all photographs unless otherwise indicated

Figure xx. Raw data observation points of large-leaved aster (green dots), possible Schreber's aster (orange points), 2018 White wood aster local minimum convex polygon for the aster community (pink) and large Oak trees (red dots), other trees (pink dots) and seasonal pool elevation feature mapping raster for subject lands.

(<https://uwaterloo.ca/astereae-lab/research/asters/eurybia/>).



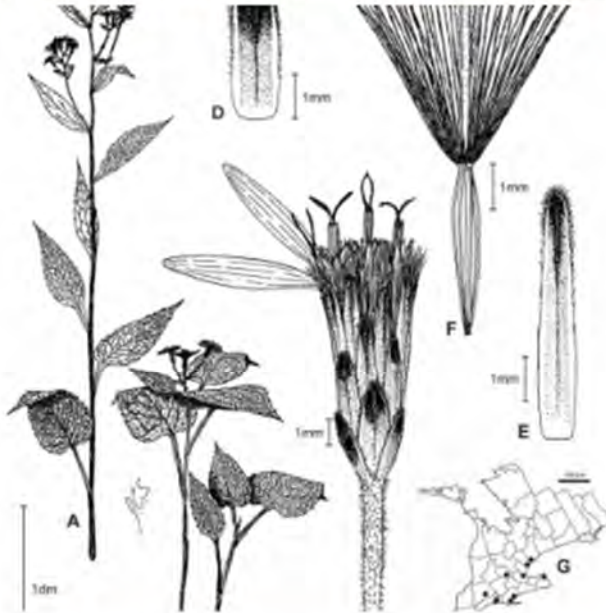
# Eurybia schreberi

## Schreber's Aster

*Eurybia schreberi* (Nees) Nees is native to damp to mesic deciduous (maple, elm, oak), mixed woods, thickets, shaded roadbanks from Ontario to southern Maine south to Alabama in many disjunct populations and in several disjunct areas in southeastern Wisconsin and northern Illinois (Brouillet 2006 FNA). The species is distinguished by its large cylindrical involucre of appressed glandless linear oblong-lanceolate phyllaries and white ray florets. It blooms generally earlier than *E. macrophylla*. It is similar to diploid *E. divaricata* and octoploid *E. macrophylla*. The species is hexaploid ( $2n=54$ ).

*Eurybia schreberi* is rare or extirpated in a many states at the northern limit of its range and introduced in Europe (Scotland; Brouillet 2006 FNA).

The following are synonyms: *Aster schreberi* Nees, *Biotia glomerata* (Nees) DC., *Biotia schreberi* (Nees) DC. *Eurybia glomerata* Nees, *Aster chasei* G.N. Jones



Last updated 14 February 2014 by J.C. Semple

© 2014 J.C. Semple, including all photographs unless otherwise indicated

(<https://uwaterloo.ca/astereae-lab/research/asters/eurybia/>).

# ASTEREAE LAB

[Astereae Lab](#) » [Research](#) » [Asters](#) » [Eurybia](#) »

## Eurybia macrophylla

### Bigleaf Aster , aster à grandes feuilles

*Eurybia macrophylla* (L.) G.L. Nesom is native to moist to dry soils, hemlock-northern hardwoods, beech-maple or pine forests, Appalachian spruce-fir forests, aspen, pine or open spruce woodlands, thickets, clearings, shaded roadsides from southeastern Manitoba east to Nova Scotia and south to northern Georgia ([Brouillet 2006 FNA](#)). The basal stem leaf blades are broadly ovate to ovate with cordate bases, the peduncles and phyllaries are stipitate-glandular, the innermost phyllaries are appressed on the large heads, and rays range from white to dark purple. The species is highly varied in stem height and ray floret color and many segregate species were described but are now included in synonymy. The species is octoploid ( $2n=72$ ).



*Last updated 13 February 2014 by J.C. Semple*

© 2014 J.C. Semple, including all photographs unless otherwise indicated

(<https://uwaterloo.ca/astereae-lab/research/asters/eurybia/>).



**Figure 5. Collage of Aster photos taken from Aqueduct Park woods and sent to NHIC and John Semple's Aster Lab at the University of Waterloo.**

\*\*\*\*\*

**From:** John Semple <[jcsemp@uwaterloo.ca](mailto:jcsemp@uwaterloo.ca)>  
**Sent:** December 10, 2021 10:53 AM  
**To:** Katharine Yagi <[kyagi2@brocku.ca](mailto:kyagi2@brocku.ca)>  
**Subject:** RE: White Wood Aster

Katharine,  
Based on the pictures, I think these plants are *Eurybia divaricata*. Someone seeing them up close might have a different opinion.  
John

Sent from [Mail](#) for Windows

**From:** [Katharine Yagi](#)  
**Sent:** Friday, December 10, 2021 10:22 AM  
**To:** [John Semple](#)  
**Cc:** [Anne Yagi](#)  
**Subject:** RE: White Wood Aster

Thank you, Dr. Semple.  
Yes, certainly expertise in herpetology is not helpful when trying to ID SAR plants!  
I have several photos of asters from a field visit, attached some here. We also have pressed samples, but I am waiting for a colleague at Brock to have a look. If these photos are not great for ID, I will get some scans of the pressed specimens for you.



