3.3.2.1 Flora

A total of 187 plant species have been recorded within the project area. Four of these plants could only be identified to genus and are not included in the following calculations. Of the 183 plants identified to species, 107 (58%) plant species are native to Ontario and 76 (42%) plant species are considered introduced and non-native to Ontario. A list of vascular plants is presented in **Appendix B**. Definitions of the acronyms and species ranks used in **Appendix B** are described in **Appendix C**.

3.3.2.2 Species at Risk

One plant species listed under the Ontario *Endangered Species Act* was identified within the study area. Black ash (*Fraxinus nigra*) was identified within several of the wetland communities within the Morningside Park ESA and is presently listed as 'Endangered' under the ESA; however, the Minister of MECP placed a two-year temporary pause on the protection of black ash. As of January 2024, the temporary pause will be lifted, and black ash will receive protection under the ESA. The species protection will include all healthy black ash trees that measure 8 cm diameter at breast height and a 30 m habitat protection zone.

Regoinally and Locally Rare Plant Species

Fifteen plant species considered to be TRCA species of concern (L1 to L3) were identified within the study. Of the 15 TRCA species of concern identified, 11 plant species are considered rare in the City of Toronto. **Table 3** presents the list of rare species, the applicable TRCA species rank, Toronto rare species rank and which vegetation community each species was identified within. A description of species rank definitions is presented in **Appendix C**. The majority of rare plant species identified within the study area are located in the vegetation communities associated with the Morningside Park ESA.

TABLE 3.

SUMMARY OF RARE SPECIES IDENTIFIED WITHIN THE STUDY AREA

Scientific Name	Common Name	Local Rank	TRCA Rank	SWC1-2	SCW3	SWM5-1	SWM1-1	SWT3-2	MAM2-2	FOD	FOD3-1	FOD5-3	FOD5-7	FOM2-2	SWT3-2	FOM2	MAS2-1	FOD4	CUT1	CUP3-3	CUS1
Osmunda cinnamomea	cinnamon fern	R3	L2		х	х															
Gymnocarpium dryopteris	oak fern	R6	L3		х	х															
Abies balsamea	balsam fir	R1	L3		Х																
Larix laricina	tamarack	R3	L3		Х				Х												
Caulophyllum giganteum	blue cohosh	R	L4									Х		х							
Salix lucida	shining willow	R4	L3												Х						
Trientalis borealis ssp. borealis	star-flower	R6	L3													Х					
Hydrocotyle americana	American marsh- pennywort	R3	L3														х				
Fraxinus nigra	black ash	R2	L4	Х	Х	Х		Х									Х				
Symplocarpus foetidus	skunk-cabbage	R6	L4		х	х		х	х												
Carex lacustris	lake-bank sedge	R5	L4					х													
Picea glauca	white spruce		L3															Х	Х	Х	Х
Caulophyllum thalictroides	blue cohosh		L2				х							х							
Cornus rugosa	round-leaved dogwood		L3				Х			х	Х		х								
Polygonatum pubescens	hairy Solomon's seal		L3										х								

3.4 Wildlife and Wildlife Habitat

Wildlife and wildlife habitat is found throughout the study area. The land uses consist of predominantly urban/anthropogenic, with meadow, thicket, wetland, and forest (interior, edge, etc.,). This section describes the existing wildlife and wildlife habitat within the study area from both background sources and field investigations.

3.4.1 Field Investigations

Field investigations were conducted with the purpose of documenting wildlife and wildlife habitat and to characterize the nature, extent and significance of wildlife usage within the study area. Wildlife investigations were conducted along the proposed Eglington LRT alignment and were focused within the road right-of-way of the following streets: Eglinton Avenue East, Kingston Road, Morningside Avenue, Ellesmere Road, Military Trail, Neilson Road, and Sheppard Avenue East. Direct observations, calls and tracks were used to record wildlife present within the study area. Three separate anuran (frog) surveys (April 10, May 23, and June 21, 2023) and two separate breeding bird surveys (June 28, and July 5, 2023) were conducted.

Breeding bird surveys were completed in the early morning between the hours of sunrise and five hours after sunrise, following the Ontario Breeding Bird Atlas (OBBA) Protocol (Cadman et al. 2007). Point counts were placed strategically at twelve locations throughout the study area (**Figure 3**), in which all bird species observed by sight or sound within the five-minute survey were recorded. Incidental observations of any wildlife species encountered while in the study area were recorded, including birds heard outside of the five-minute point count. Territorial songs, direct observations of breeding bird behaviour, along with presence of bird nests and fledged young were used to record breeding bird evidence (BBE) within the study area. Evidence of bird breeding success was categorized according to the OBBA survey methodology (Cadman et al. 2007). There are numerous categories used by the OBBA to categorize evidence of breeding. The following criteria were applicable based on field observations:

Observed:	Species observed in its breeding season, but not in suitable breeding habitat (X).
Possible Breeding:	Species observed in its breeding season in suitable nesting habitat (H). Singing male present in its breeding season in suitable nesting habitat (S).
Probable Breeding:	Permanent territory presumed through registration of territorial song heard on at least two days, one week or more apart, at the same place (T). Pair observed in their breeding season in suitable nesting habitat (P).

Confirmed Breeding: Fledged young or downy young, including young incapable of flight (FY).

Adult carrying food for young (CF).

Nest building, including the carrying of nesting material, by all s species except wrens and woodpeckers (NB).

Adult Entering, occupying, or leaving a nest site (visible or not) or whose behaviour suggests the presence of an occupied nest (AE).

Anuran survey methodologies outlined in the Marsh Monitoring Program (2000) were applied to confirm the presence of anuran species, document potential breeding habitat/areas, and confirm the nature, extent and significance of amphibian usage. Six stations were strategically placed within the study area where amphibian breeding habitat was suspected (based on aerial photo interpretation and field review). Each survey was conducted during appropriate weather conditions, beginning one half hour after sunset and concluding just prior to midnight. Surveys were completed during periods of peak anuran breeding activity and vocalization. Anuran surveys were conducted on three separate occasions during the spring and summer of 2023 (see **Table 4**). As outlined within the Marsh Monitoring Program (2000) protocol, the number of calling individuals was estimated, when possible. Call level index codes were assigned to all calling frog and toad species at each survey location as follows:

- **Code 1**: individual calls do not overlap and calling individuals can be discretely counted;
- **Code 2**: calls of individuals sometimes overlap, but numbers of individuals can still be estimated; and,
- **Code 3**: overlap among calls seems continuous (full chorus), and a count estimate is impossible.

COMMANY			
Date of	Task	Weather	Personnel Involved
inventory			
April 10, 2023	Anuran survey	Clear, 13°C, wind 15 km/h SW	Jordan Pietroniro (LGL) Justin Brodeur (LGL)
May 23, 2023	Anuran survey	Clear, 14°C, wind 5 km/h S	Jordan Pietroniro (LGL) Justin Brodeur (LGL)
June 21, 2023	Anuran survey	Clear, 21°C, wind 7 km/h NE	Jordan Pietroniro (LGL) Justin Brodeur (LGL)
June 28, 2023	Breeding bird survey	Clear, 14°C, wind 22 km/h N	Jordan Pietroniro (LGL)
July 5, 2023	Breeding bird survey	Clear, 23°C, wind 0 km/h	Jordan Pietroniro (LGL) Judson Venier (LGL)

Information concerning wildlife species at risk previously recorded within the study area limits was obtained from the Natural Heritage Information Centre (NHIC).

3.4.2 Wildlife Habitat

Wildlife habitat within the study area was relatively diverse but consisted largely of anthropogenic influenced areas including manicured lands, hedgerows, and cultural communities. Aquatic features included three watercourses: Highland Creek, Tributary of Highland Creek, and Malvern Branch of Highland Creek), along with the wetland communities associated with the Highland Creek/Morningside Park Wetland Complex Provincially Significant Wetland (PSW). These valleylands, in addition to the PSW, comprise the highest quality natural heritage features in the study area, provide important movement corridors for wildlife, and support a moderate diversity of wildlife species. These naturalized linkages provide increased opportunity for wildlife utilization of habitats within and adjacent to the study area. Forested communities associated with the Highland Creek/Morningside Park Wetland Complex features consist of a mix of coniferous and deciduous vegetation with wetted areas (swamp/marsh) interspersed which provides habitat for a wide range of species, specifically, those that utilize forest (i.e., interior and edge) habitats and likely supports herpetofauna species life cycles. The transitions forested areas and anthropogenic/meadow communities may provide habitat for species that utilize edges (edge habitats). The forested communities within the study area provide higher quality habitat and are expected to provide habitat for a relatively diverse assemblage of wildlife. Trees and shrubs within meadow communities and hedgerows are expected to provide habitat for a more modest assemblage of wildlife species, including field birds. Outside of these larger, contiguous habitats, the landscape is highly urbanized and supports limited natural heritage features (largely composed of manicured lands and cultural meadow communities), resulting in the presence of a low to moderate diversity of wildlife species generally considered urban or tolerant of anthropogenic features and disturbance.

The Highland Creek feature is expected to function as a regionally significant wildlife movement corridor because of the linear natural areas associated with the feature in an otherwise highly disturbed landscape. Additionally, this PSW is associated with the City of Toronto's Highland Forest/Morningside Park Forest and Highland Creek West ESA located adjacent to Morningside Road, south of Ellesmere Road. The Highland Creek Swamp Candidate Life Science ANSI is also located within the study area, associated with the PSW and ESA (see **Figure 3**).

In addition to natural habitats, there are several man-made structures (i.e., bridges) within the study area that were also investigated as these structures serve as potential nesting habitat for species that utilize urban landscapes. The Highland Creek Bridge was investigated during 2023 field investigations. No historic or active nests were

evident; however, it is likely that species such as Barn Swallow (*Hirundo rustica*), Cliff Swallow (*Petrochelidon pyrrhonota*), and Eastern Pheobe (*Sayornis phoebe*) would utilize the bridge girders as nesting sites. Although no nests were observed, one Eastern Pheobe was observed flying between girders during the morning of July 5, 2023.

Due to the diversity of habitats and the connectivity of those habitats to one another and the regional landscape, it is likely that the entire study area is used by a wide variety of wildlife for all or parts of their life cycles. Based on the types of habitats present, species which occupy meadow, wetlands, forests (edge habitat), and open country/anthropogenic communities are expected to be found within the study area. Generally, wildlife species inhabiting these lands within the study area would be considered urban or tolerant of anthropogenic features and disturbance.

3.4.3 Fauna

Based on field observations, 41 species of wildlife (35 birds and six mammals) could be verified in the study area and the majority of these recordings came from identification (through calls and sightings) of bird species with more modest numbers of other fauna identified. A summary of wildlife species documented in the study area during field investigations is presented in **Table 5** below.

Station	Scientific	Common	Speci	es Status ι Legislation	under	Call	Habitat
Station	Name	Name	Canada SARA	Ontario ESA	Legal Status	Level	Παμιαι
1*	-	-	-	-	-	-	Riparian habitat associated with Malvern Branch of Highland Creek
2*	-	-	-	-	-	-	Riparian habitat associated with Tributary of Morningside Creek
3*	-	-	-	-	-	-	Highland Creek/Morningside Park PSW (west side at entrance to Morningside Park)
4*	-	-	-	-	-	-	Highland Creek/Morningside Park PSW (west side south of Ellesmere Road)
5*	-	-	-	-	-	-	Highland Creek/Morningside Park PSW (east

 TABLE 5.

 Amphibian Species Documented within the Study Area and Adjacent Lands by LGL

	IDIAN OF LOIL	S DOCUMENT				DJACEN	
Station	Scientific	Common	Speci	es Status ι Legislation	under	Call	Usbitat
Station	Name	Name	Canada SARA	Ontario ESA	Legal Status	Level	Παριται
							side south of
							Ellesmere Road)
							Highland
							Creek/Morningside
6*	-	-	-	-	-	-	Park PSW (east
							side adjacent to
							Highland Creek)

 TABLE 5.

 Amphibian Species Documented within the Study Area and Adjacent Lands by LGL

* No anuran species/individuals identified at station.

Call Level Codes – Abundance Count (according to Bird Studies Canada):

Call Level One (1) - Individual males can be counted accurately.

Call Level Two (2) - Frogs can be generally counted but calls overlap thus no exact number can be obtained. Call Level Three (3) - Calls continuous and overlapping, no reasonable estimate of numbers.

For definitions of species ranks, refer to Appendix E

Herpetofauna

No anuran breeding evidence was documented for any species during the 2023 surveys. Suitable habitat to support herpetofauna life cycles is not present throughout the majority of the study area as it consists of highly urban/anthropogenic lands, with manicured and cultural meadow communities devoid of standing water. However, suitable habitat is localized to the few natural areas throughout the study area which include the riparian areas associated with Highland Creek, the Malvern Branch of Highland Creek, and the Tributary of Highland Creek, as well as within the Highland Creek/Morningside Park Provincially Significant Wetland. It is noted that a high level of traffic noise interfered with the ability to hear anuran vocalizations in some locations.

