APPENDIX B – Natural Heritage

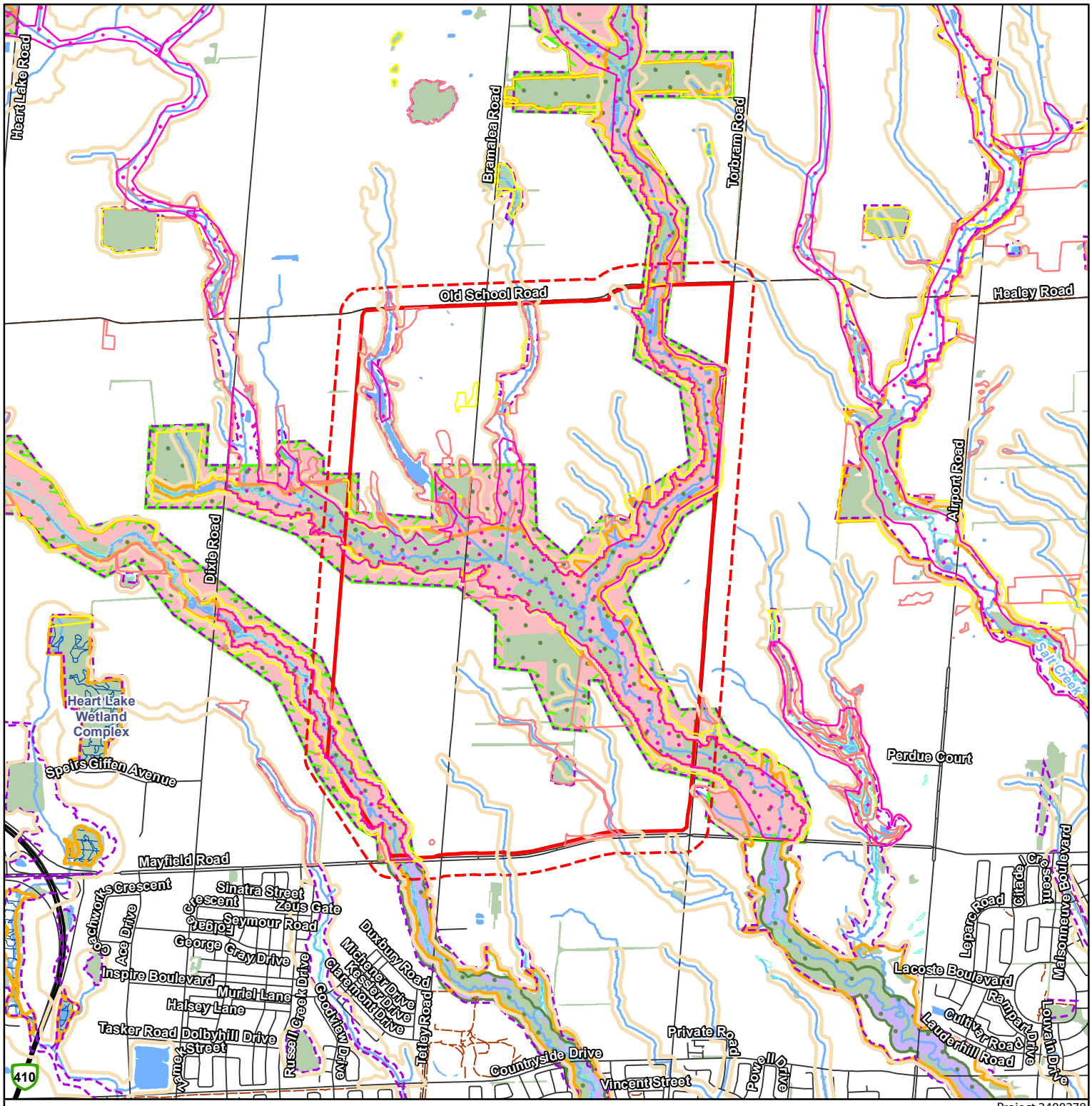
Appendix B1 – Figures

Appendix B2 – Tables

Appendix B3 – Beacon Environmental Natural Heritage Evaluation

Appendix B4 – Feature Staking

Appendix B1 – Figures



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Legend

- Study Area
- Study Area + 120m

Land Information Ontario

- Highway
- Road
- Trail Segment (OTN)
- Provincially Significant Wetland
- Wetland - Not evaluated per OWES
- Waterbody
- Wooded Area
- Protected Countryside
- Urban River Valley

Greenbelt Planning Area

- Greenbelt NHS
- Greenbelt Boundary

Peel Region Official Plan Schedules C-1 and C-2

- Greenlands Systems (C-1)
- Core Areas of the Greenlands System in Peel (C-2)

Future Caledon Official Plan (Draft, 2024)

Preliminary Natural Environment System - Schedule D1 and D2a

- Natural Features and Areas
- Supporting Features and Areas

Town of Caledon Official Plan (2024 Consolidation) - Schedule A

- Environmental Policy Area

Toronto and Region Conservation Authority (TRCA)

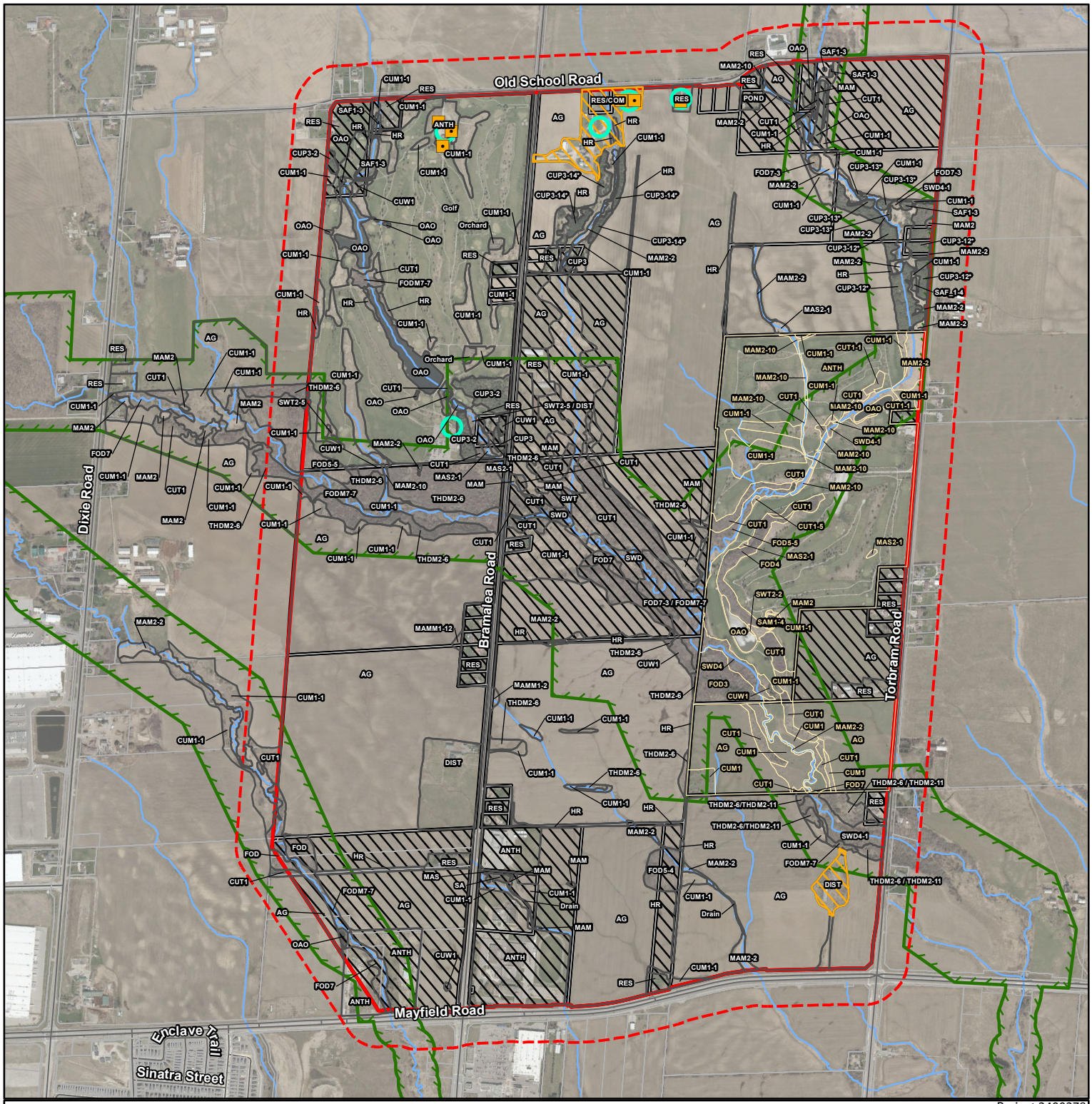
- Toronto and Region Conservation Authority Approximate Regulation Limit
- Watercourse (TRCA)

Mayfield Tullamore Landowner Group
Phase 1 - Subwatershed Characterization and Integration Report
Aquatic and Terrestrial Existing Conditions

Figure 1
Landscape Setting

0 500 m
1:30,000

GEI Consultants



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Legend

- Study Area
- Study Area + 120m
- Watercourse
- Greenbelt Plan Area
- Property Line (Town of Caledon)
- Non-Participating Property
- Participating Property
- Ecological Land Classification (GEI, 2024)
- Ecological Land Classification (Beacon 2022,2023)
- Snake VES Required
- Structures identified for further survey effort prior to removal
- Bat Exit Structure (GEI 2024)

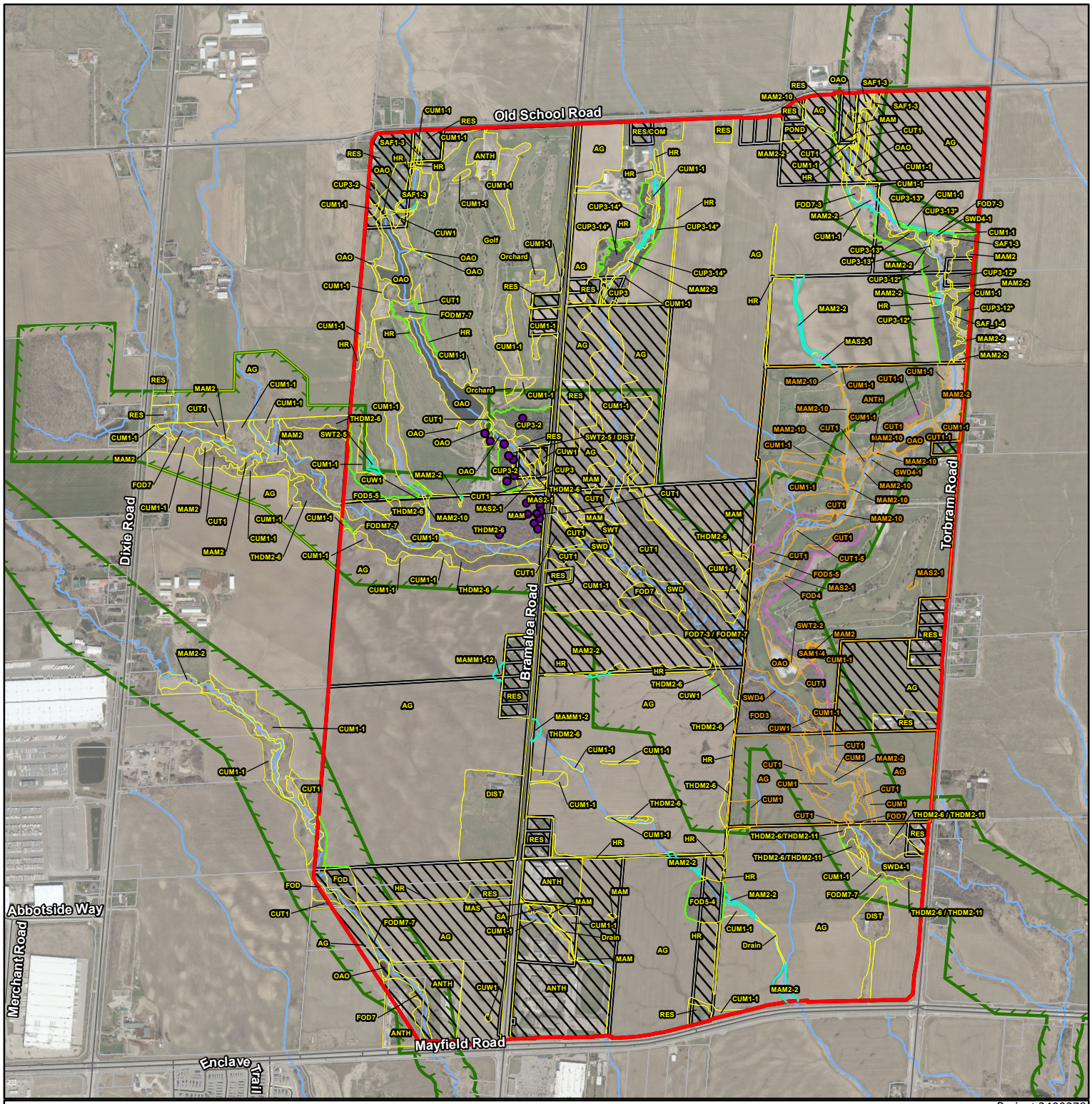
Mayfield Tullamore Landowner Group
Phase 1 - Subwatershed Characterization and Integration Report
Aquatic and Terrestrial Existing Conditions

Figure 2
Structure Screening

0 400 m

1:18,000

GEI Consultants



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Legend

- Study Area
- Watercourse
- Greenbelt Plan Area
- Property Line (Town of Caledon)
- Non-Participating Property
- Participating Property
- Ecological Land Classification (GEI 2024)
- Ecological Land Classification (Beacon 2022,2023)
- Staked Wetland with TRCA (July 4,5,8, 2024)
- Staked Tree Limit with Town of Caledon (May 30, 31 and June 3, 2024)
- Staked Dripline with TRCA (Beacon 2023)
- Endangered Plant - Butternut (GEI 2024)

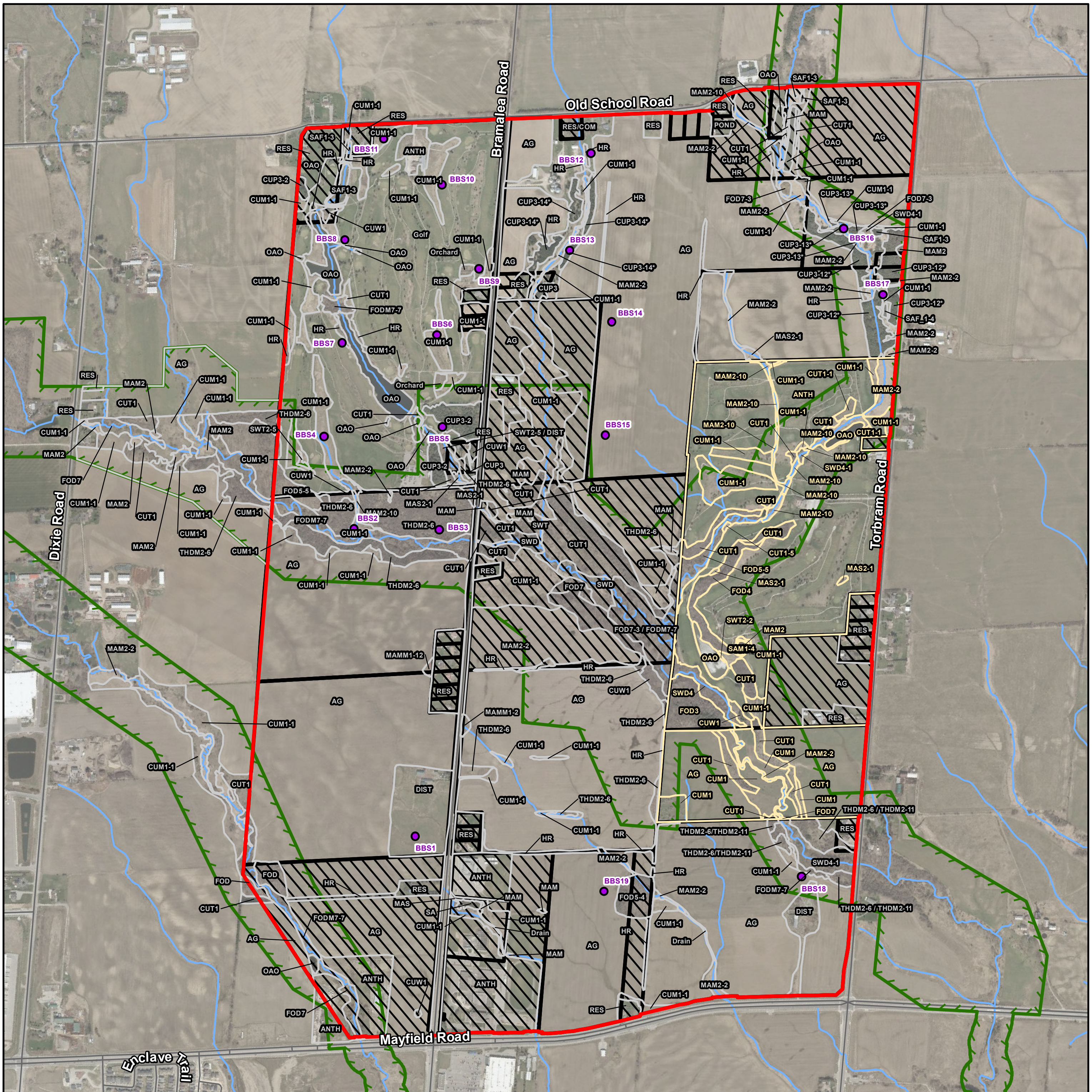
Mayfield Tullamore Landowner Group
Phase 1 - Subwatershed Characterization and Integration Report
Aquatic and Terrestrial Existing Conditions

Figure 3
Ecological Land Classification

0 390 m

1:18,000

GEI Consultants



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ELC Legend
AG, Agriculture
ANTH, Anthropogenic
CUM1, Mineral Cultural Meadow
CUM1-1, Dry-Moist Old Field Meadow
CUP3, Coniferous Plantation
CUP3-12*, White Pine - White Spruce Coniferous Plantation
CUP3-13*, White Cedar Coniferous Plantation
CUP3-14*, Norway Spruce Coniferous Plantation
CUP3-2, White Pine Coniferous Plantation
CUT1, Mineral Cultural Thicket
CUT1-1, Sumac Cultural Thicket
CUT1-5, Raspberry Cultural Thicket
CUW1, Mineral Cultural Woodland
DIST, Disturbed
FOD, Deciduous Forest
FOD3, Dry-Fresh Poplar - White Birch Deciduous Forest
FOD4, Dry-Fresh Deciduous Forest
FOD5-4, Dry – Fresh Sugar Maple – Ironwood Deciduous Forest
FOD5-5, Dry – Fresh Sugar Maple – Hickory Deciduous Forest
FOD7, Lowland Deciduous Forest
FOD7-3, Fresh – Moist Willow Lowland Deciduous Forest
FODM7-7, Fresh - Moist Manitoba Maple Lowland Deciduous Forest
HR, Hedgerow
MAM, Meadow Marsh
MAM2, Mineral Meadow Marsh
MAM2-10, Forb Mineral Meadow Marsh
MAM2-2, Reed-canary Grass Mineral Meadow Marsh
MAMM1-12, Common Reed Graminoid Mineral Meadow Marsh
MAMM1-2, Cattail Graminoid Mineral Meadow Marsh
MAS, Shallow Marsh
MAS2-1, Cattail Mineral Shallow Marsh
OAO, Open Aquatic
RES, Residential
SA, Shallow Aquatic
SAF1-3, Duckweed Floating-leaved Shallow Aquatic
SAF_1-4, Pondweed Floating-leaved Shallow Aquatic
SAM1-4, Pondweed Mixed Shallow Aquatic
SWD, Deciduous Swamp
SWD4, Mineral Deciduous Swamp
SWD4-1, Willow Mineral Deciduous Swamp
SWT, Thicket Swamp
SWT2-2, Willow Mineral Thicket Swamp
SWT2-5, Red-osier Dogwood Mineral Thicket Swamp
THDM2-6 / THDM2-11, Buckthorn Deciduous Shrub Thicket / Hawthorn Deciduous Shrub Thicket
THDM2-6, Buckthorn Deciduous Shrub Thicket

Legend
- Study Area
- Watercourse
- Greenbelt Plan Area
- Non-Participating Property
- Participating Property
- Breeding Bird Stations (GEI 2024)
- Ecological Land Classification (GEI 2024)
- Ecological Land Classification (Beacon 2022,2023)

- All participating properties were reviewed for potential suitability for winter raptors. There are no specific stations for this survey type; rather, the entire property was surveyed to review for suitability

- Breeding bird surveys completed by Beacon Environmental (2022,2023) used a roving technique instead of point count locations.

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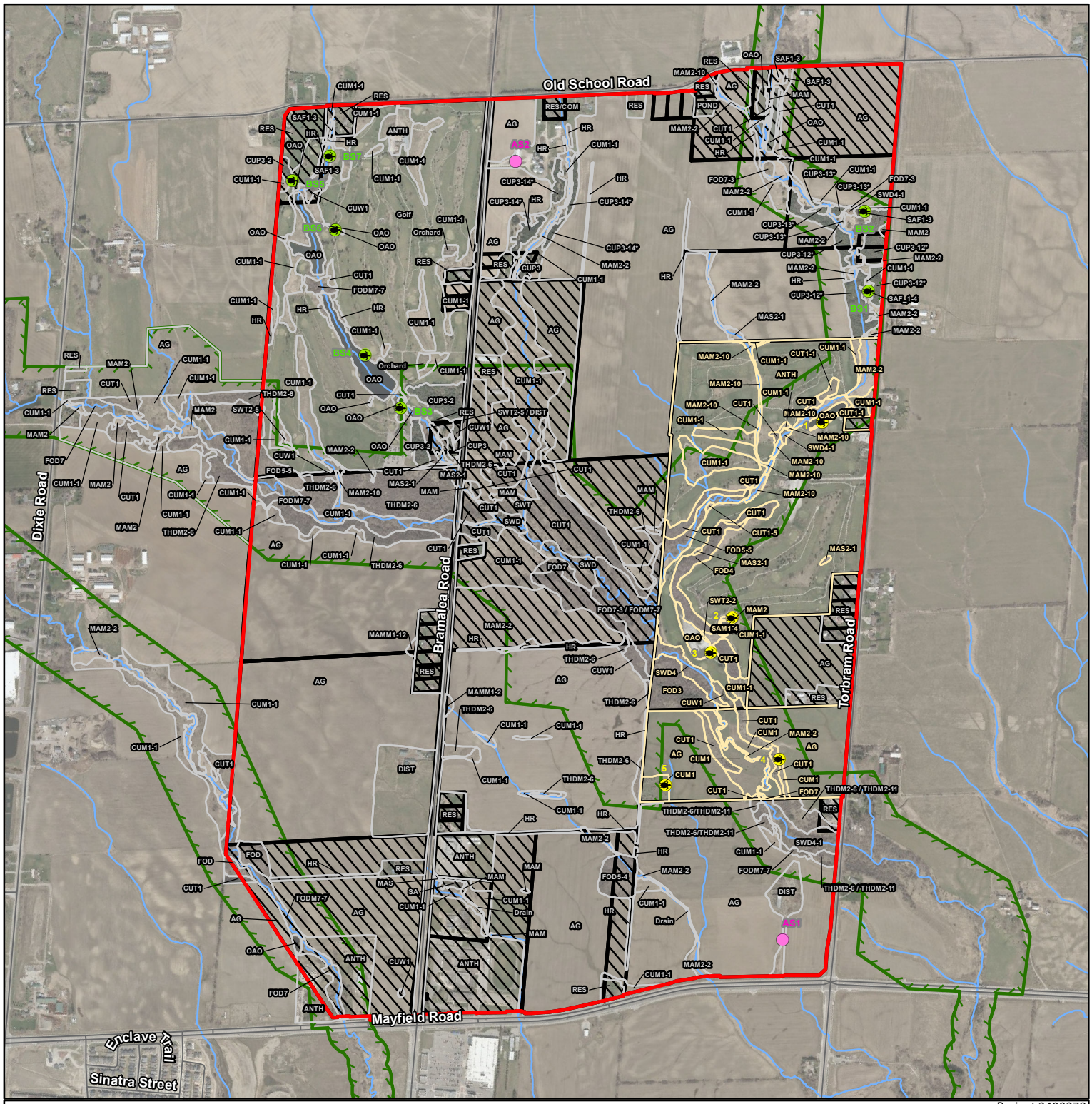
Mayfield Tullamore Landowner Group
Phase 1 - Subwatershed Characterization and Integration Report
Aquatic and Terrestrial Existing Conditions

Figure 4
Breeding Bird Surveying Stations

0 390 m
1:18,000

GEI Consultants



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Legend

- Study Area
- Watercourse
- Greenbelt Plan Area
- Non-Participating Property
- Participating Property
- Turtle Basking Surveys* (GEI 2024)
- Turtle Basking Surveys (Beacon 2023)
- Snake Visual Encounter Surveys (GEI 2024)
- Ecological Land Classification (GEI 2024)
- Ecological Land Classification (Beacon 2022,2023)

*General turtle nesting suitability assessments were completed throughout the Study Area

0 390 m

1:18,000

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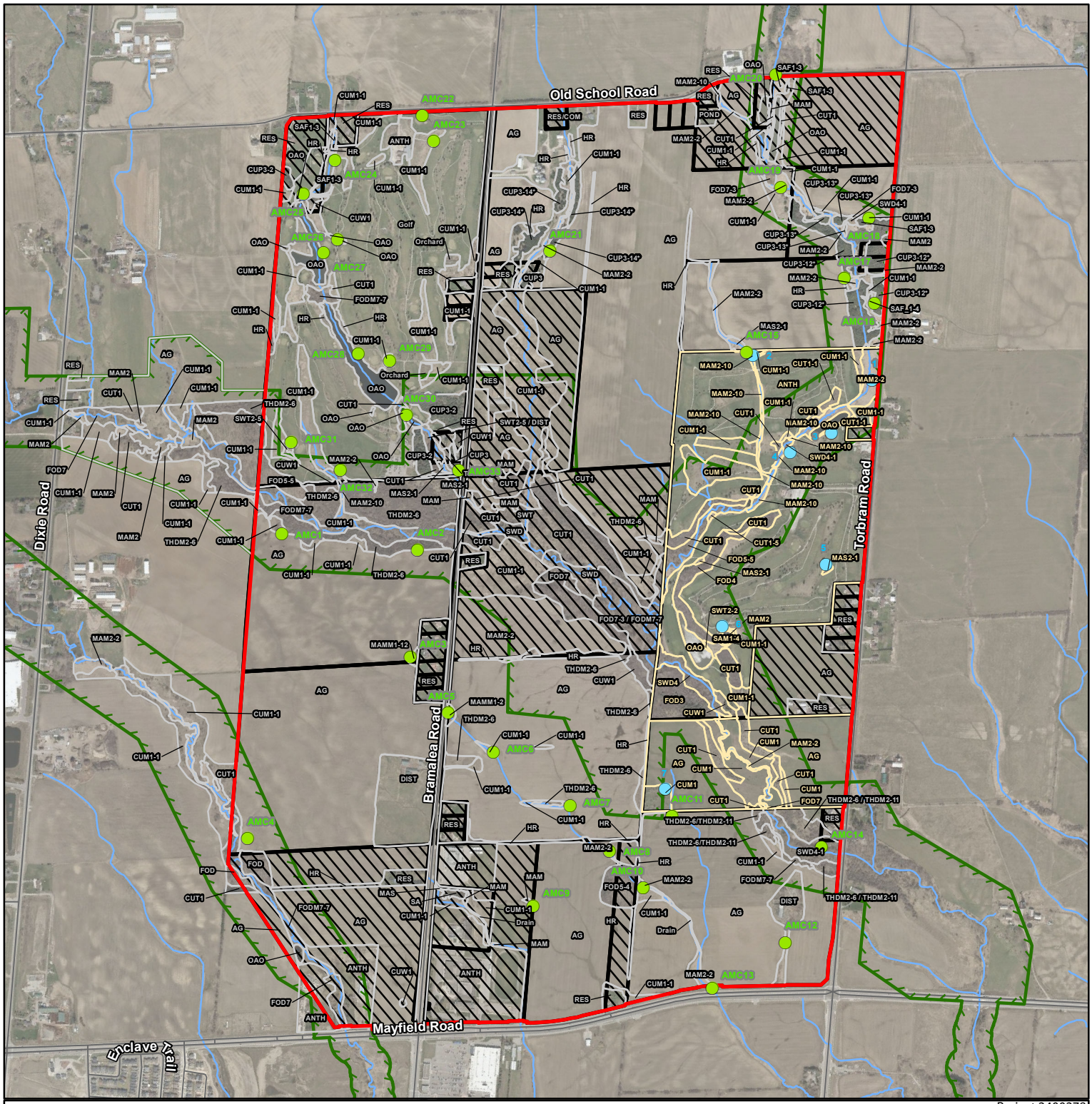
Mayfield Tullamore Landowner Group
Phase 1 - Subwatershed Characterization and Integration Report
Aquatic and Terrestrial Existing Conditions

Figure 5
Reptile Survey Stations

GEI Consultants



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Legend

- Study Area
- Watercourse
- Greenbelt Plan Area
- Non-Participating Property
- Participating Property
- Amphibian Call Count Stations (GEI 2024)
- Amphibian Call Count Stations (Beacon 2023)
- Ecological Land Classification (GEI 2024)
- Ecological Land Classification (Beacon 2022,2023)

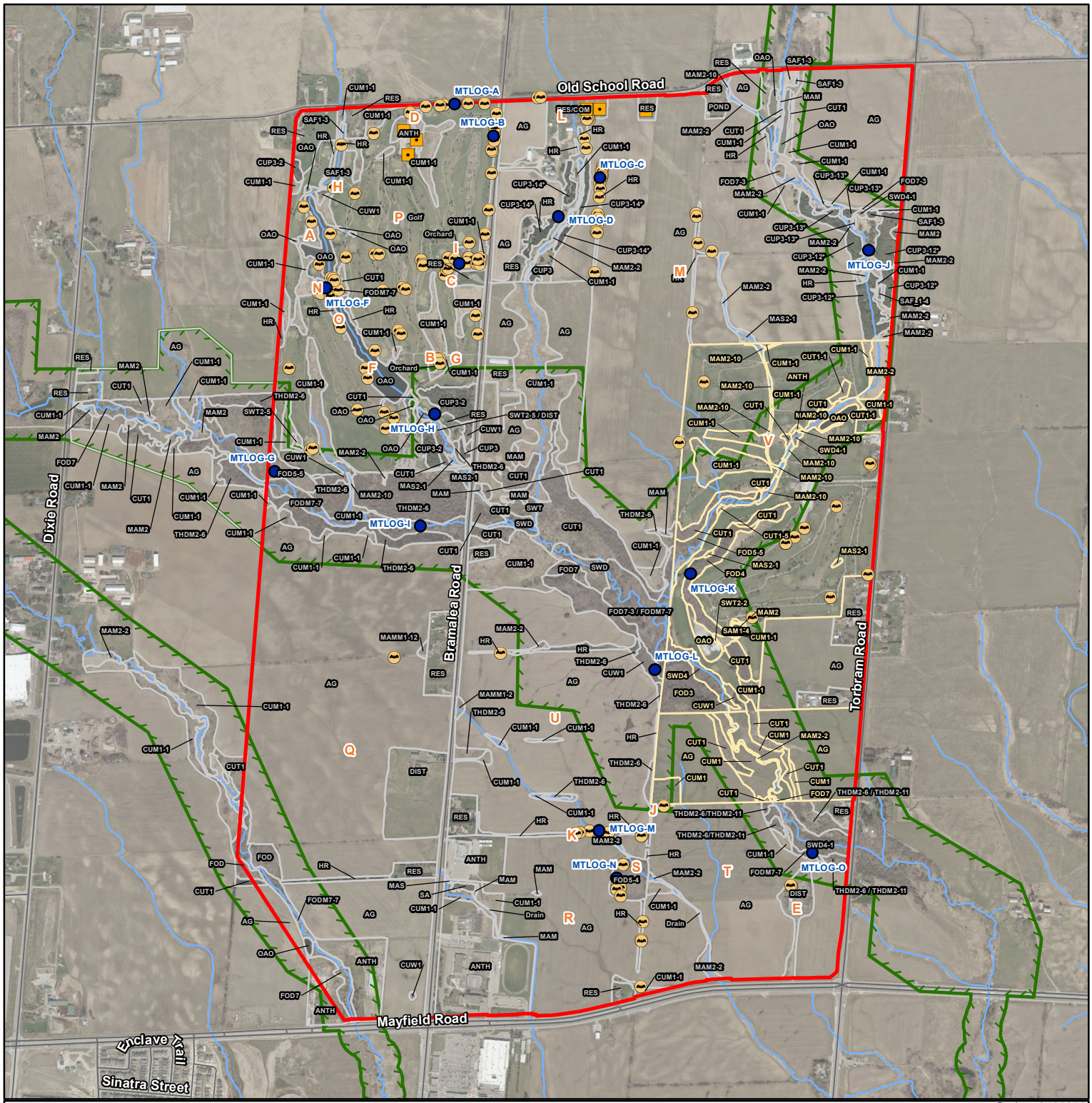
Mayfield Tullamore Landowner Group
Phase 1 - Subwatershed Characterization and Integration Report
Aquatic and Terrestrial Existing Conditions

Figure 6
Amphibian Survey Stations

0 390 m

1:18,000

GEI Consultants



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Legend

- Study Area
- Watercourse
- Greenbelt Plan Area
- Non-Participating Property
- Participating Property
- Bat Snags (GEI 2024)
- Bat Exit Structure (GEI 2024)
- Bat Acoustic Stations (GEI 2024)
- Ecological Land Classification (GEI 2024)
- Ecological Land Classification (Beacon 2022,2023)