Let me know what you think! Thank you for your help with this.

Best,  
Katharine

Katharine Yagi (she/her), PhD, CERPIT  
Research Associate | 8Trees Inc. | [www.8trees.ca](http://www.8trees.ca)  
Department of Biological Sciences | Brock University  
Amphibian and Reptile Specialist Subcommittee | COSEWIC  
E1: [katharine.yagi@8trees.ca](mailto:katharine.yagi@8trees.ca) | E2: [kyagi2@brocku.ca](mailto:kyagi2@brocku.ca)

**From:** John Semple <[jcsemp@uwaterloo.ca](mailto:jcsemp@uwaterloo.ca)>  
**Sent:** December 9, 2021 4:10 PM  
**To:** Katharine Yagi <[kyagi2@brocku.ca](mailto:kyagi2@brocku.ca)>  
**Subject:** RE: White Wood Aster

Katherine,

The *Eurybia divaricata* is diploid in Ontario, while *E. schreberi* is hexaploid and *E. macrophylla* is octoploid. Ploidy level has an effect on involucre size. *E. divaricata* has small involucres and tends to be narrower than the other two species. Anyone who thinks genomic tools are quicker than just looking at plant has never done either! If all you have is stems without flowering heads, then you have a real problem, although you might be able to tell apart *E. divaricata* and *E. macrophylla* leaves by sight, those of *E. schreberi* are more like *E. divaricata*. I have both *E. divaricata* and *E. schreberi* growing in my yards; both have done well for several decades. *E. schreberi* tends to bloom earlier than *E. divaricata* in my yard at least. Expertise in herpetology is probably not helpful in this case. If you have flowering specimens on hand, then take some pictures and email them to me and I might be able to put an ident on the mystery plants. *E. macrophylla* has taller involucres that are broader and with some stalked glands; ray flort colour varies but most have some pinkish-to purple colour. *E. divaricata* and *E. schreberi* are white rayed. I assume that you are not doing field work on asters at this time of year and are dealing with voucher collections.

The key to identification in Flora North America is OK and should work for flowering material.

Cheers,  
John

Sent from [Mail](#) for Windows

**From:** [Katharine Yagi](#)  
**Sent:** Thursday, December 9, 2021 3:51 PM  
**To:** [John Semple](#)  
**Cc:** [Anne Yagi](#)  
**Subject:** White Wood Aster

Hello Dr. Semple,



My name is Katharine, I am a Research Associate with 8Trees Inc. and Brock University. I conduct and assist various research and consulting work at 8Trees, and was hoping you could help us out with an ID issue.

We are having trouble identifying White Wood Aster vs. other woodland asters at one of our sites – timing is becoming a problem now since we have been unsuccessful in identifying these plants for the past two seasons. Since WWA is a species at risk, a confirmation of its ID is very important for these reports. Do you know if there is a faster way to ID White wood aster, perhaps using genomic tools? Perhaps there is a quick test to tell a diploid vs a polyploid specimen apart, which would help confirm WWA?

Unfortunately, genomics is outside of my wheelhouse, as my training is more in the field of applied ecology, conservation and herpetology. Any advice on this topic would be greatly appreciated!

Best Regards,  
Katharine

Katharine Yagi (she/her), PhD, CERPIT  
Research Associate | 8Trees Inc. | [www.8trees.ca](http://www.8trees.ca)  
Department of Biological Sciences | Brock University  
Amphibian and Reptile Specialist Subcommittee | COSEWIC  
E1: [katharine.yagi@8trees.ca](mailto:katharine.yagi@8trees.ca) | E2: [kyagi2@brocku.ca](mailto:kyagi2@brocku.ca)

\*\*\*\*\*

Tue 2021-12-14 9:29 AM  
Hi Albert

Have you heard back from the samples given to RBG? Did you send samples to the Semple Lab?  
I will cover any costs if you incurred any.

Thank you

Regards,  
Anne Yagi, M.Sc., EP, CERP  
President

We are here to help!  
[www.8trees.ca](http://www.8trees.ca)  
Ph: 905-892-1760  
All Citizen Scientists, try our newest mobile app “My field App”

From your mobile phone go to <https://qrco.de/bbRJJ5>  
OR Scan the QR Code

This email is intended only for the person to whom it was originally addressed and contains the intellectual property of 8Trees Inc. Distribution of this information without the expressed written consent from 8Trees Inc. is forbidden. Hi Albert, send me an invoice for your time, please send the samples to Semple.