Birds

Thirty-five species of birds were identified during field investigations within the study area. Species identified represent an assemblage found across a variety of habitat types including, anthropogenic, open-country, forest (e.g., interior, edge, etc.), thicket, and wetland/aquatic. Bird species identified were relatively evenly distributed within the study area. Two of the bird species are protected under the *Fish and Wildlife Conservation Act* (FWCA) as protected species, 26 under the *Migratory Birds Convention Act* (MBCA), and seven species have no legislative protection (**Table 6**).

Confirmed breeding of bird species was observed for four species, American Robin (*Turdus migratorius*), European Starling (*Agelaius phoeniceus*), Northern Cardinal (*Cardinalis cardinalis*), and Common Grackle (*Quiscalus quiscula*). An American Robin was observed gathering nesting materials near the small woodlot adjacent to BBS Station 11 on the morning of June 28, 2023, and again on July 5, 2023. Several

European Starlings were observed entering nests in hydro-poles and light-posts within the street boulevard at BBS Stations 2, 5, 8, 9, 10, and 12 during both field investigations. Additionally, other BBE indicating confirmed breeding for this species was observed as adults were observed carrying food for young. A Northern Cardinal fledged young was observed flying overhead at BBS Station 6 on the morning of June 28, 2023. Three Common Grackle fledged young were observed utilizing the open habitat adjacent to BBS Station 8 on June 28, 2023. Probable breeding evidence (presumed territory) was observed for two of the confirmed breeders (European Starling and American Robin), plus an additional seven species, Mourning Dove (Zenaida macroura), Rock Pigeon (Columba livia), Gray Catbird (Dumetella carolinensis), American Goldfinch (Spinus tristis), Yellow Warbler (Setophaga petechia), Song Sparrow (Melospiza melodia), and Red-winged Black Bird (Agelaius phoeniceus). American Goldfinch, Mourning Dove, and Baltimore Oriole (Icterus galbula) also presented probable breeding evidence as assumed mating pairs were observed throughout the study area. These confirmed or probable breeders represent urban/anthropogenic, open country, and thicket habitats. However, the majority of breeders are very common urban species, thus, are tolerant of disturbance and anthropogenic environments. The remaining birds observed have been categorized as possible breeders, based on the BBE recorded, but it is likely that several of these species do use the study area for breeding as their preferred nesting habitats were present. Like the confirmed and probable breeders, these birds utilize a wide variety of habitats.

Mammals

Six mammal species were identified during field investigations within the study area. Grey Squirrel (*Sciurus carolinensis*) and Eastern Cottontail (*Sylvilagus floridanus*) are common species in residential and natural areas which were observed throughout the study area. Red Squirrel (*Tamiasciurus hudsonicus*) and Eastern Chipmunk (*Tamias striatus*) were observed within the more naturalized habitat associated with Morningside Park, while one road-killed Northern Racoon (*Procyon lotor*) was observed adjacent to Morningside Park along Morningside Avenue. Additionally, three juvenile Northern Racoons and four Eastern Cottontail were observed at Morningside Park as incidental observations on the evening of April 10, 2023. A Striped Skunk (*Mephitis mephitis*) was smelt near the woodlot associated with BBS Station 11 on July 5, 2023. Based on types of habitats present, several additional mammal species that prefer open country, forest, aquatic and urban habitat types may be expected to occupy areas within the lands examined.

3.4.4 Species at Risk

Of the 35 bird species recorded through LGL's field investigations, 26 are afforded protection under the *Migratory Birds Convention Act* (MBCA) (see **Table 6**). Two bird species, Blue Jay (*Cyanocitta cristata*) and Red-tailed Hawk (*Buteo jamaicensis*) are protected under the *Fish and Wildlife Conservation Act* (FWCA). All six mammal species are also afforded protection under the FWCA (see **Table 6**).

Two wildlife species recorded within the study area through LGL's field investigations are regulated under the Ontario *Endangered Species Act, 2007* (ESA) or the federal *Species at Risk Act* (SARA), including Chimney Swift (*Chaetura pelagica*) and Barn Swallow (*Hirundo rustica*). A supplemental screening of the study area on the NHIC database (MNRF 2023) was undertaken to determine if species at risk have been previously recorded in the general study area. One species, Barn Swallow, was identified through the NHIC database, plus an additional 13 species are listed as present or have the potential to be present within the study area. These include: Bank Swallow (*Riparia riparia*), Blanding's Turtle (*Emydoidea blandingii*), Bobolink (*Dolichonyx oryzivorus*), Eastern Meadowlark (*Sturnella magna*), Eastern Milksnake (*Lampropeltis triangulum*), Eastern Wood-pewee (*Contopus virens*), Midland Painted Turtle (*Chrysemys picta marginata*), Peregrine Falcon (*Falco peregrinus*), Queensnake (*Regina septemvittata*), Red-headed Woodpecker (*Melanerpes erythrocephalus*), Rusty-patched Bumble Bee (*Bombus affinis*), Wood Thrush (*Hylocichla mustelina*), and Yellow-banded Bumble Bee (*Bombus terricola*).

\ A /:1d1:6a	Colontific Nome	Common Nome	Spec	ies Status Legislatio	s under on	Observations and
wiidlife	Scientific Name		ESA	SARA	Legal Status	BBE
	Anas platyrhynchos	Mallard	-	-	MBCA	Н
	Ardea herodias	Great Blue Heron	-	-	MBCA	Х
	Buteo jamaicensis	Red-tailed Hawk	-	-	FWCA(P)	Х
	Columba livia	Rock Pigeon	-	-	-	Н, Т
	Zenaida macroura	Mourning Dove	-	-	MBCA	P, H, T
	Chaetura pelagica	Chimney Swift	THR	THR	MBCA	S
	Picoides pubescens	Downy Woodpecker	-	-	MBCA	Н
	Dryocopus pileatus	Pileated Woodpecker	-	-	MBCA	S
	Sayornis phoebe	Eastern Pheobe	-	-	MBCA	S
Birds	Vireo olivaceus	Red-eyed Vireo	-	-	MBCA	S
	Myiarchus crinitus	Great-crested Flycatcher	-	-	MBCA	S
Dirdo	Vireo gilvus	Warbling Vireo	-	-	MBCA	S
Biras	Cyanocitta cristata	Blue Jay	-	-	FWCA(P)	Н
	Corvus brachyrhynchos	American Crow	-	-	-	S
	Corvus corax	House Finch	-	-	MBCA	S
	Tachycineta bicolor	Tree Swallow	-	-	MBCA	Н
	Hirundo rustica	Barn Swallow	SC	SC	MBCA	H, X
	Poecile atricapillus	Black-capped Chickadee	-	-	MBCA	S
	Troglodytes aedon	House Wren	-	-	MBCA	S
	Turdus migratorius	American Robin	-	-	MBCA	S, H, NB, T
	Dumetella carolinensis	Gray Catbird	-	-	MBCA	S, H, T
	Sturnus vulgaris	European Starling	-	-	-	CF, FY, AE, T
	Bombycilla cedrorum	Cedar Waxwing	-	-	MBCA	S
	Spinus tristis	American Goldfinch	-	-	MBCA	S, P, T

 TABLE 6.

 SUMMARY OF WILDLIFE SPECIES IDENTIFIED WITHIN THE STUDY AREA BY LGL (2023)

	Seientifie Nome	Common Nome	Spec	ies Status Legislatio	under on	Observations and
vviidiite	Scientific Name		ESA	SARA	Legal Status	BBE
	Passer domesticus	House Sparrow	-	-	-	S
	Geothlypis trichas	Common Yellowthroat	-	-	MBCA	S
	Setophaga petechia	Yellow Warbler	-	-	MBCA	S, T
	Spizella passerina	Chipping Sparrow	-	-	MBCA	S
	Melospiza melodia	Song Sparrow	-	-	MBCA	S, T
	Cardinalis cardinalis	Northern Cardinal	-	-	MBCA	S, H, FY
	Passerina cyanea	Indigo Bunting	-	-	MBCA	S
	Agelaius phoeniceus	Red-winged Blackbird	-	-	-	S, H, A, T
	Quiscalus quiscula	Common Grackle	-	-	-	H, FY
	Molothrus ater	Brown-headed Cowbird	-	-	-	Н
	lcterus galbula	Baltimore Oriole	-	-	MBCA	S, P
	Sylvilagus floridanus	Eastern Cottontail	-	-	FWCA(G)	direct
	Tamias striatus	Eastern Chipmunk	-	-	FWCA(P)	direct
Mammale	Sciurus carolinensis	Grey Squirrel	-	-	FWCA(G)	direct
iviaiiiiiai5	Tamiasciurus hudsonicus	Red Squirrel	-	-	FWCA(F)	direct
	Procyon lotor	Northern Raccoon	-	-	FWCA(F)	direct, roadkilled
	Mephitis mephitis	Striped Skunk	-	-	FWCA(F)	direct

 TABLE 6.

 SUMMARY OF WILDLIFE SPECIES IDENTIFIED WITHIN THE STUDY AREA BY LGL (2023)

Each of these wildlife species at risk, their respective legal status, biological requirements, and habitat information are identified below.

Bank Swallow

Bank Swallow is listed as 'Threatened' under the ESA. Bank Swallow are found utilizing natural and human made settings where vertical faces in silt and sand deposits are present. Banks are typically found along rivers and lakes, sand and gravel pits. They will also use previous burrow sites in old banks that remain stable. Suitable habitat to support this species is not present within the immediate study area. No Bank Swallow were identified during 2023 field investigations.

Barn Swallow

Barn Swallow is regulated as 'Special Concern' under the ESA, SARA and COSEWIC. Barn Swallow generally builds mud nests on bridges, walls, ledges and barns (Cadman et al. 2007). Barn Swallow typically forages in open areas such as agricultural lands, meadows or water. One Barn Swallow was observed during the 2023 field investigations exhibiting foraging behaviour. No active or historical nests were observed for this species; however, potential nesting structures are present within the study area.

Blanding's Turtle

Blanding's Turtle is provincially listed as 'Threatened' under the Ontario ESA and is afforded habitat protection and is also listed as 'Threatened' under the federal SARA and COSEWIC. Blanding's Turtle is a semi-aquatic species that lives in shallow water, usually in a large wetlands and shallow lakes with abundant emergent and submerged vegetation. Terrestrial habitat such as shorelines, beaches, open fields, meadows and forest clearings are used for travelling to nesting or mating sites. Minimal potential habitat exists for Blanding's Turtle within the vicinity of the study area as aquatic communities are not generally present, except for wetland communities within the Highland Creek/Morningside Park Wetland Complex. No individuals were observed by LGL during 2023 field investigations.

Bobolink

Bobolink is regulated as 'Threatened' under the Ontario ESA and is afforded general habitat protection, and is also listed as 'Threatened' on Schedule 1 of the Canada SARA. Bobolinks are typically described as grassland habitat specialists and inhabit areas with an abundance of grass species that are typical of old fields, hayfields and pasture. Open-country, meadow and agricultural habitat types have the potential to provide habitat suitable to support this species. Sparse habitat for Bobolink exists within

the study area and is only limited to a few small meadow communities and agricultural fields. No Bobolink were observed during 2023 field investigations.

Chimney Swift

Chimney Swift is regulated as 'Threatened' under the Ontario ESA and is afforded habitat protection and is also listed as 'Threatened' on Schedule 1 of the Canada SARA. Chimney Swift is most often found in urban settlements where they nest (or roost) in chimneys and man-made structures. They also nest in cave walls, hollow trees or tree cavities in old growth forests. Chimney Swift were observed flying overhead nearby residential and naturalized lands associated with BBS Station 4 during the morning of July 5, 2023.

Eastern Meadowlark

Eastern Meadowlark is regulated as 'Threatened' under the Ontario ESA and is afforded habitat protection and is also listed as 'Threatened' on Schedule 1 of the Canada SARA. Eastern Meadowlark, formerly a prairie species, have adapted to agricultural practices in Canada (hayfields, pastures, etc.) (Cadman et al. 2007). As farming practices have become more efficient and are cut earlier in the season, Eastern Meadowlark numbers have declined. Open-country, meadow and agricultural habitat types have the potential to provide habitat suitable to support this species. Sparse habitat for Eastern Meadowlark exists within the study area and is only limited to a few small meadow communities and agricultural fields. No Eastern Meadowlark were observed during 2023 field investigations.

Eastern Milksnake

Eastern Milksnake is listed as 'Special Concern' under Schedule 4 of the provincial ESA and as 'Special Concern' under Schedule 1 of the federal SARA. Eastern Milksnake inhabit a variety of terrestrial habitats including meadows, pastures, prairies, forests, and rocky outcrops/fields. They can also be found in urbanized areas such as parks and gardens. Eastern Milksnake was confirmed in both study areas through iNaturalist and Ontario Reptile and Amphibian Atlas background review. Potential habitat exists for Eastern Milksnake within vicinity of the study area as several cultural meadow communities are present within the vicinity of the study area, however, no individuals were observed by LGL during 2023 field investigations.

Eastern Wood-pewee

Eastern Wood-pewee is listed as 'Special Concern' under the ESA, SARA and COSEWIC. The Eastern Wood-pewee is found in deciduous and mixed forests and in forest openings/clearings/edges. Suitable habitats to support Eastern Wood-pewee

were present throughout the study area, limited to valleylands, woodlands, and larger forest communities which provided ample mature tree/forest cover and transitions from forest to open-country habitat. No Eastern Wood-pewee were recorded during targeted breeding bird surveys conducted in 2023.