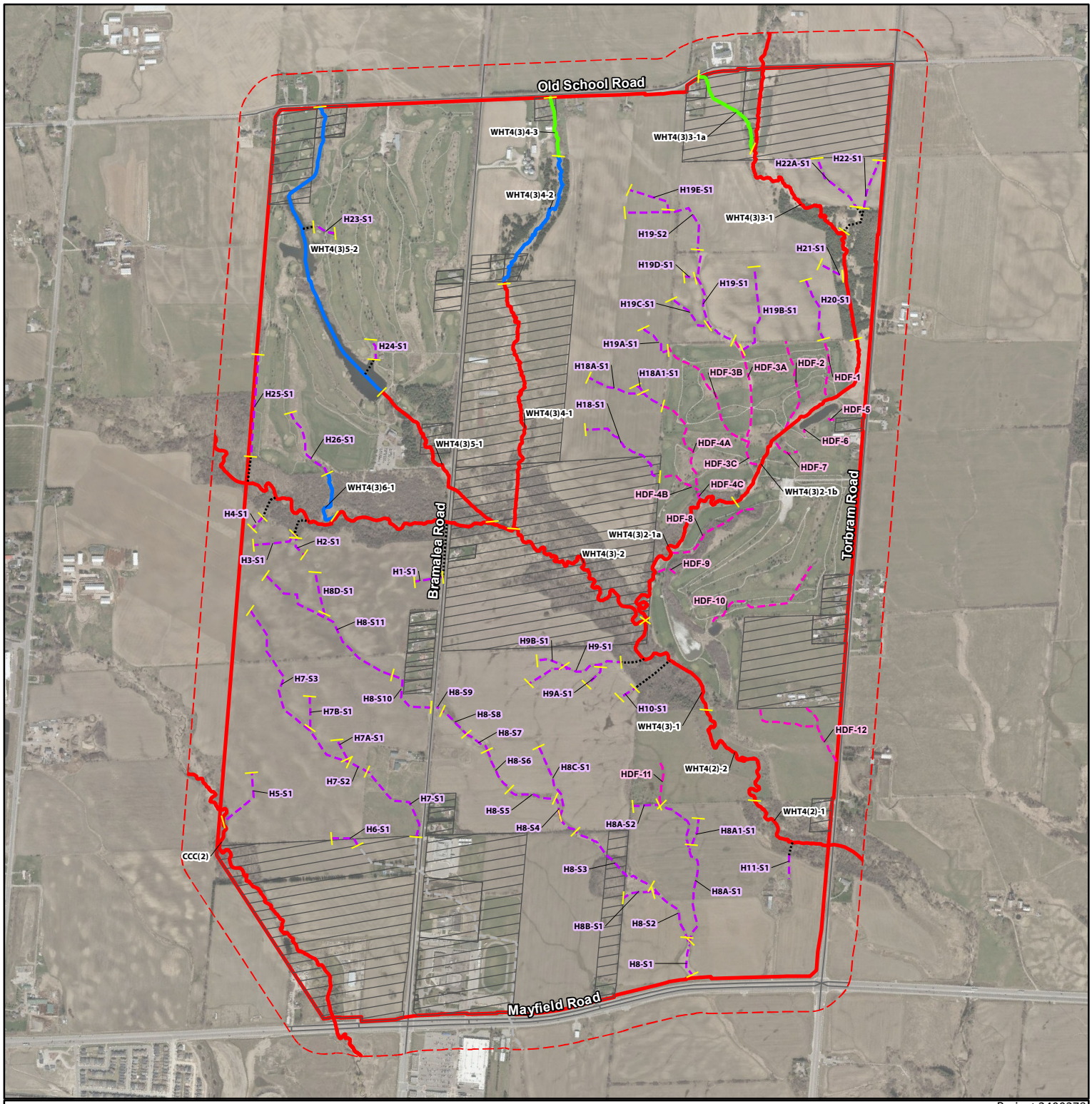
Mayfield Tullamore Landowner Group
Phase 1 - Subwatershed Characterization and Integration Report
Aquatic and Terrestrial Existing Conditions

Figure 7
Bat Survey Stations

0 390 m

1:18,000

GEI Consultants



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Legend

- Study Area
- Study Area + 120m
- Non-Participating Property

Stream Constraints (GEI 2024)

- High
- Medium
- Low

Headwater Drainage Feature (GEI 2024)

- Feature within defined valleyland
- Headwater Drainage Feature
- Assumed HDF within Non-Participating Property
- Reach Breaks
- Headwater Drainage Feature (Beacon)

*Features that may be permitted to be removed and replicated within the Natural Heritage System in accordance with environmental permitting

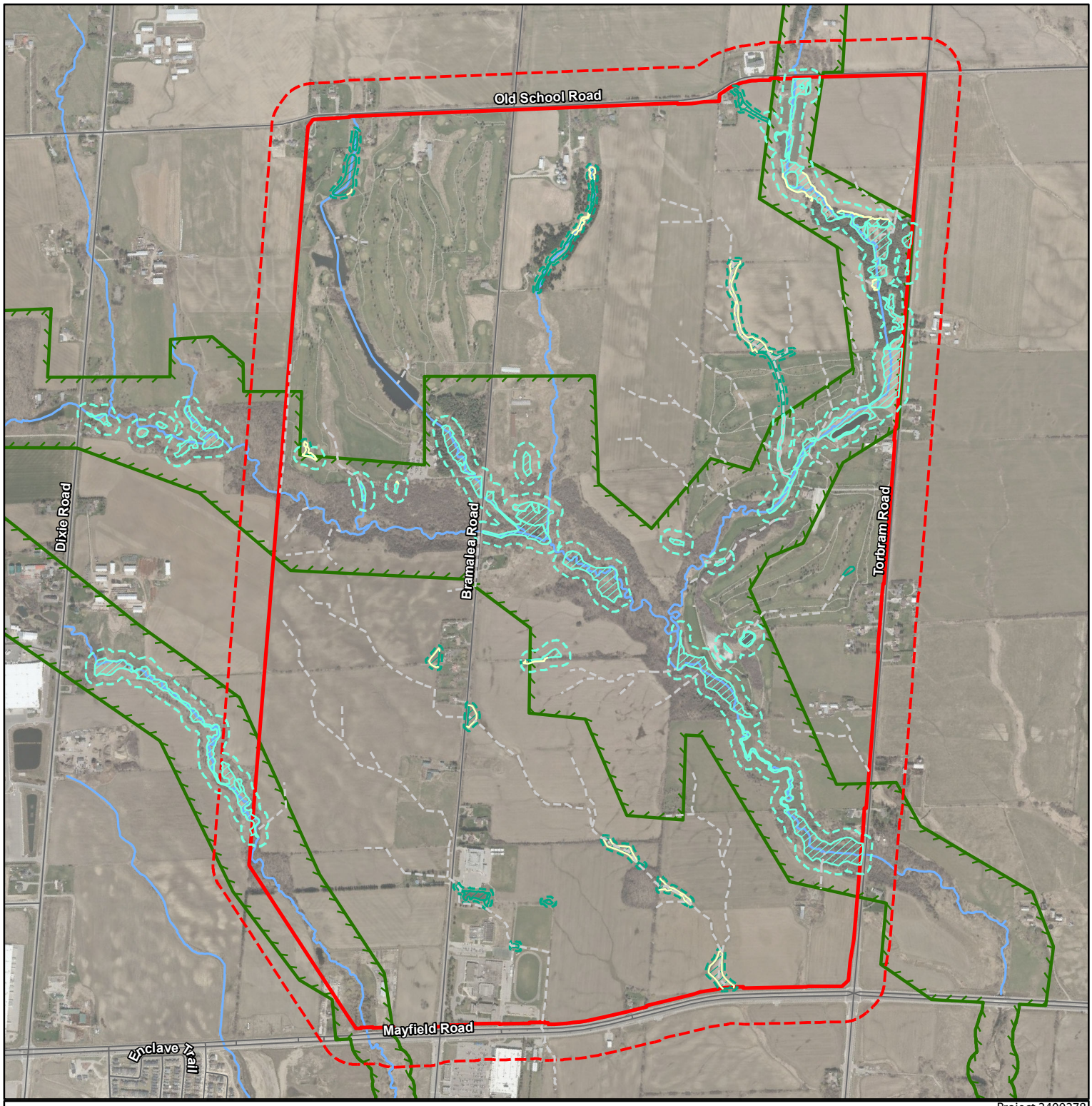
Mayfield Tullamore Landowner Group
Phase 1 - Subwatershed Characterization and Integration Report
Aquatic and Terrestrial Existing Conditions

Figure 8
Watercourses and Headwater Drainage Features

0 420 m

1:18,000

GEI Consultants



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Legend
- Study Area
- Study Area + 120m
- Greenbelt Plan Area
- Watercourse (GEI 2024)
- Headwater Drainage Feature (GEI, Beacon)
- Staked Wetland with TRCA (July 4,5,8, 2024)
- Candidate Significant Wetlands
- Non-Significant Wetlands
- Non-Significant Wetlands + 10m (GEI 2024)
- Candidate Significant Wetlands + 30m (GEI 2024)

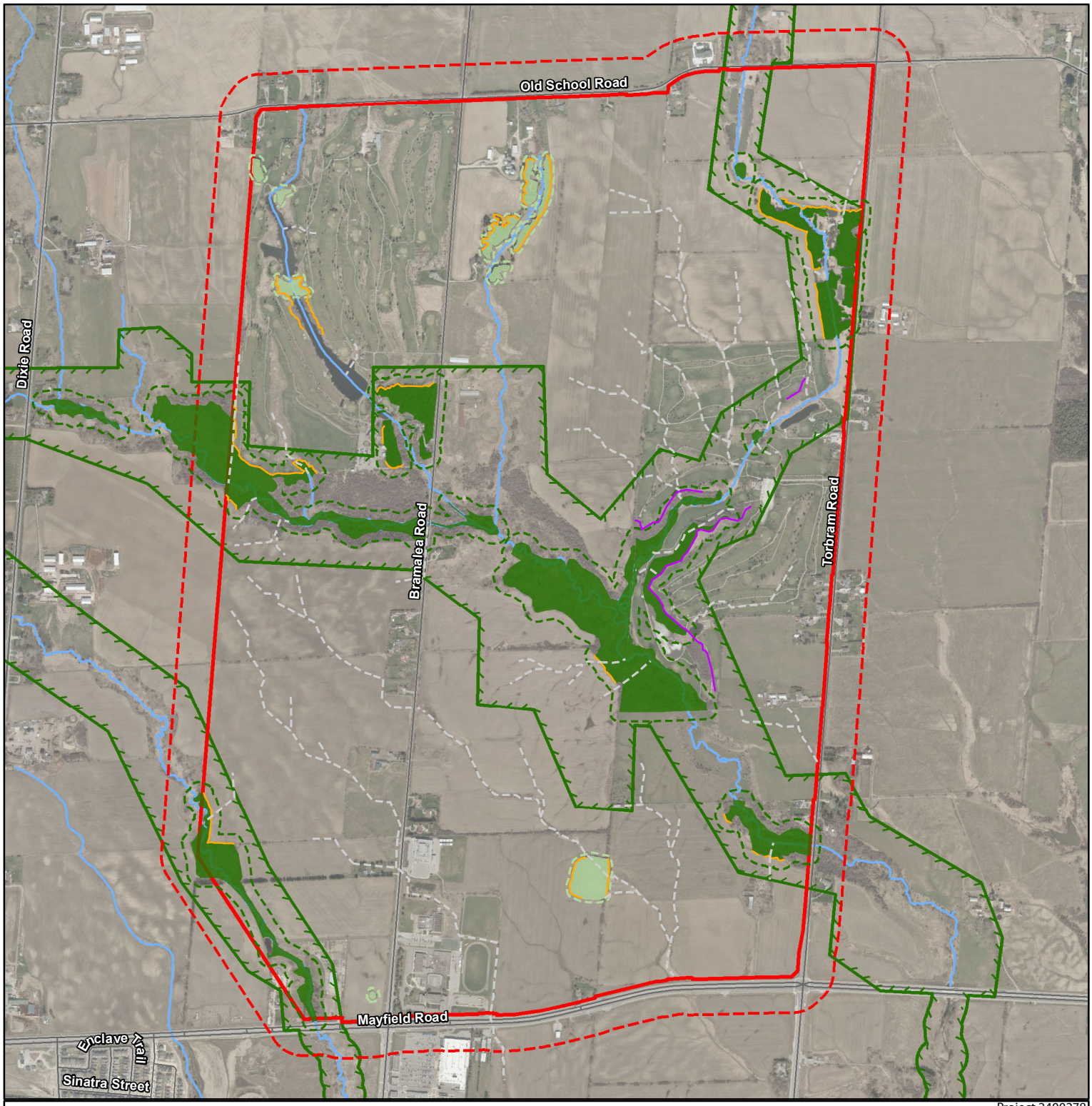
No wetland buffer was provided to the tableland wetland within Property 9 by Beacon Environmental.

Mayfield Tullamore Landowner Group
Phase 1 - Subwatershed Characterization and Integration Report
Aquatic and Terrestrial Existing Conditions

Figure 9A
Preliminary Constraints Analysis - Wetlands

0 400 m
1:18,000

GEI Consultants



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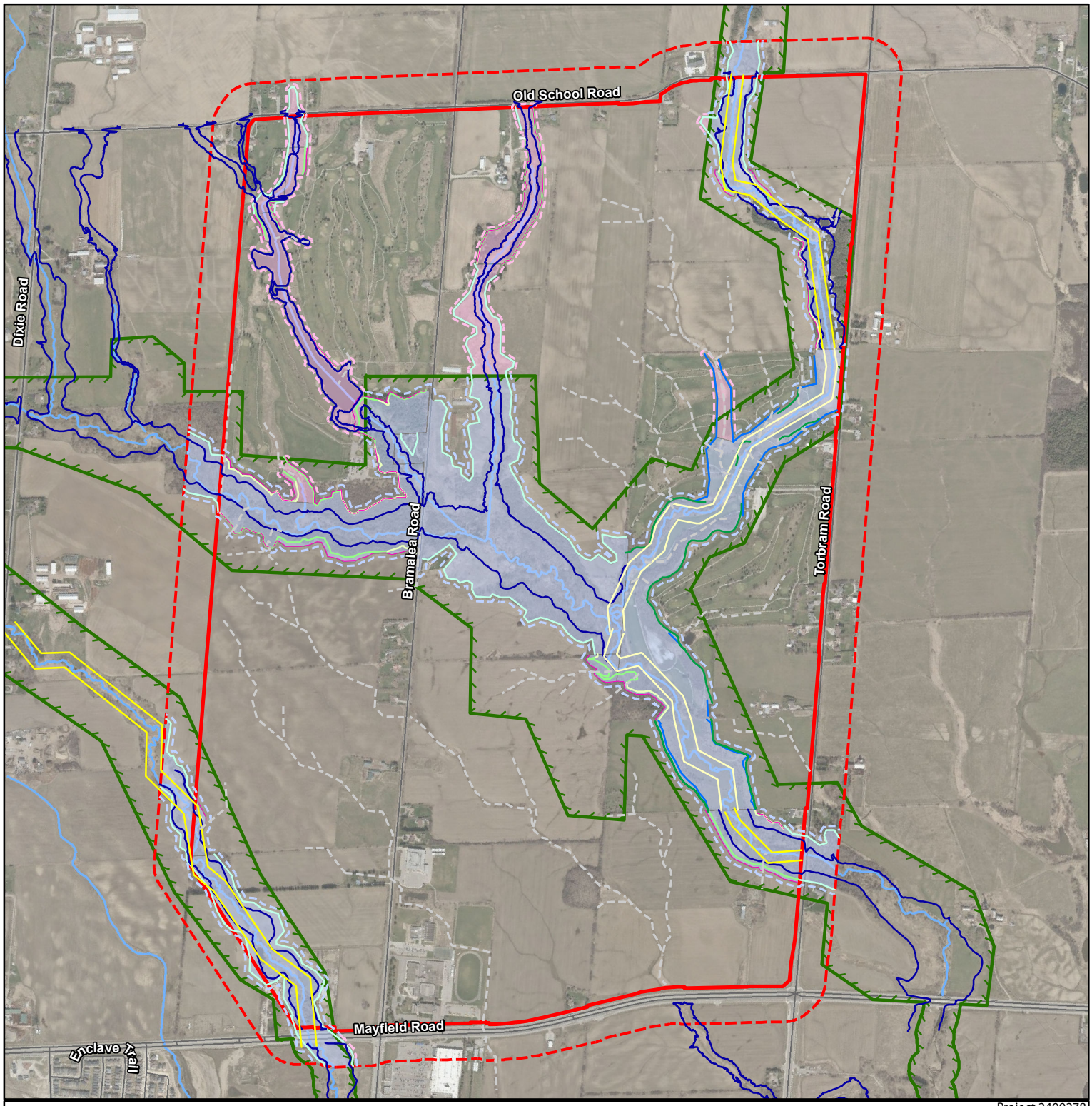
Legend
- Study Area
- Study Area + 120m
- Greenbelt Plan Area
- Watercourse (GEI 2024)
- Headwater Drainage Feature (GEI, Beacon)
- Staked Dripline with TRCA (Beacon 2023)
- Staked Tree Limit with Town of Caledon (May 30, 31 and June 3, 2024)
- Woodlands (GEI, Beacon 2024)
- Significant Woodlands (GEI, Beacon 2024)
- Woodland + 10m (GEI 2024)
- Significant Woodland + 30m (GEI 2024)

Mayfield Tullamore Landowner Group
Phase 1 - Subwatershed Characterization and Integration Report
Aquatic and Terrestrial Existing Conditions

Figure 9B
Preliminary Constraints Analysis - Woodlands

0 400 m
1:18,000

GEI Consultants



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Legend
- Study Area
- Study Area + 120m
- Greenbelt Plan Area
- Watercourse (GEI 2024)
- Headwater Drainage Feature (GEI, Beacon)
- Existing Top of Bank - Lidar (GEI 2024)
- Staked Top of Bank with TRCA (Beacon 2022,2023)
- Staked Top of Bank with TRCA (GEI 2024)
- Long Term Stable Top of Slope (GEI 2024)
- Long Term Stable Top of Slope (GEMTEC, June 2024)
- Meander Belt (GEI 2024)
- Meander Belt (Beacon 2024)
- Floodline (TRCA 2024)
- Crest of Slope (TRCA 2022)
- Non-Significant Valleyland (GEI 2024)
- Significant Valleyland (GEI 2024)
- Non-Significant Valleyland + 10m (GEI 2024)
- Significant Valleyland +15m (GEI 2024)

Floodplain hazard has been refined based on discussions with SCS.

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Mayfield Tullamore Landowner Group
Phase 1 - Subwatershed Characterization and Integration Report
Aquatic and Terrestrial Existing Conditions

Figure 9C
Preliminary Constraints Analysis - Valleylands

0 400 m
1:18,000

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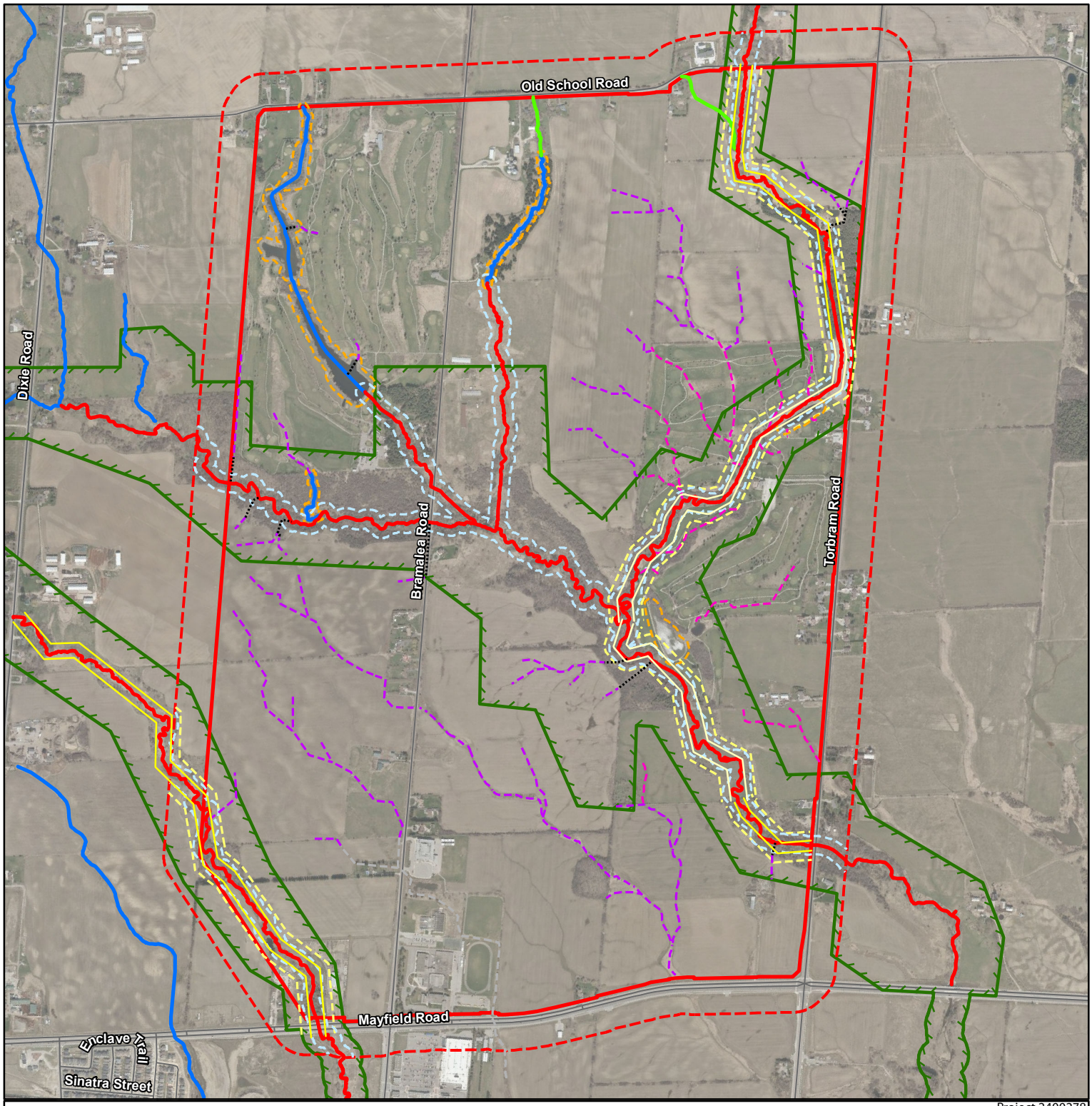

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Legend

- Study Area
- Study Area + 120m
- Greenbelt Plan Area

Stream Constraints (GEI 2024)

- High
- Medium
- Low

Headwater Drainage Feature (GEI 2024)

- Feature within defined valleyland
- Headwater Drainage Feature
- Assumed HDF within Non-Participating Property
- Headwater Drainage Feature (Beacon)

Redside Dace

- Meander Belt (GEI 2024)
- Meander Belt (Beacon 2024)
- Regulated Redside Dace Habitat

Setbacks

- Warmwater Fisheries Setback (15m)
- Cool/Coldwater Fisheries Setback (30m)

All HDFs and riparian wetlands are considered Contributing Redside Dace habitat

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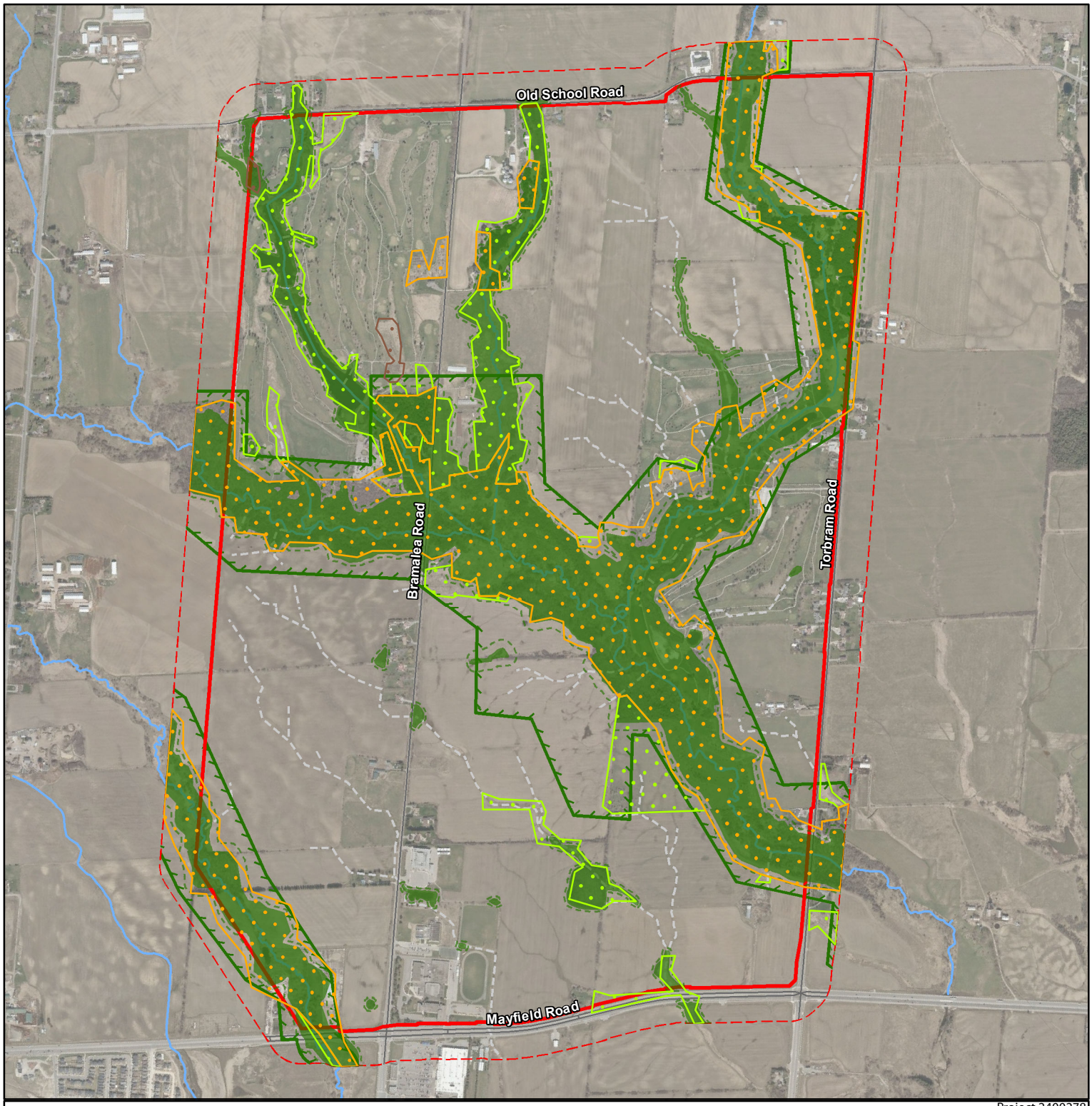
Mayfield Tullamore Landowner Group
Phase 1 - Subwatershed Characterization and Integration Report
Aquatic and Terrestrial Existing Conditions

Figure 9D
Preliminary Constraints Analysis - Fish Habitat

0 400 m
1:18,000

GEI Consultants



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Legend

- Study Area
- Study Area + 120m
- Greenbelt Plan Area
- Watercourse (GEI 2024)
- Headwater Drainage Feature (GEI, Beacon)

SABE Preliminary NHS*

- Key Features
- Supporting Features
- Other Features

Existing NHS

- Natural Heritage Features and Natural Hazards
- Natural Features and Natural Hazard Setbacks

*SABE Preliminary NHS linework has been drawn using the best approximation from Figure DA2-11b of the SABE

Mayfield Tullamore Landowner Group
Phase 1 - Subwatershed Characterization and Integration Report
Aquatic and Terrestrial Existing Conditions

Figure 10
Natural Heritage System Comparison

0 400 m
1:18,000

GEI Consultants

Appendix B2 – Tables

Table 1: Field Studies and Natural Inventories (2024)

SURVEYORS (SURNAME, INTL)	SURVEY ROUND	SURVEY TYPE	DATE (2024)	TIME		AIR TEMP (C°)	HUMIDITY (%)	CLOUD COVER (%)	BEAUFORT WIND SPEED	PRECIPITATION COMMENTS
				START	END					
Burke, P.	1	Winter Raptor Survey	08-FB	07:15	16:15	6	70	100	0	Freezing Fog
Lee, E. Hunt, N.	1-1	Bat Habitat Assessment & Structure Screening	12-FB	08:40	17:00	0	70	90	2	None
Hunt, N.	1-2	Bat Habitat Assessment & Structure Screening	15-FB	10:05	17:00	-3	70	100	3	None
Kimble, B.	1-1	Headwater Drainage Feature Assessment	18-MR	09:00	15:30	1	65	100	4	None
Kimble, B. Fleming, D.	1-2	Headwater Drainage Feature Assessment	19-MR	09:00	16:00	1	73	90	4	Snow
Kimble, B.	1-3	Headwater Drainage Feature Assessment	22-MR	09:00	16:00	-3	69	100	3	Snow
Kimble, B. Fleming, D.	1-4	Headwater Drainage Feature Assessment	27-MR	09:00	16:00	9	65	75	4	None
Williamson, L. Love, S.	1-1 1-1	Turtle Basking and Nesting Survey & Snake Transect Survey	09-AP	09:30	14:30	13	62	10	1	None
Williamson, L. Love, S.	1-2 1-2	Turtle Basking Survey & Snake Transect Survey	10-AP	10:00	14:40	17	72	10	1	None
Nieroda, M. Fleming, D.	1	Spring Fish Community Sampling	15-AP	09:00	18:30	16	32	70	4	None

Table 1: Field Studies and Natural Inventories (2024)

Williamson, L. Love, S.	2-1 2-1	Snake Transect Survey & Turtle Basking Survey	16-AP	10:00	14:20	15	67	10	1	None
Williamson, L. Love, S.	1-1	Amphibian Call Count Survey	17-AP	20:30	22:00	11	38	10	1	None
Williamson, L. Cartwright, C.	2-2 2-2	Turtle Basking Survey & Snake Transect Survey	26-AP	13:00	16:00	11	29	5	2	None
Leslie, J.	1-1	Spring Ecological Land Classification and Botanical Inventories	2-MA	09:00	16:30	16	61	20	3	None
Williamson, L. Brunelle, P.	3-1 3-1	Snake Transect Survey & Turtle Basking Survey	2-MA	12:40	16:45	15	73	5	2	None
Leslie, J.	1-2	Spring Ecological Land Classification and Botanical Inventories	3-MA	09:00	16:00	16	64	80	3	Rain
Leslie J.	1-3	Spring Ecological Land Classification and Botanical Inventories	6-MA	09:00	15:00	18	45	80	3	None
Williamson, L. Love, S.	3-2 3-2	Snake Transect Survey & Turtle Basking Survey	6-MA	09:15	13:00	14	60	15	2	None
Leslie, J.	1-4	Spring Ecological Land Classification and Botanical Inventories	7-MA	09:00	15:30	20	45	80	3	None
Leslie, J.	1-5	Spring Ecological Land Classification and Botanical Inventories	8-MA	09:00	14:00	20	54	65	4	None

Table 1: Field Studies and Natural Inventories (2024)

Williamson, L. Love, S.	2-1	Amphibian Call Count Survey	16-MA	21:00	23:00	17	73	5	1	None
Williamson, L. Love, S.	2-2	Amphibian Call Count Survey	17-MA	21:00	23:00	15	100	95	2	Rain, Fog
Robinson, O. Leslie, J. Wiginton, R. Huang, F. TRCA, Town of Caledon	1-1	Staked Top of Bank and Treed Limit	30-MA	09:00	16:00	17	36	0	3	None
Stemberger, H. Lohnes, S. Leslie, J. Wiginton, R. Huang, F. TRCA, Town of Caledon	1-2	Staked Top of Bank and Treed Limit	31-MA	09:00	16:00	21	37	5	2	None
Nieroda, M. Brunelle, P.	1-1	Bat Acoustic Survey Set-up	31-MA	08:00	18:00	22	36	5	2	None
Robinson, O. Lohnes, S. Doyle, T. Wiginton, R. Huang, F. TRCA, Town of Caledon	1-3	Staked Top of Bank and Treed Limit	03-JN	09:00	16:00	20	88	85	2	Fog

Table 1: Field Studies and Natural Inventories (2024)

Burke, P.	1-1	Breeding Bird Survey	04-JN	05:25	10:00	17	93	75-50	0	None
Nieroda, M. Fleming, D. Kimble, B.	2	Headwater Drainage Feature Assessment	04-JN	08:30	17:00	24	60	80	3	None
Burke, P.	1-2	Breeding Bird Survey	05-JN	05:25	10:00	19	77	75	1	None
Burke, P.	1-3	Breeding Bird Survey	06-JN	05:15	09:30	19	100	100	2	Fog
Nieroda, M. Brunelle, P.	1-2	Bat Acoustic Survey Pick-up	10-JN	08:30	12:30	13	66	60	3	None
Williamson, L. Brunelle, P.	3-1	Amphibian Call Survey	24-JN	21:30	23:30	23	53	0	3	None
Williamson, L. Brunelle, P.	3-2	Amphibian Call Survey	25-JN	21:30	23:30	23	74	30	3	None
Burke, P.	2-1	Breeding Bird Survey	25-JN	06:30	08:30	19	72	50	3	None
Burke, P.	2-1	Breeding Bird Survey	26-JN	05:35	09:15	18	100	85	4	None
Stemberger, H. Leslie, J. Robinson, O. TRCA	1-1	Staked Wetland Limit	04-JL	09:00	16:00	26	62	80	4	None
Stemberger, H. Leslie, J. TRCA	1-2	Staked Wetland Limit	05-JL	09:00	16:00	26	52	0	1	None
Stemberger, H. Leslie, J. Robinson, O. TRCA	1-3	Staked Wetland Limit	08-JL	09:00	16:00	26	59	75	4	None

Table 1: Field Studies and Natural Inventories (2024)

LEGEND:

BEAUFORT WIND SPEED SCALE	
0	Calm (<1 km/hr)
1	Light Air (1-5 km/hr)
2	Light Breeze (6-11 km/hr)
3	Gentle Breeze (12-19 km/hr)
4	Moderate Breeze (20-28 km/hr)

MONTH (CODE)	
JA	January
FB	February
MR	March
AP	April
MA	May
JN	June
JL	July
AU	August
SE	September
OC	October
NO	November
DE	December

Table 2: Preliminary Ecological Landscape Classification (ELC) Community Descriptions (Excluding Properties 9 and 10)

ELC TYPE	COMMUNITY DESCRIPTION	S Ranks (NHIC 2021)
CULTURAL – communities resulting from, or maintained by, cultural or anthropogenic-based disturbances		
Cultural Plantation		
CUP3	Coniferous Plantation; coniferous tree species comprise more than 75% of canopy.	N/A
CUP3-2	Coniferous Plantation; comprised primarily of White Pine.	N/A
CUP3-12*	Coniferous Plantation; comprised primarily of White Spruce.	N/A
CUP3-13*	Coniferous Plantation; comprised primarily of White Cedar.	N/A
CUP3-14*	Coniferous Plantation; comprised primarily of Norway Spruce.	N/A
Cultural Meadow		
CUM1	Mineral Cultural Meadow Community with less than 25% tree and shrub cover, and more than 25% cover of forbs and/or graminoids.	N/A
Cultural Thicket		
CUT1	Mineral Cultural Thicket Community with less than 25% cover of trees and greater than 25% cover of shrubs.	N/A
CUT1-1	Mineral cultural thicket comprised predominantly of Staghorn Sumac.	N/A
THDM2-6**	• Dry - fresh deciduous shrub thicket, comprised predominantly of European Buckthorn. • THDM codes are the 2008 version of the CUT1 ecosite code.	N/A
THDM2-11**	• Dry - fresh deciduous shrub thicket, comprised predominantly of Hawthorn species. • THDM codes are the 2008 version of the CUT1 ecosite code.	N/A
Cultural Woodland		

Table 2: Preliminary Ecological Landscape Classification (ELC) Community Descriptions (Excluding Properties 9 and 10)

ELC TYPE	COMMUNITY DESCRIPTION	S Ranks (NHIC 2021)
CUW1	Mineral Cultural Woodland Open canopy woodland containing between 35% - 60% tree cover.	N/A
SWAMP – communities with >25% hydrophytic tree or shrub cover, associated with variable flooding regimes.		
Deciduous Swamp		
SWD	Tree cover >25%, of which >75% are deciduous trees.	N/A
SWD4-1	Willow Mineral Deciduous Swamp Flooding duration is typically short, substrate aerated by early to mid-summer.	S4
Thicket Swamp		
SWT	Tree cover <25% and >25% cover of hydrophilic shrubs.	N/A
SWT2-5	Red-osier Mineral Thicket flooding duration is typically short, substrate aerated by early to mid-summer.	S5
FOREST - communities with >60% tree cover		
Deciduous Forest (FOD): Deciduous tree species make up >75% of canopy		
FOD5-4	Dry-fresh deciduous forest comprised predominantly of Sugar Maple and Ironwood. Common on managed or historically grazed sites.	S5
FOD5-5	Dry-fresh deciduous forest comprised predominantly of Sugar Maple and Hickory.	S4
FOD7	Moist lowland deciduous forest. Tree canopy closed or open (may have <60% tree cover); >75% of trees are deciduous.	N/A
FOD7-3	Moist lowland deciduous forest comprised predominantly of Willow trees.	S4S5