Regards,

Anne Yagi, M.Sc., EP, CERP  
President



We are here to help!

[www.8trees.ca](http://www.8trees.ca)

Ph: 905-892-1760

All Citizen Scientists, try our newest mobile app "My field App"



From your mobile phone go to <https://qrco.de/bbRJJ5>

OR Scan the QR Code



*This email is intended only for the person to whom it was originally addressed and contains the intellectual property of 8Trees Inc. Distribution of this information without the expressed written consent from 8Trees Inc. is forbidden*

Sun 2021-11-28 2:29 PM

Hi Albert

Thank you for taking the time to visit the site a second time.

Did you send the samples to John Semple's lab in Waterloo?

If not we can arrange to do that.

Let me know

All the Best,

Anne Yagi, M.Sc., EP, CERP

President



We are here to help!

[www.8trees.ca](http://www.8trees.ca)

Ph: 905-892-1760

All Citizen Scientists, try our newest mobile app "My field App"



From your mobile phone go to <https://qrco.de/bbRJJ5>

OR Scan the QR Code



*This email is intended only for the person to whom it was originally addressed and contains the intellectual property of 8Trees Inc. Distribution of this information without the expressed written consent from 8Trees Inc. is forbidden*

**From:** Albert Garofalo  
**Sent:** October 1, 2021 3:07 PM  
**To:** Anne Yagi <[anne.yagi@8trees.ca](mailto:anne.yagi@8trees.ca)>  
**Cc:** Michael Babin <[babinmichael0@gmail.com](mailto:babinmichael0@gmail.com)>  
**Subject:** Re: Aqueduct Park

Yes,  
I visited. My regrets I haven't contacted you yet.

I found no aster on the subject property, although I am a bit confused with the property line boundaries, as they seem to have changed from what was parkland and what is private??

The asters seem to be in the upland forest wetland edge on the Aqueduct Park property.

Perhaps Michael could show me the updated boundaries some time.

The aster's that were called White Wood Aster may in fact be Schriber's Aster. Paul O'Hara, who has been updating the status of the species, has noted this.

The samples I collected should be sent to Semple to confirm.

Albert

On Tue, Sep 28, 2021 at 10:16 AM Anne Yagi <[anne.yagi@8trees.ca](mailto:anne.yagi@8trees.ca)> wrote:

Hi Albert

Did you get a chance to take a look at Aqueduct Park for White Wood Aster and Schriber's Aster?

We still have not confirmed WWA some of our samples suggest Schriber's may be present.

Regards,

**Anne Yagi, M.Sc., EP, CERP**

**President**



We are here to help!

[www.8trees.ca](http://www.8trees.ca)

Ph: 905-892-1760

All Citizen Scientists, try our newest mobile app "My field App"



From your mobile phone go to <https://qrco.de/bbRJJ5>

OR Scan the QR Code



*This email is intended only for the person to whom it was originally addressed and contains the intellectual property of 8Trees Inc. Distribution of this information without the expressed written consent from 8Trees Inc. is forbidden*

On Mon, Sep 20, 2021 at 12:24 PM Anne Yagi <[anne.yagi@8trees.ca](mailto:anne.yagi@8trees.ca)> wrote:

Hi Albert

Can you go out asap. You can invoice me for your time and a letter.

Katharine and i were out yesterday they are bloomin.

Thank you

Anne

**From:** Albert Garofalo  
**Sent:** September 20, 2021 9:34 PM  
**To:** Anne Yagi <[anne.yagi@8trees.ca](mailto:anne.yagi@8trees.ca)>  
**Cc:** Michael Babin <[babinmichael0@gmail.com](mailto:babinmichael0@gmail.com)>  
**Subject:** Re: Aqueduct Park



Hello Anne and Michael,

Yes, a time sensitive visit this week would be fine.

Let me know your availability Michael,

Albert

On Wed, Sep 1, 2021 at 1:25 PM Albert Garofalo <[albert.garofalo@gmail.com](mailto:albert.garofalo@gmail.com)> wrote:  
Hello Anne,

I have not heard back from my samples but have an oak expert who may be visiting from the US soon. I will be in touch if I make any progress on them.

Cathy, my address is 99 Edgar Street in Welland. You are welcome any time.

albert

On Fri, Aug 20, 2021 at 9:54 AM Anne Yagi <[anne.yagi@8trees.ca](mailto:anne.yagi@8trees.ca)> wrote:

Hi Albert

Did we hear back about any of the Oak samples? MNRF thinks they are Red Oak and possible hybrids with Pin Oak and Not Shumard.

Regards,

**Anne Yagi, M.Sc., EP, CERP**

**President**



We are here to help!