Midland Painted Turtle

Midland Painted Turtle is provincially listed as 'Special Concern' under the Ontario ESA and is listed as 'Special Concern' on Schedule 1 of the federal SARA. Habitat protection is not afforded under either legislation. It is also listed as 'Special Concern' under COSEWIC. Painted turtles inhabit waterbodies, such as ponds, marshes, lakes and slow-moving creeks that have a soft bottom and provide abundant basking sites and aquatic vegetation. These turtles are often found basking on shorelines or logs and rocks that protrude from the water. Minimal potential habitat exists for Midland Painted Turtle within the vicinity of the study area limited to watercourse crossings and pocketed wetlands associated with the larger Highland Creek/Morningside Park Wetland Complex. No Midland Painted Turtles were observed by LGL during 2023 field investigations.

Peregrine Falcon

Peregrine Falcon is regulated as 'Threatened' under the provincial ESA and is listed as 'Special Concern' under the federal SARA. Peregrine Falcon are found around cliffs for nesting, open areas for foraging, and nearby waterbodies, as they require open or partially open conditions to hunt for prey. They are also found in urbanized areas, utilizing tall buildings and bridges. Habitat for Peregrine Falcon exists within the vicinity of the study area given the urbanized landscape, large valleylands, and bridges; however, no Peregrine Falcon were identified during LGL's 2023 field investigations.

Queensnake

Queensnake is regulated as 'Endangered' under the ESA, SARA, and COSEWIC. Queensnake is a semi-aquatic species that rarely travels far from water. They are found near permanent bodies or water with abundant cover material, such a flat rock. They also require areas suitable for hibernation over the winter months such as small burrows, talus slopes, cracks in bedrock, or openings around tree roots. Potential habitat exists within the study area, albeit, limited to watercourses associated with Highland Creek and its tributaries. No Queensnake were observed during 2023 field investigations.

Red-headed Woodpecker

Red-headed Woodpecker is regulated as 'Endangered' under the provincial ESA, federal SARA and COSEWIC. Red-headed Woodpecker are found in open woodlands and woodland edges, often found in parks, golf courses and cemeteries. They frequent areas with lots of dead trees, used for nesting and perching. Suitable habitat to support Red-headed Woodpecker is present within the study area; however, no Red-headed Woodpecker were observed during 2023 field investigations.

Rusty-patched Bumble Bee

Rusty-patched Bumble Bee is regulated as 'Endangered' under the ESA, SARA, and COSEWIC. This species inhabits diverse habitats including farmland, sand dunes, marshes as well as urban and wooded areas. It typically nests underground in abandoned rodent burrows. Urban, wetted and wooded habitats suitable to support this species are present throughout the study area; however, no Rusty-patched Bumble Bees were observed during 2023 field investigations, although no insect surveys were performed.

Wood Thrush

Wood Thrush is provincially listed as 'Special Concern' under the Ontario ESA, but not afforded habitat protection, and regulated as 'Threatened' under Schedule 1 of the federal SARA and COSEWIC. The Wood Thrush is found in mature deciduous and mixed forests with large trees, shade and leaf litter for foraging. Suitable habitats to support Wood Thrush were present within the study area, given the mature tree/forest cover associated with valleylands, woodlands, and naturalized corridors. No Wood Thrush were heard vocalizing during targeted breeding bird surveys conducted in 2023.

Yellow-banded Bumble Bee

Yellow-banded Bumble Bee is listed as 'Special Concern' under the Ontario ESA, under Schedule 1 of the federal SARA and by COSEWIC. The Yellow-banded Bumble Bee is a habitat generalist and is found within a wide range of habitats including both urban and naturalized settings including open meadows, mixed woodlands, prairie grasslands, urban parklands, gardens and agricultural areas. No Yellow-banded Bumble Bee were observed during 2023 field investigations, although no insect surveys were performed.

Bats

There are currently four bat species listed as 'Endangered' under the Ontario ESA including Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis and Tri-colored Bat. The latter three species are regulated as 'Endangered' under Schedule 1 of

the federal SARA. The MECP administers the ESA in the province of Ontario. The ESA affords protection for all individuals of these species (subsection 9(1)) and their habitat (subsection 10(1)). Given that species-specific habitat regulations have not yet been developed for bat SAR, habitat is protected according to the general definition provided in the ESA. Specifically, according to section 2(1), the Act protects "an area, on which the species depends, directly or indirectly, to carry on its life processes, including processes such as reproduction, rearing, hibernation, migration or feeding". Mature trees and wooded areas which could contain suitable habitat for bat SAR were identified within the study area; however, no bat species at risk were identified throughout 2023 field investigations and no bat surveys were performed.

3.4.5 Significant Wildlife Habitat

Significant Wildlife Habitat (SWH) has been identified as a natural heritage area for the purposes of Section 2.1 of the PPS. The PPS 2020 defines wildlife habitat as: "Areas where plants, animals, and other organisms live, and find adequate amounts of food, water, shelter, and space needed to sustain their populations. Specific wildlife habitats of concern may include areas where species concentrate at a vulnerable point in their annual or life cycle; and areas which are important to migratory or non-migratory species."

Wildlife habitat is considered significant by the province where it is:

"Ecologically important in terms of features, functions, representation, or amount, and contributing to the quality and diversity of an identifiable geographic area or Natural Heritage System. Criteria for determining significance may be recommended by the Province, but municipal approaches that achieve the same objective may also be used."

SWH Criteria Schedules for Ecoregion 6E (MNRF 2015) were used to evaluate potential SWH. The following types of significant wildlife habitat were examined for the potential to occur on the study area:

- Seasonal concentration areas;
- Specialized habitat for wildlife; and,
- Animal movement corridors.

Data for ELC and wildlife as presented was compiled and assessed according to the criteria outlined in MNRF's Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (MNRF 2015). Seasonal Concentration Areas are limited to the potential for Bat Maternity Colonies, Bat Hibernacula, Amphibian Breeding Habitat (Woodland) and Amphibian Breeding Habitat (Wetlands) within the study area. Specialized habitat for wildlife is limited to the potential for Woodland-Area Sensitive Bird Breeding Habitat and

Special Concern and Rare Wildlife Species. Animal movement corridors are limited to Amphibian Movement Corridors. Each of these SWH Criteria

Based on the characteristics of woodland habitat types present, it is expected that wooded habitats within the study area would not meet the criteria for bat maternity colonies; however, detailed surveys have not been undertaken to confirm this status. Similarly, there is potential for bat hibernacula to exist within larger woodlands throughout the study area; however, detailed surveys have not been conducted to confirm bat hibernacula within the study area. As a result of data collected from 2023 anuran breeding surveys, aquatic habitats for both wetland and woodland do not meet the criteria for Significant Wildlife habitat given no amphibian species were observed.

Based on the botanical survey results, there are no rare vegetation communities associated with the study area, as the vegetation communities identified within the study area are considered widespread and common in Ontario and are secure globally.

Area-Sensitive Bird Breeding Habitat was not identified within the study area as the criteria to meet both Candidate SWH and Confirmed SWH was not met. No bird species which are considered area-sensitive were observed through breeding bird surveys conducted in 2023. Habitat for species of Special Concern and Rare Wildlife Species could be found across any portion of the study area. A review of habitats and results from targeted breeding bird surveys suggest that one species of conservation concern is present within the lands examined: Barn Swallow. This species was recorded during 2023 field investigations and also recorded as an element occurrence through NHIC's Provincially Tracked Species Database. Furthermore, five additional species listed as 'Special Concern' were recorded through NHIC's Provincially Tracked Species Database, which satisfied the criteria to be considered Candidate SWH. These species include Eastern Milksnake, Eastern Wood-pewee, Midland Painted Turtle, Wood Thrush, and Yellow-banded Bumble Bee. As such, detailed species surveys should be conducted within the preferred habitat and breeding season for each species to confirm the presence and/or absence for these species, thereby confirming if Significant Wildlife Habitat is present.

Animal movement corridors within the study area are limited to Amphibian Movement Corridors. Criteria for Amphibian Movement Corridors was not met given the absence of amphibian breeding behaviours during 2023 amphibian surveys throughout the study area.

3.5 Designated Natural Areas

Designated natural areas include areas that have been identified for protection by the MNRF, TRCA, and the City of Toronto. The limits of designated natural areas located within the study area are presented in **Figure 4**.





Data sources: Ministry of Natural Resources and Forestry, Fisheries and Oceans Canada. Contains information licenced under the Open Government Licence - Ontario.

3.5.1 Areas of Natural and Scientific Interest (ANSIs)

The Highland Creek Swamp is a candidate Life Science ANSI associated with the Highland Forest/Morningside Park Forest ESA. The Rouge River Valley Life Science ANSI is located along Morningside Creek and the Rouge River immediately north of the maintenance and storage facility.

3.5.2 Provincially Significant Wetlands (PSWs)

There is one provincially significant wetland found in the study area – the Highland Creek – Morningside Wetland Complex.

3.5.3 Environmentally Sensitive Policy Areas (ESPAs)

There are several ESAs found within the study area including: Morningside Creek Forest/Milnes Forest located along Morningside Creek immediately north of the maintenance and storage facility; and, Highland Forest/Morningside Park Forest/Highland Creek West, located at the Highland Creek Main Branch crossing of Morningside Avenue.

3.5.4 City of Toronto Official Plan

The City of Toronto Official Plan identifies components of the Natural Heritage System associated with the four watercourse crossings, as well as several isolated vegetation communities and the hydro corridor.

3.5.5 Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses (Ontario Regulation 166/06)

Valleylands and wetlands associated with Highland Creek, Morningside Creek and their tributaries are regulated areas under Ontario Regulation 166/06, Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses. A permit will be required from TRCA for development within these regulated areas.

4.0 **PROJECT DESCRIPTION**

The EELRT is a light rail system operating in the centre of the roadway separated from vehicle traffic by a dedicated guideway. Design priorities for the EELRT (future Line 7) are informed by the City Toronto Accessibility Design Guidelines and the Complete Streets Guidelines which enhances multi-modal transportation options and improved public realm spaces.

There are 27 proposed stops, 400 metres to 1 kilometre apart. Stop platforms will be 50 metres long targeting major intersections. The LRT will be powered by an overhead electrical system. Electrical substations will be located approximately every two kilometres along the line to transfer power from the grid to the LRT system.

Left turns for vehicular traffic will only be permitted at signalized intersections; protected left-turn phases and LRT signal priority will be provided at stoplights traffic lights. All other areas are restricted to right- turn in and right- turn out of traffic flow, including driveways.



Typical plan view of an EELRT stop platform at a signalized intersection.



Sample cross section of intersection with public realm improvements.

Design Zones

The typical design for the EELRT is broken into two 'zones'. Each zone features its own standard design that is generally applied to the zone's full alignment.



A map showing areas of the EELRT corridor that correspond to Design Zone A and Design Zone B.

Design Zone A is applied to the mixed-use context along Eglinton Avenue East, Kingston Road, and Neilson Road north of Berner Trail. Zone A features higher density areas with an emphasis on creating a vibrant, social public realm through use of sidewalks, attractive landscaping, and public spaces.



Cross section image of four lane layout for Zone A.



Cross section image of two lane layout for Zone A.

Design Zone B is applied to primarily employment or neighbourhood context along Morningside Avenue and Neilson Road south of Berner Trail. Zone B features many single-family homes, with commercial plazas and business parks putting the emphasis on reducing residential impacts.



Cross section image of four lane layout for Zone B.



Cross section image of two lane layout for Zone B.

Separate Service

The EELRT will be a separate service from existing transit infrastructure in the area, meaning passengers will transfer at Kennedy Station Line 2 and Line 5, and at the future Line 2 terminus at Sheppard-McCowan Station.

Bridges and Culverts

Morningside Avenue — Highland Creek Bridge (Structure ID: 357)

This bridge, built in 1964, is located on Morningside Avenue between Beath Street and Ellesmere Road and passes over the Highland Creek. The current configuration has one through lane and one bus and bike shared lane in each direction. Sidewalks are present on both sides with a setback from the RapidTO bus lane. The existing bridge was previously widened in 2017 to accommodate the new bike lanes and wider sidewalks on both sides of the bridge.

The EELRT will be using the existing Morningside Avenue – Highland Creek bridge. No widening or structural modifications have been proposed to the existing structure. After preliminary level structural loading analysis, it was determined that the bridge can support centre-running LRT configuration along with 3 m multi-use path. The bridge cross-section will also include a 0.5 m buffer with concrete barriers to ensure the safety of both pedestrians and cyclists.

Sheppard Avenue — Highland Creek Bridge near Washburn Way (Structure ID: 211)

This road bridge is located on Sheppard Avenue between Washburn Way and Gateforth Drive and passes over a branch of the East Highland Creek. It was built in 1974. The watercourse has been completely channelized with gabions both upstream and downstream of the crossing. The current configuration consists of 4 lanes and sidewalks on either side. To accommodate the LRT guideway, while maintaining 4 lanes and meeting the current City public realm standard, widening or replacement of this bridge is anticipated. Feasibility of widening and/or replacement will be analyzed during the next design phase.

