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City of Mississauga
Natural Areas Survey - Update

December 2004

Prepared for:
Planning and Building Department
City of Mississauga

Prepared by:
North-South Environmental Inc.
35 Crawford Crescent, PO Box 518
Campbellville, Ontario
L0P 1B0

Cover Photo: Mary Ann Johnson

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STUDY TEAM

North-South Environmental Inc.

Mary Ann Johnson	project manager, fieldwork, database update, report author
Sarah Mainguy	wildlife surveys

City of Mississauga

Eva Kliwer	project supervisor
Nick Biskaris	digital map preparation, database update

1.0 INTRODUCTION

A Natural Areas Survey for the City of Mississauga was undertaken during 1995 and 1996 (Geomatics 1996) which identified one hundred and forty-four natural areas representing the best remaining natural features in the City. Of these 144 natural areas, 141 were classified as Significant Natural Sites, Natural Sites, or Natural Green Spaces, and three were classified as Residential Woodlands. In 1996 the 141 natural sites comprised 7.10% of the total area of the City. Also identified were 55 Special Management Areas (SMAs) and 40 Linkages. Definitions for these classifications have been updated in 2004 and are provided along with the goal and objectives for the Natural Areas System (Geomatics 1996) in Section 3.0.

Since completion of the Natural Areas Survey in 1996 a number of development projects have been initiated within or adjacent to the natural areas originally identified. In order to keep the Natural Areas database current, updates have been undertaken on an annual basis that focus on areas that may have been affected by these developments. Each year, natural areas in different quadrants of the City are reviewed. With the completion of the 2001 work, all Wards in the City were updated once since the initial study in 1996. The start of the second round of updates commenced in 2002 with natural areas in Wards 5 and 6. This year natural areas in Wards 1 and 2 will be updated, as well as a limited number of additional natural areas in other Wards that have been identified as having possible changes.

The intent of updating the Natural Areas Survey is to review the status of natural areas and update information on floristics, fauna, impacts, boundary changes and management needs. In addition, now that the second round of updates is underway, it is anticipated that some trends should emerge. This report documents the methods used, summarizes changes to the natural areas, and provides some recommendations for the mitigation of impacts and management considerations.

2.0 METHODS

2.1 Background Review

The primary focus of this update was the 41 natural areas located in Wards 1 and 2. Also reviewed were seven additional natural areas in the City. These additional sites have been: the subject of recent Environmental Impact Studies (EISs), Conservation Plans or Class Environmental Assessments, recently evaluated as wetlands, investigated by the Toronto and Region Conservation (TRCA), or are locations where Community Services projects have recently been undertaken. Information from the reports reviewed was incorporated into the Natural Areas System database and are listed in Appendix 1.

In addition to the natural areas identified by the City for updating, the following three tasks were also undertaken:

1. Updating the classification criteria for natural areas to reflect recent updates to both plant and animal rarity at the national, provincial and regional levels.
2. Refining the NAS Database to allow City staff to export plant or animal lists as text for use in spreadsheet or word processing programs.

3. Converting all of the site descriptions (fact sheets) from Word Perfect to Microsoft Word format.

A background review was undertaken comprising a careful analysis of aerial photographs and review of reports (inventory reports, EISs, etc.) undertaken since the last update study that may affect natural areas. Colour aerial photographs overlayed with natural area boundaries were used to identify impacts to natural area boundaries. Where necessary, revisions to natural area boundaries were delineated on aerial photographs and verified in the field. Forty-eight sites were thus identified as requiring field investigations (Appendix 2). This includes: all 41 natural areas that occur in Wards 1 and 2, three sites with recently completed conservation plans, two Community Services projects, two sites that were subject to Environmental Impact Studies, one site that was subject to a Class Environmental Assessment, four sites recently investigated by the TRCA, and two adjacent sites recently evaluated as a wetland. Note that some sites fell into more than one of the above categories thus they add up to more than 48. Natural areas within Wards 1 and 2 were, at minimum, the subject of a "drive by" inspection, if there was no permission granted to access privately owned sites.

2.2 Fieldwork

Field visits were made to 45 of the 48 sites identified. Natural areas CL17, LV5 and ETO3 did not receive a field visit because permission to access these sites was not granted. Landowner contact for natural areas in private ownership was undertaken by the City Planning and Building Department. Natural area PC3 was destroyed for development since the last update and, therefore, a "drive by" inspection was conducted.

Appendix 2 lists the reasons for fieldwork, and the date when fieldwork was conducted for each of the remaining 45 natural areas. For those sites in Wards 1 and 2 in public ownership, or for which access was available, a two season field program was undertaken. This entailed a late spring visit to update information on spring ephemeral plant species and a mid summer visit to document summer flora, disturbances and any other changes. In addition, breeding bird surveys were conducted in the early morning hours (05:00 to 10:00) prior to July 10, 2004 for all of the natural areas in Wards 1 and 2 where road access was available. For each natural area, a five-minute point count was obtained in each broad category of habitat (e.g., marsh, deciduous forest, etc.) to obtain approximate numbers of birds. For sites outside of Wards 1 and 2 one field visit was undertaken to document disturbances and any changes.

The following information was recorded on data sheets for each natural area that received a field visit:

- all flora and fauna species observed were recorded, and specimens collected where necessary;
- vegetation community descriptions were updated where necessary;
- evidence of disturbance, regeneration and management needs were noted; and
- the overall condition was qualitatively rated in comparison to other sites in the City.

2.3 Analysis

The City of Mississauga database records and fact sheets for each natural area were updated based on the literature review and fieldwork carried out in 2004. Hard copies of species lists and field notes were provided under separate cover to the City.

The provincial rarity ranks of floral and faunal species were also reviewed to determine the need for updating. Provincial rarity status was based on Natural Heritage Information Centre (NHIC 2004) rankings. The natural areas summary table for the City (Table 4 in the Natural Areas Survey, Geomatics 1996) was updated to allow a comparison of the revised sites with other natural areas in the City (see Table 1, page 8).

The Floristic Quality Indices (FQI) were updated for natural areas where the floral inventory changed between 1996 and 2004. For a summary of the methodology and interpretation of the Floristic Quality Assessment see the Natural Areas Survey (Geomatics 1996). Overall, the definitions for the high, medium and low categories of the native mean coefficients (high > 4.00, medium 3.3 to 3.99, low < 3.3) and Floristic Quality Indices (FQIs) (high > 40, medium 30 to 39.99, low < 30) remained the same as in 1996.

Recent disturbances, threats and management needs were noted where they changed from previous assessments (Geomatics 1996, 1998; North-South Environmental 1999, 2000, 2001, 2002). Recommendations for the mitigation of real or potential impacts that resulted from recent developments, including naturalization projects, were provided.

2.4 Mapping

Boundary changes identified for natural areas were updated on colour aerial photographs overlayed with natural area boundaries provided by the City. Boundary delineation followed the approach used in the Natural Areas Survey (Geomatics 1996). These revisions were subsequently digitized using MicroStation GeoGraphics format by the City of Mississauga, Geographic Technology Services. Updated surficial areas (hectares and acres) for the natural areas and vegetation communities were determined using GIS and incorporated into the database. Updated UTM coordinates for the natural areas and vegetation communities were also incorporated into the database.

3.0 NATURAL AREAS SYSTEM

3.1 Goals and Objectives

The goals and objectives of Mississauga's Natural Areas System were originally proposed in the Natural Areas Survey (Geomatics 1996) and are reproduced here to provide a background to the Natural Area classification scheme which was updated this year. The goal provides an overall direction and indicates an ideal end point that the program strives to attain, while the objectives represent achievable milestones. The degree to which the objectives are achieved can be used to evaluate the overall success of the program.

Goal

"*To protect, for the long-term, remnant natural areas in the City of Mississauga that are representative of the indigenous ecosystems and landscapes that once characterized the area. The maintenance and restoration of ecological integrity of natural areas shall be paramount in this regard.*"

Objectives

1. Maintain and, where possible and feasible, restore natural ecological processes (such as natural regeneration, decomposition, nutrient cycling, and groundwater recharge and discharge) in remnant natural areas and the surrounding lands which affect them.

2. Maximize biological diversity in the City through the protection and maintenance of native flora and fauna and the ecological interactions between them and the environment.

3. Protect identified natural areas in the City from further fragmentation by development, road construction and utility routing.

4. Maintain, restore, or create functional ecological linkages between remnant natural areas.

5. Minimize impacts on identified natural areas through designation of compatible adjacent land uses.

6. Develop and initiate a stewardship program that will actively involve the public in the management and protection of natural areas.

7. Minimize harmful disturbance to identified natural areas through:
   i) controlling and limiting access in areas sensitive to human use;
   ii) limiting the type of recreational activities that are permitted in natural areas; and
   iii) reviewing and refining City trail plans and standards to respect the sensitive nature of natural areas and as a means to control certain activities.

8. Develop and implement natural area management in areas requiring mitigation of existing or historic impacts including:
   i) development of management plans for specific natural areas;
   ii) removing and controlling non-native plant species where required;
   iii) restoring indigenous vegetation where appropriate;
   iv) removing litter and dumped materials from natural areas; and
   v) rehabilitating and controlling, using non-engineered solutions, areas where erosion has occurred with emphasis on eliminating the cause of the problem, rather than treating symptoms.

9. Periodically update the inventory of natural areas and maintain a current electronic database of the flora and fauna of all natural areas.

10. Develop and implement a public education program to increase general awareness of the value of natural areas and the protection and management required to preserve them.

3.2 Natural Area Classification Scheme

As part of the Natural Areas Survey (Geomatics 1996), a classification scheme that discriminated among natural areas based on their "degree of naturalness" was proposed as a component of their long-term protection. This classification scheme could then be used as a basis for management, establishing appropriate uses, protection measures, priority for acquisition, etc. Not withstanding this, a fundamental principle of the Natural Areas Survey is that all remnant natural areas are part of a system, with all natural areas regardless of their classification contributing to the health of the system, with the loss of any one area diminishing the system as a whole.

With recent changes to the rarity status of significant species at the national, provincial and regional levels, updated criteria for classifying the natural areas are provided here. Changes to the criteria as defined in Geomatics (1996) are highlighted in bold. There are three classes of natural areas: Significant Natural Site, Natural Site and Natural Green Space. Areas still need only fulfill one criterion in any of these classes to be designated in that class. In addition, there are three other classes that contribute to the natural areas system: Special Management Areas, Residential Woodlands and Linkages. There have been no changes to any natural areas as a result of the changes in the classification scheme.