Table 2: Preliminary Ecological Landscape Classification (ELC) Community Descriptions (Excluding Properties 9 and 10)

ELC TYPE	COMMUNITY DESCRIPTION	S Ranks (NHIC 2021)
	Often resulting from cultural influences or disturbances; typically associated with riparian zones and terraces, streams, riverbanks, and floodplains.	
FODM7-7**	Moist lowland deciduous forest comprised predominantly of Manitoba Maple.	N/A
MARSH - communities with <25% tree or shrub cover, with variable flooding regimes		
MAM	Often contains species less tolerant to prolonged flooding; soils may flood in spring but be moist-dry by summer.	N/A
MAM2	Mineral Meadow Marsh Grasses or sedges are often dominant; often exposed areas with shoreline energies and/or disturbance.	N/A
MAM2-2	Mineral Meadow Marsh comprised predominantly of Reed-Canary Grass.	S5
MAMM1-12**	Mineral Meadow Marsh comprised predominantly of Common Reed.	N/A
MAMM1-2**	Mineral Meadow Marsh comprised predominantly of Cattails.	N/A
Shallow Marsh		
MAS	Water depth up to 2m with standing or flowing water for much of the growing season. Grasses, sedges, or rushes are usually dominant, hydrophytic emergent macrophyte cover >25%.	N/A
MAS2-1	Mineral Shallow Marsh comprised predominantly of Cattails.	S5
SHALLOW WATER (SA) – communities with no tree or shrub cover and water depth up to 2m		
SAF1-3	• Duckweed Floating-leaved Shallow Aquatic • Dominated (>25%) by floating-leaved macrophytes	S5
SAF_1-4**	• Pondweed Floating-leaved Shallow Aquatic • Dominated (>25%) by floating-leaved macrophytes	N/A

Table 2: Preliminary Ecological Landscape Classification (ELC) Community Descriptions (Excluding Properties 9 and 10)

ELC TYPE	COMMUNITY DESCRIPTION	S Ranks (NHIC 2021)
OPEN AQUATIC (OAO) – communities with no tree or shrub cover and water depth of greater than 2m		

*****Denotes a vegetation type not listed in the Southern Ontario ELC Guide.

**Denotes a vegetation type derived from the 2008 ELC 2nd approximation ecosystem tables.

																									LOCAL / REGIONAL STATUS	
Overall	P1	P2	P3	P4	P5	P6	P7	P8	P11	ORDER	FAMILY	LATIN NAME	COMMON NAME	COEFFICIENT OF CONSERVATISM (NHIC SEP 19 2023)	WETNESS INDEX (NHIC SEP 19 2023)	OWES WETLAND SPECIES	WEEDINESS INDEX	INVASIVE EXOTIC RANK (Urban Forest Associates 2002)	PROVINCIALLY TRACKED (NHIC) (NHIC FEB 6 2024)	PROVINCIAL STATUS (S-RANK) (NHIC FEB 6 2024)	GLOBAL STATUS (G-RANK) (NHIC FEB 6 2024)	SARO (MECP) (NHIC FEB 6 2024)	COSEWIC STATUS (NHIC FEB 6 2024)		PEEL (Varga 2005)	AUTHORITY
X	X								X	DICOTYLEDONS	Anacardiaceae	Rhus typhina	Staghorn Sumac	1	3				N	S5	G5				X	L.
X									X	DICOTYLEDONS	Apiaceae	Aegopodium podagraria	Goutweed		0		-3	1	N	SNA	GNR				X	L.
X					X				X	DICOTYLEDONS	Apiaceae	Daucus carota	Wild Carrot		5		-2		N	SNA	GNR				X	L.
X					x					DICOTYLEDONS	Apocynaceae	Vincetoxicum rossicum	European Swallowwort		5			1	N	SNA	GNR				X	(Kleopow) Barbaricz
X				X						DICOTYLEDONS	Asteraceae	Arctium lappa	Great Burdock		3				N	SNA	GNR				X	L.
X									X	DICOTYLEDONS	Asteraceae	Arctium minus	Common Burdock		3		-2		N	SNA	GNR				X	(Hill) Bernh.
X	X	X							X	DICOTYLEDONS	Asteraceae	Cirsium arvense	Canada Thistle		3		-1	1	N	SNA	G5				X	(L.) Scop.
X		X								DICOTYLEDONS	Asteraceae	Inula helenium	Elecampane		3	T	-2	4	N	SNA	GNR				X	L.
X									X	DICOTYLEDONS	Asteraceae	Pilosella caespitosa	Meadow Hawkweed		5		-2	3	N	SNA	GNR				X	(Dumort.) P.D. Sell & C. West
X	X				X	X				DICOTYLEDONS	Asteraceae	Solidago flexicaulis	Zigzag Goldenrod	6	3				N	S5	G5				X	L.
X					X				X	DICOTYLEDONS	Asteraceae	Symphyotrichum lanceolatum	Panicled Aster	3	-3	I			P	S5	G5				X	(Willd.) G.L. Nesom
X	X	X	X	X	X		X	X	X	DICOTYLEDONS	Asteraceae	Taraxacum officinale	Common Dandelion		3		-2		N	SNA	G5				X	F.H. Wiggers
X	X		X					X		DICOTYLEDONS	Asteraceae	Taraxacum palustre	Marsh Dandelion		-3				N	SNA	GNR				X	(Lyons) Symons
X	X	X							X	DICOTYLEDONS	Asteraceae	Tussilago farfara	Coltsfoot		3	T	-2	4	N	SNA	GNR				X	L.
X	X	X		X			X	X	X	DICOTYLEDONS	Balsaminaceae	Impatiens capensis	Spotted Jewelweed	4	-3	I			N	S5	G5				X	Meerburgh
X	X									DICOTYLEDONS	Berberidaceae	Caulophyllum giganteum	Giant Blue Cohosh	5	5				N	S5	G4G5				X	(Farw.) Loconte & W.H. Blackw.
X						X				DICOTYLEDONS	Berberidaceae	Podophyllum peltatum	May-Apple	5	3				N	S5	G5				X	L.
X	X									DICOTYLEDONS	Betulaceae	Alnus glutinosa	European Black Alder		-3	T	-2	1	N	SNA	GNR				X	(L.) Gaertner
X	X									DICOTYLEDONS	Betulaceae	Betula papyrifera	Paper Birch	2	3	T			N	S5	G5				X	Marshall
X	X				X	X				DICOTYLEDONS	Betulaceae	Ostrya virginiana	Eastern Hop-Hornbeam	4	3				N	S5	G5				X	(Miller) K. Koch
X	X	X	X			X			X	DICOTYLEDONS	Boraginaceae	Hydrophyllum virginianum var. virginianum	Virginia Waterleaf	6	0				N	S5	G5T5				X	L.
X	X	X		X			X	X	X	DICOTYLEDONS	Brassicaceae	Alliaria petiolata	Garlic Mustard		0		-3	1	N	SNA	GNR				X	(M. Bieb.) Cavara & Grande
X	X	X	X				X	X	X	DICOTYLEDONS	Brassicaceae	Barbarea vulgaris	Bitter Wintercress		0		-1	3	N	SNA	GNR				X	W.T. Aiton
X	X		X				X		X	DICOTYLEDONS	Brassicaceae	Capsella bursa-pastoris	Common Shepherd's Purse		3		-1		N	SNA	GNR				X	(L.) Medikus
X	X									DICOTYLEDONS	Brassicaceae	Cardamine concatenata	Cut-Leaved Toothwort	6	3				N	S5	G5				X	(Michx.) O. Schwarz
X	X									DICOTYLEDONS	Brassicaceae	Cardamine diphylla	Two-Leaved Toothwort	7	3				N	S5	G5				X	(Michx.) Alph. Wood
X	X									DICOTYLEDONS	Brassicaceae	Cardamine maxima	Large Toothwort	10	3				Y	S3	G5				X	(Nutt.) Alph. Wood
X	X									DICOTYLEDONS	Brassicaceae	Draba verna	Spring Draba		5		-2		N	SNA	GNR				X	L.
X			X							DICOTYLEDONS	Brassicaceae	Erysimum cheiranthoides	Wormseed Wallflower		3		-1		N	S5?	G5				X	L.
X		X						X	X	DICOTYLEDONS	Brassicaceae	Hesperis matronalis	Dame's Rocket		3		-3	1	N	SNA	G4G5				X	L.
X			X				X			DICOTYLEDONS	Brassicaceae	Thlaspi arvense	Field Pennycress		5		-1		N	SNA	GNR				X	L.
X	X								X	DICOTYLEDONS	Caprifoliaceae	Dipsacus fullonum	Common Teasel		3		-1	3	N	SNA	GNR				X	L.
X	X	X	X	X	X		X	X	X	DICOTYLEDONS	Caprifoliaceae	Lonicera x bella	Showy Fly Honeysuckle		3		-3	1	N	SNA	GNA				X	Zabel
X			X							DICOTYLEDONS	Caprifoliaceae	Valeriana officinalis	Common Valerian		3		-1		N	SNA	GNR				XSR	L.
X				X						DICOTYLEDONS	Caryophyllaceae	Stellaria media	Common Chickweed		3		-1		N	SNA	GNRTNR				X	(L.) Villars
X						X				DICOTYLEDONS	Celastraceae	Euonymus obovatus	Running Strawberry Bush	6	5				N	S4	G5				X	Nutt.
X	X									DICOTYLEDONS	Cornaceae	Cornus alternifolia	Alternate-Leaved Dogwood	6	3				N	S5	G5				X	L. f.
X	X									DICOTYLEDONS	Cornaceae	Cornus obliqua	Silky Dogwood	2	-3	I			N	S5	G5				R5	Rafinesque
X	X	X		X	X	X		X	X	DICOTYLEDONS	Cornaceae	Cornus sericea	Red-Osier Dogwood	2	-3	I*			N	S5	G5				X	L.
X					X					DICOTYLEDONS	Fabaceae	Lotus corniculatus	Garden Bird's-Foot Trefoil		3		-2	2	N	SNA	GNR				X	L.
X			X							DICOTYLEDONS	Fabaceae	Trifolium pratense	Red Clover		3		-2	4	N	SNA	GNR				X	L.
X			X	X					X	DICOTYLEDONS	Fabaceae	Trifolium repens	White Clover		3		-1	4	N	SNA	GNR				X	L.
X					X					DICOTYLEDONS	Fagaceae	Fagus grandifolia	American Beech	6	3				N	S4	G5				X	Ehrhart
X	X			X						DICOTYLEDONS	Fagaceae	Quercus rubra	Northern Red Oak	6	3				N	S5	G5				X	L.
X		X				X				DICOTYLEDONS	Geraniaceae	Geranium robertianum	Herb-Robert	2	3		-2		N	S5	G5				X	L.
X		X								DICOTYLEDONS	Grossulariaceae	Ribes americanum	Wild Black Currant	4	-3	T			N	S5	G5				X	Miller
X	X									DICOTYLEDONS	Grossulariaceae	Ribes cynosbati	Eastern Prickly Gooseberry	4	3				N	S5	G5				X	L.
X	X	X	X	X						DICOTYLEDONS	Grossulariaceae	Ribes rubrum	European Red Currant		5	T	-2		N	SNA	G4G5				X	L.
X	X					X				DICOTYLEDONS	Juglandaceae	Carya cordiformis	Bitternut Hickory	6	0				N	S5	G5				X	(Wangenh.) K. Koch
X	X									DICOTYLEDONS	Juglandaceae	Carya ovata var. ovata	Shagbark Hickory	6	3	T			N	S5	G5				X	(Miller) K. Koch
X	X	X								DICOTYLEDONS	Juglandaceae	Juglans cinerea	Butternut	6	3				Y	S2?	G3	END	END		X	L.
X	X		X	X					X	DICOTYLEDONS	Juglandaceae	Juglans nigra	Black Walnut	5	3				N	S4?	G5				X	L.
X	X			X						DICOTYLEDONS	Lamiaceae	Glechoma hederacea	Ground-Ivy		3		-2	4	N	SNA	GNR				X	L.
X	X								X	DICOTYLEDONS	Lamiaceae	Lamium purpureum	Purple Dead-Nettle		5		-2		N	SNA	GNR					L.
X	X	X	X	X					X	DICOTYLEDONS	Lamiaceae	Leonurus cardiaca ssp. cardiaca	Common Motherwort		5		-2		N	SNA	GNRTNR				X	L.
X		X								DICOTYLEDONS	Lamiaceae	Mentha x piperita	Peppermint		-5	I	-1	4	N	SNA	GNA				X	L.
X				T				X		DICOTYLEDONS	Lamiaceae	Nepeta cataria	Catnip		3		-2	4	N	SNA	GNR				X	L.
X					X			X	X	DICOTYLEDONS	Lythraceae	Lythrum salicaria	Purple Loosestrife		-5	I	-3	1	N	SNA	G5				X	L.
X	X					X			X	DICOTYLEDONS	Malvaceae	Tilia americana	Basswood	4	3				N	S5	G5				X	L.
X	X									DICOTYLEDONS	Oleaceae	Fraxinus americana	White Ash	4	3				N	S4	G4				X	L.
X	X	X		X						DICOTYLEDONS	Papaveraceae	Chelidonium majus	Greater Celandine		5		-3		N	SNA	GNR				X	L.
X	X									DICOTYLEDONS	Papaveraceae	Dicentra cucullaria	Dutchman's Breeches	6	5				N	S5	G5				U	(L.) Bernhardi
X	X		X	X						DICOTYLEDONS	Plantaginaceae	Plantago major	Common Plantain		3		-1		N	SNA	G5				X	L.
X							X			DICOTYLEDONS	Plantaginaceae	Veronica persica	Bird's-Eye Speedwell		5		-1		N	SNA	GNR				X	Poiret
X									X	DICOTYLEDONS	Primulaceae	Lysimachia ciliata	Fringed Yellow Loosestrife	4	-3	T			N	S5	G5				X	L.
X		X								DICOTYLEDONS	Ranunculaceae	Actaea pachypoda	White Baneberry	6	5				N	S5	G5				X	Elliott
X			X							DICOTYLEDONS	Ranunculaceae	Anemone canadense	Canada Anemone	3	-3	T			N	S5	G5				X	(L.) Mosyakin
X							X			DICOTYLEDONS	Ranunculaceae	Caltha palustris	Yellow Marsh Marigold	5	-5	I			N	S5	G5				X	L.
X									X	DICOTYLEDONS	Ranunculaceae	Ranunculus acris	Common Buttercup		0	T	-2		N	SNA	G5				X	L.
X			X					X		DICOTYLEDONS	Ranunculaceae	Ranunculus sceleratus	Cursed Buttercup	2	-5	I			N	S5	G5				X	L.
X	X									DICOTYLEDONS	Ranunculaceae	Thalictrum dioicum	Early Meadow-Rue	6	3				N	S5	G5				X	L.
X	X	X		X	X	X	X	X	X	DICOTYLEDONS	Rhamnaceae	Rhamnus cathartica	European Buckthorn		0	T	-3	1	N	SNA	GNR				X	L.
X									X	DICOTYLEDONS	Rosaceae	Crataegus monogyna var. monogyna	English Hawthorn		3		-1	3	N	SNA	G5TNR				X	Jacquin
X									X	DICOTYLEDONS	Rosaceae	Crataegus punctata	Dotted Hawthorn	4	5				N	S5	G5				X	Jacquin
X	X	x			X				X	DICOTYLEDONS	Rosaceae	Fragaria virginiana	Wild Strawberry	2	3				N	S5	G5				X	Miller
X	X								X	DICOTYLEDONS	Rosaceae	Malus pumila	Common Apple		5		-1		N	SNA	G5				X	Miller
X						X			X	DICOTYLEDONS	Rosaceae	Prunus serotina var. serotina	Black Cherry	3	3				N	S5	G5T5				X	Ehrhart
X	X	X	X	X	X	X			X	DICOTYLEDONS	Rosaceae	Prunus virginiana var. virginiana	Chokecherry	2	3				N	S5	G5T5				X	L.
X	X	X	X	X					X	DICOTYLEDONS	Rosaceae	Rubus idaeus ssp. strigosus	North American Red Raspberry	2	3				N	S5	G5T5				X	(Michaux) Focke
X	X									DICOTYLEDONS	Rosaceae	Sorbus aucuparia	European Mountain-Ash		5		-2	4	N	SNA	G5				X	L.
X									X	DICOTYLEDONS	Rubiaceae	Galium asprellum	Rough Bedstraw	6	-5	I			N	S5	G5				U	Michaux
X	X	X								DICOTYLEDONS	Salicaceae	Populus tremuloides	Trembling Aspen	2	0	T			N	S5	G5				X	Michaux
X		X								DICOTYLEDONS	Salicaceae	Salix interior	Sandbar Willow	1	-3	T			N	S5	G5				R5	Rowlee
X	X	X		X		X	X	X	X	DICOTYLEDONS	Salicaceae	Salix x fragilis	Hybrid Crack Willow			T	-3	3	N	SNA	GNA				XSR	L.
X		X							X	DICOTYLEDONS	Salicaceae	Salix x sepulcralis	Golden Weeping Willow						N	SNA	GNA				XSR	Simonkai
X	X	X	X	X				X	X	DICOTYLEDONS	Sapindaceae	Acer negundo	Manitoba Maple	0	0	T		1	N	S5	G5				X	L.
X	X			X	X				X	DICOTYLEDONS	Sapindaceae	Acer saccharinum	Silver Maple	5	-3	I			N	S5	G5				X	L.
X	X	X			X	X				DICOTYLEDONS	Sapindaceae	Acer saccharum	Sugar Maple	4	3				N	S5	G5				X	Marshall
X		X					X		X	DICOTYLEDONS	Solanaceae	Solanum dulcamara	Bittersweet Nightshade		0	T	-2	3	N	SNA	GNR				X	L.
X	X	X			X			X		DICOTYLEDONS	Ulmaceae	Ulmus americana	White Elm	3	-3	T			N	S5	G4				X	L.
X	X	X	X	X			X			DICOTYLEDONS	Urticaceae	Urtica gracilis ssp. gracilis	Slender Stinging Nettle	2	0	T			N	S5	G5T5				X	
X	X						X			DICOTYLEDONS	Viburnaceae	Sambucus canadensis	Common Elderberry	5	-3	T			N	S5	G5T5				X	L.
X	X									DICOTYLEDONS	Viburnaceae	Sambucus racemosa	Red Elderberry	5	3			P	N	S5	G5				X	L.
X			X							DICOTYLEDONS	Viburnaceae	Viburnum lantana	Wayfaring Viburnum		5		-1		N	SNA	GNR				X	L.
X	X									DICOTYLEDONS	Viburnaceae	Viburnum lentago	Nannyberry	4	0	T			N	S5	G5				X	L.
X				X			X		X	DICOTYLEDONS	Viburnaceae	Viburnum opulus var. opulus	Cranberry Viburnum		-3		-1	4	N	SNA	G5TNR				X	

X	X	X			X				X	DICOTYLEDONS	Violaceae	Viola pubescens	Downy Yellow Violet	5	3				N	S5	G5				X	Aiton
X	X	X	X	X	X				X	DICOTYLEDONS	Violaceae	Viola sororia	Woolly Blue Violet	4	0	T			N	S5	G5				X	Willdenow
X	X			X	X		X			GYMNOSPERMS	Cupressaceae	Thuja occidentalis	Eastern White Cedar	4	-3	T			N	S5	G5				X	L.
X	X						X			GYMNOSPERMS	Pinaceae	Abies balsamea	Balsam Fir	5	-3	T			N	S5	G5				X	(L.) Miller
X	X			X						GYMNOSPERMS	Pinaceae	Picea abies	Norway Spruce		5		-1		N	SNA	G5				X	(L.) Karsten
X	X						X	X		GYMNOSPERMS	Pinaceae	Picea glauca	White Spruce	6	3	T			N	S5	G5				R3	(Moench) Voss
X	X									GYMNOSPERMS	Pinaceae	Picea pungens	Blue Spruce		3				N	SNA	G5					Engelm.
X	X						X	X		GYMNOSPERMS	Pinaceae	Pinus strobus	Eastern White Pine	4	3	T			N	S5	G5				X	L.
X	X									GYMNOSPERMS	Pinaceae	Pinus sylvestris	Scots Pine		3		-3	2	N	SNA	GNR				X	L.
X	X	X				X				MONOCOTYLEDONS	Amaryllidaceae	Allium tricoccum var. tricoccum	Wild Leek	7	3				N	S4	G5				X	Aiton
X									X	MONOCOTYLEDONS	Amaryllidaceae	Narcissus pseudonarcissus	Common Daffodil		5				N	SNA	GNR					L.
X	X					X				MONOCOTYLEDONS	Araceae	Arisaema triphyllum ssp. triphyllum	Jack-In-The-Pulpit	5	-3	T			N	S5	G5T5				X	(L.) Schott
X								X		MONOCOTYLEDONS	Araceae	Lemna minor	Small Duckweed	5	-5	I			N	S5	G5				X	L.
X								X		MONOCOTYLEDONS	Araceae	Lemna trisulca	Star Duckweed	6	-5	I			N	S5	G5				R4	L.
X	X									MONOCOTYLEDONS	Asparagaceae	Maianthemum racemosum	Large False Solomon's Seal	4	3				N	S5	G5T5				X	(L.) Link
X	X	X	X		X	X				MONOCOTYLEDONS	Liliaceae	Erythronium americanum ssp. americanum	Yellow Trout Lily	5	5				N	S5	G5T5				X	Ker Gawler
X	X									MONOCOTYLEDONS	Melanthiaceae	Trillium erectum	Red Trillium	6	3				N	S5	G5				X	L.
X	X					X				MONOCOTYLEDONS	Melanthiaceae	Trillium grandiflorum	White Trillium	5	3				N	S5	G5				X	(Michx.) Salisbury
X	X		X							MONOCOTYLEDONS	Poaceae	Alopecurus pratensis	Meadow Foxtail		-3		-1		N	SNA	GNR				X	L.
X	X	X	X						X	MONOCOTYLEDONS	Poaceae	Bromus inermis	Smooth Brome		5		-3	4	N	SNA	G5T5				X	Leysser
X	X								X	MONOCOTYLEDONS	Poaceae	Dactylis glomerata	Orchard Grass		3		-1	3	N	SNA	GNR				X	L.
X									X	MONOCOTYLEDONS	Poaceae	Elymus repens	Quackgrass		3		-3	3	N	SNA	GNR				X	(L.) Gould
X	X	X	X	X	X	X	X	X	X	MONOCOTYLEDONS	Poaceae	Phalaris arundinacea var. arundinacea	Reed Canary Grass	0	-3	T		P	N	S5	G5TNR				X	L.
X			X							MONOCOTYLEDONS	Poaceae	Phleum pratense ssp. pratense	Common Timothy		3		-1		N	SNA	GNRTNR				X	L.
X	X	X			X				X	MONOCOTYLEDONS	Poaceae	Phragmites australis ssp. australis	European Reed		-3	T		1	N	SNA	G5T5				X	(Cav.) Trinius ex Steudel
X			X	X			X			MONOCOTYLEDONS	Poaceae	Poa annua	Annual Bluegrass		3		-2		N	SNA	GNR				X	L.
X	X								X	MONOCOTYLEDONS	Poaceae	Poa pratensis	Kentucky Bluegrass	0	3			2	P	S5	G5				X	L.
X	X	X			X		X	X		MONOCOTYLEDONS	Typhaceae	Typha angustifolia	Narrow-Leaved Cattail		-5	I		P	N	SNA	G5				X	L.
X			X				X	X	X	PTERIDOPHYTES	Equisetaceae	Equisetum arvense	Field Horsetail	0	0	T			N	S5	G5				X	L.

X

X

	STATISTICS		
X	**Species Diversity**		
X	Total Number of Species:	125	
X	Native Species:	68	54%
X	Exotic Species:	57	46%
X	S1-S3 Species:	2	3%
X	S4 Species:	5	7%
X	S5 Species:	61	90%
X	Provincially Tracked Species:	2	3%
X	**Floristic Quality Assessment (FQA)**		
X	Mean Co-efficient of Conservatism (CC)	4.2	
X	CC 0 - 3 = lowest sensitivity	20	29%
X	CC 4 - 6 = moderate sensitivity	44	65%
X	CC 7 - 8 = high sensitivity	2	3%
X	CC 9 - 10 = highest sensitivity	1	1%
X	Floristic Quality Index (FQI)	34	
X	**Weedy & Invasive Species**		
X	Mean Weediness Index (Oldham et al):	-1.8	
X	-1 = low potential invasiveness	20	35%
X	-2 = moderate potential invasiveness	20	35%
X	-3 = high potential invasiveness	11	19%
X	Mean Exotic Rank (Urban Forest Associates):	3	
X	Category 1	11	19%
X	Category 2	3	5%
X	Category 3	8	14%
X	Category 4	10	18%
X	Potentially Invasive (P)	3	5%
X	**Wetland Species**		
X	Mean Wetness Index	1.5	
X	Upland	22	18%
X	Facultative upland	59	47%
X	Facultative	14	11%
X	Facultative wetland	20	16%
X	Obligate wetland	8	6%

No.	X	Common Name	Species Code	Scientific Name	Provincial Status (S Rank)	Global Status (G Rank)	SARO List	SARA Schedule 1	SWH Indicator Species	Highest Breeding Evidence		Round 1 BBS1	Round 1 BBS2	Round 1 BBS3	Round 1 BBS4	Round 1 BBS5	Round 1 BBS6	Round 1 BBS7	Round 1 BBS8	Round 1 BBS9	Round 1 BBS10	Round 1 BBS11	Round 1 BBS12	Round 1 BBS13	Round 1 BBS14	Round 1 BBS15	Round 1 BBS16	Round 1 BBS17	Round 1 BBS18	Round 1 BBS19	Incidental Round 1	Off Site Round 1	Round 2 BBS1	Round 2 BBS2	Round 2 BBS3	Round 2 BBS4	Round 2 BBS5	Round 2 BBS6	Round 2 BBS7	Round 2 BBS8	Round 2 BBS9	Round 2 BBS10	Round 2 BBS11	Round 2 BBS12	Round 2 BBS13	Round 2 BBS14	Round 2 BBS15	Round 2 BBS16	Round 2 BBS17	Round 2 BBS18	Round 2 BBS19	Incidental Round 2	Off Site Round 2
	X										Date:	6/4/2024	6/4/2024	6/4/2024	6/4/2024	6/4/2024	6/4/2024	6/4/2024	6/4/2024	6/4/2024	6/4/2024	6/4/2024	6/4/2024	6/4/2024	6/4/2024	6/5/2024	6/5/2024	6/5/2024	6/5/2024	6/5/2024	6/5/2024	June 4,5,6 2024.	June 4,5,6 2024.	6/25/2024	6/25/2024	6/25/2024	6/25/2024	6/25/2024	6/25/2024	6/25/2024	6/25/2024	6/25/2024	6/25/2024	6/25/2024	6/26/2024	6/26/2024	6/26/2024	6/26/2024	6/26/2024	6/26/2024	6/26/2024	6/26/2024	6/26/2024	6/25,26/2024	6/25,26/2024
	X										Time:	928	800	820	729	528	543	702	646	558	613	629	644	700	739	812	633	709	522	558			815	540	517	557	860	741	613	630	723	706	647	535	516	556	615	738	753	819	840		
	X	**Anseriformes**																																														
	X	***Anatidae***																																														
		Canada Goose	CANG	*Branta canadensis*	S5	G5			X	PO-H																					200	87																	
		Wood Duck	WODU	*Aix sponsa*	S5B, S3N	G5			X	PR-P																																						
		Mallard	MALL	*Anas platyrhynchos*	S5	G5			X	CO-FY						2										2																				1			
	X																																															
	X	**Galliformes**																																														
	X	***Phasianinae***																																													
		Wild Turkey	WITU	*Meleagris gallopavo*	S5	G5			X	PO-H																					1																
	X																																														
	X	**Columbiformes**																																														
	X	***Columbidae***																																														
		Mourning Dove	MODO	*Zenaida macroura*	S5	G5				PR-T						2			2		1	2									1	1		1														1
	X																																														
	X	**Charadriiformes**																																														
	X	***Charadriidae***																																													
		Killdeer	KILL	*Charadrius vociferus*	S4B	G5				PR-T																			1		1			1														
	X																																															
	X	***Scolopacidae***																																														
		Spotted Sandpiper	SPSA	*Actitis macularius*	S5B	G5			X	PR-A																					1																
	X																																														
	X	***Laridae***																																														
		Ring-billed Gull	RBGU	*Larus delawarensis*	S5	G5			X	OB-X																					150	39																
	X																																															
	X	**Pelecaniformes**																																														
	X	***Ardeidae***																																														
		Great Blue Heron	GBHE	*Ardea herodias*	S4	G5			X	OB-X																				1																	
		Green Heron	GRHE	*Butorides virescens*	S4B	G5			X	PR-P						1																																
	X																																															
	X	**Accipitriformes**																																														
	X	***Accipitridae***																																														
		Northern Harrier	NOHA	*Circus hudsonius*	S5B, S4N	G5	NAR	NAR	X	PO-H																																					1	
		Red-tailed Hawk	RTHA	*Buteo jamaicensis*	S5	G5		NAR	X	PO-H																					1																
	X																																															
	X	**Piciformes**																																														
	X	***Picidae***																																														
		Red-bellied Woodpecker	RBWO	*Melanerpes carolinus*	S5	G5				PR-T						1																																1
		Downy Woodpecker	DOWO	*Dryobates pubescens*	S5	G5				CO-CF																							1															
		Northern Flicker	NOFL	*Colaptes auratus*	S5	G5				PR-T																				1		1				1										1		
	X																																														
	X	**Falconiformes**																																														
	X	***Falconidae***																																														
		American Kestrel	AMKE	*Falco sparverius*	S4	G5			X	PO-S																																						
	X																																															
	X	**Passeriformes**																																														
	X	***Tyrannidae***																																														
		Great Crested Flycatcher	GCFL	*Myiarchus crinitus*	S5B	G5				PR-T						1															1																1	1
		Eastern Kingbird	EAKI	*Tyrannus tyrannus*	S4B	G5				PR-A						1						1		1							1																	
		Eastern Wood-Pewee	EAWP	*Contopus virens*	S4B	G5	SC	SC	X	PR-T			2			1		1																													1		1
		Willow Flycatcher	WIFL	*Empidonax traillii*	S4B	G5			X	PR-N									1		1																											
		Eastern Phoebe	EAPH	*Sayornis phoebe*	S5B	G5				PO-S																																					1		1
	X																																															
	X	***Vireonidae***																																														
		Warbling Vireo	WAVI	*Vireo gilvus*	S5B	G5				PR-T									2		1																											
		Red-eyed Vireo	REVI	*Vireo olivaceus*	S5B	G5				PR-T						2	1														2	1															1	1
	X																																														
	X	***Corvidae***																																														
		Blue Jay	BLJA	*Cyanocitta cristata*	S5	G5				PR-A			2		1										1							2		1		1										1	
		American Crow	AMCR	*Corvus brachyrhynchos*	S5	G5				PO-H															2		1																			1	
		Common Raven	CORA	*Corvus corax*	S5	G5				PO-H																																						
	X																																														
	X	***Alaudidae***																																														
		Horned Lark	HOLA	*Eremophila alpestris*	S4	G5				CO-DD																	1	1		1																	
	X																																															
	X	***Hirundinidae***																																														
		Tree Swallow	TRES	*Tachycineta bicolor*	S4S5B	G5				PR-T						1	1																													1	
		Northern Rough-winged Swallow	NRWS	*Stelgidopteryx serripennis*	S4B	G5			X	PR-T																																					1	
		Barn Swallow	BARS	*Hirundo rustica*	S4B	G5	SC	SC		CO-AE						1															1	6														2	8
	X																																														
	X	***Paridae***																																														
		Black-capped Chickadee	BCCH	*Poecile atricapillus*	S5	G5				PR-P			1			1	1							1	1					2	2	1	1		1		1									2		1
	X																																														
	X	***Sittidae***																																														
		Red-breasted Nuthatch	RBNU	*Sitta canadensis*	S5	G5			X	PR-T						1																																
	X																																														
	X	***Troglodytidae***																																														
		House Wren	HOWR	*Troglodytes aedon*	S5B	G5				PR-T				1										1						1																	1
	X																																														
	X	***Turdidae***																																														
		Eastern Bluebird	EABL	*Sialia sialis*	S5B, S4N	G5		NAR		PO-S																			1																		
		Wood Thrush	WOTH	*Hylocichla mustelina*	S4B	G4	SC	THR	X	PO-S					1																																	
		American Robin	AMRO	*Turdus migratorius*	S5	G5				CO-FY		1	1	2	2	3	3	4	2	3	3	2	1				2			1	1		2	1	2	3	1	2	1	6	6	2	1	1	1		1	1	
	X																																														
	X	***Mimidae***																																														
		Gray Catbird	GRCA	*Dumetella carolinensis*	S5B, S3N	G5				PR-A			1			1							1							2				1		1		1	2						1		
		Brown Thrasher	BRTH	*Toxostoma rufum*	S4B	G5			X	PR-T																					1															1	
		Northern Mockingbird	NOMO	*Mimus polyglottos*	S4	G5				CO-NY							2																						2								
	X																																														
	X	***Sturnidae***																																													
		European Starling	EUST	*Sturnus vulgaris*	SNA	G5				PO-H							1		1	1											2									1				4				
	X																																														
	X	***Bombycillidae***																																														
		Cedar Waxwing	CEDW	*Bombycilla cedrorum*	S5	G5				PR-P								2		2			2									1		4	1		1									2		
	X																																														
	X	***Passeridae***																																														
		House Sparrow	HOSP	*Passer domesticus*	SNA	G5				PR-T							1		1																													
	X																																														
	X	***Fringillidae***																																														
		House Finch	HOFI	*Haemorhous mexicanus*	SNA	G5				PR-T									1	1	1																											
		American Goldfinch	AMGO	*Spinus tristis*	S5	G5				PR-P		1		1						1			3			1	5		1	1			1		1	2		2	1	1			2		2			2
	X																																														
	X	***Passerellidae***																																														
		Chipping Sparrow	CHSP	*Spizella passerina*	S5B, S3N	G5				CO-CF							1	1		2	1			1						1	1									2	1	1	2				1		
		Vesper Sparrow	VESP	*Pooecetes gramineus*	S4B	G5			X	PR-T										1																												
		Savannah Sparrow	SAVS	*Passerculus sandwichensis*	S5B, S3N	G5			X	PR-T							2									2	2			2	1			3													2
		Song Sparrow	SOSP	*Melospiza melodia*	S5	G5				CO-CF		1	1		2	1		4	1	2		1	1	3	2	4	3	2	5	1		1		2		3		3	3	1	1	1	1	4		2	1	4	2		2
	X																																			1												
	X	***Icteridae***																																														
		Bobolink	BOBO	*Dolichonyx oryzivorus*	S4B	G5	THR	THR		PR-P		7																			4	3																
		Eastern Meadowlark	EAME	*Sturnella magna*	S4B, S3N	G5	THR	THR		CO-CF							1														1	2																1
		Orchard Oriole	OROR	*Icterus spurius*	S4B	G5				PR-T							1	1	1					1																								
		Baltimore Oriole	BAOR	*Icterus galbula*	S4B	G5				CO-CF				1			1		1																		1										1	
		Red-winged Blackbird	RWBL	*Agelaius phoeniceus*	S5	G5				CO-NY		6				2		2	1	2		2	2			2	2			1						11			3	4	1	5	1	1			4		1
		Brown-headed Cowbird	BHCO	*Molothrus ater*	S5	G5				PR-P						2		1	1					2						1		1		1										10			
		Common Grackle	COGR	*Quiscalus quiscula*	S5	G5				CO-FY						2			1	1	1	4	1								1					4		4		3	2	2						
	X																																														
	X	***Parulidae***																																														
		Common Yellowthroat	COYE	*Geothlypis trichas*	S5B, S3N	G5				PR-T									1	1											1															2		
		American Redstart	AMRE	*Setophaga ruticilla*	S5B	G5				CO-CF					1		2						1									1						3										
		Yellow Warbler	YWAR	*Setophaga petechia*	S5B	G5				PR-A								2	2				2					1									2		1	2			1					
		Pine Warbler	PIWA	*Setophaga pinus*	S5B, S3N	G5				PR-T							1																					1										
	X																																														
	X	***Cardinalidae***																																														
		Northern Cardinal	NOCA	*Cardinalis cardinalis*	S5	G5				CO-FY					1	1	1		2					1							1	1					3					1		1	1	1			
		Rose-breasted Grosbeak	RBGR	*Pheucticus ludovicianus*	S5B	G5				PR-T				1																	1															1		
		Indigo Bunting	INBU	*Passerina cyanea*	S5B	G5				PR-T										1	1		1	1	1																				1	1		
	X																																														

Species Common Name and Scientific Name: Chesser, R. T., K. J. Burns, C. Cicero, J. L. Dunn, A. W. Kratter, I. J. Lovette, P. C. Rasmussen, J. V. Remsen, Jr., D. F. Stotz, B. M. Winger, and K. Winker. 2018. Check-list of North American Birds (online). American Ornithological Society. Available online: http://checklist.aou.org/taxa

Species Code: Consistent with the American Ornithologists' Union. 2024. Species 4-Letter-Codes. Available online: http://www.birdsontario.org/atlas/codes.jsp?lang=en&pg=species

Highest Breeding Evidence: Codes assigned for breeding evidence are consistent with the Ontario Breeding Bird Atlas (OBBA). 2024. Breeding Evidence Codes. Available online: http://www.birdsontario.org/atlas/codes.jsp?lang=en&pg=breeding&sortorder=aou

S ranks: Provincial ranks are from the Natural Heritage Information Centre; S1 (critically imperiled), S2 (imperiled), S3 (vulnerable), S4 (apparently secure), S5 (secure); ranks were updated using NHIC species list 2024. Available to download from: https://www.ontario.ca/page/get-natural-heritage-information

G ranks: Global ranks are from the Natural Heritage Information Centre; G1 (extremely rare), G2 (very rare), G3 (rare to uncommon), G4 (common), G5 (very common); ranks were updated using NHIC species list 2024. Available to download from: https://www.ontario.ca/page/get-natural-heritage-information

SARO (MECP): Ontario Species at Risk as listed by the Committee on the Status of Species at Risk in Ontario (from Ontario Regulation 230/08 Species at Risk in Ontario website: https://www.ontario.ca/laws/regulation/080230/); END - Endangered; THR - Threatened; SC - Special Concern; NAR - Not at Risk

COSEWIC: Assessed Species at Risk at the national level as listed by the Committee on the Status of Endangered Wildlife in Canada (from COSEWIC: https://wildlife-species.canada.ca/species-risk-registry/sar/index/default_e.cfm); END - Endangered, THR - Threatened, SC - Special Concern, NAR - Not at Risk

SWH Indicator Species: SWH refers to Significant Wildlife Habitat as defined by the MNRF (2015) Significant Wildlife Habitat Criteria Schedules for Ecoregions 7E and 6E (as appropriate for the Subject Lands). SWH indicator species are identified in this table and any potential SWH is discussed in the text of this report. Available online: http://www.townofnemi.on.ca/wp-content/uploads/2016/02/NEMI-OP-App-C-schedule-6e-jan-2015-access-ver-final-s.pdf

Table 5: Turtle Basking and Nesting Survey Results

DATE SURVEYED	SURVEY ROUND	STATION NUMBER	SPECIES CODE								
			NOTU	MPTU	SNTU	MATU	BLTU	SSTU	WOTU	STIN	SPTU
09-AP-24	1	BS1	X								
16-AP-24	2	BS1	X								
06-MA-24	3	BS1	X								
09-AP-24	1	BS2	X								
16-AP-24	2	BS2	X								
06-MA-24	3	BS2	X								
10-AP-24	1	BS3	X								
30-AP-24	2	BS3	X								
06-MA-24	3	BS3	X								
10-AP-24	1	BS4		13	1						
30-AP-24	2	BS4		4							
06-MA-24	3	BS4		13	1						
10-AP-24	1	BS5			1						
30-AP-24	2	BS5			1						
06-MA-24	3	BS5		15	1						
10-AP-24	1	BS6	X								
30-AP-24	2	BS6	X								
06-MA-24	3	BS6	X								
10-AP-24	1	BS7		65	4						
30-AP-24	2	BS7		66	2						
06-MA-24	3	BS7		53	4						

Turtle Survey Results – Nesting

BS3 – BS7 are located on active golf course lands (Property 1), therefore, suitable nesting habitat opportunities (sandtraps) for turtle nesting.