[www.8trees.ca](http://www.8trees.ca)

**Ph: 905-892-1760**

All Citizen Scientists, try our newest mobile app "My field App"



From your mobile phone go to <https://qrco.de/bbRJJ5>

**From:** Albert Garofalo  
**Sent:** August 18, 2021 1:31 PM  
**To:** C Blott <[cblott6@gmail.com](mailto:cblott6@gmail.com)>  
**Cc:** Anne Yagi <[anne.yagi@8trees.ca](mailto:anne.yagi@8trees.ca)>  
**Subject:** Re: White Wood Aster

Hello Cathy,

Thanks for letting me know.

My White Wood Asters in the front yard are not quite in flower and just about to bloom too. They are from Woodlawn Park seed.

Due to Covid, I have not heard back from the RBG or Semple on the possible Schriber's Aster. Although it matches the ones I also have in my front yard which bloomed a few weeks ago and are well past peak. This nicely separates them from White Wood Aster which is yet to fully bloom.

I will try to get out for a quick look at Aqueduct. You are more than welcome to look at the asters here too.

All the best and I will keep you posted if I hear or see anything,

Albert

On Fri, Aug 13, 2021 at 2:12 PM C Blott <[cblott6@gmail.com](mailto:cblott6@gmail.com)> wrote:

Hello Albert,

It's Cathy Blott, I was out yesterday to look again this year for White Wood Aster at Aqueduct Park and Lucchetta property next door.... and at Woodlawn Park.

Found the White Wood Aster just starting to bloom at Woodlawn Park..... most bud getting ready to open and a few already open.

I only found Large Leaf Aster at the Aqueduct Park and neighboring Lucchetta where we looked last year together with Theresa.

Thought you would like to know these species are blooming now ... please feel welcome to access the Lucchetta property if you would like to confirm.

There is a lot of variation in characteristics of the Large-leaf aster on the site.

Did you hear back from Dr Semple about any samples you might have sent him last year? I think you had been wondering about Scribers Aster .....

Cathy

Images Sent to NHIC and their corresponding file name



IMG\_20210919\_143521



IMG\_20210919\_143532



IMG\_20210919\_143540



IMG\_20210919\_143623





IMG\_20210919\_143637



IMG\_20210919\_143642



IMG\_20210919\_143832



IMG\_20210919\_145847

From: NHIC-Requests (NDMNRF) <[nhicrequests@ontario.ca](mailto:nhicrequests@ontario.ca)>

Sent: September 21, 2021 1:29 PM



**To:** Katharine Yagi <[katharine.yagi@8trees.ca](mailto:katharine.yagi@8trees.ca)>  
**Subject:** RE: Help with an ID?

Hi Katherine,

I don't believe any of your photos depict White Wood Aster.

At least one looks like a good bet for *Eurybia schreberi* (IMG\_20210919\_145847 (003) based on the oblong-linear phyllaries and white ray florets (though *Eurybia macrophylla* is highly variable and can sometimes have white ray florets also). I can't tell if there are glands present on the phyllaries based on the images presented, so can't be sure, but they should be essentially glandless to rule out *E. macrophylla*.

Sam

**Sam Brinker**  
**Provincial Botanist**  
**Ontario Natural Heritage Information Centre**

Science and Research Branch  
Ministry of Northern Development, Mines, Natural Resources and Forestry  
300 Water St., 2nd Floor, North Tower  
Peterborough, ON, CA, K9J 3C7  
705-761-7264  
[sam.brinker@ontario.ca](mailto:sam.brinker@ontario.ca)

Working with conservation partners to track Ontario's biodiversity.  
Collaborer avec les partenaires en conservation afin de surveiller la biodiversité en Ontario.  
Trabajamos con nuestros socios del sector de la conservación para llevar un registro de la biodiversidad de Ontario.  
bΔ·C·mPLb·m<1·<Δ·b·r·r·Δ·PL·\b·e·e·²·C·Δ·P·q·σ·Γ·²·C·D·>U·\*·Δ·†·<<·b·²·q·d·e·²·b·Λ·L·C·P·²·<1·P·C·b·Γ·L

**From:** Oldham, Michael (NDMNRF) <[michael.oldham@ontario.ca](mailto:michael.oldham@ontario.ca)>  
**Sent:** September 21, 2021 2:09 PM  
**To:** Katharine Yagi <[katharine.yagi@8trees.ca](mailto:katharine.yagi@8trees.ca)>  
**Cc:** Brinker, Sam (NDMNRF) <[Sam.Brinker@ontario.ca](mailto:Sam.Brinker@ontario.ca)>; Michael Oldham <[papooshki@gmail.com](mailto:papooshki@gmail.com)>; NHIC-Requests (NDMNRF) <[nhicrequests@ontario.ca](mailto:nhicrequests@ontario.ca)>  
**Subject:** Fw: Help with an ID?

Hi Katharine,

As you will have seen from my email auto-reply, I retired from NHIC at the end of March.