Natural Areas

Significant Natural Site

These are areas that are outstanding from a natural areas perspective, in the context of the City of Mississauga. Significant Natural Sites must fulfill one of the following criteria:

- ANSI, ESA and other areas designated for outstanding ecological features
- areas with a Floristic Quality Index (FQI) of ≥ 40.00
- areas with a mean floristic coefficient of ≥ 4.50
- woodlands ≥ 10ha (25 acres) in size
- areas that support provincially significant **(S1, S2, S3)** or **"species at risk" listed as special concern**, threatened or endangered **(designated by COSEWIC or COSSARO)**
- woodlands with the potential to provide interior conditions (i.e., no dimension of the woodland is < 700m)
- woodlands that support old-growth trees (≥ 100 years old)
- wetlands ≥ 2ha (5 acres) in size regardless of rank
- the Credit River and Etobicoke Creek valleys

Natural Site

These are areas that represent good examples of remnant features that once characterized the City of Mississauga. Natural Sites must fulfill one of the following criteria:

- woodlands ≥ 2ha (5 acres) but < 10ha (25 acres) (defined as forests which support appropriate understory and canopy species
- **areas** that represent uncommon vegetation associations in the City
- **areas that support regionally significant plant (in the City of Mississauga) or animal species (CVC species of concern)**
- areas with a Floristic Quality Index (FQI) of 25.00 to 39.99
- areas with a mean floristic coefficient of 3.50 to 4.49

- areas that include natural (i.e., not engineered) landscape features [i.e., valley lands, watercourses, unusual (in the context of the City) landform features]

Natural Green Space
This class includes areas which perform ecological functions but do not satisfy any of the criteria for the previous two natural area classes. Natural Green Space includes:

- watercourses with vegetation other than mowed grass, even if they are predominantly engineered (i.e., straightened or channelized)
- wooded areas that are < 2ha (5 acres) in size and do not fulfill any of the other criteria for Natural Site or Significant Natural Site
- Lakes Aquitaine and Wabukayne

Other Contributing Areas
There has been no change to the definition of these areas in 2004. They are provided here to complete the description of the Natural Areas System.

Residential Woodland
These are older residential areas, generally with large lots, and almost completely in private ownership. They support trees with a mature, fairly continuous canopy, but the native understory is generally absent or degraded, usually through maintenance of residential lawns and landscaping. However, these areas still serve some functions such as: providing habitat for tolerant canopy birds, both in migration and for breeding; fixing atmospheric carbon; and facilitating groundwater recharge owing to the high proportion of permeable ground cover. With approaches that involve landscaping with native species, the ecological function of these areas would be greatly increased.

Special Management Areas
These are areas adjacent or close to existing natural areas, and which have the potential for restoration, or which should be planned or managed specially. They are primarily identified to alert planners to the possibility of directing compatible land uses to lands adjacent to natural areas.

Linkages
These are areas which serve to link two or more of any of the previous 5 classes within the City, or to natural areas outside City boundaries. It is noted that many of the City's ecological linkages have been designated as Significant Natural Sites or Natural Sites owing to their overall significance beyond their linkage function (e.g., Credit River valley and Etobicoke Creek valley). Linkages could include:

- stormwater management facilities including ponds and watercourses;
- designated open space;
- rights-of-way; and
- greenspace along major arterial roads providing there is an adequate barrier between the linkage and the roadway.

4.0 NATURAL AREAS FRAMEWORK

Table 1 (page 8) summarizes the current information available for each natural area in the City of Mississauga. This table updates Table 4 from Geomatics (1996) and summarizes the following information:

- the classification of each natural area;
- designation of natural areas as significant features (ANSI, ESA, evaluated wetland);
- size of each natural area in hectares and acres;
- the number of floral species;
- the proportion of the flora that is non-native;
- the native FQI and native mean coefficient;
- the number of vegetation communities;
- the number of provincially and regionally significant floral and faunal species;
- the number of bird, mammal, amphibian and reptile species;
- the number of Credit Valley Conservation species of conservation interest; and
- the condition of the natural areas.

Appendix 3 documents the changes that occurred in natural areas between 1996 and 2004 using the same categories. Some of the changes outlined in Appendix 3 are minor revisions while others are considered significant in the context of the natural areas program. Significant changes are considered to be:

- a change in the classification of a natural area (e.g., from Significant Natural Site to Natural Site);
- a change in the designation of a natural area (e.g., the removal or addition of ANSI status);
- a change of more then 25% in the original size of a natural area;
- a change in the FQI or native mean coefficient rank for a natural area (e.g., a rank that goes from a high to medium category);
- the addition of rare floral or faunal species (provincial, local and CVC); and
- the addition or deletion of a vegetation community.

Figure 1 (see page 18) shows the location of natural areas, Special Management Areas, Residential Woodlands (RW) and Linkages. This figure updates Figure 2 from Geomatics (1996). Due to the scale of mapping, Significant Natural Sites (SNS), Natural Sites (NS) and Natural Green Space (NGS) are not discriminated on this map, and are all labelled as "natural area". The definition and location of "minor natural features" and "shoreline reaches" are the same as in the Geomatics (1996) report.

Table 1. Summary of natural area features, significance and condition. This table represents an update of Table 4 in the Natural Areas Survey (Geomatics 1996). Native FQI and native mean C are defined in the Natural Areas Survey (Geomatics 1996). Definitions for provincially significant species (prov. sig. species) and regionally significant species (reg. sig. species) are in the Natural Areas Survey (Geomatics 1996) with updates as discussed in this report (section 4.0). See North-South (2000), Section 4.4, for a discussion of Credit Valley Conservation (CVC) Species of Conservation Interest. Condition is explained in Appendix 1 of the Natural Areas Survey (Geomatics 1996). Abbreviations used in this table are as follows: n/a = not available. ✦ Areas evaluated that changed between 1996 and 2004 (see Appendix 4 for a summary of the changes).

Site #	Site Code	Classification	Designation	Area		Flora								Fauna					Condition
				(ha)	(acres)	total	# non-native	% non-native	native FQI	native mean C	# veg comm	prov. sig. species	reg. sig. species	# birds	# mammals	# reptiles & amphibians	prov. sig. species	CVC	
1✦	SD1	Significant Natural Site		19.55	48.28	170	67	39.41%	35.96	3.54	6	1	10	113	7	2		6	Fair
2✦	SD4	Natural Site		23.66	58.45	106	24	22.64%	31.69	3.50	6		2	13				2	Fair
3✦	SD5	Significant Natural Site		10.14	25.05	80	17	21.25%	34.65	4.37	3		5	14	1	1		2	Good
4✦	CL52	Natural Site		6.69	16.53	73	43	58.90%	14.61	2.67	1			25	1	2		3	Poor
5✦	CL1	Significant Natural Site		3.59	8.86	80	17	21.25%	34.65	4.37	1		5	14	1	1		2	Good
6✦	CL9	Significant Natural Site	ESA,ANSI,wetland	45.62	112.68	501	163	32.53%	80.30	4.37	13	1	133	203	22	21	3	14	Good
7✦	CL8	Significant Natural Site	wetland	11.28	27.86	85	24	28.24%	24.58	3.15	8		6	28	10	1		5	Good
8✦	CL15	Natural Site		0.83	2.05	54	9	16.67%	25.79	3.84	1		3	10	3			1	Fair
9✦	CL16	Significant Natural Site		11.79	29.12	161	49	30.43%	39.02	3.84	6	1	15	42	17			6	Fair - Poor
10✦	CL17	Residential Woodland		33.28	82.21	73	15	20.55%	0.00	0.00	1		19			4			n/a
11✦	CL13	Natural Site		7.03	17.35	86	49	56.98%	15.04	2.54	3		1	11	1			1	Poor
12✦	CL43	Natural Site		4.16	10.27	87	18	20.69%	31.18	3.75	2		6	14	2			1	Fair - Poor
13✦	CL42	Natural Site		8.31	20.54	119	34	28.57%	37.31	4.05	3		12	18	1			4	Fair - Poor
14✦	CL21	Significant Natural Site	ESA,wetland	9.05	22.34	112	23	20.54%	41.23	4.37	3		20	17	3	1		3	Fair - Poor
15✦	CL39	Significant Natural Site		12.59	31.10	271	79	29.15%	57.23	4.13	2		43	39	6	8		7	Fair
16✦	CL22	Significant Natural Site	ESA,ANSI	17.75	43.84	134	46	34.33%	37.31	3.98	1	1	13	2	1	6			Good
17✦	CL30	Significant Natural Site	ESA,ANSI	0.06	0.15	83	33	39.76%	27.86	3.94	1	1	20	1					Fair
18✦	CL31	Significant Natural Site	ESA,ANSI	2.55	6.29	82	34	41.46%	23.09	3.33	1		3	4	1				Poor