Sheppard Avenue — Highland Creek Bridge near McCowan Road (Structure ID: 265)

This road bridge is located on Sheppard Avenue between McCowan Road and Shorting Road and passes over a branch of the East Highland Creek. It was built in 1969. The watercourse has been completely channelized with concrete both upstream and downstream of the crossing. The current configuration consists of 4 lanes, a painted median and sidewalks on either side. To accommodate the LRT guideway, while maintaining 4 lanes and meeting the current City public realm standard, widening or replacement of this bridge is anticipated. Feasibility of widening and/or replacement will be analyzed during the next design phase.

Sheppard Avenue – Tributary of Morningside Creek Culvert near Conlins Road

This culvert is located on Sheppard Avenue west of Conlins Road and conveys a tributary of Morningside Creek. The watercourse has been completely channelized both upstream and downstream of the crossing. The current configuration consists of 4 lanes, a continuous centre turn lane, and sidewalks on either side. The existing culvert is wide enough to accommodate the LRT guideway, while maintaining 4 lanes and meeting the current City public realm standard; therefore, no widening or replacement of this culvert is anticipated. This approach will be analyzed during the next design phase.

Downstream of the Sheppard Avenue crossing, approximately 230 m of the box culvert that conveys flows along the south limit of the MSF site is recommended to be removed and an open channel constructed. The watercourse along the east limit of the property is proposed to be retained within its current configuration and Regulatory Limit. As

such, a 100 m (+/-) segment of the box structure is proposed to be retained to connect the reconstructed watercourse located along the south side of the MSF with the existing watercourse located along east limit of the MSF. This design will be investigated in greater detail during the next design phase.

5.0 IMPACT ASSESSMENT AND MITIGATION

5.1 Soils

The soils located along the EELRT are susceptible to erosion and will be impacted during construction as a result of clearing, excavation and grading. Consequently, soil disturbance associated with drainage improvements, grading revisions, culvert extension, etc. may result in erosion of, and sedimentation to, sensitive receiving watercourses. For this reason, standard erosion and sediment control measures will be followed during construction in accordance with Ontario Provincial Standard Specification (OPSS) 805 – Construction Specification for Temporary Erosion and Sediment Control Measures (2010) to minimize construction-related impacts on surface water quality and fish habitat. Site-specific erosion and sedimentation control measures to be implemented prior to construction will be identified during a later design stage following best management practices recommended in the following documents:

- Erosion and Sediment Control Guideline for Urban Construction (Greater Golden Horseshoe Area Conservation Authorities 2006);
- Best Management Practices Manual for Fisheries (MTO 2017); and,
- Environmental Guide for Erosion and Sediment Control during Construction of Highway Projects (MTO 2007).

These guidance documents will be used to prepare a detailed Erosion and Sediment Control Plan that will implement a multi-barrier solution that includes:

- placing straw bale/rock flow checks at regular intervals in ditches down-gradient from areas of soil disturbance in rural sections;
- protecting inlets to catch basins and maintenance holes in urban sections;
- placing silt fence along stream margins in areas of soil disturbance;
- managing stormwater during construction to prevent contact with exposed soils;
- implementing erosion control products within exposed areas such as erosion control blankets, coir logs, tackifyers and mulch, etc.;
- implementing temporary stormwater treatment measures during construction including sediment bags, sediment basins/ponds, diversion swales, pumping/drawdown of sediment basins/ponds, etc.
- limiting the extent and duration that soils are exposed to the elements to the minimum area and time necessary to perform the work;

- applying seed and mulch, tackifier and/or erosion control blanket in areas of soil disturbance to provide adequate slope protection and long-term slope stabilization; and,
- monitoring and maintenance of erosion and sedimentation control measures during construction to ensure their effectiveness.

Temporary erosion and sediment controls shall be inspected on a regular basis in accordance with the following documents:

- Erosion and Sediment Control Inspection Guide (TRCA 2008);
- Silt Smart: Erosion and Sediment Control Effectiveness Monitoring and Rapid Response Protocol for Large Urban Development Sites (CVC, MNRF, MECP and DFO 2012); and,
- Construction Administration and Inspection Task Manual (MTO 2007).

As a mimumum, erosion and sediment control measures shall be inspected on a daily basis during installation, prior to forecasted major storm events, during snowmelt and following significant storm events. Inspections for routine maintenance of erosion and sediment controls shall occur once per week, unless maintenance/repairs are required upon inspection and after significant storm events.

These environmental protection measures will greatly reduce the potential for soil erosion and impairment of surface water quality and fish habitat.

5.2 Fish and Fish Habitat

5.2.1 Impact Assessment

This section focuses on the potential direct and indirect environmental effects associated with the EELRT project on fish and fish habitat. These effects can be mitigated through avoidance, design modifications, construction timing windows and best management practices to minimize disturbance to species and habitats. The mitigation measures outlined in this report will be refined in greater detail as the design is developed and assessed in the next phase of the project.

5.2.1.1 Aquatic Habitat and Communities

The EELRT will require modifications to existing structures, including widening, extension or replacements of existing bridges and culverts. These works have the potential to result in impacts to aquatic habitats and communities. Effects on the aquatic features crossed or present within in the proximity of this new infrastructure, could include:

- Temporary disruption or permanent loss of site-specific aquatic habitat;
- Temporary changes to water quality;
- Changes in water temperature;
- Creating new barriers to fish passage;
- Indirect effects, including channel erosion; and
- Impacts to fish and mussel species at risk.

Projects undertaken near water must avoid causing harmful alterations, disruption or destruction of fish habitat, unless exceptions are allowed (e.g. through a permit/authorization). The new *Fish and Fish Habitat Protection Provisions of the Fisheries Act* (2014) came into force on August 28, 2019. Under the new fish habitat protection provisions, there remains a proponent self-assessment process, for projects that qualify. Changes to the provisions include protecting all fish and fish habitats, restoring the acronym, HADD "harmful alteration, disruption or destruction of fish habitat," and restoring a prohibition against causing "the death of fish by means other than fishing." "Serious Harm to Fish", according to Fisheries and Oceans Canada, is considered to occur based on the following;

- the **death of fish**;
- a **permanent alteration** to fish habitat of a spatial scale, duration or intensity that limits or diminishes the ability of fish to use such habitats as spawning grounds, or as nursery, rearing, or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes; and
- the **destruction of fish habitat** of a spatial scale, duration, or intensity that fish can no longer rely upon such habitats for use as spawning grounds, or as nursery, rearing, or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes. (DFO 2015).

The self-assessment process shall be carried out durng a later design stage, once specific details related to each stream crossing have been determined. Based on the self-assessment, it will be determined if the project can meet the conditions of DFO's Code of Practice or should be referred to DFO for a Request for Review. The DFO review will determine if the project will cause the death of fish and/or a HADD. In the event that the project will cause the death of fish and/or a HADD a *Fisheries Act* Authorization will be obtained prior to in-water construction activities.

5.2.1.2 Summary of Works and Site-Specific Habitat Impacts at Individual Crossings The following provides a summary of the proposed works and high-level site-specific impacts at each watercourse crossing.

Main Branch Highland Creek

The existing bridge located at this watercourse crossing can accommodate the proposed EELRT; therefore, no in-water work will be required and no HADD is anticipated.

Markham Branch of Highland Creek

To accommodate the LRT guideway, while maintaining 4 lanes and meeting the current City public realm standard, widening or replacement of this bridge is anticipated. Feasibility of widening and/or replacement will be analyzed during the next design phase. The potential for a HADD will be determined at that time.

Malvern Branch of Highland Creek

To accommodate the LRT guideway, while maintaining 4 lanes and meeting the current City public realm standard, widening or replacement of this bridge is anticipated. Feasibility of widening and/or replacement will be analyzed during the next design phase. The potential for a HADD will be determined at that time.

Tributary of Morningside Creek

The existing culvert located at this watercourse crossing can accommodate the proposed EELRT; therefore, no in-water work will be required and no HADD is anticipated at this location.

The culvert located downstream of this crossing on the south side of the MSF site is recommended to be removed and an open channel constructed. Further discussions will be carried out with TRCA during later design phases to determine approval requirements. A Request for Review will be submitted to DFO to determine if a HADD will occur and what measures will be taken to compensate for the HADD, if warranted. No modifications to the watercourse located on the east side of the MSF are anticipated.

5.2.2 Design Considerations

New culverts/bridges will be designed to allow for fish movement, where applicable. The following design measures will be considered during a later design stage to ensure that fish and wildlife passage are maintained or enhanced. Many of these measures are taken from MTO's Highway Design Guide (2018).

• For culverts, ensuring the width of the culvert is 1.25 times the average bankfull width of the watercourse (DFO 2015; MTO 2008);

- For closed bottom designs, a low flow channel is created within stable substrate to promote fish passage as well as provide an overbank area for wildlife movement, where deemed applicable;
- No drops/perches will be present through the crossing;
- All in-water construction shall be performed in the dry using appropriate flow bypass/isolation systems;
- Culvert slope measures ≥ 0.5% (desirable slope) and 0.0 % (minimum slope); and,
- Minimal depth at the inlet, outlet and barrel should be 20 cm deep to allow for passage of all fish species/size.

As many of the large systems will be crossed by bridges, it is important that the final width and span placements are assessed by a Fluvial Geomorphologist to ensure that channel-structure conflicts are avoided. Other considerations to the bridge design should include considerations with regards to vegetation loss or die-back and maintaining wildlife movement.

5.2.2.1 Maintenance of Riparian Vegetation

Maintaining riparian vegetation to the extent possible will help to stabilize the watercourse banks, provide shading/cover for the watercourse, filter contaminants, and improve wildlife habitat and aesthetics. The following measures are recommended:

- Prior to construction, trees/shrubs to be retained will be clearly identified in the field by the installation of tree/shrub protection barriers;
- In areas where riparian vegetation removal is necessary to accommodate construction, measures to protect the local fish communities shall include the following: no clearing of matures trees providing a bank stabilization function; no felling of trees into the watercourse; minimize the amount of debris produced from entering the watercourse; and only clear the vegetation required to complete the necessary works; and,
- Planting plans will be completed, that includes planting native trees, shrubs and native seeding at each watercourse crossing, to replace and enhance the riparian communities.

5.2.3 Soils, Erosion and Sediment Control, and Surface Water

The building of the EELRT has the potential to suspend soil particles, which could result in eroded materials inadvertently affecting vegetation, wildlife habitat and could impair surface water quality. Furthermore, an increase in runoff may promote erosion downstream thus impairing water quality with sediments. There is also the potential for the contamination of surface water from sources other than sediments (i.e. spills). Water quality treatment must be provided to maintain the existing quality of surface water within the study limits.

An erosion and sedimentation control plan must be implemented during construction, using best practice erosion and sedimentation control measures to cover the installation, maintenance, and removal of the temporary erosion and sediment control measures and the removal of sediment accumulated by the control measures. This will minimize construction-related impacts on water quality and fish habitat.

Site-specific erosion and sedimentation control measures will be identified during a later design stage following best management practices. Erosion and sedimentation control measures may include:

- Placing flow checks at regular intervals in roadside ditches down-gradient from areas of soil disturbance to trap suspended sediments and reduce the erosive force of runoff;
- Placing silt fence along watercourses, ditches, wetlands and forest/woodland edges in areas of soil disturbance;
- Limiting the extent and duration that soils are exposed to the elements to the minimum area and time necessary to perform the work;
- Managing stormwater during construction to prevent contact with exposed soils;
- Applying seed and mulch, tackifier and/or erosion control blanket in areas of soil disturbance to provide adequate slope protection and long-term slope stabilization;
- Monitoring and maintenance of erosion and sedimentation control measures during construction to ensure their effectiveness; and,
- Any dewatering will have discharge directed to a sediment containment system (sediment basin, sediment bag, etc.) prior to release to the watercourse.

These environmental protection measures will be implemented prior to construction commencement and will remain in place until construction is complete and soils have been re-stabilized. This will greatly reduce the potential for soil erosion and impairment of surface water quality and fish habitat.

5.2.4 Contamination of Surface Water from Other Sources

There is also the potential for contamination of surface water from sources other than sediment (i.e. spills or other materials/equipment). Best management/construction practices and control of all construction operations will be implemented during

construction to reduce the potential for spills or other materials/equipment from entering the watercourses and wetlands within the study area. The following measures will be employed:

- Storage, stockpiling and staging areas will be delineated prior to construction and inspected in accordance with the Erosion and Sediment Control Guideline for Urban Construction (GGHA 2006);
- Construction material, excess material, construction debris, and empty containers will be stored at least 30 m distance from watercourses and watercourse banks to prevent their entry into watercourses;
- Equipment refueling, maintenance and washing activities will be conducted at a pre-determined site located at an adequate distance (minimum 30 m) from the watercourses and their banks located within the study area to prevent the entry of petroleum, oil or lubricants (POL) or other deleterious substances (including any debris, waste, rubble or concrete material) into watercourses within the study area, or their release to the environment. Any material which inadvertently enters the watercourses will be removed by the Contractor in a manner satisfactory to the Contract Administrator; and,
- All spills that could potentially cause damage to the environment shall be reported to the Spills Action Centre of the MECP. In the event of a spill, containment and clean-up will be completed quickly and effectively. In addition, an NSSP (Spill Prevention and Response Contingency Plan) must be included in the contract package to ensure a Spill Prevention and Response Contingency Plan and the appropriate contingency materials to absorb or contain any petroleum products/spills that may be accidentally discharged will be on site at all times.