Sam Brinker, cc'd here, is the new Provincial Botanist at NHIC and is very familiar with the flora of Niagara and with White Wood Aster (he and I conducted surveys for the species in Niagara).

I haven't had a chance to look too closely at the photos you sent, but on a first inspection I don't think any of them are White Wood Aster (most or all are likely Large-leaved Aster, *Eurybia macrophylla*).

Cheers,

Mike Oldham

**From:** Katharine Yagi <[katharine.yagi@8trees.ca](mailto:katharine.yagi@8trees.ca)>  
**Sent:** September 20, 2021 4:14 PM  
**To:** NHIC-Requests (NDMNRF) <[nhicrequests@ontario.ca](mailto:nhicrequests@ontario.ca)>  
**Cc:** Anne Yagi <[anne.yagi@8trees.ca](mailto:anne.yagi@8trees.ca)>  
**Subject:** FW: Help with an ID?

**CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.**

Hello

I was wondering if anyone at NHIC could let us know if any of these photos indicate White Wood Aster? This is within Aqueduct Park in Welland, which is a site listed in the White Wood Aster Recovery Strategy.

Thank you!  
-Katharine

Katharine Yagi (she/her), PhD, CERPIT  
Research Associate | 8Trees Inc. | [www.8trees.ca](http://www.8trees.ca)  
Department of Biological Sciences | Brock University  
Amphibian and Reptile Specialist Subcommittee | COSEWIC  
E1: [katharine.yagi@8trees.ca](mailto:katharine.yagi@8trees.ca) | E2: [kyagi2@brocku.ca](mailto:kyagi2@brocku.ca) | T: (905) 328-2450

RE: Aqueduct Park X Gadsby Rd City of Welland Tues 2021-10-05 4:16PM

Hi Anne,

Very interesting. I look forward to seeing more information in the EIS.

Following up on my classification of habitat, I think it's a little different with flora than fauna, and I was definitely thinking more about fauna in my last email. For example, for someone to argue that a wetland is no longer Blanding's turtle habitat, we would require several years of surveys since they are cryptic and it is often very hard to find them, even with great surveys. Plants on the other hand are different and at this point we have two years of surveys indicating no WWA. I will need to review the EIS/IGF in depth to make a determination, but I don't think we would require multiple survey years like we would Blanding's, for example.

I would love to come out, but unfortunately I will have to attend virtually.

Sincerely,

Brianne

**From:** Anne Yagi <[anne.yagi@8trees.ca](mailto:anne.yagi@8trees.ca)>  
**Sent:** October 5, 2021 3:39 PM  
**To:** Brothers, Brianne (MECP) <[Brianne.Brothers@ontario.ca](mailto:Brianne.Brothers@ontario.ca)>  
**Subject:** RE: Aqueduct Park X Gadsby Rd City of Welland

**CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.**

We think the asters identified in the Recovery Strategy were Schrieber's not WWA. There are no Schrieber's or WWA within the Lucchetta woods- no aster's, only poison ivy this time of year. They are a different vegetation community- different soil profiles especially in terms of wetness. The Aqueduct woods with woodland asters (not WWA) has a sand lens, dry upland site, the Lucchetta wood is clay soil moist to wet.

We need to have a chat about the implications for SAR habitat protection and the proposed development. Especially when we have tried for two years now to find the WWA and I have asked Albery Garofalo out to check each year independently. He has not found them either. The woods were cut out from the north and a drain was added which we think altered the woods. But it is possible the WWA was misidentified and was never there.

If the province says the entire woods is SAR habitat then the province will need to back this up at an LPAT hearing. I will make the changes in the EIS accordingly.

Are you able to zoom meet with me on this or come out to a site visit?

Regards,  
**Anne Yagi, M.Sc., EP, CERP**  
**President**



We are here to help!

[www.8trees.ca](http://www.8trees.ca)

Ph: 905-892-1760

All Citizen Scientists, try our newest mobile app "My field App"



From your mobile phone go to <https://qrco.de/bbRJJ5>

OR Scan the QR Code



*This email is intended only for the person to whom it was originally addressed and contains the intellectual property of 8Trees Inc. Distribution of this information without the expressed written consent from 8Trees Inc. is forbidden*

**From:** Brothers, Brianne (MECP)  
**Sent:** October 5, 2021 3:25 PM

**To:** Anne Yagi <[anne.yagi@8trees.ca](mailto:anne.yagi@8trees.ca)>  
**Subject:** RE: Aqueduct Park X Gadsby Rd City of Welland

Hi Anne,

Am I understanding this correctly, the asters identified in the Recovery Strategy for Aqueduct may not actually be White Wood Aster? Or do you mean that the WWA is extant within Aqueduct Park, but the asters on the Lucchetta property are actually Schrieber's? Either way, very interesting.

