

APPENDIX E
Natural Environment Assessment



Pelham Elevated Tank Schedule B Municipal Class Environmental Assessment

Natural Sciences Report

for:

R.V. Anderson Associates Limited

by:



environmental research associates



LGL Limited

environmental research associates

March 2023

LGL File TA8909

prepared by:

Name	Title	Signature
Lynette Renzetti, B.Ed., Hons.B.Sc.	Senior Ecologist	
Jen Noël, M.Sc.	Senior Botanist, ISA Certified Arborist	

LGL Limited
environmental research associates
445 Thompson Drive, Unit 2
Cambridge, Ontario N1T 2K7
Tel: 519-622-3300 Fax: 519-622-3310
Email: cambridge@lgl.com
URL: [LGL Limited](#)

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1.0 Introduction

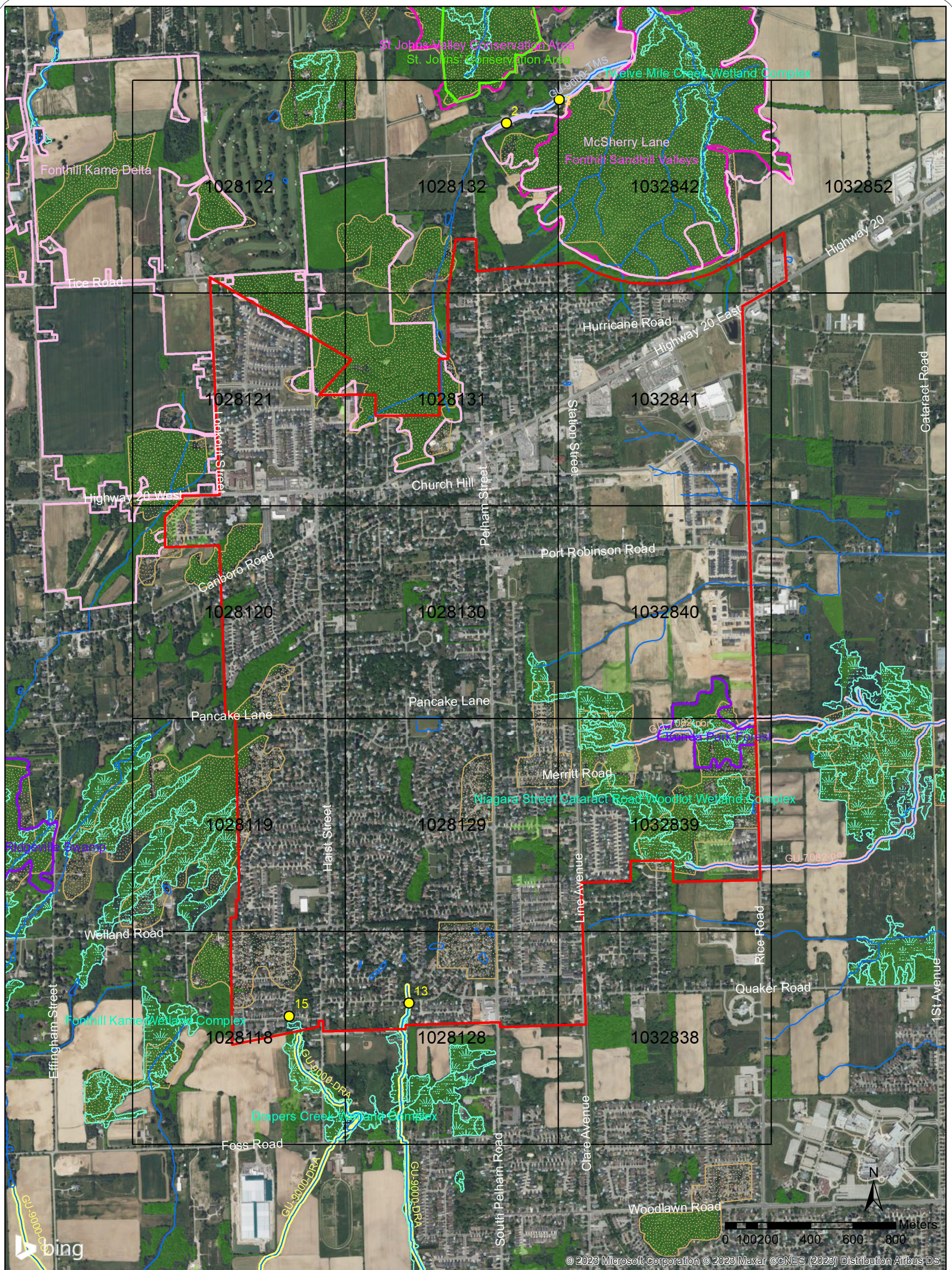
The Niagara Region has embarked upon an integrated process known as Niagara 2041 which is aimed at identifying and planning for area growth for a 25-year period. As part of this process, the Niagara Region (Region) completed a new Transportation Master Plan and updated the Region's Water and Wastewater Master Servicing Plans (MSP). The MSP outlined a number of Pelham Water System upgrades to include upgrades to the Shoalts Drive Pumping Station, construction of a new 6.0 ML elevated tank within the Town of Pelham, decommissioning of the existing elevated tank, and added feedermain capacity. Subsequently, the Region initiated a Schedule B Municipal Class Environmental Assessment (Class EA) to consider options for the design and construction of a new Pelham Elevated Water Storage Tank and transmission system upgrades.

LGL Limited (LGL) has been retained as part of the project team to provide natural sciences support during the Class EA. This report represents a combination of desktop assessment and subsequent field investigation to verify available background information assembled for sites proposed to host project infrastructure. The characterization of existing conditions will be used to identify natural heritage constraints for the purpose of evaluating alternative design solutions and to identify appropriate mitigation to minimize impacts associated with a preferred design alternative.

1.1 Background

The intent of this Natural Sciences Report (NSR) is to describe existing natural heritage conditions within the study area through a combination of desktop review and field investigation to assess impacts related to the alternative solutions of the Class EA. With this in mind, a broad geographical study area was used to collect background information as shown in Figure 1, and then LGL biologists visited locations proposed for construction of a new elevated tank to confirm site conditions. For the purpose of the natural sciences investigation, secondary sources of information were reviewed in the context of the following:

- Designated Natural Areas – Areas of Natural and Scientific Interest (ANSI); significant wetlands, woodlands, and valleylands; areas regulated by the Niagara Peninsula Conservation Authority (NPCA) under Ontario Regulation 155/06; and, Environmental Features as identified under the Town of Pelham Official Plan and Core Natural Heritage as identified on Schedule C of the Niagara Region Official Plan;
- Vegetation (including species at risk) and vegetation communities;
- Wildlife and wildlife habitat (including species at risk); and,
- Aquatic habitat and fisheries.



Pelham Elevated Tank EA

Significant Natural Areas



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Project	TA8909	Figure	1
Date	June 2019	Prepared By	KC
Scale	1:17,000	Verified By	LKR

1.2 Study Area

The study area lies within the jurisdiction of the Niagara Peninsula Conservation Authority (NPCA) and represents a mix of urbanized development, agricultural fields and open spaces in proximity to natural areas. Aggregate resources are prevalent in the study area. Natural areas include the Fonthill Kame Delta Earth Science Area of Natural and Scientific Interest (ANSI), portions of the Natural Heritage System, and woodland features.

2.0 Existing Conditions – Desktop Review

The documentation of existing conditions through desktop review has employed aerial imagery and a review of background data from secondary sources to describe natural heritage conditions within the study area. The review of existing background documentation and GIS data layers included the following resources:

- Aerial imagery;
- Mapping of physiography and soils;
- Ministry of Natural Resources and Forestry (MNRF) Natural Heritage Information Centre (NHIC) database;
- Land Information Ontario (LIO) MNRF data layers;
- MNRF fisheries records;
- Fisheries and Oceans Canada (DFO) mapping for aquatic species at risk (SAR);
- Niagara Region Official Plan (ROP); and,
- Town of Pelham Official Plan.

Secondary source information was compiled and analyzed in order to develop a general description of the terrestrial and aquatic ecosystems, vegetation and wildlife within the study area. In addition, the Ministry of Environment, Conservation and Parks (MECP) was consulted to obtain records for species at risk in the study area.

2.1 Designated Natural Areas

Natural areas within the study area in the form of open space, parklands, stream corridors, and woodlands were screened for any designations within various local, regional and provincial policies, the results of which are noted in the following sections and displayed in Figure 1.

2.1.1 Areas of Natural and Scientific Interest (ANSIs)

Regionally significant Areas of Natural and Scientific Interest (ANSI) are typically identified in mapping part of a municipality's Official Plan. Provincially significant ANSIs are determined by the MNR. The MNR defines ANSIs as "lands and waters with features that are important for natural heritage protection, appreciation, scientific study or education". Records contained within the MNR's LIO database identify the presence of the Fonthill Kame Delta Earth Science ANSI within the limits of the study area and the Town of Pelham Official Plan identifies Kunda Park Forest Life Science ANSI (Figure 1).

The Fonthill Kame Delta ANSI is the most noticeable feature found on the Haldimand Clay Plain. This unique glacial landform is composed of sand and gravel left by retreating Wisconsin glaciers (MNR 2013). The ANSI is characterized as having the highest elevation in Niagara Region (Pelham Niagara 2014). It is a northeast to southwest trending structure with its highest elevation in the north and sloping southward to a terminus near Fenwick. The highest point is near the intersection of Effingham and Tice Roads at an elevation of 260 metres above sea level (NPCA 2010). This creates a very unique microclimate that is supportive of the production of tender fruits.

2.1.2 Significant Wetlands

The potential occurrence of wetland features were screened through a review of available GIS data layers provided by MNR. Three types of wetland features are identified in MNR data layers: provincially significant wetlands (PSWs), unevaluated wetlands and other wetlands. The status of wetlands is determined through an evaluation according to the Ontario Wetland Evaluation System (OWES). PSWs are those for which an OWES evaluation has resulted in a score sufficient to qualify as a provincially significant feature. Unevaluated wetlands are wetland features that have not undergone an OWES evaluation, while those presented as evaluated or as 'other' wetlands are features where an OWES evaluation has been completed and the resulting score was insufficient to qualify as a provincially significant feature. Evaluated/other wetlands may also be considered locally significant wetlands.

The study area includes portions of the Niagara Street – Cataract Road Woodlot Wetland Complex. Three other PSWs are located adjacent to the study area boundary to the west (Fonthill Kame Wetland Complex), south (Drapers Creek Wetland Complex), and north (Twelve Mile Creek Wetland Complex). Where wetland units are found in proximity to PSWs there is potential for those wetlands to be 'complexed into' the PSW, particularly where a hydrologic connection between the features is evident.

2.1.3 Significant Woodlands

LIO data layers indicate the presence of large wooded areas part of the Niagara Street – Cataract Road Woodlot Wetland Complex and the Fonthill Kame Delta ANSI. A number of remnant woodlands part of residential parklands and agricultural lands are also found within the study area (Figure 1).

2.1.4 Significant Valleyland

Along valleylands where banks are of a height greater than 3 metres the Niagara Region OP requires minimum setbacks to development and site alteration. No mapping of significant valleylands was available for the study area.

2.1.5 Significant Wildlife Habitat

The study area includes a number of Deer Wintering Areas as shown in Figure 1. White-tailed Deer in southern Ontario, Ecoregion 7E are not constrained by snow depth for the use of wintering habitat. The MNRF Significant Wildlife Habitat Mitigation Support Tool (MNRF 2000) recognizes that in much of southern Ontario deer do not 'yard' in the traditional sense and that deer will often congregate in large numbers in suitable forested habitat. Therefore, large woodland areas in southern ecoregions are identified by local MNRF Districts as Deer Winter Congregation Areas. These areas are considered significant wildlife habitat.

2.1.6 Niagara Peninsula Conservation Authority (NPCA) Data

Data available through the NPCA's interactive online mapping tool indicates that highly vulnerable aquifer as well as significant groundwater recharge areas are present in the study area and surrounding location. As well, mapping identifies a number of wetlands in the study area regulated by the NPCA under *Ontario Regulation 155/06 Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*.

2.1.7 Official Plans

2.1.7.1 Region of Niagara Official Plan

The Region of Niagara Official Plan (2015) Policy 7.B.1.1 and Schedule C identify a Core Natural Heritage System for the Region comprised of:

- Core Natural Areas classified as Environmental Protection Areas or Environmental Conservation Areas;
- Potential Natural Heritage Corridors connecting the Core Natural Areas;
- The Greenbelt Natural Heritage and Water Resources Systems; and,

- Fish Habitat.

The components of the Region's Core Natural Heritage System throughout the study area are shown in Figure 2.

2.1.7.2 Town of Pelham Official Plan

The Town of Pelham Official Plan (2014) Schedule B identifies a number of Environmental Features within the study area to include the features already noted above as identified through MNRF LIO and NPCA data layers. As well, the limits of the Niagara Escarpment Plan Area (NEPA) are shown in Schedule B. Generally, very little overlap is evident for the study area since the southern limit of the NEPA aligns with Tice Road.