Site #	Site Code	Classification	Designation	Area		Flora								Fauna					Condition
				(ha)	(acres)	total	# non-native	% non-native	native FQI	native mean C	# veg comm	prov. sig. species	reg. sig. species	# birds	# mammals	# reptiles & amphibians	prov. sig. species	CVC	
19✦	CL24	Significant Natural Site	ESA,ANSI	7.76	19.16	245	65	26.53%	59.89	4.46	5	1	36	20	1	1		3	Good
20✦	CL26	Significant Natural Site		1.97	4.86	189	70	37.04%	36.03	3.30	1	1	17	19	7				Fair
21✦	PC1	Natural Site		1.03	2.54	101	49	48.51%	25.17	3.56	1		7	69	1			1	Poor
22✦	PC2	Natural Green Space		4.37	10.79	26	15	57.69%	0.00	0.00	1			5		1			Poor
23✦	PC3	Removed		0	0	11	3	27.27%	0.00	0.00	1								Removed
24✦	CRR9	Significant Natural Site	ESA,ANSI,wetland	25.63	63.30	49	17	34.69%	20.86	3.69	3		17	40	1	10	2	9	Fair
25✦	MI4	Residential Woodland		154.31	381.15	28	16	57.14%	0.00	0.00	1		1						Fair
26✦	MI1	Natural Site		5.64	13.94	57	36	63.16%	0.00	0.00	4			51	2			2	Fair
27✦	LV3	Natural Site		3.54	8.75	94	36	38.30%	28.23	3.71	5		1	34	3			4	Fair
28✦	LV4	Natural Site		2.31	5.70	51	27	52.94%	11.29	2.30	5		2	20	1			1	Poor
29✦	LV5	Natural Green Space		1.12	2.77				0.00	0.00	1								Poor
30✦	LV2	Natural Site		2.09	5.17	40	13	32.50%	13.09	2.52	1			12	1			2	Poor
31✦	LV1	Significant Natural Site		14.22	35.12	123	46	37.40%	29.74	3.39	5	1	1	27	2			5	Fair
32✦	ETO8	Significant Natural Site		16.67	41.17	101	37	36.63%	29.21	3.65	4		4	26	6	1		5	Fair
33✦	LV14	Natural Site		1.86	4.59	51	24	47.06%	15.20	2.93	1			10				1	Poor
34✦	LV6	Natural Site		2.03	5.01	82	24	29.27%	29.41	3.86	1		4	7	1			1	Fair
35✦	LV7	Significant Natural Site	ESA,ANSI,wetland	21.56	53.25	336	110	32.74%	63.66	4.23	2	1	62	68	7	5	1	5	Good
36✦	ETO7	Significant Natural Site	ESA	32.40	80.02	103	38	36.89%	24.82	3.08	3		6	11	2	11	3	1	Fair
37✦	SP1	Natural Site		7.17	17.7	194	77	39.69%	39.57	3.66	5		17	27	7			4	Fair
38✦	SP3	Significant Natural Site		8.54	21.09	134	30	22.39%	40.89	4.01	5		11	13	2	1		2	Good
39✦	SH6	Natural Site		6.28	15.51	104	49	47.12%	24.68	3.33	4		2	12	3			1	Poor
40	CRR7	Significant Natural Site	ESA,ANSI	88.94	219.69	93	23	24.73%	34.90	4.17	3	1	10	29	5	7		8	Good

Site #	Site Code	Classification	Designation	Area		Flora								Fauna					Condition
				(ha)	(acres)	total	# non-native	% non-native	native FQI	native mean C	# veg comm	prov. sig. species	reg. sig. species	# birds	# mammals	# reptiles & amphibians	prov. sig. species	CVC	
41	CRR8	Significant Natural Site	ESA,ANSI,wetland	110.62	273.23	50	3	6.00%	0.00	0.00	4	1	30	38	6	8	1	6	Good
42	ER6	Significant Natural Site		1.31	3.24	46	18	39.13%	18.33	3.46	1	1		5	1				Poor
43	CRR6	Significant Natural Site	ESA,ANSI	134.94	333.3	272	91	33.46%	61.74	4.59	4	2	64	67	7	18	1	10	Good
44	CV1	Natural Site		1.71	4.22	52	25	48.08%	14.05	2.70	2			6	1				Fair
45	CV2	Residential Woodland		50.66	125.14	143	42	29.37%	41.29	4.11	1	1	10	6	1				Fair
46	CV12	Significant Natural Site		6.99	17.27	213	93	43.66%	38.34	3.50	3	1	16	4	1				Fair
47	CV10	Natural Site		4.26	10.53	51	22	43.14%	15.04	2.79	2		1	6	1				Poor
48	CV8	Natural Site		8.04	19.85	60	25	41.67%	15.72	2.66	4		2	7	2				Poor
49	ETO6	Significant Natural Site		9.52	23.52				0.00	0.00	3								Poor
50	AW1	Significant Natural Site		7.98	19.71	75	27	36.00%	22.41	3.23	3	1	2	10	1				Poor
51	WB1	Natural Site		3.94	9.73	57	10	17.54%	26.11	3.81	5			5		1			Fair
52	EM30	Natural Site		5.57	13.75	68	9	13.24%	30.98	4.03	5		7	7	8				Good
53	EM6	Natural Site		1.07	2.65	58	14	24.14%	24.72	3.73	1		1	6	1				Fair
54	EM2	Significant Natural Site		4.90	12.09	74	15	20.27%	29.81	3.88	1	1		8	1				Fair
55	EM10	Natural Site		3.73	9.22	54	13	24.07%	22.96	3.59	2			4	2				Fair
56	EM14	Significant Natural Site		9.19	22.70	74	36	48.65%	17.36	2.82	2	1		8					Poor
57✦	EM4	Significant Natural Site	ESA,ANSI	42.98	106.17	240	66	27.50%	56.25	4.26	8	2	32	67	5	6		2	Good - Fair
58	EM5	Natural Site		1.87	4.63	49	17	34.69%	22.27	3.94	1			4					Fair
59	EM21	Natural Site		1.13	2.80	42	8	19.05%	19.89	3.41	1			2	1				Fair
60	CR1	Significant Natural Site	ESA	4.90	12.1	70	11	15.71%	33.72	4.39	2		6	4	1				Fair
61	FV1	Natural Site		2.11	5.22	54	11	20.37%	22.72	3.47	1		2	2					Fair
62	FV3	Natural Site		6.76	16.71	100	39	39.00%	27.27	3.49	3			16	2				Fair

Site #	Site Code	Classification	Designation	Area		Flora								Fauna					Condition
				(ha)	(acres)	total	# non-native	% non-native	native FQI	native mean C	# veg comm	prov. sig. species	reg. sig. species	# birds	# mammals	# reptiles & amphibians	prov. sig. species	CVC	
63	CC1	Significant Natural Site		3.18	7.84	145	48	33.10%	36.84	3.76	1	1	9	10	1				Fair
64	MY1	Significant Natural Site		13.44	33.20	145	48	33.10%	36.84	3.76	2	1	9	10	1				Fair
65	MY3	Natural Green Space		3.71	9.16	41	26	63.41%	6.45	1.67	1		1						Poor
66	AW4	Natural Site		11.71	28.92	42	28	66.67%	7.49	2.08	1		2	3					Poor
67	AW3	Natural Green Space		7.92	19.57	52	30	57.69%	12.87	2.81	2			8	1				Poor
68	ETO5	Significant Natural Site		7.72	19.06	53	31	58.49%	9.65	2.16	2		2	8	1				Poor
69	ETO4	Significant Natural Site	ESA	58.00	143.27	149	41	27.52%	43.06	4.20	3	1	16	24	3	5		2	Fair
70	RW5	Natural Site		3.51	8.68	54	26	48.15%	11.96	2.35	1		2	7	1				Poor
71	RW6	Natural Site		7.31	18.06	51	28	54.90%	10.55	2.42	1		1	11	1				Poor
72	RW4	Natural Site		1.09	2.68	44	7	15.91%	24.99	4.11	1			7	1				Fair
73	RW1	Significant Natural Site		2.11	5.21	69	12	17.39%	34.04	4.51	1		3		1				Fair
74	RW2	Natural Green Space		3.90	9.63	34	20	58.82%	9.89	2.64	1			4					Poor
75	CM7	Significant Natural Site		11.38	28.12	89	18	20.22%	35.13	4.17	3		3	15	1	5	1		Excellent
76	CM9	Natural Site		3.37	8.34	64	12	18.75%	27.74	3.85	2		3	8	2				Good
77	CM11	Removed		0	0	22	1	4.55%	18.33	4.00	1			1					Removed
78	CM12	Natural Site		5.77	14.25	82	16	19.51%	30.65	3.77	1		3	14	5	6			Good
79	CM17	Removed		0	0	25	4	16.00%	16.80	3.67	1			5					Removed
80	CM13	Removed		0	0	37	14	37.84%	16.26	3.39	1			1	1				Removed
81	CE7	Significant Natural Site		10.08	24.9	98	30	30.61%	33.35	4.04	2	1	6	4	1	7			Good
82	CE9	Natural Site		4.74	11.7	78	17	21.79%	32.52	4.16	3		5	10	2				Fair
83	CE10	Significant Natural Site		18.20	44.95	111	23	20.72%	39.12	4.17	3		10	13	2	2			Good - Fair
84	CE5	Natural Green Space		5.47	13.50	13	8	61.54%	2.68	1.20	1								Poor

Site #	Site Code	Classification	Designation	Area		Flora								Fauna					Condition
				(ha)	(acres)	total	# non-native	% non-native	native FQI	native mean C	# veg comm	prov. sig. species	reg. sig. species	# birds	# mammals	# reptiles & amphibians	prov. sig. species	CVC	
85	CE1	Natural Green Space		16.93	41.82	50	23	46.00%	0.00	0.00	2			3		5			Poor
86	CE12	Significant Natural Site		17.62	43.51	97	42	43.30%	22.52	3.04	2	1	1	14	3	1			Fair
87	CRR5	Significant Natural Site		24.74	61.10	64	26	40.63%	21.09	3.42	2	1		15	2	2	1	2	Fair
88	CRR4	Significant Natural Site	ESA,ANSI	21.17	52.29	54	22	40.74%	18.07	3.19	4		6	22	3	7	2	5	Good
89	SV12	Significant Natural Site		1.72	4.25	97	42	43.30%	22.52	3.04	1	1	1	14	3	1			Fair
90	SV10	Natural Green Space		3.04	7.50	40	20	50.00%	10.29	2.30	1			1		1			Poor
91	SV1	Significant Natural Site		4.57	11.29	102	23	22.55%	35.67	4.01	2	1	5	10	2				Fair
92	CRR3	Significant Natural Site		68.94	170.28	91	31	34.07%	27.44	3.54	4	1	3	37	5	8	1	7	Fair
93	CRR2	Significant Natural Site	ESA,ANSI	91.29	225.50	112	35	31.25%	33.85	3.86	12		3	45	9	11		11	Good
94	EC22	Natural Site		2.32	5.73	75	9	12.00%	31.14	3.83	1		6	4	2				Fair - Poor
95	EC10	Removed		0	0	46	10	21.74%	21.83	3.64	2		1	2					Removed
96✦	EC13	Significant Natural Site	wetland	4.39	10.84	186	31	16.67%	54.62	4.39	4		71	88	6	11		13	Excellent
97	EC1	Removed	ESA,wetland	0	0	10	4	40.00%	4.90	2.00	1		1	5		2			Removed
98	HO1	Natural Site		1.20	2.97	33	7	21.21%	19.81	3.88	1			5	1				Fair - Poor
99	HO2	Removed		0	0	24	3	12.50%	18.77	4.10	2			3					Removed
100	HO3	Natural Site		14.41	35.59	60	11	18.33%	26.43	3.78	3			13	2				Fair
101	HO6	Natural Green Space		8.50	21.00				0.00	0.00	1								Poor
102	HO7	Natural Site		1.07	2.65	80	17	21.25%	30.62	3.86	2		4	8	1				Fair - Poor
103	HO9	Significant Natural Site	ESA	11.34	28.01	207	55	26.57%	51.34	4.16	1	1	22	19	2	1			Good - Poor
104	NE4	Natural Site		13.43	33.17	106	19	17.92%	34.31	3.68	5		9	8					Excellent
105	NE3	Natural Green Space		2.59	6.40	29	10	34.48%	0.00	0.00	2								Poor
106	NE2	Removed		0	0	55	10	18.18%	28.17	4.20	1		4	5					Removed