These environmental protection measures will greatly reduce the potential for surface water contamination from spills and from other materials/equipment from entering the watercourses and wetlands within the study area, and will provide a contingency in the event of an unforeseen event.

5.2.5 Changes to Water Quality and Quantity

The construction associated with the proposed structures and culvert works has the potential to alter water quality through on-site erosion of exposed materials and the subsequent impairment of downstream water quality with sediments and other contaminants.

Changes to water quality during construction will be mitigated through the isolation of the work areas, the treatment of effluent from dewatering (if applicable) prior to its

release back into the receiving watercourse, and the deployment and maintenance of erosion and sediment controls (silt fencing, flow checks, etc.) which will prevent sediments from reaching the watercourse from exposed soils upslope. In addition, all exposed areas should be vegetated as quickly as possible once the work is completed.

The Drainage and Stormwater Management Report for 10% Design Phase prepared by HDR provides alternatives for a long-term stormwater management strategy. To manage stormwater quantity, online storage pipes, catch basin inlet capacity, and underground chambers with increased sewer conveyance are proposed as potential alternatives. No quantity controls will be required for the outlets that discharge directly to Highland Creek. However, quantity controls will be required for the areas which discharge into an existing storm sewer and/or a minor and medium watercourse. Capacity assessment of the existing storm sewer systems will be conducted at the detailed design stage. Other stormwater management alternatives (i.e. drainage area diversions) will be investigated to mitigate potential increase in peak flow to major and minor drainage systems representing the receivers from the right-of-way.

Water quality measures, such as OGS units, bioretention cells, infiltration trenches, and vegetated filter strips will be reviewed and assessed for their applicability during the detailed design stage. Due to the limited space within the roadway right-of-way, an available pervious space will be assessed at the detailed design stage, and Low Impact Development Best Management Practices will be incorporated to provide resilience were possible.

The implementation of these mitigation measures should eliminate potential changes to water quality and quantity at the receiving watercourses and wetland communities.

5.2.6 In-water works

Where possible, structures shall be constructed outside of the watercourse banks, eliminating the need for in-water works. However, at some of the crossings in-water work may be necessary. At all locations where in-water work is proposed, cofferdams (pea gravel bags, sheet piles, jersey barriers, aquadams, etc.) will be used to isolate the work area from the watercourse to enable work to be done in-the-dry. Flow will be maintained through either damming and pumping or fluming. If possible, work shall be done during the driest part of the year when minimal flows are present. This will minimize disturbance to fish habitat at the site and downstream. To further reduce the potential for a HADD, the following environmental protection measures will be implemented:

• at warmwater watercourses (Markham Tributary, Malvern Tributary and Morningside Tributary) no in-water work (or work on watercourse banks) will be

permitted from March 15 to June 30 to protect spawning warmwater fish, incubating eggs and fry emergence;

- at coolwater watercourses (Highland Creek) no in-water work (or work on watercourse banks) will be permitted from September 15 to June 30 to protect spawning coolwater fish, incubating eggs and fry emergence;
- where cofferdams are to be employed, dewatering effluent will be treated prior to discharge to receiving watercourse;
- cofferdams will be constructed using pea gravel bags, sheet piling or other appropriate material to isolate the work area: flow will be maintained at all stations;
- only clean material free of particulate matter will be placed in the watercourse; and,
- fish isolated by construction activities (if present) will be captured by a qualified fisheries specialist and safely released to the watercourse.

5.2.7 Species at Risk

Impacts to aquatic species at risk include:

- killing, harming, harassment, possession, capturing or taking of species listed as extirpated, endangered or threatened under the Species at Risk Act or Endangered Species Act;
- damage or destruction of a residence; and,
- destruction of any part of the species' critical habitat.

No aquatic species at risk are found within the project limits.

5.3 Vegetation Communities

Construction of the EELRT has the potential to result in impacts to vegetation and vegetation communities. Effects on vegetation related to the construction of the LRT and associated facilities could include:

- Displacement of and/or disturbance to vegetation and vegetation communities; and,
- Displacement of and/or disturbance to Rare, Threatened or Endangered Vegetation and Vegetation Communities.

5.3.1 Displacement of and/or disturbance to vegetation and vegetation communities

Clearing of vegetation will be required to accommodate the proposed construction of the EELRT. The proposed construction will result in the removal of approximately 10.46 ha

of naturalized and human influenced areas. The largest area of impact will be to lands that have been anthropogenically influenced including cultural vegetation communities and a restoration area. A total of 9.89 ha of human influenced lands and cultural vegetation communities will be removed as a result of the proposed construction. In addition, a total of 0.57 ha wetland communities will be removed, respectively. **Table 7** provides a summary of the total area of vegetation communities that will be removed for the proposed construction of the EELRT. The largest area of impact to vegetation communities will occur at the maintance and storage facility on Sheppard Avenue. No impacts will occur to vegetation communities located within the Morningside Park ESA or the forest community within the maintenance/storage facility lands.

Vegetation Community Type	Vegetation Community	Total Area (ha) to be Impacted
	Dry-Moist Old Field Meadow (CUM1-1)	9.56
Cultural	Scotch Pine Coniferous Plantation (CUP3-3)	0.06
Cultural	Mineral Cultural Woodland (CUW1)	0.14
	Sub-total	9.76
Watland	Shallow Marsh (MAS2)	0.57
vveliand	Sub-total	0.57
Human Influenced	Restoration Area	0.13
Lands	Sub-total	0.13
	Total	10.46

 TABLE 7.

 IMPACTS TO VEGETATION COMMUNITIES WITHIN THE STUDY AREA

Cultural Vegetation Communities

A total of 9.76 ha of cultural vegetation communities will be removed as a result of the proposed construction. The largest impact will be to cultural meadow communities (CUM1-1) within the lands identified for the maintenance and storage facility. Overall, impacts resulting in the loss of vegetation within these cultural vegetation communities is considered to be minor. Cultural vegetation communities typically persist in areas that are regularly disturbed, and as a result, contain a high proportion of invasive and non-native plant species that are tolerant of these conditions.

It is expected that plant species displaced and/or disturbed within the cultural communities due to the proposed construction will re-colonize available lands adjacent to the new right-of-way post-construction. Disturbance activities often serve to promote the establishment and/or spread of certain plant species such as those disturbance tolerant species.

Wetland Vegetation Communities

A total of 0.57 ha of wetland vegetation communities will be removed as a result of the proposed construction. Impacts to the wetland communities will result in the removal of the shallow marsh communities within the maintenance and storage facility. These

wetland communities support low quality habitat and are dominanted by European reed. Overall, impacts resulting from the proposed EELRT will have no significant effect on the remaining portions of wetland communities throughout the study area.

Forest Vegetation Communities

No impacts to forest communities are anticipated as a result of the proposed works. Where forest communities are adjancent to the proposed works best management practices (**Section 5.3.3**) shall be implemented to protect the woodland feature. In particular, tree protection fencing shall established along the dripline of the deciduous forest community within the maintenance/storage facility lands to prevent inadvertant intrusion into the feature and to protect the trees along the community edge.

Human Influenced Lands

As noted in **Table 8**, a total of 0.13 ha of human influenced vegetation will be removed as a result of the proposed construction of the EELRT. The impacts to the human influenced area will occur to a restoration area within the centre median at the intersection of Eglinton Avenue East and Kingston Road. The overall significance of the impact to these lands is considered low.

5.3.2 Displacement of and/or Disturbance to Rare, Threatened or Endangered Vegetation and Vegetation Communities

Several locally rare vegetation communities were identified within the study area. However, all of these communities are located within the Morningside Park ESA and as such, no impacts to the rare vegetation communities within the study area are anticipated.

Black ash was identified within the vegetation communities associated with the Morningside Park ESA and is protected as Endangered under the ESA. No impacts are anticipated to the communities within the ESA and as such, no impacts will occur to black ash or its habitat.

As noted in **Section 3.3.4**, a total of 15 regionally rare plant species where identified within the study area. The majority of these species are located within the Morningside Park ESA. No impacts to the regionally/locally rare plant species identified within the Morningside Park ESA are anticipated. Round dogwood is located within the deciduous forest community on the lands identified for the mainteance and storage facilicty. It is recommended that the regionally rare plant species be retained, to the extent possible. If impacts are unavoidable, it is recommended that these plant species, including individual shrub and trees that measure less than 10 cm DBH, be transplanted into suitable habitat conditions. Where possible, these plants should be transplanted into the newly created edges of those impacted communities, but outside of the limit of disturbance.

5.3.3 Mitigation

5.3.3.1 Avoidance

The EELRT has been designed to avoid terrestrial ecosystems to the extent possible. Minor refinements to the current alignment may occur during later design stages on a site-specific basis to minimize footprint area and avoid natural heritage features, where practical. Where avoidance cannot be achieved, restoration and enhancement measures will be identified to replace vegetation communities lost as a result of the LRT following TRCA policies.

5.3.3.2 Restoration and Enhancement

Restoration and enhancement measures to mitigate the removal of wetland and forest communities will be determined through consultation with agencies and the municipality during a future design stage. Restoration and enhancement measures will be implemented in accordance with TRCA policies.

Impacts to wetland communities within the study area will primarily be to shallow marsh communities largely dominanted by European reed. It is expected that post-construction, new wetland areas will be created as a result of changes in drainage related to the construction of the EELRT and its related components, that being said, restoration and enhancement measures will be identified during later design stages in consultation with MNRF and TRCA.

Impacts to forest communities within the study area will primarily result in the new removal of the deciduous forest community within the maintenance and storage facility lands. Compensation and enhancement measure will be identified during later design stages in consultation with the City of Toronto and TRCA.

5.3.3.3 Invasive Species Management

Efforts to control non-native and invasive plant species that have become established, as well as prevent the establishment of new non-native and invasive plant species at a minimum should include the following:

- where there are dense patches of common buckthorn, swallow-wort or garlic mustard, the appropriate removal and control of these species by a qualified specialist should be undertaken;
- minimize the exposure of bare soil, where bare soil must persist over a period of time these should be planted with a non-invasive annual cover crop for an interim period; and,
- no non-native and invasive ornamentals plants should be used for landscaping (e.g., Norway maple, purple loosestrife, Japanese knotweed, Japanese honeysuckle, etc.).

In addition, efforts should be made to prevent the spread of invasive plant species during construction both on and off site. Sanitation of construction equipment should be undertaken in accordance with the *Clean Equipment Protocol for Industry* (Halloran, Anderson and Tassie 2013) and at a minimum should include sanitation of construction vehicles and equipment prior to leaving and moving to the next site. A cleaning station should be set up, so vehicles and equipment can be inspected and cleaned regularly.

5.3.3.4 Planting Plans

A detailed planting plan will be developed during a later design stage once areas identified for restoration have been determined in consultation with the respective agencies. It is recommended that the planting of forest and wetland habitat be undertaken with the appropriate native and non-invasive plant species which will be presented on site-specific plans to be developed by an experienced landscape architect.

At a minimum, planting plans will show the following:

- detailed maps of the planting locations along with the respective allocations of tree, shrub, herbaceous and grass species to be planted inclusive of species and ratio of plantings or abundances; and,
- a description of the best management practices that are to be followed in the planting and tending of these sites for a minimum of five years following the initial planting stage. In particular, management will need to be undertaken for those invasive/ aggressive plant species.

5.3.3.5 Construction Best Management Practices

At a minimum the following mitigation measures will be implemented during construction:

- vegetation cover will be used to protect any exposed surfaces in accordance with OPSS 804 -Construction Specification for Seed and Cover;
- topsoil from stockpiles to be in accordance with OPSS 802 Construction Specification for Topsoil;
- old field seed mix and mulching or erosion control blanket (in accordance with NSSP-Erosion Control Blanket) will be placed in areas of soil disturbance to provide adequate slope protection and long-term slope stabilization; and,
- tree protection to be in accordance with OPSS 801 Construction Specification for the Protection of Trees.

5.4 Wildlife and Wildlife Habitat

Implementation of the EELRT has the potential to result in impacts to wildlife and wildlife habitat. Effects related to the construction of the EELRT and associated facilities could include:

- Displacement of wildlife and wildlife habitat;
- Barrier effects on wildlife passage;
- Wildlife/vehicle conflicts;
- Disturbance to wildlife from noise, light and visual intrusion;
- Potential impacts to migratory birds; and,
- Displacement of rare, threatened or endangered wildlife or significant wildlife habitat.

5.4.1 Displacement of Wildlife and Wildlife Habitat

The EELRT will be constructed primarily within the right-of-way of existing municipal roads. The existing right-of-way will be widened; however, the area of encroachment consists of previously modified/disturbed terrestrial wildlife habitat with low habitat structure and diversity and limited habitat capability. Consequently, the development of the LRT will have no significant effect on wildlife and wildlife habitat along the running way.

Most of the wildlife habitat to be removed is located at the Maintenance and Storage Facility on Sheppard Avenue. Development at the MSF will result in the removal of CUM1-1, CUW1, MAS2 and FOD vegetation communities, although the majority of the FOD vegetation community is located on the valley slope and will likely not be heavily impacted by the MSF.

