Natural Heritage Evaluation for Part of Lots 19, 20 and 21 Concession 5, Town of Caledon, Region of Peel

Prepared For:

Mayfield Golf Course Inc. and Tullamore Industrial GP Limited

Prepared By:

Beacon Environmental Limited

Date:	*Project:*
2024-10-08	**222239**

BEACON ENVIRONMENTAL

GUIDING SOLUTIONS IN THE NATURAL ENVIRONMENT

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Report Versions Issued

Version	Date	Revisions
1.	January 2024	
2.	October 2024	Revised Draft Plan

1. Introduction

Beacon Environmental Limited (Beacon) has been retained by Mayfield Golf Course Inc. and Tullamore Industrial GP Limited to prepare a Natural Heritage Evaluation (NHE) for the proposed development of Part of Lots 19, 20 and 21 Concession in the Town of Caledon, Region of Peel. Part of the development lands includes the redevelopment of the Mayfield Golf Course with the municipal address of 12580,12552 Torbram Road the lands also include a parcel of undeveloped land, with no municipal address, directly to the south. Combined, the area of study for the proposed development can be formally described as Part of Lots 19, 20 and 21 Concession 5 in the Town of Caledon, Regional Municipality of Peel (hereafter referred to as the "subject lands") (**Figure 1**).

The northern parcel of the subject lands is currently an existing golf course with anthropogenic structures. The southern parcel is outside of the existing golf course and contains agricultural fields and natural features. Natural features present on the subject lands are primarily associated with the valley and stream corridors of the West Humber River Tributaries, including several drainage features, wetlands, offline ponds, and woodlands. Malone Given Parsons (MGP; 2024) has prepared a Draft Plan for the Subdivision (**Appendix A**) that identifies that the proposed development will include low density and medium density residential blocks, commercial blocks, an elementary school, a fire hall, stormwater management pond facilities and multiple natural areas specifically parklands/ open spaces.

Given this geographical setting and the presence of key natural heritaige and key hydrologic features, development applications concerning the lands are subject to natural heritage policies including, but not limited to, those outlined in: *Species at Risk Act* (SARA), *Fisheries Act*, *Endangered Species Act* (ESA), Provincial Policy Statement (PPS), Regional Municipality of Peel Official Plan, Town of Caledon Official Plan and Toronto Region Conservation Authority (TRCA) regulations and policies. This NHE considers that the subject lands will be brought into the Urban Area to allow for urban development. This NHE has been prepared to support a Draft Plan of Subdivision application to redevelop the subject lands for residential land use.

An NHE is required, by the region, municipality and the TRCA, as part of the *Planning Act* applications to develop the subject lands; due to its proximity to (i.e., within 120 m of) natural features and within areas that are regulated by the TRCA. Therefore, the purpose of this NHE is to:

- Describe the existing natural heritage conditions and features both on and immediately adjacent to the subject lands;
- Identify the applicable environmental polices and evaluate project conformance with the relevant provincial and municipal planning documents, and the policies and regulations as set out by the TRCA;
- Identify any potential development impacts to natural heritage features and ecological functions; and
- Identify appropriate protection, mitigation, enchancement and compensation recommendations, if required.

A *Functional Servicing and Stormwater Management Report* (FSSR; SCS 2024), *Detailed Factual Geotechnical and Hydrogeological Subsurface Investigation Report* (Gemtec 2024), *Tree Inventory & Assessment Report* (Schollen & Company Inc. 2024), and *Geomorphic Assessment* (Beacon 2024) have also been prepared for the subject lands to support the Draft Plan of Subdivision application. The NHE should be read in conjunction with these companion reports.

2. Natural Heritage Policy Review

A review of applicable natural heritage regulations, policies and guidelines was undertaken to identify environmental planning considerations and requirements, as applicable to the subject lands and proposed residential development and site alteration activities. The following sections summarize key environmental legislation policies and regulations that will apply to the subject lands within the context of the proposed development application once the lands are brought into the Town of Caledon Settlement Area through the Future Caledon Official Plan (Draft 2024) which has been approved by Council and will subsequently need to be approved by the Ministry of Municipal Affairs and Housing (MMAH).

2.1 Federal *Species at Risk Act* (2002)

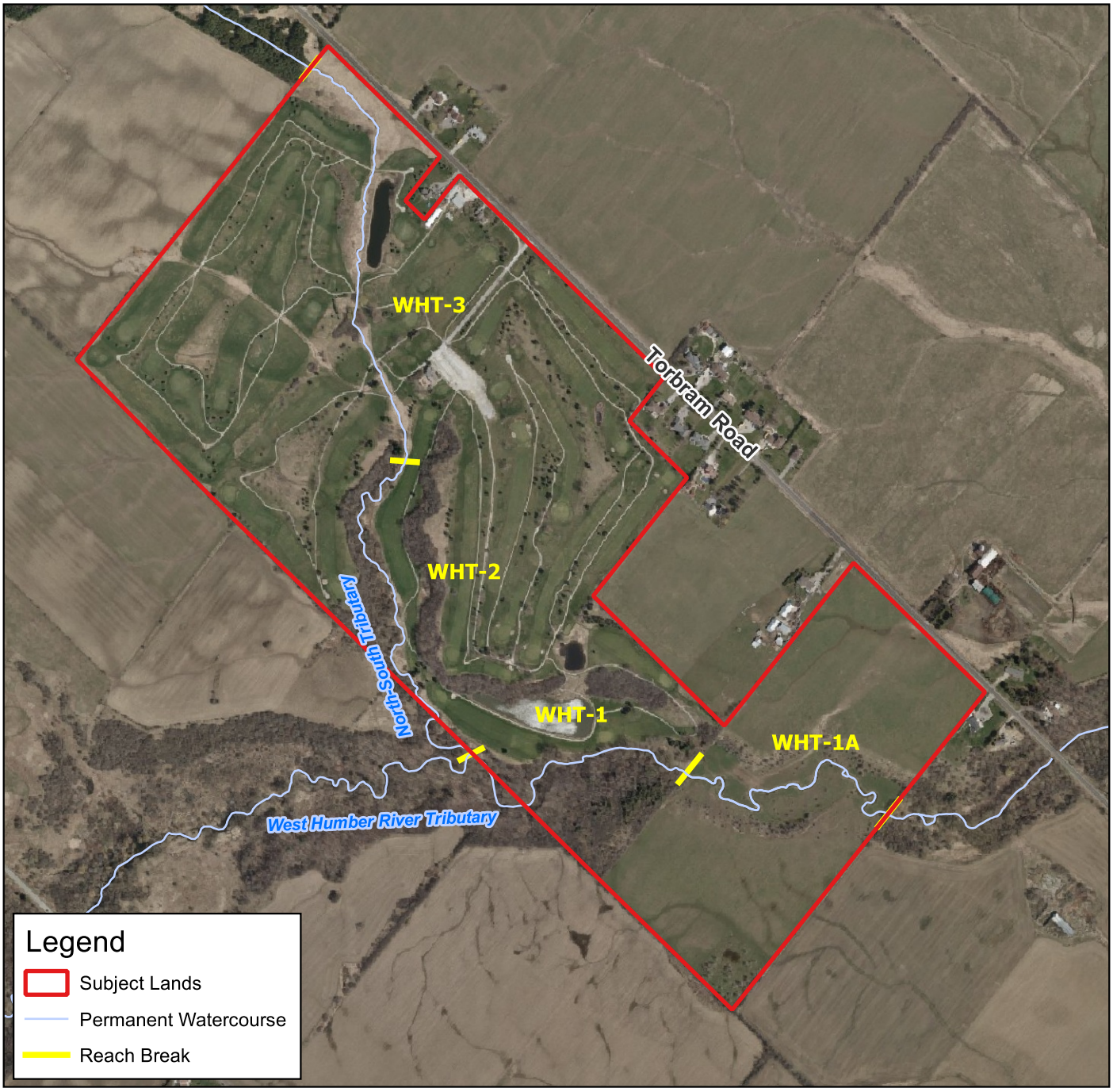
The federal SARA (2002) is intended to prevent federally endangered or threatened wildlife (including plants) from becoming extinct in the wild, and to help in the recovery of these species. The Act is also intended to help prevent species listed as Special Concern from becoming endangered or threatened. To ensure the protection of Species at Risk, SARA contains prohibitions that make it an offence to kill, harm, harass, capture, take, possess, collect, buy, sell, or trade an individual of a species listed in Schedule 1 of SARA as endangered, threatened, or extirpated.

SARA applies primarily to lands under federal jurisdiction and relies on provincial laws to protect federal SAR habitat. On private land, SARA prohibitions apply only to aquatic species (see Section 2.2. below) and migratory birds that are also listed in the *Migratory Birds Convention Act* (1994). The intent of SARA is to protect critical habitat as much as possible through voluntary actions and stewardship measures.

2.2 Federal *Fisheries Act* (1985)

Fish and fish habitat are protected under the federal *Fisheries Act*, which was last amended on August 28, 2019, and is administered by the Fish and Fish Habitat Protection Program within Fisheries and Oceans Canada (DFO). The protection provisions of the Fisheries Act apply to all fish and fish habitat throughout Canada and the Act sets out authorities for the regulation of works, undertakings or activities that risk harming fish and fish habitat.

Fish habitat is defined in subsection 2(1) of the *Fisheries Act* to include all waters frequented by fish and any other areas upon which fish depend directly or indirectly to carry out their life processes. The types of areas that can directly or indirectly support life processes include, but are not limited to, spawning grounds and nursery, rearing, food supply and migration areas.



Site Location	Figure 1
Natural Heritage Evaluation - Part of Lots 19, 20 and 21 Concession 5, Town of Caledon, Region of Peel	
BEACON ENVIRONMENTAL	Project: 222239 Last Revised: October 2024
Client: Mayfield Golf Course Inc. and Tullamore Industrial GP Limited	Prepared by: BD Checked by: KQ
N 1:10,000	Inset Map: 1:100,000
Contains information licensed under the Open Government License– Ontario Orthoimagery Baselayer: FBS Peel Region (2022)	

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Critical habitat is defined in subsection 2(1) of SARA as the habitat necessary for the survival or recovery of a listed wildlife species and that is identified as the species' critical habitat in the recovery strategy or in an action plan for the species. Also, SARA defines habitat for aquatic species as spawning grounds and nursery, rearing, food supply, migration, and any other areas on which aquatic species depend directly or indirectly in order to carry out their life processes, or areas where aquatic species formerly occurred and have the potential to be reintroduced.

Section 35 of the *Fisheries Act*, which prohibits the carrying out of any work, undertaking, or activity that results in the harmful alteration, disruption, or destruction of fish habitat, applies to all fish habitat, including the critical habitat of endangered and threatened species listed under Schedule 1 of SARA. Under section 73 of SARA, the Minister may enter into an agreement with a person, or issue a permit to a person, authorizing the person to engage in an activity affecting a listed aquatic species, any part of its critical habitat, or the residences of its individuals, provided that the following requirements are met:

Subsections 73(2):

a) the activity is scientific research related to conservation;
b) the activity benefits the species or enhances the species chance of survival; or
c) or the affecting the species is incidental to carrying out the activity.

And subsection73(3):

a) all reasonable alternatives to the activity have been considered in order to reduce the impact(s);
b) all feasible measures will be taken to minimize the impact of the activity on its species or its residents or its critical habitat; and
c) the activity will not jeopardize the survival of the species, minimizing the impact of the authorized activity on the species or providing for its recovery.

The Fish and Fish Habitat Protection Program (FFHPP) ensures compliance with relevant provisions under the *Fisheries Act* and (SARA by reviewing proposed works, undertakings and activities that may impact fish and fish habitat. If a project is taking place in or near water, the proponent is responsible for understanding project related impacts on fish and fish habitat and applying measures to avoid and/or mitigate potential impacts (i.e., harmful, alteration, disruption, or destruction) to fish and fish habitat. Per Section 73(3)(c) of SARA an activity would be considered to jeopardize the survival or recovery of a species at risk if it would prevent the "attainment of the population and distribution objectives described within the recovery strategy". It is DFO's responsibility to complete an assessment to determine whether an activity would jeopardize the survival or recovery of the species on a case-by-case basis.

2.3 Provincial *Endangered Species Act* (2007)

Ontario's ESA came into effect on June 30, 2008 and replaced the former 1971 Act. The ESA protects species listed as endangered and threatened by the Committee on the Status of Species at Risk in Ontario (COSSARO). The purpose of the ESA is:

- To identify species at risk based on the best available scientific information, including information obtained from community knowledge and aboriginal traditional knowledge;
- To protect species that are at risk and their habitats, and to promote the recovery of species that are at risk; and
- To promote stewardship activities to assist in the protection and recovery of species that is at risk.

Section 9 of the ESA prohibits the killing, harming, harassing, possession, collection, buying and selling of extirpated, endangered, and threatened species on the Species at Risk in Ontario (SARO) List; and Section 10 prohibits the damage or destruction of protected habitat of species listed as extirpated, endangered, or threatened on the SARO List.

There are several species protected under the ESA that occur within the Region of Peel with some degree of regularity. Seasonally appropriate field studies are typically required to determine if these species are present or using the landscape to fulfill a part of their life cycle.

2.4 Provincial Policy Statement (2020)

The Provincial Policy Statement (PPS) (MMAH 2020) provides policy direction to municipalities on matters of provincial interest as they relate to land use planning and development. It is noted that that PPS will be replaced with the Provincial Planning Statement on October 24, 2024 and that there are no substantive changes to the natural heritage policies.

The PPS provides for appropriate land use planning and development while protecting Ontario's natural heritage. Development governed by the *Planning Act* must be consistent with the policy statements issued under the PPS. These are outlined in Section 2.1 - Natural Heritage, Section 2.2 – Water, and Section 3.1 - Natural Hazards of the PPS, and relevant sections from each are provided in the following pages.

Section 2.0 of the PPS provides direction to regional and local municipalities regarding planning policies specifically for the protection and management of natural heritage features and resources. The PPS includes policies that speak to the identification and protection of natural heritage systems, as well as levels of protection for the various components that comprise such systems. Some of these features are present within the subject lands and must be assessed in the context of these policies. The policies specific to natural heritage are found in Section 2.1 of the PPS and are provided in their entirety below:

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

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

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

2.1.4. Development and site alteration shall not be permitted in:

1) Significant wetlands in Ecoregions 5E, 6E and 7E; and

2) Significant coastal wetlands.

2.1.5 Development and site alteration shall not be permitted in:

a. Significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E;

b. Significant woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);

c. Significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);

d. Significant wildlife habitat;

e. Significant areas of natural and scientific interest; and

f. *Coastal wetlands in Ecoregions 5E, 6E and 7E that are not subject to policy 2.1.4(b).*

Unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.

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

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

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

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

In terms of implementation, identification of the various natural heritage features noted above is a responsibility shared by the Ministry of the Environment, Conservation, and Park (MECP), Ministry of Natural Resources and Forestry (MNRF) and the municipal planning authority. The MECP is responsible for the confirmation of habitat of endangered species and threatened species, and for its regulation (under the Act as described above). The MNRF is responsible for the identification of Provincially Significant Wetlands (PSWs) and Areas of Natural and Scientific Interest (ANSIs).

Local and regional planning authorities are responsible for the identification of Significant Woodlands, Significant Valleylands, and Significant Wildlife Habitat (SWH), with support from applicable guidance documents (i.e., Natural Heritage Reference Manual, OMNR 2010; Significant Wildlife Habitat Technical Guidelines, OMNR 2000; Significant Wildlife Habitat Criteria for Ecoregion 6E or 7E, MNRF 2015). Local and regional planning authorities in southern Ontario also typically work with their local conservation authority to identify and confirm non-PSWs that may have significance at the local or regional level. The protection provisions of the *Fisheries Act* apply to all fish and fish habitat throughout Canada. The FFHPP ensures compliance with relevant provisions under the *Fisheries Act* and SARAby reviewing proposed works, undertakings and activities that may impact fish and fish habitat.

In areas where significant natural heritage features have been identified by the appropriate agency or planning authority, the boundaries of such features can typically be refined through site-specific studies undertaken as part of the planning process, with input from the responsible agency and/or planning authority. There are no mapped PSWs within the subject lands, however there is significant woodland, significant valleyland, SWH, fish habitat and suitable habitat for threatened or endangered species.

2.5 Greenbelt Plan (2017)

The Greenbelt Plan (2017) identifies areas where urbanization should not occur in order to provide protection for the agricultural land base within the "Greater Golden Horseshoe" area and protection of ecological features and functions occurring on the landscape.

A portion of the subject lands is within the Protected Countryside under the Greenbelt Plan as depicted on Schedule 1 (Greenbelt Area). The Protected Countryside lands identified in the Greenbelt Plan are intended to enhance the spatial extent of agriculturally and environmentally protected lands while at the same time improving linkages between these areas and the surrounding major lake systems and watersheds.

Schedule 4 (NHS) of the Plan identifies all of the lands designated Protected Countryside on the subject lands as within the NHS. The NHS includes areas of the Protected Countryside with the highest concentration of the most sensitive and/or significant natural features and functions. The NHS includes Key Natural Heritage Features (KNHFs) and Key Hydrologic Features (KHFs).

2.5.1 Natural Heritage System Policies

Policies for lands within the NHS of the Protected Countryside are presented under Section 3.2.2 of the Greenbelt Plan. As per Section 3.2.2, new development, or site alteration in the NHS (as permitted by the policies of the Greenbelt Plan) shall demonstrate that:

- *There will be no negative impacts on KNHFs or KHFs or their functions;*
- *Connectivity along the system and between KNHFs and KHFs located within 240 metres of; each other will be maintained or, where possible, enhanced;*
- *The removal of other natural features not identified as KNHFs and KHFs should be avoided. Such features should be incorporated into the planning and design of the proposed use wherever possible;*

- *Except for uses described in and governed by the policies of sections:*
  - *4.1.2 (Recreational Use Policies) and 4.3.2 (Non-renewable Resource Policies);*
  - *The disturbed area, including any buildings and structures, of the total developable area will not exceed 25 per cent (40 per cent for golf courses);*
  - *The impervious surface of the total developable area will not exceed 10 per cent; and*
- *At least 30 per cent of the total developable area will remain or be returned to natural self-sustaining vegetation, recognizing that section 4.3.2 establishes specific standards for the uses described there.*

2.5.2 Key Natural Heritage Features and Key Hydrologic Features Policies

According to Section 3.2.5 of the Greenbelt Plan, KNHFs include:

- Habitat of endangered species and threatened species;
- Fish habitat;
- Wetlands;
- Life Science Areas of Natural and Scientific Interest (ANSIs);
- Significant valleylands;
- Significant woodlands;
- Significant wildlife habitat (including habitat of special concern species);
- Sand barrens, savannahs and tallgrass prairies;
- Alvars;

KHF include:

- Permanent and intermittent streams;
- Lakes (and their littoral zones);
- Seepage areas and springs; and
- Wetlands.

As per Section 3.2.5 (1), development or site alteration is not permitted in key hydrologic features and key natural heritage features within the Natural Heritage System, including any associated VPZ with the exception of:

- *Forest, fish and wildlife management;*
- *Conservation and flood or erosion control projects, but only if they have been demonstrated to be necessary in the public interest and after all alternatives have been considered; or*
- *Infrastructure, aggregate, recreational, shoreline and existing uses, as described by and subject to the policies of section 4 (Protected Countryside policies).*

Vegetation Protection Zones (VPZ)

As per Section 3.2.5 (4), in the case of wetlands, seepage areas and springs, fish habitat, permanent and intermittent streams, lakes and significant woodlands, the minimum VPZ shall be a minimum of 30 m measured from the outside boundary of the KNHF or KHF.

As per Section 3.2.5 (5), a proposal for new development or site alteration within 120 m of a KNHF within the NHS or a KHF anywhere within the Protected Countryside requires the preparation of a Natural Heritage Evaluation (NHE) or hydrological evaluation which identifies a VPZ to protect KNHF and KHF and their functions.

Fish Habitat

Fish Habitat is described in Section 7.2 of Greenbelt Plan Technical Paper 1 (*Technical Definitions and Criteria for KNHFs in the NHS of the Protected Countryside Area*).

As per Section 7.2:

> *Where available, detailed fish habitat mapping and information may be provided by MNR, Department of Fisheries and Oceans Canada (DFO) and/or conservation authorities. This more detailed information should be used to determine the location of fish habitat and to help determine the appropriate level of fish habitat protection, or*
>
> *Where no detailed fish habitat mapping has been completed, all waterbodies - including permanent or intermittent streams, headwaters, seasonally flooded areas, municipal or agricultural surface drains, lakes and ponds (except human-made off-stream ponds) - should initially be considered fish habitat unless it can be demonstrated to the satisfaction of the planning authority under the Planning Act that the feature does not constitute fish habitat as defined by the DFO.*

Wetlands

Wetlands are described in Section 7.3 of Greenbelt Plan Technical Paper 1 (*Technical Definitions and Criteria for KNHFs in the NHS of the Protected Countryside Area*).

The following criteria are used to identify wetlands for the purposes of applying the natural features policies of the Plan:

- *All wetlands, regardless of size, evaluated as provincially significant in accordance with the Ontario Wetland Evaluation System (OWES) (Southern Manual, MNR 2002) and accepted by MNR;*
- *All other identified wetlands 0.5 hectares or greater in size; and*
- *All other identified wetlands less than 0.5 hectares in size except where it can be demonstrated to the satisfaction of the planning authority by a qualified person (such as a hydro-geologist or a person with equivalent qualifications) that the wetland does not constitute or provide one or more of the following features or functions.*

- *A wetland feature having one or more of the following characteristics:*
    - *Permanent or intermittent surface water connection between the wetland and an adjacent KHF;*
    - *Significant recharge to the underlying aquifer (generally considered to be any small wetland underlain by at least 3 metres of mineral soil having a hydraulic conductivity of 10-4cm/s or more);*
    - *Direct hydraulic connections between the wetland and an underlying aquifer (e.g. along fracture zones or granular soil conduits);*
        - *An important groundwater hydrologic linkage to an adjacent KHF; or*
        - *An important component of, or ecological linkage to, an adjacent KNHF.*

Significant Woodlands

Significant woodlands are described in Section 7.6 of Greenbelt Plan Technical Paper 1 (*Technical Definitions and Criteria for KNHFs in the NHS of the Protected Countryside Area*).

The subject lands are located in the South Area for identification of significant woodlands within the NHS of the Protected Countryside. A woodland that meets one of the following criteria is considered significant:

- *Any woodland 4 hectares or more;*
- *Any woodlands containing 1 ha or more of naturally occurring trees listed in the table in Appendix D;*
- *Any woodlands 1 ha or more with either: a) 10 or more trees per ha that are either greater than 100 years old or 50 cm or more in diameter; or b) containing a basal area of at least 8 square metres per hectare in native trees that are 40 cm or more in diameter;*
- *Any woodlands 1 ha or more wholly or partially within 30 metres of a: significant wetland; significant habitat of an endangered or threatened species; significant woodland; or*
- *Any woodlands 0.5 ha or more containing: a provincially rare treed vegetation community with an S1, S2 or S3 in its ranking by the MNR's NHIC; or habitat of a woodland plant species with an S1, S2 or S3 in its ranking or an 8, 9, or 10 in its Southern Ontario Coefficient of Conservatism by the NHIC, consisting of 10 or more individual stems or 100 or more square metres of leaf coverage.*

Exceptions to the significant woodland designation include plantations and may be considered for communities dominated by invasive non-native tree species Buckthorn (*Rhamnus species*) or Norway Maple (*Acer platanoides*).

Significant Valleylands

Significant valleylands are described in Section 7.5 of Greenbelt Plan Technical Paper 1 (*Technical Definitions and Criteria for KNHFs in the NHS of the Protected Countryside Area*).

Significant valleylands include any of the features identified in any of the following three categories:

- *All streams with well-defined valley morphology (i.e. floodplains, riparian zones, meander belts and/or valley slopes) of an average width of 25 metres or more; the physical boundary is defined by the stable top of bank (as defined by the conservation authority);*
- *All spillways and ravines with the presence of flowing or standing water for a period of no less than two months in an average year. Such features must be greater than 50 metres in length; 25 metres in average width with a well-defined morphology (i.e. two valley walls of 15% slope or greater with a minimum height of 5 metres, and valley floor), and having an overall area of 0.5 ha or greater; or*
- *Additional features beyond the ones described above that have been identified by the planning authority as providing one or more of the features or functions described in the table contained in Appendix A.*

As per Section 4.2.3 (3), within those portions of the Protected Countryside that define the major river valleys that connect the Niagara Escarpment and Oak Ridges Moraine to Lake Ontario, naturalized stormwater management systems may be permitted within the VPZ of a significant valleyland, provided they are located a minimum of 30 m from the river or stream, and they are located outside of the VPZ of any other KNHF or KHF.

2.5.3 Protected Countryside Policies

General policies for the Protected Countryside are presented under Section 4 of the Greenbelt Plan. As per 4.1.1(2), proposals for non-agricultural uses must demonstrate that type of water and sewer servicing proposed is appropriate for the type of use, along with ensuring there are no negative impacts on KNHF or KHF or their functions, and no negative impacts on the biodiversity or connectivity of the NHS.

Infrastructure policies are presented in Section 4.2. The location and construction of infrastructure are subject to the policies of Section 4.2.1 (2). Policies generally require that the area occupied by infrastructure, and the impacts of the infrastructure to the NHS and water resource system, are minimized. Should the infrastructure result in the loss of natural features, need must be demonstrated, and it must be established that there is no reasonable alternative.

In addition to the policies of Section 4.2.1, stormwater management infrastructure is subject to the policies of Section 4.2.3. Stormwater management systems are prohibited in KNHF, KHF, and their associated VPZs. Naturalized stormwater management systems may be permitted within the vegetation protection zone of a significant valleyland, provided they are located a minimum of 30 metres from the river or stream, and they are located outside of the VPZ of any other KNHF or KHF. A stormwater management plan is required to avoid, or if avoidance is not possible, minimize and mitigate stormwater volume, contaminant loads and impacts to receiving water courses.