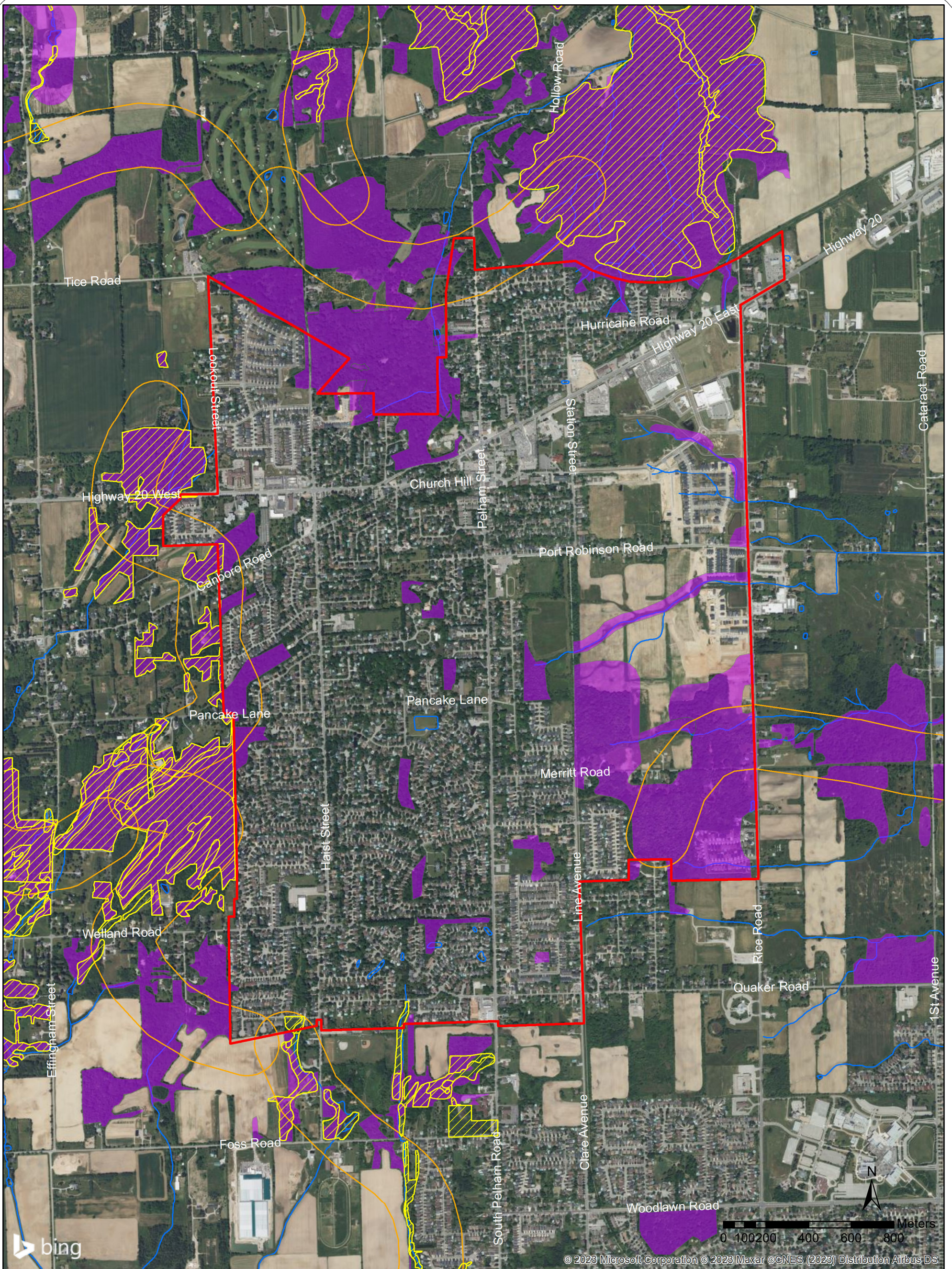
Environmentally Sensitive Areas (ESAs) are identified in the East Fonthill section of the City of Pelham's Official Plan. Rose Little Woodlot ESA is found between Line Avenue and Rice Road on either side of Merritt Road. This natural area is located on the eastern slope of the Fonthill Kame-Delta Complex on the well-drained, sand and loamy sand soils of the Sand Plain. The majority of the areas inventoried within this site are dominated by Deciduous Swamp (NPCA 2010). NPCA has documented a number of species at risk flora within the Rose Little Woods - Merritt Road Swamp to include American Chestnut (*Castanea dentata*), Eastern Flowering Dogwood (*Cornus florida*) and Butternut (*Juglans cinerea*).

2.1.8 Greenbelt Plan

Portions of the study area are within the Protected Countryside of the Greenbelt Plan. This also includes the Greenbelt Natural Heritage System. The Greenbelt Plan (Section 4.2) provides provincial policy direction for the planning of new and/or expanded infrastructure within the Greenbelt.

2.2 Terrestrial Ecosystems

Collection of background information specific to wildlife and wildlife habitat includes a summary of bird species documented across the large study area identified for the project (Table 1). A total of 93 bird species were documented for the area between 2015 and July 2019. Of these, 75 species are considered migratory and regulated under the *Migratory Birds Convention Act* (MBCA), while ten additional species are protected under the *Fish and Wildlife Convention Act, 1997*. Only eight of the documented bird species are not under any legislative protection. A total of 25 bird species are considered area sensitive according to the Significant Wildlife Habitat Technical Guide (SWHTG, 2000) and 35 species are considered to be priority species (level 1 to 4) for the Region of Niagara



Pelham Elevated Tank EA
Niagara Region Data

- Study Area
- Core Natural Heritage Environmental Conservation Area
- Core Natural Heritage Environmental Protection Area
- Watercourse
- Waterbody
- Core Natural Heritage Potential Natural Heritage Corridor



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Table 1. Records of Wildlife for the Study Area (eBird 2015-2019).

Common Name	Scientific Name	eBird Data (2015-2019) for Study Area					G-Rank	S-Rank	SARA	SARO	FWCA	MBCA	Area Sensitive
		1028121	1028131	1028132	1032842	1032852							
American Crow	<i>Corvus brachyrhynchos</i>	X	X	X	X	X	G5	S5B					
American Goldfinch	<i>Carduelis tristis</i>	X	X	X	X	X	G5	S5B				X	
American Redstart	<i>Setophaga ruticilla</i>	X	X	X	X	X	G5	S5B				X	X (>100ha forest)
American Robin	<i>Turdus migratorius</i>	X	X	X	X	X	G5	S5B				X	
Baltimore Oriole	<i>Icterus galbula</i>			X	X	X	G5	S4B				X	
Barn Swallow	<i>Hirundo rustica</i>	X	X	X			G5	S4B		THR		X	
Belted Kingfisher	<i>Ceryle alcyon</i>			X	X	X	G5	S4B			P		
Black and White Warbler	<i>Mniotilta varia</i>	X	X	X			G5	S5B				X	X (>100ha forest)
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>			X	X	X	G5	S5B				X	
Blackburnian Warbler	<i>Dendroica fusca</i>			X	X	X	G5	S5B				X	X (50ha mature forest)
Black-capped Chickadee	<i>Poecile atricapillus</i>	X	X	X	X	X	G5	S5				X	
Blackpoll Warbler	<i>Dendroica striata</i>			X	X	X	G5	S4B				X	
Black-throated Blue Warbler	<i>Dendroica caerulescens</i>	X	X	X	X	X	G5	S5B				X	X (>100ha dense forest)
Black-throated Green Warbler	<i>Dendroica virens</i>	X	X	X	X	X	G5	S5B				X	X (30ha variable forest)
Blue Jay	<i>Cyanocitta cristata</i>	X	X	X	X	X	G5	S5			P		
Blue-headed Vireo	<i>Vireo solitarius</i>			X	X	X	G5	S5B					

Common Name	Scientific Name	eBird Data (2015-2019) for Study Area					G-Rank	S-Rank	SARA	SARO	FWCA	MBCA	Area Sensitive
		1028121	1028131	1028132	1032842	1032852							
Blue-winged Warbler	<i>Vermivora pinus</i>			X	X	X	G5	S4B				X	
Broad-winged Hawk	<i>Buteo platypterus</i>			X	X	X	G5	S5B			P		X (dense aspen/birch forests >100ha)
Brown Creeper	<i>Certhia americana</i>	X	X	X	X	X	G5	S5B				X	X (30ha mature forest)
Brown-headed Cowbird	<i>Molothrus ater</i>			X	X	X	G5	S4B					
Canada Goose	<i>Branta canadensis</i>	X	X	X	X	X	G5	S5				X	
Cape May Warbler	<i>Dendroica tigrina</i>	X	X	X			G5	S5B				X	
Carolina Wren	<i>Thryothorus ludovicianus</i>	X	X	X	X	X	G5	S4				X	
Cedar Waxwing	<i>Bombycilla cedrorum</i>			X	X	X	G5	S5B				X	
Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>			X	X	X	G5	S5B				X	
Chipping Sparrow	<i>Spizella passerina</i>			X	X	X	G5	S5B				X	
Common Grackle	<i>Quiscalus quiscula</i>	X	X	X	X	X	G5	S5B					
Common Raven	<i>Corvus corax</i>	X	X	X			G5	S5			P		
Common Yellowthroat	<i>Geothlypis trichas</i>			X	X	X	G5	S5B				X	
Cooper's Hawk	<i>Accipiter cooperii</i>	X	X	X			G5	S4			P		X (dense Carolinian forest >50ha)
Dark-eyed Junco	<i>Junco hyemalis</i>	X	X	X	X	X	G5	S5B				X	
Double-crested Cormorant	<i>Phalacrocorax auritus</i>			X	X	X	G5	S5B					
Downy Woodpecker	<i>Picoides pubescens</i>	X	X	X	X	X	G5	S5				X	

Common Name	Scientific Name	eBird Data (2015-2019) for Study Area					G-Rank	S-Rank	SARA	SARO	FWCA	MBCA	Area Sensitive
		1028121	1028131	1028132	1032842	1032852							
Eastern Bluebird	<i>Sialia sialis</i>			X	X	X	G5	S5B				X	
Eastern Phoebe	<i>Sayornis phoebe</i>	X	X	X	X	X	G5	S5B				X	
Eastern Towhee	<i>Pipilo erythrophthalmus</i>			X	X	X	G5	S4B				X	
Eastern Wood Pewee	<i>Contopus virens</i>	X	X	X	X	X	G5	S4B		SC		X	
European Starling	<i>Sturnus vulgaris</i>	X	X	X	X	X	G5	SNA					
Field Sparrow	<i>Spizella pusilla</i>			X	X	X	G5	S4B				X	
Golden-crowned Kinglet	<i>Regulus satrapa</i>	X	X	X	X	X	G5	S5B				X	
Gray Catbird	<i>Dumetella carolinensis</i>			X	X	X	G5	S4B				X	
Great Blue Heron	<i>Ardea herodias</i>	X	X	X	X	X	G5	S4				X	
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	X	X	X	X	X	G5	S4B				X	
Hairy Woodpecker	<i>Picoides villosus</i>	X	X	X	X	X	G5	S5				X	X (forests with tall trees/snags >25cm)
Hermit Thrush	<i>Catharus guttatus</i>			X	X	X	G5	S5B				X	X (100ha of forest)
Hooded Warbler	<i>Wilsonia citrina</i>	X	X	X	X	X	G5	S4B	THR			X	
House Finch	<i>Carpodacus mexicanus</i>	X	X	X	X	X	G5	SNA				X	
House Sparrow	<i>Passer domesticus</i>	X	X	X	X	X	G5	SNA					
House Wren	<i>Troglodytes aedon</i>			X	X	X	G5	S5B				X	
Indigo Bunting	<i>Passerina cyanea</i>			X	X	X	G5	S4B				X	
Killdeer	<i>Charadrius vociferus</i>	X	X	X	X	X	G5	S5B, S5N				X	

Common Name	Scientific Name	eBird Data (2015-2019) for Study Area					G-Rank	S-Rank	SARA	SARO	FWCA	MBCA	Area Sensitive
		1028121	1028131	1028132	1032842	1032852							
Least Flycatcher	<i>Empidonax minimus</i>	X	X	X			G5	S4B				X	X (open habitat >100ha)
Magnolia Warbler	<i>Dendroica magnolia</i>	X	X	X	X	X	G5	S5B				X	X (30ha forest with dense shrubs)
Mallard	<i>Anas platyrhynchos</i>	X	X	X			G5	S5				X	
Mourning Dove	<i>Zenaida macroura</i>	X	X	X	X	X	G5	S5				X	
Nashville Warbler	<i>Vermivora ruficapilla</i>	X	X	X			G5	S5B				X	
Northern Cardinal	<i>Cardinalis cardinalis</i>	X	X	X	X	X	G5	S5				X	
Northern Flicker	<i>Colaptes auratus</i>	X	X	X	X	X	G5	S4B				X	
Northern Harrier	<i>Circus cyaneus</i>			X	X	X	G5	S4B			P		X (habitat size >30ha)
Northern Parula	<i>Parula americana</i>	X	X	X	X	X	G5	S4B				X	X (100ha interior forest)
Orchard Oriole	<i>Icterus spurius</i>			X	X	X	G5	S4B				X	
Ovenbird	<i>Seiurus aurocapilla</i>			X	X	X	G5	S4B				X	X (>70ha forest)
Pileated Woodpecker	<i>Dryocopus pileatus</i>			X	X	X	G5	S5				X	X (40-260ha mature FOD/FOM w/large diameter trees)
Pine Siskin	<i>Carduelis pinus</i>	X	X	X	X	X	G5	S4B				X	
Pine Warbler	<i>Dendroica pinus</i>			X	X	X	G5	S5B				X	X (15-30ha white pine forest)
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	X	X	X	X	X	G5	S4				X	
Red-breasted Nuthatch	<i>Sitta canadensis</i>	X	X	X	X	X	G5	S5				X	X (10ha interior forest)
Red-eyed Vireo	<i>Vireo olivaceus</i>	X	X	X	X	X	G5	S5B				X	