Prior to construction, a wildlife sweep should be carried out at the MSF to drive wildlife away from the work zone. Wildlife that cannot be dispersed from the work zone should be captured and transported to nearby suitable habitats outside of the work zone. A Scientific Collectors Permit will be obtained from MNRF prior to wildlife salvage activities.

5.4.2 Displacement of Rare, Threatened or Endangered Wildlife or Significant Wildlife Habitat

Wildlife surveys conducted in 2023 confirmed the presence of barn swallow and chimney swift within the project limits. Bats are also anticipated to occur in the study area, although formal bat surveys were not carried out.

Barn Swallow

Barn Swallow is regulated as 'Special Concern' under the ESA and under SARA. One Barn Swallow was observed during the 2023 field investigations exhibiting foraging behaviour. No active or historical nests were observed for this species; however, potential nesting structures are present within the study area. Since no active or historical nests were observed, the single Barn Swallow observation exhibited foraging behaviour and Barn Swallow are currently regulated as a 'Special Concern' species, no impacts to Barn Swallow are anticipated to occur and no permitting is expected for this species.

Chimney Swift

Chimney Swift is regulated as 'Threatened' under the Ontario ESA and is afforded habitat protection and is also listed as 'Threatened' on Schedule 1 of the Canada SARA. Chimney Swift were observed flying overhead nearby residential and naturalized lands associated with BBS Station 4 during the morning of July 5, 2023. While the Chimney Swift observation was a flyover, with no evidence of nesting or obvious nesting structures, no inpacts to Chimney Swift are anticipated to occur and no permitting is expected for this species.

Bats

There are currently four bat species regulated as 'Endangered' under the ESA, including Eastern Small-footed Myotis; Little Brown Myotis; Northern Myotis; and, Tricoloured Bat. The ESA affords protection for both individuals of these species (subsection 9(1)) and their habitat (subsection 10(1)). Given that species-specific habitat regulations have not yet been developed for SAR bats, habitat is protected according to the general definition provided in the ESA. Specifically, according to section 2(1), the Act protects "an area, on which the species depends, directly or indirectly, to carry on its life processes, including processes such as reproduction, rearing, hibernation, migration or feeding".

Maternity roosting habitat has been grouped into three types: treed habitat, buildings, and rock piles. Within the study area, treed habitats occur, and these are considered potentially suitable as bat roosting habitat. Buildings are also used for roosting, most frequently by Little Brown Myotis. Bats could use any building, regardless of building age, structure type or whether it is currently occupied by people. Therefore, all buildings are considered potentially suitable habitat. Eastern Small-footed Myotis is a saxicolous (rock-loving) species and will frequently roost in rock piles, talus, or crack and crevices in rock outcrops. In all cases, habitat occupancy must be either demonstrated or conservatively assumed for protection to be applied. A more detailed evaluation of bat

habitat and the occupancy of their habitat will be completed as part of the permitting phase of the project in advance of construction. Should bat maternity roosts be identified, consultation with MECP should be carried out to confirm permitting requirements. Vegetation removals should not be carried out during the active period, which typically extends from April 1 to September 31.

5.4.3 Barrier Effects on Wildlife Passage

No new barriers to wildlife passage are expected to occur as a result of the construction of the EELRT. Major watercourse crossings, which provide passage for wildlife, will be maintained, or new bridges/culverts will be installed. All new bridges/culverts should be reviewed during later design phases to ensure that as a minimum, existing openness ratios are maintained.

5.4.4 Wildlife/Vehicle Conflicts

Wildlife/vehicle conflicts appear to be very minor at present within the EELRT corridor as it follows existing roads. Watercourse crossings will be bridges/culverts, which should minimize wildlife/vehicle conflicts.

5.4.5 Disturbance to Wildlife from Noise, Light and Visual Intrusion

Noise, light and visual intrusion may alter wildlife activities and patterns. In the area of the proposed EELRT, wildlife has likely become acclimatized to the noise, light and visual conditions associated with roads, railways, and pedestrian trails present within and in the vicinity of the study area. Only those fauna that are tolerant of human activities tend to persist. Given that wildlife found within the study area are acclimatized to the presence of road infrastructure, disturbance to wildlife from any increase in noise, light and visual intrusion potentially caused by the operation of the EELRT are not expected to have any significant adverse effects.

Potential disturbance caused by light pollution from the EELRT runningway and stops can be mitigated by using reflectors to focus light beams onto the facilities and away from natural heritage features adjacent to the EELRT. Focussed lighting should also be employed at the maintenance and storage facility to avoid light spillage into the adjacent Morningside Creek Forest/Milnes Forest located north of the facility.

5.4.6 Potential Impacts to Migratory Birds

Several bird species listed under the *Migratory Birds Convention Act* (MBCA) are located within the study area. The MBCA prohibits the killing, capturing, injuring, taking or disturbing of migratory birds (including eggs) or the damaging, destroying, removing or disturbing of nests. While migratory insectivorous and non-game birds are protected year-round, migratory game birds are only protected from March 10 to September 1. To comply with the requirements of the MBCA, disturbance, clearing or disruption of

vegetation where birds may be nesting should be completed outside the window of April 1 to August 15. In the event that these activities must be undertaken from April 1 to August 15, a nest survey will be conducted by a qualified avian biologist to identify and locate active nests of species covered by the MBCA.

5.5 Impacts to Designated Natural Areas

No impacts to designated natural areas are anticipated to accommodate the EELRT.

6.0 CONCLUSION AND RECOMMENDATIONS

The EELRT will be constructed along existing roadways. The following tasks shall be carried out in greater detail during future design phases including:

- Preparation of the following environmental management plans: Restoration and Enhancement Plans; Erosion and Sediment Control Plan; and, Environmental Inspection and Monitoring Plan. Further correspondence with regulatory agencies and municipal planning staff shall take place during the preparation of these plans;
- Further correspondence shall take place with MECP to discuss species at risk that have been identified or have the potential to be located in the vicinity of the study area, and any requirements under the Ontario ESA;
- Further field investigations will be undertaken during the appropriate seasons using MNRF protocols. Surveying for species at risk should be conducted to confirm their presence or absence, and thus, the appropriate steps for protection and permitting;
- Further correspondence shall take place with TRCA to determine application requirements for permits under Ontario Regulation 166/06 and to stake the boundaries of wetlands located in proximity of the EELRT; and,
- A self-assessment shall be carried out in accordance with DFO procedures to determine the potential for "HADD" once culvert and bridge designs have been advanced. Further correspondence with DFO shall take place to discuss species at risk and *Fisheries Act* requirements.

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APPENDIX A PHOTOGRAPHIC RECORD OF WATERCOURSE CROSSINGS

PHOTO APPENDIX





Facing southwest at Milliken Branch upstream end of crossing of Sheppard Avenue East.



Upstream (north) of crossing facing upstream. Note concrete trapezoidal channel and perch.



Milliken Branch channel downstream (south) of crossing.



Facing upstream (north) at downstream side of Sheppard Avenue East crossing of Milliken Branch.



Facing southwest at Malvern Branch upstream of crossing of Sheppard Avenue East.



Upstream (north) of crossing of Malvern Branch facing upstream.

PHOTO APPENDIX





Malvern Branch channel downstream (south) of crossing. Note large gabion basket wall on right (west) bank.



Facing upstream (southwest) across Sheppard Avenue East at the tributary of Morningside Creek crossing.



Downstream end of 30 m open channel at entrance to piped section on west side of driveway (facing northeast).



Facing upstream (north) at downstream side of Sheppard Avenue East crossing of Malvern Branch from atop gabion basket wall.



Downstream (south) 30 m open channel of the tributary of Morningside Creek downstream of Sheppard Avenue East (facing northeast).



Downstream end of piped section facing north (downstream). Pipe outlet is on north side of fence. Note manhole to access pipe.

PHOTO APPENDIX





Tributary of Morningside Creek pipe outlet.



Facing north (downstream) along access road that parallels the channel (to right). This is the flatter section of channel.



Gradient increases and channel narrows. Note rectangular stone blocks that constitute the substrates of the channel and give it its trapezoidal shape.



Near the end of the tributary of Morningside Creek channel at the bottom of the deep valley. Note large "ditch inlet" structure in background. Facing downstream (north).



The valley deepens and the gradient increases again further downstream.



Downstream end of tributary of Morningside Creek at the entrance to the large structure. Facing south (upstream).

PHOTO APPENDIX





Large "ditch inlet" structure at end of the tributary of



Highland Creek upstream of Morningside Avenue bridge (facing southwest).



Downstream end of outfall from "ditch inlet" (previous photo) Morningside Creek channel. Height is approximately 20 m. which is approximately 50 m upstream. Note deep, eroded valley. Morningside Creek is approximately 75-80 m downstream.



Highland Creek facing downstream (east) at Morningside Avenue bridge.



Highland Creek facing downstream (southeast) from under the Morningside Avenue bridge.



Highland Creek facing upstream (southwest) at Morningside Avenue bridge.

APPENDIX B VASCULAR PLANT LIST

	Scientific Name	Common Name	TRCA	GRank	SRank	MNR	COSEWIC	Toronto	CUM1-1	CUP3-3	CUS1	CUT1	CUT1-1	CUW1	FOD	FOD3-1	FOD4	FOD5-3	FOD5-7	FOD7	FOD8-1	FOM2	FOM2-2	FOM7-2	MAM2-2	MAS2	MAS2-1	SWC1-2	SWC3	SWM1-1	SWM5-1	SWT3-2
	EQUISETACEAE	HORSETAIL FAMILY																														
	Equisetum arvense	field horsetail	L5	G5	S5			Х													Х								Х	Х		
	OSMUNDACEAE	ROYAL FERN FAMILY																														
	Osmunda cinnamomea	cinnamon fern	L2	G5	S5			R3																					Х		Х	
	DENNSTAEDTIACEAE	BRACKEN FERN FAMILY																														
	Pteridium aquilinum var. latiusculum	eastern bracken-fern	L4	G5T	S5			Х														X		Х				X				
	DRYOPTERIDACEAE	WOOD FERN FAMILY																														
	Athyrium filix-femina var. angustum	northern lady fern	L5	G5T5	S5			Х																					Х			
	Cystopteris bulbifera	bulbet bladder fern	L4	G5	S5			U											Х										Х	Х		
	Dryopteris carthusiana	spinulose wood fern	L5	G5	S5			Х										Х				Х						Х				
	Dryopteris marginalis	marginal wood fern	L4	G5	S5			U										Х														
	Gymnocarpium dryopteris	oak fern	L3	G5	S5			R6																					Х		Х	
	Matteuccia struthiopteris var. pensylvanica	ostrich fern	L5	G5	S5			Х											X		X	х		Х					X		X	
	Onoclea sensibilis	sensitive fern	L5	G5	S5			Х								Х								Х	Х			Х	Х		Х	Х
	PINACEAE	PINE FAMILY																														
	Abies balsamea	balsam fir	L3	G5	S5			R1																					Х			
*	Larix decidua	European larch	L+	G?	SE2			Х		Х																						
	Larix laricina	tamarack	L3	G5	S5			R3																	Х				Х			
*	Picea abies	Norway spruce	L+	G?	SE3			Х		Х				Х																		
	Picea glauca	white spruce	L3	G5	S5			X+		Х	Х	Х					Х															
*	Picea pungens	Colorado spruce	L+	G5	SE1						Х	Х																				
	Pinus banksiana	jack pine	L+	G5	S5			Х		Х																						
*	Pinus nigra	Austrian pine	L+	G?	SE2					Х																						
	Pinus strobus	eastern white pine	L4	G5	S5			Х		Х	Х	Х		Х			Х					Х	Х					Х			Х	
*	Pinus sylvestris	scotch pine	L+	G?	SE5			Х		Х	Х	Х		Х																		
	Tsuga canadensis	eastern hemlock	L4	G5	S5			Х											Х			Х	Х					Х		Х	Х	
	CUPRESSACEAE	CEDAR FAMILY																														
	Juniperus virginiana	eastern red cedar	L5	G5	S5						Χ	Х																				
	Thuja occidentalis	eastern white cedar	L4	G5	S5			Х		Х	Х			Х	Х	Χ	Χ		Х			Х	Х	Χ	Χ		Χ	Χ	Х	Х	Χ	
	RANUNCULACEAE	BUTTERCUP FAMILY																														
	Actaea pachypoda	white baneberry	L4	G5	S5			Х															Χ							Χ		