Site #	Site Code	Classification	Designation	Area		Flora								Fauna					Condition
				(ha)	(acres)	total	# non-native	% non-native	native FQI	native mean C	# veg comm	prov. sig. species	reg. sig. species	# birds	# mammals	# reptiles & amphibians	prov. sig. species	CVC	
107	NE1	Natural Green Space		0.95	2.35	62	27	43.55%	17.24	2.91	1			4					Fair
108	NE6	Significant Natural Site		2.66	6.58	60	15	25.00%	24.00	3.58	2	1	1	4	1				Good
109	NE5	Natural Green Space		12.20	30.14	17	11	64.71%	0.00	0.00	1			1					Poor
110	NE7	Natural Green Space		2.76	6.82				0.00	0.00	1								Poor
111	ETO3	Significant Natural Site		78.87	194.81	400	164	41.00%	56.35	3.67	4	1	59	7	5	5		3	Fair - Poor
112	NE8	Natural Green Space		2.98	7.37				0.00	0.00	1								Poor
113	NE10	Natural Green Space		8.27	20.42				0.00	0.00	1								Poor
114	NE11	Natural Green Space		5.63	13.90				0.00	0.00	1								Poor
115	NE12	Natural Green Space		6.49	16.02				0.00	0.00	1								Poor
116	ETO2	Significant Natural Site		13.01	32.14	31	19	61.29%	7.22	2.08	1			3	1				Poor
117	ETO1	Significant Natural Site		9.13	22.55	39	10	25.64%	15.00	2.79	4		1	4	2				Fair - Poor
118✦	NE9	Significant Natural Site		46.00	113.61	197	78	39.59%	37.74	3.47	4	1	27	39	3	4		5	Fair
119	LS1	Significant Natural Site	wetland	28.47	70.32	111	39	35.14%	28.99	3.42	3		7	9	1				Good - Poor
120	LS2	Natural Site		1.03	2.55	52	16	30.77%	23.50	3.92	1			5	1				Fair
121	LS3	Natural Site		3.00	7.40	95	30	31.58%	28.16	3.49	3		4	4	1	2			Fair
122	ME10	Significant Natural Site		2.92	7.22	64	17	26.56%	26.26	3.83	1	1	2	4	1				Fair
123	ME12	Significant Natural Site		2.90	7.16	64	36	56.25%	14.63	2.81	1			8	2	7	1		Poor
124	ME11	Natural Green Space		4.36	10.78	56	27	48.21%	11.13	2.43	1		3	9	2	4			Poor
125	ME9	Natural Site		2.39	5.90	54	13	24.07%	29.20	4.56	1		3	2	1				Fair
126	ME8	Significant Natural Site		5.82	14.38	90	24	26.67%	31.27	3.85	1	1	4	5	3	4			Fair
127	MB9	Natural Green Space		6.60	16.31				0.00	0.00	1					2			Poor
128	MB7	Natural Green Space		10.45	25.80	35	20	57.14%	6.92	1.79	1			4					Poor

Site #	Site Code	Classification	Designation	Area		Flora								Fauna					Condition
				(ha)	(acres)	total	# non-native	% non-native	native FQI	native mean C	# veg comm	prov. sig. species	reg. sig. species	# birds	# mammals	# reptiles & amphibians	prov. sig. species	CVC	
129	MB8	Significant Natural Site		10.17	25.11	90	24	26.67%	31.27	3.85	2	1	4	5	3	4			Fair
130	MB3	Natural Green Space		4.91	12.13	26	15	57.69%	4.82	1.45	1			3		1			Poor
131	MB5	Removed		0	0	42	5	11.90%	23.67	3.89	1								Removed
132	MB4	Natural Site		1.94	4.78	40	11	27.50%	19.31	3.59	1								Poor
133	MB6	Significant Natural Site		23.76	58.71	100	18	18.00%	33.57	3.71	2		9	5	2	2			Good
134	MB2	Natural Site		1.34	3.31	41	6	14.63%	23.66	4.00	1		1	1					Poor
135	MB1	Natural Site		0.94	2.32	34	6	17.65%	22.87	4.32	1								Fair
136	MV19	Significant Natural Site		22.93	56.64	212	56	26.42%	51.80	4.15	6		31	23	6	4			Good
137✦	CRR1	Significant Natural Site	ESA, wetland	69.82	172.46	252	82	32.54%	49.07	3.76	10	1	37	29	5	7		4	Fair
138	MV18	Natural Site		2.60	6.43	19	1	5.26%	0.00	0.00	2		1	7				2	Fair
139	MV2	Significant Natural Site	ESA,ANSI	60.55	149.57	218	71	32.57%	47.33	3.90	5	1	19	67	15	5	1	14	Good - Fair
140	MV3	Removed		0	0	57	17	29.82%	23.40	3.70	1			6	2				Removed
141✦	MV12	Natural Site		8.27	20.44	125	35	28.00%	36.26	3.82	2		7	8	4				Fair
142	MV14	Removed		0	0				0.00	0.00	1								Removed
143	MV11	Natural Site		2.90	7.17	24	4	16.67%	17.44	3.90	1			1					Fair
144	MV15	Natural Site		10.69	26.41	53	24	45.28%	14.48	2.69	2		1	7	1				Poor
145	GT1	Removed		0	0	41	10	24.39%	18.50	3.32	1		1	2					Removed
146	GT2	Natural Site		7.20	17.78	68	11	16.18%	29.80	3.95	6		6	10	3	1			Good
147	GT3	Natural Site		2.67	6.59	43	11	25.58%	18.74	3.31	2		1	1					Fair
148	GT4	Removed		0	0	206	56	27.18%	51.03	4.17	1		22	22	4	1			Removed
149	MA1	Natural Site		24.06	59.42	61	31	50.82%	13.66	2.63	1		3	4					Poor
150✦	SD7	Significant Natural Site		3.81	9.41	94	49	52.13%	18.84	2.84	3	1	5	54	1			1	Poor

Site #	Site Code	Classification	Designation	Area		Flora								Fauna					Condition
				(ha)	(acres)	total	# non-native	% non-native	native FQI	native mean C	# veg comm	prov. sig. species	reg. sig. species	# birds	# mammals	# reptiles & amphibians	prov. sig. species	CVC	
151✦	MI17	Significant Natural Site		5.98	14.77	167	54	32.34%	43.56	4.10	2		16	19	8	3		3	Fair
152✦	MI7	Significant Natural Site		4.98	12.30	125	39	31.20%	39.90	4.30	2	1	7	10	4			2	Poor
153	CV6	Natural Site		2.71	6.69	57	13	22.81%	20.80	3.14	1		1	2	1				Fair
154	CRR10	Significant Natural Site	ESA,ANSI	63.58	157.04	365	130	35.62%	66.56	4.34	9	2	67	88	9	10	1	26	Good
155	CRR11	Significant Natural Site	ESA	32.16	79.44	101	44	43.56%	24.64	3.26	4		3	19	2	5			Good
156	ER7	Natural Site		3.15	7.78	50	17	34.00%	15.91	2.81	3		2	2	1				Poor

Figure 1. Legend For Natural Area Framework for the City of Mississauga (arranged by Planning District). Note: There are 136 natural areas and 3 Residential Woodlands identified on Figure 1, however 143 areas are listed below because 4 areas span two planning districts and are thus listed twice).

SOUTHDOWN
1. SD1
2. SD4
3. SD5 (Meadowwood)
150. SD7 (Lakeside)

CLARKSON-LORNE PARK
4. CL52 (Meadowwood)
5. CL1 (Meadowwood)
6. CL9 (Rattray Marsh)
7. CL8
8. CL15
9. CL16 (Jack Darling Park)
10. CL17 (Lorne Park Estates)
11. CL13
12. CL43
13. CL42
14. CL21 (Birch Glen)
15. CL39 (Whiteoaks)
16. CL22
17. CL30 (Lorne Park Prairie)
18. CL31 (Lornewood Creek Trail)
19. CL24 (Tecumseh)
20. CL26
24. CRR9 (Credit River Flats)

PORT CREDIT
21. PC1 (Rhododendron Gardens)
22. PC2 (Port Credit Memorial)

MINEOLA
24. CRR9 (Credit River Flats)
25. MI4
26. MI1
151. MI17 (Mary Fix)
152. MI7

LAKEVIEW
27. LV3 (Adamson Estate)
28. LV4 (Helen Molasy Memorial)
29. LV5
30. LV2
31. LV1
32. ETO8
33. LV14 (Lakeview Golf Course)
34. LV6
35. LV7 (Cawthra Woods)
36. ETO7

SHERIDAN PARK
37. SP1
38. SP3

SHERIDAN
39. SH6
40. CRR7
41. CRR8

ERINDALE
40. CRR7
41. CRR8
42. ER6
43. CRR6
156. ER7

COOKSVILLE
44. CV1 (Iroquois Flats)
45. CV2
46. CV12 (Richard Jones)
47. CV10
48. CV8 (Camilla)
153. CV6 (Stillmeadow)

DIXIE
36. ETO7
49. ETO6
50. AW1 (Willowcreek)

WESTERN BUSINESS PARK
51. WB1 (Erin Mills Twin Arena)

ERIN MILLS
52. EM30 (Tom Chater Memorial)
53. EM6 (King's Masting)
54. EM2 (South Common)
55. EM10
56. EM14
57. EM4
58. EM5 (Glen Erin Trail)
59. EM21 (R.F.C. Mortensen)
154. CRR10

CREDITVIEW
60. CR1

FAIRVIEW
61. FV1
62. FV3

CITY CENTRE
63. CC1 (Bishopstoke Walk)

MISSISSAUGA VALLEY
64. MY1 (Mississauga Valley)
65. MY3 (Stonebrook)

APPLEWOOD
50. AW1 (Willowcreek)
66. AW4 (Applewood Hills)
67. AW3 (Applewood Hills)
68. ETO5
49. ETO6

RATHWOOD
69. ETO4
70. RW5 (Applewood Hills)
71. RW6 (Applewood Hills)
72. RW4 (Rathwood District)
73. RW1
74. RW2 (Woodington Green)

CHURCHILL MEADOWS
75. CM7
76. CM9
78. CM12

CENTRAL ERIN MILLS
81. CE7 (Sugar Maple Woods)
82. CE9 (Quenippenon Meadows)
83. CE10 (Erin Wood)
84. CE5
85. CE1 (Woodland Chase Trail)
86. CE12 (Bonnie Brae)
87. CRR5
88. CRR4
155. CRR11

STREETSVILLE
89. SV12 (Bonnie Brae)
90. SV10
88. CRR4
91. SV1 (Turney Woods)
92. CRR3
93. CRR2

Figure 1 Legend continued...