Common Name	Scientific Name	eBird Data (2015-2019) for Study Area					G-Rank	S-Rank	SARA	SARO	FWCA	MBCA	Area Sensitive
		1028121	1028131	1028132	1032842	1032852							
Red-tailed Hawk	<i>Buteo jamaicensis</i>	X	X	X	X	X	G5	S5			P		
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	X	X	X	X	X	G5	S4					
Ring-billed Gull	<i>Larus delawarensis</i>			X	X	X	G5	S5B, S4N				X	
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	X	X	X	X	X	G5	S4B				X	
Ruby-crowned Kinglet	<i>Regulus calendula</i>	X	X	X	X	X	G5	S4B				X	
Ruby-throated Hummingbird	<i>Archilochus colubris</i>			X	X	X	G5	S5B				X	
Scarlet Tanager	<i>Piranga olivacea</i>	X	X	X	X	X	G5	S4B				X	X (20ha mature forest)
Sharp-shinned Hawk	<i>Accipiter striatus</i>			X	X	X	G5	S5			P		X (4ha dense canopy, forest >30ha)
Song Sparrow	<i>Melospiza melodia</i>	X	X	X	X	X	G5	S5B				X	
Swainson's Thrush	<i>Catharus ustulatus</i>	X	X	X	X	X	G5	S4B				X	
Swamp Sparrow	<i>Melospiza georgiana</i>			X	X	X	G5	S5B				X	
Tree Swallow	<i>Tachycineta bicolor</i>	X	X	X	X	X	G5	S4B				X	
Tufted Titmouse	<i>Parus bicolor</i>	X	X	X	X	X	G5	S4				X	X (4ha shrub/sapling growth near water)
Turkey Vulture	<i>Cathartes aura</i>	X	X	X	X	X	G5	S5B			P		
Veery	<i>Catharus fuscescens</i>			X	X	X	G5	S4B				X	X (10ha young forest)
Warbling Vireo	<i>Vireo gilvus</i>			X	X	X	G5	S5B				X	
White-breasted Nuthatch	<i>Sitta carolinensis</i>	X	X	X	X	X	G5	S5				X	X (10ha forest)

Common Name	Scientific Name	eBird Data (2015-2019) for Study Area					G-Rank	S-Rank	SARA	SARO	FWCA	MBCA	Area Sensitive
		1028121	1028131	1028132	1032842	1032852							
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>			X	X	X	G5	S4B				X	
White-throated Sparrow	<i>Zonotrichia albicollis</i>	X	X	X	X	X	G5	S5B				X	
Wild Turkey	<i>Meleagris gallopavo</i>			X	X	X	G5	S5			G		
Winter Wren	<i>Troglodytes troglodytes</i>			X	X	X	G5	S5B				X	X (30ha FOC)
Wood Thrush	<i>Hylocichla mustelina</i>			X	X	X	G5	S4B		SC		X	
Yellow Warbler	<i>Dendroica petechia</i>	X	X	X	X	X	G5	S5B				X	
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>			X	X	X	G5	S5B				X	X (dry, second growth forests)
Yellow-rumped Warbler	<i>Dendroica coronata</i>	X	X	X	X	X	G5	S5B				X	

Table 1 Legend:

G- Rank - Global Rank): assigned by a consensus of the network of Conservation Data Centres (CDCs), scientific experts and The Nature Conservancy to designate a rarity rank based on the range-wide status of species, subspecies or variety, according to the following:

- G1- extremely rare; usually 5 or fewer occurrences in the overall range or very few remaining individuals or because of some factor (s) making it especially vulnerable
- G2-very rare; usually between 5 and 20 occurrences in the overall range or with many individuals in fewer occurrences or because of some factor (s) making it vulnerable to extinction
- G3- rare to uncommon; usually between 20 and 100 occurrences; may have fewer occurrences but with a large number of individuals in some populations or may be susceptible to large-scale disturbances
- G4-common; usually more than 100 occurrences, usually not susceptible to immediate threats
- G5-very common; demonstrably secure under present conditions

GH-historic; no records in the past 20 years

GU-status uncertain; often because of low search effort or cryptic nature of species, more data needed

GX-globally extinct; no records despite specific searches

?-denotes inexact numeric rank

G- global rank has not been obtained from the Nature Conservancy

G?-unranked; or if following a ranking the rank is tentatively assigned

Q-denotes taxonomic status of species, subspecies or variety as questionable

T-denotes the rank applies to a subspecies or variety

S-Rank - Provincial or Subnational ranks): used by the Natural Heritage Information Centre to set protection priorities for rare species and natural communities. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario.

SX-presumed extirpated; not located despite intensive searches

SH-historical; no known extant occurrences in past 20 years

S1-critically imperiled; typically 1 to 5 extant occurrences

S2-imperiled; typically 6 to 20 extant occurrences

S3-vulnerable; typically 21 to 80 extant occurrences

S4-apparently secure; uncommon but not rare; some cause for long-term concern; usually >80 extant occurrences

S5-secure; common, widespread and abundant

SNA-status not applicable; not a suitable target for conservation (e.g. non-native species)

SU-unrankable; insufficient information to rank confidently

SNR-not ranked

SARA - Species at Risk Act Schedule 1- official list of wildlife species at risk

THR-threatened; a wildlife species likely to become endangered if limiting factors are not reversed

END-endangered; a wildlife species facing imminent extirpation or extinction

EXT-extirpated; a species no longer existing in the wild in Canada but occurring elsewhere

SC-special concern; a wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats

SARO - Species at Risk in Ontario

END-Endangered; a species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's ESA

EXP-Extirpated; a species that no longer exists in the wild in Ontario but exists elsewhere

THR-Threatened; a species that is at risk of becoming endangered in Ontario if limiting factors are not reversed

SC-Special Concern; a species with characteristics making it sensitive to human activities or natural events

FWCA –Fish and Wildlife Conservation Act, 1997

P-protected species, G – game species, F – furbearing species

MBCA –Migratory Birds Convention Act, 1994; X=protected

SWH-TG – Species with specific habitat requirements and considered 'area sensitive' as a result (Ontario Ministry of Natural Resources, 2000)

2.3 Aquatic Habitat and Fisheries

The study area spans across several watersheds. The southwestern limits of the study area are within the Central Welland River Watershed (Coyle Creek and Drapers Creek), the study area north of Hwy 20 is part of the Twelve Mile Creek Watershed, and the western portion is within the Beaverdams and Shriners Creeks Watershed. The study area includes the headwaters of two watercourses, for which fisheries records were found (Figure 1 and Table 2).

2.3.1 Coyle Creek

The headwaters of Coyle Creek are within the study area. The Coyle Creek Subwatershed drains 40 square kilometers of land predominantly under active agricultural production, with a mix of urban and rural residential land use (NPCA 2010). The NPCA's water quality monitoring station at the outlet of the subwatershed rated water quality as marginal in 2010. No thermal regime data is available for this system through LIO and fisheries data is comprised of only three species from a station located outside of the study area (GU-9000-COY; south of Foss Road as shown in Figure 1). Those records are included in Table 2. Approximately half (52%) of the watercourses in the subwatershed have some riparian habitat and 23% of the available habitat was identified as upland habitat in the 2010 Watershed Plan. The headwater drainage features in proximity to Options 2A and 2B are within these upland communities.

2.3.2 Drapers Creek

The headwaters of Drapers Creek are within the southern limits of the study area defined for the project. Drapers Creek is a tributary of the Welland River. The creek receives baseflow from the Fonthill Kame Moraine to the north (Yagi and Blott 2012). NPCA indicates that riparian forest cover and water quality in this creek are poor (NPCA 2012a). Water quality parameters regularly exceed the provincial water quality objectives (PWQO) for phosphorus and for *E. coli*. The PWQO for copper is also exceeded occasionally. The benthic community found in this watershed has consisted of pollutant tolerant species indicative of impaired water quality. Table 2 includes a list of fish species found in the creek. Stations 13 and 15 are located within the study area as shown on Figure 1.

2.3.3 Upper Twelve Mile Creek

The headwaters of Twelve Mile Creek are within the northern extent of the study area. Roughly 80% of the creek flows through private property. Up to 59 species of fish have been identified in this watershed. They include Brook Trout, Northern Pike, various Perch, and minnows (NPCA 2012b). Twelve Mile Creek is the only identified cold water stream in the Niagara Region and has the only self-sustaining Brook Trout (*Salvelinus fontinalis*) population. The Niagara Water Strategy, NPCA Groundwater Study, and the

Niagara Peninsula Source Protection Area Assessment Report have all identified portions of Twelve Mile Creek watershed as highly vulnerable to groundwater contamination, in part because of the topography of the Fonthill Kame. The geological formation is mainly comprised of sand and gravel, which doesn't filter sediment as well as a thicker layer of soil. Table 2 includes a list of fish species found in this creek. Stations 2 and 3 are located to the north of the study area as shown on Figure 1.

Table 2. Fish Occurrence Data for the Study Area (MNR).

Common Name	Scientific Name	Area of Occurrence (Figure 1)	S Rank	SARA	SARO	Thermal Regime	Tolerance
Bluegill	<i>Lepomis macrochirus</i>	Drapers Creek - Stations 1, 7, 16	S5			W	intermediate
Brook Stickleback	<i>Culaea inconstans</i>	Coyle Creek Drapers Creek - Stations 1, 5, 7, 9, 15, 16	S5			CL	intermediate
Brown Bullhead	<i>Ameiurus nebulosus</i>	Drapers Creek - Station 16	S5			W	intermediate
Central Mudminnow	<i>Umbra limi</i>	Coyle Creek Drapers Creek - Stations 1, 6, 7, 9, 16	S5			CL	tolerant
Creek Chub	<i>Semotilus atromaculatus</i>	Drapers Creek – Stations 1, 5, 6, 7, 9, 10, 13, 15, 16 Upper Twelve Mile Creek – Stations 3, 8, 11	S5			CL	intermediate
Eastern Blacknose Dace	<i>Rhinichthys atratulus</i>	Upper Twelve Mile Creek – Station 11	SNR			CL	intermediate
Fathead Minnow	<i>Pimephales promelas</i>	Coyle Creek Drapers Creek - Stations 1, 9, 16 Upper Twelve Mile Creek - Station 8	S5			W	tolerant
Golden Shiner	<i>Notemigonus crysoleucas</i>	Drapers Creek- Stations 1, 5, 9, 16	S5			CL	moderately tolerant of turbidity

Common Name	Scientific Name	Area of Occurrence (Figure 1)	S Rank	SARA	SARO	Thermal Regime	Tolerance
Green Sunfish	<i>Lepomis cyanellus</i>	Drapers Creek - Stations 1, 6, 7, 9, 15, 16	S4	NAR	NAR	W	tolerant
Johnny Darter	<i>Etheostoma nigrum</i>	Drapers Creek – Stations 1, 5, 7, 9, 16	S5			CL	moderately tolerant
Largemouth Bass	<i>Micropterus salmoides</i>	Drapers Creek – Stations 1, 7, 9	S5			W	tolerant but moderately tolerant of turbidity
Northern Pike	<i>Esox lucius</i>	Drapers Creek – Station 6	S5			CL	intermediate
Pumpkinseed	<i>Lepomis gibbosus</i>	Drapers Creek - Stations 1, 5, 6, 7, 9, 10, 16	S5			W	intermediate
Tessellated darter	<i>Etheostoma olmstedi</i>	Drapers Creek - Station 9	S4		NAR	CL	tolerant
Yellow Perch	<i>Perca flavescens</i>	Drapers Creek - Station 9	S5			CL	moderately tolerant
Sunfish sp.	<i>Lepomis sp</i>	Drapers Creek – Stations 9, 16					

Table Notes – see Table 1 and below

Thermal Regime W- warmwater; CL – coolwater, C - coldwater

Species Information Source: Eakins, R. J. 2014. Ontario Freshwater Fishes Life History Database. Version 4.53. On-line database. (<http://www.ontariofishes.ca>), accessed August 16, 2019.

2.4 Species At Risk

2.4.1 DFO Aquatic Species at Risk Mapping

The DFO’s aquatic species at risk (SAR) mapping does not identify any critical habitat for SAR; however, records for Eastern Pondmussel (*Ligumia nasuta*) and Mapleleaf (*Quadrula quadrula*) are shown for Drapers Creek. Eastern Pondmussel is protected as an Endangered species under Schedule 1 of the *Species at Risk Act*, 2002 (SARA) and prefers sediments composed of clay, silt/organics and/or sand/gravel where macrophytes are absent or at low densities. Mapleleaf is protected as a Threatened mussel species under Schedule 1 of SARA. In Ontario, Mapleleaf is most typically recovered from medium to large rivers in firmly packed coarse gravel and sand to firmly

packed clay/mud bottoms (Species at Risk Registry). Both of these species are identified under the provincial *Endangered Species Act, 2007* (ESA 2007) as Special Concern.

2.4.2 MNRF Natural Heritage Information Centre (NHIC) Database

A review of the MNRF’s NHIC database was conducted to search for records of SAR and/or rare species for the study area. Records for a total of 13 species were returned (Table 3). The dates of the records returned suggest they are partly historical (> 20 years old). Given the changes that have occurred across the landscape since some of these observations were made, it is unlikely that habitat for all of these SAR is currently available. Four of the species listed in Table 3 are afforded protection under the ESA 2007, namely the American Chestnut, Butternut, Eastern Flowering Dogwood, and Northern Bobwhite (*Colinus virginianus*).

Table 3. NHIC Search Results for the Study Area.