Table 5: Turtle Basking and Nesting Survey Results

LEGEND:

SPECIES CODE	COMMON NAME	SCIENTIFIC NAME
NOTU	No turtles observed despite survey effort	
MPTU	Midland Painted Turtle	*Chrysemys picta marginata*
SNTU	Snapping Turtle	*Chelydra serpentina*
MATU	Northern Map Turtle	*Graptemys geographica*
BLTU	Blanding's Turtle	*Emydoidea blandingii*
SSTU	Spiny Soft-shelled Turtle	*Apalone spinifera*
WOTU	Wood Turtle	*Glyptemys insculpta*
STIN	Stinkpot Turtle	*Stemotherus odoratus*
SPTU	Spotted Turtle	*Clemmys guttata*

DATE	
MONTH	CODE
January	JA
February	FE
March	MR
April	AP
May	MA
June	JN
July	JL
August	AU
September	SE
October	OC
November	NO
December	DE

Table 6: Amphibian Call Count Survey Station Results

SURVEY ROUND	STATION NUMBER	SPECIES CODE												Water Presence
		NOAM	AMTO	FOTO	GRTR	SPPE	CHFR	WOFR	NLFR	PIFR	GRFR	BULL	MIFR	
1	AMC1	X												Unknown
2	AMC1	X												Unknown
3	AMC1	X												Unknown
1	AMC2	X												Unknown
2	AMC2	X												Unknown
3	AMC2	X												Unknown
1	AMC3	X												Yes
2	AMC3	DRY												No
1	AMC4		1(1)											No Access
2	AMC4	X												No Access
3	AMC4		1(1)		1(1)									No Access
1	AMC5	X												Yes
2	AMC5	X												Yes
3	AMC5	DRY												No
1	AMC6	X												Yes
2	AMC6	X												Yes
3	AMC6	DRY												No
1	AMC7	X												Yes
2	AMC7	DRY												No
1	AMC8	X												Yes
2	AMC8	X												Yes
3	AMC8	DRY												No
1	AMC9	X												Yes
2	AMC9	X												Yes

Table 6: Amphibian Call Count Survey Station Results

SURVEY ROUND	STATION NUMBER	SPECIES CODE												Water Presence
		NOAM	AMTO	FOTO	GRTR	SPPE	CHFR	WOFR	NLFR	PIFR	GRFR	BULL	MIFR	
3	AMC9	X												Yes
1	AMC10	X												Yes
2	AMC10	X												Yes
3	AMC10	DRY												No
1	AMC11		1(1)					1(2)						Yes
2	AMC11		1(2)		1(5)									Yes
3	AMC11		1(1)		1(2)									Yes
1	AMC12	X												Yes
2	AMC12	X												Yes
3	AMC12	X												Yes
1	AMC13	X												No
2	AMC13	X												Yes
3	AMC13	DRY												No
1	AMC14	X												Unknown
2	AMC14	X												Unknown
3	AMC14	X												Unknown
1	AMC15	X												Yes
2	AMC15	DRY												No
1	AMC16	X												Yes
2	AMC16		1(1)		1(3)						1(1)			Yes
3	AMC16										2(12)			Yes
1	AMC17	DRY												No
1	AMC18	X												Yes
2	AMC18										1(1)			Yes
3	AMC18										1(8)			Yes

Table 6: Amphibian Call Count Survey Station Results

SURVEY ROUND	STATION NUMBER	SPECIES CODE												Water Presence
		NOAM	AMTO	FOTO	GRTR	SPPE	CHFR	WOFR	NLFR	PIFR	GRFR	BULL	MIFR	
1	AMC19	DRY												No
1	AMC20	X												Yes
2	AMC20	X												Yes
3	AMC20										2(12)			Yes
1	AMC21		1(1)											Yes
2	AMC21	X												Yes
3	AMC21				1(1)									Yes
1	AMC22	X												Yes
2	AMC22	X												Yes
3	AMC22	DRY												No
1	AMC23	DRY												No
1	AMC24	X												Yes
2	AMC24		1(1)											Yes
3	AMC24										1(5)			Yes
1	AMC25	X												Yes
2	AMC25		1(3)											Yes
3	AMC25										1(2)			Yes
1	AMC26	X												Yes
2	AMC26	X												Yes
3	AMC26										1(3)			Yes
1	AMC27	X												Yes
2	AMC27	X												Yes
3	AMC27										2(16)			Yes
1	AMC28	X												Yes
2	AMC28	X												Yes

Table 6: Amphibian Call Count Survey Station Results

SURVEY ROUND	STATION NUMBER	SPECIES CODE												Water Presence
		NOAM	AMTO	FOTO	GRTR	SPPE	CHFR	WOFR	NLFR	PIFR	GRFR	BULL	MIFR	
3	AMC28							1(3)			3(27)			Yes
1	AMC29	X												Yes
2	AMC29	DRY												No
1	AMC30	X												Yes
2	AMC30		1(2)		1(1)									Yes
3	AMC30										1(7)			Yes
1	AMC31	X												Unknown
2	AMC31	X												Unknown
3	AMC31	X												Unknown
1	AMC32	X												Unknown
2	AMC32		1(2)											Unknown
3	AMC32	X												Unknown
1	AMC33	X												No Access
2	AMC33		1(2)		1(3)									No Access
3	AMC33										1(2)			No Access

LEGEND:

SPECIES CODE	COMMON NAME	SCIENTIFIC NAME
NOAM	No Amphibians	No amphibians despite survey effort
AMTO	American Toad	*Anaxyrus americanus*
FOTO	Fowler's Toad	*Anaxyrus fowleri*
GRTR	Gray Treefrog	*Hyla versicolor*
SPPE	Spring Peeper	*Pseudacris crucifer*
CHFR	Western Chorus Frog	*Pseudacris triseriata*
WOFR	Wood Frog	*Lithobates sylvaticus*

CALL CODES	
X	No amphibians heard
1	Calls can be counted without error
2	Calls overlap but can be reliably estimated
3	Calls overlap too much to estimate number

Table 6: Amphibian Call Count Survey Station Results

NLRF	Northern Leopard Frog	*Lithobates pipiens*
PIFR	Pickerel Frog	*Lithobates palustris*
GRFR	Green Frog	*Lithobates clamitans*
BULL	American Bullfrog	*Lithobates catesbeianus*
MIFR	Mink Frog	*Lithobates septentrionalis*

Note: For each species, the first number is the call code and the second number, which is in brackets, is the number of individuals of that species heard calling.

Table 7: Suitable Bat Roosting Tree Density Survey Results

Polygon	Community Type	Approx. Area Size (ha)	# of snag trees observed at ≥25 cm DBH	# of snag trees observed at ≥10 cm DBH	SWH Density (# of snag trees/ha at ≥25 cm DBH)
A	CUM1-1	1.84	2	2	1.09
B	Orchard	0.18	2	2	10.85
C	CUM1-1	0.78	7	7	8.92
D	ANTH	1.21	1	1	0.82
E	DIST	1.88	2	2	1.06
F	Golf	2.13	1	1	0.47
G	CUM1-1	0.33	1	1	3.01
H	HR	0.26	1	1	3.90
I	Orchard	0.17	1	1	5.91
J	HR	0.40	2	2	5.05
K	HR	0.41	2	2	4.84
L	RES	4.34	4	4	0.92
M	HR	82.66	22	22	0.27
N	FODM7-7	0.45	5	5	11.19
O	HR	0.15	3	3	19.97
P	Golf	55.95	50	50	0.89
Q	AG	72.08	1	1	0.01
R	AG	27.884	4	4	0.14
S	FOD5-4	1.61	77	77	4.35
T	AG	26.25	2	2	0.08
U	AG	46.02	2	2	0.04
V	ANTH	51.25	12	12	0.23

Acoustic Monitoring Station	ELC Community	Low Frequency					High Frequency Calls								Total
		Hoary Bat	Big Brown Bat	Silver-haired Bat	Unknown Low Freqency	Total Low Frequency Calls	Eastern Red Bat	Eastern Small-footed Myotis	Northern Myotis	Little Brown Myotis	Tri-colored Bat	Unknown Myotis (40K Myotis Characteristics)	Unknown High Frequency	Total High Frequency Calls	
MTLOG-A	HR	0	0	0	2	2	0	2	0	0	0	9	0	11	13
MTLOG-B	HR	8	5	86	8	107	0	0	0	0	0	2	0	2	109
MTLOG-C	HR	282	181	96	52	611	4	0	0	0	0	2	1	7	618
MTLOG-D	CUP13-14	273	78	95	63	509	13	22	0	7	0	145	0	187	696
MTLOG-E	Orchard	80	71	59	31	241	1	2	0	0	0	5	0	8	249
MTLOG-F	FODM7-7	156	87	68	59	370	2	23	0	2	0	602	21	650	1020
MTLOG-G	FOD5-5	76	86	105	83	350	1	0	0	0	0	4	0	5	355
MTLOG-H	CUP3-2	71	109	55	33	268	11	0	0	0	0	7	4	22	290
MTLOG-I	FODM7-7	3	1	7	2	13	0	0	0	0	0	0	0	0	13
MTLOG-J	CUP3-12	357	225	141	110	833	17	16	0	4	0	85	59	181	1014
MTLOG-K	FOD4	49	150	78	69	346	0	0	0	0	0	35	6	41	387
MTLOG-L	CUW1	7	0	16	8	31	0	0	0	0	0	0	0	0	31
MTLOG-M	HR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MTLOG-N	FOD5-4	16	8	53	12	89	0	0	0	0	0	0	0	0	89
MTLOG-O	FOD7-3	30	20	49	15	114	0	0	0	0	0	1	0	1	115
Total		1408	1021	908	547	3884	49	65	0	13	0	897	91	1115	4999

Inside Study Area	Outside Study Area	COMMON NAME	SCIENTIFIC NAME	Provincial Status (S RANK)	Global Status (G RANK)	SARO List (MECP)	SARA Schedule 1 (Federal)	Local Status TRCA	SWH Indicator Species 6E
		ODONATA							
X		Familiar Bluet	*Enallagma civile*	S5	G5				
X		Eastern Forktail	*Ischnura verticalis*	S5	G5				
X		Black Saddlebags	*Tramea lacerata*	S4	G5				
		BUTTERFLIES							
X		Black Swallowtail	*Papilio polyxenes*	S5	G5				
X		Appalachian Brown	*Satyrodes appalachia*	S4	G4				
X		**CRAYFISH**							
X		Digger Crayfish	*Creaserinus fodiens*	S3	G5			L2	X
		AMPHIBIANS							
X	X	American Toad	*Anaxyrus americanus*	S5	G5			L4	X
X	X	Gray Treefrog	*Hyla versicolor*	S5	G5			L2	X
X		Northern Green Frog	*Lithobates clamitans*	S5	G5			L4	X
X		Wood Frog	*Lithobates sylvatica*	S5	G5			L2	X
		REPTILES							
X		Snapping Turtle	*Chelydra serpentina*	S4	G5	SC	SC	L3	X
X	X	Midland Painted Turtle	*Chrysemys picta marginat*	S4	G5T5		SC	L3	X
X		Eastern Gartersnake	*Thamnophis sirtalis*	S5	G5			L4	X
		BIRDS							
X		Canada Goose	*Branta canadensis*	S5	G5			L5	X
X	X	Wood Duck	*Aix sponsa*	S5B, S3N	G5			L4	X
X	X	Mallard	*Anas platyrhynchos*	S5	G5			L5	X
X		Wild Turkey	*Meleagris gallopavo*	S5	G5			L3	X
X		Mourning Dove	*Zenaida macroura*	S5	G5			L5	
X		Killdeer	*Charadrius vociferus*	S4B	G5			L4	
X		Spotted Sandpiper	*Actitus macularius*	S5B	G5				
	X	Ring-billed Gull	*Larus delawarensis*	S5	G5			L4	X
X		Great Blue Heron	*Ardea herodias*	S4	G5			L3	X
X		Green Heron	*Butorides virescens*	S4B	G5			L4	X
X		Northern Harrier	*Circus cyaneus*	S5B, S4N	G5			L2	X
X		Red-tailed Hawk	*Buteo jamaicensis*	S5	G5			L5	X
	X	Red-bellied Woodpecker	*Melanerpes carolinus*	S5	G5			L4	
X		Downy Woodpecker	*Dryobates pubescens*	S5	G5			L5	
X		Northern Flicker	*Colaptes auratus*	S5	G5			L4	
X		American Kestrel	*Falco sparverius*	S4	G5			L4	X
	X	Great Crested Flycatcher	*Myiarchus crinitus*	S5B	G5			L4	
X		Eastern Kingbird	*Tyrannus tyrannus*	S4B	G5			L4	
X		Eastern Wood-Pewee	*Contopus virens*	S4B	G5	SC	SC	L4	X
X		Willow Flycatcher	*Empidonax traillii*	S4B	G5			L4	X
X		Eastern Phoebe	*Sayornis phoebe*	S5B	G5			L5	
X		Warbling Vireo	*Vireo gilvus*	S5B	G5			L5	
	X	Red-eyed Vireo	*Vireo olivaceus*	S5B	G5			L4	
X	X	Blue Jay	*Cyanocitta cristata*	S5	G5			L5	
X		American Crow	*Corvus brachyrhynchos*	S5	G5			L5	
X		Common Raven	*Corvus corax*	S5	G5			L4	
X		Horned Lark	*Eremophila alpestris*	S4	G5			L3	
X		Tree Swallow	*Tachycineta bicolor*	S4S5B	G5			L4	
X		Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	S4B	G5			L4	X
X	X	Barn Swallow	*Hirundo rustica*	S4B	G5	THR	SC	L4	
X	X	Black-capped Chickadee	*Poecile atricapillus*	S5	G5			L5	
X		Red-breasted Nuthatch	*Sitta canadensis*	S5	G5			L4	X
X		House Wren	*Troglodytes aedon*	S5B	G5			L5	
X		Eastern Bluebird	*Sialia sialis*	S5B, S4N	G5			L4	
X	X	Wood Thrush	*Hylocichla mustelina*	S4B	G4	SC	THR	L3	X
X	X	American Robin	*Turdus migratorius*	S5	G5			L5	
X		Gray Catbird	*Dumetella carolinensis*	S5B, S3N	G5			L4	
	X	Brown Thrasher	*Toxostoma rufum*	S4B	G5			L3	X
X		Northern Mockingbird	*Mimus polyglottos*	S4	G5			L5	

Inside Study Area	Outside Study Area	COMMON NAME	SCIENTIFIC NAME	Provincial Status (S RANK)	Global Status (G RANK)	SARO List (MECP)	SARA Schedule 1 (Federal)	Local Status TRCA	SWH Indicator Species 6E
X		European Starling	*Sturnus vulgaris*	SNA	G5			L+	
X		Cedar Waxwing	*Bombycilla cedrorum*	S5	G5			L5	
X		House Sparrow	*Passer domesticus*	SNA	G5			L+	
X		House Finch	*Carpodacus mexicanus*	SNA	G5			L+	
X		American Goldfinch	*Spinus tristis*	S5	G5			L5	
X	X	Chipping Sparrow	*Spizella passerina*	S5B, S3N	G5			L5	
X		Vesper Sparrow	*Pooecetes gramineus*	S4B	G5			L3	X
X	X	Savannah Sparrow	*Passerculus sandwichensis*	S5B, S3N	G5			L4	X
X	X	Song Sparrow	*Melospiza melodia*	S5	G5			L5	
X		Eastern Towhee	*Pipilo erythrophthalmus*	S4B, S3N	G5			L3	X
X	X	Bobolink	*Dolichonyx oryzivorus*	S4B	G5	THR	THR	L2	
X	X	Eastern Meadowlark	*Sturnella magna*	S4B, S3N	G5	THR	THR	L3	
X	X	Orchard Oriole	*Icterus spurius*	S4B	G5			L5	
X	X	Baltimore Oriole	*Icterus galbula*	S4B	G5			L5	
X	X	Red-winged Blackbird	*Agelaius phoeniceus*	S5	G5			L5	
X		Brown-headed Cowbird	*Molothrus ater*	S5	G5			L5	
X	X	Common Grackle	*Quiscalus quiscula*	S5	G5			L5	
X	X	Common Yellowthroat	*Geothlypis trichas*	S5B, S3N	G5			L4	
X		American Redstart	*Setophaga ruticilla*	S5B	G5			L3	
X		Yellow Warbler	*Setophaga petechia*	S5B	G5			L5	
X		Pine Warbler	*Setophaga pinus*	S5B, S3N	G5			L4	
X		Northern Cardinal	*Cardinalis cardinalis*	S5	G5			L5	
X		Rose-breasted Grosbeak	*Pheucticus ludovicianus*	S5B	G5			L4	
X		Indigo Bunting	*Passerina cyanea*	S5B	G5			L4	
X		**MAMMALS**							
X		Eastern Small-footed Myotis	*Myotis leibii*	S2S3	G4	END			
X		Little Brown Myotis	*Myotis lucifugus*	S3	G3	END	END	L4	
X		Silver-haired Bat	*Lasionycteris noctivagans*	S4	G3G4				X
X		Eastern Red Bat	*Lasiurus borealis*	S4	G3G4			LX	
X		Big Brown Bat	*Eptesicus fuscus*	S4	G5			L4	X
X		Hoary Bat	*Lasiurus cinereus*	S4	G3G4			LX	
X	X	Eastern Cottontail	*Sylvilagus floridanus*	S5	G5			L4	
X		Eastern Chipmunk	*Tamias striatus*	S5	G5			L4	
X		Eastern Gray Squirrel	*Sciurus carolinensis*	S5	G5			L5	
X		Red Squirrel	*Tamiasciurus hudsonicus*	S5	G5			L4	
X		Beaver	*Castor canadensis*	S5	G5			L4	
X		Muskrat	*Ondatra zibethicus*	S5	G5			L4	
X		Meadow Vole	*Microtus pennsylvanicus*	S5	G5			L4	
X	X	Coyote	*Canis latrans*	S5	G5			L4	
X		Red Fox	*Vulpes vulpes*	S5	G5			L4	
X	X	Northern Raccoon	*Procyon lotor*	S5	G5			L5	
X		American Mink	*Mustela vison*	S4	G5			L4	
X		Striped Skunk	*Mephitis mephitis*	S5	G5			L5	
X	X	White-tailed Deer	*Odocoileus virginianus*	S5	G5			L4	X
		SUMMARY							
		Total Odonata:	*3*						
		Total Butterflies:	*2*						
		Total Other Arthropods	*1*						
		Total Amphibians:	*4*						
		Total Reptiles:	*3*						
		Total Birds:	*63*						
		Total Mammals:	*20*						
		SIGNIFICANT SPECIES							
		Global:	*4*						
		National:	*8*						
		Provincial:	*8*						
		Regional:	*8*						
		Local:	*16*						

Inside Study Area	Outside Study Area	COMMON NAME	SCIENTIFIC NAME	Provincial Status (S RANK)	Global Status (G RANK)	SARO List (MECP)	SARA Schedule 1 (Federal)	Local Status TRCA	SWH Indicator Species 6E
		Explanation of Status and Acronyms							
		S1: Critically Imperiled—Critically imperiled in the province (often 5 or fewer occurrences)							
		S2: Imperiled—Imperiled in the province, very few populations (often 20 or fewer),							
		S3: Vulnerable—Vulnerable in the province, relatively few populations (often 80 or fewer)							
		S4: Apparently Secure—Uncommon but not rare							
		S5: Secure—Common, widespread, and abundant in the province							
		SX: Presumed extirpated							
		SH: Possibly Extirpated (Historical)							
		SNR: Unranked							
		SU: Unrankable—Currently unrankable due to lack of information							
		SNA: Not applicable—A conservation status rank is not applicable because the species is not a suitable target for conservation activities.							
		S#S#: Range Rank—A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species							
		S#B- Breeding status rank							
		S#N- Non Breeding status rank							
		?: Indicates uncertainty in the assigned rank							
		G1: Extremely rare globally; usually fewer than 5 occurrences in the overall range							
		G1G2: Extremely rare to very rare globally							
		G2: Very rare globally; usually between 5-10 occurrences in the overall range							
		G2G3: Very rare to uncommon globally							
		G3: Rare to uncommon globally; usually between 20-100 occurrences							
		G3G4: Rare to common globally							
		G4: Common globally; usually more than 100 occurrences in the overall range							
		G4G5: Common to very common globally							
		G5: Very common globally; demonstrably secure							
		GU: Status uncertain, often because of low search effort or cryptic nature of the species; more data needed.							
		T: Denotes that the rank applies to a subspecies or variety							
		Q: Denotes that the taxonomic status of the species, subspecies, or variety is questionable.							
		END: Endangered							
		THR: Threatened							
		SC: Special Concern							
		NAR: Not At Risk							
		IND: Indeterminant, insufficient information to assign status							
		DD: Data Deficient							
		6: Rare in Site Region 6							
		7: Rare in Site Region 7							
		Area: Minimum patch size for area-sensitive species (ha)							
		H- highly significant in Hamilton Region (i.e. rare)							
		m- moderately significant in Hamilton Region (i.e. uncommon)							
		L1- extremely rare locally (Toronto Region)							
		L2- very rare locally (Toronto Region)							
		L3- rare to uncommon locally (Toronto Region)							
		HR- rare in Halton Region, highly significant							
		HU- uncommon in Halton Region, moderately significant							
		REFERENCES							
		COSSARO Status							
		Endangered Species Act, 2007 (Bill 184). Species at Risk in Ontario List (O. Reg. 230/08). Accessed July 4, 2024.							
		COSEWIC Status							
		COSEWIC. 2024. Canadian Species at Risk. Committee on the Status of Endangered Wildlife in Canada.							
		Local Status							
		Toronto and Region Conservation Authority (TRCA). 2023. Revised Fauna Scores and Ranks.							
		Significant Wildlife Habitat (SWH) Indicator Species							
		Ministry of Natural Resources and Forestry (MNRF). 2015. Significant wildlife habitat criteria schedules for ecoregion 6E. Available at: https://dr6j45jk9xcmk.cloudfront.net/documents/4775/schedule-6e-jan-2015-access-ver-final-s.pdf.							
		Natural Heritage Information Center (NHIC). 2024. Ontario Species List: All Species.							

Table 10: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
H1-S1	FT-7 FC-4 (Round 1) FC-1 (Round 2) **Contributing**-Reach was flowing during early spring and was dry upon late spring assessment	Feature appears to be a dug swale to facilitate agricultural drainage.	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial functions	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.
H2-S1	FT-7 FC-4 (Round 1) FC-1 (Round 2) **Contributing**-Reach was flowing during early spring and was dry upon late spring assessment	Feature appears to be a dug swale to facilitate agricultural drainage. .	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial functions	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.

Table 10: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
H3-S1	FT-7 FC-4 (Round 1) FC-1 (Round 2) **Contributing**-Reach was flowing during early spring and was dry upon late spring assessment	Feature appears to be a dug swale to facilitate agricultural drainage. .	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial functions	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.
H4-S1	FT-7 FC-4 (Round 1) FC-1 (Round 2) **Contributing**-Reach was flowing during early spring and was dry upon late spring assessment	Feature appears to be a dug swale to facilitate agricultural drainage.	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial functions	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.

Table 10: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
H5-S1	FT-7 FC-4 (Round 1) FC-1 (Round 2) **Contributing**-Reach was flowing during early spring and was dry upon late spring assessment	Feature appears to be a dug swale to facilitate agricultural drainage.	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial functions	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.
H6-S1	FT-7 FC-4 (Round 1) FC-1 (Round 2) **Contributing**-Reach was flowing during early spring and was dry upon late spring assessment	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial functions	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.

Table 10: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
H7-S1	FT-7 FC-4 (Round 1) FC-1 (Round 2) **Contributing**-Reach was flowing during early spring and was dry upon late spring assessment	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Valued-** Meadow lands surround this feature.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial function.	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.
H7A-S1	FT-7 FC-4 (Round 1) FC-1 (Round 2) **Contributing**-Reach was flowing during early spring and was dry upon late spring assessment	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial functions	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.

Table 10: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
H7B-S1	FT-7 FC-4 (Round 1) FC-1 (Round 2) **Contributing**-Reach was flowing during early spring and was dry upon late spring assessment	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial functions	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.
H7-S2	FT-4 FC-4 (Round 1) FC-1 (Round 2) **Contributing**-Reach was flowing during early spring and was dry upon late spring assessment	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, undefined features provide limited terrestrial functions	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.

Table 10: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
H7-S3	FT-7 FC-4 (Round 1) FC-1 (Round 2) **Contributing**-Reach was flowing during early spring and was dry upon late spring assessment	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial functions	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.
H8-S1	FT-6 FC-4 (Round 1) FC-2 (Round 2) **Contributing**-Reach was flowing during early spring and had standing water upon late spring assessment Third round assessment required to	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Important-**Reach is a wetland.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Valued** – Feature is a wetland. No calling amphibians were recorded within the feature during targeted call count assessments.	**Protection –** Reach assigned a "Protection" management recommendation since the feature is identified as contributing Redside Dace habitat. Reach is a wetland which leads to a higher management recommendation.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of a non-significant wetland community that can be replicated and/or enhanced elsewhere. A Mitigation management recommendation will ensure wetland

Table 10: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
	confirm hydrology; however, based on GEI's experience with these types of wetlands it is likely that it will be dry by summer.						mitigation occurs and any flows are maintained to downstream receiving habitats.
H8A-S1	FT-7 FC-4 (Round 1) FC-2 (Round 2) **Contributing**-Reach was flowing during early spring. Third round assessment required to confirm hydrology; however, based on GEI's experience these types of swales are typically dry by summer.	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial functions	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.

Table 10: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
H8A1-S1	FT-7 FC-4 (Round 1) FC-1 (Round 2) **Contributing**-Reach was flowing during early spring and was dry upon late spring assessment	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial functions	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.
H8B-S1	FT-7 FC-4 (Round 1) FC- 2 (Round 2) **Contributing**-Reach was flowing during early spring and had standing water upon late spring assessment Third round assessment required to confirm	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Valued-**Riparian area dominated by meadow community.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial function.	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.

Table 10: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
	hydrology; however, based on GEI's experience with these types of swales it is likely that it will be dry by summer.						
H8C-S1	FT-7 FC-4 (Round 1) FC-1 (Round 2) **Contributing**-Reach was flowing during early spring and was dry upon late spring assessment	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial functions.	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.
H8-S2	FT-6 FC-4 (Round 1) FC-2 (Round 2) **Contributing**-Reach was flowing during	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Important-**Reach is a wetland.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Valued** – Feature is a wetland. No calling amphibians were recorded within the	**Protection –** Reach assigned a "Protection" management recommendation since the feature is identified as	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of a

Table 10: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
	early spring and had standing water upon late spring assessment Third round assessment required to confirm hydrology; however, based on GEI's experience with these types of wetlands it is likely that it will be dry by summer.				feature during targeted call count assessments.	contributing Redside Dace habitat. Reach is a wetland which leads to a higher management recommendation.	non-significant wetland community that can be replicated and/or enhanced elsewhere. A Mitigation management recommendation will ensure wetland mitigation occurs and any flows are maintained to downstream receiving habitats.
H8A-S2	FT-7 FC-4 (Round 1) FC-1 (Round 2) **Contributing**- Reach was flowing during early spring and was dry upon late	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Valued**- Meadow lands adjacent to this feature.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited**- As per Table 7 of the HDFA guidelines, swales provide limited terrestrial functions	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of

Table 10: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
	spring assessment						contributing Redside Dace habitat will occur with MECP during the site-specific stage.
H8-S3	FT-7 FC-4 (Round 1) FC-2 (Round 2) **Contributing**- Reach was flowing during early spring and had standing water upon late spring assessment Third round assessment required to confirm hydrology; however, based on GEI's experience with these types of swales it is likely that it will be dry by summer.	Agricultural land uses surrounding this feature are expected to influence its hydrology. Likely tile drain inlets causing localized increased definition.	**Important-** Riparian area dominated by forest and flows through a wetland.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial function.	**Protection –** Reach assigned a "Protection" management recommendation since the feature is identified as contributing Redside Dace habitat and flows through a forested unit.	**Mitigation** - The reduction of the management recommendation to "Mitigation" is recommended since the woodland will be evaluated separately. The HDF does not appear to hydrologically support the woodland (FOD5-4) since the woodland is a classified as a "Dry Deciduous Forest" ecosite. The drainage feature itself does not warrant a Protection management recommendation.

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DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
H8-S4	FT-7 FC-4 (Round 1) FC-2 (Round 2) **Contributing**-Reach was flowing during early spring and had standing water upon late spring assessment Third round assessment required to confirm hydrology; however, based on GEI's experience with these types of swales it is likely that it will be dry by summer.	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial functions.	**Protection** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat; however, since it is located downstream of HDF H8-S9 and HDF H8-S7 (wetlands) it is assigned a "Protection" management recommendation.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural features. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage. As discussed within HDF H8-S9 and H8-S7, a Mitigation management recommendation for the upstream wetlands is warranted as it permits the removal and replication of the wetland functions elsewhere, while still maintaining the downstream flow conveyance.

Table 10: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
H8-S5	FT-4 FC-4 (Round 1) FC-2 (Round 2) **Contributing**- Reach was flowing during early spring and had standing water upon late spring assessment Third round assessment required to confirm hydrology; however, based on GEI's experience with these types of undefined feature types it is likely that it will be dry by summer.	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Valued -** Riparian area dominated by meadow.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, undefined features provide limited terrestrial functions.	**Protection** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat; however, since it is located downstream of HDF H8-S9 and HDF H8-S7 (wetlands) it is assigned a "Protection" management recommendation.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural features. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage. As discussed within HDF H8-S9 and H8-S7, a Mitigation management recommendation for the upstream wetlands is warranted as it permits the removal and replication of the wetland functions elsewhere, while still maintaining the downstream flow conveyance.

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DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
H8-S6	FT-7 FC-4 (Round 1) FC-2 (Round 2) **Contributing**-Reach was flowing during early spring and had standing water upon late spring assessment Third round assessment required to confirm hydrology; however, based on GEI's experience with these types of swales it is likely that it will be dry by summer.	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial functions.	**Protection** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat; however, since it is located downstream of HDF H8-S9 and HDF H8-S7 (wetlands) it is assigned a "Protection" management recommendation.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage. As discussed within HDF H8-S9 and H8-S7, a Mitigation management recommendation for the upstream wetlands is warranted as it permits the removal and replication of the wetland functions elsewhere, while still maintaining the downstream flow conveyance.