2.6 Regional Municipality of Peel Official Plan (2022)

The Region of Peel Official Plan (RPOP) was adopted by Regional Council on April 28, 2022 and approved with modifications by the Minister of Municipal Affairs and Housing on November 4, 2022. As per Ontario Bill 23 *(More Homes Built Faster Act, 2022)* and Bill 185 *(Cutting Red Tape to Build More Homes Act, 2024)*, the Region of Peel Official Plan (RPOP), as of July 1, 2024, will be deemed to constitute an official plan of Peel's lower-tier municipalities of Brampton, Caledon, and Mississauga. The RPOP outlines a comprehensive land use policy framework to guide growth and development

The natural heritage features present on the subject lands are primarily associated with the valley and stream corridors of the two West Humber River Tributaries. These features are identified as lands within the Protected Countryside, as shown on Schedule B-5, and are subject to the entirety of the Greenbelt Plan. Schedule C-2 identified these natural features as Core Areas of the Region's Greenlands System.

Section 2 of the RPOP 2051 outlines the Region's policy on the Natural Environment to ensure a healthy, resilient, and self-sustaining natural environment within the Region of Peel. Section 2.12 implements the boundaries and policies of the Greenbelt Plan. Section 2.14 contains policies that are aimed at protecting, maintaining, and restoring a Greenlands System. The Greenlands System consists of "Core Areas", "Natural Areas and Corridors (NAC)", and "Potential Natural Areas and Corridors (PNAC)". Key elements of the Region's Greenlands System include the following:

- Areas of Natural and Scientific Interest (ANSI);
- Environmentally Sensitive or Significant Areas (ESA);
- Escarpment Natural Areas;
- Escarpment Protection Areas;
- Fish and wildlife habitat;
- Habitats of threatened and endangered species;
- Wetlands;
- Woodlands;
- Valley and stream corridors;
- Shorelines;
- Natural lakes;
- Groundwater recharge and discharge areas;
- Open space portions of the Parkway Belt West Plan; and
- Other natural features and functional areas.

The above key elements are to be interpreted, identified, and protected in accordance with the policies of the RPOP.

The extent and composition of a vegetated buffer is determined in accordance with provincial and municipal official plan policies or through a subwatershed study, environmental impact study or other equivalent study.

2.6.1 Core Areas

Core Areas represent those features and areas that are considered to be significant at the provincial and regional levels. They generally correspond with significant features and areas listed in the PPS and include:

- *Significant Wetlands;*
- *Significant Coastal Wetlands;*
- *Core Woodlands;*
- *Environmentally Sensitive or Significant Areas*
- *Provincial Life Science ANSI;*
- *Escarpment Natural Areas of the Niagara Escarpment Plan; and*
- *Core Valley and Stream Corridors.*

Policy 2.14.15 prohibits development and site alteration within the Core Areas of the Greenlands System in Peel, except for:

- *Forest, fish, and wildlife management;*
- *Conservation and flood or erosion control projects, but only if they have been demonstrated to be necessary in the public interest and after all reasonable alternatives have been considered;*
- *Essential infrastructure exempted, pre-approved or authorized under an environmental assessment process;*
- *Passive recreation;*
- *Minor development and minor site alteration;*
- *Existing uses, buildings, or structures;*
- *Expansions to existing buildings or structures;*
- *Accessory uses, buildings, or structures; and*
- *A new single residential dwelling on an existing lot of record, provided that the dwelling would have been permitted by the applicable planning legislation or zoning by-law on May 23, 2014. A new dwelling built after May 23, 2014, in accordance with this policy shall be deemed to be an existing building or structure for the purposes of the exceptions.*

The above noted exceptions are permitted provided that:

a) *The exceptions are permitted in accordance with the policies in an approved local municipal official plan or the Niagara Escarpment Plan, where applicable;*
b) *Any development and site alteration will not be permitted unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions and that:*
    i. *there is no reasonable alternative location outside of the Core Area and the use, development or site alteration is directed away from the Core Area to the greatest extent possible;*
    ii. *if avoidance of the Core Area is not possible, the impact to the Core Area feature is minimized;*
    iii. *any impact to the Core Area or its functions is mitigated through restoration or enhancement to the greatest extent possible; and*

iv. *where ecosystem compensation is determined to be appropriate and feasible, including for essential infrastructure, it may be considered in accordance with local municipal or conservation authority ecosystem compensation guidelines.; and*

c) *Within significant wetlands and significant coastal wetlands the above exceptions may only be considered in accordance with federal and provincial legislation, regulations and policies (e.g. Conservation Authorities Act); and*

d) *When developing policies to allow the exceptions, the local municipalities may consider appropriate implementation tools including existing approval requirements and tools of other agencies.*

2.6.2 Natural Areas and Corridors (NAC) and Potential Natural Areas and Corridors (PNAC)

NAC include:

- *Evaluated non-provincially significant wetlands;*
- *Woodlands meeting one or more of the criteria in Table 1 of the RPOP;*
- *Significant wildlife habitat;*
- *Fish habitat;*
- *Habitat of aquatic species at risk;*
- *Habitat of endangered and threatened species defined in accordance with he ESA;*
- *Regionally significant life science ANSI;*
- *Provincially significant earth science ANSI;*
- *Escarpment Protection Areas of the Niagara Escarpment Plan; and*
- *The Lake Ontario shoreline and littoral zone and other natural lakes and their shorelines;*
- *Any other valley and stream corrdiors that have not been definesd as part of the Core Areas;*
- *Sensitive headwater areas and sensitive groundwater discharge areas; and*
- *any other natural features and functional areas interpreted as part of the Greenlands System Natural Areas and Corridors by the local municipalities, in consultation with the conservation authorities and the Ministry of Northern Development, Mines, Natural Resources and Forestry, including, as appropriate, elements of the Potential Natural Areas and Corridors.*

PNAC include:

- *Unevaluated wetlands and coastal wetlands;*
- *Cultural woodlands and cultural savannahs within the Urban System and Rural Service Centers meeting one or more of the criteria in Table 1 of the RPOP;*
- *Any other woodlands greater than 0.5 hectares (1.24 acres);*
- *Regionally significant earth science ANSI;*
- *Sensitive groundwater recharge areas;*
- *Portions of Historic shorelines;*
- *Open space portions of the Parkway Belt West Plan Area;*
- *enhancement areas, buffers and linkages; and*

- *Any other natural features and functional areas interpreted as part of the Greenlands System Potential Natural Areas and Corridors, by the individual area municipalities in consultation with the conservation authorities.*

NAC and PNAC represent natural features and areas that are considered locally significant. NAC and PNAC' are considered locally important. Regional policies pertaining to NAC and PNAC defer their interpretation, protection, restoration, enhancement, proper management, and stewardship to local municipalities.

2.7 Town of Caledon Official Plan (2024 Consolidation)

The Town of Caledon Official Plan came into effect in 1979 and has been amended over time; it was most recently consolidated in 2024. The Town of Caledon OP provides direction as to the land use within the Town.

The Town details an Ecosystem Planning Strategy (Section 3.2.3) that outlines the policy approach to implementing the Town's ecosystem principle, goal and objectives and provides a basis for the General Policies and Performance Measures contained in Sections 3.2.4 and 3.2.5, as well as the detailed environmental and open space/recreation land use policies contained in Sections 5.7 and 5.8.

The Ecosystem Framework (3.2.3.1) outlined on Table 3.1 organizes ecosystem components into four categories:

- *Natural Core Areas;*
- *Natural Corridors;*
- *Supportive Natural Systems; and*
- *Natural Linkages.*

It should be noted that the Ecosystem Framework incorporates and refines the components of the Regional Greenlands System, as defined in the RPOP, in a manner which conforms with the environmental policy directions contained in the RPOP. Within the Greenbelt Plan Protected Countryside designation, this framework incorporates KNHFs and KHFs, and their related VPZs as defined in the Greenbelt Plan, and lands within 120 metres of such features.

Natural Core Areas and Natural Corridors are designated Environmental Policy Area (EPA), and development within and adjacent to EPA shall subject to the general policies of Section 3.2.4, the performance measures of Section 3.2.5, and the detailed land use policies of Section 5.7, and, within the Greenbelt Protected Countryside designation, the detailed policies of Section 7.13.

Environmental Policy Area

According to Section 5.7 new development generally is prohibited within areas designated Environmental Policy Area with limited exceptions described in Section 5.7.3.1.2:

> *The uses permitted in EPA shall be limited to: legally existing residential and agricultural uses; a building permit on a vacant existing lot of record; portions of new lots; activities permitted through approved Forest Management and Environmental Management Plans; limited extractive industrial; non-intensive recreation; and, essential infrastructure. Detailed policies with respect to each of these permitted uses are provided in Sections 5.7.3.2 to 5.7.3.7 inclusive. Within the ORMCPA or the Greenbelt Protected Countryside designation, permitted uses are also subject to the provisions of Sections 7.10 and 7.13, as applicable.*

Section 5.7.3.1.6 states that:

> *Lands designated EPA are not to be damaged or destroyed, unless as a result of an approved permitted use pursuant to Section 5.7.3.1.2 above, and, within the ORMCPA, pursuant to Section 7.10 and within the Greenbelt Protected Countryside designation, pursuant to Section 7.13. In the event that EPA is damaged or destroyed without required approvals, there shall be no adjustment to the boundary or re-designation of these areas, and the Town and Region of Peel will require replacement or rehabilitation of the affected ecosystem features, functions and/or landforms.*

Proposed new development adjacent to EPA will be required to complete an Environmental Impact Study (EIS) and Management Plan (MP) to the satisfaction of the Town and other relevant agencies (Section 5.7.3.7).

2.8 Future Caledon Official Plan (Draft 2024)

In 2019, the Town of Caledon initiated its review of the Caledon Official Plan as required by the Planning Act and to ensure conformity with provincial policy and the adopted RPOP (2022). The Future Caledon Draft Official Plan (2024) was adopted by council on March 26, 2024. The OP requires approval by the Ministry of Municipal Affairs and Housing before it comes into effect and the subject lands are brought into the New Urban Area.

The policies are in alignment with the policies set out in the RPOP for Core Areas , Natural Areas and Corridors and Potential Natural Areas and Corridors within the regional Greenlands System as described above.

2.8.1 Mayfield Tullamore Secondary Plan Area

The subject lands are located within the Mayfield Tullamore Secondary Plan Area. The Mayfield Tullamore Secondary Plan Area has been identified as a New Urban Area in the Town of Caledon, based on the results of a Settlement Area Boundary Expansion Area (SABE) Study, completed as part of the Region of Peel's recent Municipal Comprehensive Review (RPOP, Adopted 2022).

Prior to any development, the preparation and approval of a secondary plan, is required to determine detailed land use designations for the recently identified new community area. To support the future development of the area, an Official Plan Amendment (OPA) is required to bring these New Urban Areas into the Town's Settlement Area, to redesignate them for urban land uses in alignment with RPOP (2022) Section 5.6.20.14, and Future Caledon OP (Draft 2024) Section 21.3.

As part of the SABE, a Scoped Subwatershed Study (Scoped SWS; Wood *et al*., 2022) was completed to inform the New Urban Area (New Community Areas and New Employment Areas) within the SABE.

The Mayfield Tullamore Local Subwatershed Study (SWS) is currently underway and the recommendations outlined in the draft Phase 1 – Subwatershed Characterization and Integration Report (GEI 2024) have been incorporated into this NHE. Included in these recommendations are minimum VPZs and setbacks for valleylands and other features/hazards outside the Greenbelt Plan Area:

- *30 m from PSWs or 10 m from non-significant wetlands (using the staked wetland boundary);*
- *10 m from woodlands (using the staked dripline boundary);*
- *15 m from significant valleylands or 10 m from non-significant valleylands (using the greater of long-term stable top of slope or staked top of bank boundary for confined systems; or the greater of meander belt or floodline boundary for unconfined systems);*
- *15 m from warmwater baitfish habitat (medium constraint watercourses) or 30 m from cool/cold water fish habitat (high constraint watercourses); and*
- *30 m from the meander belt width of occupied Redside Dace watercourses.*

2.9 Toronto and Region Conservation Authority (TRCA) Polices and Regulations

The subject lands are located within the Humber River Watershed and two tributaries of the West Humber River flow through the subject lands. Areas regulated by the TRCA on the subject lands are associated with the valley and stream corridors, associated floodplains, wetlands, and several of the drainage features.

2.9.1 Conservation Authorities Act (Ontario Regulation 41/24)

Part VI of the *Conservation Authorities Act* (2024) sets out the regulatory powers of conservation authorities. The *CA Act* prohibits, in the absence of a permit, development activities to straighten, change, divert or interfere in any way with the existing channel of a river, creek, stream or watercourse or to change or interfere in any way with a wetland are prohibited. Development activities are also prohibited in hazardous lands in the absence of a permit issued by the TRCA.

Under Ontario Regulation 41/24 (2024) under the *CA Act*, the TRCA regulates hazard lands including floodplains, watercourses, valleylands, shorelines, and wetlands. TRCA also regulates other areas which include areas within 30 m of a wetland.

The TRCA may issue a permit for works within a regulated area if, in its opinion,

- the activity is not likely to affect the control of flooding, erosion, dynamic beaches, or unstable soil or bedrock.
- the activity is not likely to create conditions or circumstances that, in the event of a natural hazard, might jeopardize the health or safety of persons or result in the damage or destruction of property; and
- any other requirements that may be prescribed by the regulations are met.

The TRCA may issue a permit with or without conditions.

2.9.2 Toronto and Region Conservation Authority Living City Policies

The *Living City Policies* (LCP) *for Planning and Development in the Watersheds of the TRCA* was approved by its board on November 28, 2014. These policies were written to support the former regulation which is no longer in force and thus the natural hertiage policies are no longer applicable, whereas the hazard policies will be addressed where appropriate.

3. Methodology

To characterize natural heritage resources and functions associated with the subject lands and adjacent lands, Beacon Environmental has completed a review of all available background information. A summary of the desktop review and field investigations undertaken is summarized below.

3.1 Background Review

Background information was gathered and reviewed at the outset of the project. This involved consideration of the following documents and information sources, as relevant to the subject lands:

- PPS (2020);
- Greenbelt Plan (2017);
- RPOP (April 2022 Office Consolidation);
- Town of Caledon OP (March 2024 Office Consolidation);
- Future Caledon OP (Draft 2024)
- TRCA regulation (2024);
- Land Information Ontario (LIO) and MNRF resource information;
- ESA (2007), including relevant Ontario Regulations and guidance documents;
- SARA (2002); and
- Federal *Fisheries Act* (1985) including relevant policy and guidance documents.

Other sources of information such as current and historical aerial photographs and local topographic survey data, were also reviewed prior to commencing field investigations.

Further, Beacon's background review also includes analysis of numerous information sources in a Geographic Information System (GIS) environment that facilitates an assessment of the likelihood that species at risk and other natural heritage features are present in an area of interest. This system allows Beacon to combine the most current information provided by the MNRF through the LIO portal with GIS layers from other provincial and local datasets, including but not limited to, floral and faunal atlas data. This system enables the creation of a list of Species at Risk (SAR) for which there are records, or which might be expected to occur within 5 km of a location. All relevant layers can then be overlaid on the most recent high resolution ortho-imagery. The screening process helps identify areas that can then be targeted (for example, potential habitat) during the field program to maximize the efficiency and effectiveness of on-site investigations.

Information sources reviewed included:

- Provincially tracked species layer (1 km grid LIO dataset);
- Ontario Reptile and Amphibian Atlas (ORAA);
- Ontario Breeding Bird Atlas (OBBA);
- Ontario Butterfly Atlas (MacNaughton et al. 2023);
- Natural Heritage Information Centre (NHIC) Data via the Make-A-Map application;
- SAR range maps (Government of Ontario);
- LIO and Aquatic Resource Area (ARA) dataset;
- DFO Aquatic Species at Risk Mapping;
- Committee on the status of Endangered Wildlife in Canada (COSEWIC) Assessment and Status Reports (including SAR distribution and range maps);
- High resolution aerial photography of the property;
- Natural and physical feature layers (e.g., topographic, wetland, waterbody, watercourse data); and
- Ontario Geological Survey (OGS) and soil physiography (Chapman and Putnam) datasets.

3.2 Feature Staking

The limits of the regulated top of slope, the dripline of the wooded valley features and unevaluated wetlands associated with the valley and stream corridors were surveyed and staked with TRCA staff. Nick Cascone (Senior Planner) and Maria Parish (Senior Ecologist) attended the staking on October 18, 2022, for the Golf Course Lands and on August 28, 2023 for the south lands. There is one area of woodland in the southwest, located within the Greenbelt Plan Area, that was not staked, the boundary of which has been established through mapping of the ELC community.

3.3 Field Investigations

The field investigations detailed below are time sensitive and were completed during specific timing windows within the year to be valid, scientifically appropriate, and acceptable to the agencies.

Field investigations to identify existing natural heritage and hydrological features within the subject lands commenced in the summer of 2022 and have continued into the spring and summer of 2023. Note that additional land was added to the overall area of study at the beginning of 2023.

Since there is a division within the timing of surveys and the surrounding land use, there are periodical references to the north and south parcels or the future development lands throughout the report.

A summary is presented in **Table 1**. More detailed survey descriptions are provided in the subsections that follow.

Table 1. Summary of Field Investigations

Field Investigation	Dates
Aquatic Habitat Assessment	June 28, 2022, and June 22, 2023
Headwater Drainage Feature Assessment	April 12, May 17, and September 5, 2023
Ecological Land Classification and Floral Inventory	September 1, 2022, and June 30, 2023
Breeding Bird Surveys	June 11 and July 4, 2022, and June 3, 27 and July 7, 2023
Breeding Amphibian Surveys	April 13, May 26, and June 22, 2023
Turtle Basking Surveys	May 25 and 26 and June 8, 2023
Feature Staking Exercise (TRCA)	October 18, 2022, and August 28, 2023

3.3.1 Aquatic Habitat Assessment

An aquatic habitat assessment was completed within the West Humber River tributaries that traverse the subject lands. The assessment of aquatic habitat was completed on foot and involved a visual assessment of the following characteristics:

- Channel width and depth profile, bank height, bank stability;
- Substrate types and distribution;
- Fish barriers;
- Riparian vegetation type and cover; and
- In-stream cover type and extent.

3.3.2 Geomorphic Assessment

A geomorphic assessment, provided under a separate cover, was completed for the two West Humber River tributaries that traverse the subject lands. This assessment included the results of the field investigation and provides an impact assessment of the proposed development concept plan from a geomorphic perspective. Additionally, this assessment provides a meander belt analysis for the West Humber River Tributaries meander belt, on a reach basis, to delineate the regulated Redside Dace habitat limit. Reach names identified in the Geomorphic Assessment (Beacon 2024) will also be referenced in Section 4.1 to maintain naming consistency.

3.3.3 Headwater Drainage Feature Assessment

Part 1 of the *Evaluation, Classification and Management of Headwater Drainage Features Guidelines* ("HDFA Guidelines"; TRCA and Credit Valley Conservation [CVC] 2014) is to collect data on the identified features. Data is collected according to the *Ontario Stream Assessment Protocol Headwater Drainage Feature Module* (Stanfield *et al*. 2013) on the identified features, scoped for data relevance and adapted to a reach-based approach. Per the OSAP HDFA Module (Stanfield *et al*. 2013) spring sampling shall occur between March and the middle of June in southern Ontario. However, data collected in the late summer can provide valuable insight into vegetive growth and flow conditions that can support the spring data.

In support of the assessment three site visits were undertaken by Beacon staff on April 4, May 10 and September 5, 2023. Part 2 of the HDFA Guidelines (TRCA & CVC 2014) provides an approach to classify features by providing a step-by-step characterization of specific functions that may be associated with the features assessed. This includes hydrology, riparian function and provision of fish or terrestrial habitat.

Part 3 of the HDFA Guidelines (TRCA & CVC 2014) provides guidance on linking the characteristics and functions of features to specific management recommendations that may be applied to those features. Recommendations for management generally fall into one of the following:

- *Protection – Important Functions: i.e., swamps with amphibian breeding habitat; perennial headwater drainage features; seeps and springs; Species at Risk (SAR) habitat; permanent fish habitat with woody riparian cover.*
- *Conservation – Valued Functions: i.e., seasonal fish habitat; with woody riparian cover; marshes with amphibian breeding habitat; or general amphibian habitat with woody riparian cover.*
- *Mitigation – Contributing Functions: i.e., contributing fish habitat with meadow vegetation or limited cover.*
- *Recharge Protection – Recharge Functions: i.e., features with no flow with sandy or gravelly soils.*
- *Maintain or Replicate Terrestrial Linkage – Terrestrial Functions: i.e., features with no flow with woody riparian vegetation and connects two other natural features identified for protection.*
- *No Management Required – Limited Functions: i.e., features with no or minimal flow; cropped land or no riparian vegetation; no fish or fish habitat; and no amphibian habitat.*

3.3.4 Ecological Land Classification and Floral Inventory

Vegetation surveys and community mapping was undertaken to describe and map the existing vegetation communities on current colour ortho-photography of the lands using the Ecological Land Classification (ELC) system for southern Ontario (Lee *et al*. 1998). This is the standard method used for describing vegetation communities in southern Ontario.

A flora inventory was completed, and a list of vascular plants was compiled for the subject lands.

3.3.5 Breeding Bird Surveys

Surveys for the north parcel were conducted on the mornings of June 11 and July 4, 2022, on days with low to moderate winds, no precipitation, and temperatures within 5°C of average seasonal temperatures. Start times were between 5:00 and 5:30 AM to capture the peak period of avian vocalization. The breeding bird community was surveyed using a roving type of survey, in which all parts of the subject lands were walked to within 50 m and all birds heard or observed and showing some inclination toward breeding were recorded as breeding species. All birds heard and seen were recorded in the location observed on an aerial photograph of the site. A third breeding bird survey is typically conducted when suitable grassland habitat is present that may support protected grassland specialists. These birds (Bobolink and Eastern Meadowlark) were detected on the first and second visits (discussed in Section 4.3.4 below) and therefore the third visit was not deemed to be required as presence of these species had been confirmed.

Three surveys for the south parcel were conducted in 2023 (June 3, 27 and July 7) and implemented the same methodology as above.

3.3.6 Breeding Amphibian Surveys

Three evening visits were made to survey the subject lands for breeding amphibians. Survey locations were placed in proximity to wetland habitat that may support breeding amphibians. The surveys were conducted as per the protocol outlined in the Great Lakes Marsh Monitoring Program. Surveys consisted of auditory surveys undertaken during the prime breeding period to record calling males that are present, spread throughout the breeding season to include the short temporal peak for each species of interest. The surveys involved visiting the site after dusk when minimum night-time air temperatures of at least 5°C during the first visit, 10°C during the second visit and 17°C during the third visit. Calling amphibians, if present, were identified to species and chorus activity was assigned a code from the following options:

0 No calls;
1 Individuals of one species can be counted, calls not simultaneous;
2 Some calls of one species simultaneous, numbers can be reliably estimated and shown in brackets; and
3 Full chorus, calls continuous and overlapping.

3.3.7 Turtle Basking Surveys

Staff undertook three turtle basking surveys in May and June to study the potential presence of these animals on the subject lands. Survey stations were developed based on the location of wetland communities such as the open ponds and marsh communities.

These surveys are typically completed on sunny days in May through to mid-June. Staff walk the perimeter of the identified communities and scan the community with binoculars to enhance visual detection.

3.3.8 Endangered or Threatened Species

Beacon staff completed an in-house desktop screening for endangered and threatened species. The list of species was screened against potential habitat, which was confirmed through field investigations and seasonal, species-specific surveys and will be verified with the applicable regulatory bodies, as required.

3.3.9 Incidental Wildlife

Incidental observations of other wildlife, including reptiles, amphibians, mammals and/or migrant birds, were made during field investigations. This included sounds heard, scat, tracks, and visual observations.

4. Existing Conditions

The following sections detail the existing natural heritage conditions on the subject lands.

4.1 Aquatic Resources

The onsite aquatic systems are composed of several drainage features that all drain into a tributary that diagonally bisects the subject lands, from northeast to southwest, to its confluence with the West Humber River (herein referred to as the "North-South Tributary"). A tributary of the West Humber River enters the subject lands from the west and naturally meanders southeast for approximately 950 m. Both the West Humber River Tributary and the North-South Tributary have origins approximately 5 km north of the subject lands (i.e., north of King Street). The tributaries are mapped in **Figure 2**.

The 2005 Humber River Fisheries Management Plan (FMP; OMNR and TRCA) identified the West Humber River Tributary as an intermediate riverine warmwater system. This habitat category is usually made up of third and forth order tributaries draining from the Peel Plain. Infiltration rates and baseflow is low, therefore some of these streams dry up or become standing pools in the summer, particularly those in the West Humber River subwatershed. As well, the flow regime and water temperatures fluctuate due to low amounts of baseflow (OMNR and TRCA 2005). TRCA Regional Watershed Monitoring Program (RWMP) monitors the fish community throughout the Humber Watershed and has a monitoring sampling station in the West Humber River Tributary, downstream of the subject lands. **Table 2** provides the species identified during their 2019 sampling program.