Scientific Name	Common Name	TRCA	GRank	SRank	MNR	COSEWIC	Toronto	CUM1-1	CUP3-3	CUS1	CUTI	CUT1-1	CUWI	FOD	FOD3-1	FOD4	FOD5-3	FOD5-7	FOD7	FOD8-1	FOM2	FOM2-2	FOM7-2	MAM2-2	MAS2	MAS2-1	SWC1-2	SWC3	SWM1-1	SWM5-1	SWT3-2
* Ranunculus repens	creeping buttercup	L+	G?	SE5			Х												Х												
BERBERIDACEAE	BARBERRY FAMILY																														
* Berberis thunbergii	Japanese barberry	L+	G?	SE5			Х														Х										
Caulophyllum giganteum	blue cohosh	L4	G	S5			R										Х					Х									
Caulophyllum thalictroides	blue cohosh	L2	G	S5			Х															Х									
Podophyllum peltatum	may-apple	L4	G5	S5			Х												Х												
PAPAVERACEAE	POPPY FAMILY																														
* Chelidonium majus	celandine	L+	G?	SE5			Х																						Х		
ULMACEAE	ELM FAMILY																														
Ulmus americana	white elm	L5	G5?	S5			Х		Х						Х				Х		Х								Х		
* Ulmus pumila	Siberian elm	L+	G?	SE3			Х			Х			Х																		
MORACEAE	MULBERRY FAMILY																														
* Morus alba	white mulberry	L+	G?	SE5			Х		Х	Х		Х																			
URTICACEAE	NETTLE FAMILY																														
Pilea pumila	dwarf clearweed	L5	G5	S5			U																					Х			Х
* Urtica dioica ssp. dioica	European stinging nettle	L+	G5T?	SE2			Х											Х										Х	Х		Х
JUGLANDACEAE	WALNUT FAMILY																														
Juglans nigra	black walnut	L5	G5	S4			Х						Х	Х					Х												
FAGACEAE	BEECH FAMILY																														
Fagus grandifolia	American beech	L4	G5	S5			Х										Х														
Quercus macrocarpa	bur oak	L4	G5	S5			Х		Х	Х								Х													
Quercus rubra	red oak	L4	G5	S5			Х		Х				Х					Х												Х	
BETULACEAE	BIRCH FAMILY																														
Betula alleghaniensis	yellow birch	L4	G5	S5			Х											Х		Х			Х				Х	Х	Х	Х	
Betula papyrifera	white birch	L4	G5	S5			Х			Х					Х					Х	Х	Х	Х			Х	Х	Х		Х	
Ostrya virginiana	ironwood	L5	G5	S5			Х						Х									Х									
CARYOPHYLLACEAE	PINK FAMILY																														
* Silene vulgaris	catchfly	L+	G?	SE5			Х	Х		Х			Х	Х																	
POLYGONACEAE	SMARTWEED FAMILY																														
* Polygonum cuspidatum	Japanese knotweed	L+	G?	SE4			Χ			Х																					
* Rumex crispus	curly-leaf dock	L+	G?	SE5			Х	Х			Х		Х												Х						
GUTTIFERAE	ST. JOHN'S-WORT FAMILY																														
* Hypericum perforatum	common St. John's-wort	L+	G?	SE5			Χ	Х		Χ	Χ		Χ																		

						C																									
Scientific Name	Common Name	TRCA	GRank	SRank	MNR	COSEWI	Toronto	CUM1-1	CUP3-3	CUS1	CUT1	CUT1-1	CUW1	FOD	FOD3-1	FOD4	FOD5-3	FOD5-7	FOD7	FOD8-1 FOM2	FOM2-2	7-71410.T	FOM7-2	MAM2-2	MAS2	MAS2-1	SWC1-2	SWC3	SWM1-1	SWM5-1	SWT3-2
TILIACEAE	LINDEN FAMILY																														
Tilia americana	basswood	L5	G5	S5			Х		Х	Х	Х			Х	Х			Х	Х	Х						Х			Х		
* Tilia cordata	small leaf linden	L+	G?	SE1						Х																					
VIOLACEAE	VIOLET FAMILY																														
Viola sororia	woolly blue violet	L5	G5	S5			Х											Х											Х		
SALICACEAE	WILLOW FAMILY																														
* Populus alba	silver poplar	L+	G5	SE5		-	Х			Х																					
Populus balsamifera ssp. balsamifera	balsam poplar	L5	G5T?	S5			X						X						X	X			X	Х		Х					Х
Populus deltoides	cottonwood							Х	Х		Х		Х																		
Populus grandidentata	large-tooth aspen	L4	G5	S5			Х		Х						Х						X	K									
Populus tremuloides	trembling aspen	L5	G5	S5		-	Х				Х		Х	Х	Х					X X			Х			Х				Х	Х
* Salix alba	white willow	L+	G5	SE4			Х												Х												
Salix bebbiana	long-beaked willow	L4	G5	S5			Х																								Х
Salix discolor	pussy willow	L4	G5	S5			Х																								Х
Salix eriocephala	Missouri willow	L5	G5	S5			Х																								Х
Salix exigua	sandbar willow	L5	G5	S5			Х				Х																				
Salix lucida	shining willow	L3	G5	S5		F	R4																								Х
Salix sp.	willow			?									Х	Х					Х						Х						
* Salix X rubens	reddish willow	L+	HYB	SE4			Х												Х												
BRASSICACEAE	MUSTARD FAMILY																														
* Alliaria petiolata	garlic mustard	L+	G5	SE5			Х	Х	Х				Х		Х			Х			X	K	Х					Х	Х		
* Barbarea vulgaris	yellow rocket	L+	G?	SE5			Х						Х																		
* Hesperis matronalis	dame's rocket	L+	G4G5	SE5			Х		Х										Х									Х			
* Lepidium campestre	field cress	L+	G?	SE5		-	Х						Х																		
PRIMULACEAE	PRIMROSE FAMILY																														
Trientalis borealis ssp. borealis	star-flower	L3	G5T?	S5		F	R6													X											1
GROSSULARIACEAE	GOOSEBERRY FAMILY																														
* Ribes rubrum	red currant	L+	G4G5	SE5			Х								Х			Х													1
ROSACEAE	ROSE FAMILY																														1
Agrimonia gryposepala	tall hairy agrimony	L5	G5	S5			Х		Х																						
Amelanchier laevis	smooth juneberry	L4	G4G5Q	S5		1	U													X											
Crataegus sp.	hawthorn																	Х													
Geum aleppicum	yellow avens	L5	G5	S5			X	T							T			Х		X										Ţ	

	Scientific Name	Common Name	TRCA	GRank	SRank	MNR	COSEWIC	Toronto	CUM1-1	CUP3-3	CUS1	CUT1	CUT1-1	CUWI	FOD	FOD3-1	FOD4	FOD5-3	FOD5-7	FOD7	FOD8-1	FOM2	FOM2-2	FOM7-2	MAM2-2	MAS2	MAS2-1	SWC1-2	SWC3	SWM1-1	SWM5-1	SWT3-2
	Geum canadense	white avens	L5	G5	S5			Х																Х								Í
*	Geum urbanum	wood avens	L+	G5	SE2			Х							Х		Х		Х				Х	Х								
*	Malus baccata	Siberian crabapple	L+	G?	SE1			Х						Х																		1
*	Malus pumila	common apple	L+	G5	SE5			Х		Х													Х									1
*	Potentilla recta	rough-fruited cinquefoil	L+	G?	SE5			Х	Х		Х			Х																		1
*	Prunus avium	sweet cherry	L+	G?	SE4			Х			Х	Х																				1
	Prunus serotina	black cherry	L5	G5	S5			Х		Х				Х					Х			Х	Х	Х							Х	Í
	Prunus virginiana var. virginiana	choke cherry	L5	G5T?	S5			Х						Х		Х		Х	X	Х			Х	Х						Х		
	Rubus occidentalis	thimble-berry	L5	G5	S5			Х	Х							Х			Х												Х	1
	Rubus odoratus	purple flowering raspberry	L5	G5	S5			Х																						Х		
*	Sorbus aucuparia	European mountain-ash	L+	G5	SE4			Х			Х								Х													1
	FABACEAE	PEA FAMILY																														1
*	Lotus corniculatus	bird's-foot trefoil	L+	G?	SE5			Х	Х			Х								Х												1
*	Medicago lupulina	black medick	L+	G?	SE5			Х	Х		Х			Х																		1
*	Medicago sativa ssp. sativa	alfalfa	L+	G?T?	SE5			Х			Х	Х																				1
*	Melilotus alba	white sweet-clover	L+	G?	SE5			Х				Х		Х																		1
*	Melilotus officinalis	yellow sweet-clover	L+	G?	SE5			Х				Х		Х																		1
*	Robinia pseudo-acacia	black locust	L+	G5	SE5			Х		Х				Х			Х		Х											Х		1
*	Trifolium pratense	red clover	L+	G?	SE5			Х	Х		Х	Х																				
*	Trifolium repens	white clover	L+	G?	SE5			Х						Х																		
*	Vicia cracca	tufted vetch	L+	G?	SE5			Х	Х			Х		Х																		
	ELAEAGNACEAE	OLEASTER FAMILY																														
*	Elaeagnus angustifolia	Russian olive	L+	G?	SE3			Х				Х														Х						
*	Elaeagnus umbellata	Russian olive	L+	G?	SE3			Х						Х																		
	LYTHRACEAE	LOOSESTRIFE FAMILY																														
	Lythrum alatum	wing-angled loosestrife		G5	S3																										Х	
*	Lythrum salicaria	purple loosestrife	L+	G5	SE5			Х																			Х					1
	ONAGRACEAE	EVENING-PRIMROSE FAMILY																														
	Circaea lutetiana ssp. canadensis	yellowish enchanter's nightshade	L5	G5T5	S5			X									Х					X		X					Х			
	Oenothera biennis	common evening- primrose	L5	G5	S5			U	X																							

	Scientific Name	Common Name	TRCA	GRank	SRank	MNR	COSEWIC	Toronto	CUM1-1	CUP3-3	CUS1	CUT1	CUT1-1	CUW1	FOD	FOD3-1	FOD4	FOD5-3	FOD5-7	FOD7	FOD8-1	FOM2	FOM2-2	FOM7-2	MAM2-2	MAS2	MAS2-1	SWC1-2	SWC3	SWM1-1	SWM5-1	SWT3-2
	CORNACEAE	DOGWOOD FAMILY																														
	Cornus alternifolia	alternate-leaved dogwood	L5	G5	S5			Х											Х		Х	Х										
	Cornus racemosa	red panicled dogwood	L4	G5?	S5			Х															Х									
	Cornus rugosa	round-leaved dogwood	L3	G5	S5			Х							Х	Х			Х											Х		
	Cornus sericea ssp. sericea	red-osier dogwood	L5	G5	S5			Х						Х	Х											Х					Х	Х
	CELASTRACEAE	STAFF-TREE FAMILY																														
*	Euonymus alata	winged spindle tree	L+	G?	SE2			Х			Х					Х																
	RHAMNACEAE	BUCKTHORN FAMILY																														
*	Rhamnus cathartica	common buckthorn	L+	G?	SE5			Х		Х				Х	Х	Х	Х		Х	Х		Х	Х	Х			Х	Х	Х		Х	
	VITACEAE	GRAPE FAMILY																														
	Parthenocissus vitacea	inserted Virginia-creeper	L5	G5	S5			Х	Х					Х		Х			Х	Х	Х		Х	Х		Х						
	Vitis riparia	riverbank grape	L5	G5	S5			Х	Х		Х	Х		Х		Х			Х	Х		Х				Х						
	ACERACEAE	MAPLE FAMILY																														
*	Acer ginnala	amur maple	L+	G?	SE1			Х												Х				Х								
	Acer negundo	manitoba maple	L+?	G5	S5			Х	Х	Х	Х	Х	Х	Х	Х	Х			Х	Х	Х				Х		Х			Х	Х	
*	Acer platanoides	norway maple	L+	G?	SE5			Х		Х	Х	Х		Х	Х	Х	Х		Х	Х				Х						Х		
	Acer rubrum	red maple	L4	G5	S5			Х			Х											Х	Х	Х							Х	
	Acer saccharinum	silver maple	L4	G5	S5			Х			Х																					
	Acer saccharum var. saccharum	sugar maple	L5	G5T?	S5			Х		Х					Х			Х	Х	Х			Х									
	Acer X freemanii	freeman's maple	LH					Х			Х	Х		Х		Х														Х		
	ANACARDIACEAE	SUMAC FAMILY																														
	Rhus hirta	staghorn sumac	L5	G5	S5			Х	Х	Х	Х	Х	Х	Х	Х																	
	Toxicodendron rydbergii	western poison-ivy	L5	G5T	S5			Х	Х		Х				Х				Х	Х				Х			Х			Х	Х	
	GERANIACEAE	GERANIUM FAMILY																														
*	Geranium robertianum	herb-robert	L+?	G5	SE5			Х		Х																				Х		
	BALSAMINACEAE	TOUCH-ME-NOT FAMILY																														
	Impatiens capensis	spotted touch-me-not	L5	G5	S5			Х							Х					Х				Х			Х			Х	Х	
	ARALIACEAE	GINSENG FAMILY																														
	Aralia nudicaulis	wild sarsaparilla	L5	G5	S5			Х														Х	Х								Х	
	APIACEAE	PARSLEY FAMILY																														
*	Daucus carota	wild carrot	L+	G?	SE5			Х	Х		Х	Х		Х												Х						
	Hydrocotyle americana	American marsh- pennywort	L3	G5	S5]	R3																			Х					