Common Name	Scientific Name	S Rank	SARO	COSEWIC Status	Last Observed Date
American Chestnut	<i>Castanea dentata</i>	S1S2	END	END	2015-05-26
Broad Beech Fern	<i>Phegopteris hexagonoptera</i>	S3	SC	SC	2004-09-27
Butternut	<i>Juglans cinerea</i>	S2?	END	END	2008-09-00
Common Hop-tree	<i>Ptelea trifoliata</i>	S3	SC	SC	1982-09-23
Eastern Flowering Dogwood	<i>Cornus florida</i>	S2?	END	END	2011-04-05
Eastern Wood-pewee	<i>Contopus virens</i>	S4B	SC	SC	
Kansas Hawthorn	<i>Crataegus coccinioides</i>	S2			1993
Northern Bayberry	<i>Morella pennsylvanica</i>	S1			1968-07-01
Northern Bobwhite	<i>Colinus virginianus</i>	S1	END	END	1900
Perfoliate Bellwort	<i>Uvularia perfoliata</i>	S1S2			1950-06-18
Pignut Hickory	<i>Carya glabra</i>	S3			1982-10-07
Round-leaved Tick-trefoil	<i>Desmodium rotundifolium</i>	S2			1937-07-05
Wood Thrush	<i>Hylocichla mustelina</i>	S4B	SC	THR	

2.4.3 Screening of Species Databases

Table 1 documents three bird species with the potential to occur in the study area that are listed on the provincial Species at Risk in Ontario (SARO) list to include: Barn Swallow (*Hirundo rustica*), Wood Thrush (*Hylocichla mustelina*), and Eastern Wood Pewee (*Contopus virens*). Of those, Wood Thrush and Eastern Wood Pewee (identified

as Special Concern) do not receive species or habitat protection under the Ontario *Endangered Species Act, 2007*. Barn Swallow is protected as a Threatened species under the ESA, 2007.

2.4.4 Ministry of Environment, Conservation and Parks (MECP)

As of April 2019, the Ministry of Environment, Conservation and Parks (MECP) has been administering the ESA, 2007. In an attempt to determine SAR with potential to occur in the study area of the Pelham Elevated Water Tank Class EA, LGL initiated contact with the MECP in August 2019 to check if any additional species occurrence data beyond what has been assembled here is available. As of March 2023, no additional data had been provided by MECP beyond what has been assembled by LGL from available data resources (NHIC, DFO SAR mapping, eBird, species inventories).

3.0 Existing Conditions – Field Investigation

Existing conditions as documented in Section 2.0 through review of available background information were confirmed during field investigation on June 7, 2019. The focus of field investigation was to confirm conditions within four areas identified as potential locations for the construction of a new elevated tank. The options for the elevated tank are located on either side of Lookout Street, north of Highway 20W. The sites generally make use of open fields under crop production or manicured lawn.

3.1 Field Investigation Methods

3.1.1 Vegetation and Vegetation Communities

A vegetation survey was conducted on June 7, 2019 to confirm the current condition, limits and extent of vegetation communities identified through review of aerial imagery and available resources for the four elevated tank options proposed within the study area. Natural vegetation features identified within the study area were classified according to the *Ecological Land Classification for Southern Ontario: First Approximation and Its Application* (Lee et al. 1998). Plant species status was reviewed for Ontario (Oldham and Brinker 2009) and Niagara-Haldiman (Riley, 1999). Vascular plant nomenclature follows Newmaster and Ragupathy (2012).

3.1.2 Wildlife and Wildlife Habitat

Wildlife data was collected during the June 7, 2019 field visit through pedestrian survey of the four locations to focus on natural areas and where structures with the potential to provide habitat (e.g. bridges, culverts) were noted in proximity to the design alternatives. This survey was timed to fall within the breeding bird window in order to capture as many species as possible. Wildlife identification was completed through visual and auditory observations as well as indirect incidental observations (i.e. tracks, scat, and

scents). Wildlife observations were screened for to identify species listed as at risk provincially or federally; and, for species of local concern.

3.1.3 Aquatic Habitat

The objective of site investigation as it pertained to surface water features was to supplement the data collected through background review to include a description of general morphology and habitat conditions of sufficient detail to allow for the evaluation of alternative design solutions for construction of a new elevated tank. In LGL's review of background data, only one surface water feature was noted in the area of the four options under consideration; a tributary to Coyle Creek near Options 2A and 2B. Property access was not available for the collection of detailed data to complete aquatic habitat mapping of the feature; however, collection of this level of data is likely not necessary to evaluate the alternative design options given that all options are sited outside of the NPCA's area for permit review under O.Reg. 155/06.

3.2 Field Investigation Results

3.2.1 Vegetation and Vegetation Communities

3.2.1.1 Vegetation Communities

Option 2019-2A

This site is dominated by manicured lawn with ornamental trees along the driveway. A large forest community occurs along the western and southern boundary of the property. The forest community is dominated by a mixture of lowland tolerant species along the western boundary which steeply slopes toward a small tributary/drainage feature. Species in this area consist of Eastern Cottonwood (*Populus deltoides*), Red Maple (*Acer rubrum*), Sassafras (*Sassafras albidum*), Black Walnut (*Juglans nigra*), and Norway Maple (*Acer platanoides*). A locally and regionally rare species, Pignut Hickory (*Carya glabra*), was observed where the driveway intersects the forest. The forest along the southern boundary of the study area is considered more upland as it contains a mixture of Oak (*Quercus rubra*), Sugar Maple (*Acer saccharum*), Black Cherry (*Prunus serotina*) and Tulip Tree (*Liriodendron tulipifera*) which are less tolerant to moisture. Isolated trees are not locally or provincially significant.

Option 2019-2B

This site is currently in use for crop production (soybean). A band of cultural meadow follows the edge of the field with a narrow, forested arm extending north from the contiguous forest located west of the property. The forest is dominated by Black Walnut and includes on a steep slope towards a small tributary/drainage feature. Locally significant species observed on this site occur within the forested community.

Option 2019-3

This site is within the Fonthill Kame Delta ANSI and assessed from the fence line north of the property due to lack of property access. Small sapling trees were growing through the fence along the northern edge. The site is primarily occupied by a meadow/fallow field, portions of which have been used by local residence for a small hobby garden. A small cluster of trees occurs to the west of the meadow/fallow field. The cluster of trees contains a mixture of Black Walnut, Black Cherry, Norway Maple, Eastern Cottonwood and Staghorn Sumac (*Rhus hirta*). The meadow/fallow field contains a mixture of introduced species that typically colonize disturbed areas. Species observed include Timothy (*Phleum pratensis*), Orchard Grass (*Dactylis glomerata*), Awnless Brome (*Bromus inermis ssp. inermis*), Canada Goldenrod (*Solidago canadensis*) and White Sweet Clover (*Melilotus alba*).

Option 2019-4

Much of this site is being maintained as manicured lawn by Bell (property owners). The southwest quadrant of the property is occupied by communications towers, associated buildings and gravel pad/driveway. A small, naturalized area south of the towers shows signs of dumping and is now covered in Variable Crown Vetch (*Coronilla varia*), Canada Goldenrod, Garlic Mustard (*Alliaria petiolata*) and Orchard Grass (*Dactylis glomerata*). The property parcel is lined by hedgerow/fencerow trees that located on adjacent properties. Oaks and Pignut Hickory occur along the northern and eastern edges of the property and a large contiguous oak forest part of the Fonthill Kame Delta ANSI is directly adjacent to the northeast corner of the property.

3.2.1.2 Flora

A total of 109 vascular plant species were recorded within and surrounding the elevated tank options as shown in **Appendix B**. Fifty-seven of the species observed (52% of the total flora) are considered introduced and non-native to Ontario. These species are typically found within the manicured lawns, fallow field, or edges of agricultural fields. The lists of flora species provided in Appendix B and Table 4 are organized by option in order to assist with the evaluation of alternative design solutions. Three locally significant species were observed within forested communities and along the hedgerow of the Option 4 property (Table 4).

3.2.2 Wildlife and Wildlife Habitat

3.2.2.1 Wildlife

A total of 38 wildlife species were documented during the June field investigation, to include three mammals, one invertebrate, and 34 bird species (Appendix C). Most of the species observed are considered secure and common to the community types found

within the study area. However, two SAR were documented: Monarch (Special Concern), and Barn Swallow (Threatened). A barn located north of the field where Option 2B is located is identified as suspected breeding habitat for Barn Swallow. Many birds were observed flying around the barn during the field investigation. The barn has a large opening in the side. No active nests were found, nor were any birds observed entering the barn during the survey. Birds were observed to forage over the fields of Options 2B and 3. SAR are discussed further in Section 4.0.

Approximately 82 percent of the bird species observed are considered migratory and are regulated under the *Migratory Birds Convention Act* (MBCA). Five species [Blue Jay (*Cyanocitta cristata*), Eastern Chipmunk (*Tamias striatus*), Eastern Grey Squirrel (*Sciurus carolinensis*), Red Squirrel (*Tamiasciurus hudsonicus*), and Monarch (*Danaus plexippus*)] are protected under the *Fish and Wildlife Conventions Act*. Only five of the recorded bird species are not under any legislative protection: American Crow (*Corvus brachyrhynchos*), Brown-headed Cowbird (*Molothrus ater*), Common Grackle (*Quiscalus quiscula*), European Starling (*Sturnus vulgaris*), and House Sparrow (*Passer domesticus*). Three species observed are considered area sensitive according to the *Significant Wildlife Habitat Technical Guide* (SWHTG, 2000): Hairy Woodpecker (*Picoides villosus*), Savannah Sparrow (*Passerculus sandwichensis*), and Veery (*Catharus fuscescens*).

3.2.2.2 Wildlife Habitat

Option 2019-2A

Option 2A is primarily comprised of manicured grass. More sensitive wildlife habitat is located in the large, contiguous forest tract to the south and west, which may contain more sensitive species. For example, Veery was heard calling from the forest during the breeding season.

Option 2019-2B

Option 2B is primarily under active agricultural use, however, there are likely active nests for Barn Swallow nearby as individuals were observed foraging over the field. This option is likely within the general habitat of Barn Swallow, defined by MNR as within 200 metres of an active nest. Killdeer were also observed breeding (with young fledgling) in the field of Option 2B.

Option 2019-3

Option 3 is comprised primarily of grassland/meadow, and likely provides nesting habitat for grassland birds. This site may be within the general habitat for Barn Swallow as described above for Option 2B.

Option 2019-4

The site hosting Option 4 is largely comprised of manicured grass. Little in the way of bird/wildlife activity was noted at this site. No nests were observed on the utility building, or tower.

3.2.3 Species at Risk

The results of the background review conducted to locate records for species at risk data in the project area, along with field investigation results and information about species habitat preferences were combined to determine a list of SAR with the potential to occur in proximity to the sites under consideration for construction of a new elevated water tank. **Table 4** summarizes the results of that effort to determine where there is potential for SAR to be impacted by project works, or where additional works related to SAR may be warranted.

3.2.4 Summary of Field Investigations

In June 2019 field investigation of sites 2019-2A, 2019-2B, 2019-3, and 2019-4 were completed; the results of which have been presented above. Site 2019-3 Golf Course was identified as the recommended location for a new elevated tank during the first Public Information Centre (PIC#1) in November 2019. Based on the feedback received during PIC#1, the Class EA study re-evaluated potential sites for a new elevated tank and presented the results of the re-evaluation during a second PIC (PIC #2) in 2021. Given that the recommended location presented at PIC #2 for the new elevated tank remained as site 2019-3/2021-3 Golf Course, no additional field investigations were completed of the additional locations considered in follow up to PIC#1.

Table 4. Screening for Species at Risk Habitat with Potential to Occur in the Study Area.

Group	Species	SARO Status/ ESA Protection	Data Source	Habitat Description	Habitat Potential/Results of Field Investigation	Further Effort Recommended in Detailed design
Plant	American Chestnut (<i>Castanea dentata</i>)	END /Species and General Habitat Protection	NHIC (2015 record)	The American chestnut tree was once a dominant forest species in Southwestern Ontario but due to a blight disease introduced from Asia in the early 1900s, is now rare throughout its range.	Field survey conducted in June 2019. No individuals of the species were noted during field investigation; however, property access was not available for all sites.	No encroachment into woodland communities is proposed. No further effort recommended.
Plant	Broad Beech Fern (<i>Phegopteris hexagonoptera</i>)	Special Concern/ESA protections do not apply	NHIC (2004 record)	The Broad Beech Fern prefers to grow in rich soils in deciduous forests, often in areas dominated by maple and beech trees. It requires moist soil and usually grows in full shade. In Ontario, the species is found in forest remnants in southern Muskoka, along Lake Erie, and in the eastern Lake Ontario-St. Lawrence River region.	Field survey conducted in June 2019. No individuals of the species were noted during field investigation; however, property access was not available for all sites.	No encroachment into woodland communities is proposed. No further effort recommended.
Plant	Butternut (<i>Juglans cinerea</i>)	THR /Species and General Habitat Protection (General Habitat Description available)	NHIC (2008 record)	Generally, grows in rich, moist, and well-drained soils often found along streams. May also be found on well-drained gravel sites; seldom found on dry, rocky and sterile soils. In Ontario, the Butternut generally grows alone or in small groups in deciduous forests as well as in hedgerows.	Field survey conducted in June 2019. No butternut noted during field investigation, however edges of FOD were not surveyed in detail (no property access was available for some options).	Where works are proposed in proximity to woodland edges or treed areas, further screening for this species should be completed as part of Detailed design.
Plant	Common Hop-tree (<i>Ptelea trifoliata</i>)	Special Concern/ESA protections do not apply	NHIC (1982 record)	Common Hoptree ranges from the lower Great Lakes south to Texas, and from eastern Pennsylvania to northern Florida. In Canada, Common Hoptree is found only in southwestern Ontario along the Lake Erie and Lake St. Clair shorelines, on Lake Erie islands and near Lake Ontario in the Niagara Region. Common Hoptree is found often along shorelines in areas of nutrient poor sandy soils, although it is sometimes found on thin soils overlying limestone. It does best in full sun and is intolerant of shade.	Field survey conducted in June 2019. No individuals of the species were noted during field investigation; however, property access was not available for all sites.	No suitable habitat for this species found in proximity to alternative design options. No further effort recommended.
Plant	Eastern Flowering Dogwood (<i>Cornus florida</i>)	END /Species and General Habitat Protection	NHIC (2011 record)	Eastern Flowering Dogwood grows under taller trees in mid-age to mature deciduous or mixed forests. It most commonly grows on floodplains, slopes, bluffs and in ravines, and is also sometimes found along roadsides and fencerows. Eastern Flowering Dogwood is a fairly common species in the core of its range in the middle and southern United States. In Canada, it can only be found in southern Ontario in the Carolinian Zone.	Field survey conducted in June 2019. No individuals of the species were noted during field investigation; however, property access was not available for all sites.	No encroachment into woodland communities is proposed. No further effort recommended.