Legend

- Subject Lands
- Floodline

Terrestrial Resources

- Ecological Communities
- Bobolink Locations
- Eastern Meadowlark Locatons
- Turtle Survey Locations
- Amphibian Survey Locations
- Soil Sample Locations

Aquatic Features (Beacon 2023)

- Intermittent
- Ephemeral
- Permanent
- Waterbody (Pond)
- Tiled (Underground)

Redside Dace Habitat

- Watercourse
- Meander Belt + 30 m

Code	Cultural Communities
CUM1	Mineral Cultural Meadow
CUM1-1	Dry - Moist Old Field Meadow
CUT1	Mineral Cultural Thicket
CUT1-1	Sumac Cultural Thicket
CUT1-5	Raspberry Cultural Thicket
CUW1	Mineral Cultural Woodland

Code	Aquatic Communities
OAO	Open Aquatic
SAM1-4	Pondweed Mixed Shallow Aquatic
	Forest Communities
FOD3	Dry - Fresh Poplar - White Birch Deciduous Forest
FOD4	Dry - Fresh Deciduous Forest
FOD5-5	Dry - Fresh Sugar Maple - Hickory Deciduous Forest
FOD7	Fresh - Moist Lowland Deciduous Forest
	Wetland Communities
MAM2	Mineral Meadow Marsh
MAM2-10	Forb Mineral Meadow Marsh
MAM2-2	Reed-canary Grass Mineral Meadow Marsh
MAS2-1	Cattail Mineral Shallow Marsh
SWD4	Mineral Deciduous Swamp
SWD4-1	Willow Mineral Deciduous Swamp
SWT2-2	Willow Mineral Thicket Swamp
	Other Communities
AG	Agricultural Crop
ANT	Anthropogenic

Existing Conditions

Figure 2

Natural Heritage Evaluation - Part of Lots 19, 20 and 21 Concession 5, Town of Caledon, Region of Peel

BEACON ENVIRONMENTAL

Project: 222239

Last Revised: October 2024

Client: Mayfield Golf Course Inc. and Tullamore Industrial GP Limited

Prepared by: BD
Checked by: KQ

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Table 2. Fish Species in the West Humber River Tributary (2019)

Scientific Name	Common Name
Rhinichthys atratulus	Blacknose Dace
Luxilus cornatus	Common Shiner
Etheostoma flabellare	Fantail Darter
Etheostoma nigrum	Johnny Darter
Hypentilium nigricans	Northern Hog Sucker
Ambloplitites rupestris	Rock Bass
Pimephales notatus	Bluntnose Minnow
Semotilus atromaculatus	Creek Chub
Pimephales promelas	Fathead Minnow
Rhinichthys cataractae	Longnose Dace
Etheostoma caeruleum	Rainbow Darter
Catostomus commersonii	White Sucker

TRCA public data does not offer information regarding SAR. However, the management plan (OMRF and TRCA 2005) lists Redside Dace (*Clinostomus elongatus*) as historically present throughout the intermediate riverine warmwater systems in the Humber River Watershed.

The North-South Tributary was identified in the FMP as a small riverine warmwater habitat (OMNR and TRCA 2005). This habitat category is usually made up of first and second order tributaries draining from the Peel Plain. Due to the dominance of clay soils in the Peel Plain, infiltration rates are low, as are the rates of groundwater discharge to streams. As a result, many of these tributaries are either reduced to standing pools or completely dry up during the warmer summer months (OMNR and TRCA 2005). Fish community assemblage has a low diversity and consists of warmwater species, and fish habitat is generally limited during the summer months. No fisheries data is publicly available for this tributary; however, fish community assemblage is likely similar to the West Humber River Tributary as field investigations have confirmed that water is present throughout the year and no identifiable impediments to fish movement were observed. The FMP also denotes a historical presence of Redside Dace in these systems (OMNR and TRCA 2005).

Most of the fish listed in **Table 2** are either highly tolerant species (i.e., has a low sensitivity or is adaptive to) or intermittently tolerant species (i.e., neither particularly sensitive nor insensitive) to environmental or anthropogenic stresses. All the species listed, apart from Redside Dace, are common with a widespread range throughout Ontario (Eakins 2024. Redside Dace is a federally and provincially listed endangered species that is afforded habitat protection under both the provincial ESA and the federal SARA legislation.

There are three (3) offline ponds within the subject lands that were constructed for irrigation purposes for the golf course. The FMP (2005) specifies that artificial ponds are common throughout the Humber River watershed. Artificial ponds are typically characterized as low slope, low velocity zones of sediment deposition and many are eutrophic near the bottom during summer months. Due to detention time and exposure to the sun, these waterbodies experience high summer temperatures which typically have negative impacts to downstream aquatic communities (OMNR and TRCA 2005).

4.1.1 Watercourses

Watercourses, drainage features and waterbodies on the subject lands are detailed below based on analysis of field data collected. Representative photographs of the watercourses within the subject lands are included in **Appendix B**.

4.1.1.1 West Humber River Tributary

North Parcel Reach (WHT-1)

The northwest reach was characterized as a permanent, naturally meandering feature through a densely forested (deciduous swamp) riparian area with areas of open herbaceous vegetation. Flow was moderate and the water was clear with a temperature of 15 ºC. The average wetted width and depth were 2.25 m and 0.12 m, respectively. The channel in this reach contained a varied morphology with riffle (20%) and run (80%) sections with substrate dominated by cobble (50%), gravel (20%), sand, boulder, and silt (in order of dominance). Banks were a low gradient with areas of moderate erosion (with exposed tree roots) on outer meanders. Instream cover was dominated by woody debris, cobble, and boulders (**Appendix B – Photograph 1**). No groundwater indicators were identified. Fish were observed throughout the reach. The Geomorphic Assessment identified a 40 m meander belt for this reach (Beacon 2024).

South Parcel Reach (WHT-1A)

The southeast reach was also characterized as a permanent, naturally meandering feature (**Appendix B – Photograph 2,**). However, the surrounding riparian area was contained within a defined floodplain encompassing a wet meadow marsh that transitioned to agricultural lands beyond the slope gradient of the valley. Flow was moderate, water was clear and there were no observed indicators of groundwater influence. Channel dimensions varied in width and water depth for each habitat section, however generally pooled sections had a mean wetted width of 8 m, and a wetted depth of 0.32 m and riffle sections had a mean wetted width of 1.75 m and depth of 0.05 m. The channel in this reach maintained the varied morphology seen in the upstream reach, however sections were more equally divided between pool (30%) riffle (25%) and run (25%) habitats with flat (20%) sections in lesser amounts. Riffle substrate consisted of sand, large gravel, cobble, and boulders. Pool substrate consisted of clay, sand, and gravel. Instream cover was moderate and largely provided by cobble and aquatic vegetation (filamentous algae and emergent species) with boulders and small woody debris in lesser amounts. Shore cover was low (< 30% of stream shaded) and there was no canopy cover. Banks displayed areas of high and low gradient and there was evidence of erosion (exposed bank, no vegetative growth) on outer meanders. Deposition zones consisting largely of sand and silt (10 cm deep) were observed and dry cut off chutes were forming islands within the channel. No groundwater indicators were identified. Fish were observed throughout the reach, primarily in pooled habitats. The Geomorphic Assessment identified a 55 m meander belt for this reach (Beacon 2024).

4.1.1.2 North-South Tributary

WHT-2 and WHT-3

The North-South Tributary flows diagonally across the north parcel from the northeast to the southeast to its confluence with the West Humber River Tributary on the subject lands. This tributary receives drainage from HDFs 1 through 10 (**Figure 2**). The average wetted width and depth were 0.85 m and 0.12 m, respectively. Flow was low and water was clear with a temperature of 15 ºC. The watercourse was a permanent and natural feature; however, there is evidence of slight channel modification (i.e., channelization) as the sinuosity of the channel does not mimic those of upstream and downstream reaches. The upstream reach was contained within a 2 – 5 m riparian buffer dominated by wet marsh and grass (MAM2-2 and MAM2-10) species with areas of thicket (CUT1-1) (**Appendix B – Photographs 3 and 4**). The channel was incised, and the banks were steep and well vegetated with no signs of erosion. The upstream channel substrate was composed of cobble (40%) gravel (40%), sand (15%) and silt (5%). The flow sequence followed a riffle (50%) and flat (50%) sectioning. Instream cover was provided by a combination of cobble and aquatic vegetation. Evidence of groundwater influence (i.e., *Nasturtium officinale* [watercress]) was identified in several locations throughout the upstream reach. Within the upstream reach there was no canopy providing shade.

As the tributary flows south the riparian buffer increases in width becomes dominated by a thicket (CUT1) community and overhanging vegetation and riparian undergrowth become more abundant. Channel substrate within the downstream reach of are composed of sand (35%), gravel (25%), cobble (25%), silt (10%) and clay (5%). Morphology of the tributary becomes much more naturalized, dominated by slow flowing riffle (30%), flat (20%) and run (50%) sections. Average wetted width and depth were 0.95 m and 0.07 m, respectively. Instream cover is provided by cobble, aquatic vegetation and undercut banks. No groundwater indicators were identified throughout the downstream reach. The downstream reach then continues through a deciduous forest (FOD5-5) then drains directly into the West Humber River Tributary. Fish were observed throughout the reach.

The Geomorphic Assessment identified a 50 m meanderbelt for WHT-3 and a 35 m meanderbelt for WHT-3 (Beacon 2024).

4.1.2 Offline Ponds

During the aquatic field reconnaissance, three offline ponds, primarily used for golf course irrigation, were identified within the subject lands, labelled A, B and C on **Figure 2**. Although mapping shows a connection between Pond A and the North-South Tributary, further investigations have confirmed this pond is offline. Water level within the pond is maintained by several surface level PVC overflow pipes which drain into the Tributary. Pond A has a large open water surface with limited aquatic macrophytes or algae growth (**Appendix B –Photographs 5**). The shoreline is comprised of a moderately sized vegetated buffer (1-3 m), which was lined with sedges and grasses, herbaceous plants, small patches of invasive phragmites (European Common Reed) (*Phragmites australis subsp. australis*) and a larger swath of thicket.

Pond B (**Appendix B – Photographs 6**) is an offline pond that was bordered predominantly by the manicure grass of the golf course to the southeast and a larger vegetated buffer (0.5 – 2 m) on the northwest shoreline. As noted above, Pond B appears to receive drainage from HDF-10 which originated in a small wetland depression near the eastern boundary of the north parcel.

Pond C is an offline pond bordered predominantly by forest along the northern shoreline and by manicured lawn, with patches of invasive phragmites along the southeast and west shoreline (**Appendix B – Photograph 7**). Pond C also has a large open water surface with limited aquatic macrophyte; however, algae growth is more predominant. There were no visible surface level PVC drainpipes from the shoreline. However, during the aquatic assessment of the West Humber River Tributary, three PVC drainpipes appeared to have been draining pond water into the tributary. The most southern shoreline of Pond C is approximately 65 m from the channel of the West Humber River Tributary and a large portion of the pond is with the mapped floodplain (**Figure 2**).

4.1.3 Headwater Drainage Features

As identified in the FSSR (SCS 2024), the existing surface drainage pattern for the subject lands consists of five catchment areas. Runoff from Catchment 101 (11.85 ha) and Catchment 102 (4.31 ha) is conveyed overland towards the center of the subject lands via the drainage features. The drainage features from both Catchments ultimately confluence within the subject lands and continue southwards as the North-South Tributary. Runoff from Catchment 103 (17.70 ha) is conveyed overland west towards the North-South Tributary. The North-South Tributary combines with the West Humber River Tributary at the west edge of the subject lands which then flows southeast towards an existing culvert at Torbram Road. Runoff from Catchment 104 (17.96 ha) is conveyed overland east towards an existing culvert underneath Torbram Road. Runoff from Catchment 105 (3.60 ha) is conveyed overland west towards the West Humber River Tributary and outlets along the southern boundary of the subject lands.

Ten (10) potential headwater drainage features (HDF) were identified within the north parcel and two (2) features were identified within the south parcel. Representative photographs of the drainage features on the subject lands are included in **Appendix B (Photographs 8 to 23)**.

HDF 1 & 2

These features originated in the northwest portion of the subject lands and received drainage from the neighbouring agricultural fields. The features exhibited areas of standing water in early spring and were dry by the late spring investigation. HDF 1 measured 0.3 m wide, while HDF 2 measured 0.7 m wide. The features may provide ephemeral drainage during spring freshet and during large precipitation events via undefined grassy swales to the North-South Tributary. The swales exhibited no substrate or riparian buffers. Multiple corrugated steel pipe (CSP) culverts, to conveyed flow under the cart path crossings, were observed along both features.

HDF 3

This feature was broken up into three segments to address the conditions in each of the branches and downstream of their confluence. HDF 3A and 3B originated in the northwest portion of the subject lands and received drainage from the neighbouring farm field. HDF 3A and 3B merge to form HDF 3C.

HDF 3A exhibited substantial flow during early spring and minimal flow by the late spring investigations. The channel width was 1 m and was heavily vegetated with cattail and Phragmites species. The riparian vegetation extended approximately 3 m from the channel on both banks.

Multiple 1 m CSP culverts conveyed flow under the cart path crossings. Water depth of the scour pool associated with the culvert was 0.2 m.

HDF 3B was tiled, with an undefined grassy swale remaining on the surface. Flow was observed exiting the tile drain during the early spring investigation. No water was present during the late spring investigation.

HDF 3C exhibited substantial flow during early spring and minimal flow during the late spring investigations. The channel width was 1.4 m and was heavily vegetated with cattail (*Typha spp.*) and European Common Reed). Measurements were taken during the Round 2 investigation. Water depth was 5 cm, hydraulic head was 3 mm, and bankfull depth was 0.28 m. The riparian vegetation extended approximately 3 m from the channel on both banks. A double 1 m CSP culvert conveyed flow under the cart path crossing. Sand was the dominant substrate; gravel was the sub-dominate substrate. Deposition measuring 3 cm was noted on the banks. No barrier to fish movement was present at the downstream limit of HDF 3C and it is possible that fish from the North-South Tributary could seasonally access the feature.

All features in HDF-3 were observed to be dry during the round three headwater assessment completed in September 2023.

HDF 4

This feature was broken up into three segments to address the conditions in each of the branches and downstream of their confluence. HDF 4A and 4B originated in the southwest portion of the subject lands and received drainage from the neighbouring farm field. HDF 4A and 4B merge to form HDF 4C.

HDF 4A was a surface feature for a small section (i.e., the upstream extent within the subject lands) then became a tiled feature, with a poorly defined grassy swale on the surface. HDF 4B was a poorly defined, grassy swale. Both features exhibited standing water in early spring and were observed to be dry by the late spring investigation. A golf cart path crossed both features at several locations along their respective segments; at these crossings CSP culverts (averaging 0.3 m in diameter) conveyed flow downstream.

HDF 4C exhibited substantial flow in early spring and minimal flow during the late spring investigations. The tile drain associated with HDF 4A outlets within the wooded area associated with the West Humber Tributary. Measurements were taken during the Round 2 investigation. The channel width was 0.65 m, the water depth was 10 cm, the hydraulic head was 3 mm, and the bankfull depth was 0.3 m. No instream or riparian vegetation was observed. Woody debris was present. Cobble was the dominant substrate; sand was the sub-dominate substrate. No barrier to fish movement was present at the downstream limit of HDF 4C and it is possible that fish from the North-South Tributary could seasonally access the feature.

All features in HDF-4 were observed to be dry during the round three headwater assessment completed in September 2023.

HDF 5 & 6

These small (i.e., less than 30 m in length) features originated directly adjacent to Pond A. They were both observed to be dry during the early spring investigations. HDF 5 appeared to drain overland flow from the backyard of an adjacent residential property. HDF 6 was a tiled feature that appeared to provide drainage to the manicure golf course greens to the south.

HDF 7

This feature originated in the central portion of the subject lands, east of the North-South Tributary. The undefined grassy swale appeared to provide surface drainage to the manicure golf course greens to the east. The feature was dry during the early spring investigations. This feature may convey very early spring freshet and lar precipitation events to the North-South Tributary.

HDF 8

This feature was observed as a narrowly defined swale that drained southwest through a steeply sloped thicket (CUT1) and wooded community (FOD4) associated the staked stream corridor of the North-South Tributary. A small wetland depression, dominated by cattails (MAS2-1), was present at the bottom of the slope. From the wetland depression, the feature continues as an undefined grassy swale to a CSP culvert that drains it under a golf cart path into the dense riparian vegetation of the Tributary. During the early spring investigation, the feature was damp with areas of standing water and small sections of minimal flow (in areas of steep slopes). By late spring the feature was observed to be dry; apart from standing water noted within the small wetland depression.

HDF 9

This small feature originated at the top of the slope associated with the stream corridor of the North-South Tributary. This feature was poorly defined throughout the wooded (FOD4) corridor. The feature was observed to be dry in the early spring. This feature may convey very early spring freshet and large precipitation events to the North-South Tributary.

HDF 10

This feature originated in a small wetland (MAS2-1) depression (dominated by cattails) near the eastern boundary of the north parcel. From the wetland, a poorly defined grass swale was observed to traverse south to its confluence with Pond B. The wetland contained standing water in throughout both spring investigations, however the feature was observed to be dry throughout its length during both spring investigations. This feature may convey very early spring freshet and large precipitation events to the North-South Tributary.

HDF 11

This feature is the uppermost reach of a feature that drains southeast of subject lands. The feature appears to drain a large, ponded depression in the centre of the cultural meadow (CUM1) on the tablelands west of the West Humber River Valley. The feature was an undefined grassy swale until the fence line along the southern boundary; at which point it transitioned to a narrow, incised feature that traversed through an agricultural field south of the south parcel. Apart from the standing water observed within the ponded depression, the feature was dry during the early spring investigation. This feature may convey very early spring freshet and large precipitation events south of the subject lands.

HDF 12

This feature originated directly north of the south parcel on the west side of the tablelands. The feature was an undefined swale with a small depression of standing water within the agricultural field. There was also standing water upstream of a CSP culvert that provided drainage of the feature into the roadside ditch. An additional CSP culvert, facilitated drainage of the roadside ditch under Torbram Road. This feature may convey very early spring freshet and large precipitation events east of the subject lands.

4.1.3.1 Drainage Feature Management Recommendation

With respect to management of existing functions through the replication of primary functions for HDF 1 through 12 features, **Table 3** below provides an assessment following the HDFA Guidelines. A summary table of the functional classifications and the management recommendations is provided in **Appendix C.**

Table 3. Summary of Drainage Feature Management Recommendations

Drainage Feature Segment	Output from HDFA	Final Management Recommendations	Comments/Rationale
HDF 1	Mitigation	No Management	Ephemeral flow conditions, no meadow riparian vegetation or cover, no fish habitat, and no breeding amphibians.
HDF 2	Mitigation	No Management	Ephemeral flow conditions, no meadow riparian vegetation or cover, no fish habitat, and no breeding amphibians.
HDF 3A	Conservation	Conservation	No change in management recommendation. Feature segment shall be maintained within the Natural Heritage System (NHS).
HDF 3B	Mitigation	Mitigation	No change in management recommendation.
HDF 3C	Protection	Protection	No change in management recommendation. Feature segment shall be maintained within the NHS.
HDF 4A	Mitigation	Mitigation	No change in management recommendation.
HDF 4B	Mitigation	Mitigation	No change in management recommendation.
HDF 4C	Protection	Protection	No change in management recommendation. Feature segment shall be maintained within the NHS.
HDF 5	No Management	No Management	No change in management recommendation. Feature segment shall be maintained within the NHS.
HDF 6	No Management	No Management	No change in management recommendation. Feature segment shall be maintained within the NHS.
HDF 7	No Management	No Management	No change in management recommendation. Feature segment shall be maintained within the NHS.
HDF 8	Conservation	Mitigation	Change from Conservation to Mitigation based on presence of maintained treed area being sole factor for elevated management recommendation. Feature segment shall be maintained within the NHS.
HDF 9	Maintain/ Replicate Terrestrial	Maintain/ Replicate Terrestrial	No change in management recommendation. Feature segment shall be maintained within the NHS.
HDF 10	Mitigation	Mitigation	No change in management recommendation. Feature segment shall be maintained.
HDF 11	No Management	No Management	No change in management recommendation.
HDF-12	No Management	No Management	No change in management recommendation.

4.1.4 Fish Habitat

The West Humber River Tributary and the North-South Tributary support a warmwater thermal regime with a cool to warm species assemblage. Although no fish were observed in HDF 3C and 4C, it was determined that the downstream reaches of these features may provide direct (although seasonal) fish habitat for the more tolerant species identified within the West Humber River Tributaries based the presence of refuge pools, seasonal flow, and connection to a fish bearing watercourse. The ephemeral (i.e., dry after spring freshet) flow conditions, dense vegetative growth (in the late spring and summer) and/or the prevalence of tiled reaches limit fish movement into the upstream reaches of these features. All other HDFs contribute to allochthonous inputs (detritus/invertebrates) to downstream fish-bearing reaches and therefore provide indirect fish habitat.

The three offline ponds within the subject lands may support fish populations. However, the protection prohibitions of the *Fisheries Act* do not apply to certain "prescribed waterbodies", which includes artificial waterbodies (e.g., ponds currently and historically used for golf course irrigation) that are not connected to a waterbody that contains fish at any time during any given year. Review of the historical aerial imagery, provided in the Geomorphic Assessment (Beacon 2024), the ponds within the subject lands appear to have originated naturally as depressions or wetland features. However, they have been historically modified (e.g., dug) to support the golf course irrigation requirements for over 45 years. Although the ponds have been identified as offline to the surrounding fish bearing waterbodies, Pond A and C likely contain fish as they are either partially or fully with the floodplains of the West Humber River Tributaries. Although Pond A and C are man made/created (artificial), they may have a potential connection to the West Humber River Tributaries only during large flood events and therefore the fish habitat protection provisions under the *Fisheries* Act may apply to these features and any alteration will require DFO review (refer to **Section 2.1**). Pond B, however, does meet the exception requirements for a waterbody where the prohibitions do not apply.

Both the West Humber River Tributary and the North-South Tributary are considered habitat for Redside Dace. Refer to Section 4.3.1.1 for further discussion.

4.2 Terrestrial Resources

4.2.1 Vegetation Communities

Much of the subject lands consist of an active golf course with rolling topography. The North-South Tributary stream corridor is centrally positioned within the subject lands and supports a variety of habitats including wetlands, woodlands, thickets, meadows, and ponds. The lands in the south parcel consist of thicket and meadow communities within the valley corridor of the West Humber River Tributary surrounded by active cropped agriculture. Vegetation communities identified within the subject lands are illustrated in **Figure 2** and photographic record of each community is provided in **Appendix B.**

The portions of the subject lands that have been classified as Anthropogenic (ANT) are primarily associated with the existing golf course. This is not considered a formal ELC community according to the provincial methodology, however, is included as a representation of the ongoing land use at this location. Vegetation in this area consists of manicured turf and trees, along with a patchwork of planted deciduous and coniferous trees and shrubs.

Trees included Silver Maple (*Acer saccharinum*), Scots Pine (*Pinus sylvestris*), White Pine (*Pinus strobus*), White Spruce (*Picea glauca*), Colorado Blue Spruce (*Picea pungens*), American Basswood (*Tilia americana*), Red Oak (*Quercus rubra*), Norway Maple (*Acer platanoides*), Common Hackberry (*Celtis occidentalis*), and Carolina Poplar (*Populus x canadensis*). Refer to **Appendix B – Photograph 24**.

There are two Agricultural (AG) fields located within the south parcel of the subject lands. At the time of surveys there were row crops of corn planted. Like anthropogenic areas, agricultural lands are not considered a formal ELC community, but recorded to document current land use.

4.2.1.1 Cultural Communities

Dry-Moist Old Field Meadow (CUM1-1)

There are several meadows within the subject lands dominated by cool season grasses including but not limited to Kentucky Blue Grass (*Poa pratensis*), Smooth Brome (*Bromus inermis*), Common Timothy (*Phleum pratensis*), Canada Goldenrod (*Solidago canadensis*), New England Aster (*Symphyotrichum novae-angliae*) along with Common Milkweed (*Asclepias syricia*), Queen Anne's Lace (*Daucus carota*), and St. John's Wort (*Hypericum perforatum*). On this basis, the meadows are characterized as dry-moist old field meadow communities (CUM1-1). Some of the meadow communities had shrub or sapling cover given the adjacent cultural thickets and wooded areas in the vicinity. Other plants noted within these meadow communities included Canada Thistle (*Cirsium arvense*), Lesser Burdock (*Arctium minus*), Cow Vetch (*Vicia cracca*), and Annual Fleabane (*Erigeron annuus*). Refer to **Appendix B – Photograph 25**.

The CUM1-1 community within the southwestern corner is slightly different than the other CUM1-1 units as it includes scattered mature Basswood and shrubs such as European Buckthorn (*Rhamnus cathartica*) and hawthorns (*Craetagus* spp.). In addition to the cool season grasses with the southwest CUM1-1 community, other species include but are not limited to Curled Thistle (*Carduus crispus*), Wild Teasel (*Dipsacus fullonum*), Garden Bird's-foot Trefoil (*Lotus corniculatus*), Ox-eye Daisy (*Leucanthemum vulgare*), and Elecampane (*Inula helenium*). Relatively large sections of the southwest CUM1-1 community is dominated by Common Reed (*Phalaris arundinacae*). Refer to **Appendix B – Photograph 26**.

Common Reed can grow in a variety of moisture regimes (i.e., dry to wet) and is considered a wetland indicator plant under the Ontario Wetland Evaluation System (OWES). As such, during the field staking site visit on August 28, 2023, TRCA staff requested soil sampling to be completed within this area to confirm the presence/absence of hydric soils. Hydric soils are formed through prolonged periods of water saturation or flooding and their formation could indicate a potential wetland.

A total of six soil samples were taken within the CUM1-1 community in the southwest corner of the subject lands as shown in **Figure 2**. Soils within the upper portions of the samples (i.e., ranging between an average of 0 cm to 40 cm) included loam, silty clay loam, silt loam, and in one sample, sandy clay. Soils within the lower portions of the samples (i.e., ranging between an average of 40 cm to 60 cm) included silty clay, silt loam, loam, and clay loam. Mottles occurred in five of the samples at depths of 30 cm to 60 cm. Using the "Soil Description" section of the ELC system for southern Ontario (Lee *et al*. 1998), drainage was determined to range between moderately well/imperfect to imperfect/poor and the soil moisture regime was determined to range between moderately moist to moist.

On this basis, the soil samples were determined not to be hydric soils as the soil moisture regime was outside/below the "wet" range of hydric soils.

Cultural Thicket (CUT1)

The CUT1 units on the lands were dominated by shrub cover which was predominantly European Buckthorn or hawthorns with lesser amounts of Staghorn Sumac (*Rhus typhina*) along the fringes of the more open communities (**Appendix B – Photograph 27**). The CUT1 units within the south parcel were generally more open and contained higher amounts of Hawthorn, as well as European Buckthorn, and Common Apple (*Malus pumila*). There was a few scattered mature Sugar Maple, and Basswood present. Staghorn Sumac was absent from the southern CUT1 communities (**Appendix B – Photograph 28**). European Buckthorn was widespread throughout the north parcel and most of the noted CUT1 communities, along with regeneration progressing into adjacent non-thicket areas.