As for habitat, we usually still consider a property habitat if it remains functional for the species. In other words, if the habitat was made into a parking lot, we obviously would agree that it was no longer habitat for the species. But, if the forest remained the same as it did when there were SAR observations, we would likely still consider it habitat (unless there was several years of surveys that suggested the species was no longer occupying the area). Hope that makes sense.

Let me know if you would like to discuss further.

Sincerely,

Brianne

**Brianne Brothers**

A/Management Biologist, Permissions and Compliance Section  
Species at Risk Branch  
Ministry of the Environment, Conservation and Parks  
(905)-321-5736 | [Brianne.brothers@ontario.ca](mailto:Brianne.brothers@ontario.ca)

**From:** Anne Yagi <[anne.yagi@8trees.ca](mailto:anne.yagi@8trees.ca)>  
**Sent:** October 2, 2021 9:00 AM  
**To:** Brothers, Brianne (MECP) <[Brianne.Brothers@ontario.ca](mailto:Brianne.Brothers@ontario.ca)>  
**Subject:** FW: Aqueduct Park X Gadsby Rd City of Welland

**CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.**

Hello Brianne

I am following up with our White Wood Aster Investigation for the woodlands. We have not confirmed WWA again this year. This was a site recognized in the 2018 Recovery Strategy as having WWA. Now we think the site has Schrieber's Aster and not WWA- the two species have similar characteristics. We also sent samples again to NHIC and they could only confirm Schrieber's. Finally, I asked Albert Garofolo to take a second look, he is our local expert on this species and he was part of the team that identified WWA in 2018. He also confirms WWA is not present. Please see email below.

How long would MECP consider the site as WWA habitat? Can I call you sometime to discuss further?

Regards,



Anne Yagi, M.Sc., EP, CERP  
President



We are here to help!

[www.8trees.ca](http://www.8trees.ca)

Ph: 905-892-1760

All Citizen Scientists, try our newest mobile app "My field App"



From your mobile phone go to <https://qrco.de/bbRJJ5>

OR Scan the QR Code



*This email is intended only for the person to whom it was originally addressed and contains the intellectual property of 8Trees Inc. Distribution of this information without the expressed written consent from 8Trees Inc. is forbidden*

Anne

\*\*\*\*\*

FW: Hilda St studies City of Welland 2021-11-03-3:25 PM

Hello Cara

I am requesting a copy of the EIS for the Hilda and Aqueduct developments City of Welland. OR any other background documents the Region may have regarding the housing development constraints for this area.

Thank you

Regards,

Anne Yagi, M.Sc., EP, CERP  
President



We are here to help!

[www.8trees.ca](http://www.8trees.ca)

Ph: 905-892-1760

All Citizen Scientists, try our newest mobile app "My field App"



From your mobile phone go to <https://qrco.de/bbRJJ5>

OR Scan the QR Code



*This email is intended only for the person to whom it was originally addressed and contains the intellectual property of 8Trees Inc. Distribution of this information without the expressed written consent from 8Trees Inc. is forbidden*

**From:** Anne Yagi <[anne.yagi@8trees.ca](mailto:anne.yagi@8trees.ca)>  
**Sent:** November 3, 2021 3:08 PM  
**To:** Lucchetta, Lucas <[Lucas.Lucchetta@colliers.com](mailto:Lucas.Lucchetta@colliers.com)>  
**Subject:** RE: Hilda St studies

I guess the woodlot was under 2 ha in size at the time of the development. But it has only gotten smaller. Why did Region request EIS for your site and not there?

Regards,  
**Anne Yagi, M.Sc., EP, CERP**  
**President**



We are here to help!

[www.8trees.ca](http://www.8trees.ca)

**Ph: 905-892-1760**

All Citizen Scientists, try our newest mobile app "My field App"



From your mobile phone go to <https://qrco.de/bbRJJ5>

OR Scan the QR Code



*This email is intended only for the person to whom it was originally addressed and contains the intellectual property of 8Trees Inc. Distribution of this information without the expressed written consent from 8Trees Inc. is forbidden*

**From:** Lucchetta, Lucas  
**Sent:** November 3, 2021 2:28 PM  
**To:** Anne Yagi <[anne.yagi@8trees.ca](mailto:anne.yagi@8trees.ca)>  
**Subject:** Fwd: Hilda St studies

Get [Outlook for iOS](#)

---

**From:** Rachelle Larocque <[rachelle.larocque@welland.ca](mailto:rachelle.larocque@welland.ca)>

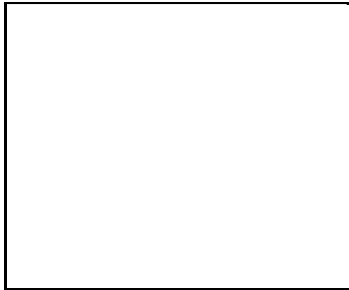
**Sent:** Wednesday, November 3, 2021 12:24:50 PM

**To:** Lucchetta, Lucas <[Lucas.Lucchetta@colliers.com](mailto:Lucas.Lucchetta@colliers.com)>  
**Subject:** RE: Hilda St studies

Hi Lucas,

An EIS wasn't required for that property as there were no natural heritage features identified.