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DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
H8-S7	FT-6 FC-4 (Round 1) FC-2 (Round 2) **Contributing**-Reach was flowing during early spring and had standing water upon late spring assessment Third round assessment required to confirm hydrology; however, based on GEI's experience with these types of wetlands it is likely that it will be dry by summer.	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Important**-Reach is a wetland.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Valued** – Feature is a wetland. No calling amphibians were recorded within the feature during targeted call count assessments.	**Protection –** Reach assigned a "Protection" management recommendation since the feature is identified as contributing Redside Dace habitat. Reach is a wetland which leads to a higher management recommendation.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of a non-significant wetland community that can be replicated and/or enhanced elsewhere. A Mitigation management recommendation will ensure wetland mitigation occurs and any flows are maintained to downstream receiving habitats.
H8-S8	FT-7 FC-4 (Round 1) FC-2 (Round 2)	Agricultural land uses surrounding this feature are	**Limited**-Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach	**Limited**- As per Table 7 of the HDFA guidelines,	**Protection** – Reach assigned a "Conservation" management	**Mitigation** – The reduction of the management recommendation to

Table 10: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
	Contributing-Reach was flowing during early spring and had standing water upon late spring assessment Third round assessment required to confirm hydrology; however, based on GEI's experience with these types of swales it is likely that it will be dry by summer.	expected to influence its hydrology.		identified as indirect fish habitat.	swales provide limited terrestrial functions	recommendation since the feature is identified as contributing Redside Dace habitat; however, since it is located downstream of HDF H8-S9 (wetland) it is assigned a "Protection" management recommendation.	"Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage. As discussed within HDF H8-S9, a Mitigation management recommendation for the upstream wetland is warranted as it permits the removal and replication of the wetland functions elsewhere, while still maintaining the downstream flow conveyance.
H8-S9	FT-6 FC-4 (Round 1) FC-2 (Round 2) **Contributing**-Reach was flowing during	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Important-**Reach is a wetland.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Valued** – Feature is a wetland. No calling amphibians were recorded within the	**Protection –** Reach assigned a "Protection" management recommendation since the feature is identified as	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of a

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DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
	early spring and had standing water upon late spring assessment Third round assessment required to confirm hydrology; however, based on GEI's experience with these types of wetlands it is likely that it will be dry by summer..				feature during targeted call count assessments.	contributing Redside Dace habitat. Reach is a wetland which leads to a higher management recommendation.	non-significant wetland community that can be replicated and/or enhanced elsewhere. A Mitigation management recommendation will ensure wetland mitigation occurs and any flows are maintained to downstream receiving habitats.
H8-S10	FT-7 FC-4 (Round 1) FC-2 (Round 2) **Contributing**-Reach was flowing during early spring and had standing water upon late	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial functions	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of

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DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
	spring assessment Third round assessment required to confirm hydrology; however, based on GEI's experience with these types of swales it is likely that it will be dry by summer.						contributing Redside Dace habitat will occur with MECP during the site-specific stage.
H8-S11	FT-7 FC-4 (Round 1) FC-1 (Round 2) **Contributing**-Reach was flowing during early spring and was dry upon late spring assessment	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swale provide limited terrestrial functions	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.

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DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
H9-S1	FT-7 FC-4 (Round 1) FC-2 (Round 2) **Contributing**-Reach was flowing during early spring and had standing water upon late spring assessment Third round assessment required to confirm hydrology; however, based on GEI's experience with these types of swales it is likely that it will be dry by summer.	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial functions	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.
H9A-S1	FT-7 FC-4 (Round 1) FC-1 (Round 2)	Agricultural land uses surrounding this feature are expected to	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as	**Limited-** As per Table 7 of the HDFA guidelines, swales provide	**Conservation** – Reach assigned a "Conservation" management recommendation	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line

Table 10: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
	Contributing- Reach was flowing during early spring and was dry upon late spring assessment	influence its hydrology.		indirect fish habitat.	limited terrestrial functions	since the feature is identified as contributing Redside Dace habitat.	with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.
H9B-S1	FT-7 FC-4 (Round 1) FC-1 (Round 2) **Contributing**- Reach was flowing during early spring and was dry upon late spring assessment	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial functions	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.
H10-S1	FT-7 FC-4 (Round 1) FC-1 (Round 2) **Contributing**- Reach was	Agricultural land uses surrounding this feature are expected to	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical

Table 10: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
	flowing during early spring and was dry upon late spring assessment	influence its hydrology.		indirect fish habitat.	terrestrial functions	identified as contributing Redside Dace habitat.	management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.
H11-S1	FT-7 FC-4 (Round 1) FC-1 (Round 2) **Contributing**-Reach was flowing during early spring and was dry upon late spring assessment	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Limited-** Riparian area composed of agriculture and anthropogenic disturbance.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial function.	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.
H18-S1 (upstream of HDF-4B within Property 9)	FT-7 FC-4 (Round 1) FC-1 (Round 2) **Contributing**-Reach was flowing during	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of

Table 10: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
	early spring and was dry upon late spring assessment				terrestrial functions	contributing Redside Dace habitat.	seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.
H18A-S1 (upstream of HDF-4A within Property 9)	FT-7 FC-4 (Round 1) FC-1 (Round 2) **Contributing**-Reach was flowing during early spring and was dry upon late spring assessment	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Limited**-Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited**- As per Table 7 of the HDFA guidelines, swales provide limited terrestrial functions	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.
H18A1-S1 (upstream of HDF-4A within Property 9)	FT-7 FC-4 (Round 1) FC-1 (Round 2) **Contributing**-Reach was flowing during early spring	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Limited**-Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited**- As per Table 7 of the HDFA guidelines, swales provide limited terrestrial functions	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing

Table 10: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
	and was dry upon late spring assessment					contributing Redside Dace habitat.	agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.
H19-S1 (upstream of HDF-3A within Property 9)	FT- 6 FC-4 (Round 1) FC-4 (Round 2) **Contributing**- Reach was flowing during early spring and had standing water upon late spring assessment Third round assessment required to confirm hydrology; however, based on GEI's experience with these types of swales it is likely that it will be dry by summer.	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Important**- Feature is a wetland.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Valued** – Feature is a wetland. No calling amphibians were recorded within the feature during targeted call count assessments.	**Protection –** Reach assigned a "Protection" management recommendation since the feature is identified as contributing Redside Dace habitat. Reach is a wetland which leads to a higher management recommendation.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of a non-significant wetland community that can be replicated and/or enhanced elsewhere. A Mitigation management recommendation will ensure wetland mitigation occurs and any flows are maintained to downstream receiving habitats.

Table 10: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
H19A-S1 (upstream of HDF-3B within Property 9)	FT-7 FC-4 (Round 1) FC-1 (Round 2) **Contributing**-Reach was flowing during early spring and was dry upon late spring assessment	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial functions.	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.
H19B-S1 (upstream of HDF-3A within Property 9)	FT-7 FC-4 (Round 1) FC-1 (Round 2) **Contributing**-Reach was flowing during early spring and was dry upon late spring assessment	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial functions	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.

Table 10: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
H19C-S1 (upstream of HDF-3A within Property 9)	FT-7 FC-4 (Round 1) FC-2 (Round 2) **Contributing**-Reach was flowing during early spring and had standing water upon late spring assessment Third round assessment required to confirm hydrology; however, based on GEI's experience with these types of swales it is likely that it will be dry by summer.	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial functions	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.
H19D-S1 (upstream of HDF-3A within Property 9)	FT-7 FC-4 (Round 1) FC-1 (Round 2)	Agricultural land uses surrounding this feature are expected to	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as	**Limited-** As per Table 7 of the HDFA guidelines, swales provide	**Conservation** – Reach assigned a "Conservation" management recommendation	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line

Table 10: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
	Contributing- Reach was flowing during early spring and was dry upon late spring assessment	influence its hydrology.		indirect fish habitat.	limited terrestrial functions	since the feature is identified as contributing Redside Dace habitat.	with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.
H19-S2 (upstream of HDF-3A within Property 9)	FT-7 FC-4 (Round 1) FC-2 (Round 2) **Contributing**- Reach was flowing during early spring and had standing water upon late spring assessment Third round assessment required to confirm hydrology; however, based on GEI's experience	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial functions	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.

Table 10: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
	with these types of wetlands it is likely that it will be dry by summer.						
H19A-S2 (upstream of HDF-3A within Property 9)	FT-7 FC-4 (Round 1) FC-2 (Round 2) **Contributing**- Reach was flowing during early spring and had standing water upon late spring assessment Third round assessment required to confirm hydrology; however, based on GEI's experience with these types of wetlands it is likely that it will be dry by summer.	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial functions	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.

Table 10: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
H20-S1 (upstream of HDF-1 within Property 9)	FT-7 FC-4 (Round 1) FC-1 (Round 2) **Contributing**-Reach was flowing during early spring and was dry upon late spring assessment	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial functions	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.
H21-S1	FT-7 FC-4 (Round 1) FC-1 (Round 2) **Contributing**-Reach was flowing during early spring and was dry upon late spring assessment	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial functions	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.

Table 10: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
H22-S1	FT-7 FC-4 (Round 1) FC-1 (Round 2) **Contributing**-Reach was flowing during early spring and was dry upon late spring assessment	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial functions	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.
H22A-S1	FT-7 FC-4 (Round 1) FC-1 (Round 2) **Contributing**-Reach was flowing during early spring and was dry upon late spring assessment	Agricultural land uses surrounding this feature are expected to influence its hydrology.	**Limited-**Riparian area dominated by agricultural lands.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial functions	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing agricultural swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.

Table 10: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
H23-S1	FT- 4 FC-2 (Round 1) FC-2 (Round 2) **Important-** Feature held water during both spring assessments and is likely to continue to host water in the summer. There is no exact feature type within the HDFA Guideline that matches to a pond type.	Feature is artificially created for golf course purposes.	**Limited** – Feature is surrounded by manicured golf course.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Important** – While this is not a wetland feature, this is a created pond where calling amphibians were recorded within the feature during targeted call count assessments.	**Protection** - Reach assigned a "Protection" management recommendation since the created feature is assumed to hold water year round (important hydrology).	**Mitigation** – The reduction of the management recommendation to "Mitigation" is warranted given this is a constructed feature that has been designed to host water for the golf course. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.
H24-S1	FT-7 FC-4 (Round 1) FC-2 (Round 2) **Contributing-** Reach was flowing during early spring and had standing water upon late	Feature is designed to facilitate golf course drainage.	**Limited** – Feature is surrounded by manicured golf course and Common Reed. Common Reed patch was not mapped as a wetland by TRCA.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited-** As per Table 7 of the HDFA guidelines, swales provide limited terrestrial function.	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing golf course swales. Discussion on the management of

Table 10: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
	spring assessment Third round assessment required to confirm hydrology; however, based on GEI's experience with these types of swale it is likely that it will be dry by summer.						contributing Redside Dace habitat will occur with MECP during the site-specific stage.
H25-S1	FT-7 FC-4 (Round 1) FC-2 (Round 2) **Contributing**- Reach was flowing during early spring and had standing water upon late spring assessment Third round assessment required to	Feature appears artificially dug to facilitate golf course drainage.	**Important-** Riparian area on left bank dominated by forest.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Contributing-** As per Table 7 of the HDFA guidelines, reaches with forest riparian provide terrestrial functions (i.e. movement corridors)	**Protection** - Reach assigned a "Protection" management recommendation since the feature is identified as contributing Redside Dace habitat and has forest riparian vegetation.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing golf swales. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.

Table 10: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
	confirm hydrology; however, based on GEI's experience with these types of swale it is likely that it will be dry by summer.						
H26-S1	FT- 5 FC-4 (Round 1) FC-2 (Round 2) **Contributing**- Reach was flowing during early spring and had standing water upon late spring assessment Third round assessment required to confirm hydrology; however, based on GEI's experience	Feature is piped with a riprap stone Inlet which is expected to influence hydrology.	**Valued**- Meadow lands surround this feature.	**Valued** – Reach is contributing Redside Dace habitat. Reach identified as indirect fish habitat.	**Limited -** As per Table 7 of the HDFA guidelines, piped reaches provide limited terrestrial function.	**Conservation** – Reach assigned a "Conservation" management recommendation since the feature is identified as contributing Redside Dace habitat.	**Mitigation** – The reduction of the management recommendation to "Mitigation" is in line with the typical management of seasonally flowing golf course swales, especially since a portion of the feature is already piped. Discussion on the management of contributing Redside Dace habitat will occur with MECP during the site-specific stage.

Table 10: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION (PER HDFA GUIDELINES)	GEI'S MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS					
	with these types of wetlands it is likely that it will be dry by summer.						

LEGEND:

FT	Feature Types (1-defined natural channel, 2-channelized, 3-multi-thread, 4-no defined feature, 5-tiled drainage, 6-wetland, 7-swale, 8-roadside ditch, 9-online pond outlet)
FC	Flow Conditions (1-no surface water, 2-standing water, 3-interstitial flow, 4-surface flow minimal, 5-surface flow substantial)

Note: Codes correspond with Ontario Stream Assessment Protocol (OSAP) guidelines

Table 11: Ecoregion 6E Significant Wildlife Habitat Assessment

SIGNIFICANT WILDLIFE HABITAT (SWH) TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	DEFINING CRITERIA MET (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT
1. SEASONAL CONCENTRATION AREAS OF ANIMALS					
Waterfowl Stopover and Staging Areas (terrestrial)	Yes – CUM1 and CUT1 vegetation communities are present within the Study Area.	No – No evidence of significant sheet water during spring surveys was recorded. This area is not known to have historical waterfowl stopover use and is not an area known for sheet water presence.	No	N/A	Not Present
Waterfowl Stopover and Staging Areas (aquatic)	Yes – MAS, SAF and SWD vegetation communities are present within the Study Area.	No – These features are small with some (SWD, MAS) not containing open water; they are not expected to attract or support significant numbers of waterfowl.	No	N/A	Not Present
Shorebird Migratory Stopover Areas	Yes – MAM vegetation communities are present within the Study Area.	No – Muddy, unvegetated shorelines are not present. This area is not known to support large congregations of shorebirds.	No	N/A	Not Present
Raptor Wintering Areas	Yes – FOD, SWD, SWC, CUM, CUT, and CUW vegetation communities are present within the Study Area.	Yes – Habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for winter raptors within the Greenbelt Plan Area. Potential wintering Sites are > 20 ha with a combination of forest and uplands. Habitat within the tableland did not meet the minimum size criteria (<20 ha).	No - Candidate habitat is assumed within the Greenbelt Plan Area	N/A	Candidate - within the Greenbelt NHS.
Bat Hibernacula	No – Cave ecosites are absent from the Study Area.	No	No	N/A	Not Present

Table 11: Ecoregion 6E Significant Wildlife Habitat Assessment

SIGNIFICANT WILDLIFE HABITAT (SWH) TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	DEFINING CRITERIA MET (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT
Bat Maternity Colonies	Yes – FOD and SWD vegetation communities are present within the Study Area.	Yes – Snag abundance (>25cm dbh; >10 stems/ha) was met within the FODM7-7 community. No other suitable communities within the tableland met the snag abundance (see **Table 7**, **Appendix B2)**. Snag abundance is also expected to be met within the Greenbelt Plan Area.	Yes	Passive bat detectors were deployed over ten consecutive evenings (see **Figure 7**, **Appendix B1** for station locations). Two SWH Indicator species were documented within the FODM7-7 community (acoustic monitoring location MTLOG-F); however, abundance criteria were not met. Average nightly calls for Big Brown Bat were recorded at 8.7 calls per night and Silver-haired Bat was recorded at 6.8 calls per night (see **Table 8**, **Appendix B2** for survey results). This low abundance of calls is likely associated with foraging activity not roosting.	Candidate - within the Greenbelt NHS
Turtle Wintering Areas	Yes – SW, MA, SA and OA vegetation communities are present within the Study Area. Permanent watercourses are also present.	Yes – Permanent watercourses (the West Humber River and its associated tributaries) may support overwintering turtles. The SAF and OA vegetation communities are anthropogenic pond features and are not considered SWH habitat. MA and SW communities are not expected to provide sufficient hydroperiods and/or water depth to provide ice-free overwintering conditions for turtles.	Yes	Three rounds of turtle basking surveys were completed within the participating properties (see **Figure 5**, **Appendix B1** for turtle basking station locations). Two indicator species were documented (see **Table 5**, **Appendix B2** for survey result); however, these indicator species were observed within anthropogenic pond features which are not considered SWH. One incidental observation of Snapping Turtle was documented near BS1 during wetland pre-staking.	Confirmed – within Property 8. Candidate - within the Greenbelt NHS and Non-Participating Properties.
Reptile Hibernacula	Yes – Required ecosites are present within the Study Area.	Yes – Two anthropogenic areas (within Property 4 and Property 11) were identified within the Study Area may provide subsurface access below the frost line. No other anthropogenic or natural features were documented that could provide subsurface access below the frost line.	Yes	Three rounds of snake visual encounter surveys were completed within Properties 4 and 11 where candidate habitat had been identified (see **Figure 5**, **Appendix B1** for snake visual encounter station locations). No snakes were observed at the formal stations. Incidental snake occurrences were not noted near suitable habitat.	Not Present

Table 11: Ecoregion 6E Significant Wildlife Habitat Assessment

SIGNIFICANT WILDLIFE HABITAT (SWH) TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	DEFINING CRITERIA MET (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT
Colonially-Nesting Bird Breeding Habitat (Bank and Cliff)	Yes – CUM and CUT vegetation communities are present within the Study Area.	No – Presence of exposed or eroding banks, hills, steep slopes and sand piles were not recorded within the Study Area.	No	N/A	Not Present
Colonially-Nesting Bird Breeding Habitat (Tree and Shrub)	Yes – SWD vegetation communities are present within the Study Area.	Yes – Live and dead standing trees are present near permanent watercourses. Mixed Wader Nesting Colony was identified in NHIC search for area.	Yes	Two rounds of breeding bird surveys were conducted within the participating properties (see **Figure 4**, **Appendix B1** for survey locations), of which one SWD community is present within the participating properties (within Property 6 at BBS16). The other two SWD communities are located well within the Greenbelt of non-participating properties. No SWH indicator species were documented at BBS16 (see **Table 4**, **Appendix B2**). It is acknowledged that one Great Blue Heron (*Ardea Herodias)* was observed during round 1 at Property 11 and a pair of Green Herons (*Butorides virescens*) were observed during round 1 and 2 at Property 1; however, these observations were located outside of suitable habitat. In addition, the recorded abundance does not meet SWH criteria of at least 5 pairs.	Candidate - within the Greenbelt and Non-Participating Properties.
Colonially-Nesting Bird Breeding Habitat (Ground)	No – No rocky islands or peninsulas are present within the Study Area.	N/A	No	N/A	Not Present
Migratory Butterfly Stopover Areas	Yes – CUM, CUT, FOD, and CUP vegetation communities are present within the Study Area.	No – The Study Area is greater than 5 km from Lake Ontario.	No	N/A	Not Present
Landbird Migratory Stopover Areas	Yes – FOD, SWC, and SWD vegetation communities are present on the Study Area.	No - The Study Area are greater the 5 km away from Lake Ontario.	No	N/A	Not Present

Table 11: Ecoregion 6E Significant Wildlife Habitat Assessment

SIGNIFICANT WILDLIFE HABITAT (SWH) TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	DEFINING CRITERIA MET (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT
Deer Yarding Area	No – Mapping from the MNRF LIO database did not depict any deer yarding areas on or adjacent to the Study Area.	N/A	No	N/A	Not Present
Deer Winter Congregation Areas	No – Mapping from the MNRF LIO database did not depict any deer wintering areas on or adjacent to the Study Area. No woodlots of >100 ha in size were present on the Study Area.	N/A	No	N/A	Not Present
2. RARE VEGETATION COMMUNITIES OR SPECIALIZED HABITAT FOR WILDLIFE					
2a. Rare Vegetation Communities					
Rare Vegetation Types (cliffs, talus slopes, sand barrens, alvars, old-growth forests, savannahs, and tallgrass prairies)	No – Rare vegetation types are not present within the Phase 1 Lands	No	No	N/A	Not Present
Other Rare Vegetation Types (S1 to S3 communities)	No – All vegetation communities identified within the Study Area are culturally influenced or commonly occurring natural communities (**Table 2, Appendix B2**).	No	No	N/A	Not Present
2b. Specialized Wildlife Habitat					
Waterfowl Nesting Areas	Yes – MAS, MAM, SA, SWT, and SWD vegetation communities are present within the Study Area.	Yes –suitable upland area is present adjacent to wetland communities within Greenbelt Plan Area. Upland areas within the tablelands are actively managed (golf course or agricultural) and would not be suitable.	Yes	Two rounds of breeding bird surveys were conducted within the Study Area (see **Figure 4**, **Appendix B1** for station locations). Two SWH indicator species were documented within the Study Area: Mallard and Wood Duck (see **Table 4**, **Appendix B2** for survey results). These observations were documented within actively managed areas (Properties 1 and 11) that would be unsuitable habitat. Abundance criteria was also not met.	Candidate - within the Greenbelt and Non-Participating Properties.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	Yes - FOD, SWD and SWC vegetation communities are present within the Study Area.	Yes – Vegetation communities are located near the tributaries of the West Humber River corridors.	No - These areas are located within the Greenbelt NHS and will be protected from future development.	N/A	Candidate - within the Greenbelt and Non-Participating Properties.

Table 11: Ecoregion 6E Significant Wildlife Habitat Assessment

SIGNIFICANT WILDLIFE HABITAT (SWH) TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	DEFINING CRITERIA MET (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT
Woodland Raptor Nesting Habitat	Yes – Forested vegetation communities are present within the Study Area.	No – The forested vegetation communities do not meet the minimum size criteria (>30 ha with >4 ha interior habitat that is greater than 200 m from the woodland edge).	No	N/A	Not Present
Turtle Nesting Areas	Yes – MAS and SA vegetation communities are present within the Study Area.	Yes – Potential nesting habitat may be present within non-participating properties or located within the Greenbelt NHS and will be protected from future development. No suitable turtle nesting areas were identified within the Study Area. Sand traps are anthropogenic and are not considered significant wildlife habitat.	No - These areas are located within the Greenbelt NHS and will be protected from future development.	N/A	Candidate - within the Greenbelt and Non-Participating Properties.
Seeps and Springs	Yes – Forested vegetation communities are present within the Study Area.	Yes – Drainage features are documented within and adjacent to forested communities.	Yes – Data will be collected incidentally during ecological surveys.	Yes – Groundwater seeps were recorded by hydrogeology team within the Greenbelt at Properties 2, 10 and 11.	Confirmed – within the Greenbelt Plan Area at Properties 2, 10 and 11. Candidate - Potential SWH within Non-Participating Properties.
Amphibian Breeding Habitat (Woodland)	Yes – FOD, SWC, and SWD vegetation communities are present within the Study Area.	Yes – presence of wetland communities adjacent to and with FO and SW vegetation communities. Size criteria (>25 m diameter) was met for several FOD, SWC and SWD communities within the Study Area.	Yes	Three rounds of amphibian call count surveys were completed within participating properties (see **Figure 6**, **Appendix B1** for station locations). None of the amphibian stations on the Study Area met the SWH criteria for species diversity and abundance (see **Table 6**, **Appendix B2** for survey results).	Candidate - within the Greenbelt and Non-Participating Properties.
Amphibian Breeding Habitat (Wetland)	Yes – SW, MA, OA, and SA vegetation communities are present within the Study Area.	Yes – Minimum size criteria (>25 m diameter) was met for several vegetation communities within the Study Area.	Yes	Three rounds of amphibian call count surveys were completed within the participating properties (see **Figure 6**, **Appendix B1** for station locations). None of the amphibian stations on the Study Area met the SWH criteria for species diversity and abundance (see **Table 6**, **Appendix B2** for survey results).	Candidate - within the Greenbelt and Non-Participating Properties.

Table 11: Ecoregion 6E Significant Wildlife Habitat Assessment

SIGNIFICANT WILDLIFE HABITAT (SWH) TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	DEFINING CRITERIA MET (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT
Woodland Area-Sensitive Bird Breeding Habitat	Yes – FO and SW vegetation communities are present within the Study Area.	No – Vegetation communities do not meet the minimum size criteria (>30 ha with interior habitat >200 m from the woodland edge).	No	N/A	Not Present
3. SPECIES OF CONSERVATION CONCERN					
Marsh Bird Breeding Habitat	Yes – MA, SA and SW vegetation communities are present within the Study Area.	Yes – All wetlands contain shallow water with emergent aquatic vegetation.	Yes	Two rounds of breeding bird surveys were conducted within the participating properties (see **Figure 4**, **Appendix B1** for survey locations). One SWH indicator species was identified: Green Heron. This species was documented along an OA man-made pond and within a CUM in Property 1 (see **Table 4**, **Appendix B2** for survey results), which are not candidate SWH ecosites.	Candidate - within the Greenbelt and Non-Participating Properties.
Open Country Bird Breeding Habitat	Yes – CUM vegetation communities are present within the Study Area.	No - Vegetation communities do not meet the minimum size criteria (no habitat >30 ha).	No	N/A	Not Present
Shrub/Early Successional Bird Breeding Habitat	Yes – CUT, and CUW vegetation communities are present within the Study Area.	No - Vegetation communities do not meet the minimum size criteria (no habitat >10 ha).	No	N/A	Not Present
Terrestrial Crayfish	Yes – MAM, MAS, SWD, and SWT, vegetation communities are present on the Study Area.	Yes – No minimum size requirement.	Yes – observations of crayfish chimneys will be documented, if present, during all ecological surveys.	Terrestrial crayfish chimneys were incidentally identified during ecological inventories. These chimneys were located within the MAM communities on Properties 2 and 8 within the Greenbelt near the watercourses. Terrestrial Crayfish chimneys were noted within Property 5; however, these were located within actively managed agricultural fields and are not considered significant wildlife habitat.	Present – within Participating Properties 2 and 8. Candidate - Potential SWH within the Greenbelt and Non-Participating Properties.

Table 11: Ecoregion 6E Significant Wildlife Habitat Assessment

SIGNIFICANT WILDLIFE HABITAT (SWH) TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	DEFINING CRITERIA MET (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT
Special Concern and Rare Wildlife Species					
ii) Barn Swallow (*Hirundo rustica)*	N/A	Yes – Suitable breeding habitat (e.g., anthropogenic structures) are present within the Study Area.	Yes	Two rounds of breeding bird surveys were conducted within participating properties (see **Figure 4**, **Appendix B1** for survey locations). Nesting Barn Swallows were documented during survey efforts on Property 1 within two shipping containers (see **Table 4**, **Appendix B2** for survey results). No other Barn Swallow nesting was observed on suitable structures within participating properties.	Present – with participating Properties 1. Candidate - Potential SWH on Non-Participating Properties.
iii) Eastern Wood-Pewee (*Contopus virens*)	N/A	Yes – Forested habitats are present within the Study Area.	Yes	Two rounds of breeding bird surveys were conducted within the participating properties (see **Figure 4**, **Appendix B1** for survey locations). Eastern Wood-Pewee were documented on Property 2 only during round one survey efforts; they were documented on Properties 1 and 6 during both survey efforts (see **Table 4**, **Appendix B2** for survey results).	Present - within Participating Property 1 and 6. Candidate - Potential SWH within the Greenbelt and Non-Participating Properties.
iv) Wood Thrush (*Hylocichla mustelina*)	N/A	Yes – Forested habitats are present within the Study Area.	Yes	Two rounds of breeding bird surveys were conducted within the participating property (see **Figure 4**, **Appendix B1** for survey locations). This species was recorded during first round at Property 1 near the CUW this species was not recorded again during second round surveys.	Candidate - Potential SWH within the Greenbelt and Non-Participating Properties
Common Nighthawk (*Chordeiles minor*)	N/A	Yes – Forested habitats are present within the Study Area.	Yes	Two rounds of breeding bird surveys were conducted within the participating properties (see **Figure 4**, **Appendix B1** for survey locations). No Common Nighthawk were documented despite survey efforts (see **Table 4**, **Appendix B2** for survey results).	Candidate - Potential SWH within the Greenbelt and Non-Participating Properties.

Table 11: Ecoregion 6E Significant Wildlife Habitat Assessment

SIGNIFICANT WILDLIFE HABITAT (SWH) TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	DEFINING CRITERIA MET (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT
Golden-winged Warbler (*Vermivora chrysoptera*)	N/A	Yes – Woodland communities and forested habitats are present within the Study Area.	Yes	Two rounds of breeding bird surveys were conducted within the participating properties (see **Figure 4**, **Appendix B2** for survey locations). No Golden-winged Warblers were documented despite survey efforts (see **Table 4**, **Appendix B2** for survey results).	Candidate - Potential SWH within the Greenbelt and Non-Participating Properties.
v) Grasshopper Sparrow (*Ammodramus savannarum*)	N/A	Yes – Cultural meadow communities are present within the Study Area.	Yes	Two rounds of breeding bird surveys were conducted within the participating properties (see **Figure 4**, **Appendix B1** for survey locations). No Grasshopper Sparrows were documented despite survey efforts (see **Table 4**, **Appendix B2** for survey results).	Candidate - Potential SWH within the Greenbelt and Non-Participating Properties.
vi) Ruddy Duck (*Oxyura jamaicensis)*	N/A	Yes – Marsh communities are present within the Study Area.	Yes	Two rounds of breeding bird surveys were conducted within the participating properties (see **Figure 4**, **Appendix B1** for survey locations). No Ruddy Ducks were documented despite survey efforts (see **Table 4**, **Appendix B2** for survey results).	Candidate - Potential SWH within the Greenbelt and Non-Participating Properties.
vii) Eastern Musk Turtle (*Sternotherus odoratus*)	N/A	Yes – Anthropogenic OA features SA, and SAF communities may provide suitable overwintering habitat.	Yes	Three rounds of turtle basking surveys were completed within the participating properties (see **Figure 5**, **Appendix B1** for turtle basking station locations). No Eastern Musk Turtles were recorded during these surveys (see **Table 5**, **Appendix B2** for survey result)	Candidate - Potential SWH within the Greenbelt and Non-Participating Properties.

Table 11: Ecoregion 6E Significant Wildlife Habitat Assessment

SIGNIFICANT WILDLIFE HABITAT (SWH) TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	DEFINING CRITERIA MET (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT
viii) Northern Map Turtle (*Graptemys geographica*)	N/A	Yes – Anthropogenic OA features, SA, and SAF communities may provide suitable overwintering habitat.	Yes	Three rounds of turtle basking surveys were completed within the participating properties (see **Figure 5**, **Appendix B1** for turtle basking station locations). No Northen Map Turtles were recorded during these surveys (see **Table 5**, **Appendix B2** for survey result)	Candidate - Potential SWH within the Greenbelt and Non-Participating Properties.
ix) Snapping Turtle (*Chelydra serpentina*)	N/A	Yes – Anthropogenic OA features, SA, and SAF communities may provide suitable overwintering habitat.	Yes	Three rounds of turtle basking surveys were completed within the participating properties (see **Figure 5**, **Appendix B1** for turtle basking station locations). Snapping Turtles were recorded on Property 1 during these surveys (see **Table 5**, **Appendix B2** for survey result) within anthropogenic ponds. One Snapping Turtle was also documented within Property 8 during wetland pre-staking within the watercourse. Nesting was incidentally observed during top of bank and treed limit staking within a sand trap near Basking Station (BS) 5. Sand traps are anthropogenic features and are not considered SWH.	Present – within the anthropogenic ponds within Participating Property 1 and within the Tributary of the West Humber River on Property 8. Candidate - Potential SWH within the Greenbelt and Non-Participating Properties.
x) Black Dash (*Euphyes conspicua*)	N/A	Yes – marsh communities are present within the Study Area.	Occurrences will be documented during other targeted field investigations	No incidental occurrences recorded to-date.	Candidate - Potential SWH within the Greenbelt and Non-Participating Properties.
xi) Monarch (*Danaus plexippus*)	N/A	Yes – Cultural meadows with abundance of Common Milkweed (*Asclepias syriaca*; host plant) were present.	Yes	No occurrences observed to date; however, larger abundances of Milkweed were incidentally recorded. Targeted field investigations to occur in late July/early August.	Candidate within the Study Area

Table 11: Ecoregion 6E Significant Wildlife Habitat Assessment

SIGNIFICANT WILDLIFE HABITAT (SWH) TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	DEFINING CRITERIA MET (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT
4. ANIMAL MOVEMENT CORRIDORS					
Amphibian Movement Corridors	N/A	Yes – It is possible that amphibian breeding SWH is present within the Greenbelt NHS and there are nearby forested habitats that would support movement. Amphibian breeding SWH was not present from the participating properties – it is unlikely that movement corridors would be supported within participating properties.	No	N/A	Candidate - within the Greenbelt and Non-Participating Properties.
Deer Movement Corridors	N/A	No – Mapping from the MNRF LIO database did not depict any deer yarding or wintering areas on or adjacent to the Study Area.	No	N/A	Not Present

Table 12A: Significant Valleyland Assessment – West Humber River (Reaches WHT4(3)3-2, WHT4(3)-1, WHT4(2)-2, WHT4(2)2-1) Between Bramalea Road and Torbram Road

1. ***Surface Water Functions***	
• Areas of water conveyance from catchment areas of 50 ha or greater, as defined by a stream channel conveying or holding water for at least two months of the year, or as defined by floodlines or by the meander belt width	**Criteria met**
• Areas of active or historic erosion as characterized by exposed soils on shorelines, river banks, valley walls and instream islands	**Criteria met**
• Areas of active or historic deposition characterized by alluvial soils forming bottomlands, terraces, levees and instream or river-mouth deltas or islands	**Criteria not met; no evidence of deposition in the form of alluvial soils, terraces, levees or islands**
• Associated wetlands important to water attenuation, storage and release	**Criteria met; riparian wetlands are present**
2. ***Groundwater Functions***	
• Areas contributing to groundwater infiltration; areas that make an important contribution to infiltration in the region	**Criteria not met; surficial soils consist of low-permeability sediments which preclude high infiltration rates. Where channels intersect permeable sediments, groundwater discharge rather than recharge is expected**
• Areas of groundwater release (i.e., springs, seepage slopes, wetlands)	**Criteria met; groundwater indicator species and seeps noted at locations just north and southwest of Property 9**
3. Landform Prominence	
• Areas with well-defined valley morphology (e.g., floodplains, meander belts, valley slopes) having an average width of 25 m or more	**Criteria met; valleyland has a clear top of slope and is greater than 25 m wide**
4. Distinctive Geomorphic Landforms	
• Distinctive landforms based on their representation of geomorphological processes and features, quality and rarity	**Criteria met**
• Features such as oxbows, bottom-lands, terraces, deltas, exposed soil strata or eroding slopes along riverbanks or valley walls	**Criteria met**
5. Degree of Naturalness	
• Areas of contiguous woodland, wetland and/or meadow considered cumulatively	**Criteria met; contiguous natural communities including various woodlands, wetlands and meadow types**
• The proportion of valleyland that has natural vegetation cover vs. a cultural use (e.g., golf course, landscaped parkland, agricultural field, urban area) – greater than 25% natural vegetation cover should be considered significant	**Criteria largely met; however, a small portion of the golf course within Property 9 is located within the valleyland**
• Proportion of valleyland that has natural riparian vegetation	**Criteria largely met; however, a small portion of the manicured golf course within Property 9 is located within the valleyland**
• Riparian vegetation greater than 30 m in width on each side of surface water features should be considered significant	**Criteria largely met; however, a portion of the golf course within Property 9 is located within 30 m of the valleyland**
• Assessment of Floristic Quality Index (FQI) score (Oldham et al., 1995) – high FQI in the context of the local watershed should be considered significant	**Unknown – Criteria to be evaluated following completion of summer and botanical inventories**
6. ***Community and Species Diversity***	
• Areas of high community and/or species diversity	**Criteria met; significant flora and fauna diversity present**

7. ***Unique Communities and Species***	
• Seasonally important habitats such as deer yards, migration stopovers, etc.	**Criteria not met; no such features identified**

Table 12A: Significant Valleyland Assessment – West Humber River (Reaches WHT4(3)3-2, WHT4(3)-1, WHT4(2)-2, WHT4(2)2-1) Between Bramalea Road and Torbram Road