Sumac Cultural Thicket (CUT1-1)

Like the CUT1 community noted above, the CUT1-1 unit was predominantly composed of Staghorn Sumac, with lesser amounts of European Buckthorn.

Raspberry Cultural Thicket (CUT1-5)

This thicket community occurred in one location on the subject lands in the valleyland bottom and was dominated by Red Raspberry (*Rubus idaeus*) canes.

Mineral Cultural Woodland (CUW1)

This cultural woodland community is located within the southern boundary of the golf course lands. The species composition of CUW1 is planted White Spruce, White Pine, and Tamarack (*Larix laricina*) as well as planted and regenerating Black Walnut (*Juglans nigra*). There is some European Buckthorn within the understory. Common meadow species occur in canopy gaps and along the woodland edges. Refer to **Appendix B – Photograph 29**.

4.2.1.2 Woodland Communities

Dry-Fresh Poplar – White Birch Deciduous Forest (FOD3)

There is a large FOD3 community located southwest corner of the north parcel. The FOD3 community is associated with the valley of the West Humber River Tributary. It is separated from the adjacent mineral swamp community (SWD4) by a ridge that transects the communities east to west. The canopy is composed of primarily Large-toothed Trembling Aspen (*Populus grandidentata*), Sugar Maple (*Acer saccharum*), Black Cherry (*Prunus serotina*), Red Oak, American Elm (*Ulmus americana*), and dead Ash (*Fraxinus* sp.). There is a relatively small coniferous Scots Pine plantation (CUP3-3) inclusion within woodland.

The understory and ground layers are relatively dense and include Ironwood (*Ostrya virginiana*) and Northern Bush-honeysuckle (*Diervilla lonicera*) in the drier ridge areas, and European Buckthorn, and Chokecherry (*Prunus virginiana*) in the tableland sections. Other species present include Garlic Mustard (*Alliaria petiolata*), Broad-leaved Enchanter's Nightshade (*Circaea canadensis*), Virginia Waterleaf (*Hydrophyllum virginianum*), and Bloodroot (*Sanguinaria canadensis*), among others. Refer to **Appendix B – Photograph 30**.

Dry-Fresh Deciduous Forest (FOD4)

One FOD4 community was delineated in the central portion of the north parcel. Much of the FOD4 unit exists on the downslope into the valley and stream corridor of both the West Humber River tributaries and along the shoreline of Pond C. Tree species found here included Manitoba Maple (*Acer negundo*), Black Walnut and White Ash (*Fraxinus americana*) with a dominant shrub layer of European Buckthorn. Other species noted included Wild Strawberry (*Fragaria vesca*), Wood Avens (*Geum urbanum*), Wild Grape (*Vitis riparia*), Zigzag Goldenrod (*Solidago flexicaulis*), Garlic Mustard, and Choke Cherry. Several of the ash trees in the canopy of the FOD4 were in poor condition or dead.

Dry-Fresh Sugar Maple - Hickory Deciduous Forest (FOD5-5)

One FOD5-5 vegetation unit was delineated in the north parcel along the north bank of the North-South tributary corridor. The community was composed of a variety of tree species such as Manitoba Maple, Sugar Maple, Bitternut Hickory (*Carya codiformis*), Ironwood, and American Elm (*Ulmus americana*), with an abundance of European Buckthorn in the lower layers.

Wetland vegetation was noted as an inclusion along the tributary corridor and included Orange Jewelweed (*Impatiens capensis*), Watercress (*Nasturtium officinale*) and Swamp Dodder (*Cuscuta gronovii*), with upland vegetation persisting on either side.

Fresh-Moist Lowland Deciduous Forest (FOD7)

One FOD7 forest community was recorded along the southernmost limit of the subject lands and continued offsite to the south. The dripline and only a few individual trees extended onto the site. The community was generally surveyed from the south parcel boundary and viewed 50 m into the wooded area. The canopy was composed of primarily White Willow, and Manitoba Maple. The understory was dense with European Buckthorn. Other species noted include Wood Avens, Garlic Mustard, Wild Grape, Herb-Robert (*Geranium robertianum*), and Ground-ivy (*Glechoma hederacea*).

4.2.1.3 Wetland Communities

Forb Mineral Meadow Marsh (MAM2-10)

Several MAM2-10 units were present on the lands and generally are within the riparian areas surrounding HDF 3 and the North-South Tributary. Botanical composition included Reed Canary Grass, Field Horsetail (*Equisetum arvense*), Curly Dock (*Rumex crispus*), Lance-leaved Aster (*Symphyotrichum lanceolatum*), Joe Pye-weed (*Eutrochium maculatum*), Purple Loosestrife (*Lythrum salicaria*), Grass-leaved Goldenrod (*Euthamia graminifolia*), Orange Jewelweed and Tall Goldenrod (*Solidago altissima*). Patches of the non-native and invasive Common Reed (*Phragmites australis*) were noted periodically throughout these communities. Refer to **Appendix B – Photograph 31**.

Reed Canary Grass Mineral Meadow Marsh (MAM2-2)

Two MAM2-2 units occur within the subject lands. The larger unit occurs in the northernmost portion of the subject lands and is associated with the riparian area surrounding the North-South Tributary. The second unit is within the valley of West Humber River Tributary on the south parcel. The meadow marsh is almost entirely composed of Reed Canary Grass, with lower abundances of wetland plants noted within the MAM2-10 units.

Cattail Mineral Shallow Marsh (MAS2-1)

Two MAS2-1 units were noted within the subject lands; one isolated within the active golf course and one within the valley of the West Humber River. Both units were dominated by cattail species. A few others were noted including Bittersweet Nightshade (*Solanum dulcamara*), Blue Vervain (*Verbena hastata*), Purple Loosestrife (*Lythrum salicaria*) and Stinging Nettle (*Urtica dioica*). Refer to **Appendix B – Photograph 32**.

Mineral Deciduous Swamp (SWD4)

Deciduous swamp units were identified in the lower valley of the West Humber River Tributary within the north parcel. Tree species included White Willow (*Salix alba*), Balsam Poplar (*Populus balsamifera*), Manitoba Maple, Black Maple (*Acer nigrum*), along with both White and Green Ash (*Fraxinus pennsylvanica*). Red-osier Dogwood (*Cornus sericea*) and European Buckthorn were abundant in the understory. Along the community edges and canopy openings the vegetation was dense and included Spotted Jewelweed, Joe Pye Weed, Swamp Dodder, Virginia Clematis (*Clematis virginiana*), Rice Cutgrass (*Leersia oryzoides*), and Red Raspberry. In areas with increased shade, the ground layer was sparse, and included Thicket Creeper (*Parthenocissus vitacea),* Forget-me-not (*Myosotis stricta*), Bittersweet Nightshade, and Ostrich Fern (*Matteuccia struthiopteris*).

Areas adjacent to the watercourse were dry during time of surveys, however there was evidence of inundation of water within the floodplain. There was a large amount of wood debris and fallen trees within the community. Refer to **Appendix B – Photograph 33**.

Willow Mineral Deciduous Swamp (SWD4-1)

The SWD4-1 unit was composed of mature Weeping Willow (*Salix sepulcralis*) trees in the northern portion of the north parcel, along with Balsam Poplar and Freeman's Maple (*Acer x freemanii*).

Willow Mineral Thicket Swamp (SWT2-2)

A small SWT2-2 unit was noted along the edge of Pond B and was completed composed of young and regenerating willow shrubs such as Missouri Willow (*Salix eriocephala*) and Sandbar Willow (*Salix interior*).

4.2.1.4 Aquatic Communities

Open Aquatic (OAO) - Offline Ponds

There are two large ponds (identified as Pond A and C in **Figure 2**) within north parcel that have been characterized as OAO based on their size and apparent depth. These ponds are fringed with little to no wetland vegetation. Refer to **Appendix B – Photograph 34**.

Pondweed Mixed Shallow Aquatic (SAM1-4)

The smallest pond (identified as Pond B in **Figure 2**) was much more naturalized and biodiverse than the OAO communities and contained a mixture of upland and wetland vegetation along the fringe. Submerged and floating vegetation included charotype green algae (*Chara* spp.), Common Duckweed (*Lemna minor*), Canada Waterweed (*Elodea canadensis*), and Hornwort (*Ceratophyllum demersum*). Emergent vegetation along the edges included Narrow-leaved Cattail, Fox Sedge (*Carex vulpinoidea*), Water Plantain (*Alisma plantago-aquatica*), Broadleaf Arrowhead (*Sagittaria latifolia*) and Soft-stem Bulrush (*Schoenoplectus tabernamontanii*). Refer to **Appendix B – Photograph 35.**

4.2.2 Arborist Report

A Tree Inventory and Assessment Report prepared by Schollen and Company Inc. (2023) was prepared under a separate cover.

A total of 980 trees were assessed within the proposed development site. The recorded species were comprised of a mix of planted and naturalized tree species, most commonly identified as Silver Maple, Scots Pine, Colorado Spruce, American Basswood, Eastern White Pine (*Pinus strobus*), Norway Maple, White Spruce and Red Oak.

4.2.3 Floral Inventory

A total of one hundred sixty-one (161) plant taxa were observed on the subject lands (**Appendix D**) with over one third (42%) being non-native plant species (ranked L+ or L+? by the TRCA). The high number of exotic species reflects the disturbed nature of the site, and large number of cultural and anthropogenic communities. No floral SAR were recorded on the subject lands.

Most native plant species are ranked provincially as S5 (Secure) except for Common Hackberry (*Celtis occidentalis*), Lance-leaved Tickseed (*Coreopsis lanceolata*), Running Strawberry-bush (*Euonymus obovatus*), Red and White Ash, Michigan Lily (*Lilium michiganense*), and Black Willow (*Salix nigra*) that are ranked provincially as S4 (Apparently Secure). The Common Hackberry were of planted origin and the Lance-leaved Tickseed often used as an ornamental plant were likely a garden escapee within the north parcel.

Water Plantain, Running Strawberry-bush, Tamarack, Michigan Lily, White Spruce, and Black Willow are ranked as L3, and Red Pine ranked L1 by the TRCA, and were located within the FOD3, SWD3, CUW1, SAM1-4 communities on the subject lands. L3 species are tolerant to minor disturbances and are generally secure within natural areas. While Red Pine is ranked L1, they are frequently utilized for shelterbelts and as landscape trees and were of planted origin on the subject lands.

Hornwort, Swamp Dodder, Canada Waterweed, White Spruce, Red Pine, Greater Water Dock (*Rumex Britannica*), Sandbar Willow, and Black Willow generally located within the SAM1-4, SWD3, and CUW1 communities are listed as rare in Peel Region by Varga (2005). Likewise, Common Hackberry, Canada Wildrye (*Elymus canadensis*), Red Pine, and Black Willow located within the ANT and CUM1-1 units are also listed as rare in the GTA by Varga (2005). All the aforementioned species are widespread provincially and ranked as S4 or S5.

4.2.4 Breeding Birds

The breeding bird data sets have been separated into areas of study: the north parcel, and the south parcel. Data for the north parcel was collected in 2022 and data for the south parcel was surveyed in 2023.

North Parcel

A total of 51 species were documented within the north parcel in 2022 (**Appendix E**). This diversity is reflective of the variable habitats present within the north parcel, including woodlands, swamps, meadows, ponds, marshes, and open manicured space. Observations were generally well distributed through the lands, however, were slightly more concentrated around the habitat fringes and transition zones. The open habitat within the north parcel offered the least habitat for nesting birds.

The avian community is comprised of species indicative of both rural and urbanizing settings. The most abundant species included the following, with over seven separate observations: American Robin (*Turdus migratorius*), Chipping Sparrow (*Spizella passerina*), Song Sparrow (*Melospiza melodius*), Red-winged Blackbird (*Agelaius phoeniceus*), Yellow Warbler (*Setophaga petechia*) and Savannah Sparrow (*Passerculus sandwichensis*).

Other species with multiple observations included Black-capped Chickadee (*Poecile atricapillus*), House Wren (*Troglodytes aegon*), Red-bellied Woodpecker (*Melanerpes carolinus*), Gray Catbird (*Dumetella carolinensis*) and Willow Flycatcher (*Empidonax traillii*).

Most of the breeding records were of common disturbance-tolerant species often found near human habitation. Several habitat specialists were noted in association with their preferred habitats, including species tied to woodlands, species tied to wetlands and species of the open country. Woodland communities supported breeding forest birds such as Great Crested Flycatcher (*Myiarchus crinitus*), Eastern Wood-pewee (*Contopus virens*), Red-eyed Vireo (*Vireo olivaceus*), American Redstart (*Setophaga ruticilla*) and Rose-breasted Grosbeak (*Pheucticus ludovicianus*), whereas the wetlands supported Red-winged Blackbirds, Yellow Warblers and Common Yellowthroat (*Geothlyphis trichas*). Open country or grassland species were recorded as breeding such as Horned Lark (*Eremophila alpestris*), Eastern Meadowlark (*Sturnella magna*), Savannah Sparrow and Vesper Sparrow (*Pooecetes gramineus*). The habitat types on the subject lands were generally represented by a fairly diverse avian community.

Area-sensitive birds require larger tracts of suitable habitat in which to breed or are those that have a higher breeding success in larger areas of suitable habitat. Five such species were recorded. Three of these are forest-sensitive species which requires large areas of woodland habitat in which to breed successfully (American Redstart, Least Flycatcher and Hairy Woodpecker). The remaining two, Savannah Sparrow and Eastern Meadowlark, are grassland-sensitive species requiring large areas of open habitat for successful breeding. While Savannah Sparrow is a common breeder in a wide variety of such open habitats, including old-field and agricultural edge habitat, Eastern Meadowlark are less common, less tolerant to disturbance.

The TRCA has developed a species sensitivity ranking system from L1-L5, with the L5 species being the commonly encountered, urban tolerant and secure individuals. Species between L1 and L3 are considered species of conservation concern. Many of the birds that were present on this location were either L4 or L5. Five L3 species were present and are less commonly encountered. These were Brown Thrasher (*Toxostoma rufum*), Eastern Meadowlark, Least Flycatcher (*Empidonax minimus*), Vesper Sparrow and Wild Turkey (*Meleagris gallopavo*).

Although no species provincially ranked as S1 through S3 (Critically Imperiled through Vulnerable) were encountered, one species regulated under the ESA were recorded: Eastern Meadowlark. This bird is listed as Threatened federally and provincially and breeds in a variety of grassland habitats including hayfields, pasturelands, and weedy meadows. Its populations initially increased in Eastern Canada following settlement and the clearance of forests in favor of pasturelands and hayfields, but it has faced decline since the mid-20th century due to changes in agricultural practices (COSEWIC 2011). One territory of this species was observed (**Figure 2**).

Additionally, two species listed as Special Concern, Eastern Wood-Pewee and Barn Swallow (*Hirundo rustica*), were observed breeding at this location. Firstly, with respect to Eastern Wood-pewee, these birds are special concern provincially and federally based on a declining trend over their range, these birds remain relatively common in both urban and urbanizing woodlands. They are somewhat tolerant of forest fragmentation and will live in both edge habitats and forest interiors. Special Concern species are not afforded with habitat protection under the ESA. Barn Swallow were recorded on site foraging throughout, with one presumed nesting location in a golf course building.

South Parcel

Breeding bird surveys on the south parcel revealed the presence of 29 breeding species, with an additional one species noted as foraging on site and not breeding. This work was completed in 2023 and is provided in **Appendix E**.

The landscape for the south lands differs from the north parcel described above, and therefore supported a different avian community. Much of these lands are open meadow, marsh or agricultural. The breeding bird species were reflective of this with Red-winged Blackbirds, Bobolink (*Dolichonyx oryzivorus*) and Savannah Sparrow being the most abundant species. A total of eight, seven and six pairs of each were noted, respectively. All the birds observed in the south lands had been previously observed in the north parcel, apart from Eastern Towhee (*Pipilio erythrophtalmus*).

The area-sensitive birds were largely the same and included Hairy Woodpecker, American Redstart, Savannah Sparrow, and Bobolink. The latter species represents the only species protected by the ESA on the south parcel, however these birds were observed in relatively high numbers within the suitable habitat, totalling seven territories or pairs (**Figure 2**).

Like the north parcel, four species of conservation concern according to the TRCA L-ranking system were identified. These were Brown Thrasher, American Redstart, Eastern Towhee and Bobolink.

4.2.5 Breeding Amphibians

The results of the nocturnal amphibian call surveys are summarized in **Table 3**. Amphibian vocalizations were studied at seven locations throughout the subject lands as illustrated on **Figure 2**.

Vocalizations of four species were present: Wood Frog (*Lithobates sylvaticus*), Green Frog (*Rana clamitans*) Gray Treefrog (*Hyla versicolor*) and American Toad (*Anaxyrus americanus*). In addition to the data presented in the table below; visual and auditory observations of these species were made outside of the station boundaries and elsewhere within the subject lands. Leopard Frogs (*Lithobates pipiens*) were also visually encountered on the lands during unrelated fieldwork; however, this species was not detected during the vocalization surveys. The call code (CC) and total number of individuals recorded is provided alongside each station and survey, where appropriate.

Table 4. Amphibian Call Survey Findings

Location	Survey 1	Survey 2	Survey 3
1	American Toad (CC2 - 2 individuals)	None heard	None heard
2	None heard	None heard	None heard
3	None heard	None heard	Green Frog (CC1 – 2 individuals); Gray Treefrog (CC1 – 1 individual)
4	None heard	None heard	None heard
5	None heard	Green Frog (CC 1 - 1 individual); Gray Treefrog (CC2 -2 individuals)	Green Frog (CC1 – 2 individuals); American Toad (CC1-1)
6	None heard	Green Frog (CC 1 - 1 individual); Gray Treefrog (CC2 -2 individuals)	Green Frog (CC1 - 2 individuals); Gray Treefrog (CC 2 – 4 individuals); American Toad (CC2-2)
7	Wood Frog (CC 1 - 2 individual); American Toad (CC1 – 1 individual)	None heard	Gray Treefrog (CC 1 – 2 individuals)

The amphibians that were encountered implement different overwintering strategies, with Green Frogs and Leopard Frogs overwintering aquatically and Wood Frogs and American Toads overwintering terrestrially. The aquatic overwintering species require a year-round water source of sufficient depth such that the ponds do not entirely freeze.

4.2.6 Turtle Basking Surveys

Basking surveys took place and targeted the wetland communities on the lands that offer potential turtle habitat. These areas are depicted on **Figure 2**.

Several Midland Painted Turtle (*Chrysemys picta*) and Snapping Turtle (*Chelydra serpentina*) observations were made throughout the wetland and pond features within the subject lands, with observation detailed outlined below in **Table 4**. The table below presents the data from the targeted basking surveys, however additional observations of the same species in greater numbers were made during unrelated fieldwork. For example, in September 2022 there were approximately seven (7) large Snapping Turtles observed in Pond C (OAO) within valley of West Humber River Tributary, and thirteen (13) Midland Painted Turtles along with four (4) Snapping Turtles within Pond B (SAM1-4 community).

Table 5. Turtle Survey Findings

Location	Survey 1	Survey 2	Survey 3
1	No turtles	No turtles	No turtles
2	6 Midland Painted Turtles	1 Snapping Turtle	4 Midland Painted Turtles
3	6 Midland Painted Turtles	6 Midland Painted Turtles and 2 Snapping Turtles	1 Midland Painted Turtle
4	1 Midland Painted Turtle and 1 Snapping Turtle	1 Snapping Turtle	4 Snapping Turtles
5	No turtles	No turtles	No turtles

In addition to this data, Beacon was informed by golf course staff that Snapping Turtles are somewhat regularly encountered traveling through the north parcel between wetland communities and have been relocated to the Pond C in the valley corridor (**Figure 2**).

Adults and younger individuals of both these species were present, suggesting they nest successfully on the subject lands. The persistence of these animals along with the presence of suitable habitat suggests they are likely overwintering in the deeper ponds as well.

4.2.7 Incidental Wildlife

Several incidental wildlife species were recorded during field investigations within the subject lands. Mammal species recorded included Beaver (*Castor canadensis*), Muskrat (*Ondatra zibethicus*), White-tailed Deer (*Odocoileus virginianus*), and Grey Squirrel (*Sciurus carolinensis*). Evidence of Coyote (*Canis latrans*) presence within the subject lands was also recorded.

Other common mammal species that are likely present on and adjacent to the subject lands include Raccoon (*Proycon lotor*), Striped Skunk (*Mephitis mephitis*), Meadow Vole (M*icrotus pennsylvanicus*) and/or Red Fox (*Vulpes vulpes*). Two snake species Eastern Gartersnake (*Thamnophis sirtalis sirtalis*) and Dekay's Brownsnake (*Storeria dekayi*) were both observed on the subject lands.

4.3 Endangered or Threatened Species

As described in the preceding sections, Beacon staff conducted both desktop and on-site investigations to assess whether any Endangered or Threatened species were likely to occur on or adjacent to the subject lands. **Table 6** provides Beacon's assessment based on the results of field investigations combined with knowledge of the habitat preferences and natural history of the species being considered.

Table 6. Endangered and Threatened Species (Provincial)

Species	Status on SARO List	Were Species and/or Habitat Documented during on-site Assessment?
Vascular Plants (Dicots)		
Butternut, *Juglans cinerea*	END	**No,** a targeted search for Butternut trees (*Juglans cinerea*) was conducted and no Butternut were found to be present within the subject lands. This species is a provincially and nationally endangered tree species that, while still relatively common in southern Ontario, has been listed because the population has been declining due to the presence of a Butternut Canker disease.
Fish		
Redside Dace, *Clinostomus elongatus*	END	**Yes,** both West Humber River Tributary and the North-South Tributary are identified as regulated Redside Dace habitat.
Birds		
Bank Swallow, *Riparia riparia*	THR	**No**, vertical exposed banks (suitable habitat) are not present at this location. No Bank Swallow were recorded during breeding bird surveys.
Chimney Swift, *Chaetura pelagica*	THR	**No**, a habitat assessment was conducted, and suitable habitat was not identified. These birds typically nest in uncapped vertical chimney columns. No foraging individuals were recorded during the 2022 or 2023 breeding season.
Bobolink, *Dolichonyx oryzivorus*	THR	**Yes,** grassland habitat is present on the subject lands. Bobolink were present breeding within the south parcel as well as on the fringe of the north parcel in an area slated for future development. These areas are shown on **Figure 2**.
Eastern Meadowlark, *Sturnella magna*	THR	**Yes,** grassland habitat is present within the subject lands. One occurrence of Eastern Meadowlark breeding was identified within the north parcel. These areas are shown on **Figure 2**.
Acadian Flycatcher, *Empidonax virescens*	END	**No**, the subject lands are generally outside of the range for this species, and none were recorded during breeding bird surveys. These birds utilize mature forests on both their breeding and wintering grounds.
Prothonotary Warbler, *Protonotaria citrea*	END	**No,** the subject lands are generally outside of the range for this species, and none were recorded during breeding bird surveys. These birds typically nest in large woodlands, swamps and forests near lakes and streams.
Red-headed Woodpecker, *Melanerpes erythrocephalus*	END	**No,** suitable habitat is present on the subject lands however none were recorded during breeding bird surveys.
Mammals		
Endangered Bats Little Brown Myotis, *Myotis lucifugus* Northern Myotis, *Myotis septentrionalis* Tri-colored Bat, *Perimyotis subflavus* Eastern Small-footed Myotis, *Myotis leibii*	END	**Yes,** there is potentially suitable roosting bat habitat within the woodland communities on site. A detailed habitat inventory (snag survey) will need to be completed in later phases of the planning process if any suitable trees or structures are identified for removal**.**

Species at Risk in Ontario List (SARO): END – Endangered; THR – Threatened.

Based on the above assessment in **Table 5** and on-site investigations, there is confirmed habitat present for the endangered Redside Dace and suitable habitat present for threatened Bobolink and Eastern Meadowlark and endangered bats within the subject lands. These species are discussed in **Section 5.**

4.3.1.1 Redside Dace Habitat

Both the North-South Tributary and the West Humber River Tributary are mapped as critical habitat for Redside Dace in the species Recovery Strategy (DFO 2024). In accordance with *Ontario Regulation 832/21* of the ESA and the Federal Redside Dace Recovery Strategy (DFO 2024), protection of Redside Dace habitat extends to the meander belt plus an additional 30 m of vegetated area extending from the meander belt width. Beacon (2024) has completed a geomorphic assessment, under separate cover, to delineate the meander belt plus 30 m riparian area of the West Humber River Tributary and North-South Tributary (**Figure 3**).

Additionally, *Ontario Regulation 832/21* of the ESA, defines and protects contributing Redside Dace habitat. Contributing features are defined as a stream, permanent or intermittent headwater drainage feature, groundwater discharge area or wetland that augments or maintains the baseflow, coarse sediment supply or surface water quality of an occupied reach. Based on this definition, portions of HDF-3 and HDF-4 may be considered contributing Redside Dace habitat. Consultation will be undertaken, with the applicable regulatory agencies to confirm the extent of the Redside Dace habitat within the subject lands.

4.4 Significant Wildlife Habitat

Significant Wildlife Habitat designation is the responsibility of the planning authority and determination of it on a site-by-site basis is generally not an appropriate manner in which to determine this constraint given that it is necessary to understand the context of the habitat within the local environment. In this case, the Town of Caledon and Region of Peel have not identified significant wildlife habitat within their jurisdiction. There is guidance provided in two provincial documents: the Significant Wildlife Technical Guide (OMNR 2000) and the Natural Heritage Reference Manual (MNRF 2010).

The *Significant Wildlife Habitat Technical Guidelines* (MNRF 2000) identify four broad categories of Significant Wildlife Habitat (SWH):

- Seasonal Concentration Areas of Animals;
- Rare Vegetation Communities or Specialized Habitat for Wildlife;
- Habitat for Species of Conservation Concern; and
- Animal Movement Corridors.

Within each of these categories, there are multiple types of SWH, each intended to capture a specialized type of habitat that may or may not be captured within other existing feature-based categories (e.g., significant wetlands, significant woodlands).

As the identification of SWH is the under the jurisdiction of the planning authority (i.e., Municipality or Region) any types of SWH discussed below have been identified as potential SWH for the purposes of this study (**Table 6**).