EAST CREDIT
87. CRR5
88. CRR4
92. CRR3
93. CRR2
94. EC22
96. EC13
155. CRR11

HURONTARIO
98. HO1
100. HO3 (Staghorn Woods)
101. HO6
102. HO7
103. HO9 (Britannia Woods)

NORTHEAST
104. NE4
105. NE3
107. NE1
108. NE6
109. NE5
110. NE7
69. ETO4
111. ETO3
112. NE8
113. NE10
114. NE11
115. NE12
116. ETO2
117. ETO1
118. NE9 (Wildwood)

LISGAR
119. LS1 (Lisgar Meadow Brook)
120. LS2
121. LS3 (Trelawny Woods)

MEADOWVALE
122. ME10 (Eden Woods)
123. ME12 (Lake Wabukayne)
124. ME11 (Lake Aquitaine)
125. ME9 (Maplewood)
126. ME8 (Windrush Woods)

MEADOWVALE BUSINESS PARK
127. MB9
128. MB7 (Mullet Creek)
129. MB8
130. MB3
132. MB4

MEADOWVALE BUSINESS PARK continued
133. MB6 (Totoredaca)
134. MB2
135. MB1

MEADOWVALE VILLAGE
136. MV19
137. CRR1 (Meadowvale C.A.)
138. MV18
139. MV2
141. MV12
143. MV11
144. MV15
93. CRR2

GATEWAY
146. GT3
147. GT2

MALTON
149. MAI

Figure 1. Natural Area Framework

4.1 Summary of Changes

Figure 2 illustrates the overall change between 1996 and 2004 in the proportion of the City occupied by the Natural Areas System. A detailed summary of the changes to natural area classification between 1996 and 2004 is provided in Appendix 4. The total number of natural areas has decreased from 141 in 1996 to 136 in 2004. The total area of the City identified as part of the natural area system in 2004 is 6.63% which is essentially unchanged from 2002. This reflects an overall decline in area from the 7.10% reported in 1996 and represents an overall loss of 147.70 ha (364.96 a.).

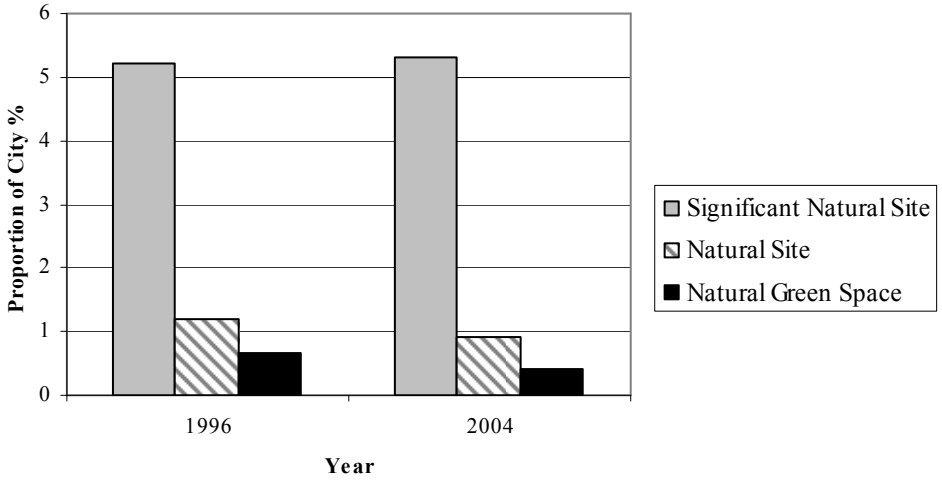

Figure 2. The proportion of the City contributed by each natural area classification in 1996 and 2004. See Appendix 4 for a complete summary.

One Special Management Area associated with natural area CL42 was removed due to development, bringing the 2004 total down to 42 from the original number of 55 identified in 1996. The total number of Linkages remains the same (36) as in 2000. One natural area (PC3) was removed by development and one natural area (SD4) was substantially (20%) reduced in size as a result of development. Most changes to natural area boundaries in 2004 were minor in nature and as a result the overall statistics did not change dramatically from 2002.

The overall change to the three major landform types (valleyland, tableland, and wetland) in the City between 1996 and 2004 is presented in Figure 3. A detailed summary of the changes to the landform types is provided in Appendix 5. Figure 3 illustrates that the majority of the natural areas system (80.3%) is associated with valleylands in 2004. This proportion has increased from approximately 78.4% of the system in 1996, but is unchanged from 2002. The actual number of valleyland sites has decreased from 78 in 2002 to 77 in 2004 with the removal of natural area PC3 for development.

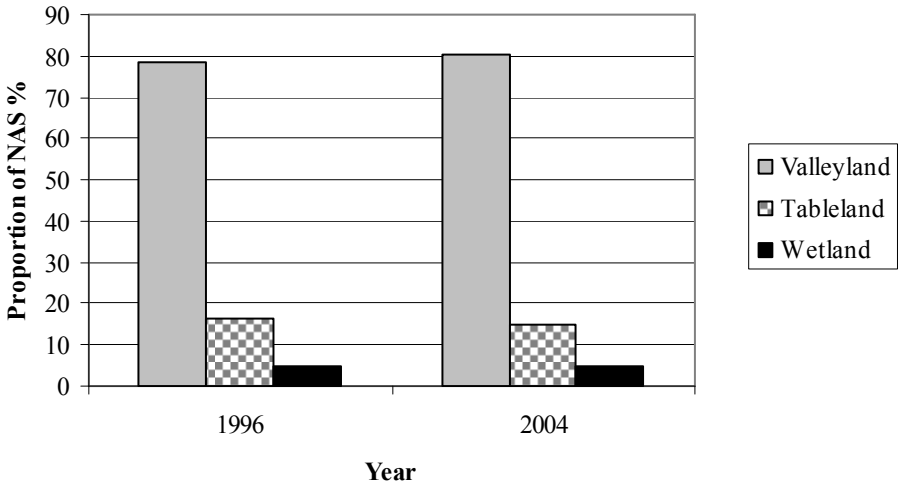

Figure 3. The proportion of the Natural Areas System contributed by landform type in 1996 and 2004. See Appendix 5 for a complete summary.

In contrast, tablelands only account for 14.7% of the natural areas system in 2004 (Figure 3). This represents a continued decrease from 16.4% in 1996, but again is unchanged from 2002. The total number of tableland natural areas has decreased from 60 in 1996 to 52 in 2004. From a City-wide perspective, there has been steady decreases from 1.16% in 1996 to 0.97% in 2004 of the landbase represented in tableland natural areas. Tableland natural areas (which are mainly wooded) tend to be discrete islands that have limited connections to other remnant natural features. Valleylands are better connected by virtue of the linearity of the landform and because they have historically been better protected from development. This reinforces the need to place a high priority on the protection of the remaining tableland features present within the City, and an emphasis on their management to maintain or improve their quality.

The proportion of the natural areas system associated with wetlands has remained more or less constant from 1996 at approximately 5.0% (Figure 3). The proportion of the City that is classified as wetland has decreased marginally from 0.36% in 1996 to 0.33% in 2004 but remains unchanged from 2002 (Appendix 5).

The mean size of natural areas in all three landscape types has been decreasing since 1996 due to the removal of portions of natural areas for development (Appendix 5). The exception to this is the mean size of wetlands which increased between 2001 and 2002 with the removal of EC1 which was smaller then the average wetland size. Currently the mean size of wetlands is 19.2 ha (47.44 a). Tableland natural areas are generally very small (mean size of 5.4 ha or 13.3 a.) when compared to the valleyland areas (mean size of 19.4 ha or 47.94 a.).

5.0 NATURAL ENVIRONMENT OVERVIEW

5.1 Vegetation Communities

The 49 vegetation communities described for the City (see Table 2 in Geomatics 1996) were compared between 1996 and 2004 (see Figure 4, as well as Appendices 6 and 7). In 2000, the Ecological Land Classification (ELC) (Lee *et al.* 1998) was applied to the vegetation communities described for the City. A list of the City's vegetation communities and their corresponding ELC vegetation community classification is provided in North-South (2000), Appendix 5. To facilitate the comparison of vegetation communities between updates, the City designations are discussed in this report.

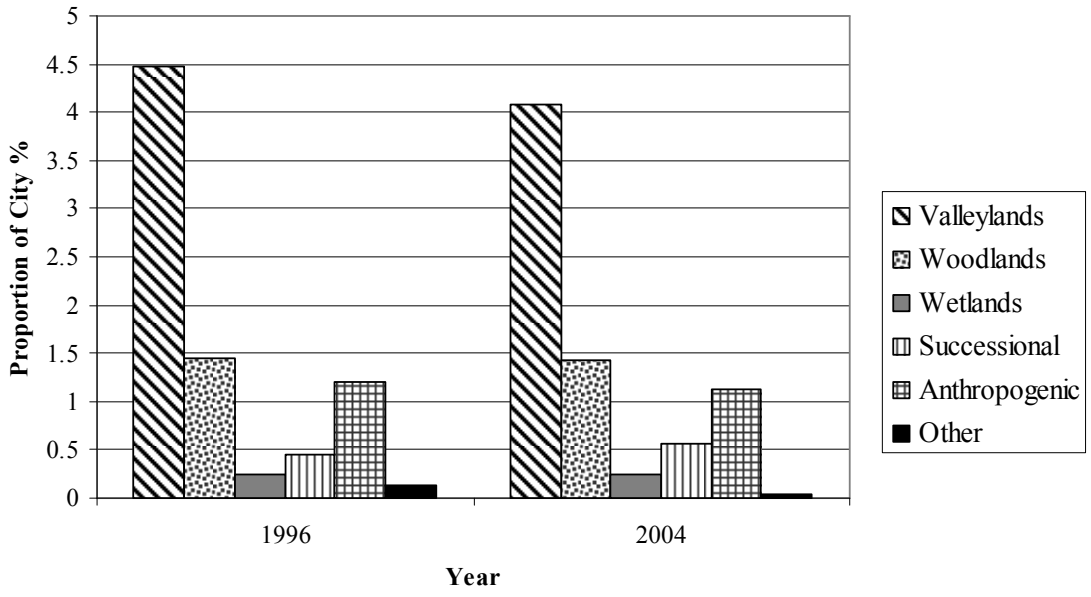

Figure 4. The proportion of the City contributed by vegetation community in 1996 and 2004. See Appendix 6 and 7 for a complete summary.