Group	Species	SARO Status/ ESA Protection	Data Source	Habitat Description	Habitat Potential/Results of Field Investigation	Further Effort Recommended in Detailed design
Bird	Barn Swallow (<i>Hirundo rustica</i>)	THR /Species and General Habitat Protection (General Habitat Description available)	LGL field investigation eBird	Prefers farmland; lake/river shorelines; wooded clearings; urban populated areas; rocky cliffs; and wetlands. They nest inside or outside buildings; under bridges and in road culverts; on rock faces and in caves etc. This species is well adapted to use anthropogenic structures and urbanized areas.	Field survey conducted in June 2019. Several Barn Swallows observed in the area of Options 2B and 3. Neighbouring barn is suspected breeding habitat.	A full breeding bird survey (two visits) of the preferred alternative is recommended during Detailed design to confirm presence and breeding status. Habitat up to 200m from a nesting site is identified as Category 1 to 3 habitat. Should Barn Swallow or active nests of the species be found to occur within or in proximity to the preferred alternative, further consultation with MECP will be required to ensure compliance under the Endangered Species Act.
Bird	Eastern Wood-pewee (<i>Contopus virens</i>)	Special Concern/ESA protections do not apply	eBird NHIC (no date)	Mixed and deciduous forests in the mid-canopy layer near forest clearings and edges. The forests usually have little understory vegetation.	Hedgerow trees (i.e., no wooded ELC communities) are present within the property limits of the preferred alternative. Field survey conducted in June 2019 - none observed.	Complete vegetation removal outside of breeding bird window.
Bird	Northern Bobwhite (<i>Colinus virginianus</i>)	END/Species and General Habitat Protection	NHIC (1900 record)	Northern bobwhites live in savannahs, grasslands, around abandoned farm fields, along brushy fencerows and other similar sites. The Northern bobwhite is near its northern range limit in southern Ontario. The range of this species has steadily retracted and now includes only the southwest corner of the province, mostly on Walpole Island, and possibly a few scattered locations nearby.	Field survey conducted in June 2019 - none observed. Suitable habitat found in proximity to farm fields.	Existing record is dated, however full two visit breeding bird survey of the preferred alternative is recommended during Detailed design to confirm presence/absence.
Bird	Wood Thrush	Special Concern/ESA protections do not apply	eBird NHIC (no date)	The wood thrush lives in mature deciduous and mixed (conifer-deciduous) forests. They seek moist stands of trees with well-developed undergrowth and tall trees for singing perches. These birds prefer large forests but will also use smaller stands of trees. They build their nests in living saplings, trees or shrubs, usually in sugar maple or American beech.	Hedgerow trees (i.e., no wooded ELC communities) are present within the property limits of the preferred alternative. Field survey conducted in June 2019 - none observed.	Complete vegetation removal outside of breeding bird window.

Group	Species	SARO Status/ ESA Protection	Data Source	Habitat Description	Habitat Potential/Results of Field Investigation	Further Effort Recommended in Detailed design
Mammal	Little Brown Myotis (<i>Myotis lucifugus</i>)	END/Species and General Habitat Protection	Candidate habitat	Overwintering habitat is associated with caves and mines that remain above 0°C. Maternal Roosts are associated with buildings (attics, barns etc.) and large diameter trees (25-44 cm DBH) with suitable cavities or sloughing bark.	No wooded ELC communities are present within the property limits of the preferred alternative; however, any open grown trees with suitable cavities represent potential habitat. No surveys for bats were conducted.	MECP's recommended approach to avoid impacts to SAR bats using open grown trees is to restrict tree removal to the period outside of April 1 – September 30. MECP should be consulted in Detailed design prior to any pruning or removal of suitable roosting trees to confirm this approach aligns with current guidance.
Mammal	Northern Myotis (<i>Myotis septentrionalis</i>)	END/Species and General Habitat Protection	Candidate habitat	Overwintering habitat is associated with caves and mines that remain above 0°C. Maternal Roosts are associated with buildings (attics, barns etc.) and large diameter trees (25-44 cm DBH) with suitable cavities or sloughing bark.	No wooded ELC communities are present within the property limits of the preferred alternative; however, any open grown trees with suitable cavities represent potential habitat. No surveys for bats were conducted.	MECP's recommended approach to avoid impacts to SAR bats using open grown trees is to restrict tree removal to the period outside of April 1 – September 30. MECP should be consulted in Detailed design prior to any pruning or removal of suitable roosting trees to confirm this approach aligns with current guidance.
Mammal	Eastern Small-footed Myotis (<i>Myotis leibii</i>)	END/Species and General Habitat Protection	Candidate habitat	Like other <i>Myotis</i> bats, this species hibernates overwinter in caves. During spring and summer this species will roost in or under rocks, buildings, bridges, caves, mines and hollow trees. This species may change its roost sites frequently or daily.	No wooded ELC communities are present within the property limits of the preferred alternative; however, any open grown trees with suitable cavities represent potential habitat. No surveys for bats were conducted.	MECP's recommended approach to avoid impacts to SAR bats using open grown trees is to restrict tree removal to the period outside of April 1 – September 30. MECP should be consulted in Detailed design prior to any pruning or removal of suitable roosting trees to confirm this approach aligns with current guidance.

Group	Species	SARO Status/ ESA Protection	Data Source	Habitat Description	Habitat Potential/Results of Field Investigation	Further Effort Recommended in Detailed design
Mammal	Tri-colored Bat (<i>Perimyotis subflavus</i>)	END/Species and General Habitat Protection	Candidate habitat	The Tri-colored Bat is less frequently encountered compared to Little Brown Myotis and Northern Myotis. Tri-coloured Bat establishes maternity roosts within live and dead foliage within or below the canopy. Oak is the preferred roost tree species; however, maples are also thought to be important. Some studies show that this species prefers dead leaves over live leaves, especially if the dead leaves are situated on a live tree (i.e., along a broken branch). Other documented roost sites include dogwood leaves, squirrel nests and tree cavities.	No wooded ELC communities are present within the property limits of the preferred alternative; however, any open grown trees with suitable cavities represent potential habitat. No surveys for bats were conducted.	MECP's recommended approach to avoid impacts to SAR bats using open grown trees is to restrict tree removal to the period outside of April 1 – September 30. MECP should be consulted in Detailed design prior to any pruning or removal of suitable roosting trees to confirm this approach aligns with current guidance.
Mussel	Eastern Pondmussel (<i>Ligumia nasuta</i>)	Special Concern/ESA protections do not apply. Schedule 1 Special Concern under SARA.	DFO Mapping (Drapers Creek) NHIC (no date)	Eastern Pondmussel is found in most waterbodies it occupied historically, including lakes St. Clair, Erie and Ontario, their connecting channels, and Lyn Creek. It appears to have been eliminated from the offshore waters of Lake St. Clair and Lake Erie in Canada due to the impacts of dreissenids. A remnant subpopulation occupies the nearshore areas of the St. Clair River delta. Extant subpopulations exist in the coastal wetlands of lakes Erie and Ontario, several eastern Ontario inland lakes, as well as Lyn Creek, a tributary of the upper St. Lawrence River.	No habitat is identified within the areas proposed for project works.	No additional effort is recommended.
Mussel	Mapleleaf (<i>Quadrula quadrula</i>)	Special Concern/ESA protections do not apply Schedule 1 Special Concern under SARA.	DFO Mapping (Draper Creek)	The Mapleleaf is usually found in medium to large rivers with slow to moderate currents and firmly packed sand, gravel, or clay and mud bottoms. It also lives in lakes and reservoirs. In Canada, the Mapleleaf is found in Manitoba and in southwestern Ontario. In Ontario, this species is found in several large rivers that drain into Lake St. Clair and Lake Erie including the Sydenham, Ausable, Grand, and Thames and Welland rivers. The species has disappeared from Lake Erie and the Detroit and Niagara rivers.	No habitat is identified within the areas proposed for project works.	No additional effort is recommended.
Invertebrate	Monarch (<i>Danaus plexippus</i>)	Special Concern/ESA protections do not apply	LGL Field Investigation, June 209	Throughout their life cycle, Monarchs use three different types of habitat. Only the caterpillars feed on milkweed plants and are confined to meadows and open areas where milkweed grows. Adult butterflies can be found in more diverse habitats where they feed on nectar from a variety of wildflowers. Monarchs spend the winter in Oyamel Fir forests found in central Mexico.	Individuals of the species were observed within the properties hosting Option 2A and Option 3.	Property access to the site of the preferred alternative (Option 3) was not available for the 2019 field inventory, therefore the presence of host plants (milkweed) for this species is not well understood. Consider including milkweed in reseeding/restoration efforts post-construction.

4.0 Proposed Alternatives (2019)

4.1 Summary of Constraints

4.1.1 Option 2019-2A

An appropriate setback to the large, contiguous forest is recommended to avoid impacts to the tributary and aquatic habitat, vegetation, wildlife and wildlife habitat. An appropriate setback from the Pignut Hickory dripline would also avoid impacts to this locally significant tree species. Overall, the open areas of this site are currently maintained for anthropogenic purpose. Where an appropriate setback to the forest community and slope to the headwater drainage feature can be achieved, this is identified as the second most preferable location for construction of a new elevated tank.

4.1.2 Option 2019-2B

Option 2B is primarily under active agricultural land use, however, the site is likely within Category 1-3 habitat for Barn Swallow (THR) suspected to be breeding on a neighbouring property. An appropriate setback to the forested slope to the west is recommended to avoid impacts to the tributary and aquatic habitat, vegetation, wildlife, and wildlife habitat. As well, where this site is identified as the preferred alternative further consultation with MECP is recommended to address potential impacts to Barn Swallow.

4.1.3 Option 2019-3

Option 3 is within the Fonthill Kame Delta ANSI. The area is comprised primarily of grassland/meadow vegetation, and may provide nesting habitat for grassland birds. The site is likely within Category 1-3 habitat for Barn Swallow (THR) suspected to be breeding on a neighbouring property. Access to this site for construction and maintenance of a new elevated tank is proposed along the southern edge of the property (immediately north of 1584 Lookout Street). Mature trees on the adjacent property have canopies that may require pruning to allow for construction of an access road. Where this site is identified as the preferred alternative, further consultation with MECP is recommended to address potential impacts to Barn Swallow.

4.1.4 Option 2019-4

The Option 4 site is largely comprised of manicured grass. Little in the way of bird/wildlife activity was noted at this site. Locally significant tree species are found in the hedgerow/fence rows on adjacent properties. Siting construction of a new elevated tank within the area of manicured lawn and away from the dripline of the hedgerow trees would reduce impacts to locally significant trees. This site is the preferred location from an ecological perspective.

5.0 Preferred Alternative

5.1 Site Summary and Description of Works

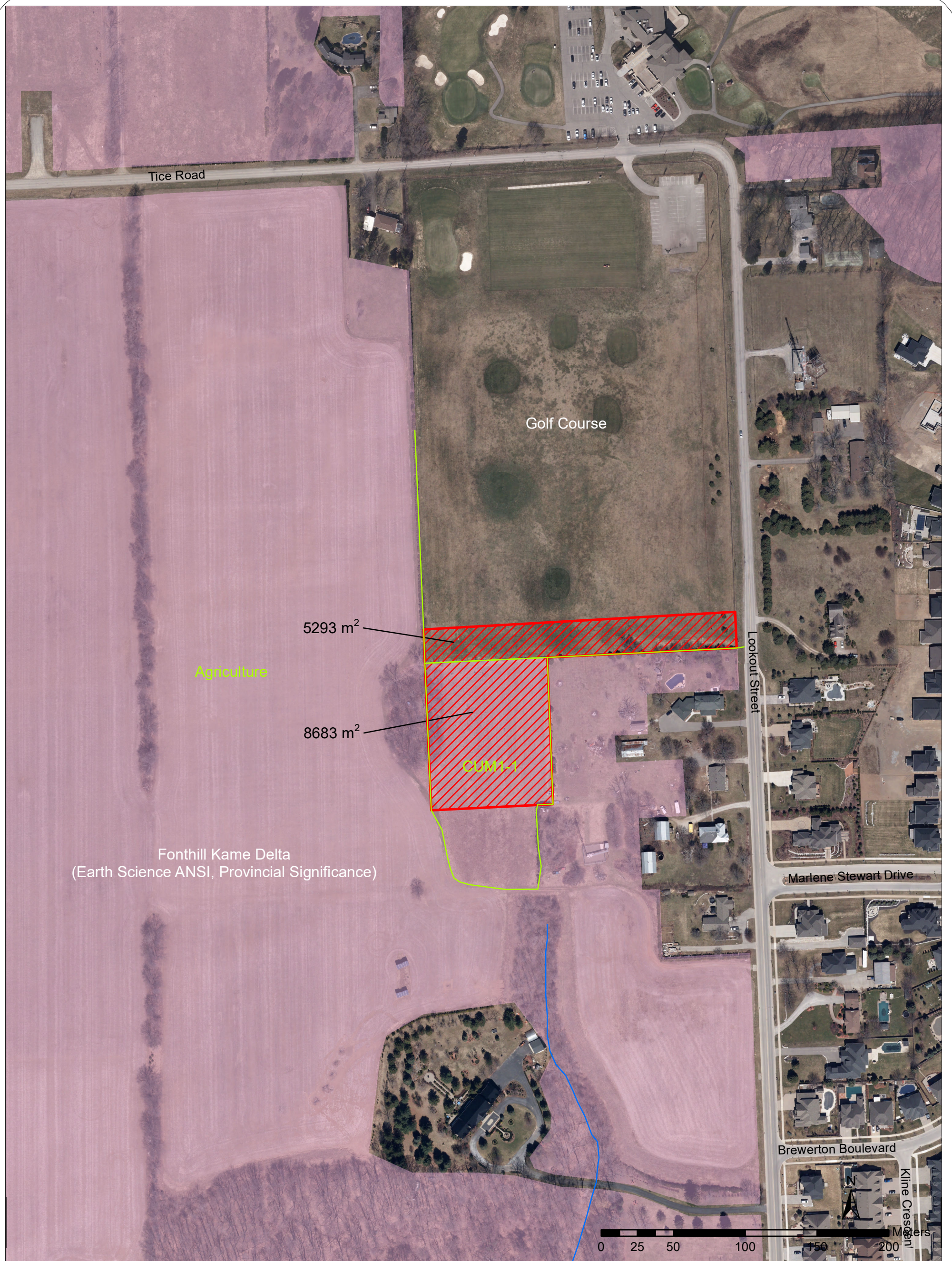
The project team evaluated each of the project alternatives against a wide variety of criteria (social, economical, technical, archaeological, and environmental) to identify the preferred design solution as Alternative 2019-3 (**Figure 3**). The preferred design includes construction of a new elevated storage tank (EST), a pond for emergency overflow and for use during planned maintenance of the tank, and an access road from Lookout Street into the site. Construction of a new watermain from the EST discharge line out to Lookout Street to connect to the local distribution system will follow the same alignment as the access road. A new, dedicated transmission main from the existing Shoalts Drive Reservoir will also be constructed to fill the EST. The site will also be fenced along the property line.