Table 7. Assessment of Potential Significant Wildlife Habitat for the Subject Lands

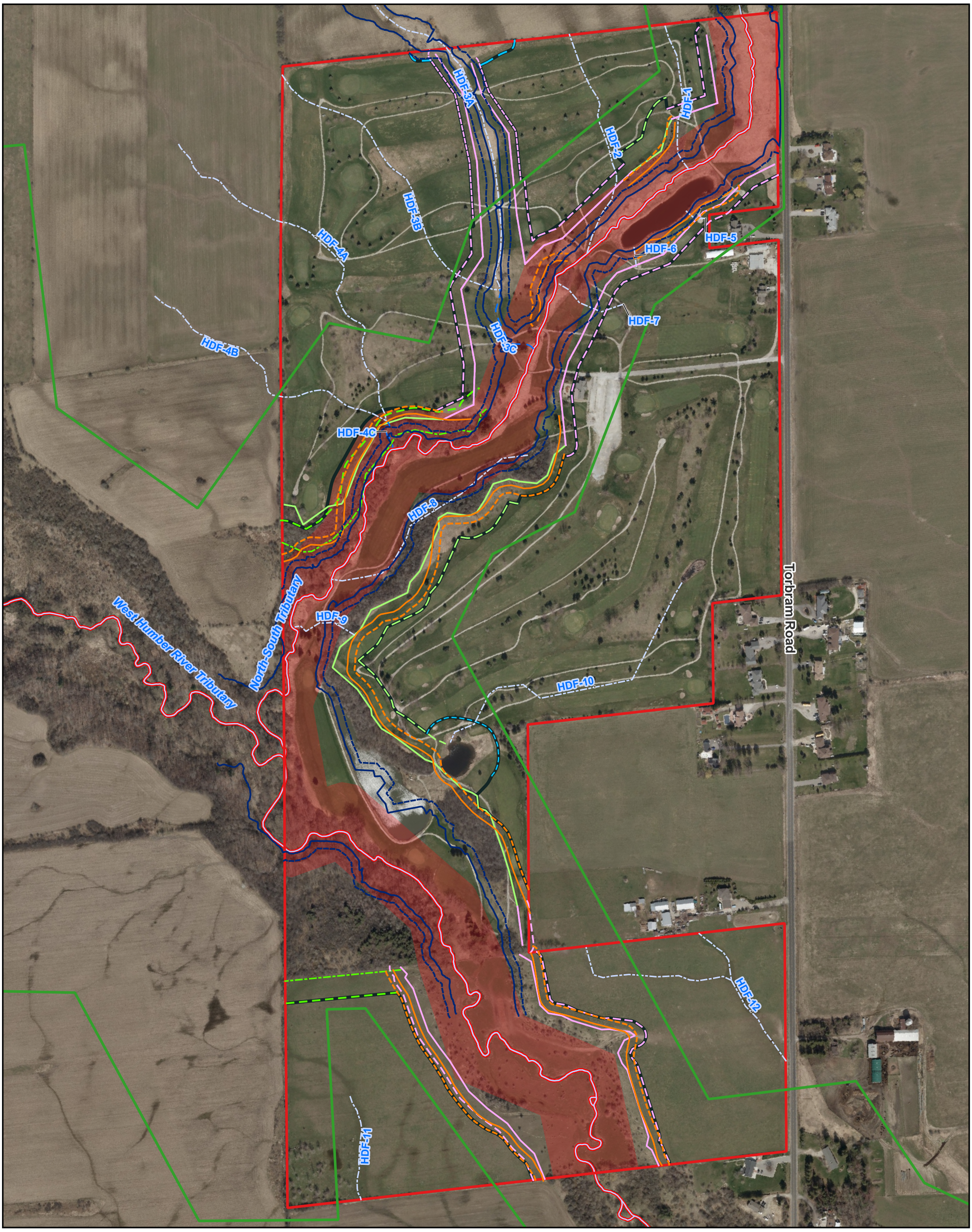
Wildlife Habitat Category	Presence or Absence on Subject Lands Based on MNRF Criteria for Ecoregion 6E	
	Absent	Potential Presence
Seasonal Concentration Areas for Wildlife Species		
Waterfowl Stopover and Staging Areas (Terrestrial)	No suitable habitat identified on the subject lands.	
Waterfowl Stopover and Staging Areas (Aquatic)	No suitable habitat identified on the subject lands.	
Shorebird Migratory Stopover Area	No suitable habitat identified on the subject lands.	
Raptor Wintering Area	No suitable habitat identified on the subject lands.	
Bat Hibernacula	No suitable habitat identified on the subject lands.	
Bat Maternity Colonies	Suitable habitat is present on the subject lands within the forested communities. Acoustic surveys completed as part of the SWS (GEI 2024) confirmed this SWH type is not present.	
Turtle Wintering Areas	The golf ponds on the subject lands do not meet the criteria for SWH as overwintering habitat as the Guideline (OMNRF 2015) specifically states “man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH” as turtle wintering areas.	
Reptile Hibernaculum	No suitable habitat identified on the subject lands.	
Colonially-Nesting Bird Breeding Habitat (Bank and Cliff)	No suitable habitat identified on the subject lands.	
Colonially-Nesting Bird Breeding Habitat (Tree/Shrubs)	No suitable habitat identified on the subject lands.	
Colonially-Nesting Bird Breeding Habitat (Ground)	No suitable habitat identified on the subject lands.	
Migratory Butterfly Stopover Areas	No suitable habitat identified on the subject lands.	
Land bird Migratory Stopover Areas	No suitable habitat identified on the subject lands.	
Deer Yarding Areas	No suitable habitat identified on the subject lands.	
Deer Winter Congregation Areas	No suitable habitat identified on the subject lands.	

Wildlife Habitat Category	Presence or Absence on Subject Lands Based on MNRF Criteria for Ecoregion 6E	
	Absent	Potential Presence
Rare Vegetation Communities		
Cliffs and Talus Slopes	Does not occur on the subject lands.	
Sand Barren	Does not occur on the subject lands.	
Alvar	Does not occur on the subject lands.	
Old Growth Forest	Does not occur on the subject lands.	
Tallgrass Prairie	Does not occur on the subject lands.	
Savannah	Does not occur on the subject lands.	
Provincially Rare S1, S2 and S3 vegetation communities	Does not occur on the subject lands.	
Regionally or Locally Rare vegetation communities	Does not occur on the subject lands.	
Specialized Habitats of Wildlife		
Waterfowl Nesting Area	No suitable habitat identified on the subject lands. Breeding bird surveys did not record any waterfowl on the subject lands.	
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	No suitable habitat identified on the subject lands.	
Woodland Raptor Nesting Habitat	No suitable habitat identified on the subject lands.	
Turtle Nesting Areas		Suitable habitat is present on the subject lands within the Greenbelt lands to be retained. Golf course sand traps do not qualify as they are man-made. X
Seeps and Springs		Suitable habitat was identified on the property through the SWS (GEI 2024). Additional hydrogeological investigations required to confirm location(s).
Amphibian Breeding Habitat (Woodland)	Seasonal surveys confirmed breeding amphibians are not present at recommended criteria thresholds.	
Amphibian Breeding Habitat (Wetlands)	Seasonal surveys confirmed breeding amphibians are not present at recommended criteria thresholds.	
Woodland Area-Sensitive Bird Breeding Habitat	No suitable habitat identified on the subject lands.	
Habitats of Species of Conservation Concern		
Marsh Bird Breeding Habitat	Suitable habitat is present on the subject lands within the marsh communities. Although suitable habitat is present, only 1 marsh bird (Green Heron) was observed, and the criteria threshold has not been met.	
Open Country Bird Breeding Habitat	No suitable habitat identified on the subject lands as Cultural Meadow	

Wildlife Habitat Category	Presence or Absence on Subject Lands Based on MNRF Criteria for Ecoregion 6E	
	Absent	Potential Presence
	community does not meet the required size threshold.	
Shrub/Early Successional Bird Breeding Habitat	No suitable habitat identified on the subject lands.	
Terrestrial Crayfish	Suitable habitat is present on the subject lands within the marsh communities. Although suitable habitat is present, no Terrestrial Crayfish were observed during the vegetation community survey or aquatic habitat survey.	
Special Concern and Rare Wildlife Species		Three species of special concern were recorded on the subject lands. • Eastern Wood-Pewee • Barn Swallow • Snapping Turtle
Animal Movement Corridors		
Amphibian Movement Corridors	Suitable habitat is present on the subject lands within the marsh communities. Seasonal surveys confirmed breeding amphibians are not present at recommended criteria thresholds.	
Deer Movement Corridors	No suitable habitat identified on the subject lands.	

In summary, this analysis has considered that there are three SWH types on the subject lands. These include specialized habitats of wildlife (turtle nesting areas and seeps and springs) and habitats of species of conservation concern (special concern and rare wildlife species). Turtle nesting areas and habitat of Snapping Turtle are contained within the NHS. Should the presence and location of seeps and springs be confirmed through additional hydrogeological investigations, these areas are contained within the NHS. We do not consider the presence of one breeding pair of Eastern Wood-Pewee and one presumed nesting location of Barn Swallow to meet the threshold to be considered SWH.

This analysis distinguishes between the natural areas on the subject lands, specifically the watercourse, rirarian corridor and wooded valley corridor, and the anthropogenic units that have naturalized to provide various elements of wildlife habitat, namely the constructed golf course ponds (A-C) and sand trap areas. The ponds are man-made golf course ponds that have naturalized and the sand traps are man-made and are actively maintained as part of the golf course. Constructed habitats such as golf course ponds and sandtraps are not typically considered in the SWH discussion.



Legend

- Subject Lands
- Ultimate Constraint Line
- Greenbelt Outer Boundary (MMAH 2017)
- Floodline
- Floodline + 10 m
- Approximate Woodland Boundary
- Approximate Woodland Boundary + 30 m
- Wetland + 10 m
- Wetland + 30 m
- Top of Stable Slope
- Top of Stable Slope + 10 m

TRCA Staked Natural Features

- Top of Bank (TRCA 2022 & 2023*)
- Top of Bank + 10 m
- Top of Bank + 15 m
- Dripline (TRCA 2022 & 2023*)
- Dripline + 30 m

Aquatic Features (Beacon 2023)

- Intermittent
- Ephemeral
- Permanent

Redside Dace Habitat

- Watercourse
- Meander Belt + 30 m

* TRCA staked the north parcel in October 2022 and the south parcel in August 2023.

Natural Heritage Constraints

Figure 3

Natural Heritage Evaluation - Part of Lots 19, 20 and 21 Concession 5, Town of Caledon, Region of Peel

BEACON ENVIRONMENTAL

Project: 222239
Last Revised: October 2024

Client: Mayfield Golf Course Inc. and Tullamore Industrial GP Limited

Prepared by: BD
Checked by: HP

DRAFT

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4.5 Landscape Connectivity

Landscape connectivity and natural linkages have become common parlance when discussing environmental planning. The idea is that variously sized habitat patches, so-called 'core' natural areas, and supporting features are linked by natural corridors in an often-fragmented landscape of land uses. Current planning policy typically includes provisions for the maintenance of such corridors. For example, as in section 2.1.2 of the Provincial Policy Statement (MMAH 2020):

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

The wooded valley and riparian feature running centrally through the subject lands and to the east of the subject lands provides connectivity within the local landscape, as it provides a continuous vegetated conduit for the movement of both aquatic and urban-tolerant terrestrial species. This north-south linkage for movement will be maintained post development and will observe an increase in area with the implementation of plantings associated with an edge management plan to be established at the detailed design stage.

In general, the open space element of the north parcel (that results from the current land use), provides a larger landscape connection for larger animals to move through the landscape.

5. Summary of Natural Heritage Features

The natural heritage features of the subject lands are discussed in the next paragraphs in the context of the proposed development, the results of the vegetation and wildlife surveys, and based on applicable policy and regulations related to natural heritage.

5.1 Wetlands

No Provincially Significant Wetlands (PSWs) have been identified within 5 km of the subject lands. There are four wetland communities that occur on the subject lands: Meadow Marsh, Shallow Marsh, Deciduous Swamp, and Thicket Swamp. These communities have not been evaluated through OWES and are not considered significant. All wetland communities, except for one small MAS unit, are contained within the NHS and are within the Protected Countryside of the Greenbelt Plan Area and the Regional Greenlands System of the RPOP. Any outlier boundaries of wetland communities associated with the NHS were staked and confirmed by the TRCA in October 2022 and August 2023.

Unevaluated wetlands are classified as PNAC under the RPOP.

5.2 Woodlands

There are several natural and cultural woodland communities that have been identified within the subject lands; all of which are located within the NHS. These woodlands are within the Protected Countryside of the Greenbelt Plan Area and the Regional Greenlands System of the RPOP. These woodlands meet the criteria listed in Table 1 of the RPOP to classify them as NAC under the RPOP and the criteria identified in the Greenbelt Plan Technical Paper 1 to classify them as significant woodlands. The majority of the dripline of the woodland communities was staked and confirmed by the TRCA in October 2022 (**Figure 3**). There is one area of woodland in the southwest that was not staked, the boundary of which has been established through mapping of the ELC community. The staked dripline for vegetation communities (i.e. CUT) that do not meet the RPOP criteria for woodland were not included in the woodland mapping.

5.3 Valleylands and Stream Corridors

The stream corridor of the North-South Tributary and the valley corridor of the West Humber River Tributary delineated the NHS within the subject lands. These systems are also within the Protected Countryside of the Greenbelt Plan Area and the Regional Greenlands System of the RPOP. The valley and the stream corridor of the West Humber River Tributaries satisfy the criteria in Table 2 of the Peel RPOP to be considered a Core Area Valley and Stream Corridor. The top of slope and dripline associated with the West Humber River Tributary valley and the corridor of the North-South Tributary were staked in the field with TRCA in October 2022 (north parcel) and August 2023 (south parcel). Additionally, TRCA requested the top of slope associated with HDF-3 was staked (**Figure 3**). However, HDF 3 does not meet the criteria in Table 2 of the RPOP to be considered a Core Area Valley and Stream Corridor.

The draft Phase 1 – Subwatershed Characterization and Integration Report (GEI 2024) has identified valleylands within the Greenbelt Plan Area as significant valleylands and those outside the Greenbelt Plan Area (i.e.. HDF 3) as non-significant valleylands.

Valleylands are regulated by the TRCA.

5.4 Significant Wildlife Habitat

Based on Beacon's review in Section 4.4, three SWH types were identified on the subject lands and are contained within the natural features located within the NHS and will be maintained and buffered.

Suitable habitat for turtle wintering areas and turtle nesting areas may be present in the golf course ponds and sand traps. However, these areas are man-made features that are actively maintained as part of the golf course operation and as such, should not be considered SWH.

5.5 Watercourses and Fish Habitat

Both the West Humber River Tributary and the North-South Tributary support a warmwater thermal regime with a cool to warm species assemblage. The fish habitat assessment has determined that HDF 3C and 4C may provide seasonal habitat for the more tolerant warm water species found downstream. These watercourses would be considered direct fish habitat. The remaining HDF's do not have habitat conditions to support fish and are therefore considered indirect fish habitat through the contribution of exported food (detritus/ invertebrates) downstream.

The three offline ponds within the subject lands may support fish populations; however, they are isolated and do not have a direct downstream to connection to fish habitat. Nonetheless, Pond A and C are within the West Humber River Tributary floodplain and may have a seasonal connection to a fish bearing watercourse under flood conditions.

5.6 Habitat of Threatened or Endangered Species

Both the North-South Tributary and the West Humber River Tributary are mapped as critical habitat for Redside Dace in the species Recovery Strategy (DFO 2024). In accordance with Ontario Regulation 832/21 of the ESA and the Federal Redside Dace Recovery Strategy (DFO 2024), protection of Redside Dace habitat extends to the meander belt plus an additional 30 m of vegetated area extending from the meander belt width of occupied reaches or those included in the DFO distribution mapping. Additionally, through Ontario Regulation . 832/21 of the ESA, portions of HDF-3 and HDF-4 may be considered contributing Redside Dace habitat, and should be confirmed with MECP

The threatened Eastern Meadowlark and Bobolink were confirmed breeding within the subject lands as illustrated on **Figure 2**.

The woodland communities contained within the valley and stream corridors and the existing anthropogenic structures may provide suitable habitat for endangered bats. Bat Acoustic surveys were completed on the subject lands as part of the Phase 1 – Subwatershed Characterization and Integration Report (GEI 2024) and no endangered species of bats were recorded.

No other threatened or endangered species were recorded within the subject lands.

6. Proposed Development

The proposed development, as illustrated on the Draft Plan (**Appendix A**), identifies a subdivision that will provide low and medium density residential areas (17.65 ha). In addition to the residential land uses, an elementary school (2.50 ha), a firehall (0.76 ha), a commercial block (0.47 ha), future residential (3.73 ha), open spaces (0.02 ha), stormwater management (SWM) facilities (8.3 ha) and parkland (6.46 ha) have been identified.

Internal road access for the proposed development will be provided by Streets 'A' through Street 'Q'. A connection to Torbram Road will be provided by Street 'A', Street 'B' and Street 'O'. internal roads and private laneways will account for 10.41 ha of the development lands. Approximately 0.82 ha is required to accommodate the widening of Torbram Road.

All development blocks, apart from the SWM Ponds and parklands/ open spaces are outside of the boundary of the Greenbelt and reflect a Limit of Development (LOD) confirmed by the TRCA. The proposed development will retain 40.44 ha of the NHS. The proposed development plan is shown in **Figure 4** and on the Draft Plan located in **Appendix A.**

6.1 Servicing

Key servicing details, as they relate to natural environmental features, are provided below and in greater detail within the draft FSSR (SCS 2024).

6.1.1 Stormwater Management

The implementation of a SWM Plan is required to protect the natural environment from the following:

- Increased risk of flooding to downstream areas;
- Erosion of the valley and stream corridors from uncontrolled surface water runoff and flows; and
- Impaired water quality and increased turbidity leading to impacts to fisheries, macroinvertebrates, and aquatic vegetation.

Also, with the presence Redside Dace, impacts to this endangered species may result if the SWM plan has not been designed for their protection. The ponds have been designed according to MNRF (2016) recommendations that SWM ponds discharging to Redside Dace streams provide a 3.0 m deep permanent pool with a bottom draw outlet to mitigate temperature impacts. The design must include best efforts to maintain the following conditions:

- Discharge temperature below 24°C;
- Dissolved oxygen concentration at discharge of at least seven milligrams per litre; and
- TSS of <25 mg/L above stream background (MNRF 2016).

The analysis provided in the FSSR (SCS 2024) determined that four SWM facilities (three underground wet SWM facilities and one wet SWM pond) are required for quality and quantity control. The location of the proposed facilities is identified on **Figure 4** within the blocks identified for the SWM Facilities.

The proposed wet SWM facilities will provide quantity control, erosion control, quality control, and temperature mitigation for the subject lands. The SWM facilities will control proposed peak flows from the subject lands to the West Humber River Tributaries at the allowable release rates for the 2-to-100-year and Regional storm events. The SWM facilities will provide erosion control for runoff conveyed to the facilities. The extended detention volumes will be sized based on the detention of the 25 mm – 4-hour Chicago rainfall event. The volumes calculated for the extended detention will be attenuated for a minimum of 48 hours.

SWM Facilities 1-4 will provide quality control to meet MECP Enhanced Level Protection (80% TSS Removal) requirements for runoff conveyed to the SWM facilities.

SWM facilities 1, 2 and 4 are proposed to be underground “Vault” SWM systems (hybrid plastic and concrete chamber system). All underground SWM facilities will have a permanent pool depth of 1.5 m and an active storage depth of 2.0 m (total internal height of 3.5 m). A 1.5 m deep permanent pool and control maintenance hole will be provided for each underground SWM facility. The control maintenance holes will be connected to an outlet storm sewer which will convey flows to the valley. The preliminary locations of the proposed outlets are provided in the FSSR (SCS 2023).

SWM facility 3 is proposed to be a wet SWM pond. The wet pond design will include a maintenance access road, a minimum length-to-width ration of 4:1, and a safety shelf. The proposed grading in the SWM facility 3 aftbay has been maximized to provide a permanent pool depth of 3 m, and includes a bottom draw outlet.

The regional floodplain elevation is well within the limits of the valley and stream corridors; therefore, the existing floodplain will not impact the hydraulics outlet control structures for the SWM facilities. An emergency overflow channel will be provided at each park/SWM block which will convey the uncontrolled 100-year storm event peak flow from the park/SWM block to the valley. This overflow channel will act as the emergency conveyance for the SWM facilities to avoid additional disturbance through the valley wall.

The storm sewer system (minor system) will be designed for the 10-year return storm as per the Town of Caledon standards. The major system flow drainage (up to the 100-year storm event) will generally be conveyed overland along the road rights-of-way and easements. Major system flows (greater than the 10-year up to the 100-year and Regional storm events) will be conveyed within the road rights-of-way to the SWM facilities. Major system flows will be captured at low points adjacent to the underground SWM Facility blocks.

6.1.2 Wastewater and Sanitary Sewers

There are no existing sanitary sewer systems within the immediate vicinity of the subject lands. In accordance with the Region of Peel Water and Wastewater Master Plan and the Mayfield Tullamore Secondary Plan High Level Background Servicing and Stormwater Management Analysis, the subject lands are anticipated to be serviced by a regional trunk sanitary sewer which will be constructed as part of the proposed development immediately to the east of the subject lands. Two connections, located on the east side of Torbram Road at the proposed intersections of Street ‘A’ and Street ‘B, will be provided to service the subject lands. The proposed sanitary sewers will be extended underneath Torbram Road. The proposed sewer crossings will require underground installation under North-South Tributary (associated with Street ‘A’) and HDF 3A (associated with Street ‘C’).

The Region of Peel Water and Wastewater Master Plan identifies that the subject lands are to be serviced by a regional trunk sanitary sewer which will be constructed as part of the proposed development immediately to the east of the subject lands and will therefore not have direct impacts on the natural heritage features or wildlife within the subject lands.

6.2 Water Balance

The Geotechnical and Hydrogeological Report (Gemtec 2024) identifies that the preliminary data collected observes a negative vertical gradient, which is indicative of recharging conditions. However, the preliminary data identified one location that observed a positive vertical hydraulic gradient, which may indicate a groundwater discharge location. Artesian conditions were observed in the boreholes located in the northwest corner of the subject lands, as such, the vertical hydraulic gradient could not be estimated at these locations. Continued monitoring and analysis of the groundwater condition within the subject lands is currently ongoing. Therefore, a water balance analysis for the subject lands is forthcoming.

However, low impact development (LID) measures have been proposed (refer to **Section 7.2**) to maintain or increase existing infiltration rates and appropriate treatments shall be further explored and confirmed as design progresses. It is anticipated that an appropriate infiltration volume will be achieved through the application of these design measures.

6.3 Grading

As per the FSSR (SCS 2024), the subject lands will be graded in accordance with the Town of Caledon lot and road grading criteria and in a manner which will satisfy the following goals:

- Provide a minimum road grade of 0.75%, a maximum road grade of 6.0%; a minimum lot grade (split lots) of 2%, a minimum lot grade (front draining lots) of 3%, a maximum lot grade of 5% and a maximum slope between houses (in any direction) of 4:1;
- Provide a 0.6 m wide gently sloped area at 2.0% away from the house on at least one side of the building where side yard setbacks permits;
- Provide continuous road grades for overland flow conveyance;
- Minimize the need for retaining walls;
- Minimize the volume of earth to be moved and minimize cut/fill differential;
- Minimize the need for rear lot catchbasins; and
- Achieve the stormwater management objectives required for the subject lands.

At the detailed design stage, the preliminary grading will be subject to a more in-depth analysis to balance the cut and fill volumes and minimize slopes and walls.

6.4 Road Crossings of the NHS

Two road crossings of the NHS are proposed to facilitate access to the residential areas in the northeast section of the subject lands (**Figure 4**). The TRCA HEC-RAS model (West Humber), as refined through the Phase 1 local subwatershed study (SCS and GEI 2024) was used to quantify the hydraulic characteristics of the West Humber River Tributaries based on the proposed development and the recommendations from the Geomorphic Assessment (Beacon 2024) were incorporated.

Street 'A' crosses the North-South Tributary and Street 'C' crosses the upper reach of HDF-3A. The Street 'A' crossing will consist of a 14.9 m wide open bottom arch culvert. The street crossing will meet the following design criteria: design flow return period of 50-year storm, span the 100 year erosion limit, maintain Regional Storm Event flooding condition external to the subject lands, and accommodate passage of fish. The existing golf cart crossing at this location will be removed and restored as part of the construction of the proposed development. A low flow channel will be provided within the open bottom arch culvert to maintain natural channel processes and to allow for fish passage. The arch open bottom culvert will be embedded into the natural streambed. Should HDF-3 be considered contributing Redside Dace habitat, additional design criteria may need to be considered.

The proposed Street 'C' crossing over HDF3 will be a 6.4 m wide by 1.5 m high by 40.6 m long concrete box culvert. The street crossing will meet the following design criteria: design flow return period of 25-year storm and maintain Regional Storm Event flooding condition external to the subject lands. As Street 'C' crosses Redside Dace habitat, additional design criteria may be required by MECP and DFO to minimize impacts to the species.

6.5 Amenities

The proposed development includes approximately 6.46 ha of parkland (throughout the subject lands) that will surround the NHS and are contained within the boundary of the Greenbelt (**Figure 4**). The proposed development will also include an elementary school and a firehall that will service the proposed subdivision as well as the surrounding communities.

7. Assessment of Potential Impacts

The proposed development of the north parcel is generally confined to lands that are already modified by golf course operations and associated manicured landscape and infrastructure. The proposed development of the south parcel is confined to lands that are currently in active agriculture. The subject lands are divided by a natural heritage system associated with the valley and stream corridor of the West Humber River and North South Tributaries. The NHS within the subject lands is within the Protected Countryside of the Greenbelt Plan Area and identified as Core Areas of the Region's Greenlands System. Furthermore, many of the natural heritage features within the NHS have been identified as either a NAC or a PNAC in accordance with the criteria set out in the RPOP.