The vegetation communities have been grouped into six broad categories to facilitate discussion; valleylands, woodlands, successional, wetlands, anthropogenic and other. The category "other" was used for three communities (tall-grass prairie, beach and unknown) that did not easily fit into one of the other five categories. The category "anthropogenic" refers to five communities that have been created and maintained through human intervention (manicured, urban lake, wooded residential, plantation, black walnut grove). The most prevalent vegetation communities within the City remain those in the valleyland category. The tall-grass prairie community is still considered the only provincially rare vegetation community within the City.

Appendices 6 and 7 summarize the changes in the vegetation community categories between 1996 and 2004. Figure 4 highlights the significant decrease in the size of all vegetation community categories within the City from 7.96% in 1996 to 7.45% in 2004 (Note: this figure is higher then reported in section 3.1 due to the inclusion of wooded residential areas in the

anthropogenic category). Figure 4 also illustrates that the Anthropogenic category accounts for almost the same proportion of the city as the Woodland category with 1.12% and 1.42%, respectively. This loss of vegetation communities will result in a reduction in biodiversity in the City, contrary to the goals and objectives of the Natural Areas Program (Geomatics 1996).

Valleylands

Valleylands includes nine vegetation communities, one of which "manicured with wooded slopes" (O) no longer occurs in the natural areas system as a result of naturalization programs initiated by the City (listed in Appendices 6 and 7). Even though this category is termed valleylands, the boundaries of these vegetation communities do not necessarily follow floodplain boundaries. For example, wooded slope could occur on valley slopes or above the top of bank (tableland is included in wooded slope as long as it contiguous with the valleyland). In 2004, this category comprised 4.08 % of the total City area (Figure 4). This category has seen a decrease in area between 1996 and 2004 of 107.69 ha (266.10 a.) (Table 2). More than half of this loss (59%) occurred between 2001 and 2002 with a decrease of 58.28 ha (143.95 a.). Four of the vegetation communities in this category continue to be the most widespread in the City: wooded slope, floodplain, wooded non-native valleyland, and open with open slopes valleyland.

Table 2. Changes to the area of vegetation communities 1996-2004.

Vegetation Community Category	Areal Change (1996 - 2004)		Areal Change (2002 - 2004)		Extent of Change and Reason (2000 - 2004)
	hectares	acres	hectares	acres	
Valleylands	- 107.69	- 266.10	- 8.49	- 22.04	Revision of communities in CRR1, CL13, CL31, CL43, LV14, MI17, MI1, SD1, SD7, SH6, LV4, PC1 Removal of portions of NE9, CL21, LV5, CL42
Woodlands	- 8.36	- 20.66	+ 9.75	+ 24.09	Addition of communities in SD4, CL16 Revision of communities in CL24, MI7, SH6, CL43 Removal of portions of CL26, MV12, CL42, LV3
Successional	+ 28.78	+ 71.11	+ 21.55	+ 53.25	Addition of communities in SD4, SH6, CRR1, CL24, ETO8, LV4 Revision of communities in CL16, CL9, ETO7, MI1, NE9
Wetland	- 5.32	- 13.15	+ 5.89	+ 14.55	Addition of communities in CRR1 Removal of portions of CL9 and CL21
Anthropogenic	- 26.22	- 64.79	- 0.24	- 0.59	Revision of communities in LV3, CL24, CRR1, ETO8, NE9, MI4, CL17, MV12 Addition of communities in LV3, LV4, MI1, SH6
Other	- 27.96	- 69.09	- 27.80	68.69	Removal of natural are PC3 Reclassification of communities in SD4 Addition of communities in SD1, SD7, LV3, LV4

Wooded slope valleylands (A), floodplain valleylands (B) and wooded native valleylands had substantial decreases in 2004 of 6.27 ha (15.49 a.), 10.60 ha (226.19 a.) and 5.15ha (12.73 a.), respectively (Appendix 6). In contrast, wooded non-native valleylands increased in size by 6.47 ha (15.98 a.) with the addition of this community in two natural areas. The decrease can

primarily be attributed to the recent evaluation of CRR1 as a wetland and the subsequent mapping revisions of wooded slope and floodplain to wetland communities in this natural area. The decrease in wooded native valleylands and increase in non-native valleylands is the result of reclassification of a number of natural areas.

Woodlands

Woodlands includes twenty vegetation communities (listed in Appendices 6 and 7), all of which occur outside of valleylands, although intermittent streams may be present within. Two of these communities, "bur oak - American beech forest" (QQ) and "bur oak - black walnut forest" (WW), no longer occur in the natural areas system due to their removal as a result of development. In 2004, this category comprised 1.42 % of the total City area, essentially unchanged from 2002 (Figure 4). This category has seen a total decrease between 1996 and 2004 of 8.36 ha (20.66 a.). However, between 2002 and 2004 this category saw an increase of 9.75 ha (24.09 a.) (Table 2). The majority of this increase can be attributed to the reclassification of vegetation communities in natural areas SD4 and CL16. In addition, minor revisions to natural area boundaries accounted for the rest of the changes in this category. Eleven of the vegetation communities in this category (see Appendix 7 for a complete list) are considered uncommon in the City, each occupying less than 1% of the total area of natural areas or containing an uncommon "working-group" (Krahn *et al.* 1995). Six of these eleven communities can also be considered "at risk" in the City, each represented only in a single natural area. These communities are: sugar maple-eastern hemlock forest (GG); sugar maple-black cherry forest (II); sugar maple-American beech-eastern hemlock forest (LL); white pine-eastern hemlock-sugar maple forest (MM); American beech forest (PP); and black cherry-eastern hemlock-white ash forest (VV).

Most woodland communities saw small decreases (less than 1 hectare). However "ash-hickory forest" (TT) increased by 2.67 ha (6.60 a.) and "sugar maple-American beech forest" (DD) decreased by 4.17 ha (10.30 a.) due to 2002 mapping changes in natural areas CRR2 and WB1 which have been incorporated in 2004 into the database. One woodland community, "red ash - American elm forest" (BB) increased by 11.74 ha (29.00 a.) with the addition of this community to CL16 and SD4 which was offset by the removal of portions of this community in CL26, MI7 and SH6

An emphasis should be placed on the protection and management of the remaining woodland vegetation communities. Even though these communities increased in total size in 2004 there is still an overall continued loss of these communities that will result in a subsequent loss of plant and animal species from the City. The additional pressures associated with development adjacent to natural areas will jeopardize the remaining communities even more (see section 5.0 for a discussion of disturbances related to development).

Successional

The successional category has six vegetation communities (listed in Appendices 6 and 7). This category has increased in size by 28.78 ha (71.11 a.) between 1996 and 2004 (Table 2) with 75 % (21.55 ha) of this increase occurring in 2004. Even with this substantial increase in size, in 2004, this category comprised only 0.56 % of the total City area (Figure 4). Five of the vegetation communities in this category remain uncommon in the City occupying approximately

1% of the total area of natural areas (Appendix 7). One of these five communities, birch forest (XX), can also be considered "at risk" in the City, as it is represented in a single natural area.

"Old field" (C) increased by 7.12 ha (17.59 a.) between 2002 and 2004. The two most substantial changes appear to be 2002 mapping changes in natural area CE12 which have been incorporated in 2004 into the database and mapping revisions to CRR1 as a result of the recent designation of wetland that substantially reduced the size of successional communities in this area. "Old field" was also added to natural areas ETO8, LV4, SD4 and SH6 in 2004. "Early successional forest" (E) also increased by 13.21 ha (32.64 a.) with the addition of this community to natural areas CL24, CRR1 and SD4. "Poplar forest" (YY) also increased marginally by 1.42 ha (3.51 a.) with the addition of this community to CRR1 and SD4.

The small overall size of successional communities in the City continues to highlight the assumption that these types of communities do not contribute to the biodiversity of the City and, therefore are not important to retain. However, these communities perform a number of important ecological functions: they provide habitat for a number of plant and animal species (including birds), they act as a buffer between forests and adjacent development, they provide structural diversity to a site (variation in the height of plant species provides a wider range of animal habitat), and they provide habitat for small mammals and insects, which in turn provide a prey base for other species higher up the food chain.

Wetland

The wetland category is composed of six vegetation communities (listed in Appendices 6 and 7). Between 1996 and 2004 this category decreased in size by 5.32 ha (13.15 a.) to only 0.24% of the total City area (Table 2 and Figure 4). Between 2002 and 2004 this category increased by 5.89 ha (14.55 a.) primarily through the completion of a wetland evaluation for CRR1. Each of the vegetation communities in this category continue to be considered uncommon in the City occupying approximately 1% of the total area of natural areas (cattail marsh is 1.2%). One of these six communities, "willow-buttonbush swamp thicket" (X), can also be considered "at risk" in the City as it is represented in a single natural area.

Despite their small size, wetland communities tend to contribute a disproportionately high amount of biodiversity of the City. A large number of both plant and animal species are restricted to this habitat. In addition to the outright removal of these communities for development there is also the concern that even if a wetland is retained within a subdivision, alterations to the hydrological and/or hydrogeological regime from the development will result in permanent conversion of the vegetation community from wetland to upland.