Take care,



**Rachelle Larocque, BES, M.Sc., MCIP, RPP**  
Manager of Planning  
Planning and Development Services  
Corporation of the City of Welland  
60 East Main Street, Welland, Ontario L3B 3X4  
**Hours:** 8:30am-4:30PM  
**Phone:** (905)735-1700 Ext. 2310 **Fax:** (905)735-8772  
[www.welland.ca](http://www.welland.ca)



This email may contain confidential and/or privileged information for the sole use of the intended recipient. Any review, disclosure, or distribution by others is strictly prohibited. If you have received this email in error, please contact the sender immediately and delete all copies.

**From:** Lucchetta, Lucas <[Lucas.Lucchetta@colliers.com](mailto:Lucas.Lucchetta@colliers.com)>  
**Sent:** November 2, 2021 8:38 AM  
**To:** Rachelle Larocque <[rachelle.larocque@welland.ca](mailto:rachelle.larocque@welland.ca)>  
**Subject:** Hilda St studies

**WARNING:** This email originated from an external sender. eMail from City of Welland email accounts will not begin with this warning! Please do not click links or open attachments unless you are sure they are safe!

Hello Rachelle,

Hope all is well with you. Would you be able to send me an EIS and ESA clearance or any due diligence regarding the study of White Wood Aster and SAR bats on the Hilda Street development that was approved a few years ago. I was informed that White wood aster may have been discovered in the portion of the woods that was formerly on the site of the new single family homes fronting on Hilda Street. If it doesn't exist let me know.

Thank you

\*\*\*\*\*

RE: Hilda St studies Thu 2021-11-04 10:58 AM  
Hi Anne,

We may be able to look at the file based on SAR, but anything related to PPS would need to be addressed through under the Planning Act with MMAH or the municipality.

Thanks!  
Brianne

RE: ESA Process for Aqueduct and Gadsby Tuesday 2021-11-02 3:49PM  
Hi Anne,

Thanks for the info. I will pass this along to our compliance staff who will then review it and determine any next steps.

Brianne

**From:** Anne Yagi <[anne.yagi@8trees.ca](mailto:anne.yagi@8trees.ca)>  
**Sent:** November 1, 2021 11:42 AM  
**To:** Brothers, Brianne (MECP) <[Brianne.Brothers@ontario.ca](mailto:Brianne.Brothers@ontario.ca)>  
**Subject:** Re: ESA Process for Aqueduct and Gadsby

**CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.**

City of Welland Aqueduct Park. Development to the north of park. Between Hilda and the park. The most recent loss is immediately beside park. I am not sure of address. Mihjt be 398 or 399 Aqueduct.

Anne

Get [Outlook for Android](#)

---

**From:** Brothers, Brianne (MECP) <[Brianne.Brothers@ontario.ca](mailto:Brianne.Brothers@ontario.ca)>  
**Sent:** Monday, November 1, 2021 9:19:09 AM  
**To:** Anne Yagi <[anne.yagi@8trees.ca](mailto:anne.yagi@8trees.ca)>  
**Subject:** RE: ESA Process for Aqueduct and Gadsby

Hi Anne,

Can you give me the address for the development below?

**From:** Anne Yagi <[anne.yagi@8trees.ca](mailto:anne.yagi@8trees.ca)>  
**Sent:** October 29, 2021 4:44 PM  
**To:** Brothers, Brianne (MECP) <[Brianne.Brothers@ontario.ca](mailto:Brianne.Brothers@ontario.ca)>  
**Subject:** ESA Process for Aqueduct and Gadsby



**CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.**

Hi Brianne

So we just saw the new aerial imagery for these woods and the area to the north of Aqueduct Park is now developed since we did our last EIS mapping. Somehow another house was squeezed into the lot immediately north of the park and the woods were cleared. I am wondering why my client has to complete this EIS amendment and all the expense when the areas that likely had White Wood Aster did not have to go through any planning or protection.

There is something clearly wrong. I am in the process of completing an addendum with additional work completed searching for WWA and delineating its habitat which is not on my client's lands.

What process do you want me to follow?

Regards,

**Anne Yagi, M.Sc., EP, CERP**

**President**



We are here to help!