The lands where Option 2019-3 is proposed are comprised of manicured grass, cultural meadow (CUM1-1) with some open grown trees and are part of the Fonthill Kame Delta ANSI. The Fonthill Kame Delta ANSI is a unique glacial landform composed of sand and gravel left by retreating Wisconsin glaciers (MNR 2013). The ANSI is characterized as having the highest elevation in Niagara Region and protection of the ANSI includes the goal of maintaining its topography. The portion of Option 2019-3 along the western limits of 1584 and 1578 Lookout Street lie within the ANSI.

This option will result in the disturbance of 13,976 m², of which 8,683 m² is within the cultural meadow community (**Table 5, Figure 3**). Barn Swallow was observed foraging in this area in 2019. Additional data collection is recommended to confirm breeding activity of the species and ensure compliance under the ESA 2007. The meadow habitat and/or neighbouring agricultural fields may also support SAR grassland birds. Trees part of the hedgerow on the northern edge of 1584 Lookout Street along the western limit of the impact area may require removal or pruning. Where pruning/removal is proposed, trees should be screened as candidate habitat for SAR bat maternal roosting habitat and mitigation applied to ensure compliance with the ESA 2007.

Table 5. Preferred Alternative Area of Impact (Figure 3).

Groundcover Type	Area of Disturbance (m ²)
CUM1-1	8,683
Manicured	5,293
Total Area	13,976 m ²



Pelham Elevated Tank EA

Preferred Option 2019-3

- Disturbance Area
- ELC Communities Boundary
- ANSI
- Dry-Moist Old Field Meadow
- Watercourse
- Waterbody

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Project	TA8909	Figure	3
Date	March 2023	Prepared By	KC
Scale	1:2,500	Verified By	LKR

5.2 Impact Assessment & Mitigation Recommendations

This section summarizes potential impacts associated with construction and operation of the preferred alternative and outlines the protection/mitigation measures proposed to manage those adverse effects to natural heritage features and functions within and adjacent to the Option 2019-3 site. Environmental effects are identified based on the current level of design detail and the identified natural heritage sensitivities. As additional level of design detail becomes available (i.e., detailed design), the proposed environmental protection and mitigation strategies will need to be reviewed and updated, as necessary.

The potential for impacts associated with construction can first be mitigated through good project planning and use of best practices. Minimizing the extent of disturbance wherever possible through coordination of all projects related planning, including design, staging, and scheduling is key. This includes the incorporation of construction timing windows established for the protection of fish and wildlife, where identified, into the overall project schedule. Consideration should be given to staging/grouping of project activities in such a way that disturbance within the same area would be coordinated to limit the duration of impact. The extent of construction related activity can also be effectively isolated and secured from adjacent natural lands through clear delineation of the work site. The isolation of the work area will also discourage the entry of wildlife into the work zone, thereby minimizing incidental encounters and the risk of incidental wildlife mortality during construction.

5.2.1 Soils

Excavation and grading associated with construction have the potential to suspend soil particles, which could result in eroded materials inadvertently affecting vegetation, wildlife and fish habitat, including impairment of surface water quality of nearby watercourses. LIO data shows a drainage feature on the property to the south (1542 Lookout Street) of Option 2019-3 (**Figure 1**). No property access was available during the 2109 field investigation to investigate connection of overland flow from the Option 2019-3 site to the nearest tributary.

At this point in the project design, the need for dewatering or pumping (drawdown effects) during construction are not well understood. Where it is determined in later stages of design that dewatering is required, that activity has the potential to impact water quantity or quality, thereby impacting fish habitat within the drawdown zone. Dewatering may cause reduction in baseflow where groundwater contributions are reduced, or conversely, discharge back to surface features may cause temperature effects, alter flow regimes and result in erosion.

Site-specific Erosion and Sediment Control (ESC) measures will be identified during detailed design, installed prior to construction, and remain in place until construction is

complete, and soils have been re-stabilized. This will greatly reduce the potential for soil erosion, and sedimentation, impairment of any nearby surface water features, and potential for impacts to fish habitat.

The following measures are required to exclude silt, sediment, debris, petroleum-based substances and other deleterious materials from natural areas:

- Storage, stockpiling and staging areas will be delineated prior to construction.
- An erosion and sediment control site specific plan will be developed that details the ESC plans and responsibilities to include the following, at minimum:
 - Ensuring that construction activities are adequately contained with Erosion and Sediment Control (ESC) measures to include silt fence along watercourses, ditches, and forest/woodland edges in areas of soil disturbance;
 - Limiting the extent and duration that soils are exposed to the elements to the minimum area and time necessary to perform the work;
 - Managing stormwater during construction to prevent contact with exposed soils;
 - Monitoring and maintaining erosion and sedimentation control measures during construction to ensure their effectiveness;
 - Intercepting sediment laden drainage as close to the source as possible; and,
 - Ensuring the contractor has supplemental ESC measures available on site that can be utilized, should additional ESC measures be warranted.
- Construction material, debris, and empty containers will be stored at least 30 m from watercourses to prevent their entry into watercourses;
- Equipment refueling, maintenance and washing activities will be conducted at a pre-determined site located at an adequate distance (minimum 30 m) from surface water features and their banks located within the study area to prevent the entry of petroleum, oil, lubricants, or other deleterious substances (including any debris, waste, rubble or concrete material) into watercourses, or their release to the environment. Any material which inadvertently enters a surface water feature will be removed by the Contractor in a manner satisfactory to the Contract Administrator;
- All spills that could potentially cause damage to the environment will be reported to the Spills Action Centre of the MECP. In the event of a spill, containment and clean-up will be completed quickly and effectively. In addition, a Spill Prevention and Response Contingency Plan must be included in the contract package to ensure the appropriate contingency materials to absorb or contain any petroleum

products/spills that may be accidentally discharged will be on site at all times;
and,

- Riparian areas within 30 metres of surface water features will be revegetated and/or covered with an erosion control blanket as required until such time that vegetation cover can be established.
- Where a need for dewatering is identified, a detailed Dewatering Plan should be developed in accordance with MECP guidance to include the following, at minimum:
 - Ensure dewatering activities are addressed in site specific Environmental Management Plans to address alterations to baseflow and discharge of water back to surface features (from both a quantity and quality aspect);
 - Maintain existing flow patterns to avoid changing character of vegetation communities and habitat functions; and,
 - Filter groundwater discharge prior to it entering a surface water feature using a treatment train approach (i.e., via tanks, dewatering pads, filter bags) prior to being released.

The above environmental protection measures will serve to minimize the potential for impacts relating to soil entrainment and provide contingency in the case of an unforeseen event.

5.2.2 Vegetation and Vegetation Communities

The lands where Option 2019-3 is proposed are part of the Fonthill Kame Delta ANSI and comprised of manicured grass, cultural meadow (CUM1-1) and open grown trees. Construction of new infrastructure will result in the displacement of, and disturbance to, vegetation and vegetation communities. All of the vegetation communities identified within the study area are considered widespread and common in Ontario and secure globally. The recommended project design impacts cultural meadow and open grown trees. **Table 5** provides a summary of the area of impact where vegetation removals are proposed.

The site of the preferred alternative was viewed from the nearest accessible parcel boundary. A screening of SAR plants is recommended during detailed design once property access is available.

The following potential impacts on vegetation are noted:

- Loss of vegetation part of cultural meadow;
- Tree removals/pruning along edges of the hedgerow and property parcel to accommodate entrance into the site and grading; and,

- Erosion of exposed sediments may result in sediment migration into vegetation communities via site run-off from ground disturbance and from potential dewatering activities.

Mitigation measures listed below will be revised accordingly during detailed design. At a minimum, the following protection/mitigation measures will be implemented to ensure the protection of vegetation and vegetation communities to the extent possible:

- A tree inventory to include grading limits, and staging, storage and laydown areas is recommended at detailed design to determine tree impacts and refine the project design to minimize impacts to the extent feasible.
- The contractor will ensure that soil migration from the construction area is prevented, and that exposed soils are stabilized as soon as is possible (see Section 6.2 Soils mitigation).
- Heavy equipment (wheeled or tracked) should not be permitted outside of the delineated construction and staging areas. It is recommended that appropriate tree protection be installed to protect trees and natural areas to be retained, including safeguarding trees and natural areas from construction operations, equipment and vehicles. Prior to construction, trees and natural areas to be protected should be clearly identified in the field by the Contract Administrator and a protective barrier will be installed. The repair or replacement of trees/shrubs identified to remain outside of grading limits that were damaged by construction activities should be undertaken; and, restoration of disturbed natural areas should use a native species seed mix similar to the character of the surrounding area.
- Native and non-invasive vegetation cover will be used to restore any exposed surfaces (consideration for milkweed as part of the restoration seed mix is recommended).

5.2.3 Wildlife and Wildlife Habitat

Wildlife habitat as it occurs within the footprint of the preferred design is comprised of cultural meadow, open grown trees and manicured grass (part of the golf course). These areas provide habitat for common/secure mammals. Breeding birds protected under the MBCA are also using these habitats. The site represents candidate habitat for SAR (bats using trees for maternal roosting and grassland birds using the cultural meadow and surrounding agricultural fields). Follow up field studies in detailed design are recommended to confirm whether the site supports individual SAR or SAR habitat.

The construction and operation of infrastructure part of this project has the potential to result in impacts to wildlife and wildlife habitat. Effects related to the construction and operation could include:

- Wildlife and construction equipment/vehicle conflicts;
- Displacement of resident wildlife using habitat for breeding, local movement and foraging due to the disturbance/removal of habitat within the CUM1-1 community (**Table 5**);
- Temporary disturbance to wildlife from noise, and on-site construction activity, including disturbance to birds listed under the MBCA that may be using adjacent natural (shrubs, trees, grasses) or built structures as habitat within and/or adjacent to the construction footprint; and,
- Potential displacement of endangered wildlife protected under the ESA 2007 - where removals/pruning of mature, open grown trees with suitable cavities/leaf clusters for bat maternal roosting is proposed, or where habitats support SAR birds.

Mitigation measures listed below will be revised accordingly during detailed design and with each refinement to the design. At a minimum, the following protection/mitigation measures will be implemented to ensure the protection of wildlife and their habitat to the extent possible:

- Avoidance - opportunities to mitigate loss of wildlife habitat include limiting tree and vegetation removals through strategic positioning of the design footprint and storage/laydown areas within manicured/previously disturbed or open areas to the extent feasible.
- A tree inventory of the design footprint, including grading limits and staging, storage and laydown areas is recommended during detailed design to determine tree impacts and develop a tree protection plan.
- Where any removal or pruning of mature, open grown trees (i.e., those outside of a treed ELC/forest community) representing candidate bat roosting habitat is proposed, timing windows to avoid the period from April 1 to September 30 (to be confirmed with MECP) should be employed.
- A number of bird species listed under the MBCA were identified within the study area. The MBCA prohibits the killing, capturing, injuring, taking or disturbing of migratory birds (including eggs) or the damaging, destroying, removing or disturbing of nests. The study area falls within Environment Canada's Nesting Zone C2 (Nesting Period: end of March to end of August). Consequently, to comply with the requirements of the MBCA, it is recommended that disturbance, clearing or disruption of vegetation where birds may be nesting should be

completed outside the window of April 1 to August 31 to avoid the breeding bird season for the majority of the species protected under the Act. In the event that project construction must be undertaken during the breeding period, a nest screening survey should be conducted by a qualified avian biologist. If an active nest is located, a mitigation plan should be developed in consultation with Environment Canada – Ontario Region.

- Where construction is planned to occur during the active seasons for wildlife, the delineation of the construction area (e.g., silt fencing for erosion and sediment control) can serve to exclude wildlife from entering the work areas to some extent.
- Native and non-invasive vegetation cover should be used to protect any exposed surfaces and ensure that temporarily disturbed areas are adequately restored post-construction (inclusion of milkweed is recommended where conditions are suitable to enhance diversity and maintain food source for Monarch).
- Maintain existing drainage patterns to avoid changing character of vegetation communities and associated habitat functions.