• High proportion of regionally and locally significant species	**Criteria assumed to be met**
• Rare communities or the habitat of rare species, based on federal or provincial guidelines	**Criteria met; occupied Redside Dace habitat**
8. ***Habitat Value***	
• Areas determined to provide important habitat required to sustain native aquatic and terrestrial species diversity within the region	**Criteria met; habitat supports Redside Dace**
9. ***Linkage Function***	
• The portion of the valleyland with continuous natural vegetation corridors with a minimum width of 100 m	**Criteria met; at widest point measuring approximately 260 m wide**
• Areas with functional ecological connections to other natural areas within the watershed both inside and outside the valleylands	**Criteria met; apparent linkage as part of the West Humber River corridor**
• Areas that are determined to provide important wildlife corridors	**Criteria met; this section of the West Humber River likely acts as a primary linkage within the landscape**
10. ***Restoration and Potential Value***	
• Restoration will provide important ecological benefits such as linkage function, improvement of habitat for rare species, reduced fragmentation effects, and/or increased core natural areas	**Criteria met; restoration areas would increase core natural areas**
• Areas where restoration will provide a minimum 30 m corridor of riparian vegetation on each side of surface water features	**Criteria met; all development will be a minimum of 30 m the main watercourse**
• Areas where the public is interested in assisting in the implementation of ecological restoration	**Criteria not met; private lands**
• Areas that are in public ownership and that would benefit from restoration	**Criteria not met; private lands**
• Areas where restoration would buffer existing natural areas from the effects of adjacent development	**Criteria met; restoration will buffer the valleyland from the effects of the proposed development**

Overall Ranking:

Criteria Met – 21
Criteria Partial Met – 0
Criteria Not Met – 5

Criteria To Be Evaluated - 1

Table 12B: Significant Valleyland Assessment – West Humber River (Reach WHT4(3)-2) West of Bramalea Road

1. ***Surface Water Functions***	
• Areas of water conveyance from catchment areas of 50 ha or greater, as defined by a stream channel conveying or holding water for at least two months of the year, or as defined by floodlines or by the meander belt width	**Criteria met**
• Areas of active or historic erosion as characterized by exposed soils on shorelines, river banks, valley walls and instream islands	**Criteria met**
• Areas of active or historic deposition characterized by alluvial soils forming bottomlands, terraces, levees and instream or river-mouth deltas or islands	**Criteria not met; no evidence of deposition in the form of alluvial soils, terraces, levees or islands**
• Associated wetlands important to water attenuation, storage and release	**Criteria met; riparian wetlands are present**
2. ***Groundwater Functions***	
• Areas contributing to groundwater infiltration; areas that make an important contribution to infiltration in the region	**Criteria not met; surficial soils consist of low-permeability sediments which preclude high infiltration rates. Where channels intersect permeable sediments, groundwater discharge rather than recharge is expected**
• Areas of groundwater release (i.e., springs, seepage slopes, wetlands)	**Criteria met; groundwater indicator species and seeps noted at locations on southwest edge of Property 1**
3. Landform Prominence	
• Areas with well-defined valley morphology (e.g., floodplains, meander belts, valley slopes) having an average width of 25 m or more	**Criteria met; valleyland has a clear top of slope and is greater than 25 m wide**
4. Distinctive Geomorphic Landforms	
• Distinctive landforms based on their representation of geomorphological processes and features, quality and rarity	**Criteria met**
• Features such as oxbows, bottom-lands, terraces, deltas, exposed soil strata or eroding slopes along riverbanks or valley walls	**Criteria met**
5. Degree of Naturalness	
• Areas of contiguous woodland, wetland and/or meadow considered cumulatively	**Criteria met; contiguous natural communities including various woodlands, wetlands and meadow types**
• The proportion of valleyland that has natural vegetation cover vs. a cultural use (e.g., golf course, landscaped parkland, agricultural field, urban area) – greater than 25% natural vegetation cover should be considered significant	**Criteria met**
• Proportion of valleyland that has natural riparian vegetation	**Criteria largely met; however, portions of the valleyland are comprised of communities dominated by non-native species (e.g. Buckthorn)**
• Riparian vegetation greater than 30 m in width on each side of surface water features should be considered significant	**Criteria met**
• Assessment of Floristic Quality Index (FQI) score (Oldham et al., 1995) – high FQI in the context of the local watershed should be considered significant	**Unknown – Criteria to be evaluated following completion of summer and botanical inventories**
6. ***Community and Species Diversity***	
• Areas of high community and/or species diversity	**Criteria met; significant flora and fauna diversity present**

7. ***Unique Communities and Species***	
• Seasonally important habitats such as deer yards, migration stopovers, etc.	**Criteria not met; no such features identified**

Table 12B: Significant Valleyland Assessment – West Humber River (Reach WHT4(3)-2) West of Bramalea Road

	Criteria assumed to be met
• High proportion of regionally and locally significant species	**Criteria met; several Butternut recorded**
• Rare communities or the habitat of rare species, based on federal or provincial guidelines	
8. ***Habitat Value***	
• Areas determined to provide important habitat required to sustain native aquatic and terrestrial species diversity within the region	**Criteria met**
9. ***Linkage Function***	
• The portion of the valleyland with continuous natural vegetation corridors with a minimum width of 100 m	**Criteria met; at widest point measuring approximately 230 m wide**
• Areas with functional ecological connections to other natural areas within the watershed both inside and outside the valleylands	**Criteria met; apparent linkage as part of the West Humber River corridor**
• Areas that are determined to provide important wildlife corridors	**Criteria met; this section of the West Humber River likely acts as a primary linkage within the landscape**
10. ***Restoration and Potential Value***	
• Restoration will provide important ecological benefits such as linkage function, improvement of habitat for rare species, reduced fragmentation effects, and/or increased core natural areas	**Criteria met; restoration areas would increase core natural areas**
• Areas where restoration will provide a minimum 30 m corridor of riparian vegetation on each side of surface water features	**Criteria met; all development will be a minimum of 30 m the main watercourse**
• Areas where the public is interested in assisting in the implementation of ecological restoration	**Criteria not met; private lands**
• Areas that are in public ownership and that would benefit from restoration	**Criteria not met; private lands**
• Areas where restoration would buffer existing natural areas from the effects of adjacent development	**Criteria met; restoration will buffer the valleyland from the effects of the proposed development**

Overall Ranking:

Criteria Met – 21
Criteria Partial Met – 0
Criteria Not Met – 5

Criteria To Be Evaluated - 1

Table 12C: Significant Valleyland Assessment – Tributary of the West Humber River (Reaches WHT4(3)3-1, WHT4(3)2-1 a, WHT4(3)2-1b) along Torbram Road

1. ***Surface Water Functions***	
• Areas of water conveyance from catchment areas of 50 ha or greater, as defined by a stream channel conveying or holding water for at least two months of the year, or as defined by floodlines or by the meander belt width	**Criteria met**
• Areas of active or historic erosion as characterized by exposed soils on shorelines, river banks, valley walls and instream islands	**Criteria met**
• Areas of active or historic deposition characterized by alluvial soils forming bottomlands, terraces, levees and instream or river-mouth deltas or islands	**Criteria not met; no evidence of deposition in the form of alluvial soils, terraces, levees or islands**
• Associated wetlands important to water attenuation, storage and release	**Criteria met; riparian wetlands are present**
2. ***Groundwater Functions***	
• Areas contributing to groundwater infiltration; areas that make an important contribution to infiltration in the region	**Criteria not met; surficial soils consist of low-permeability sediments which preclude high infiltration rates. Where channels intersect permeable sediments, groundwater discharge rather than recharge is expected**
• Areas of groundwater release (i.e., springs, seepage slopes, wetlands)	**Criteria met; Groundwater indicator species and seeps encountered in the south portion of Property 9**
3. Landform Prominence	
• Areas with well-defined valley morphology (e.g., floodplains, meander belts, valley slopes) having an average width of 25 m or more	**Criteria met; valleyland has a clear top of slope and is greater than 25 m wide**
4. Distinctive Geomorphic Landforms	
• Distinctive landforms based on their representation of geomorphological processes and features, quality and rarity	**Criteria partially met; components of the golf course and ponds are located within the valleyland**
• Features such as oxbows, bottom-lands, terraces, deltas, exposed soil strata or eroding slopes along riverbanks or valley walls	**Criteria partially met; components of the golf course and ponds are located within the valleyland**
5. Degree of Naturalness	
• Areas of contiguous woodland, wetland and/or meadow considered cumulatively	**Criteria met; contiguous natural communities including various woodlands, wetlands and meadow types**
• The proportion of valleyland that has natural vegetation cover vs. a cultural use (e.g., golf course, landscaped parkland, agricultural field, urban area) – greater than 25% natural vegetation cover should be considered significant	**Criteria partially met; components of the golf course and agricultural ponds are located within the vallelyand**
• Proportion of valleyland that has natural riparian vegetation	**Criteria met**
• Riparian vegetation greater than 30 m in width on each side of surface water features should be considered significant	**Criteria partially met; components of the golf course and agricultural ponds are located within the valleyland**
• Assessment of Floristic Quality Index (FQI) score (Oldham et al., 1995) – high FQI in the context of the local watershed should be considered significant	**Unknown – Criteria to be evaluated following completion of summer and botanical inventories**
6. ***Community and Species Diversity***	
• Areas of high community and/or species diversity	**Criteria met; significant flora and fauna diversity present**

7. ***Unique Communities and Species***	
• Seasonally important habitats such as deer yards, migration stopovers, etc.	**Criteria not met; no such features identified**
• High proportion of regionally and locally significant species	**Criteria assumed to be met**

Table 12C: Significant Valleyland Assessment – Tributary of the West Humber River (Reaches WHT4(3)3-1, WHT4(3)2-1 a, WHT4(3)2-1b) along Torbram Road

• Rare communities or the habitat of rare species, based on federal or provincial guidelines	**Criteria met; occupied Redside Dace habitat**
8. ***Habitat Value***	
• Areas determined to provide important habitat required to sustain native aquatic and terrestrial species diversity within the region	**Criteria met; habitat supports Redside Dace**
9. ***Linkage Function***	
• The portion of the valleyland with continuous natural vegetation corridors with a minimum width of 100 m	**Criteria not met; continuous 100 m width is not met in several locations (golf course, non-participating parcel in north-east corner)**
• Areas with functional ecological connections to other natural areas within the watershed both inside and outside the valleylands	**Criteria met; connects into the main West Humber River and valleyland continues north of Old School Road**
• Areas that are determined to provide important wildlife corridors	**Criteria met; likely acts as a primary linkage within the landscape**
10. ***Restoration and Potential Value***	
• Restoration will provide important ecological benefits such as linkage function, improvement of habitat for rare species, reduced fragmentation effects, and/or increased core natural areas	**Criteria met; restoration areas would increase core natural areas and decrease fragmentation**
• Areas where restoration will provide a minimum 30 m corridor of riparian vegetation on each side of surface water features	**Criteria met; all development will be a minimum of 30 m the main watercourse**
• Areas where the public is interested in assisting in the implementation of ecological restoration	**Criteria not met; private lands**
• Areas that are in public ownership and that would benefit from restoration	**Criteria not met; private lands**
• Areas where restoration would buffer existing natural areas from the effects of adjacent development	**Criteria met; restoration will buffer the valleyland from the effects of the proposed development**

Overall Ranking:

Criteria Met – 16
Criteria Partial Met – 4
Criteria Not Met – 6

Criteria To Be Evaluated - 1

Table 12D: Significant Valleyland Assessment – Tributary of the West Humber River (Reaches WHT4(3)4-2 and WHT4(3)4-3) within Property 4 (outside of Greenbelt)

1. ***Surface Water Functions***	
• Areas of water conveyance from catchment areas of 50 ha or greater, as defined by a stream channel conveying or holding water for at least two months of the year, or as defined by floodlines or by the meander belt width	**Criteria met**
• Areas of active or historic erosion as characterized by exposed soils on shorelines, river banks, valley walls and instream islands	**Criteria met. Valley toe impact observed**
• Areas of active or historic deposition characterized by alluvial soils forming bottomlands, terraces, levees and instream or river-mouth deltas or islands	**Criteria not met; no evidence of deposition in the form of alluvial soils, terraces, levees or islands**
• Associated wetlands important to water attenuation, storage and release	**Criteria met; riparian wetlands are present**
2. ***Groundwater Functions***	
• Areas contributing to groundwater infiltration; areas that make an important contribution to infiltration in the region	**Criteria not met; surficial soils consist of low-permeability sediments which preclude high infiltration rates. Where channels intersect permeable sediments, groundwater discharge rather than recharge is expected**
• Areas of groundwater release (i.e., springs, seepage slopes, wetlands)	**Criteria partially met; groundwater indicator species representing unconfirmed groundwater discharge noted along Torbram Road**
3. Landform Prominence	
• Areas with well-defined valley morphology (e.g., floodplains, meander belts, valley slopes) having an average width of 25 m or more	**Criteria met; valleyland has a clear top of slope and is greater than 25 m wide**
4. Distinctive Geomorphic Landforms	
• Distinctive landforms based on their representation of geomorphological processes and features, quality and rarity	**Criteria partially met. Area controlled by dense vegetation (grasses)**
• Features such as oxbows, bottom-lands, terraces, deltas, exposed soil strata or eroding slopes along riverbanks or valley walls	**Criteria partially met. Area controlled by dense vegetation (grasses)**
5. Degree of Naturalness	
• Areas of contiguous woodland, wetland and/or meadow considered cumulatively	**Criteria partially met; contiguous woodland is a planted community adjacent to the riparian wetland**
• The proportion of valleyland that has natural vegetation cover vs. a cultural use (e.g., golf course, landscaped parkland, agricultural field, urban area) – greater than 25% natural vegetation cover should be considered significant	**Criteria partially met; woodland is not naturally occurring rather it is a cultural plantation**
• Proportion of valleyland that has natural riparian vegetation	**Criteria partially met; woodland is not naturally occurring rather it is a cultural plantation**
• Riparian vegetation greater than 30 m in width on each side of surface water features should be considered significant	**Criteria met**
• Assessment of Floristic Quality Index (FQI) score (Oldham et al., 1995) – high FQI in the context of the local watershed should be considered significant	**Unknown – Criteria to be evaluated following completion of summer and botanical inventories**
6. ***Community and Species Diversity***	
• Areas of high community and/or species diversity	**Criteria not met; low community and species diversity. Woodland is a monocultural planted stand**

7. ***Unique Communities and Species***	
• Seasonally important habitats such as deer yards, migration stopovers, etc.	**Criteria not met; no such features identified**
• High proportion of regionally and locally significant species	**Criteria not met; high proportions of regionally or locally rare species were not identified within the valleyland**

Table 12D: Significant Valleyland Assessment – Tributary of the West Humber River (Reaches WHT4(3)4-2 and WHT4(3)4-3) within Property 4 (outside of Greenbelt)

• Rare communities or the habitat of rare species, based on federal or provincial guidelines	**Criteria not met**
8. ***Habitat Value***	
• Areas determined to provide important habitat required to sustain native aquatic and terrestrial species diversity within the region	**Criteria not met**
9. ***Linkage Function***	
• The portion of the valleyland with continuous natural vegetation corridors with a minimum width of 100 m	**Criteria not met; continuous 100 m width is not met in several locations**
• Areas with functional ecological connections to other natural areas within the watershed both inside and outside the valleylands	**Criteria not met; While valleyland connects into the main West Humber River it does not have any natural features north of Old School Road that it is connecting to**
• Areas that are determined to provide important wildlife corridors	**Criteria not met; does not act as a primary linkage corridor**
10. ***Restoration and Potential Value***	
• Restoration will provide important ecological benefits such as linkage function, improvement of habitat for rare species, reduced fragmentation effects, and/or increased core natural areas	**Criteria met; restoration areas could increase diversity and size of core natural areas**
• Areas where restoration will provide a minimum 30 m corridor of riparian vegetation on each side of surface water features	**Criteria met; all development will be a minimum of 30 m the main watercourse**
• Areas where the public is interested in assisting in the implementation of ecological restoration	**Criteria not met; private lands**
• Areas that are in public ownership and that would benefit from restoration	**Criteria not met; private lands**
• Areas where restoration would buffer existing natural areas from the effects of adjacent development	**Criteria met; restoration will buffer the valleyland from the effects of the proposed development**

Overall Ranking:

Criteria Met – 8
Criteria Partial Met – 6
Criteria Not Met – 12

Criteria To Be Evaluated - 1

Table 12E: Significant Valleyland Assessment – Tributary of the West Humber River (Reaches WHT4(3)5-2) within Property 1 (outside of Greenbelt)

1. ***Surface Water Functions***	
• Areas of water conveyance from catchment areas of 50 ha or greater, as defined by a stream channel conveying or holding water for at least two months of the year, or as defined by floodlines or by the meander belt width	**Criteria met**
• Areas of active or historic erosion as characterized by exposed soils on shorelines, river banks, valley walls and instream islands	**Criteria not met; No evidence of erosion throughout system, as it exists as a pond / diffuse wetland.**
• Areas of active or historic deposition characterized by alluvial soils forming bottomlands, terraces, levees and instream or river-mouth deltas or islands	**Criteria not met; no evidence of deposition in the form of alluvial soils, terraces, levees or islands**
• Associated wetlands important to water attenuation, storage and release	**Criteria not met; riparian wetlands are not present (not including the created pond that has been identified as shallow aquatic)**
2. ***Groundwater Functions***	
• Areas contributing to groundwater infiltration; areas that make an important contribution to infiltration in the region	**Criteria partially met; Coarse, permeable sediments which facilitate infiltration are mapped in this area at surface. Could not be confirmed through the drilling program; further analysis to be conducted in Phase 2**
• Areas of groundwater release (i.e., springs, seepage slopes, wetlands)	**Criteria not met. No evidence of groundwater/surface water interaction in this area**
3. Landform Prominence	
• Areas with well-defined valley morphology (e.g., floodplains, meander belts, valley slopes) having an average width of 25 m or more	**Criteria met; valleyland has a clear top of slope and is greater than 25 m wide**
4. Distinctive Geomorphic Landforms	
• Distinctive landforms based on their representation of geomorphological processes and features, quality and rarity	**Criteria not met; No evidence of geomorphological function throughout system, as it exists as a pond**
• Features such as oxbows, bottom-lands, terraces, deltas, exposed soil strata or eroding slopes along riverbanks or valley walls	**Criteria not met; No evidence of geomorphological function throughout system, as it exists as a pond**
5. Degree of Naturalness	
• Areas of contiguous woodland, wetland and/or meadow considered cumulatively	**Criteria not met; one deciduous forest is present within an otherwise actively managed golf course**
• The proportion of valleyland that has natural vegetation cover vs. a cultural use (e.g., golf course, landscaped parkland, agricultural field, urban area) – greater than 25% natural vegetation cover should be considered significant	**Criteria not met; majority of valleyland consists of manicured golf course lawn**
• Proportion of valleyland that has natural riparian vegetation	**Criteria not met; valleyland located within golf course**
• Riparian vegetation greater than 30 m in width on each side of surface water features should be considered significant	**Criteria not met; no to minimal riparian vegetation present along entire extent of valleyland (outside of the Greenbelt)**
• Assessment of Floristic Quality Index (FQI) score (Oldham et al., 1995) – high FQI in the context of the local watershed should be considered significant	**Unknown – Criteria to be evaluated following completion of summer and botanical inventories**
6. ***Community and Species Diversity***	
• Areas of high community and/or species diversity	**Criteria not met; low community and species diversity**

7. ***Unique Communities and Species***	
• Seasonally important habitats such as deer yards, migration stopovers, etc.	**Criteria not met; no such features identified**
• High proportion of regionally and locally significant species	**Criteria not met; high proportions of regionally or locally rare species were not identified within the valleyland**

Table 12E: Significant Valleyland Assessment – Tributary of the West Humber River (Reaches WHT4(3)5-2) within Property 1 (outside of Greenbelt)

• Rare communities or the habitat of rare species, based on federal or provincial guidelines	**Criteria not met**
8. ***Habitat Value***	
• Areas determined to provide important habitat required to sustain native aquatic and terrestrial species diversity within the region	**Criteria not met**
9. ***Linkage Function***	
• The portion of the valleyland with continuous natural vegetation corridors with a minimum width of 100 m	**Criteria not met; continuous 100 m width is not met**
• Areas with functional ecological connections to other natural areas within the watershed both inside and outside the valleylands	**Criteria not met; While valleyland connects into the main West Humber River it does not have any natural features north of Old School Road that it is connecting to**
• Areas that are determined to provide important wildlife corridors	**Criteria not met; does not act as a primary linkage corridor**
10. ***Restoration and Potential Value***	
• Restoration will provide important ecological benefits such as linkage function, improvement of habitat for rare species, reduced fragmentation effects, and/or increased core natural areas	**Criteria not met; significant intervention required to restore functions**
• Areas where restoration will provide a minimum 30 m corridor of riparian vegetation on each side of surface water features	**Criteria not met; development may not be located 30 m from watercourse**
• Areas where the public is interested in assisting in the implementation of ecological restoration	**Criteria not met; private lands**
• Areas that are in public ownership and that would benefit from restoration	**Criteria not met; private lands**
• Areas where restoration would buffer existing natural areas from the effects of adjacent development	**Criteria not met; minimal natural areas existing within valleyland to protect**

Overall Ranking:

Criteria Met – 2
Criteria Partial Met – 1
Criteria Not Met – 23

Criteria To Be Evaluated - 1

Table 12F: Significant Valleyland Assessment – Southwest Tributary of the West Humber River (Reach CCC(2)) within Property 3

1. ***Surface Water Functions***	
• Areas of water conveyance from catchment areas of 50 ha or greater, as defined by a stream channel conveying or holding water for at least two months of the year, or as defined by floodlines or by the meander belt width	**Criteria met**
• Areas of active or historic erosion as characterized by exposed soils on shorelines, river banks, valley walls and instream islands	**Criteria met**
• Areas of active or historic deposition characterized by alluvial soils forming bottomlands, terraces, levees and instream or river-mouth deltas or islands	**Criteria met; evidence of deposition in the form of alluvial soils**
• Associated wetlands important to water attenuation, storage and release	**Criteria met; riparian wetlands are present**
2. ***Groundwater Functions***	
• Areas contributing to groundwater infiltration; areas that make an important contribution to infiltration in the region	**Criteria not met; surficial soils consist of low-permeability sediments which preclude high infiltration rates. Where channels intersect permeable sediments, groundwater discharge rather than recharge is expected**
• Areas of groundwater release (i.e., springs, seepage slopes, wetlands)	**Criteria met; groundwater indicator species and seeps noted at locations on southwest edge of Property 3**
3. Landform Prominence	
• Areas with well-defined valley morphology (e.g., floodplains, meander belts, valley slopes) having an average width of 25 m or more	**Criteria met; valleyland has a clear top of slope and is greater than 25 m wide**
4. Distinctive Geomorphic Landforms	
• Distinctive landforms based on their representation of geomorphological processes and features, quality and rarity	**Criteria met; channel exists within a distinct valley; Some evidence of substrate sorting / sediment transport observed**
• Features such as oxbows, bottom-lands, terraces, deltas, exposed soil strata or eroding slopes along riverbanks or valley walls	**Criteria met**
5. Degree of Naturalness	
• Areas of contiguous woodland, wetland and/or meadow considered cumulatively	**Criteria met; contiguous natural communities including various woodlands, wetlands and meadow types**
• The proportion of valleyland that has natural vegetation cover vs. a cultural use (e.g., golf course, landscaped parkland, agricultural field, urban area) – greater than 25% natural vegetation cover should be considered significant	**Criteria met**
• Proportion of valleyland that has natural riparian vegetation	**Criteria largely met; however, portions of the valleyland are comprised of communities consisting of non-native species (e.g. Buckthorn)**
• Riparian vegetation greater than 30 m in width on each side of surface water features should be considered significant	**Criteria met**
• Assessment of Floristic Quality Index (FQI) score (Oldham et al., 1995) – high FQI in the context of the local watershed should be considered significant	**Unknown – Criteria to be evaluated following completion of summer and botanical inventories**
6. ***Community and Species Diversity***	
• Areas of high community and/or species diversity	**Criteria partially met; some variation in communities and higher species diversity likely**

7. ***Unique Communities and Species***	
• Seasonally important habitats such as deer yards, migration stopovers, etc.	**Criteria not met; no such features identified**
• High proportion of regionally and locally significant species	**Criteria assumed to be met**

Table 12F: Significant Valleyland Assessment – Southwest Tributary of the West Humber River (Reach CCC(2)) within Property 3

• Rare communities or the habitat of rare species, based on federal or provincial guidelines	**Criteria met; occupied Redside Dace habitat**
8. ***Habitat Value***	
• Areas determined to provide important habitat required to sustain native aquatic and terrestrial species diversity within the region	**Criteria met; habitat supports Redside Dace**
9. ***Linkage Function***	
• The portion of the valleyland with continuous natural vegetation corridors with a minimum width of 100 m	**Criteria not met; continuous 100 m width is not met**
• Areas with functional ecological connections to other natural areas within the watershed both inside and outside the valleylands	**Criteria met; valleyland continues north of Dixie Road and south of Mayfield Road**
• Areas that are determined to provide important wildlife corridors	**Criteria met; likely acts as a primary linkage within the landscape**
10. ***Restoration and Potential Value***	
• Restoration will provide important ecological benefits such as linkage function, improvement of habitat for rare species, reduced fragmentation effects, and/or increased core natural areas	**Criteria met; restoration areas would increase core natural areas**
• Areas where restoration will provide a minimum 30 m corridor of riparian vegetation on each side of surface water features	**Criteria met; all development will be a minimum of 30 m the main watercourse**
• Areas where the public is interested in assisting in the implementation of ecological restoration	**Criteria not met; private lands**
• Areas that are in public ownership and that would benefit from restoration	**Criteria not met; private lands**
• Areas where restoration would buffer existing natural areas from the effects of adjacent development	**Criteria met; restoration will buffer the valleyland from the effects of the proposed development**

Overall Ranking:

Criteria Met – 20
Criteria Partial Met – 1
Criteria Not Met – 5

Criteria To Be Evaluated - 1

Appendix B3 – Beacon Environmental Natural Heritage Evaluation

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:*
2024-01-26	**222239**

BEACON ENVIRONMENTAL

GUIDING SOLUTIONS IN THE NATURAL ENVIRONMENT

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Report Versions Issued

Version	Date	Revisions
1.	January 2024	

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 (2023) 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, development applications concerning the lands are subject to policies including, but not limited to, those outlined in: *Species at Risk Act*, *Fisheries Act*, *Endangered Species Act* (ESA), Provincial Policy Statement (PPS), Regional Municipality of Peel Official Plan, Town of Caledon Official Plan and TRCA regulations and policies. This NHE considers that the subject lands will be reclassified 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 mitigation recommendations, if required.

A *Functional Servicing and Stormwater Management Report* (SCS 2023), *Detailed Factual Geotechnical and Hydrogeological Subsurface Investigation Report* (Gemtec 2023), *Tree Inventory & Assessment Report* (Schollen & Company Inc. 2023), 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 new Caledon Official Plan which is currently underway and will subsequently need to be approved by Council.

2.1 Federal *Species at Risk Act* (2002)

The federal *Species at Risk Act* (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. 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.

Site Location	Figure 1
Natural Heritage Evaluation - Part of Lots 19, 20 and 21 Concession 5, Town of Caledon, Region or Peel	
BEACON ENVIRONMENTAL	Project: 222239 Last Revised: November 2023
Client: Mayfield Golf Course Inc. and Tullamore Industrial GP Limited	Prepared by: BD Checked by: DF
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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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 Species at Risk Act (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 purposes of the ESA are:

- 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. 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, 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 Species at Risk Act (SARA) by 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 fish habitat and suitable habitat for threatened or endangered species.

2.5 Greenbelt Plan (2017)

Portions of the subject lands have been designated as Protected Countryside in the Greenbelt Plan (2017). The Greenbelt Plan identifies that the Protected Countryside is defined by three geographic-specific policy lands: Agricultural System, Natural System, and Settlement Areas. The agricultural land base is comprised of *prime agricultural areas* which includes specific policies for *speciality crop areas* and *rural lands*.

The Natural System identifies lands that support natural heritage, hydrologic and/or landform features and functions. The Natural System is made up of a Natural Heritage System (includes core areas and linkages areas within the Protected Countryside) and a Water Resource System (includes ground and surface water features and areas and their associated functions). Specifically, these two systems can be broken down into the flowing:

- Key Hydrologic Areas, including:
  - Significant groundwater recharge areas;
  - Highly vulnerable aquifers; and
  - Significant surface water contribution areas;
- Key Natural Heritage Features (KNHFs), including:
  - 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; and
  - Alvars;
- Key Hydrology Features (KHFs), including:
  - Permanent and intermittent streams;
  - Lakes (and their littoral zones);
  - Seepage areas and springs; and
  - Wetlands.

Generally, development or site alteration is not permitted in KNHFs and KHFs within the Natural Heritage System, including any associated vegetation protection zone, unless exemptions within the Greenbelt Plan apply. In the case of wetlands, seepage areas and springs, fish habitat, permanent and intermittent streams, lakes and significant woodlands, the minimum vegetation protection zone (MVPZ) is 30 m measured from the outside boundary of the feature.

A proposal for new development or site alteration within 120 metres of a KNHF in the Natural Heritage System or a KHF anywhere within the Protected Countryside requires a NHE or a hydrological evaluation which identifies if a vegetation protection zone:

- *Is of sufficient width to protect feature and its functions from the impacts of the proposed change and associated activities that may occur before, during and after construction and, where possible, restore or enhance the feature and/or its function; and*
- *Is established to achieve and be maintained as natural self-sustaining vegetation*.

Section 4.5 of the Greenbelt Plan indicates that all existing uses are permitted. Existing uses are defined within the Greenbelt Plan as uses legally established prior to the date that the Greenbelt Plan came into force on December 16, 2004.

2.6 Regional Municipality of Peel Official Plan (2022)

The premise of the Region of Peel Official Plan is to implement provincial policy through both the regional and municipal plans. 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. The Plan 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;*
- *Natural corridors;*
- *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 Regional Official Plan.

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;*
- *Habitats of Threatened and Endangered Species;*
- *Fish and wildlife habitat*
- *Escarpment Natural Areas of the Niagara Escarpment Plan; and*
- *Core Valley and Stream Corridors.*

Policy 2.3.2.6 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)

Natural Areas and Corridors (NAC) include:

- *Evaluated non-provincially significant wetlands;*
- *Woodlands meeting one or more of the criteria in Table 1 of the ROP;*
- *Significant wildlife habitat;*
- *Fish habitat;*
- *Regionally significant life science Areas of Natural and Scientific Interest;*
- *Provincially significant earth science Areas of Natural and Scientific Interest;*
- *Escarpment Protection Areas of the Niagara Escarpment Plan; and*
- *The Lake Ontario shoreline and littoral zone and other natural lakes and their shorelines.*

Potential Natural Areas and Corridors (PNAC) include:

- *Unevaluated 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 ROP;*
- *Any other woodlands greater than 0.5 hectares (1.24 acres);*
- *Regionally significant earth science Areas of Natural and Scientific Interest;*
- *Sensitive groundwater recharge areas;*
- *Portions of Historic shorelines;*
- *Open space portions of the Parkway Belt West Plan Area;*
- *Potential ESA's identified as such by the conservation authorities; 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 (2018)

The Town of Caledon Official Plan (2018) 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 Region of Peel Official Plan, in a manner which conforms with the environmental policy directions contained in the Region of Peel Official Plan. Within the Greenbelt Plan Protected Countryside designation, this framework incorporates Key Natural Heritage Features (KNHFs) and Key Hydrologic Features (KHFs), and their related Vegetation Protection Zones, as defined in the Greenbelt Plan, and lands within 120 metres of such features.

The ecosystem components identified as Natural Core Areas and Natural Corridors (Section 3.2.3.1.1). Table 3.1 of the Official Plan Summarizes the Ecosystem Framework and its components. In addition to being subject to the general environmental policies and performance measures of this Plan, a portion of the subjects lands are designated Environmental Policy Area (EPA) and are subject to the detailed land use policies in Section 5.7.

Natural Core Areas and Natural Corridors shall be 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 Toronto and Region Conservation Authority (TRCA) Polices and Regulations

There are ongoing changes to the *Conservation Authorities Act* associated with Ontario's Bill 23 (*More Homes Built Faster Act*, 2022), which revokes the individual regulations set out for each conservation authority. A generic regulation is proposed by the province that will specify the requirements that apply to all conservation authorities across the province. One new regulation (Ontario Regulation 686/21) which defines Mandatory Programs and Services, has been issued by the province which focuses the scope of the conservation authorities to regulations specifically associated with flooding and natural hazards and prevents them from commenting on natural heritage. In this regard, TRCA will review a project related to the risk of natural hazards within its jurisdiction and in accordance with Ontario Regulation 166/06, until such time as the new regulation is brought into force.

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.

2.8.1 Ontario Regulation 166/06

The TRCA regulates hazard lands including floodplains, watercourses, valleylands, shorelines, and wetlands under Ontario Regulation 166/06 (TRCA 2006). TRCA also regulates other areas where development could interfere with the hydrologic function of a wetland, including areas within 120 m of Provincially Significant Wetlands (PSWs), and within 30 m of other wetlands. Proposed development within the regulated area may require the preparation of an EIS.

Generally, development within the flood limit of a watercourse is not allowed. However, subject to conformity with the Official Plan and completion of appropriate studies and Conservation Authority permits, development may be permitted within other regulated areas. The Authority may grant permission for development in or on the areas regulated if, in its opinion, the control of flooding, erosion, dynamic beaches, pollution or the conservation of land will not be affected by the development. The permission of the Authority shall be given in writing, with or without conditions.

2.8.2 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. The LCP contains policies related to terrestrial resources, water resources, natural features and areas, natural hazards, and potential natural cover and buffers. Section 7.3 contains TRCA's policies for how to define, protect, enhance, and secure a Natural Heritage System. The policies described in Section 7.3.1.4 have been identified with the goal of protecting lands

that have the potential to be restored in order to enhance existing natural cover and manage natural hazards.

As per Section 7.3.1.4 of the LCP, the TRCA prescribes the following buffers to natural features and hazards as it may relate to the subject properties:

- *Valley or Stream Corridors – a 10 m buffer from the greater of the long-term stable top of slope/bank, the stable toe of slope, Regulatory flood plain, meander belt, and any contiguous natural features or areas;*
- *Wetlands – a 30 m buffer from PSWs and a 10 m buffer for all other wetlands and any contiguous natural features or areas;*
- *Any additional distances prescribed by federal, provincial, or municipal requirements or standards (e.g., Greenbelt);* and
- *Any additional distances demonstrated as necessary through technical reports.*

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);
- The Growth Plan for the Greater Golden Horseshoe (August 2020);
- Regional Municipality of Peel Official Plan (April 2022 Office Consolidation);
- Town of Caledon Official Plan (April 2018 Office Consolidation);
- TRCA policies (2014) and regulations (2006);
- Land Information Ontario (LIO) and Ministry Natural Resources and Forestry (MNRF) resource information;
- *Endangered Species Act* (2007), including relevant Ontario Regulations and guidance documents;
- *Species at Risk* (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.

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 also completed for the two West Humber River tributaries. 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 Tributary meander belt, on a reach basis, to delineate the protected Redside Dace habitat limit. Reach names identified in the Geomorphic Assessment (Beacon 2023) 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* (Toronto and Region Conservation Area and Credit Valley Conservation 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 2004 Humber River Fisheries Management Plan (OMNR and TRCA) identified the North-South Tributary as a small riverine warmwater habitat. 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 2004). Fish community assemblage has a low diversity and consists of warmwater species. Fish habitat is generally limited during the summer months. The management plan (OMNR and TRCA 2004) also denotes a historical presence of Redside Dace (*Clinostomus elongatus*) in these systems.