The subject lands are in an area that is already altered and subject to existing rural and agricultural stressors and disturbances (e.g., noise, light, landscaping, and vegetation maintenance). Most of the proposed development area, apart from lands designated as parklands and the four SWM Facilities, have been planned outside of the NHS. Appropriate mitigation measures will be required to protect the NHS (a) during the construction phase and (b) following the completion of construction, as discussed below to minimize the temporary and residual impacts to the extent possible.

7.1 Vegetation Removal

A large portion of the subject lands are utilized as active agriculture or golf course and consist of landscaped and cropped areas with individual trees scattered throughout.

7.1.1 Tree Removal

The Tree Inventory and Assessment Report prepared by Schollen and Company Inc. (2024) under separate cover provides details on the protection, management, and monitoring of retained tress, any individual tree removals, and compensation. A total of 316 trees were identified for retention (pending detailed design), a total of 629 trees were identified for removal due to conflicts with proposed construction and grading, a total of 6 trees were identified for removal due to poor condition, a total of 16 dead trees were identified for removal and a total of 13 dead trees were identified for retention (Schollen and Company Inc. 2023). Trees proposed for removal are located outside of the NHS and woodland communities and are located within the golf course areas, which were likely planted during the construction of the golf course.

Trees situated within the areas for development will need to be removed; however, the proposed development has been designed so that trees have been integrated within parklands, or where feasible lots of residences. Considerable effort has been taken to preserve as many trees as possible. The naturally vegetated areas within the subject lands are largely contained within the NHS and will be protected.

7.1.2 Wetland Communities

One isolated wetland unit is proposed for removal to accommodate the proposed development. There will be minor encroachments into the riparian wetland units associated with HDF 3 and the North-South Tributary to facilitate the crossings of Street ‘A’ and Street ‘C’. This includes the following communities, as illustrated in **Figure 2**:

- Complete removal of Cattail Mineral Shallow Marsh Willow (MAS2-1); and
- Partial removal of Forb Mineral Meadow Marsh (MAM2-10).

The Cattail Mineral Shallow Marsh Willow (MAS2-1) in the north parcel is an isolated unit outside of the NHS and surrounding by manicured golf course. This wetland unit is approximately 0.06 ha in size and is dominated by cattail species.

Approximately 0.15 ha of Forb Mineral Meadow Marsh (MAM2-10) will be temporarily removed to accommodate the proposed road crossings. Detailed grading has not yet been prepared for these structures. The MAM2-10 units are within the riparian areas surrounding HDF 3 and the North-South Tributary. This wetland area contains a combination of native and nonnative species. The wetland has undergone notable modifications to accommodate the manicured landscape of the surrounding golf course and is relatively narrow in this area.

TRCA provides the conditions for which a permit to change or interfere with a wetland may be issued. Accordingly, the removal of these wetlands is not likely to affect the control of flooding, erosion, dynamic beaches, or unstable soil or bedrock. The proposed road crossings have been placed in locations where the riparian vegetation, associated with the meadow marsh community, is relatively limited in width and in proximity to existing trial crossings. Disturbances to wildlife linkages provided by the wetlands within the stream corridors will be temporary and the proposed crossing structures will not inhibit amphibian and reptile passage. A permit will be required by the TRCA to remove these wetland units. The total area of wetland that will be removed is 0.21 ha (**Figure 4**) and opportunities for restoration and enhancement in the NHS will be developed at detailed design to mitigate this loss. It is intended that wetland compensation will occur within the NHS in order to increase the wetland area and to enhance function.

7.1.3 Woodland Communities

All woodland communities are located within the NHS and will be retained. No tree removals are proposed to any of the forested communities during construction or in the post-development condition. Potential impacts to the woodlands on the subject lands may include changes to the water balance. Without mitigation, less drainage may reach these features which could cause long-term impacts. These impacts can be avoided through the implementation of LID measures. **Section 7.5** of this report addresses recommended mitigation measures related to the water balance. These woodlands to be retained are also generally the most active with respect to forest bird species and may provide suitable bat habitat.

7.2 Crossings of the NHS

Two road crossings are proposed for connectivity, neighborhood structure and traffic flow within the proposed development. Street ‘A’ will cross the North-South Tributary, and Street ‘C’ crosses the upper reach of HDF 3 (**Figure 4**). The TRCA Policies and Regulations were reviewed when identifying the design of the proposed crossing structures. Two servicing (sanitary) crossings are also required and will generally be located within the same area as Street ‘A’ and Street ‘C’.

7.2.1 Road Crossing of HDF 3A

As part of the proposed development plan, a 40.6 m long concrete box culvert is proposed to facilitate the road crossing of Street ‘C’ over HDF 3A. At the proposed crossing location, HDF 3A reach has been identified as an ephemeral feature that provides allochthonous inputs (detritus/ invertebrates to the direct (seasonal) fish habitat in its lower reaches at its confluence with the North-South Tributary. The feature traverses south, through a small wetland (meadow marsh community) that has been modified into a 2 m riparian buffer (as maintained by the golf course). Data presented in the Geotechnical and Hydrogeological Report (Gemtec 2024), indicates that this feature may provide groundwater recharge. Results from the HDFA suggest that this feature may provide a valued function primarily due to the riparian wetland that borders it and its contribution to downstream fish habitat. The proposed crossing structure will maintain the form and function of the feature, however, a portion of riparian vegetation will be removed, and groundwater recharge would be eliminated within the footprint of the culvert.

Legend

- Subject Lands
- Ulitmate Constraint Line

Aquatic Features (Beacon 2023)

- Intermittent
- Ephemeral
- Permanent

- Proposed Development

Impacted Areas

- Area of NHS Encroachment (1.09 ha)
- Cultural Meadow Removal (2.33 ha)
- Wetland Removal (0.21 ha)

Proposed Development

Figure 4

Natural Heritage Evaluation - Part of Lots 19, 20 and 21 Concession 5, Town of Caledon, Region of Peel

BEACON ENVIRONMENTAL

Project: 222239
Last Revised: October 2024

Client: Mayfield Golf Course Inc. and Tullamore Industrial GP Limited

Prepared by: BD
Checked by: KQ

1:5,000

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C:\ODB\OneDrive - Beacon Environmental\GeoSpatial\Geo Projects\2022\222239 Mayfield Golf Club NHE\Q Project Files\2022-06-09 - Mayfield Golf Club NHE - 222239.qgz

The feature will still provide exported food (detritus/ invertebrates) to downstream fish-bearing reaches and any passage of wildlife life will remain post development. Furthermore, there are opportunities for the riparian corridor of the feature to be enhanced post-development. Should HDF 3A be considered contributing Redside Dace habitat, additional design criteria may be required, and a permit under the ESA may be required from MECP. Any proposed channel works will also require review by DFO in the context of the *Fisheries Act*.

7.2.2 Road Crossing of the North-South Tributary

The proposed Street 'A' crossing over the North-South Tributary has been designed to be a 14.9 m wide open bottom arch culvert. The existing golf cart crossing at this location will be removed and restored as part of the construction of the proposed development. This perennial watercourse carries flows through a primarily natural channel. There is evidence of minor channel modification (i.e., straightening/ channelization and constriction) and at the existing (undersized) golf cart crossings throughout the reach. The proposed road crossing will require a partial removal of the riparian wetland community on either side of the watercourse. Impacts to the channel, stream bed and any groundwater exchange will be minor as a result of the proposed open bottom structure; however riparian habitat (i.e., habitat within meander belt + 30 m) will be removed.

The two road crossings are proposed in areas that are already disturbed by the presence of the golf course trail crossings. Wetland removals associated with the crossing are discussed above in **Section 7.1.3**.

The remainder of the proposed roads within the subject lands are located outside of the NHS and are mainly proposed within areas that are already developed or being used for golf course crossings or agriculture.

Typical approvals from the TRCA will be required to construct the crossings to the watercourses and to interfere with their associated wetlands. As noted in **Table 5**, both West Humber River tributaries have been identified as regulated habitat for Redside Dace.. The proposed crossing structure identified for the North-South Tributary will require approval (i.e., permit/authorization) from both DFO and MECP.

7.2.3 Sanitary Crossings

To avoid conflicts with the open bottom culvert footings, the proposed sanitary sewer crossing of the North-South Tributary is to cross north of the proposed crossing. This crossing will be installed using trenchless technologies and will provide a minimum of 2 m cover the watercourse (SCS 2024).

The crossing of HDF 3A will have a minimum clearance of 0.5 m provided from the sanitary sewer to the proposed culvert. Should footings be required for the proposed culvert, the sanitary alignment will be directed around the culvert and a minimum cover of 2 m to the tributary.

7.3 Stormwater Facilities and Outfalls Within the NHS

Four wet SWM facilities are proposed to support the proposed development. The location of these facilities, the associated outlet storm sewers and outlet headwall infrastructure are provided in the FSSR (SCS 2024). The limit of the SWM facility development blocks are shown on **Figure 4**. Impacts of the outlet storm sewers will be evaluated in more detail during future design stages of the development plan. However, since the outlet storm sewers are underground, they can be installed with minimal impacts. There will be a minor footprint at each of the proposed outlet headwall locations within the NHS. The construction of the outlet headwalls for the SWM Facilities will be placed in the stream corridor of the North-South Tributary and may result in minor removal of vegetation associated with cultural thicket, meadow, meadow marsh and deciduous forest communities. Construction of the outlet headwalls may result in an increased potential for erosion and sediment run off as a result of grubbing and stripping. These headwalls and outfall channels should avoid Redside Dace habitat to the extent possible, and minimize disturbance. Approvals from DFO and MECP will be required should any works be required within regulated habitat.

7.4 Potential Changes to Site Water Balance

A water balance analysis is ongoing.

7.5 Changes to Site Grading

The preliminary grading plan design has allowed for major storm drainage to be directed to the proposed SWM facilities which will outlet to the valley and stream corridors. Grading for the subject lands has generally been driven by the NHS, the existing infrastructure (i.e., matching existing grades), road and lot grading criteria and pipe cover. A more in-depth analysis to balance the cut and fill volumes and minimize slopes and walls will be completed in the detailed design stage.

7.6 Displacement of Wildlife

Wildlife including birds, amphibians, turtles, and mammals utilize the subject lands to fulfill their life cycles. This includes breeding, rearing young and overwintering. It is anticipated that changes to the wildlife community will result from the proposed development as a reflection of the shift of available habitat and an increase in overall anthropogenic activity and density.

The recorded breeding bird communities were diverse and reflective of the range of available habitat on site, including wetlands, woodlands, meadows, and open anthropogenic areas. The proposed development will likely result in a reduction in the overall number of birds that utilize the subject lands given the shift in proposed land use and removal of vegetation (i.e., trees, wetlands, meadows) as described above. The proposal is generally concentrated in the open areas of the lands and therefore a reduction in species utilizing those landscapes is proposed. The woodland and wetland communities on site are being retained within the valley corridor, however changes to the surrounding environment will likely reduce the future habitat functionality, as is often the case in urbanizing matrices.

The isolated MAS2-1 wetland unit within the subject lands is proposed for removal. This wetland unit is approximately 0.06 ha in size and is dominated by cattail species. A permit to relocate any wildlife will be obtained prior to removal. It is anticipated that small mammals such as raccoon, grey squirrel and skunk will continue to use the subject lands post development.

7.7 Noise and Light Effects on Wildlife

Acute and cumulative effects for a single development associated with noise and light are very difficult to quantify. Noise may be a reason why landscape-level effects are known to occur within urban matrices even as natural areas are set aside. The effects of these stressors can be significant in previously undeveloped areas; however, this system is already heavily influenced by the light and noise of the existing golf course, nearby agricultural operations, and roadways. This has resulted in a suite of species that are already tolerant to these stressors.

7.8 Endangered and Threatened Species

Targeted field surveys were conducted for endangered and threatened species on the subject lands. Potential impacts are discussed below with respect to confirmed species discussed under **Section 4.4** of this report.

7.8.1 Removal of Habitat for Eastern Meadowlark

Approximately 2.26 ha of cultural meadow communities will be removed to accommodate the proposed development. These meadows provided botanical biodiversity and habitat for grassland bird species, including Eastern Meadowlark, a threatened avian species. The removal of this meadow habitat will proceed in conformity with the ESA, as discussed in **Section 8.9** of this report.

Bobolink territories were also recorded during breeding bird surveys however these meadows are within other constraints and are not proposed for alteration.

7.8.2 Impacts to Redside Dace Habitat

Potential impacts to Redside Dace habitat may result from the Street ‘A’ road crossing of the North-South Tributary, ‘Street C’ road crossing of HDF 3A, the proposed stormwater inputs, and footprints within the regulated/critical habitat that may result from the placement of the proposed SWM outlet headwalls and sedimentation as a result of construction.

Impacts related to the Street ‘A’ road crossing can generally be minimized upon applying the appropriate design mitigations such as crossing location, structure size, orientation, and method of construction. The proposed design and construction mitigations are expanded upon in **Section 8.5**. Consultation with MECP and DFO will be required to ensure compliance with the ESA, *Fisheries Act* and SARA.

8. Recommended Mitigation Measures

The following section identifies mitigation measures to minimize effects of the proposed development plan. The proposed development is situated within an area that has been transformed over time to an increasingly urbanized landscape, which inevitably reduces natural heritage functions of any site within that larger landscape area. However, these kinds of landscape level changes cannot be wholly mitigated on a site-by-site basis, and a shift in the natural heritage values towards an urban tolerant system will continue to occur. Despite the recommendation of the numerous mitigation measures in this section, potential impacts such as a general trend towards urbanization can not be addressed at the site level.

8.1 Mitigation by Design

As the predominant natural heritage features and functions of the subject lands are largely contained within the valley corridor, it is anticipated that the site-specific effects have largely been mitigated by the design of the development plan. The maintenance of a contiguous natural corridor is proposed. The development is proposed within areas that have been previously altered and is currently represented by a golf course and agricultural lands.

8.2 Maintenance and Enhancement of the NHS

One of the primary design principles adopted for the development was to protect the natural heritage corridor for terrestrial and aquatic species associated with the West Humber and North-South tributaries. As impact avoidance is generally the most effective means of reducing the risk of development impacts on the natural environment, the proposed development includes the maintenance of the NHS such that it is a contiguous block buffered from any future development. The natural features (woodland, wetland and top of slope) limits were confirmed in the field during the site walk with the TRCA.

The following setbacks and buffers have been applied to the natural features within the NHS in accordance with provincial, municipal and TRCA goals, objectives and policies as shown on **Figure 3.**

- Wetlands plus a 30 m buffer (within the Greenbelt) or 10 m buffer (outside of the Greenbelt);
- Woodlands plus a 30 m buffer (within the Greenbelt) or 10 m buffer (outside of the Greenbelt);
- Top of Stable Slope plus a 10 m buffer;
- Top of Bank plus a 15 m setback (within the Greenbelt) or 10 m setback (outside of the Greenbelt); and
- Redside Dace regulated habitat limits (i.e., meander belt width plus 30 m vegetated area) for both the North-South Tributary and the West Humber River Tributary

All the above-mentioned setbacks and buffers have been incorporated into an overall limit of constraint which has been delineated as the Ultimate Constraint line on **Figure 3** and **Figure 4** and is incorporated into the NHS in the Draft Plan (**Appendix A**).

An Edge Management and Buffer Planting Plan will be prepared for these areas as the project moves to detailed design. This will include the restoration of the area impacted by the grading associated with the two crossings. The addition of a planted buffer area will convert existing golf course to natural areas and will further bolster the utility of the buffer distance to protect the natural feature from potentially adverse impacts associated with the proposed development, in addition to increasing overall naturalized cover area.

8.3 Maintenance of Site Drainage

Drainage features identified with management recommendations as “Conseravtion” or “Proteciton” in Sewction 4.1.3 will be maintained in the landscape. HDFs 1, 2, 3B and 10 had a management recommendations of “Mitigation” and will be mitigated as follows in **Table 8**.

Table 8. Management of Drainage Features

Drainage Feature Segment	Final Management Recommendation	Proposed Removal/ Alteration	Recommended Management
HDF 1, HDF 2, HDF 3B and HDF 10.	Mitigation	Either partial or full removal of the features are proposed. Features existing connection to the North-South tributary shall be maintained within the NHS.	Drainage features that are identified as “Mitigation” can be maintained, relocated and/or enhanced. If catchment drainage had been previously removed or will be removed due to diversion of stormwater flows, restore lost functions through enhanced lot level controls (i.e., restore original catchment using clean roof drainage), where feasible. Maintain or replace on-site flows using mitigation measures. Flows shall be maintained. Drainage feature must connect to downstream.

Replication of function shall be achieved through applying the proposed lot level/conveyance controls and stormwater management as identified in **Section 8.4.**

Details on the LID measures specific to each feature that will be removed to facilitate the proposed development will be determined and finalized in consultation with the TRCA and addressed in the Final FSSR during detailed design.

8.4 Low Impact Development

A water balance analysis is ongoing and will be finalized; however, the following LID measures can be incorporated in the detailed design to maintain or increase existing infiltration rates:

- Increased Topsoil Depth – An increase in the restored topsoil depth on lots can be used to promote lot level infiltration and evapotranspiration (up to 0.3 m depth). Increased topsoil depth will contribute to lot-level quality and water balance control. A minimum depth of 0.3 m is proposed in all landscaped areas;
- Roof Leaders to Grassed Areas – Roof leaders will be discharged to grassed areas to promote lot level infiltration, thereby passively contributing to water quality and quantity control;
- Rear Yard At-Surface Infiltration Trenches – Rear yard at-surface infiltration trenches will be provided on the single detached and condominium townhouse rear yards as able, thereby passively contributing to water quality and quantity control. At-surface trenches will be utilized to meet water balance and retention requirements. Adequate separation to the seasonally high groundwater will be provided to ensure functionality; and
- Wet Ponds and Underground Wet SWM Facilities – Sized in accordance with the MECP criteria, these end of pipe facilities can provide water quality, quantity, and erosion control treatment. An end of pipe wet facility is proposed to provide water quality, quantity, and erosion control treatment for the development.

There may be additional opportunities to provide other LIDs, which will be explored at detailed design in consultation with the TRCA.

8.5 Best Management Practices for Development in Regulated Redside Dace Habitat

The West Humber Tributary and the North-South Tributary have been identified as regulated Redside Dace habitat. The proposed road and sewer crossings within protected Redside Dace habitat will require a comprehensive assessment of impacts at the detailed design stage to determine the appropriate compliance and compensation requirements under the ESA and the *Fisheries Act*.

Since the drainage within the subject lands ultimately discharge into Redside Dace habitat, temperature mitigation and quality control for stormwater discharge needs to be considered and meet the Redside Dace stormwater BMP's and design criteria outlined in the *Guidance for Development Activities in Redside Dace Protected Habitat* (MNRF 2016) and any additional requirements identified through consultation with DFO. The BMPs identify both thermal and water quality targets that must be met to ensure compliance with the ESA. To meet this requirement, as outlined in the FSSR (SCS 2024), the stormwater will be treated on-site in underground storage tanks and will achieve 80% TSS removal as well as a discharge temperature below 24 ^{o}C.

The proposed road network has been designed to avoid crossing the West Humber River and has minimized the number of crossings in regulated Redside Dace habitat as per the BMP's outlined in the MNRF (2016). The proposed crossing, while not a bridge to span the meander belt, is proposed as an open bottom arch culvert to maintain groundwater exchange, and has been sized to not restrict flow.

It has been oriented to cross over a straight segment of the channel and in a location that will require minimal removal of riparian wetland community. The design will incorporate a low flow channel to maintain the natural channel processes and to promote fish passage. Design of the crossing structure in future stages shall ensure that stormwater drainage will avoid direct discharge into the watercourse.

Servicing crossings will maintain a minimum of 2 m cover to the watercourses and will be installed using trenchless techniques, as appropriate.

A robust erosion and sediment control plan is required to address potential impacts to Redside Dace habitat throughout construction (refer to Section 8.7).

8.6 Timing of In-Water Works

All construction activities (on land or in water) within regulated Redside Dace habitat shall occur within the MECP recognized timing window (July 1 to September 15) for the species, upon approval from the appropriate regulatory agencies. Additionally, a fish and wildlife salvage plan shall be prepared prior to works within wetlands or waterbodies/watercourses with permits obtained from MRNF under the *Fish and Wildlife Conservation Act*.

8.7 Erosion and Sediment Control

During the detailed design stage, erosion and sediment control measures will be designed with a focus on erosion control practices (such as stabilization, track walking, staged earthworks, etc.) as well as sediment controls (such as fencing, mud mats, catchbasin sediment control devices, rock check dams and temporary sediment control ponds). These measures will be designed and constructed as per the "Erosion and Sediment Control Guide for Urban Construction" document (TRCA 2019). A detailed erosion and sediment control plan will be prepared for review and approval by the Municipality and Conservation Authority prior to any proposed grading being undertaken. This plan will address phasing, inspection and monitoring aspects of erosion and sediment control. All reasonable measures will be taken to ensure sediment loading to the adjacent watercourses and properties are minimized both during and following construction (SCS 2024).

8.8 Timing of Vegetation Removal

The federal *Migratory Bird Convention Act* (1994) protects the nests, eggs and young of most bird species from harm or destruction. Environment Canada considers the general nesting period of breeding birds in southern Ontario to be between late March and the end of August. This includes times at the beginning and end of the season when only a few species might be nesting. In light of this it is recommended that during the peak period of bird nesting (i.e., between mid-April and mid-July), no vegetation clearing or disturbance to nesting bird habitat should occur.

In the "shoulder" seasons of April 1 to April 15, and July 16 to August 31, vegetation clearing could occur, but only after an ecologist with appropriate avian knowledge has surveyed the area to confirm lack of nesting.

For any proposed clearing of vegetation within the breeding bird season an ecologist should undertake detailed nest searches immediately prior (within two days) to site alteration to ensure that no active nests are present.

If nesting is found, then vegetation clearing in an area around the nest, the size of which depends on the specific circumstances, has to wait until nesting has concluded. The likelihood of nesting birds being present in the 'shoulder' seasons also depends on the habitat type.

From September 1 through to March 31, vegetation clearing can occur without nest surveys, but the need to ensure nest protection still applies (i.e., if an active nest is known to be present it must be protected).

8.9 Noise and Light Mitigation Measures

The placement of buffers, parkland and SWM facilities between the NHS and the proposed development will serve to mitigate potential noise and light effects on wildlife.

8.10 Compensation/Mitigation for Removal of Eastern Meadowlark Habitat

Eight (8) Bobolink breeding territories were recorded on the south parcel, and one (1) Eastern Meadowlark breeding territory and one (1) Bobolink pair breeding territory were recorded on the north parcel (**Figure 2**). The proposed development involves the removal of habitat for the one Eastern Meadowlark nesting location.

Under the habitat regulations for these species (Section 23.2 of Ontario Regulation 242/08), it is possible to remove the habitat provided suitable habitat is created within the same ecoregion. MECP has developed species specific guidelines and regulations to address habitat removals. Prior to removal of the meadow habitat, a plan must be developed in accordance with MECP guidelines to ensure compliance with the regulations. Alternatively, compensation through the Species at Risk Conservation Fund, per Ontario Regulation 829/21,may be explored where the proponent is required to pay a species conservation charge to the MECP.

8.11 Tree Removal and Preservation

The Tree Inventory and Assessment Report prepared by Schollen and Company Inc. (2024) under separate cover provides details on individual tree removals and compensation. These plans detail single trees and groups of trees that are outside of woodland areas. The Plan includes recommendations for retention or removal of each of these trees. The report also includes general guidelines including nest surveys during the breeding bird season prior to removal of any specimens, as well as direction for the installation of tree protection fencing.

9. Restoration and Enhancement Opportunities

Restoration and enhancement areas have not yet been identified at this stage of design, however, based on the current plan, opportunities do exist for restoration. An Edge Management and Buffer Planting Plan is proposed as the project moves to detailed design. It is recommended that the following restoration and enhancement objectives be achieved:

- Buffering existing habitats (**Section 8.2**);
- Providing connectivity between natural areas;
- Creating new habitat; and
- Enhancing and restoring existing habitats.

These will be addressed as the project moves to detailed design through the preparation of restoration, enhancement, and edge management plans.

Should a permit under Section 17(2)(c) of the ESA be required by MECP or offsetting as part of a SARA compliant *Fisheries Act* Authorization, additional restoration and enhancement will be required.

10. Policy Conformity

A summary of federal, provincial, and municipal environmental protection and planning policies and regulations applicable to the subject lands were discussed in **Section 2**. An evaluation of how the proposed development complies with the applicable environmental policies and legislation are summarized below..

10.1 Federal *Fisheries Act* (1985) and *Species at Risk Act* (2002)

Two road and sewer crossings are proposed for connectivity, neighborhood structure and to service the proposed development (refer to **Figure 4**). Street 'A' will cross the North-South Tributary, and Street 'C' crosses the upper reach of HDF 3. Additionally, consideration in further planning stages will need to be made to reduce impacts from SWM facility infrastructure and the quality and quantity of any stormwater inputs into fish habitat.

The protection provisions of the *Fisheries Act* apply to all fish habitat (including critical habitat) except for the prescribed waterbodies that meet the criteria for exemption.

When work is proposed within fish habitat and/or in the critical habitat of Redside Dace, a Request for Project Review shall be the first step to engage with DFO in order to ensure compliance with and identify the appropriate approval process that will be required under paragraphs 34.4(2)(b) and 35(2)(b) of the *Fisheries Act* and subsection 73(1) of SARA. A SARA compliant *Fisheries Act* Authorization may be required for works within critical habitat of Redside Dace.

10.2 Provincial *Endangered Species Act* (2007)

Habitat for Bobolink (threatened), Eastern Meadowlark (threatened), and Redside Dace (endangered) has been confirmed within the subject lands.

Eastern Meadowlark habitat will be removed from the subject lands to accommodate the proposed development. Compensation for the removal of the habitat will be provided in accordance with ESA regulations to the satisfaction of MECP.

The woodland communities contained within the NHS and the existing anthropogenic structures may provide suitable habitat for endangered bats. If later phases of the planning process result in anticipated impacts to the woodland communities, a detailed habitat inventory will likely need to be completed. Exit surveys are recommended for the existing structures that are currently being used for golf course operations. Pending the determination of impacts, consultation with the MECP may be required to ensure conformity with the ESA.