Anthropogenic

Anthropogenic is composed of five vegetation communities (listed in Appendices 6 and 7). The size of this category decreased between 1996 and 2004 by 26.22 ha (64.79 a.) and currently comprises 1.12% of the total City area, essentially unchanged from 2002 (Table 2 and Figure 4). This is more than the amount of the City occupied by wetlands (0.24%) and successional (0.56%) communities combined. "Wooded residential" is still considered to be one of the largest communities in the City. The community "manicured" (F) decreased in size by 2.73 ha (6.75 a.) but increased in the number of occurrences between 2002 and 2004. Very small occurrences of

this community were added to natural areas LV3, LV4, MI1 and SH6 but a large portion of this community was removed from CRR1 as a result of naturalization.

Other
The "other" category is composed of three vegetation communities (listed in Appendices 6 and 7): "beach", "tall grass prairie" and "unknown". This category decreased in size by 27.96 ha (69.09 a.) between 1996 and 2004 (Table 2) with 99 % (27.80 ha) of this increase occurring in 2004. This substantial change is due to the removal of natural area PC3 for development and the reclassification of "unknown" communities at natural area SD4 to successional and woodland categories. The other category now only occupies 0.03 % of the total City area (Table 2 and Figure 4) and is found only in natural area SD5.

5.2 Flora

The total number of flora species in the City of Mississauga stands at 1121 (see database for a complete list). There are 670 native species in Mississauga (60% of the flora) and non-natives number 451 (40% of the flora). Eight non-native flora species were added to the Mississauga flora based on field work and literature reviewed. One native species, velvetleaf blueberry (*Vaccinium myrtilloides*) was added to the flora list for natural area EC13 based on the literature.

Butternut (*Juglans cinerea*) has been documented from 34 natural areas and is currently designated as Endangered nationally by COSEWIC and provincially by Ontario Ministry of Natural Resources (OMNR) (Appendix 8). Species listed as Endangered in the province are afforded habitat protection under the Provincial Policy Statement of the Planning Act (OMNR 2004). Butternut is listed as Endangered because it is being infected throughout it's entire North American range by a fungal infection, butternut canker (*Sirococcus clavigignenti-juglandacearum*). A number of the butternut records for the City's natural areas date prior to 1984 (are greater than 20 years old) and their current health and in some cases continued presence is unknown. A first step should be to confirm the continued presence and health of the butternut in the City's natural areas. At confirmed locations, continued monitoring of butternut is warranted and contact should be made with the Butternut Conservation Coalition to determine if any conservation strategies have been developed.

There was only one change in the regional rarity rankings for plant species in 2004, velvetleaf blueberry, was given a regional rarity rank of "rare". Of the 670 native species in the Mississauga flora, 37 (6%) are considered extirpated, 396 (59%) are rare (known from only 1 to 3 locations in the City) or uncommon (known from 4 to 10 locations in the City), and 237 (35%) are common (known from more than 10 locations in the City).

Table 3 lists the plant species documented in natural areas in the literature reviewed in 2004 that are currently not confirmed as occurring in the City of Mississauga [*i.e.*, there are no confirmed specimens and they are not listed by Kaiser (2001)]. These species need to be confirmed prior to their inclusion in the flora of Mississauga.

Table 3. Flora species documented for the City of Mississauga that require confirmation. Numbers in the source column correspond to Appendix 1.

Scientific Name	Common Name	Site	Reg Rank	NHIC Rarity	Source	Status in Kaiser (2001)
Betula populifera	gray birch	SD7	new	n/a	219	not documented in Peel
Epilobium ciliatum ssp. *glandulosum*	Northern willow-herb	SD7	new	SU	219	not documented in Peel likely *Epilobium ciliatum* ssp. *ciliatum*
Salix atrocinerea	willow	SD7	new	SE2	219	not documented in Ontario likely *Salix cinerea*
Geum macrophyllum	large-leaved avens	SP1	new	S5	220	not documented in Peel

5.3 Floristic Quality Assessment

Table 1 (page 5) provides the FQIs and native mean coefficients for all natural areas that were assessed, and changes are summarized in Appendix 4 (some of the changes noted in this appendix are significant in the context of the natural areas program while others are considered minor revisions). In 1996, 107 of the 144 natural areas were assessed. FQIs ranged from 2.68 to 80.10 and the native mean coefficients ranged from 1.20 to 4.82. In 2004, 120 of the 136 natural areas and one residential woodland were reassessed. Currently, the FQIs range from 2.68 to 80.30 and the native mean coefficients range from 1.20 to 4.59. High, medium and low values are defined in the 1996 Natural Areas report (page 29) (Geomatics 1996).

In 1996, the majority of natural areas fell in the medium range of native mean coefficients (3.3 to 3.99) and in the low range for the FQIs (< 30.00). This is still the case in 2004 for both FQIs and native mean coefficients. Currently, 75 of the 120 (63%) natural areas assessed have low FQIs. While, 37 of the 120 (31%) natural areas assessed have low native mean coefficients (< 3.3) and 56 of the 120 (47%) natural areas assessed have medium native mean coefficients (3.3 to 3.99).

Lower native mean coefficients indicate an increase in the presence of native plant species characteristic of disturbed environments, and a commensurate decrease in plant species that indicate high quality habitat. Species with low coefficients tend to occur in a wide range of habitats and are not as susceptible to disturbance. In contrast, plant species with high coefficients tend to be conservative in their habitat requirements. The Natural Areas report (Geomatics 1996) has a more complete explanation of native mean coefficients. The decrease in the high end of the native mean coefficient range, from 4.82 in 1996 to 4.59 (a 5% decrease), reflects a trend towards increasing disturbance in Mississauga's natural areas.

FQIs and native mean coefficients were re-calculated for 38 natural areas in 2004; *i.e.*, for those natural areas that had a change in their floral inventories. Of the natural areas evaluated in 2004, almost half (18) have medium mean coefficients and low FQI values. This proportion is unchanged from 2002. FQIs and native mean coefficients for the natural areas evaluated in 2004 are basically unchanged and likely represent minor revisions resulting from additional fieldwork. Four sites (SD4, CL1, CL43, CL21) increased their FQI range and three sites (CL52, CL15 and CL22) decreased their mean coefficient range.

5.4 Fauna

Six new species were added to the fauna of the City of Mississauga in 2004 through field work conducted in 2004 and literature reviewed. The breeding bird surveys conducted in natural areas in Wards 1 and 2 documented yellow-billed cuckoo (CL8 and CL9) and ruffed grouse (CL9) for the first time in the natural areas system. In addition, salamander monitoring conducted by the Halton/North Peel Naturalist Club documented blue-spotted salamander in natural area MV2. Three migrant bird species, king eider, Barrow's goldeneye and prothonotary warbler were also added to the fauna based on the literature review.

The 2004 studies continued to document the widespread use of most natural areas by habitat-generalist species. However, a few habitat-specialists, many of which are significant (birds of conservation interest) in the Credit River Watershed (Credit Valley Conservation undated) because their habitat has become increasingly fragmented, are still present in larger patches. For example, mourning warbler noted in natural areas CL9 and in areas along the Credit River as well as the marginally area-sensitive species wood thrush in MV2, NE9, ET08, and along the Credit River. Area-sensitive successional species include eastern kingbird, present in 10 of the areas surveyed in 2004, and brown thrasher, present in CL16, CRR10, EC13, and SD4. Marsh area-sensitive species are particularly uncommon, including American bittern and Virginia rail, present only in large cattail marshes along the Credit River and in Rattray Marsh. Raptorial birds are also uncommon, reflecting the lack of open natural areas to support a forage base, but a few red-tailed hawks and great horned owls are found in more diverse patches, especially where undeveloped fields remain at the edge of the City. Older areas of the City still provide habitat for declining bird species that depend on human structures in older neighbourhoods, which are not present in new residential areas: such as barn swallow, chimney swift, eastern phoebe and cliff swallow.

Changes to provincial rarity ranks for fauna species, especially reptiles and amphibians, have occurred since 2002, thus an updated list is provided in Appendix 10. Most provincially significant bird species noted in the City are migrants. However, recent provincially significant bird species that are considered possible breeders include black-crowned night-heron, which was noted in several places in the City, though nests were not found to confirm its status, red-shouldered hawk, and red-headed woodpecker, in CRR10.

There has been no change to the status of Credit Valley Conservation species of conservation interest (Credit Valley Conservation undated), however as a result of the breeding bird surveys conducted in 2004 additional bird species of conservation interest have been documented from natural areas in the City. A complete list of bird species of conservation interest documented from natural areas is provided in Appendix 11. Currently, 95 bird species of conservation interest are documented, of which 57 species are likely breeding in natural areas. As described above, most of these species are habitat specialists, for which habitat is more likely to be eliminated as natural areas become isolated, fragmented and altered by surrounding development.

5.5 Significant Features

There are no changes to Areas of Natural and Scientific Interest (ANSIs) since they were last updated by the MNR, as reported in the 1998 update report. A portion of natural area CRR1 has recently been evaluated and designated as the provincially significant Churchville wetland complex.

6.0 CONDITION OF NATURAL AREAS

6.1 Condition

Generally, the natural areas within the City that were surveyed in 2004 continue to be in fair condition (see Table 1, Appendix 3). Natural areas evaluated as in fair condition have moderate disturbances (few trails, limited dumping, some trampling, *etc*.) and an average number of non-native flora species typical of what can be expected in an urban natural area. The overall condition of the natural areas visited in 2004 remained largely unchanged from previous studies.

Spring surveys in natural areas in Wards 1 and 2 documented an abundance of spring ephemeral plant species in most natural areas, with the exception of those areas considered to be in "poor" condition. This indicates that suitable conditions (e.g., adequate moisture, soils that are not compacted, adequate nutrients, etc.) are present to support these plant species.

Access was available to one site (SD4) for the first time since the initiation of the natural areas survey in 1996. This site was evaluated as fair condition due to the limited human disturbances and successional nature of the habitats. A naturalization program has been undertaken in natural area LV4 since it was last visited in 1999. The natural area has been updated to now include "old field", "beach" and "wooded non-native valleylands" in addition to the original classification as "open with open slopes valleyland". In addition, a number of natural areas in Wards 1 and 2 that have not been visited since the original field work in 1995 (CL42, CL15, SD1, LV2) due to lack of permission for access were visited in 2004. The condition of all of these sites remains the same as in 1995.

Reviews of two community services projects (CL30 and CL16) were also conducted in 2004. Repeated controlled burns at the Lorne Park Prairie have resulted in the reduction in the amount of non-native species present, particularly white sweet clover (*Melilotus alba*). Continued controlled burns are recommended to retain the diversity of plant species present at this natural area.