The West Humber River Tributary was identified as an intermediate riverine warmwater system. This habitat category is usually made up of third and forth order tributaries draining from the Peel Plain. As noted above, 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 2004). Fish community assemblage consists of warmwater species and includes Redside Dace and Rainbow Darter (*Etheostoma caeruleum*).

There are three (3) offline ponds within the subject lands that were constructed for irrigation purposes for the golf course. The Management Plan (2004) 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's rays, these waterbodies experience high summer temperatures which typically have negative impacts to downstream aquatic communities (OMNR and TRCA 2004).

- Blackchin Shiner (*Miniellus heterodon*)
- Blacknose Dace (*Rhinichthys atratulus*)
- Bluegill (*Lepomis macrochirus*)
- Brassy Minnow (*Hybognathus hankinsoni*)
- Brook Stickleback (*Culaea inconstans*)
- Common Shiner (*Luxilus cornutus*)
- Creek Chub (*Semotilus atromaculatus*)
- Fantail Darter (*Etheostoma flabellare*)
- Fathead Minnow (*Pimephales promelas*)
- Iowa Darter (*Etheostoma exile*)
- Johnny Darter (*Etheostoma nigrum*)
- Largemouth Bass (*Micropterus salmoides*)
- Longnose Dace (*Rhinichthys cataractae*)
- Mottled Sculpin (*Cottus bairdii*)
- Ninespine Stickleback (*Pungitius pungitius*)
- Northern Hog Sucker (*Hypentelium nigricans*)
- Northern Pearl Dace (*Margariscus nachtriebi*)
- Pumpkinseed (*Lepomis gibbosus*)
- Rainbow Darter
- Redside Dace
- River Chub (*Nocomis micropogon*)
- Rock Bass (*Ambloplites rupestris*)
- Rosyface Shiner (*Notropis rubellus*)
- Sand Shiner (*Miniellus stramineus*)
- Slimy Sculpin (*Cottus cognatus*)
- Smallmouth Bass (*Micropterus dolomieu*)
- White Sucker (*Catostomus commersonii*)

Most of the fish listed above 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 2023). 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 Fish community assemblage is likely similar for the North-South Tributary as field investigations have confirmed that the system contains water that is present throughout the year and no identifiable impediments to fish movement were observed.

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 (**Photograph 1 – Appendix B**). No groundwater indicators were identified. Fish were observed throughout the reach.

South Parcel Reach (WHT-1A)

The southeast reach was also characterized as a permanent, naturally meandering feature (**Photograph 2, Appendix B**). 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 1.75m 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.

4.1.1.2 North-South Tributary (WHT-2 & WHT-2)

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*) was identified in several locations throughout the upstream reach. Within the upstream reach there was no canopy providing shade to the reach.

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.

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. 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 – Photographs 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 floodlines (**Figure 2**).

4.1.3 Drainage Features

As identified in the Functional Servicing and Stormwater Management Report (FSSR) prepared by SCS Consulting Group Ltd. (SCS 2023), 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

Legend

- Subject Lands

Terrestrial Resources

- Ecological Communities
- Barn Swallow Locations
- BoboLink Locations
- Eastern Meadowlark Locatons
- Turtle Survey Locations
- Amphibian Survey Locations
- Soil Sample Locations

Aquatic Features (Beacon 2023)

- Intermittent
- Ephemeral
- Peramanent
- 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 or Peel

BEACON ENVIRONMENTAL

Project: 222239

Last Revised: January 2024

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

Prepared by: SZ
Checked by: DF

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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.

HDF-3 was observed to be dry during the June 2022 aquatic habitat assessment and during the summer (round 3) 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.

HDF-4 was observed to be dry during the June 2022 aquatic habitat assessment and during the summer (round 3) 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 over land 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 2** below provides an assessment following the TRCA and CVC (2014) Guidelines. A summary table of the functional classifications and the management recommendations is provided in **Appendix C.**

Table 2. 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.

Drainage Feature Segment	Output from HDFA	Final Management Recommendations	Comments/Rationale
HDF 3A	Conservation	Conservation	No change in management recommendation. Feature segment shall be maintained within the 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	No Management	No Management	No change in management recommendation.
HDF 4B	No Management	No Management	No change in management recommendation.
HDF 4C	Conservation	Conservation	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	No change in 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 Assessment of 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.

4.1.4.1 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). Also, provincial mapping (MNRF 2023) provides records for Redside Dace in the West Humber River Tributary. 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 (2023) has completed a geomorphic assessment, under a separate cover, to delineate the meander belt plus 30 m riparian area of the West Humber River Tributary (**Figure 2**). However, the assessment did not include a meander belt analysis for the North-South Tributary as the Recovery Strategy and Action Plan for the Redside Dace (DFO 2024), identifying the Tributary as critical habitat, was not yet published on the SARA registry. A meander belt study for the North-South Tributary will be conducted to delineate the extent of critical habitat.

Although no records for Redside Dace were identified from the provincial mapping tool (MNRF 2023) the North-South Tributary may also be considered 'occupied' Redside Dace habitat by MECP as there were no identifiable impediment to fish passage between this reach and the West Humber River Tributary. Therefore, it is anticipated that MECP will regulate the North-South Tributary as an occupied watercourse and the extent of the critical habitat determined in accordance with the Recovery Strategy will be coincident with occupied habitat.

Additionally, *O.Reg. 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, HDF-3 may be considered contributing Redside Dace habitat. Consultation should be undertaken, with the applicable regulatory agencies, to confirm the extent of the Redside Dace habitat within the subject lands.

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 property 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 property.

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 a presumed nesting location identified on **Figure 2**.

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 3. 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)

Location	Survey 1	Survey 2	Survey 3
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 4. 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
6	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 5** 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 5. 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 and North – South Tributaries are identified as protected Redside Dace habitat.
Birds		

Species	Status on SARO List	Were Species and/or Habitat Documented during on-site Assessment?
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.
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.**

4.4 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 6. 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)	X	
Waterfowl Stopover and Staging Areas (Aquatic)	X	
Shorebird Migratory Stopover Area	X	
Raptor Wintering Area	X	
Bat Hibernacula	X	
Bat Maternity Colonies		X
Bat Migratory Stopover Area	X	
Turtle Wintering Areas		X
Reptile Hibernaculum		X
Colonially-Nesting Bird Breeding Habitat (Bank and Cliff)	X	
Colonially-Nesting Bird Breeding Habitat (Tree/Shrubs)	X	
Colonially-Nesting Bird Breeding Habitat (Ground)	X	

Wildlife Habitat Category	Presence or Absence on Subject Lands Based on MNRF Criteria for Ecoregion 6E	
	Absent	Potential Presence
Migratory Butterfly Stopover Areas	X	
Land bird Migratory Stopover Areas	X	
Deer Yarding Areas	X	
Deer Winter Congregation Areas	X	
Rare Vegetation Communities		
Cliffs and Talus Slopes	X	
Sand Barren	X	
Alvar	X	
Old Growth Forest	X	
Tallgrass Prairie	X	
Savannah	X	
Provincially Rare S1, S2 and S3 vegetation communities	X	
Regionally or Locally Rare vegetation communities	X	
Specialized Habitats of Wildlife		
Waterfowl Nesting Area	X	
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	X	
Woodland Raptor Nesting Habitat	X	
Turtle Nesting Areas		X
Seeps and Springs	X	
Amphibian Breeding Habitat (Woodland)		X
Amphibian Breeding Habitat (Wetlands)		X
Woodland Area-Sensitive Bird Breeding Habitat	X	
Habitats of Species of Conservation Concern		
Marsh Bird Breeding Habitat	X	
Open Country Bird Breeding Habitat		X
Shrub/Early Successional Bird Breeding Habitat	X	
Terrestrial Crayfish	X	
Special Concern and Rare Wildlife Species		X
Animal Movement Corridors		
Amphibian Movement Corridors		X
Deer Movement Corridors	X	

In summary, this analysis has considered that there are eight SWH types on the subject lands. Three of these are under the *Seasonal Concentration Areas for Wildlife Species* category and are: Bat Maternity Colonies, Turtle Wintering Areas, and Reptile Hibernaculum. The bat category is presumed given the presence of suitable habitat, however, was not studied. Turtle wintering is assumed given the observation of several turtles throughout the wetlands of the golf course, and specifically the

observation of juveniles and adults. Two snake species were observed on site and likely overwinter on site in a hibernacula below the frost line. Three of the SWH types are under *Specialized Habitats of Wildlife* and are: Turtle Nesting Areas and Amphibian Breeding Habitat (woodland and wetland), based on the observation of juvenile and mature turtles along with multiple amphibian species discussed under Section 4.3.5 of this report. Two SWH categories were under *Habitats of Species of Conservation Concern*: Open Country Bird Breeding Habitat and Special Concern and Rare Wildlife Species. The latter is in relation to Eastern Wood-pewee and Snapping Turtle, whereas the former is in relation to breeding records of Vesper Sparrow and Savannah Sparrow. Lastly, the final SWH category is Amphibian movement Corridors given the mosaic of wetlands and uplands throughout the subject lands and confirmation of multiple breeding amphibians that winter both aquatically and terrestrially.

None of these areas have been identified as potential SWH by the Town and all SWH types are within the natural heritage corridor.

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. Assessment of Significant Natural Heritage Features

The findings of this study have been used to determine if the subject lands support any natural heritage components that are recognized under the PPS, the Peel Region Official Plan, and the Town of Caledon Official Plan (**Table 7**).

Table 7. Assessment of Significant Natural Heritage Features

Natural Heritage Feature	Assessment	Present within the subject lands?
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 associated with the regional NHS as identified on Schedule B5 Green Plan Area Land Use Designations and Schedule C-1 Regional Greenlands Systems of the Peel Regional Official Plan and are regulated by the TRCA. 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 Peel ROP.	Yes
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 associated with the NHS and thus are identified on Schedule B5 Green Plan Area Land Use Designations and Schedule C-1 Regional Greenlands Systems of the Peel Regional Official Plan. Any natural woodland community that is 4 ha or greater and supports the habitat of a threatened or endangered species meets the criteria listed in Table 1 of the ROP to classify them as NAC. Woodland communities supported most of the forest birds observed within the subject lands and provided suitable habitat for bats. The dripline of the woodland communities, within the NHS, was staked and confirmed by the TRCA in October 2022 (**Figure 3**).	Yes
Valley 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 identified as NHS on Schedule B5 Green Plan Area Land Use Designations and Schedule C-1 Regional Greenlands Systems of the Peel Regional Official Plan. The valley and the stream corridor of the West Humber River Tributaries satisfy the criteria in Table 2 of the Peel ROP 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 Peel ROP to be considered a Core Area Valley and Stream Corridor.	Yes
Significant Wildlife Habitat	There are eight potential SWH types within the subject lands. Seasonal Concentration Areas for Wildlife Species: • Bat Maternity Colonies (presumed based on suitable habitat within the NHS); • Turtle Wintering Areas (assumed based on presence of wetlands and species observations); and, • Reptile Hibernaculum (assumed based on species observations). Specialized Habitats of Wildlife: • Turtle Nesting Areas (assumed based of the age diversity of the observed turtle species); and,	Yes

Natural Heritage Feature	Assessment	Present within the subject lands?
	• Amphibian Breeding Habitat (woodland and wetland) (based the results of the breeding amphibian surveys). Habitats of Species of Conservation Concern: • Open Country Bird Breeding Habitat (based on observations of breeding Vesper Sparrow and Savannah Sparrow); • Special Concern and Rare Wildlife Species (based on observations of Eastern Wood-pewee and Snapping Turtle). Animal Movement Corridors: • Amphibian Movement Corridors (inferred based on mosaic of wetlands and uplands throughout the subject lands and the confirmation of multiple breeding amphibians that winter both aquatically and terrestrially, not studied). None of these areas have been identified as SWH by the Town.	
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. Pond A and C are within the West Humber River Tributary floodplain and therefore these ponds may have a seasonal connection to a fish bearing watercourse. Pond B is located outside of the floodplain of the West Humber River Tributary and therefore there is no potential connection to a fish bearing watercourse.	Yes
Habitat for Endangered or Threatened 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). Also, provincial mapping (MNRF 2023) provides records for Redside Dace in the West Humber River Tributary. As per the explanation provided Section 4.1.4., it is anticipated that MECP will regulate the North South Tributary as an occupied watercourse. 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. Additionally, O.Reg. 832/21 of the ESA, HDF-3 may be considered contributing Redside Dace habitat. However, due to the data discrepancies between provincial and federal records/ mapping, further discussions should be undertaken, with the applicable regulatory agencies, to confirm the extent of the Redside Dace habitat within the subject lands. 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 exiting anthropogenic structures may provide suitable habitat for endangered bats. No other threatened or endangered species were recorded within the subject lands.	Yes

Natural Heritage Feature	Assessment	Present within the subject lands?
Significant Area of Natural and Scientific Interest	There are no Significant Area of Natural and Scientific Interest within 5 km of the subject lands.	No

The natural heritage features within the subject lands are discussed in **Section 7** 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.

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 (18.36 ha). In addition to the residential land uses, an elementary school (2.06 ha), a firehall (0.84 ha), a commercial block (0.5 ha), open spaces (0.02 ha) and parkland (9.08 ha) have been identified.

Internal road access for the proposed development will be provided by Streets 'A' through Street 'O'. A connection to Torbram Road will be provided by Street 'A', Street 'B' and Street 'O'. internal roads and private laneways will account for 10.1 ha of the development lands. Approximately 0.5 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 41.8 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 2023).

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.

The analysis provided in the FSSR (SCS 2023) determined that four underground wet SWM facilities 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 underground SWM facilities will provide quantity control, erosion control, quality control, and temperature mitigation for the subject lands. The underground wet 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 storm events. 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. However, due to the small size of the SWM Facility 4 catchment, extended detention cannot be provided for 48 hours.

All SWM facilities will have a permanent pool depth of 1.0 m and an active storage depth of 2.0 m (total internal height of 3.0 m). The control manholes will outlet to storm sewers; three of which will convey flows to the North-South Tributary and one of which will convey flows to the West Humber River Tributary. The preliminary locations of the proposed outlets are provided in the FSSR (SCS 2023).

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 SWM block which will convey the uncontrolled 100-year storm event peak flow from the 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 storm event) will be conveyed within the road rights-of-way to the SWM facilities captured at low points adjacent to the facilities.

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, 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 2023) 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 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 2023), 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**). To aid in the preliminary design, a TRCA HEC-RAS model (West Humber) 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 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.

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.

6.5 Amenities

The proposed development includes approximately 10 ha of parkland and open space (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 identified on Schedule C-2 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 applicable natural heritage policy documents.

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 / or open spaces 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. (2023) under separate cover provides details on the protection, management, and monitoring of retained tress, any individual tree removals, and compensation. A total of 335 trees were identified for retention (pending detailed design), a total of 610 trees were identified for removal, 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 open space or 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. Anecdotal evidence was provided by golf course staff indicate that turtles are regularly encountered traveling through the north parcel between wetland and open water features. This wetland is not within the TRCA regulation limits.

Approximately 0.06 ha of Forb Mineral Meadow Marsh (MAM2-10) will be temporarily removed to accommodate the proposed road crossings. The MAM2-10 units are within the riparian areas surrounding HDF 3 and the North-South Tributary. This wetland area contained 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 wetland may be "interfered with", or in this case, removed. Accordingly, these wetlands are not provincially significant, are all less than 0.5 ha., they do not provide significant wildlife habitat or habitat for rare species, and they are not part of a significant groundwater discharge area as per the Geotechnical and Hydrogeological Report (Gemtec 2023). 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

0.12 ha (**Figure 4**) and opportunities for restoration and enhancement in the NHS will be developed at detailed design to mitigate this loss.

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 Road Crossings of the NHS

Two road crossings are proposed for connectivity, neighborhood structure and traffic flow within 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. The TRCA Policies and Regulations were reviewed when identifying the design of the proposed crossing structures.

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 2023), 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. 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.

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. A low flow channel is proposed throughout the culvert to maintain the natural channel processes and to promote fish passage. The arch open bottom culvert shall be embedded into the natural streambed.

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 away from 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 protected habitat for Redside Dace. MECP and DFO consultation will be required to define the critical/ regulated habitat limit of this species within the subject lands as per each respective legislation. The proposed crossing structure identified for the North-South Tributary will require approval and/or permits/ authorizations from both DFO and MECP.

7.3 Stormwater Facilities and Outfalls Within the NHS

Four underground 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 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 headwall for the SWM Facilities 1-3 to 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 marsh and deciduous forest communities. One outlet headwall is proposed for SWM Facility 4. This proposed outlet headwall will fall within the south parcel and may result in minor removal of vegetation associated with cultural thicket and meadow 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.

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 underground wet 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 generally being retained, 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 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.

7.7.1 Removal of Habitat for Eastern Meadowlark

Approximately 2.25 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.

7.7.2 Impacts to Redside Dace Habitat

As noted in **Section 4.1.5.1**, data discrepancies in the background review will require consultation with MECP and DFO to confirm the extent of the habitat within the subject lands. Potential impacts can not be fully understood until the protected habitat is confirmed with the above noted agencies. However, potential impacts to Redside Dace habitat may result from the Street 'A' road crossing of the North-South Tributary, the proposed stormwater inputs, and footprints within the regulated/critical habitat that may result from the placement of the proposed SWM outlet headwalls.

Impacts related to the Street 'A' road crossing can generally be avoided 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**. The result of agency consultation will determine what type of compliance approval/permit/authorization will be required for both crossings.

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.

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 Natural Heritage System 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 limit of constraints associated with the proposed Natural Heritage System within the greenbelt are a combination of the setbacks and buffers associated with:

- 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 Slope plus a 30 m setback (within the greenbelt) or 10 m setback (outside of the Greenbelt); and
- Redside Dace protected habitat limits (i.e. meander belt width plus 30 m vegetated area) for the two reaches of the West Humber Tributary within the subject lands.

All the above-mentioned setbacks and buffers have been incorporated into an overall limit of constraint which has been delineated as the Natural Heritage System on **Figure 3** and **Figure 4** and is reflected 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. 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

The following drainage features will require full removal or alteration as a result of the proposed development.

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.

Drainage Feature Segment	Final Management Recommendation	Proposed Removal/ Alteration	Recommended Management
HDF 4B and HDF 12	No Management	Full removal of both feature segments is proposed. Features existing connection to the North-South tributary shall be maintained within the NHS.	Drainage features that are identified as "No Management" can be removed without the need for feature or function replication. Nonetheless, an appropriate stormwater management (SWM) system and low impact developments (LID) will be implemented.

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

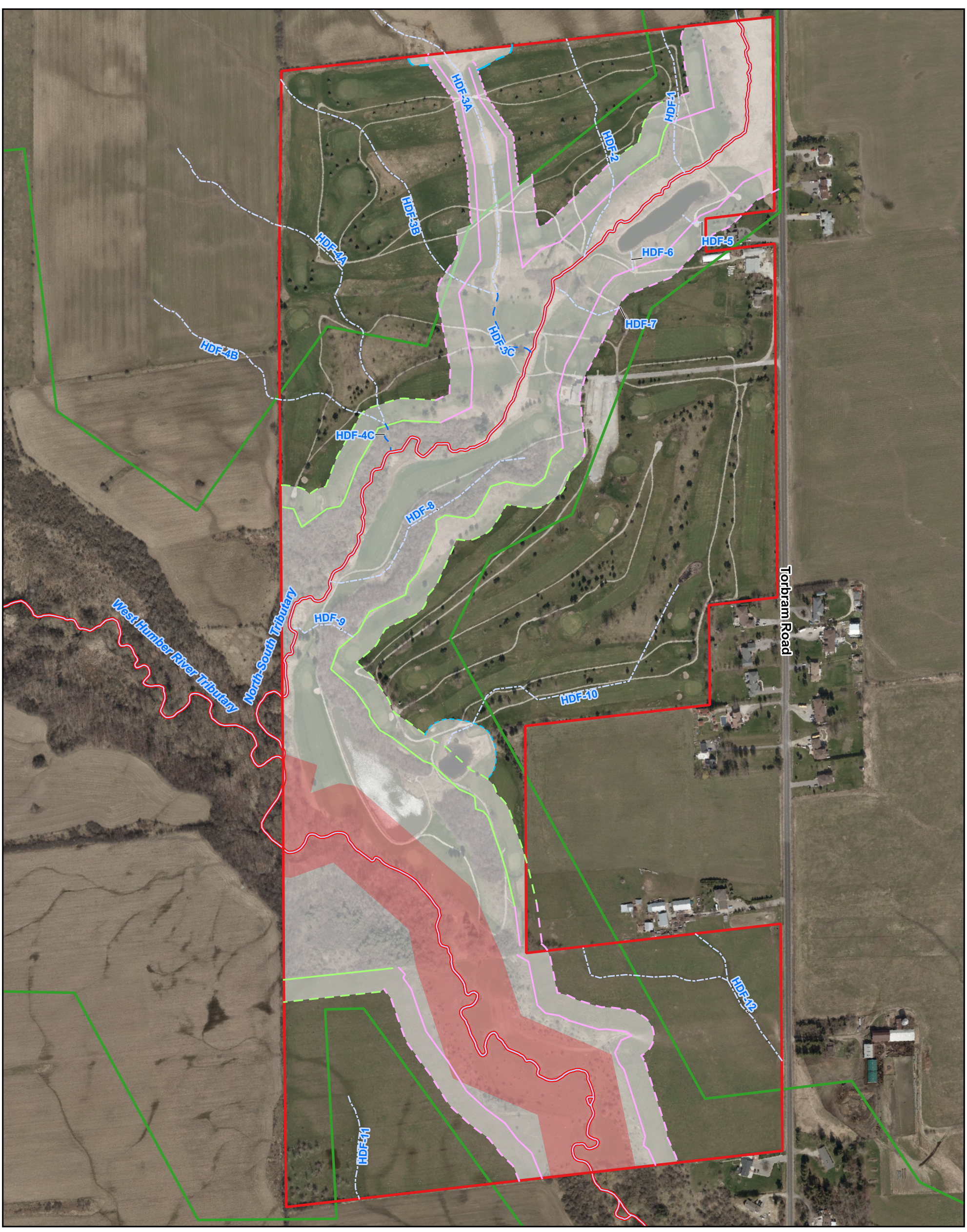
Details on the LID measures specific to each feature that will be removed to facilitate the proposed development will be determined and finalized in consultation with the TRCA and addressed in the Final FSSR (SCS) during detailed design.

8.4 Low Impact Development Techniques

A water balance analysis is ongoing and will be finalized; however, the following low impact development 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 can be provided on the single detached lots to meet the onsite retention and water balance targets and provide passive water quality and quantity control. Adequate separation to the seasonally high groundwater will be provided to ensure functionality. The trenches will be located beneath the rear yard swales, covered in topsoil, and vegetated. Where residential lots back toward the valley corridor, any overflow from the rear yard infiltration trenches will be directed via the storm sewer system to the proposed SWM Facilities; 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.



Legend

- Subject Lands
- Greenbelt Outer Boundary (MMAH 2017)
- Wetland + 10 m
- Wetland + 30 m

TRCA Staked Natural Features

- Top of Bank (TRCA 2022 & 2023*)
- Top of Bank + 10 m
- Top of Bank + 30 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 or Peel

BEACON ENVIRONMENTAL

Project: 222239

Last Revised: January 2024

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

Prepared by: SZ
Checked by: DF

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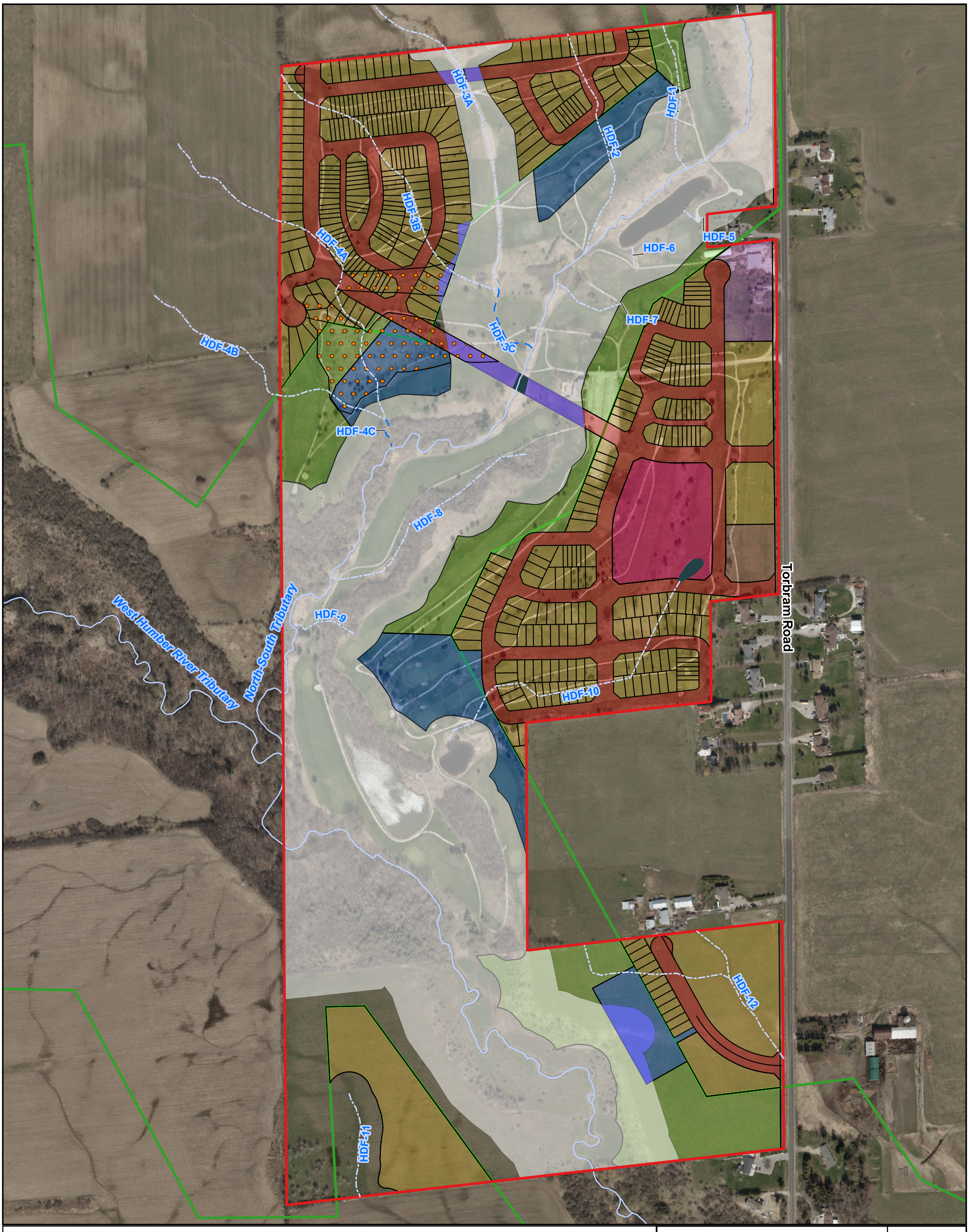

Legend

- Subject Lands
- Proposed Development
- Greenbelt Outer Boundary (MMAH 2017)
- Natural Heritage System

Aquatic Features (Beacon 2023)

- Intermittent
- Ephemeral
- Permanent

Schedule of Land Use

- Residential
- Stormwater Management Facility
- Parkland
- Firehall
- School
- Commercial
- Road

Impacted Areas

- Cultural Meadow Removal (2.25 ha)
- Area of NHS Encroachment (1.02 ha)
- Wetland Removal (0.12 ha)

Proposed Development | **Figure 4**

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

BEACON ENVIRONMENTAL

Project: 222239
Last Revised: November 2023

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

Prepared by: BD
Checked by: DF

1:5,000

0 100 200 m

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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 protected 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 2023), 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 protected Redside Dace habitat as per the BMP's outlined in the MNRF Guidance Document (2016). The proposed open bottom arch culvert will maintain groundwater exchange, has been sized to not restrict flow and 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.

8.6 Timing of In-Water Works

All construction activities (on land or in water) within regulated Redside Dace habitat shall occur within the 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.

8.7 Erosion and Sediment Control

Prior to any construction, a detailed Erosion and Sediment Control Plan will be developed using the Greater Golden Horseshoe Area Conservation Authorities' Erosion and Sediment Control Guidelines for Urban Construction (2019). Any grading or site alteration related activities should be confined to the established limit of development. Fencing at the development limit should be regularly inspected and maintained in good working order throughout the construction period. Fencing should be removed upon completion of construction after exposed soils have been stabilized. Standard Best Management Practices, including the provision of sediment control measures, should also be employed during the construction process.

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 Compensation/Mitigation for Removal of Eastern Meadowlark Habitat

Eight Bobolink breeding territories were recorded on the south parcel and one Eastern Meadowlark breeding territory, and one Bobolink pair breeding territory was 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 may be explored where the proponent is required to pay a species conservation charge to the MECP.

8.10 Tree Removal and Preservation

An Arborist Report prepared by Schollen and Company Inc. (2023) under separate cover will provide 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.

8.11 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.

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.

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 in **Table 9**.

Table 9. Policy Compliance Assessment

Applicable Policy / Legislation	Relevant NHE Findings and Recommendations	Policy Compliance
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	Yes (Subject to DFO approval)

Applicable Policy / Legislation	Relevant NHE Findings and Recommendations	Policy Compliance
	made to reduce impacts from SWM Pond 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.	
Provincial *Endangered Species Act* (2007)	Habitat for Bobolink (threatened), Eastern Meadowlark (threatened), Redside Dace (endangered) has been confirmed within the subject lands. Bobolink and Eastern Meadowlark habitat will be removed from 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 exiting 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 warranted to the confirm status of the habitat in the North-South Tributary, ensure compliance and identify the appropriate approval process that will be required under the ESA.	Yes (Subject to MECP approval)
Provincial Policy Statement (2020) Section 2.1 – Natural Heritage		
1. Habitat for Threatened and Endangered Species	Habitat for endangered and threatened species has been identified within the subject lands and will be addressed in conformity with the applicable acts (see above).	Yes (Subject to MECP and DFO approval)
2. Core Area Valley and Stream Corridor	The West Humber River Tributaries have been identified as Core Area Valley and Stream Corridors. A road crossing of the North-South Tributary is proposed to facilitate access to the residential areas. The SWM Facilities proposed to service the proposed development will require three outlet structures within the corridor of the North-South Tributary and one within the valley of the West Humber River Tributary.	Yes (Subject to Municipal, federal, and provincial agency approvals)
3. Significant Wetlands	Not applicable – There are no Significant Wetlands on or adjacent to the subject lands.	Yes
4. Significant Woodlands	There are several natural and cultural woodland communities that have been identified within the subject lands. This woodland met the criteria in Table 1 of	Yes

Applicable Policy / Legislation	Relevant NHE Findings and Recommendations	Policy Compliance
	the ROP to classify them as NAC. All woodland communities are located within the NHS and will be retained.	
5. Significant Wildlife Habitat	There are eight potential SWH types within the subject lands None of these areas have been identified as potential SWH by the Town.	Yes (Subject to Municipal approvals)
6. Significant Areas of Natural and Scientific Interest	Not applicable – There are no ANSIs on or adjacent to the subject lands.	Yes
7. Fish Habitat	See Above.	Yes (Subject to DFO and MECP approvals)
Town of Caledon Official Plan (2018)	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 EIS 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) Ecologically appropriate 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.	Yes (Subject to Municipal, TRCA and provincial and federal agency approvals)
Toronto and Region Conservation Authority (TRCA) Polices and Regulations	TRCA regulated areas are present on the subject lands and therefore a permit will likely be required from the authority to proceed with site alteration. Beacon provided TRCA with a draft Terms of Reference (ToR) for this NHE in 2022 prior to completing the staking exercise. TRCA did not provide a review of the (ToR). It was communicated by TRCA that it was too early in the planning process for site-specific studies. TRCA did agree to conduct a feature staking of the north parcel under a Concept Development Application. Ecologically appropriate buffers have been applied to natural features to prevent any negative impacts and to enhance the Natural Heritage System 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.	Pending the provision of a permit under *Ontario Regulation 166/06* from TRCA.

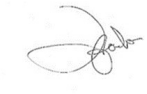
11. Conclusion

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, Growth 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. The proposed development will occur largely within the current existing golf course area and result in 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. These features will be compensated for through restoration and enhancement areas that will be identified in future stages of the planning and design process. 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, Region, Town, and the regulations of the TRCA Consultation with MECP and DFO will be complete 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.

Report prepared by:
Beacon Environmental Ltd.

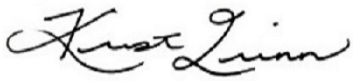


Devon Fowler, B.Sc., Dipl. Eco. Restoration
Aquatic Ecologist

Report prepared by:
Beacon Environmental Ltd.

Chana Steinberg, B.Sc. (Hons.)
Ecologist

Report reviewed by:
Beacon Environmental Ltd.



Kristi Quinn, B.E.S., Cert. Env. Assessment
Principal, Senior Environmental Planner

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Appendix A

Draft Plan of Subdivision

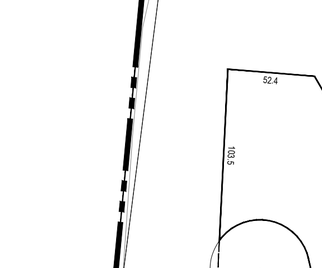
DRAFT PLAN OF SUBDIVISION

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

Prepared For:

Geranium Corporation

KEY PLAN



SUBJECT PROPERTY

SCHEDULE OF LAND USE

LOT/BLOCK	LAND USE		UNITS	AREA (ha)
1-240	Single Detached Min. 13.40m	+	44	2.22
	Single Detached Min. 11.60m	o	164	6.53
	Single Detached Min. 9.75m	^	32	1.21
Blks 241-261	Street Townhouse Min. 6.0m	x	127	2.89
Blks 262-272	Lane Townhouse Min. 6.0m	L	62	1.39
Blks 273-277	Medium Density			3.98
Blks 278	Elementary School			2.06
Blks 280-284	Park			9.06
Blks 285-288	Storm Water Management Pond			5.40
Blk 289	Commercial			0.51
Blk 290	Firehall			0.86
Blks 291-293	Natural Heritage System			41.83
Blks 294-310	Future Residential			2.73
Blks 311-313	Road Widening			0.48
Blk 314	Open Space			0.02
Blks 315-319	0.3m Reserve			0.01
Streets A-B	22.0m Right of Way - 1,562m			3.53
Streets C-O	18.0m Right of Way - 3,308m			6.23
Laneway A-C	8.0m Right of Way - 233m			0.24
TOTAL			429	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.