	Scientific Name	Common Name	TRCA	GRank	SRank	MNR	COSEWIC	Toronto	CUM1-1	CUP3-3	CUS1	CUTI	CUT1-1	CUW1	FOD	FOD3-1	FOD4	FOD5-3	FOD5-7	FOD7	FOD8-1	FOM2	FOM2-2	FOM7-2	MAM2-2	MAS2	MAS2-1	SWC1-2	SWC3	SWM1-1	SWM5-1	SWT3-2
	ASCLEPIADACEAE	MILKWEED FAMILY																														
	Asclepias incarnata ssp. incarnata	swamp milkweed	L4	G5T5	S5			U																	Х							
	Asclepias syriaca	common milkweed	L5	G5	S5			Х	Х		Х	Х		Х																		
*	Cynanchum rossicum	swallow-wort	L+	G?	SE5			Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		Х		Х				
	SOLANACEAE	POTATO FAMILY																														
*	Solanum dulcamara	bitter nightshade	L+	G?	SE5			Х			Х			Х	Х				Х													
	HYDROPHYLLACEAE	WATER-LEAF FAMILY																														
	Hydrophyllum virginianum	Virginia water-leaf	L5	G5	S5			Х												Х												
	BORAGINACEAE	BORAGE FAMILY																														
*	Echium vulgare	blueweed	L+	G?	SE5			Х	Х		Х	Х		Х																		
	Hackelia virginiana	Virginia stickweed	L5	G5	S5			U		Х										Х											Х	
	LAMIACEAE	MINT FAMILY																													ļ	
*	Glechoma hederacea	creeping Charlie	L+	G?	SE5			Х				Х							Х													
*	Leonurus cardiaca ssp. cardiaca	common motherwort	L+	G?T?	SE5			X		Х				Х					X													
	Lycopus uniflorus	northern water-horehound	L4	G5	S5			Х																			Х					
	PLANTAGINACEAE	PLANTAIN FAMILY																														
*	Plantago lanceolata	ribgrass	L+	G5	SE5			Х			Х																					
*	Plantago major	common plantain	L+	G5	SE5			Х							Х																	
	OLEACEAE	OLIVE FAMILY																														
	Fraxinus americana	white ash	L5	G5	S5			Х		Х	Х								Х	Х												
	Fraxinus nigra	black ash	L4	G5	S5			R2																			Х	Х	Х		Х	Χ
	Fraxinus pennsylvanica	red ash	L5	G5	S5			Х	Х	Х	Х			Х	Х	Х				Х	Х		Х				Х	Х	Х	Х	Х	Х
*	Syringa vulgaris	common lilac	L+	G?	SE5			Х						Х					Х													
	SCROPHULARIACEAE	FIGWORT FAMILY																														
*	Linaria vulgaris	butter-and-eggs	L+	G?	SE5			Х	Х		Х	Х		Х																		
*	Verbascum thapsus	common mullein	L+	G?	SE5			Х				Х		Х						Х												
	CAMPANULACEAE	BLUEBELL FAMILY																														
*	Campanula rapunculoides	creeping bellflower	L+	G?	SE5			Х						Х																		
	RUBIACEAE	MADDER FAMILY																														
	Galium aparine	cleavers	L4	G5	S5			U							Х															Χ		
	CAPRIFOLIACEAE	HONEYSUCKLE FAMILY																														
*	Lonicera tatarica	tartarian honeysuckle	L+	G?	SE5			Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		Х	Х		Х			Х				Χ	Х		

Scientific Name	Common Name	TRCA	GRank	SRank	MNR	COSEWIC	Toronto	CUM1-1	CUP3-3	CUS1	CUT1	CUT1-1	CUW1	FOD	FOD3-1	FOD4	FOD5-3	FOD5-7	FOD7	FOD8-1 FOM2	FOM2-2	FOM7-2	MAM2-2	MAS2	MAS2-1	SWC1-2	SWC3	SWM1-1	SWM5-1	SWT3-2
* Sambucus nigra	European elderberry		G?	SEH																			Х							1
* Viburnum opulus	guelder rose	L+	G5	SE4			Х								Х													Х		1
ASTERACEAE	ASTER FAMILY																													1
* Achillea millefolium var. millefolium	common yarrow	L+	G5T?	SE?			X	Х																						
Ageratina altissima var. altissima	white snakeroot	L5	G5	S5			X																						Х	
* Arctium minus	common burdock	L+	G?T?	SE5			Х	Х	Х	Х					Х			Х												1
Aster lateriflorus var. lateriflorus	calico aster		G5T5	S5				Х																						
Aster sp.	aster												Х																	
* Centaurea biebersteinii	spotted knapweed	L+	G?	SE5			Х				Х																			
* Cichorium intybus	chicory	L+	G?	SE5			Х	Х		Х	Х		Х																	
* Cirsium arvense	Canada thistle	L+	G?	SE5			Х	Х					Х						Х					Х	Х					
* Cirsium vulgare	bull thistle	L+	G5	SE5			Х			Х																				
Eupatorium maculatum var. maculatum	spotted joe-pye-weed	L5	G5T5	S5			X																		Х		Х		Х	Х
Eupatorium perfoliatum	perfoliate thoroughwort	L4	G5	S5			Х																		Х		Х			Í
Eurybia macrophylla	large-leaved aster	L5	G5	S5			Х										Х												Х	1
Euthamia graminifolia	flat-topped bushy goldenrod		G5	S5			X	Х					Х																	
* Leucanthemum vulgare	ox-eye daisy	L+	G?	SE5			Х	Х		Х																				
Solidago caesia	blue-stem goldenrod	L5	G5	S5			Х														X									1
Solidago canadensis	canada goldenrod	L5	G5	S5			Х	Х	Х		Х		Х	Х	Х									Х						
Solidago canadensis var. scabra	tall goldenrod	L5	G5	S5			Х					Х				Х			Х	Х						Х	Х			
Solidago flexicaulis	zig-zag goldenrod	L5	G5	S5			Х										Х	Х	Х											
Symphyotrichum novae-angliae	New England aster	L5	G5	S5			Х	Х			Х		Х																	
* Taraxacum officinale	common dandelion	L+	G5	SE5			Х			Х			Х					Х												
* Tragopogon pratensis ssp. pratensis	meadow goat's-beard	L+	G?T?	SE5			Х	Х		Х	Х		Х																	
* Tussilago farfara	coltsfoot	L+	G?	SE5			Х							Х																
ARACEAE	ARUM FAMILY																													
Arisaema triphyllum ssp. triphyllum	small jack-in-the-pulpit	L4	G5T5	S5			X								X			X				X						X		
Symplocarpus foetidus	skunk-cabbage	L4	G5	S5]	R6																Х				Х		Х	Х
CYPERACEAE	SEDGE FAMILY																													

Scientific Name	Common Name	TRCA	GRank	SRank	MNR	COSEWIC	Toronto	CUM1-1	CUP3-3	CUS1	CUTI	CUT1-1	CUW1	FOD	FOD3-1	FOD4	FOD5-3	FOD5-7	FOD7	FOD8-1	FOM2	FOM2-2	FOM7-2	MAM2-2	MAS2	MAS2-1	SWC1-2	SWC3	SWM1-1	SWM5-1	SWT3-2
Carex lacustris	lake-bank sedge	L4	G5	S5			R5																								Х
Carex pensylvanica	Pennsylvania sedge	L4	G5	S5			Х														Х										
Carex sp.	sedge																	Х	Х				Х			Х					Х
POACEAE	GRASS FAMILY																														
* Bromus inermis ssp. inermis	awnless brome	L+	G4G5T ?	SE5			X	X			Х		X												Х						
* Dactylis glomerata	orchard grass	L+	G?	SE5			Х	Х																							
* Elymus repens	quack grass	L+	G?	SE5			Х	Х					Х																		
Glyceria striata	fowl manna grass	L5	G5	S5			Х																								Х
Phalaris arundinacea	reed canary grass	L+?	G5	S5			Х	Х						Х										X	Х						Х
Phragmites australis ssp. australis								X			Х													X	Х	X					
Poa palustris	fowl meadow grass	L5	G5	S5			U																								Х
Poa pratensis ssp. pratensis	Kentucky bluegrass	L+	G5T	S5			Х	Х		Х		Х			Х																1
ТҮРНАСЕАЕ	CATTAIL FAMILY																														
Typha angustifolia	narrow-leaved cattail	L+	G5	S5			Х																	X	Х	Х					
Typha latifolia	broad-leaved cattail	L4	G5	S5			Х																	X		Х					
Typha X glauca	glaucous cattail	L+	HYB	S5			Х																			Х					
LILIACEAE	LILY FAMILY																														
* Convallaria majalis	lily-of-the-valley	L+	G5	SE5			Х			Х											Х										
Maianthemum canadense	wild lily-of-the-valley	L4	G5	S5			Х											Х			Х										
Maianthemum racemosum ssp. racemosum	false Solomon's seal	L5	G5T	S5			X										X	Х													
Maianthemum stellatum	star-flowered Solomon's seal	L5	G5	S5			X								Х																
Polygonatum pubescens	hairy Solomon's seal	L3	G5	S5			Х											Х													

*-introduced species / X – species present

APPENDIX C ACRONYMS AND DEFINITIONS USED IN SPECIES LISTS

ACRONYMS AND DEFINITIONS USED IN SPECIES LISTS

G-Rank Global Rank

Global ranks are assigned by a consensus of the network of Conservation Data Centres, scientific experts, and the Nature Conservatory to designate a rarity rank based on the range-wide status of a species, subspecies or variety.

The most important factors considered in assigning global ranks are the total number of known, extant sites world-wide, and the degree to which they are potentially or actively threatened with destruction. Other criteria the number of known populations considered to be securely protected, the size of the various populations, and the ability of the taxon to persist at its known sites. The taxonomic distinctness of each taxon has also been considered. Hybrids, introduced species, and taxonomically dubious species, subspecies and varieties have not been included.

G1=	Extremely rare; usually 5 or fewer occurrences in the overall range or very few remaining individuals; or because of some factor(s) making it especially vulnerable to extinction.
G2 =	Very rare; usually between 5 and 20 occurrences in the overall range or with many individuals in fewer occurrences; or because of some factor(s) making it vulnerable to extinction.
G3 =	Rare to uncommon; usually between 20 and 100 occurrences; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances. Common: usually more than 100 occurrences: usually not susceptible to
G4 =	immediate threats.
G5 =	Very common; demonstrably secure under present conditions.
GH =	Historic, no records in the past 20 years.
GU =	Status uncertain, often because of low search effort or cryptic nature of the species; more data needed.
GX =	Globally extinct. No recent records despite specific searches.
? =	Denotes inexact numeric rank (i.e. G4?).
G" " =	A "G" (or "T") followed by a blank space means that the NHIC has not yet obtained the Global Rank from The Nature Conservancy.
G? =	Unranked, or, if following a ranking, rank tentatively assigned (e.g. G3?). Denotes that the taxonomic status of the species, subspecies, or variety is
Q =	questionable.
Τ=	Denotes that the rank applies to a subspecies or variety.

S-Rank Provincial Rank

Provincial (or Sub-national) ranks are used by the Ontario Ministry of Natural Resources Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for the global ranks, but consider only those factors within the political boundaries of Ontario. By comparing the global and provincial ranks, the status, rarity, and the urgency of conservation needs can be ascertained. The NHIC evaluates provincial ranks on a continual basis and produces updated list at least annually.

S1 =	Critically imperiled in Ontario 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 in Ontario because of rarity due to very restricted range, very few populations (often 20 or fewer occurrences) steep declines or other factors making it very vulnerable to extirpation.
- S3 = Vulnerable in Ontario 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 in Ontario.

SX = Presumed Extirpated - specie or community is believed to be extirpated from Ontario.

SNR = assessed

SU = Unrankable - currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

- 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 or community. Ranges cannot skip more than one rank (e.g. SU is used rather that S1S4).

COSEWIC Committee On The Status Of Endangered Wildlife in Canada

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assesses the national status of wild species that are considered to be at risk in Canada.

Extinct (X) A wildlife species that no longer exists.

	A wildlife species no longer existing in the wild in Canada, but occurring
Extirpated (XT)	elsewhere.
Endangered (E)	A wildlife species facing imminent extirpation or extinction.
	A wildlife species likely to become endangered if limiting factors are not

Threatened (T) reversed.

Special Concern A wildlife species that may become a threatened or an endangered species (SC) because of a combination of biological characteristics and identified threats.

Not at Risk (NAR) A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

Data Deficient A category that applies when the available information is insufficient (a) to resolve a wildlife species' eligibility for assessment or (b) to permit an assessment of the wildlife species' risk of extinction.

COSSARO/OMNR Committee On The Status Of Species At Risk In Ontario/Ontario Ministry Of Natural Resources

The Committee on the Status of Species at Risk in Ontario (COSSARO)/Ontario Ministry of Natural Resources (OMNR) assess the provincial status of wild species that are considered to be at risk in Ontario.

Extinct (EXT)	A species that no longer exists anywhere.
Extirpated (EXP)	A species that no longer exist in the wild in Ontario but still occurs elsewhere.
Endangered	
(Regulated) (END-R)	A species facing imminent extinction or extirpation in Ontario which has been regulated under Ontario's <i>Endangered Species Act</i> .
Endangered (END)	A species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's Endangered Species Act.
Threatened (THR)	A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.
Special Concern (SC)	A species with characteristics that make it sensitive to human activities or natural events.
Not at Risk (NAR)	A species that has been evaluated and found to be not at risk.
Data Deficient (DD)	A species for which there is insufficient information for a provincial status recommendations.

Local Status Niagara Haldimand (Riley 1989)

Species status within the Durham Region was used to determine local vascular plant status for the study area.

R-# = R- Native species present and rare; # - number of stations at which the species has been identified.

U = Uncommon

X = Not classified as rare or uncommon within Niagara Haldimand