5.2.4 Aquatic Habitat

No drainage features are identified within the limits of Option 2019-3; however, LIO data shows a drainage feature on a property to the south (1542 Lookout Street) of Option 2019-3 (**Figure 1**). No property access was available during the 2109 field investigation to investigate connection of overland flow from the Option 2019-3 site to the nearest tributary. It is recommended that once site access is available, connection to nearby surface water features be further investigated.

5.2.5 Species at Risk

As noted in Section 5.2.3 Wildlife and Wildlife Habitat the preferred site represents candidate habitat for SAR bats using trees for maternal roosting and SAR grassland birds using the cultural meadow and surrounding agricultural fields. Follow up field studies in detailed design are recommended to confirm whether the site supports individual SAR or SAR habitat (e.g., breeding bird surveys and screening of the onsite tree resources for suitability as bat roosting habitat).

6.0 Conclusion

Site access to the property hosting the preferred alternative (Option 2019-3) was not available during the Class EA to conduct an industry standard breeding bird survey or detailed botanical surveys. Therefore, it is recommended that additional field survey of the preferred site be conducted during detailed design, in particular to understand site constraints relating to species at risk and their habitat, site drainage, and connectivity to fish habitat.

The mitigation measures outlined in Section 5.0 combined with the above recommendations for additional field study are intended to avoid/minimize impacts to significant natural heritage features and their functions and ensure project compliance under the *Endangered Species Act* and *Fisheries Act*. At detailed design, the proposed environmental protection and mitigation strategies outlined herein will need to be reviewed and updated to align with current guidance under the Acts and to incorporate the findings of the additional field study.

7.0 References

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Appendix A Agency Consultation.

Lynette Renzetti

To: Snell, Shamus (MNRF)
Subject: RE: Information Request - Pelham Ontario, 2019

From: Snell, Shamus (MNRF) <Shamus.Snell@ontario.ca>
Sent: Wednesday, March 22, 2023 12:25 PM
To: Lynette Renzetti <lrenzetti@lgl.com>
Subject: RE: Information Request - Pelham Ontario, 2019

Hi Lynette,

I have returned to my home position with the Ministry of Natural Resources and Forestry and am unable follow-up on your request. However, I would recommend that you check the information sources in the attached guide for all potential occurrence of Species at Risk if you have not already. This should give you an idea regarding if complete avoidance of the Endangered Species Act can be achieved or not.

Regards,
Shamus Snell
Management Biologist
Ministry of Natural Resources and Forestry
North Bay District

From: Lynette Renzetti <lrenzetti@lgl.com>
Sent: March 22, 2023 11:34 AM
To: Species at Risk (MECP) <SAROntario@ontario.ca>
Cc: Snell, Shamus (MNRF) <Shamus.Snell@ontario.ca>
Subject: RE: Information Request - Pelham Ontario, 2019

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

Hello, we are still waiting on a response to this request from 2019 to close out the ESR for the Class EA. Last check in was January 2022, but nothing has been received.

Kind regards,



Lynette Renzetti

Senior Ecologist
LGL Limited environmental research associates
445 Thompson Dr., Unit 2
Cambridge ON N1T2K7
Office: 519-622-3300 Ext. 28
www.lgl.com

From: Species at Risk (MECP) <SAROntario@ontario.ca>
Sent: January 17, 2022 9:42 AM

To: Lynette Renzetti <lrenzetti@lgl.com>
Subject: RE: Information Request - Pelham Ontario, 2019

Hi Lynette,

Your request has been received and assigned to a management biologist. Once they have completed their review they will contact you directly with the results of their review.

Regards,

Shamus Snell
A/ Management Biologist
Species at Risk Branch
Ministry of Environment, Conservation and Parks
Email: shamus.snell@ontario.ca

From: Lynette Renzetti <lrenzetti@lgl.com>
Sent: January 14, 2022 4:45 PM
To: Species at Risk (MECP) <SAROntario@ontario.ca>
Subject: RE: Information Request - Pelham Ontario, 2019
Importance: High

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

Good Afternoon

An information request was sent for this project in August 2019, but no response from MECP (other than the automated response below) was ever received. Please see email attached for the original request. I can be reached at the cell number provided below should any questions arise.

Many thanks,
Lynette



Lynette Renzetti, B.Ed.,Hons.BSc.
Senior Ecologist
LGL Limited environmental research associates
445 Thompson Dr., Unit 2
Cambridge ON N1T2K7
Office: 519-622-3300 Ext. 22
Email: lrenzetti@lgl.com
Visit us on the web at www.lgl.com

From: Species at Risk (MECP) <SAROntario@ontario.ca>
Sent: August 22, 2019 12:43 PM

To: Lynette Renzetti <lrenzetti@lgl.com>

Subject: Automatic reply: Information Request - Pelham Ontario

Thank you for contacting the Ministry of the Environment, Conservation and Parks. The Species at Risk Branch has received your email. Your inquiry will be actioned out to a branch employee who will follow up directly.

Appendix B Vascular Plant List.

Vascular Plants documented during LGL Field Investigation, June 2019.

Scientific Name	Common Name	GRank	SRank	ESA	SARA	Local Status (Riley 1989)	Site Options			
							Option 2019-2A	Option 2019-2B	Option 2019-3	Option 2019-4
DRYOPTERIDACEAE	WOOD FERN FAMILY									
<i>Athyrium filix-femina</i> <i>var. angustum</i>	northern lady fern	G5T5	S5				x			
<i>Cystopteris bulbifera</i>	bulbet bladder fern	G5	S5				x			
PINACEAE	PINE FAMILY									
* <i>Picea abies</i>	Norway spruce	G?	SE3				x	x		
<i>Picea glauca</i>	white spruce	G5	S5				x			
* <i>Pinus sylvestris</i>	scotch pine	G?	SE5							x
CUPRESSACEAE	CEDAR FAMILY									
<i>Juniperus virginiana</i>	eastern red cedar	G5	S5						x	
<i>Thuja occidentalis</i>	eastern white cedar	G5	S5					x		
TAXACEAE	YEW FAMILY									
* <i>Taxus cuspidata</i>	Japanese Yew						x	x	x	
MAGNOLIACEAE	MAGNOLIA FAMILY									
<i>Liriodendron tulipifera</i>	tulip tree	G5	S4			R	x	x		
LAURACEAE	LAUREL FAMILY									
<i>Sassafras albidum</i>	sassafras	G5	S4				x			
RANUNCULACEAE	BUTTERCUP FAMILY									
<i>Actaea rubra</i>	red baneberry	G5	S5				x			
PAPAVERACEAE	POPPY FAMILY									

Scientific Name	Common Name	GRank	SRank	ESA	SARA	Local Status (Riley 1989)	Site Options			
							Option 2019-2A	Option 2019-2B	Option 2019-3	Option 2019-4
* <i>Chelidonium majus</i>	celandine	G?	SE5				x	x	x	
ULMACEAE	ELM FAMILY									
<i>Ulmus americana</i>	white elm	G5?	S5						x	
MORACEAE	MULBERRY FAMILY									
* <i>Morus alba</i>	white mulberry	G?	SE5				x	x	x	x
URTICACEAE	NETTLE FAMILY									
<i>Pilea pumila</i>	dwarf clearweed	G5	S5				x			
<i>Urtica dioica ssp. gracilis</i>	American stinging nettle	G5T?	S5						x	
JUGLANDACEAE	WALNUT FAMILY									
<i>Carya glabra</i>	pignut hickory	G5	S3			R	x			x
<i>Juglans nigra</i>	black walnut	G5	S4				x	x	x	
FAGACEAE	BEECH FAMILY									
<i>Fagus grandifolia</i>	American beech	G5	S5				x			
<i>Quercus palustris</i>	pin oak	G5	S3			R		x		
<i>Quercus rubra</i>	red oak	G5	S5				x	x		x
PHYTOLACCACEAE	POKEWEED FAMILY									
<i>Phytolacca americana</i>	pokeweed	G5	S4				x		x	
CHENOPODIACEAE	GOOSEFOOT FAMILY									
* <i>Chenopodium album var. album</i>	lamb's quarters	G5T5	SE5						x	

Scientific Name	Common Name	GRank	SRank	ESA	SARA	Local Status (Riley 1989)	Site Options			
							Option 2019-2A	Option 2019-2B	Option 2019-3	Option 2019-4
CARYOPHYLLACEAE	PINK FAMILY									
* <i>Silene vulgaris</i>	catchfly	G?	SE5				x	x	x	
POLYGONACEAE	SMARTWEED FAMILY									
* <i>Polygonum persicaria</i>	lady's-thumb	G?	SE5						x	
* <i>Rumex crispus</i>	curly-leaf dock	G?	SE5					x	x	
<i>Rumex orbiculatus</i>	great water dock	G5	S4S5				x	x		
VIOLACEAE	VIOLET FAMILY									
* <i>Viola arvensis</i>	wild violet	G?	SE4					x		
<i>Viola sororia</i>	woolly blue violet	G5	S5				x	x		
CUCURBITACEAE	GOURD FAMILY									
<i>Echinocystis lobata</i>	prickly cucumber	G5	S5				x		x	
SALICACEAE	WILLOW FAMILY									
<i>Populus deltoides</i>	cottonwood						x	x	x	x
<i>Populus grandidentata</i>	large-tooth aspen	G5	S5				x	x		
BRASSICACEAE	MUSTARD FAMILY									
* <i>Alliaria petiolata</i>	garlic mustard	G5	SE5					x	x	x
* <i>Barbarea vulgaris</i>	yellow rocket	G?	SE5					x		
* <i>Thlaspi arvense</i>	field penny-cress	G?	SE5					x	x	
PRIMULACEAE	PRIMROSE FAMILY									
<i>Lysimachia ciliata</i>	fringed loosestrife	G5	S5							x
ROSACEAE	ROSE FAMILY									

Scientific Name	Common Name	GRank	SRank	ESA	SARA	Local Status (Riley 1989)	Site Options			
							Option 2019-2A	Option 2019-2B	Option 2019-3	Option 2019-4
<i>Geum canadense</i>	white avens	G5	S5				x	x	x	
<i>Geum sp.</i>	avens						x			
<i>Potentilla norvegica</i>	rough cinquefoil	G5T?	SU					x		
* <i>Potentilla recta</i>	rough-fruited cinquefoil	G?	SE5					x		x
* <i>Prunus avium</i>	sweet cherry	G?	SE4						x	
<i>Prunus serotina</i>	black cherry	G5	S5				x	x	x	x
* <i>Rosa multiflora</i>	multiflora rose	G?	SE4				x	x		x
* <i>Rubus idaeus ssp. idaeus</i>	red raspberry	G5T5	SE1					x	x	x
<i>Rubus occidentalis</i>	thimble-berry	G5	S5					x	x	
<i>Rubus odoratus</i>	purple flowering raspberry	G5	S5				x	x		
* <i>Sorbus aucuparia</i>	European mountain-ash	G5	SE4							x
<i>Spiraea alba</i>	narrow-leaved meadow-sweet	G5	S5				x	x		
FABACEAE	PEA FAMILY									
* <i>Coronilla varia</i>	variable crown-vetch	G?	SE5					x		x
<i>Gleditsia triacanthos</i>	honey locust	G5	S2					x		
* <i>Medicago lupulina</i>	black medick	G?	SE5					x		x
* <i>Trifolium arvense</i>	rabbit-foot clover	G?	SE4					x		
* <i>Trifolium hybridum ssp. elegans</i>	alsike clover		SE5					x	x	
* <i>Trifolium pratense</i>	red clover	G?	SE5					x		

Scientific Name	Common Name	GRank	SRank	ESA	SARA	Local Status (Riley 1989)	Site Options			
							Option 2019-2A	Option 2019-2B	Option 2019-3	Option 2019-4
* <i>Vicia cracca</i>	tufted vetch	G?	SE5						x	
ELAEAGNACEAE	OLEASTER FAMILY									
* <i>Elaeagnus angustifolia</i>	Russian olive	G?	SE3							x
ONAGRACEAE	EVENING-PRIMROSE FAMILY									
<i>Circaea lutetiana ssp. canadensis</i>	yellowish enchanter's nightshade	G5T5	S5				x			
CELASTRACEAE	STAFF-TREE FAMILY									
<i>Celastrus scandens</i>	climbing bittersweet	G5	S5							x
RHAMNACEAE	BUCKTHORN FAMILY									
* <i>Rhamnus cathartica</i>	common buckthorn	G?	SE5							x
VITACEAE	GRAPE FAMILY									
<i>Parthenocissus vitacea</i>	inserted Virginia-creeper	G5	S5					x	x	x
<i>Vitis riparia</i>	riverbank grape	G5	S5				x	x	x	x
HIPPOCASTANACEAE	BUCKEYE FAMILY									
* <i>Aesculus hippocastanum</i>	horse chestnut	G?	SE2				x			
ACERACEAE	MAPLE FAMILY									
* <i>Acer ginnala</i>	amur maple	G?	SE1					x		
<i>Acer negundo</i>	manitoba maple	G5	S5					x		
* <i>Acer platanoides</i>	norway maple	G?	SE5				x	x	x	x
<i>Acer rubrum</i>	red maple	G5	S5					x	x	