The West Humber River Tributary and the North-South Tributary are designated as regulated Redside Dace habitat. Further consultation with MECP is required to determine the extent of potential contributing habitat within the subject lands and to ensure compliance under the ESA.

10.3 Provincial Policy Statement (2020)

Section 2.0 of the PPS provides direction to regional and local municipalities regarding planning policies specifically for the protection and management of natural heritage features and resources. The PPS provides direction the planning authority with respect to natural heritage features and functions.

The subject lands do not contain provincially significant wetlands or significant ANSIs.

The subject lands contains significant woodlands and significant valleylands and is assumed to have significant wildlife habitat within these features. SWH includes specialized habitats of wildlife (turtle nesting areas and seeps and springs) and habitats of species of conservation concern (special concern and rare wildlife species). These features and their setbacks/buffers will be protected within the NHS.

The West Humber River Tributary and the North-South Tributary are permanent watercourses that provide direct fish habitat and are identified as regulated Redside Dace habitat. The meander belt width plus 30 m of vegetated area are protected within the NHS.

Habitat for endangered and threatened species will be protected or compensated for in accordance with ESA regulations as outlined in **Section 10.2** above.

10.4 Greenbelt Plan (2017)

A portion of the subject lands are within the Protected Countryside under the Greenbelt Plan as depicted on Schedule 1 (Greenbelt Area). Schedule 4 (NHS) of the Plan identifies all of the lands designated Protected Countryside on the subject lands as within the NHS. Within the NHS, KNHF and KHF have been identified on the subject lands and they include: habitat for threatened and endangered species, fish habitat, wetlands, significant valleylands, significant woodlands, SWH, permanent and intermittent streams, and seepage areas and springs.

In accordance with the policies of Section 3.2.5 (4) of the Greenbelt Plan, ecologically appropriate buffers have been applied to natural features to prevent any negative impacts and to enhance the NHS features and function. A buffer planting plan will be prepared to include additional plantings within the identified buffer areas. The addition of a planted buffer area will convert existing golf course to natural areas and will further bolster the utility of the buffer distance to protect the natural feature from potentially adverse impacts associated with the proposed development, in addition to increasing overall naturalized cover area.

The proposed development includes the encroachment of approximately 1.09 ha into the NHS within the Greenbelt, including 0.15 ha of wetland associated with the two crossings. Restoration and enhancement plantings in the NHS will be developed at detailed design to mitigate this loss.

In accordance with the infrastructure policies of the Greenbelt Plan (Section 4.2.1), the location of the crossings has been designed to minimize the impacts to the NHS. The proposed road crossings have been placed in locations where the riparian vegetation, associated with the wetland community, is relatively limited in width and in proximity to existing trial crossings.

In accordance with the stormwater management infrastructure policies of the Greenbelt Plan (Section 4.2.3), the SWM facilities are located outside the KNHF, KHF and their associated VPZs. A stormwater management plan has been completed (SCS 2024) to avoid, or if avoidance is not possible, minimize and mitigate stormwater volume, contaminant loads and impacts to receiving water courses.

10.5 Regional Municipality of Peel Official Plan (2022)

The natural heritage features present on the subject lands are primarily associated with the valley and stream corridors of the two West Humber River Tributaries. These features are identified as Core Areas, NAC and PNAC of the Region's Greenlands System (RPOP 2022). These features will be protected within the NHS. Ecologically appropriate setbacks/buffers have been applied to protect the features and their function. Mitigation measures have been recommended to minimize any potential effects of the development on the NHS.

The proposed development includes the encroachment of approximately 1.09 ha into the NHS within the Regional Greenlands System that are associated with the two crossings as well as the removal of a 0.06 ha isolated wetland (**Figure 4**). Restoration and enhancement plantings in the NHS will be developed at detailed design to mitigate this loss.

10.6 Town of Caledon Official Plan (2024 Consolidation)

Natural Core Areas and Natural Corridors are designated as Environmental Policy Area (EPA), and development within and adjacent to EPA shall subject to the general policies of Section 3.2.4, the performance measures of Section 3.2.5, and the detailed land use policies of Section 5.7, and, within the Greenbelt Protected Countryside designation, the detailed policies of Section 7.13.

This NHE has been prepared per the policies of the Town to demonstrate no negative impact on the identified natural heritage features. Features were identified to trigger the completion of this report and include wetlands, woodlands, valley corridor, habitat of threatened and endangered species, fish habitat and watercourses (West Humber and North-South tributary)

In accordance with the recommendations outlined in the draft Phase 1 – Subwatershed Characterization and Integration Report (GEI 2024), ecologically appropriate VPZs and setbacks for valleylands and other features/hazards outside the Greenbelt Plan Area have been applied to protect the features and their function. Mitigation measures have been recommended to minimize any potential effects of the development on the NHS.

The proposed development includes the encroachment of approximately 1.09 ha into the NHS within the EPA that are associated with the two crossings as well as the removal of a 0.06 ha isolated wetland (**Figure 4**). Restoration and enhancement plantings in the NHS will be developed at detailed design to mitigate this loss.

10.7 Future Caledon Official Plan (Draft 2024)

The policies of the Future Caledon OP are in alignment with the policies set out in the RPOP for Core Areas, Natural Areas and Corridors and Potential Natural Areas and Corridors within the regional Greenlands System. The requirements of the policies have been met as outlined in **Section 10.5.**

10.8 Toronto and Region Conservation Authority (TRCA) Regulation

TRCA regulated areas on the subject lands include hazard lands including floodplains, watercourses, valleylands, and wetlands. A permit will be required by the TRCA as development is proposed within valleylands and wetlands and there are two proposed crossings of the watercourse.

The proposed development includes the encroachment of approximately 1.09 ha into the NHS associated with the two crossings as well as the removal of a 0.06 ha isolated wetland (**Figure 4**). Restoration and enhancement plantings in the NHS will be developed at detailed design to mitigate this loss.

Beacon provided TRCA with a draft Terms of Reference (TOR) for this NHE in 2022 prior to completing the staking exercise. TRCA conducteda feature staking with Beacon Environmental under a Concept Development Application.

The limits of the regulated top of slope, the dripline of the wooded valley features and unevaluated wetlands associated with the valley and stream corridors were surveyed and staked with TRCA staff on October 18, 2022, for the Golf Course Lands and on August 28, 2023 for the south lands. There is one area of woodland in the southwest, located within the Greenbelt Plan Area, that was not staked, the boundary of which has been established through mapping of the ELC community.

11. Conclusion

Beacon has conducted a background review and field investigations to prepare this NHE for the proposed subdivision development. Seasonal field studies including vegetation characterization, breeding bird surveys, amphibian call surveys and aquatic assessments were completed. The appropriate natural heritage policy framework was reviewed with respect to the PPS, , Greenbelt Plan, Town of Caledon Official Plan, as well as the TRCA regulations, ESA, *Fisheries Act* and SARA.

The proposed development has been described and an impact analysis undertaken in the context of natural heritage features and functions. The proposed development will occur largely within the existing golf course area and effects will include the removal of one small isolated unevaluated wetland, the partial removal of riparian wetlands associated with the West Humber River tributaries, the infilling of a portion of four headwater features, individual tree loss and the removal of cultural meadow communities. The natural heritage corridor will be maintained and buffered resulting in an overall increase in areas within the NHS. Removal of headwaters and small wetland areaswill be compensated for through restoration and enhancement areas that will be identified in future stages of the planning and design process as well as low impact development. Other general mitigation measures have been proposed and are to be adhered to, to ensure any potential adverse impacts to the natural system do not occur, including vegetation timing windows and ESC measures.

Subject to the implementation of the recommended mitigation measures, the proposed redevelopment of the subject lands demonstrates compliance and conformity with the relevant policies of the PPS, Greenbelt Plan, Region, Town, and the regulations of the TRCA. Consultation with MECP and DFO will be conducted at the appropriate stage in the planning process, to ensure compliance with and to obtain any necessary approvals, permits and authorizations under the ESA, *Fisheries Act* and SARA.

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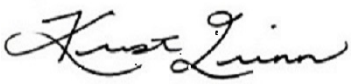

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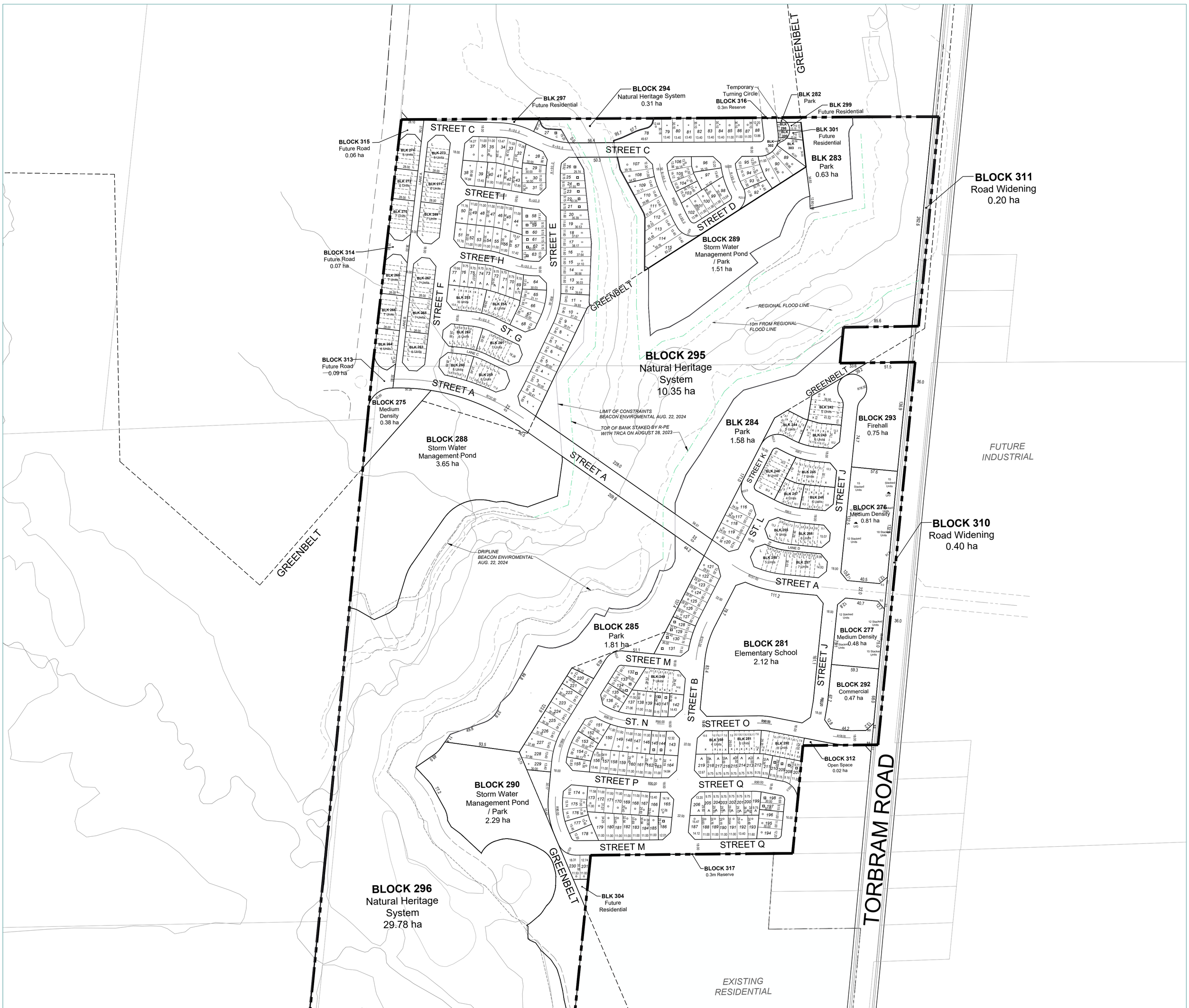
Appendix A

Draft Plan of Subdivision

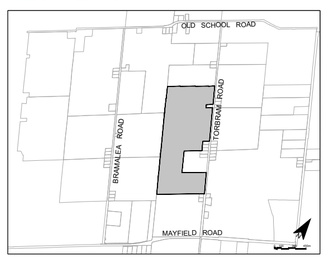


DRAFT - FOR DISCUSSION PURPOSES ONLY

DRAFT PLAN OF SUBDIVISION

Part of Lots 19, 20 and 21
Concession 5,
East of Hurontario Street
Town of Caledon
Regional Municipality of Peel

KEY PLAN



SUBJECT PROPERTY

SCHEDULE OF LAND USE

LOT/BLOCK	LAND USE		UNITS	AREA (ha)
1-241	Single Detached Min. 13.40m	+	47	9.23
	Single Detached Min. 11.60m	=	13	
	Single Detached Min. 11.00m	o	124	
	Single Detached Min. 9.45m	^	26	
	Single Detached Min. 9.15m	□	31	
242-254	Street Townhouse Min 6.10m	X	77	1.79
255-274	Lane Townhouse Min. 5.80m	L	124	2.50
275-280	Medium Density Residential			4.13
281	Elementary School			2.12
282-287	Park			6.46
288	Storm Water Management Pond			3.65
289-291	Storm Water Management Pond/Park			4.65
292	Commercial			0.47
293	Firehall			0.76
294-296	Natural Heritage System			40.44
297-308	Future Residential			3.73
309-311	Road Widening			0.82
312	Open Space			0.02
313-315	Future Road			0.21
316-318	0.3m Reserve			0.01
Streets A-B	22.0m Right of Way	1,281 m		2.84
Streets C-Q	18.0m Right of Way	3,685 m		6.92
Lane A-D	8.0m Right of Way	463 m		0.43
	TOTAL	5,429 m	442	91.18

OWNER'S AUTHORIZATION

I hereby authorize Malone Given Parsons Ltd. to prepare and submit this Draft Plan of Subdivision to the Town of Caledon.

Mayfield Golf Course Inc. — Date

Tullamore Industrial GP Inc. — Date

Tullamore Industrial GP Inc. — Date

SURVEYOR'S CERTIFICATE

I hereby certify that the boundaries of the lands to be subdivided as shown on this Plan and their relationship to the adjacent lands are accurately and correctly shown.

RPE — Date

ADDITIONAL INFORMATION

AS REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT, CHAPTER P.13(R.S.O. 1990).
(a),(e),(f),(g),(j),(l) - As shown of the Draft Plan.
(b),(c) - As shown on the Draft and Key Plan.
(d) - Land to be used in accordance with the Schedule of Land Use.
(i) - Soil is silt and clay loam.
(h),(k) - Full municipal services to be provided.

Date	Revision	By

MGP File No.: 22-3154
Date: May 31, 2024
Revised: October 1, 2024

Prepared For:

Mayfield Golf Course Inc. &
Tullamore Industrial GP Inc.

Malone Given Parsons.
140 Renfrew Drive, Suite 201 | Markham, ON | L3R 6B3
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Appendix B

Photographic Record

Appendix B

Photographic Record of Aquatic Resources

West Humber River Tributaries (WHT-1, WHT-2 and WHT-3)

Photograph 1.
Representative View of the North Parcel Reach (WHT-1) of the West Humber River Tributary.

Photograph 2.
Representative View of the South Parcel Reach (WHT-1A) of the West Humber River Tributary.

Photograph 3.
Representative View of the Downstream Reach (WHT-2) of the North-South Tributary.

Photograph 4.
Representative View of the Upstream Reach (WHT-3) of the North-South Tributary.

Irrigation (Golf Course) Ponds

Photograph 5.
Pond A – View From South Shoreline Looking North (June 28, 2022).

Photograph 6.
Pond B – View From East Pathway Looking West (June 28, 2022).

Photograph 7.
Pond C – View From Southeast Shoreline Looking North (June 28, 2022).

Drainage Features

Photograph 8.
HDF 1 – Downstream View (April 12, 2023).

Photograph 9.
HDF 2 – Downstream View (April 12, 2023).

Photograph 10.
HDF 3A – Downstream View (April 12, 2023).

Photograph 11.
HDF 3B – Upstream View of Tile Drain Outfall (April 12, 2023).

Photograph 12.
HDF 3C – Downstream View (May 17, 2023).

Photograph 13.
HDF 4A – Downstream View of Tile Drain (April 12, 2023).

Photograph 14.
HDF 4B – Upstream View (April 12, 2023).

Photograph 15.
HDF 4C – Downstream View (May 17, 2023).

Photograph 16.
HDF 5 – Upstream View (April 12, 2023).

Photograph 17.
HDF 6 – Upstream View (April 12, 2023).

Photograph 18.
HDF 7 – Downstream View (April 12, 2023).

Photograph 19.
HDF 8 – Upstream View (April 12, 2023).

Photograph 20.
HDF 9 – Upstream View (April 12, 2023).

Photograph 21.
HDF 10 – Upstream View (April 12, 2023).

Photograph 22.
HDF 11 – Downstream View (April 12, 2023).

Photograph 23.
HDF 12 – Downstream View (April 12, 2023).

Photographic Record of Terrestrial Communities

Photograph 24. View of North Parcel (Golf Course Lands) (September 1, 2022)

Photograph 25. View of CUM1-1 Unit (September 1, 2022)

Photograph 26. View Within CUT1 Unit (September 1, 2022)

Photograph 27. View Outside of CUT1 (Background) and Surrounding CUM1 (Foreground) Within the South Parcel (June 30, 2023)

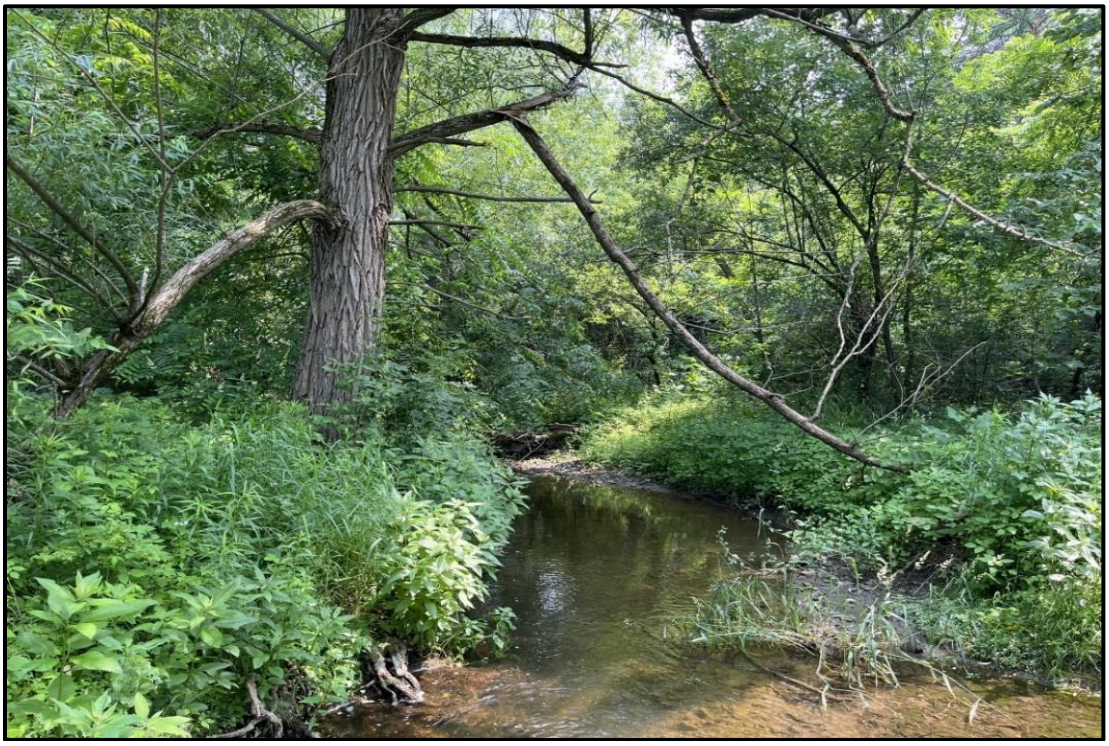
Photograph 28. View of Outside of CUW1a (June 30, 2023)

Photograph 29. View Within CUW1b (June 30, 2023)

Photograph 30. View Within FOD3 Community (June 30, 2023)

Photograph 31. View of MAM2-10 Unit (Foreground) with SWD4-1 (Background; September 1, 2022)

Photograph 32. View of Isolated MAS2-1 Community (May 26, 2023)



Photograph 33. View of SWD4 Community and West Humber River Tributary (June 30, 2023)

Photograph 34. Representative View of OAO Ponds (September 1, 2022)

Photograph 35. View of SAM1-4 Pond (June 30, 2023)

Appendix C

Summary of Functional Classifications and Management Recommendations

Appendix C

Summary of Functional Classifications and Management Recommendations

Drainage Feature Segment	Step 1		Step 2	Step 3	Step 4	Management Recommendation per HDFA Guidelines	Rational	Final Management Recommendation
	Hydrology	Modifiers	Riparian	Fish Habitat	Terrestrial Habitat			
HDF-1	**Contributing Function:** minimal flow present in early spring. Channel was observed to be dry by late spring.	None	**Contributing Function**: the riparian corridor is dominated by lawn and there are no important or valued riparian functions**.**	**Contributing Function:** may contribute to the transport of allochthonous materials to downstream fish habitat.	**Limited Function:** no terrestrial habitat present.	Mitigation - *Contributing Functions: i.e., contributing fish habitat with meadow vegetation or limited cover.*	Ephemeral flow conditions, no meadow riparian vegetation or cover, no fish habitat, and no breeding amphibians.	No Management – *Limited Functions: i.e., features with no or minimal flow; cropped land or no riparian vegetation; no fish or fish habitat; and no amphibian habitat.* Partial removal of the feature is proposed. Replication of function shall be achieved through applying the proposed lot level/conveyance controls and stormwater management. Features existing connection to the North-South tributary shall be maintained within the NHS.
HDF-2	**Contributing Function:** minimal flow present in early spring. Channel was observed to be dry by late spring.	None	**Contributing Function:** the riparian corridor is dominated by lawn and there are no important or valued riparian functions.	**Contributing Function:** may contribute to the transport of allochthonous materials to downstream fish habitat.	**Limited Function:** no terrestrial habitat present.	Mitigation	Ephemeral flow conditions, no meadow riparian vegetation or cover, no fish habitat, and no breeding amphibians.	No Management Partial removal of the feature is proposed. Replication of function shall be achieved through applying the proposed lot level/conveyance controls and stormwater management. Features existing connection to the North-South tributary shall be maintained within the NHS.
HDF-3A	**Valued Function**: substantial flow in early spring transitioning to minimal flow by late spring. Channel was observed to be dry by summer.	None	**Important Function**: the riparian corridor is dominated by wetland.	**Contributing Function:** may contribute to the transport of allochthonous materials to downstream fish habitat.:	**Valued Function:** wetland habitat occurs within the corridor, but no breeding amphibians are present.	Conservation – *Valued Functions: i.e., seasonal fish habitat; with woody riparian cover; marshes with amphibian breeding habitat; or general amphibian habitat with woody riparian cover.*	No change in management recommendation.	Conservation Feature segment shall be maintained within the NHS.
HDF-3B	**Valued Function:** substantial flow in early spring transitioning to minimal flow by late spring. Channel was observed to be dry by summer.	Approximately 90% of feature segment is tiled.	**Contributing Function**: the riparian corridor is dominated by lawn and there are no important or valued riparian functions.	Not applicable due to modifier.	**Limited Function:** no terrestrial habitat present.	Mitigation.	No change in management recommendation.	Mitigation Full removal of the feature segment is proposed. Replication of function shall be achieved through applying the proposed lot level/conveyance controls and stormwater management. Features existing connection to the HDF-3 shall be maintained within the NHS.

Drainage Feature Segment	Step 1		Step 2	Step 3	Step 4	Management Recommendation per HDFA Guidelines	Rational	Final Management Recommendation
	Hydrology	Modifiers	Riparian	Fish Habitat	Terrestrial Habitat			
HDF 3C	**Valued Function:** substantial flow in early spring transitioning to minimal flow by late spring. Channel was observed to be dry by summer.	None	**Important Function:** the riparian corridor is dominated by forest.	**Valued Function:** may provide seasonal fish habitat.	**Valued Function:** wetland habitat occurs within the corridor, but no breeding amphibians are present.	Protection – *Important Functions: i.e., swamps with amphibian breeding habitat; perennial headwater drainage features; seeps and springs; Species at Risk (SAR) habitat; permanent fish habitat with woody riparian cover.*	No change in management recommendation.	Protection Feature segment shall be maintained within the NHS.
HDF 4A	**Limited Function:** standing water observed in early spring and dry conditions in late spring.	Approximately 90% of feature segment is tiled.	**Valued Function:** a portion of the riparian corridor is dominated by meadow, however there are no important riparian functions.	Not applicable due to modifier**.**	**Limited Function:** no terrestrial habitat present.	Mitigation.	No change in management recommendation.	Mitigation Full removal of the feature segment is proposed. Replication of function shall be achieved through applying the proposed lot level/conveyance controls and stormwater management. Features existing connection to the HDF-4C shall be maintained within the NHS.
HDF4B	**Limited Function:** standing water observed in early spring and dry conditions in late spring.	None	**Contributing Function**: the riparian corridor is dominated by lawn and there are no important or valued riparian functions.	**Contributing Function**: may contribute to the transport of allochthonous materials to downstream fish habitat.	**Limited Function:** no terrestrial habitat present.	Mitigation.	No change in management recommendation.	Mitigation Full removal of the feature segment is proposed. Replication of function shall be achieved through applying the proposed lot level/conveyance controls and stormwater management. Features existing connection to the HDF-4C shall be maintained within the NHS.
HDF-4C	**Valued Function:** substantial flow in early spring transitioning to minimal flow by late spring. Channel was observed to be dry by summer	Small portion tiled upstream (HDF 4A).	**Important Function:** the riparian corridor is dominated by forest.	**Valued Function:** may provide seasonal fish habitat.	**Contributing Function**: no wetland habitat occurs within the corridor, but other vegetation may be present to facilitate wildlife movement.	Protection	No change in management recommendation.	Protection Feature segment shall be maintained within the NHS.
HDF-5	**Limited Function:** dry conditions observed in early spring.	Flows into irrigation pond.	**Contributing Function**: the riparian corridor is dominated by lawn and there are no important or valued riparian functions.	Not applicable due to modifier.	**Limited Function:** no terrestrial habitat present.	No Management	No change in management recommendation.	No Management Feature segment shall be maintained within the NHS.
HDF-6	**Limited Function:** dry conditions observed in early spring.	Tiled and flows into irrigation pond.	**Contributing Function:** the riparian corridor is dominated by lawn and there are no important or	Not applicable due to modifier.	**Limited Function:** no terrestrial habitat present	No Management	No change in management recommendation.	No Management Feature segment shall be maintained within the NHS.