[www.8trees.ca](http://www.8trees.ca)

Ph: 905-892-1760

All Citizen Scientists, try our newest mobile app "My field App"

---

INSERT EMAIL FROM MOHAMED HASSAN (MNRF) June 11,  
2021 Regarding "Old Growth"

## Anne Yagi

---

**From:** Mohamed, Hassan (MNRF) <hassan.mohamed@ontario.ca>  
**Sent:** June 11, 2021 10:53 AM  
**To:** Anne Yagi  
**Cc:** Scientific Collection Permits Guelph (MNRF)  
**Subject:** RE: Question Forestry Policies

**Follow Up Flag:** Follow up  
**Flag Status:** Completed

Hello Anne,

The primary policy direction with respect to old growth planning followed in Ontario for the development of a Forest Management Plan (FMP) on Crown Forests includes the Forest Management Guide for Landscapes Management for both the Great Lakes and Boreal Forests (<https://www.ontario.ca/page/forest-management-guides>) and the Old Growth Policy for Ontario's Crown Forests (2003) (<https://www.ontario.ca/document/old-growth-policy-crown-forests>). Old growth is defined in the "Old Growth Forest Definitions for Ontario, 2003" based of age-of onset and duration or persistency that varies by forest unit (aggregated or generalized stand conditions).

Under these policy direction, simulated ranges of natural variation (SRNV) are modelled and objectives and targets for old growth planning are set. The old growth period is a condition of dynamic forest ecosystems that tends to include complex forest stand structure, relatively large dead standing trees (snags), accumulation of downed woody material, up-turned stumps, root and soil mounds, accelerating tree mortality, and ecosystem functions that may operate at different rates and intensities compared with earlier stages of forest development.

Areas that have been depleted naturally as result of natural disturbance such as fire and also areas that have been harvested are renewed following the Forest Management Guide to Silviculture in the Great Lakes-St. Lawrence and Boreal Forests of Ontario. Silviculture is generally, the science and art of cultivating forest crops, based on a knowledge of tree species.

I hope this helps your inquiry.

***Hassan Mohamed R.P.F.***

Regional Forest Operations Specialist  
Resource Management Planning  
Southern Region  
300 Water St., Peterborough, ON K9J 8M5  
705-772-2456  
[hassan.mohamed@Ontario.ca](mailto:hassan.mohamed@Ontario.ca)

*This email may be privileged and confidential. Any dissemination or use of this information by a person other than the intended recipient(s) is not authorized. If you receive this email in error, please advise me immediately. Electronic mail through the Internet is not guaranteed to be a secure, confidential or a prompt means of communication. As such transmitted information could be intercepted, lost, destroyed, tampered with, received late, incomplete, or contain viruses. The sender accepts no responsibility or liability for any errors and omissions, loss or damage from use, including damage from viruses, or breach of any confidentiality related to the contents of this message which arises as a result of email transmission.*

**From:** Anne Yagi <[anne.yagi@8trees.ca](mailto:anne.yagi@8trees.ca)>

**Sent:** Thursday, June 10, 2021 9:40 AM

**To:** Scientific Collection Permits Guelph (MNRF) <[scp.guelph@ontario.ca](mailto:scp.guelph@ontario.ca)>

**Subject:** Question Forestry Policies

**CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.**

I am looking for a provincial definition for “Old Growth forests” as it applies to southern Ontario private lands or development planning.

I found an excellent “extension Note” that was very informative. I am wondering now about policies for old growth verses second growth.

Please advise

Regards,

**Anne Yagi, M.Sc., EP, CERP**

**President**



We are here to help!

[www.8trees.ca](http://www.8trees.ca)

Ph: 905-892-1760

All Citizen Scientists, try our newest mobile app “My field App”



From your mobile phone go to <https://qrco.de/bbRJJ5>

OR Scan the QR Code



*This email is intended only for the person to whom it was originally addressed and contains the intellectual property of 8Trees Inc. Distribution of this information without the expressed written consent from 8Trees Inc. is forbidden*

***Hassan Mohamed R.P.F.***

Regional Forest Operations Specialist

Resource Management Planning

Southern Region

300 Water St., Peterborough, ON K9J 8M5

705-772-2456

[hassan.mohamed@Ontario.ca](mailto:hassan.mohamed@Ontario.ca)

*This email may be privileged and confidential. Any dissemination or use of this information by a person other than the intended recipient(s) is not authorized. If you receive this email in error, please advise me immediately. Electronic mail through the Internet is not guaranteed to be a secure, confidential or a prompt means of communication. As such transmitted information could be intercepted, lost, destroyed, tampered with, received late, incomplete, or contain viruses. The sender accepts no responsibility or liability for any errors and omissions, loss or damage from use, including damage from viruses, or breach of any confidentiality related to the contents of this message which arises as a result of email transmission.*



## Anne Yagi

---

**From:** Anne Yagi  
**Sent:** May 11, 2021 8:26 PM  
**To:** Anne Yagi  
**Subject:** What is old-growth forest? - Ancient Forest Exploration & Research

**Follow Up Flag:** Follow up  
**Flag Status:** Completed

<http://www.ancientforest.org/what-is-old-growth-forest/>

Get [Outlook for Android](#)