Geranium Corporation — 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: August 29, 2023

Malone Given Parsons.
140 Renfrew Drive, Suite 201 | Markham, ON | L3R 6B3
905 513 0170 | mgp.ca

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)

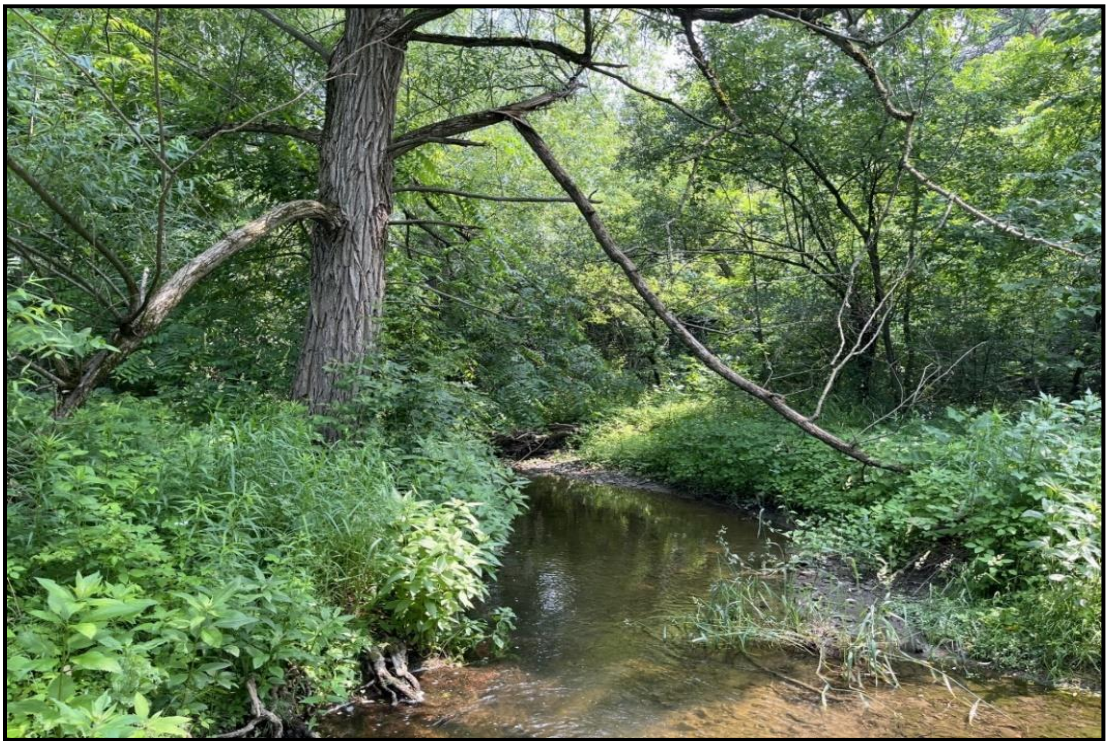
Photograph 28. View of Outside of CUW1a (June 30, 2023)

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 Hydrology	Step 1 Modifiers	Step 2 Riparian	Step 3 Fish Habitat	Step 4 Terrestrial Habitat	Management Recommendation per HDFA Guidelines	Rational	Final Management Recommendation
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.	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.*	No change in management recommendation.	No Management 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 segment 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.	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 proposed lot level/conveyance controls and stormwater management. Features existing connection to the HDF 4C segment 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.	Conservation	No change in management recommendation.	Conservation 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	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			
			important or 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	**Contributing Function:** may contribute to the transport of	**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

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			
			dominated by cropped land.	allochthonous materials to downstream fish habitat.				be achieved through applying the 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
Savannah Sparrow	*Passerculus sandwichensis*			S4	L4	A	6

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]	
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.*

Appendix B4 – Feature Staking

SKETCH TO ILLUSTRATE STAKED TOP OF BANK, TREED LIMIT AND WETLAND MAYFIELD TULLAMORE LANDOWNER GROUP

SCALE 1:2000

0m 40m 80m 120m 160 metres

R-PE SURVEYING LTD., O.L.S.

METRIC

CAUTION

THIS IS NOT A PLAN OF SURVEY AND SHALL NOT TO BE USED EXCEPT FOR THE PURPOSE INDICATED IN THE TITLE BLOCK.

LEGEND

- DENOTES STAKED TOP OF BANK (MAY 30, 31 AND JUNE 3, 2024)
- /TL DENOTES STAKED TREED LIMIT (MAY 30, 31 AND JUNE 3, 2024)
- DENOTES STAKED TOP OF BANK (OCTOBER 18, 2022 AND AUGUST 23, 2023)
- DENOTES STAKED TL (OCTOBER 18, 2022)
- /WL DENOTES STAKED WETLAND (JULY 4, 5 AND 8, 2022)

NOTES

BOUNDARIES ARE NOT CERTIFIED BY THIS PLAN, AND ARE SUBJECT TO CLARIFICATION UPON THE INCORPORATION OF ADDITIONAL DOCUMENTARY AND FIELD SURVEY EVIDENCE.

THE SURVEY WAS COMPLETED ON THE 8th DAY OF JULY 2024.

SKETCH IS AN ORIGINAL COPY IF EMBOSSED BY THE SURVEYOR.

OLD SCHOOL ROAD

BRAMALEA ROAD

TORBRAM ROAD

MAYFIELD ROAD

NON-PARTICIPATING PROPERTY

ANATOLIA

BROCCOLINI

TACC DEVELOPMENTS

SUNDIAL

DG GROUP

DG GROUP (SENTINEL HOLDINGS)

MAYFIELD GOLF COURSE INC.

TULLAMORE RESIDENTIAL LTD.

TORCHIA LANDS

R-PE SURVEYING LTD.
ONTARIO LAND SURVEYORS
643 Chrislea Road, Suite 7
Woodbridge, Ontario L4L 8A3
Tel.(416)635-5000 Fax (416)635-5001
Tel.(905)264-0881 Fax (905)264-2099
Website: www.r-pe.ca
DRAWN: S.A.
JOB No. 24-149 CAD FILE No.24149tp01b-UTM-CSRS

Technical Memorandum

75 Tiverton Court, Unit 100 ● Markham, ON L3R 4M8 ● 1-800-810-3281

Via Email:	kbeckman@devcoll.com, jason.elliot@caledon.ca, mike.hynes@trca.ca
To:	Mayfield Tullamore Landowner Group, Town of Caledon, Toronto Region Conservation Authority (TRCA)
From:	Shelley Lohnes, Vice President, Senior Ecologist Russell Wiginton, P. Eng., Senior Geotechnical Engineer
cc:	nick.cascone@trca.ca; maria.parish@trca.ca; cassie.schembri@caledon.ca
Date:	July 24, 2024
Re:	June and July Feature Staking Summary Memo – Mayfield-Tullamore Landowner Group Properties, Caledon, Ontario
Project No.:	2400278

Introduction

This memo summarizes the key decisions and next steps regarding feature staking led by GEI Consultants Canada Ltd., (GEI) with SCS Consulting Group Ltd. (SCS), the Town of Caledon and the Toronto and Region Conservation Authority (TRCA) at Mayfield-Tullamore Landowner Group (MTLOG) properties on May 30, 31, and June 3, 2024 for treed limit and top of bank staking, and July 4, 5, and 8, 2024 for wetland staking. These surveyed limits have been overlaid on aerial imagery for review and comments (attached). The dripline has been denoted as the "Staked Treed Limit" as there are some areas that will require further study to ascertain the final dripline limit. These are described further below.

GEI was provided with the following drawing following the on-site field staking activities:

- *"Sketch to Illustrate Staked Top of Bank, Treed Limit and Wetland - Mayfield Tullamore Landowner Group,"* Job No. 24-149, dated July 8, 2024, by R-PE Surveying Ltd (attached)

The drawing shows the staked locations, denoted with "Bank – Top #" and the connected red linework showing the Top of Bank (TOB) location. GEI geotechnical engineering staff reviewed this drawing and added blue callout text (attached) that summarizes on-site discussions with TRCA staff during the TOB staking fieldwork pertaining to un-staked locations and areas for potential future study. The TOB linework will be used as part of the slope stability assessment to determine the Long-Term Stable Top of Slope (LTSTOS) location for the participating properties.

Staking was not completed within Properties 9 and 10 as this was completed by Beacon Environmental in 2022 and 2023 with the TRCA. As a result, the top of bank and treed limit for these properties will be incorporated into the Phase 1 Subwatershed Study.

As part of this staking exercise, the following assumptions were made:

- Where dripline staking was not completed (i.e., for invasive Buckthorn dominated areas), it was agreed that the boundaries of any woodlands within these thickets would be represented by GEI's ELC mapping.
- Areas where woodlands were present, but within the staked top of bank limits, the boundaries of these woodlands would be represented by GEI's ELC mapping; and
- Areas where wetland were present, but within the staked top of bank or treed limits, the boundaries of these wetlands would be represented by GEI's ELC mapping.

The following summary has been prepared for each land parcel/owner within the MTLOG, property numbers are identified in (**Figure 3, Appendix A**).

Property 1

Staked Tree Limits

- Following a review of the preliminary ELC completed by GEI, it was determined that the retired apple orchards on the Anatolia property do not meet the established 0.5-hectare woodland threshold (shown as "Orchard" on current ELC mapping). In accordance with the agreements reached during field assessments with the Town of Caledon, these areas will not be staked as woodlands. The Subwatershed Study (SWS) report will include additional text to support the decision made within the field to not stake these orchards based on the Town's policies.
- A community currently mapped as forest (FODM7-7) included two hedgerow features extending south along each side of the large pond (OAO). These hedgerows were staked as being part of the woodland/treed limit with the understanding that they will be further reviewed as part of the SWS as to whether they are considered "Woodlands" in accordance with the Town's Official Plan. Subsequent review will examine the length to width ratio of each feature, and/or consist of stem density plots to determine if they meet the definition of a woodland. These have been identified as future study areas (**Figure 1, Appendix A**).
- Woodlands in the southwest corner of the property contain forest and cultural woodland features, as well as European Buckthorn thickets. The point of transition from one feature to another – particularly where Buckthorn becomes dominant, may require additional surveys (e.g., stem density plots) to ensure the division between woodland/forest and shrub thicket reflects stem density data rather than visual interpretation. These have been identified as future study areas (**Figure 1, Appendix A**).

Staked Top of Bank (TOB)

- **Figure 2** (**Appendix A**) shows several locations where TOB staking was not required because the system was unconfined as discussed and confirmed with TRCA.
- TRCA did not require staking for the large pond through the middle of the property. TRCA confirmed that a TOB can be established for this area based on existing LiDAR data and GEI's discretion, as needed.
- The TOB could not be accessed for staking in several locations in the southern part of the property due to dense vegetation cover, barbed wire fence, or other access restrictions. TRCA confirmed that the existing LiDAR data and judgement will be used to determine the TOB

location in these locations, and the TOB will tie into the locations where physical staking occurred.

- The east side of the confined valley system at the northern extent of the property showed potential visual indications of some historic filling to create golf tee blocks. TRCA confirmed that the staked TOB could be re-visited in this area if additional study (e.g. location specific boreholes, review of historic aerial images, etc.) show evidence that the slope was altered by filling.
- Another staked area that TRCA confirmed could be discussed further is located near Bramalea Road, on the east side of the property and northeast of the golf clubhouse. In this location, the staked TOB could be part of the road cut where Bramalea Road extends down into the valley and across the watercourse to the south. The TOB specific to the confined valley system is potentially farther south. It is noted that the TOB is within or near staked dripline, so depending on the LTSTOS position relative to dripline setbacks, further discussion on the staked TOB in this location could be inconsequential.

Wetlands

- Three wetland communities were staked on this property; a SWT2-5 towards the southwestern portion of the property near the Greenbelt Plan Area boundary, a MAM2-2 near the southeast corner of the property within the Greenbelt Plan Area boundary, and a SAF1-3 community located in the northwest portion of the property. For the MAM2-2 and SAF1-3 community, only a small portion along the southeaster limits of the feature were staked, and the remainder of the feature was defined based on ELC based on confirmation of that approach with the TRCA.

Property 2

Staked Treed Limits

- Much of the southern edge of the naturalized valley land feature to the north consisted of European Buckthorn, which the Town agreed would not qualify as woodland; such features were not staked. However, portions of that feature contained associations of Hawthorn, which the Town treats as a woodland tree species. Therefore, those areas were staked with the understanding that future surveys (i.e., stem density surveys) might be completed to verify those boundaries. These have been identified as future study areas.
- A very deep north/south trench was observed within the valley near Bramalea Road, starting near the agricultural field. It appeared to be created by erosion.

Staked Top of Bank

- The TOB could not be accessed for staking in several locations along the northern extent of the Broccolini North property due to dense vegetation cover, barbed wire fence, or other access restrictions. TRCA confirmed that the existing LiDAR data and judgement will be used to determine the TOB location in these locations, and the TOB will tie into the locations where physical staking occurred.

- The TOB for the easternmost extent of the southern confined valley wall near Bramalea Road was similarly not staked due to access restrictions. This area is noted to contain an erosion gully, potentially formed by an outletting tile drain or from road runoff. This erosion gully is captured in the existing LiDAR data which will be used to establish the TOB.

Wetlands

- One MAMM1-12 community was staked that crosses between Property 2 and Property 3. No areas were identified for further discussion.

Property 3

Staked Treed Limits

- The woodland dripline in the southwest corner was generally agreed upon with a couple of points of contention:
    - A live Manitoba Maple was leaning to a position where it was nearly laying on the ground and therefore extended out a couple of meters beyond the rest of the dripline. GEI's position is that this is a deviation to the overall dripline and should be excluded, but the Town did not agree and included it in the staking.
    - The boundary where the woodland transitions into thicket (north end) could be subject to further additional studies if necessary (where property access allows).
    - These have been identified as future study areas.

Staked Top of Bank

- A small section of the watercourse in the southwestern corner of the property contains a confined valley system with distinct valley walls. TRCA did not stake the TOB in this location as the TOB was determined to be located within the woodlot limit. TRCA confirmed that the LiDAR data can be used to determine the TOB as needed for the slope stability assessment.
- The remaining part of the system in the southwestern corner was confirmed by TRCA to be unconfined, hence no TOB staking was required.

Wetlands

- One MAMM1-12 community was staked that crosses between Property 2 and Property 3. No areas were identified for further discussion.

Property 4

Staked Treed Limits

- The farm / residential area in the northwest part of the property contained coniferous plantations along each side of the watercourse. Portions of this woodland extended out as linear,

hedgerow-like features. While some of those features were excluded from dripline staking, others were included with recognition that further studies may be require to determine if it meets the woodland criteria (e.g. review the length vs width). These have been identified as future study areas.

- A small woodland in this farm / residential area was present along Old School Road; preliminary ELC mapping did not recognize this as a woodland due to its small size and association with the residential land use. The Town agreed, but commented on its value from a restoration perspective, being within the valley feature.

Staked Top of Bank

- TRCA confirmed that a small section of the system near the northern extent of the property was unconfined, hence a TOB was not staked.
- The TOB was staked for the eastern side of the system at the northern extent of the property. TRCA are open for further discussion about the TOB in this location should additional boreholes, aerial images, or other resources show that filling occurred as part of the adjacent residential development.
- The staked TOB extends out westward within the wooded area near the southern extent of the property. Some visual evidence of potential filling was observed in this area. TRCA is open to further discussion on the staked TOB in this location, if boreholes, aerial images, or similar information show evidence of historic filling.
- Physical property limits were unclear on site during the field staking. A section of the confined valley system at the southern extent of the property was not staked, so LiDAR data and GEI's discretion will be used to extend the TOB farther south to the property line.
- A watercourse meanders through the east side of the property, and transitions from a confined system (with a staked TOB) to an unconfined system (no TOB staking required) as confirmed with TRCA. A section of the confined valley system in the northeastern corner of the property could not be staked due to thick poison ivy covering the ground. The LiDAR data will be used to establish the remaining TOB north of the staked TOB.

Wetlands

- Riparian wetland features (MAM2-2) were staked within the valleyland feature on this property for areas that did not otherwise have treed limits or staked top of bank to define the greatest constraint of the valley.
- The western extent of the MAM2-2 within the Greenbelt Plan Area between property 4 and 7 was staked as well to identify the constraint limits within the valleyland feature.
- No areas were identified for further discussion.

Property 5

Staked Treed Limits

- No areas were identified for further discussion; dripline staking locations were agreed upon by GEI and the Town.

Staked Top of Bank

- The TOB was staked along one section of the confined valley where it is potentially the greater constraint relative to the staked dripline. LiDAR will be used to determine the TOB within the staked wooded areas, as needed.

Wetlands

- Three wetland features were staked on this property; this first is a MAMM1-2 along Bramalea Road to the west. The second is a MAM2-2 that straddles the southern property boundary; this wetland is mostly located within the Greenbelt Plan Boundary. The final wetland was identified along the northern property boundary, where only the participating portions of the wetland could be staked. No areas were identified for further discussion.

Property 6

Staked Tree Limits

- The dripline staking was restricted to the large woodland. No areas were identified for further discussion; dripline staking locations were agreed upon by GEI and the Town.

Staked Top of Bank

- No TOB staking was required for this property.

Wetlands

- One wetland feature (MAM2-2) was staked towards the northeastern portion of the property near the property boundary. No areas were identified for further discussion

Property 7

Staked Treed Limits

- The dripline staking was generally straightforward with minimal disagreement. A single mid-age tree was disputed along Torbram Road, the species of which was not consistent with species within the coniferous plantation and also occurred outside the general dripline of the plantation. GEI argued the tree should be excluded but the Town requested it be included. Of note, this tree may be located within the regional right-of-way which may be subject to disturbance through road widening activities proposed for Torbram Road.

Staked Top of Bank

- A watercourse meanders through the property, and transitions from a confined system (with a staked TOB) to an unconfined system (no TOB staking required) as confirmed with TRCA. Most of the system is unconfined on the property. A section of the confined valley system in the

northwestern corner of the property could not be staked due to thick poison ivy covering the ground. The LiDAR data will be used to establish the remaining TOB north of the staked TOB.

Wetlands

- All wetland features are located within the Greenbelt Plan Area – as such, only the outer limits were staked.
- This includes the MAM2-2 feature that follows the watercourse between property 4 and 7 – the eastern limits of this feature were staked within property 7.
- Three addition wetland limits were staked along the southern portion of the property, this includes an MAM2-2, SWD4-1, and SAF1-3.
- No areas were identified for further discussion.

Property 8

Staked Treed Limits

- The wooded area in the northeast corner contained Buckthorn thicket dominated portions, as well as treed woodland. Portions of the Buckthorn thickets were excluded from dripline staking, while other sections were included. Although GEI generally agrees with the staking, there was recognition that a stem density survey could potentially demonstrate absence of woodland. This was the case where the wooded area abuts Property 7 lands to the north (but occurs primarily on property 9 to the south). These have been identified as future study areas (**Figure 1, Appendix A**).

Staked Top of Bank

- The TOB for the confined valley system was staked in the northeastern corner of the property, within the staked wooded area. Two erosion gullies were observed and staked, appearing to be the result of outletting tile drains. TRCA is open to further discussion on the two gully features being staked as the TOB which extend into the tableland. However, it is noted that the provincial document *Technical Guide – River and Stream Systems: Erosion Hazard Limit* (MNR, 2002) discusses that erosion gullies formed from natural overland drainage or from human-made drainage such as farm field tiles are considered part of the confined valley system and process. As the gully widens over time, the slope crest recedes, and tableland is lost. Depending on the final setbacks required from the staked dripline, the LTSTOS may not be the greatest constraint in this area.

Wetlands

- While most wetland communities within this property will be protected as part of the Greenbelt Natural Heritage System, one MAM2-2 feature was staked along its western limits where there were no treed limits staked during previous staking dates.
- The MAM2-2 and MAS2-1 communities associated with a headwater drainage feature running north-south were staked.
- No areas were identified for further discussion

Property 11

Staked Tree Limits

- The lot containing the old farm foundation (shown as Disturbed in ELC mapping) was in the process of being removed; no trees were present.
- Portions of the wooded area within the valley were excluded from dripline staking due to a prevalence of Buckthorn, while other sections were included at the Towns request due to associations of Hawthorn and other sparsely scattered trees; those areas were staked with the understanding that it could be contested with additional studies (e.g., stem density surveys). These have been identified as future study areas (**Figure 1, Appendix A**).
- The woodland along the west edge of the property was generally agreed to occur along the property edge with little encroachment into DG-4 lands.

Staked Top of Bank

- The TOB was staked for the south side of the confined valley system in the northeastern corner of the property.
- An erosion gully was observed in one location and was staked as part of the TOB. The erosion gully was likely from a tile drain outlet. TRCA is open for further discussion about the gully being staked as the TOB, which extends back into the tableland. As previously mentioned, the provincial document *Technical Guide – River and Stream Systems: Erosion Hazard Limit* (MNR, 2002) discusses that erosion gullies formed from natural overland drainage or from human-made drainage such as farm field tiles are considered part of the confined valley system and process. As the gully widens over time, the slope crest recedes, and tableland is lost. Depending on the final setbacks required from the staked dripline in this location, the LTSTOS may not be the greatest constraint in this area.
- In the northeastern-most corner of the property on the north side of the confined valley, the TOB was not staked due to access restrictions including dense vegetation and fences. TRCA confirmed that LiDAR data will be used to determine the TOB in this location, and should tie into the TOB as staked by TRCA on August 28, 2023, on the adjacent property to the north.

Wetlands

- Two MAM2-2 communities were staked associated the drainage feature in the western portion of property 11.
- No areas were identified for further discussion.

Incidental Observations

The following wildlife observations were made incidentally during the staking process:

<u>May 30th, 31st, June 3rd</u>

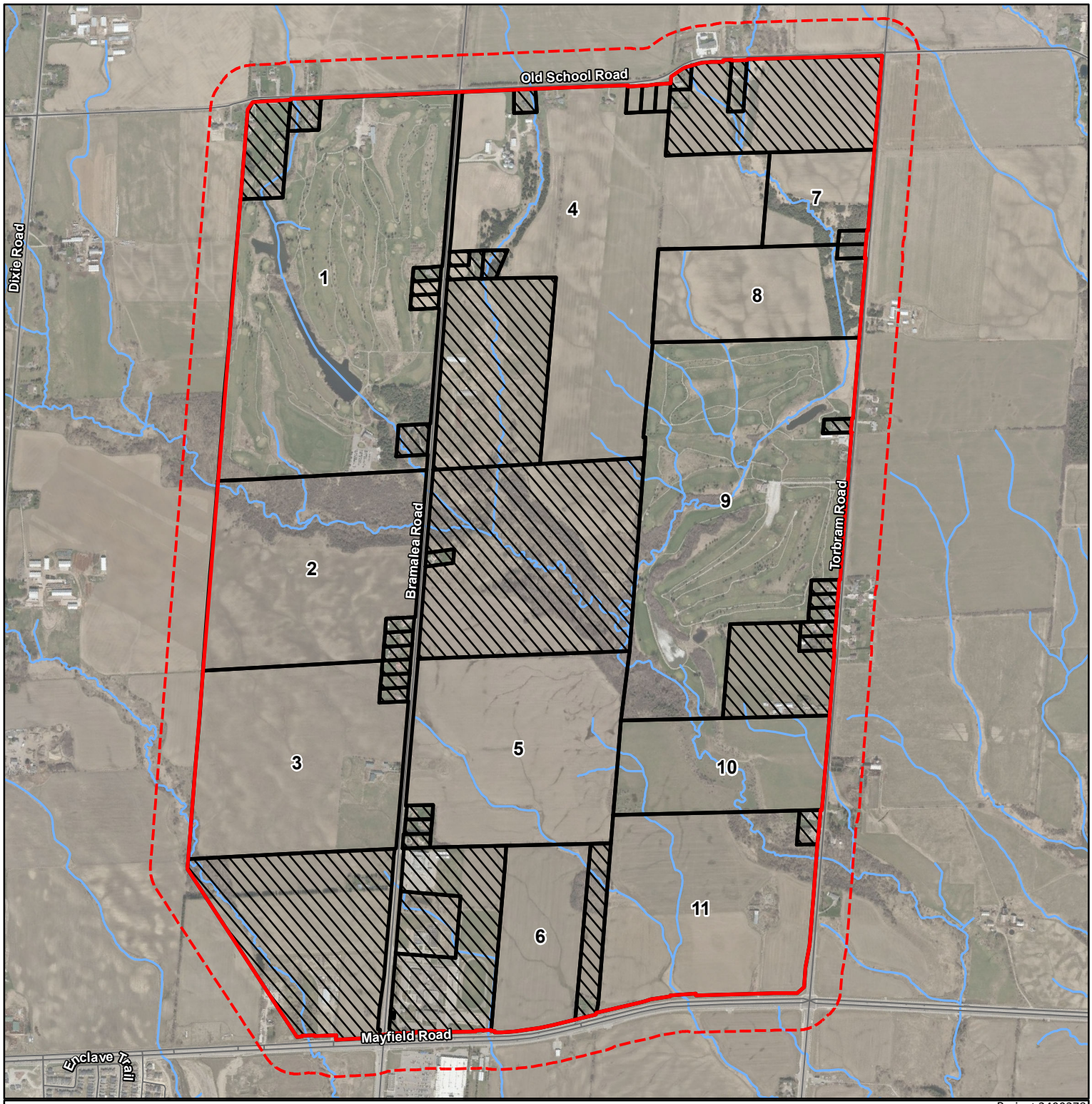
- Bobolink sightings near Property 11 (within West Humber Valleyland) and Property 3 (near fallow agricultural areas).
- Eastern Gartersnake near Property 11 (along outer limit of vegetated area).
- Snapping Turtle observations (nesting and basking) at Property 1.
- Eastern Meadowlark sightings at Property 1.
- Eastern-Wood Pewee sightings at Property 1 in multiple locations.
- American Toad toadlets at Property 6.

July 4th, 5th , and 8th

- Beaver sighting within Greenbelt Plan Area at Property 7.
- Snapping turtle sightings within Greenbelt Plan Area at Property 7.
- American Toad toadlets at Property 6.

Attachments

- Sketch to Illustrate Staked Top of Bank, Treed Limit and Wetland (R-PE)
- Figure 1-2: Participating Properties in the Local SWS Area
- Figure 3: Ecological Land Classification
- GEI Mark Up of Sketch to Illustrate Staked Top of Bank, Treed Limit and Wetland



Project 2400278

NOTES:
1. Coordinate System: NAD 1983 UTM Zone 17N.
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © King's Printer for Ontario, 2024, © Toronto and Region Conservation Authority, 2024.
3. Orthoimagery © First Base Solutions, 2024. Imagery taken in 2022.

Legend
- Study Area
- Study Area + 120m
- Watercourse (TRCA, 2022)
- Non-Participating Property
- Participating Property

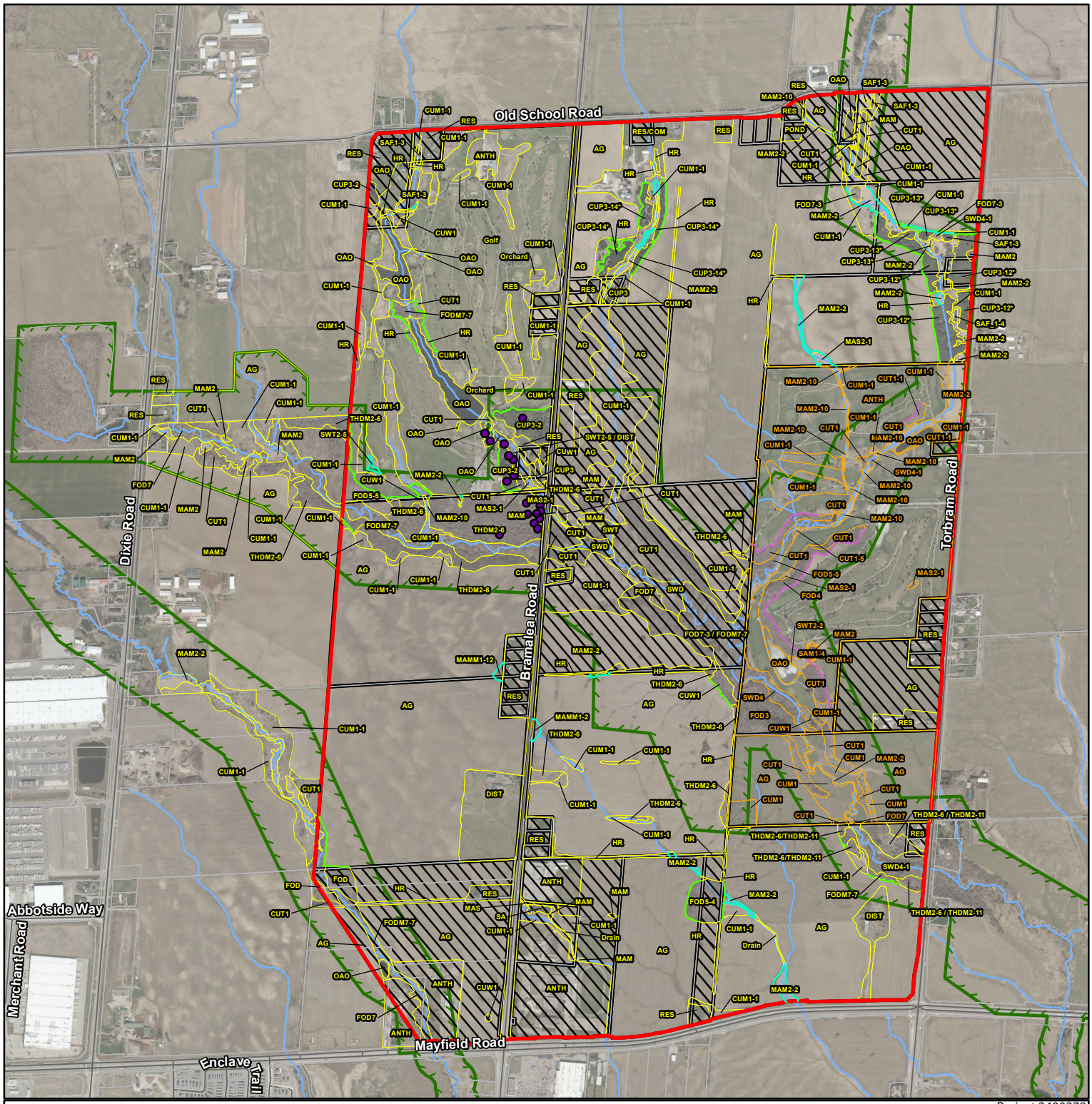
Map #	Property Identifier	Ownership Entity
1	Banty's Roost Golf Course	ANATOLIA INVESTMENTS CORP.
2	Broccolini North	12442 BRAMALEA LIMITED PARTNERSHIP represented by its general partner 12442 BRAMALEA LIMITED PARTNERSHIP
3	Broccolini South	BRAMALEA ROAD LIMITED PARTNERSHIP represented by its general partner BRAMALEA ROAD ROAD BP INC. and BRAMALEA ROAD CONINVEST LIMITED PARTNERSHIP represented by its general partner BRAMALEA ROAD COINVEST GP INC.
4	TACC	TACC DEVELOPMENTS (ARMSTRONG) LTD.
5	DG-1	DG (CALEDON 1) INC.
6	Torchia	2052743 ONTARIO INC.
7	DG-2	SENTINEL (TORBRAM) HOLDINGS INC.
8	DG-3	SENTINEL (TORBRAM) HOLDINGS INC.
9	Mayfield Golf Course	MAYFIELD GOLF COURSE INC.
10	Rice	TULLAMORE INDUSTRIAL GP LIMITED
11	DG-4	MAYFIELD LANDING DEVELOPMENTS INC.

Mayfield Tullamore Landowner Group
Phase 1 - Subwatershed Characterization and Integration Report

Figure 1-2
Participating Properties in Local Subwatershed Study Area

0 400 m
1:17,500

GEI Consultants



Project 2400278

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3. Orthoimagery © First Base Solutions, 2024. Imagery taken in 2022.

Legend

- Study Area
- Watercourse
- Greenbelt Plan Area
- Property Line (Town of Caledon)
- Non-Participating Property
- Participating Property
- Ecological Land Classification (GEI 2024)
- Ecological Land Classification (Beacon 2022,2023)
- Staked Wetland with TRCA (July 4,5,8, 2024)
- Staked Tree Limit with Town of Caledon (May 30, 31 and June 3, 2024)
- Staked Dripline with TRCA (Beacon 2023)
- Endangered Plant - Butternut (GEI 2024)

Mayfield Tullamore Landowner Group
Phase 1 - Subwatershed Characterization and Integration Report
Aquatic and Terrestrial Existing Conditions

Figure 3
Ecological Land Classification

0 390 m

1:18,000

GEI Consultants

SKETCH TO ILLUSTRATE STAKED TOP OF BANK AND TREED LIMITS MAYFIELD TULLAMORE LANDOWNER GROUP

SCALE 1:2000

0m 20m 40m 80m 120m 160 metres

R-PE SURVEYING LTD., O.L.S.

METRIC

CAUTION

THIS IS NOT A PLAN OF SURVEY AND SHALL NOT TO BE USED EXCEPT FOR THE PURPOSE INDICATED IN THE TITLE BLOCK.

LEGEND

- DENOTES STAKED TOP OF BANK (MAY 30, 31 AND JUNE 3, 2024)
- DENOTES STAKED TREED LIMIT (MAY 30, 31 AND JUNE 3, 2024)
- DENOTES STAKED TOP OF BANK (OCTOBER 18, 2022 AND AUGUST 23, 2023)
- DENOTES STAKED TREED LIMIT (OCTOBER 18, 2022)

NOTES

BOUNDARIES ARE NOT CERTIFIED BY THIS PLAN, AND ARE SUBJECT TO CLARIFICATION UPON THE INCORPORATION OF ADDITIONAL DOCUMENTARY AND FIELD SURVEY EVIDENCE.

THE SURVEY WAS COMPLETED ON THE 5th DAY OF JUNE 2024.

SKETCH IS AN ORIGINAL COPY IF EMBOSSED BY THE SURVEYOR.

OLD SCHOOL ROAD

BRAMALEA ROAD

TORBRAM ROAD

MAYFIELD ROAD

NON-PARTICIPATING PROPERTY

SUNDIAL

TACC DEVELOPMENTS

DG GROUP (SENTINEL HOLDINGS)

DG GROUP

ANATOLIA

BROCCOLINI

MAYFIELD GOLF COURSE INC.

TULLAMORE RESIDENTIAL LTD.

TORCHIA LANDS

Some visual evidence of potential filling in this area related to the golf tee blocks. Future study including additional location-specific boreholes could potentially refine the TOB in this location (if filling can be shown). TRCA is open to future discussions and study.

Unstaked areas through here confirmed to be unconfined by TRCA

TRCA is open to further discussion on staked TOB in this area, if location-specific boreholes and aerial images show filling occurred through here.

Property limits were unclear during staking - LiDAR and discretion will be used to extend TOB to the property line.

TRCA is open to further discussion on staked TOB in this area, if location-specific boreholes and aerial images show filling occurred through here.

TRCA confirmed this area is unconfined

Remaining TOB to northern property line not staked due to access restrictions. TRCA confirmed LiDAR to be used for TOB here.

Unstaked areas through here confirmed to be unconfined system by TRCA

LiDAR to be used for TOB in areas where slope is within the dripline. Areas not staked.

TRCA confirmed TOB staking not required. TRCA confirmed LiDAR and our discrestion to be used for the TOB along here, as needed.

TOB in this area could potentially be related to the cut made for Bramalea Road through the valley, and the TOB for the actually valley system could potentially be further south. TRCA is open for further discussion based on borehole findings and review of historic aerial images.

TRCA confirmed LiDAR to be used for the TOB along here.

TRCA confirmed LiDAR to be used for the TOB along here.

TRCA confirmed LiDAR to be used for the TOB along here.

TRCA confirmed LiDAR to be used for the TOB along here.

TRCA staked the TOB along the erosion gullies. The gullies appear to have formed due to outletting tile drains. TRCA open to further discussion in these areas.

TRCA confirmed LiDAR to be used for the TOB along here, connecting the staked locations.

TOB within dripline and not staked by TRCA. Local area is confined and TOB will be established using LiDAR.

TRCA confirmed unconfined system in this area. No TOB staking required.

Remaining TOB not staked due to access restrictions. TRCA confirmed LiDAR to be used for TOB here.

TRCA staked the TOB along the erosion gully. The gully appears to have formed due to an outletting tile drain. TRCA open to further discussion in this area.

R-PE SURVEYING LTD.
ONTARIO LAND SURVEYORS
643 Chrislea Road, Suite 7
Woodbridge, Ontario L4L 8A3
Tel.(416)635-5000 Fax (416)635-5001
Tel.(905)264-0881 Fax (905)264-2099
Website: www.r-pe.ca
DRAWN: T.C.
JOB No. 24-149 CAD FILE No:24149tp01g-UTM-CSRS