Scientific Name	Common Name	GRank	SRank	ESA	SARA	Local Status (Riley 1989)	Site Options			
							Option 2019-2A	Option 2019-2B	Option 2019-3	Option 2019-4
<i>Acer saccharinum</i>	silver maple	G5	S5							x
ANACARDIACEAE	SUMAC FAMILY									
<i>Rhus hirta</i>	staghorn sumac	G5	S5				x	x	x	x
<i>Toxicodendron radicans ssp. negundo</i>	poison-ivy	G5T	S5							x
OXALIDACEAE	WOOD SORREL FAMILY									
<i>Oxalis stricta</i>	upright yellow wood-sorrel	G5	S5				x	x	x	
GERANIACEAE	GERANIUM FAMILY									
* <i>Erodium cicutarium ssp. cicutarium</i>	stork's-bill	G4G5T?	SE3					x		
* <i>Geranium robertianum</i>	herb-robert	G5	SE5					x		
BALSAMINACEAE	TOUCH-ME-NOT FAMILY									
* <i>Impatiens glandulifera</i>	glandular touch-me-not	G?	SE4				x			
APIACEAE	PARSLEY FAMILY									
* <i>Daucus carota</i>	wild carrot	G?	SE5					x	x	
APOCYNACEAE	DOGBANE FAMILY									
* <i>Vinca minor</i>	periwinkle	G?	SE5				x			x
ASCLEPIADACEAE	MILKWEED FAMILY									
<i>Asclepias syriaca</i>	common milkweed	G5	S5						x	x
SOLANACEAE	POTATO FAMILY									
* <i>Solanum dulcamara</i>	bitter nightshade	G?	SE5						x	

Scientific Name	Common Name	GRank	SRank	ESA	SARA	Local Status (Riley 1989)	Site Options			
							Option 2019-2A	Option 2019-2B	Option 2019-3	Option 2019-4
LAMIACEAE	MINT FAMILY									
* <i>Leonurus cardiaca ssp. cardiaca</i>	common motherwort	G?T?	SE5				x	x	x	
PLANTAGINACEAE	PLANTAIN FAMILY									
* <i>Plantago lanceolata</i>	ribgrass	G5	SE5					x	x	x
* <i>Plantago major</i>	common plantain	G5	SE5							x
OLEACEAE	OLIVE FAMILY									
<i>Fraxinus americana</i>	white ash	G5	S5					x		
* <i>Ligustrum vulgare</i>	common privet	G?	SE5							x
* <i>Syringa vulgaris</i>	common lilac	G?	SE5				x	x		
SCROPHULARIACEAE	FIGWORT FAMILY									
* <i>Verbascum thapsus</i>	common mullein	G?	SE5				x	x		
BIGNONIACEAE	TRUMPET-CREEPER FAMILY									
<i>Campsis radicans</i>	trumpet creeper	G5	S2							x
RUBIACEAE	MADDER FAMILY									
<i>Galium aparine</i>	cleavers	G5	S5						x	
CAPRIFOLIACEAE	HONEYSUCKLE FAMILY									
* <i>Lonicera tatarica</i>	tartarian honeysuckle	G?	SE5					x		x
* <i>Weigela florida</i>	Weigela						x	x		
ASTERACEAE	ASTER FAMILY									

Scientific Name	Common Name	GRank	SRank	ESA	SARA	Local Status (Riley 1989)	Site Options			
							Option 2019-2A	Option 2019-2B	Option 2019-3	Option 2019-4
<i>Achillea millefolium</i> <i>var. millefolium</i>	yarrow	G5T?	SE?							X
<i>Ambrosia artemisiifolia</i>	common ragweed	G5	S5					X		
* <i>Artemisia biennis</i>	biennial wormwood	G5	SE5					X		
* <i>Centaurea sp.</i>	spotted knapweed	G?	SE5					X	X	X
<i>Erigeron annuus</i>	daisy fleabane	G5	S5				X	X		X
<i>Erigeron philadelphicus</i> <i>var. philadelphicus</i>	Philadelphia fleabane	G5T?	S5						X	
* <i>Leucanthemum vulgare</i>	ox-eye daisy	G?	SE5					X		X
<i>Solidago canadensis</i>	canada goldenrod	G5	S5				X	X	X	X
* <i>Sonchus arvensis ssp.</i> <i>arvensis</i>	field sow-thistle	G?T?	SE5					X		
* <i>Tanacetum vulgare</i>	common tansy	G?	SE5							X
* <i>Taraxacum officinale</i>	common dandelion	G5	SE5				X	X	X	
* <i>Tragopogon dubius</i>	doubtful goat's-beard	G?	SE5					X		
POACEAE	GRASS FAMILY									
* <i>Avena fatua</i>	wild oats	G?	SE3						X	
* <i>Bromus inermis ssp.</i> <i>inermis</i>	awnless brome	G4G5T?	SE5					X	X	
* <i>Bromus tectorum</i>	downy chess	G?	SE5						X	
* <i>Dactylis glomerata</i>	orchard grass	G?	SE5					X	X	X
* <i>Elymus repens</i>	quack grass	G?	SE5					X	X	

Scientific Name	Common Name	GRank	SRank	ESA	SARA	Local Status (Riley 1989)	Site Options			
							Option 2019-2A	Option 2019-2B	Option 2019-3	Option 2019-4
* <i>Phleum pratense</i>	timothy	G?	SE5						x	x
* <i>Poa nemoralis</i>	woodland spear grass	G5	SE3						x	
<i>Poa pratensis ssp. alpigena</i>	spear grass	G5T?	S4S5						x	x
SMILACACEAE	CATBRIER FAMILY									
<i>Smilax sp.</i>	carrion flower	G5?	S?				x		x	

Table Legend

G-Rank (Global Rank): assigned by a consensus of the network of Conservation Data Centres (CDCs), scientific experts and The Nature Conservancy to designate a rarity rank based on the range-wide status of species, subspecies or variety, according to the following.

- G1- extremely rare; usually 5 or fewer occurrences in the overall range or very few remaining individuals or because of some factor (s) making it especially vulnerable
- G2-very rare; usually between 5 and 20 occurrences in the overall range or with many individuals in fewer occurrences or because of some factor (s) making it vulnerable to extinction
- G3- rare to uncommon; usually between 20 and 100 occurrences; may have fewer occurrences but with a large number of individuals in some populations or may be susceptible to large-scale disturbances
- G4-common; usually more than 100 occurrences, usually not susceptible to immediate threats
- G5-very common; demonstrably secure under present conditions
- GH-historic; no records in the past 20 years
- GU-status uncertain; often because of low search effort or cryptic nature of species, more data needed
- GX-globally extinct; no records despite specific searches
- ?-denotes inexact numeric rank

G- global rank has not been obtained from the Nature Conservancy

G?-unranked; or if following a ranking the rank is tentatively assigned

Q-denotes taxonomic status of species, subspecies or variety as questionable

T-denotes the rank applies to a subspecies or variety

S-Rank Provincial or Subnational ranks: used by the Natural Heritage Information Centre to set protection priorities for rare species and natural communities. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario.

SX-presumed extirpated; not located despite intensive searches

SH-historical; no known extant occurrences in past 20 years

S1-critically imperiled; typically 1 to 5 extant occurrences

S2-imperiled; typically 6 to 20 extant occurrences

S3-vulnerable; typically 21 to 80 extant occurrences

S4-apparently secure; uncommon but not rare; some cause for long-term concern; usually >80 extant occurrences

S5-secure; common, widespread and abundant

SNA-status not applicable; not a suitable target for conservation (e.g. non-native species)

SU-unrankable; insufficient information to rank confidently

ESA Ontario Endangered Species Act, 2007

END-Endangered; species facing imminent extinction or extirpation in Ontario

EXP-Extirpated; a species that no longer exists in the wild in Ontario but exists elsewhere

THR-Threatened; a species that is at risk of becoming endangered in Ontario if limiting factors are not reversed

SC-Special Concern; a species with characteristics that make it sensitive to human activities or natural events

SARA Species at Risk Act Schedule 1- official list of wildlife Species at Risk

THR-threatened; a wildlife species likely to become endangered if limiting factors are not reversed

END-endangered; a wildlife species facing imminent extirpation or extinction

EXT-extirpated; a species no longer existing in the wild in Canada but occurring elsewhere

SC-special concern; a wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threat

Riley1989 Riley, J.L., W.D. Bakowsky, P.W. Ball, D.M. Britton, P.M. Catling, C.A. Campbell, W.J. Crins, K.L. McIntosh, S.M. MacKay-Kuja, M.J. Oldham, A.A. Reznicek, D.A. Sutherland, and S. Varga, 1989. Distribution and Status of the Vascular Plants of Central Region. Ontario Ministry of Natural Resources, Parks and Recreational Areas Section, Central Region. Richmond Hill, Ontario. 110 pp.

Appendix C Wildlife List.

Wildlife observed within the Pelham Elevated Tank Study Area, June 2019.

Type	Common Name	Scientific Name	Option 2019-2A	Option 2019-2B	Option 2019-3	Option 2019-4	G-Rank	S-Rank	SARA	ESA	FWCA	MBCA	SWH-TG Area Sensitive	SWH-TG Interior Species
Bird	American Crow	<i>Corvus brachyrhynchos</i>		x	x	x	G5	S5B						
Bird	American Goldfinch	<i>Carduelis tristis</i>	x	x	x	x	G5	S5B				X		
Bird	American Robin	<i>Turdus migratorius</i>	x	x	x		G5	S5B				X		
Bird	Baltimore Oriole	<i>Icterus galbula</i>	x	x	x		G5	S4B				X		
Bird	Barn Swallow	<i>Hirundo rustica</i>		x	x		G5	S4B	THR	THR		X		
Bird	Black-capped Chickadee	<i>Poecile atricapillus</i>	x	x			G5	S5				X		
Bird	Blue Jay	<i>Cyanocitta cristata</i>	x	x	x	x	G5	S5			P			
Bird	Brown-headed Cowbird	<i>Molothrus ater</i>			x		G5	S4B						
Bird	Brown Thrasher	<i>Toxostoma rufum</i>		x			G5	S4B				X		
Bird	Cedar Waxwing	<i>Bombycilla cedrorum</i>		x		x	G5	S5B				X		
Bird	Chipping Sparrow	<i>Spizella passerina</i>		x	x	x	G5	S5B				X		
Bird	Common Grackle	<i>Quiscalus quiscula</i>	x		x		G5	S5B						
Bird	Downy Woodpecker	<i>Picoides pubescens</i>		x	x		G5	S5				X		
Bird	Eastern Kingbird	<i>Tyrannus tyrannus</i>		x	x		G5	S4B				X		
Bird	European Starling	<i>Sturnus vulgaris</i>	x	x	x	x	G5	SNA						

Type	Common Name	Scientific Name	Option 2019-2A	Option 2019-2B	Option 2019-3	Option 2019-4	G-Rank	S-Rank	SARA	ESA	FWCA	MBCA	SWH-TG Area Sensitive	SWH-TG Interior Species
Bird	Gray Catbird	<i>Dumetella carolinensis</i>		x			G5	S4B				X		
Bird	Hairy Woodpecker	<i>Picoides villosus</i>			x		G5	S5				X	X	
Bird	Horned Lark	<i>Eremophila alpestris</i>		x			G5	S5B				X		
Bird	House Finch	<i>Carpodacus mexicanus</i>			x		G5	SNA				X		
Bird	House Sparrow	<i>Passer domesticus</i>				x	G5	SNA						
Bird	House Wren	<i>Troglodytes aedon</i>	x	x	x		G5	S5B				X		
Bird	Indigo Bunting	<i>Passerina cyanea</i>	x	x	x		G5	S4B				X		
Bird	Killdeer	<i>Charadrius vociferus</i>		x	x		G5	S5B,S5N				X		
Bird	Mourning Dove	<i>Zenaida macroura</i>		x	x		G5	S5				X		
Bird	Northern Cardinal	<i>Cardinalis cardinalis</i>		x	x		G5	S5				X		
Bird	Northern Flicker	<i>Colaptes auratus</i>	x	x	x	x	G5	S4B				X		
Bird	Northern Mockingbird	<i>Mimus polyglottos</i>			x	x	G5	S4				X		
Bird	Red-bellied Woodpecker	<i>Melanerpes carolinus</i>		x			G5	S4				X		
Bird	Red-eyed Vireo	<i>Vireo olivaceus</i>		x			G5	S5B				X		X
Bird	Ring-billed Gull	<i>Larus delawarensis</i>		x	x		G5	S5B, S4N				X		
Bird	Savannah Sparrow	<i>Passerculus sandwichensis</i>		x	x		G5	S4B				X	X	
Bird	Song Sparrow	<i>Melospiza melodia</i>	x	x	x	x	G5	S5B				X		

Type	Common Name	Scientific Name	Option 2019-2A	Option 2019-2B	Option 2019-3	Option 2019-4	G-Rank	S-Rank	SARA	ESA	FWCA	MBCA	SWH-TG Area Sensitive	SWH-TG Interior Species
Bird	Veery	<i>Catharus fuscescens</i>	x				G5	S4B				X	X	X
Bird	Warbling Vireo	<i>Vireo gilvus</i>	x				G5	S5B				X		
Invertebrates	Monarch	<i>Danaus plexippus</i>	x		x		G5	S4B, S2N	SC	SC	P			
Mammals	Eastern Chipmunk	<i>Tamias striatus</i>			x	x	G5	S5			P			
Mammals	Eastern Gray Squirrel	<i>Sciurus carolinensis</i>		x	x	x	G5	S5			G			
Mammals	Red Squirrel	<i>Tamiasciurus hudsonicus</i>			x	x	G5	S5			F			

Table Legend (see legend in Appendix B and wildlife specific legend information below)

MBCA (Migratory Birds Convention Act)

X- Migrant species with afforded protection

FWCA (Fish and Wildlife Conservation Act)

P- protected species

G- game species

F- furbearing species

SWH-TG – Species with specific habitat requirements and considered area sensitive or interior species as a result (Ontario Ministry of Natural Resources, 2000)

Appendix D Preferred Alternative Option 2019-3 Site Photos



Photo 1: Golf course lands on northern limit of Option 2019-3 where access and watermain construction are proposed (June 2019).



Photo 2: CUM1-1 (Cultural Meadow) as viewed from fenced property limit to the north (June 2019)



Photo 3: Small cluster of trees (Black Walnut, Black Cherry, Norway Maple, Eastern Cottonwood, Staghorn Sumac) along western edge of Option 2019-3 (June 2019).