Drainage Feature Segment	Step 1		Step 2	Step 3	Step 4	Management Recommendation per HDFA Guidelines	Rational	Final Management Recommendation
	Hydrology	Modifiers	Riparian	Fish Habitat	Terrestrial Habitat			
			valued riparian functions.					
HDF-7	**Limited Function**: dry conditions observed in early spring.	None	**Contributing Function:** the riparian corridor is dominated by lawn and there are no important or valued riparian functions.	**Contributing Function:** may contribute to the transport of allochthonous materials to downstream fish habitat.	**Limited Function:** no terrestrial habitat present	No Management	No change in management recommendation.	No Management Feature segment shall be maintained within the NHS.
HDF-8	**Contributing Function:** standing water with some areas of minimal flow observed in early spring and dry conditions in late spring.	None	**Important Function:** the riparian corridor is dominated by thicket and forest.	**Contributing Function:** may contribute to the transport of allochthonous materials to downstream fish habitat.	**Contributing Function**: no wetland habitat occurs within the corridor, but other vegetation may be present to facilitate wildlife movement.	Conservation	May provide ephemeral flow during early spring freshet and large precipitation events, woody riparian vegetation that is segmented by the golf cart path and manicured grass, no fish habitat, and no records of breeding amphibians.	Mitigation Feature segment shall be maintained within the NHS.
HDF-9	**Limited Function**: dry conditions observed in early spring.	None	**Important Function:** the riparian corridor is dominated by forest.	**Contributing Function:** may contribute to the transport of allochthonous materials to downstream fish habitat.	**Contributing Function**: no wetland habitat occurs within the corridor, but other vegetation may be present to facilitate wildlife movement.	Maintain/ Replicate Terrestrial – *Terrestrial Functions: i.e., features with no flow with woody riparian vegetation and connects two other natural features identified for protection.*	No change in management recommendation.	Maintain/ Replicate Terrestrial Feature segment shall be maintained within the NHS.
HDF-10	**Contributing Function:** dry conditions observed in early spring; however. wetland occurs upstream.	Flows into irrigation pond.	**Contributing Function:** the riparian corridor is dominated by lawn and there are no important or valued riparian functions.	Not applicable due to modifier.	**Contributing Function:** feature connects two other features upstream and downstream that have records of breeding amphibians.	Mitigation	No change in management recommendation.	Mitigation Full removal of the feature segment is proposed. Replication of function shall be achieved through applying the proposed lot level/conveyance controls and stormwater management.
HDF-11	**Limited Function:** standing water and dry conditions observed in early spring.	None	**Valued Function**: riparian corridor is dominated by meadow however there are no important riparian functions	**Contributing Function:** may contribute to the transport of allochthonous materials to downstream fish habitat	**Valued Function:** ponded area provides general amphibian habitat and has records of breeding amphibians.	No Management	No change in management recommendation.	No Management Feature segment shall be maintained.
HDF-12	**Limited Function**: standing water and dry conditions observed in early spring.	None	**Limited Function:** the riparian corridor is dominated by cropped land.	**Contributing Function:** may contribute to the transport of allochthonous	**Limited Function:** no terrestrial habitat present.	No Management	No change in management recommendation.	No Management Full removal of the feature segment is proposed. Replication of function shall be achieved through applying the

Drainage Feature Segment	Step 1		Step 2	Step 3	Step 4	Management Recommendation per HDFA Guidelines	Rational	Final Management Recommendation
	Hydrology	Modifiers	Riparian	Fish Habitat	Terrestrial Habitat			
				materials to downstream fish habitat.				proposed lot level/conveyance controls and stormwater management.

Appendix D

Floral Survey Data

Appendix D

Scientific Name	Common Name	COSEWIC	SARO	SRank	Rank (TRCA April 2019)	PEEL (Varga 2005)	GTA (Varga 2005)	Nat Status
Acer campestre	Hedge Maple			SE1	L+			I
Acer negundo	Manitoba Maple			S5	L+?			N
Acer nigrum	Black Maple			S4?	L4			N
Acer platanoides	Norway Maple			SE5	L+			I
Acer saccharinum	Silver Maple			S5	L4			N
Acer saccharum	Sugar Maple			S5	L5			N
Acer x freemanii	Freeman's Maple			SNA	L4			N
Achillea millefolium	Common Yarrow			SE5?	L+			I
Actaea rubra	Red Baneberry			S5				N
Alisma subcordatum	Southern Water-plantain			S4?	L3			N
Alliaria petiolata	Garlic Mustard			SE5	L+			I
Ambrosia artemisiifolia	Common Ragweed			S5	L5			N
Amphicarpaea bracteata	American Hog-peanut			S5	L5			N
Anemonastrum canadense	Canada Anemone			S5	L5			N
Arctium lappa	Great Burdock			SE5	L+			I
Arctium minus	Common Burdock			SE5	L+			I
Arisaema triphyllum	Jack-in-the-pulpit			S5	L5			N
Asclepias syriaca	Common Milkweed			S5	L5			N
Betula papyrifera	Paper Birch			S5	L4			N
Borago officinalis	Common Borage			SEH	L+			I
Bromus inermis	Smooth Brome			SE5	L+			I
Carduus crispus	Curled Thistle			SE2?				I
Carex stricta	Tussock Sedge			S5	L4			N
Carex vulpinoidea	Fox Sedge			S5	L5			N
Carya cordiformis	Bitternut Hickory			S5	L4			N
Celtis occidentalis	Common Hackberry			S4	L+		R	N
Ceratophyllum demersum	Common Hornwort			S5	L4	R3	U	N
Cichorium intybus	Wild Chicory			SE5	L+			I
Circaea canadensis	Broad-leaved Enchanter's Nightshade			S5				N
Cirsium arvense	Canada Thistle			SE5	L+			I
Cirsium vulgare	Bull Thistle			SE5	L+			I
Clematis virginiana	Virginia Clematis			S5	L5			N
Convolvulus arvensis	Field Bindweed			SE5	L+			I
Coreopsis lanceolata	Lance-leaved Tickseed			S4	L+			N
Cornus alternifolia	Alternate-leaved Dogwood			S5	L5			N
Cornus sericea	Red-osier Dogwood			S5	L5			N
Crataegus monogyna	English Hawthorn			SE4	L+			I
Crataegus sp.	Hawthorn sp.			S5	L5			N
Cuscuta gronovii	Swamp Dodder			S5	L4	R5	U	N
Daucus carota	Wild Carrot			SE5	L+			I
Diervilla lonicera	Northern Bush-honeysuckle			S5	L5			N
Dipsacus fullonum	Common Teasel			SE5	L+			I
Dryopteris carthusiana	Spinulose Wood Fern			S5	L5			N
Echinocystis lobata	Wild Cucumber			S5	L5			N
Eleocharis erythropoda	Red-stemmed Spikerush			S5	L5			N
Elodea canadensis	Canada Waterweed			S5	L4	R3	U	N
Elymus canadensis	Canada Wildrye			S5	L4	E	R	N
Epipactis helleborine	Broad-leaved Helleborine			SE5	L+			I
Equisetum arvense	Field Horsetail			S5	L5			N

Scientific Name	Common Name	COSEWIC	SARO	SRank	Rank (TRCA April 2019)	PEEL (Varga 2005)	GTA (Varga 2005)	Nat Status
Erigeron annuus	Annual Fleabane			S5	L5			N
Erigeron philadelphicus	Philadelphia Fleabane			S5				N
Euonymus obovatus	Running Strawberry-bush			S4	L3			N
Euthamia graminifolia	Grass-leaved Goldenrod			S5	L5			N
Eutrochium maculatum var. maculatum	Spotted Joe Pye Weed			S5	L5			N
Festuca rubra	Red Fescue			S5				N
Fragaria vesca	Woodland Strawberry			S5				N
Fragaria virginiana	Wild Strawberry			S5	L5			N
Fraxinus americana	White Ash			S4	L5			N
Fraxinus pennsylvanica	Red Ash			S4	L5			N
Geranium robertianum	Herb-Robert			S5	L+?			N
Geum urbanum	Wood Avens			SE3	L+			I
Glechoma hederacea	Ground-ivy			SE5	L+			I
Helianthus tuberosus	Jerusalem Artichoke			SU	L5			N
Hemerocallis fulva	Orange Daylily			SE5	L+			I
Hydrophyllum virginianum	Virginia Waterleaf			S5	L5			N
Hypericum perforatum	Common St. John's-wort			SE5	L+			I
Impatiens capensis	Spotted Jewelweed			S5	L5			N
Inula helenium	Elecampane			SE5	L+			I
Juglans nigra	Black Walnut			S4?	L5			N
Larix laricina	Tamarack			S5	L3			N
Lathyrus latifolius	Everlasting Pea			SE4	L+			I
Leersia oryzoides	Rice Cutgrass			S5	L5			N
Lemna minor	Small Duckweed			S5?	L5			N
Leonurus cardiaca	Common Motherwort			SE5				I
Leucanthemum vulgare	Oxeye Daisy			SE5	L+			I
Lilium michiganense	Michigan Lily			S4	L3	U	U	N
Lolium perenne	Perennial Ryegrass			SE4	L+			I
Lonicera tatarica	Tatarian Honeysuckle			SE5	L+			I
Lotus corniculatus	Garden Bird's-foot Trefoil			SE5	L+			I
Lythrum salicaria	Purple Loosestrife			SE5	L+			I
Malus pumila	Common Apple			SE4	L+			I
Matricaria chamomilla	Wild Chamomile			SE3	L+			I
Matteuccia struthiopteris	Ostrich Fern			S5				N
Melilotus officinalis	Yellow Sweet-clover			SE5	L+			I
Morus alba	White Mulberry			SE5	L+			I
Myosotis stricta	Upright Forget-me-not			SE4	L+			I
Nasturtium officinale	Watercress			SE	L+?			I
Nepeta cataria	Catnip			SE5	L+			I
Ostrya virginiana	Eastern Hop-hornbeam			S5	L5			N
Oxalis stricta	Upright Yellow Wood-sorrel			S5	L5			N
Parthenocissus vitacea	Thicket Creeper			S5	L5			N
Persicaria maculosa	Spotted Lady's-thumb			SE5	L+			I
Phalaris arundinacea	Reed Canarygrass			S5	L+?			N
Phleum pratense	Common Timothy			SE5	L+			I
Phragmites australis	Common Reed			S4?				N
Picea glauca	White Spruce			S5	L3	R3		N
Picea pungens	Blue Spruce			SE1	L+			I
Pilosella caespitosa	Meadow Hawkweed			SE5	L+			I
Pinus nigra	Austrian Pine			SE3	L+			I
Pinus resinosa	Red Pine			S5	L1	R1	R	N
Pinus strobus	Eastern White Pine			S5	L4			N
Pinus sylvestris	Scots Pine			SE5	L+			I

Scientific Name	Common Name	COSEWIC	SARO	SRank	Rank (TRCA April 2019)	PEEL (Varga 2005)	GTA (Varga 2005)	Nat Status
Plantago lanceolata	English Plantain			SE5	L+			I
Plantago major	Common Plantain			SE5	L+			I
Poa pratensis	Kentucky Bluegrass			S5				N
Populus balsamifera	Balsam Poplar			S5	L5			N
Populus grandidentata	Large-toothed Aspen			S5	L4			N
Populus x canadensis	Carolina Poplar			SNA	L+			I
Potentilla recta	Sulphur Cinquefoil			SE5	L+			I
Prunus serotina	Black Cherry			S5	L5			N
Prunus virginiana	Chokecherry			S5				N
Pyrus communis	Common Pear			SE4	L+			I
Quercus rubra	Northern Red Oak			S5	L4			N
Ranunculus acris	Common Buttercup			SE5	L+			I
Rhamnus cathartica	European Buckthorn			SE5	L+			I
Rhus typhina	Staghorn Sumac			S5	L5			N
Ribes cynosbati	Eastern Prickly Gooseberry			S5	L5			N
Rubus idaeus	Red Raspberry			S5				N
Rumex britannica	Greater Water Dock			S5	L4	R2	U	N
Rumex crispus	Curled Dock			SE5	L+			I
Sagittaria latifolia	Broad-leaved Arrowhead			S5	L4			N
Salix alba	White Willow			SE4	L+			I
Salix discolor	Pussy Willow			S5	L4			N
Salix eriocephala	Cottony Willow			S5	L5			N
Salix interior	Sandbar Willow			S5	L5	R5		N
Salix nigra	Black Willow			S4	L3	R4	R	N
Salix x fragilis	Hybrid Crack Willow			SNA	L+			I
Salix x sepulcralis	Weeping Willow			SNA	L+			I
Sambucus canadensis	Common Elderberry			S5	L5			N
Sanguinaria canadensis	Bloodroot			S5	L5			N
Schoenoplectus tabernaemontani	Soft-stemmed Bulrush			S5	L4			N
Solanum dulcamara	Bittersweet Nightshade			SE5	L+			I
Solidago altissima	Tall Goldenrod			S5	L5			N
Solidago canadensis	Canada Goldenrod			S5				N
Solidago flexicaulis	Zigzag Goldenrod			S5	L5			N
Sonchus arvensis	Field Sow-thistle			SE5				I
Symphyotrichum cordifolium	Heart-leaved Aster			S5	L5			N
Symphyotrichum lanceolatum	Panicled Aster			S5				N
Symphyotrichum novae-angliae	New England Aster			S5	L5			N
Syringa vulgaris	Common Lilac			SE5	L+			I
Tanacetum vulgare	Common Tansy			SE5	L+			I
Taraxacum officinale	Common Dandelion			SE5	L+			I
Tilia americana	Basswood			S5	L5			N
Trifolium hybridum	Alsike Clover			SE5	L+			I
Trifolium pratense	Red Clover			SE5	L+			I
Trifolium repens	White Clover			SE5	L+			I
Tripleurospermum inodorum	Scentless Chamomile			SE	L+			I
Tussilago farfara	Coltsfoot			SE5	L+			I
Typha angustifolia	Narrow-leaved Cattail			SE5	L+			I
Typha latifolia	Broad-leaved Cattail			S5	L4			N
Typha x glauca	Hybrid Cattail			SNA	L+			N
Ulmus americana	White Elm			S5	L5			N
Urtica dioica	Stinging Nettle			S5				N
Verbascum thapsus	Common Mullein			SE5	L+			I
Verbena hastata	Blue Vervain			S5	L5			N

Scientific Name	Common Name	COSEWIC	SARO	SRank	Rank (TRCA April 2019)	PEEL (Varga 2005)	GTA (Varga 2005)	Nat Status
Viburnum opulus	Cranberry Viburnum			S5				N
Vicia cracca	Tufted Vetch			SE5	L+			I
Vincetoxicum rossicum	European Swallowwort			SE5	L+			I
Viola sororia	Woolly Blue Violet			S5	L5			N
Vitis riparia	Riverbank Grape			S5	L5			N

Provincial S-Rank

S1 – Critically Imperiled: Critically imperiled because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation.
S2 – Imperiled: Imperiled because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation.
S3 – Vulnerable: Vulnerable due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4 – Apparently Secure: Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5 – Secure: Common, widespread, and abundant.
SNA – Not Applicable: A conservation status rank is not applicable because the species is not a suitable target for conservation activities (usually refers to non-native species).
SU – Unrankable: Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

TRCA RANK, Level of conservation concern in TRCA Region

L5 – Able to withstand high levels of disturbance; generally secure throughout the jurisdiction, including the urban matrix.
L4 – Able to withstand some disturbance; generally secure in rural matrix; of concern in urban matrix.
L3 – Able to withstand minor disturbance; generally secure in natural matrix; considered to be of regional concern.
L2 – Unable to withstand disturbance; some criteria are very limiting factors and generally, occur in high-quality natural areas, in natural matrix; probably rare in the TRCA jurisdiction; of concern regionally.
L1 – Unable to withstand disturbance; many criteria are limiting factors and generally occur in high-quality natural areas in natural matrix; almost certainly rare in the TRCA jurisdiction; of concern regionally.

COSEWIC = Committee on the Status of Endangered Wildlife in Canada

Species at Risk in Ontario List (as applies to ESA) as designated by COSSARO (Committee on the Status of Species at Risk in Ontario),

Appendix E

Breeding Bird Survey Data

Appendix E

Breeding Bird Data – North Parcel

Common Name	Scientific Name	Status					# Pairs/Territories
		National Species at Risk COSEWIC[1]	Species at Risk in Ontario Listing [2]	Provincial breeding season SRANK [3]	TRCA Status [4]	Area-sensitive (OMNR) [5]	
Great Blue Heron	*Ardea herodias*			S4	L3		foraging
Green Heron	*Butorides virescens*			S4	L4		1
Canada Goose	*Branta canadensis*			S5	L5		3
Wild Turkey	*Meleagris gallopavo*			S5	L3		1
Killdeer	*Charadrius vociferus*			S5	L4		3
Spotted Sandpiper	*Actitis macularia*			S5	L4		2
Rock Pigeon	*Columba livia*			SNA	L+		2
Mourning Dove	*Zenaida macroura*			S5	L5		3
Red-bellied Woodpecker	*Melanerpes carolinus*			S4	L4		3
Downy Woodpecker	*Dryobates pubescens*			S5	L5		2
Hairy Woodpecker	*Dryobates villosus*			S5	L4	A	1
Northern Flicker	*Colaptes auratus*			S4	L4		1
Eastern Wood-Pewee	*Contopus virens*	SC	SC	S4	L4		3
Willow Flycatcher	*Empidonax traillii*			S5	L4		4
Least Flycatcher	*Empidonax minimus*			S4	L3	A	1
Eastern Phoebe	*Sayornis phoebe*			S5	L5		1
Great Crested Flycatcher	*Myiarchus crinitus*			S4	L4		2
Eastern Kingbird	*Tyrannus tyrannus*			S4	L4		3
Horned Lark	*Eremophila alpestris*			S5	L3		3
Tree Swallow	*Tachycineta bicolor*			S4	L4		1
Barn Swallow	*Hirundo rustica*	SC	SC	S4	L4		4
Blue Jay	*Cyanocitta cristata*			S5	L5		2
American Crow	*Corvus brachyrhynchos*			S5	L5		1
Black-capped Chickadee	*Poecile atricapillus*			S5	L5		5
House Wren	*Troglodytes aedon*			S5	L5		2
American Robin	*Turdus migratorius*			S5	L5		11
Gray Catbird	*Dumetella carolinensis*			S4	L4		5

Common Name	Scientific Name	Status					# Pairs/Territories
		National Species at Risk COSEWIC[1]	Species at Risk in Ontario Listing [2]	Provincial breeding season SRANK [3]	TRCA Status [4]	Area-sensitive (OMNR) [5]	
Brown Thrasher	*Toxostoma rufum*			S4	L3		1
Cedar Waxwing	*Bombycilla cedrorum*			S5	L5		2
European Starling	*Sturnus vulgaris*			SE	L+		4
Warbling Vireo	*Vireo gilvus*			S5	L5		2
Red-eyed Vireo	*Vireo olivaceus*			S5	L4		3
Yellow Warbler	*Setophaga petechia*			S5	L5		7
American Redstart	*Setophaga ruticilla*			S5	L4	A	4
Common Yellowthroat	*Geothlyphis trichas*			S5	L4		3
Northern Cardinal	*Cardinalis cardinalis*			S5	L5		6
Rose-breasted Grosbeak	*Pheucticus ludovicianus*			S4	L4		1
Indigo Bunting	*Passerina cyanea*			S4	L4		3
Chipping Sparrow	*Spizella passerina*			S5	L5		8
Vesper Sparrow	*Pooecetes gramineus*			S4	L3		1
Savannah Sparrow	*Passerculus sandwichensis*			S4	L4	A	7
Song Sparrow	*Melospiza melodia*			S5	L5		11
Red-winged Blackbird	*Agelaius phoeniceus*			S4	L5		7
Eastern Meadowlark	*Sturnella magna*	THR	THR	S4	L3	A	1
Common Grackle	*Quiscalus quiscula*			S5	L5		2
Brown-headed Cowbird	*Molothrus ater*			S4	L5		1
Orchard Oriole	*Icterus spurius*			S4	L5		1
Baltimore Oriole	*Icterus galbula*			S4	L5		2
House Finch	*Haemorhous mexicanus*			SNA	L+		1
American Goldfinch	*Spinus tristis*			S5	L5		6
House Sparrow	*Passer domesticus*			SNA	L+		2

Field Work Conducted On: June 3 and July 11, 2022

Number of Species: 50 + 1 foraging
Number of (provincial and national) Species at Risk: Eastern Meadowlark (THR), Barn Swallow (SC) and Eastern Wood-pewee (SC)
Number of S1 to S3 Species: 3
Number of TRCA L1, L2 and L3 Species (Species of Concern): 0
Number of Area-sensitive Species: 0

Table Key
1) COSEWIC = Committee on the Status of Endangered Wildlife in Canada
2) Species at Risk in Ontario List (as applies to ESA) as designated by COSSARO (Committee on the Status of Species at Risk in Ontario); *END = Endangered, THR = Threatened and SC = Special Concern*.
3) SRANK (from Natural Heritage Information Centre) for breeding status if: *S1 (Critically Imperiled), S2 (Imperiled), S3 (Vulnerable), S4 (Apparently Secure), S5 (Secure), SNA (Not applicable…'because the species is not a suitable target for conservation activities'; includes non-native species).*
4) Ontario Ministry of Natural Resources (OMNR). 2000. Significant Wildlife Habitat Technical Guide (Appendix G). 151 p plus appendices.
5) Toronto and Region Conservation Authority L rank (2019): *L1 to L3 Regional species of concern from highest to lowest; L4 Urban concern; L5 Secure through region; L+ Non-native.*

Breeding Bird Data – South Parcel

Common Name	Scientific Name	Status					# Pairs/Territories
		National Species at Risk COSEWIC[1]	Species at Risk in Ontario Listing [2]	Provincial breeding season SRANK [3]	TRCA Status [4]	Area-sensitive (OMNR) [5]	
Mallard	*Anas platyrhynchos*			S5	L5		1
Killdeer	*Charadrius vociferus*			S5	L5		2
Mourning Dove	*Zenaida macroura*			S5	L5		1
Red-bellied Woodpecker	*Melanerpes carolinus*			S4	L4		1
Hairy Woodpecker	*Picoides villosus*			S5	L4	A	1
Eastern Wood-Pewee	*Contopus virens*	SC	SC	S4	L4		1
Eastern Kingbird	*Tyrannus tyrannus*			S4	L4		1
Tree Swallow	*Tachycineta bicolor*			S4	L4		2
Barn Swallow	*Hirundo rustica*	SC	SC	S4	L4		foraging
Blue Jay	*Cyanocitta cristata*			S5	L5		1
American Robin	*Turdus migratorius*			S5	L5		3
Gray Catbird	*Dumetella carolinensis*			S4	L4		1
Brown Thrasher	*Toxostoma rufum*			S4	L3		2
Cedar Waxwing	*Bombycilla cedrorum*			S5	L5		1
European Starling	*Sturnus vulgaris*			SE	L+		2
Yellow Warbler	*Setophaga petechia*			S5	L5		2
American Redstart	*Setophaga ruticilla*			S5	L3	A	1
Northern Cardinal	*Cardinalis cardinalis*			S5	L5		2
Eastern Towhee	*Pipilio erythrophthalmus*			S4	L3		1
Chipping Sparrow	*Spizella passerina*			S5	L5		1

Common Name	Scientific Name	Status					# Pairs/Territories
		National Species at Risk COSEWIC[1]	Species at Risk in Ontario Listing [2]	Provincial breeding season SRANK [3]	TRCA Status [4]	Area-sensitive (OMNR) [5]	
Savannah Sparrow	*Passerculus sandwichensis*			S4	L4	A	6
Song Sparrow	*Melospiza melodia*			S5	L5		4
Bobolink	*Dolichonyx oryzivorus*	THR	THR	S4	L2	A	7
Red-winged Blackbird	*Agelaius phoeniceus*			S4	L5		8
Common Grackle	*Quiscalus quiscula*			S5	L5		1
Brown-headed Cowbird	*Molothrus ater*			S4	L5		1
Orchard Oriole	*Icterus spurius*			S4	L5		1
Baltimore Oriole	*Icterus galbula*			S4	L5		2
American Goldfinch	*Spinus tristis*			S5	L5		2
House Sparrow	*Passer domesticus*			SNA	L+		2

Field Work Conducted On: June 3 & 27 and July 4, 2023

Number of Species: 29 + 1 foraging
Number of (provincial and national) Species at Risk: 2 – Bobolink (THR) and Eastern Wood-pewee (SC)
Number of S1 to S3 Species: 0
Number of Regionally Rare Species: 0
Number of TRCA L1, L2 and L3 Species (Species of Concern): 4
Number of Forest Area-sensitive Species: 2
Number of Grassland Area-sensitive Species: 2

Table Key
1) COSEWIC = Committee on the Status of Endangered Wildlife in Canada
2) Species at Risk in Ontario List (as applies to ESA) as designated by COSSARO (Committee on the Status of Species at Risk in Ontario); *END = Endangered, THR = Threatened and SC = Special Concern*.
3) SRANK (from Natural Heritage Information Centre) for breeding status if: *S1 (Critically Imperiled), S2 (Imperiled), S3 (Vulnerable), S4 (Apparently Secure), S5 (Secure), SNA (Not applicable…'because the species is not a suitable target for conservation activities'; includes non-native species).*
4) Ontario Ministry of Natural Resources (OMNR). 2000. Significant Wildlife Habitat Technical Guide (Appendix G). 151 p plus appendices.
5) Toronto and Region Conservation Authority L rank (2019): *L1 to L3 Regional species of concern from highest to lowest; L4 Urban concern; L5 Secure through region; L+ Non-native.*