A prairie planting program in Jack Darling Park (CL16) commenced in 1999 and is currently continuing. A large proportion of the prairie species planted are thriving in the planting beds near Lakeshore Road. Most of these species are historically native to Lorne Park, however there are some planted species that are not native. It is recommended that if prairie species continue to be planted at Jack Darling Park only those species native to Lorne Park be used. In addition to the native species currently planted, the following species are documented by Webber (1984) as occurring in the Lorne Park Prairie, and would likely complement the planting program:

- wild bergamot (*Monarda fistulosa*);
- frostweed (*Helianthemum bicknellii*);

- pinweed (*Lechea intermedia*);
- hairy bush clover (*Lespedeza hirta*);
- fall witch grass (*Digitaria cognata*);
- little bluestem (*Schizachyrium scoparium*);
- whorled milkwort (*Polygala verticillata*); and
- beard-tongue (*Penstemom hirsutus*).

Of substantial note is the large patches of big bluestem (*Andropogon gerardii*), Indian grass (*Sorghastrum nutans*) and Canadian tick trefoil (*Desmodium canadense*) on the naturalized, southeast facing old fields in the area of the tennis courts at this natural area. It is recommended that a controlled burn plan be developed for this portion of the natural area to encourage the natural restoration of prairie species to this site.

Between 2000 and 2004 the canopy trees in natural area CL39 (White Oaks Park) were largely removed to combat the disease "oak blight". This natural area appears to be a relic oak savannah, and with the removal of some canopy trees, the site may be closer to this historical condition with respect to canopy closure. Plantings of appropriate native trees and shrubs have been undertaken, however a large proportion of these planted species have not become established. In addition, the understory is still dominated by garlic mustard (*Alliaria petiolata*) and large debris piles from the tree removal are not decomposing. A conservation plan should be developed to restore this natural area to an oak savannah. The conservation plan should address the dominance of the understory by non-native species, human disturbances, and the large amount of woody debris currently present that does not appear to be decomposing. The use of prescribed burns in the restoration and maintenance of this site should also be investigated.

6.2 Disturbances

As with the all of the other update surveys, the most common disturbances within natural areas are those associated with an increase in uncontrolled human use of natural areas following development in adjacent areas. Examples of these disturbances include: the creation of *ad hoc* trails, the use of mountain bikes (including the construction of some elaborate racing circuits), the presence of garbage, boundary encroachment, and vandalism (tree carving, tree cutting, spray paint). These disturbances have become more prevalent at all of the natural areas surveyed this year. In particular, mountain bike circuits that have resulted in the removal of vegetation and severe soil compaction are present in natural areas CL39, LV1, CL1, LV6 and MI17. Observations at natural areas in Mississauga are consistent with reports from the literature that human use of natural areas results in the alteration of decomposition and nutrient cycles through: the loss of understory vegetation (particularly herbaceous species) (Friesen 1998, Matlock 1993); the loss of leaf litter, humus as well as moss species; and soil compaction (Matlock 1993). Matlock (1993) also suggested that the recovery of soil and understory vegetation could take 10 to 20 years after the cessation of traffic. Deterioration of the quality of Mississauga's natural areas can be expected to continue unless there is a substantial effort to manage natural areas through site specific Conservation Plans and community stewardship iniatives.

Stewardship initiatives and community participation in the maintenance of Cawthra Woods (LV7) has resulted in minimal disturbances considering the large amount of human use it

receives. As noted before, the controlled burns conducted regularly at the Lorne Park Prairie (CL30) have decreased the number of weedy, non-native species and retained the prairie characteristics of this site.

In addition to these initiatives, the Clean Water Agency undertook management at natural area LV2 to remove a mountain bike circuit in the late 1990s using a bobcat to level the circuit (Bob Hotte pers. comm.). It is conceivable that this method might work in City-owned natural areas where mountain bike courses have become a problem. Investigations into the subsequent establishment of native versus non-native understory plant species in the newly disturbed soil and the need for a planting program would be required.

6.3 Development

Direct impacts from development have resulted in the removal of portions, as well as entire natural areas. Development can include the removal of entire natural areas through the construction of a new residential subdivision or new industrial complex, infill construction of a single residential dwelling within a natural area, or the expansion of an industrial or commercial parking lot into a natural area. One natural area (PC3) was eliminated from the natural area system in 2004 as a result of development. In addition, 21 of the 48 natural areas surveyed in 2004 decreased in overall size due to development. Some of the associated indirect impacts that resulted from the removal of portions of natural areas included: increased light penetration in the remainder of the area, and changes in the vegetation composition (e.g., invasion of non-native species, removal of canopy tree species, etc.). Other potential long-term impacts that could occur are: changes in moisture (soil and air); increased impacts from air pollution and temperature within the natural area; as well as the less well documented impacts of increased light and noise pollution.

6.4 Non-native Species

There has been a continual increase in the proportion of non-native to native plant species in the natural areas surveyed between 1996 and 2004 (see Appendix 3). An increase in the presence and dominance of non-native species within the City's natural areas is a serious management concern. Without active management species such as Norway maple (*Acer platinoides*), garlic mustard (*Alliaria petiolata*), European buckthorn (*Rhamnus cathartica*), and others will result in a continued loss of native plant species in a number of natural areas. A City-wide strategy to deal with aggressive non-native species impacts needs to be formulated and management plans developed to remove the most invasive exotic species as soon as possible.

Naturalization projects initiated at a number of natural areas typically has involved leaving an area of unmowed grass to regenerate naturally. While the size of the natural areas increases as a result of this regeneration, this strategy also provides habitat for invasive plants such as purple loosestrife (*Lythrum salicaria*) and dog-strangling vine (*Cynachum rossicum*). In addition, if the natural area occurs in a valleyland its inherent ability to function as a linkage will promote the spread of these invasive species within the City.

As noted in previous studies, the dumping of discarded horticultural plants, largely as a result of encroachment where residents use the natural areas behind their house for compost and dumping yard waste, is a common vector for the introduction of non-native plants to natural areas. This was present in most of the residential areas visited during this update.

7.0 CONCLUSIONS

After six years of update surveys covering the entire City, two trends have emerged. There has been a decrease in the quality of vegetation as indicated by an increase in the number of natural areas with lower native mean coefficients (section 4.3); and there has been a decrease in the amount of tableland (woodland and successional categories) and wetland habitats (section 3.1). Development between 1996 and 2004 has resulted in the total loss of 146.32 ha (360.66 a.) from the natural areas system including the loss of thirteen natural areas. Two woodland vegetation communities have been lost, as a result of development removing the only two natural areas in which they were represented in the City (section 4.1). Eleven woodland communities, five successional communities and all six of the wetland vegetation communities are uncommon in the City, occupying less than 1% of the total area of the natural areas system (Appendix 8). Of these, six of the woodland communities, one successional community and one wetland community are "at risk" in the City, occurring in only one natural area each. In addition, a longer-term conversion of vegetation community composition (from wetland pockets to old field) in some natural areas is also occurring, likely as a result of increased human disturbance and changes in hydrology resulting from development. These trends reinforce the urgent need to maintain and manage (and where possible restore) all of the remaining natural areas in the City. In particular, tableland natural areas (including woodlands, wetlands and successional vegetation communities) continue to be the most seriously threatened by development.

One positive trend is the naturalization projects undertaken by the City. The majority of naturalization projects initiated between 1996 and 2004 have involved leaving an area of unmowed grass adjacent to a watercourse or woodlot feature to regenerate naturally. While this approach will increase the overall size of the natural area in question, this initiative could be enhanced by taking an approach that includes long-term management will more likely result in a healthy natural area with a diversity of native plant and animal species such as at Jack Darling Park.

8.0 RECOMMENDATIONS

1. All of the remaining natural areas in the City should be protected from development and managed to maintain the biodiversity of the City for future generations. Of particular importance is the protection and subsequent management of all woodlands, wetlands and successional habitats.

2. It is recommended that the City consider prioritizing the natural areas based on significance, representation, size and condition, and initiate Conservation Plans for those of greatest value.

3. Initiate greater control over natural areas to reduce impacts related to human use. This is best achieved through site-specific Conservation Plans. Issues addressed in the Conservation Plans should include, but not be limited to: access, encroachment, appropriate activities, non-native plant control, and restoration initiatives (see Geomatics 1996 for a complete description of Conservation Plan requirements). Natural areas CM12, CM7 and CM9 are ideal candidates to have Conservation Plans developed prior to completion of the surrounding residential subdivisions.

4. Initiate a public education program in concert with community-based stewardship initiatives to involve local citizens in the conservation and management of natural areas, as outlined in the Natural Areas Survey (Geomatics 1996). Key to this is demonstrating the ongoing degradation of woodland through careless and improper use. The public education and stewardship activities on-going in Cawthra Woods (LV7) offer a good example of what can be achieved.

5. Formulate a City-wide strategy to deal with non-native species and develop management initiatives to address the most invasive exotic species. Part of such a study should include an assessment of the feasibility of managing some aggressive exotics. Species that are a high priority are Norway maple, garlic mustard, purple loosestrife, dog-strangling vine, white poplar (*Populus alba*), Japanese knotweed (*Polygonum cuspidatum*) and white mulberry (*Morus alba*). At a minimum the City should immediately adopt policies to restrict or prevent the planting of invasive non-native plants, as well as providing encouragement and a mechanism for the City and the community to work together to remove such plants.

6. All naturalization (creation of natural habitat from manicured parkland) projects undertaken in natural areas by the City should involve both the planting/seeding of native species and the control of non-native species.

7. Continue and expand restoration (management of natural habitat) initiatives within natural areas. The prescribed burns at Lorne Park Prairie could be used as an education tool to gain community support for similar initiatives for the other natural areas that contain remnants of the Lorne Park Prairie: CL24, CL31 and CL22.

8. It is recommended that natural area CL39 be made a priority to undertake a conservation plan with the goal of restoring and maintaining the indigenous oak savannah community. The plan should include the rehabilitation of the area occupied by the substantial mountain bike circuit south of the hydro line and the removal of invasive exotics (garlic mustard, periwinkle, Japanese knotweed, etc.). The possibility of using a low intensity controlled burn to facilitate the restoration and subsequent maintenance of this site is recommended.

9. In addition to the prairie planting program at Jack Darling Park (CL16), it is recommended that a low intensity, controlled burn be initiated in the old fields adjacent to the tennis courts to restore and maintain the prairie habitat in this location. The prairie planting program should be expanded to include those prairie species native to Lorne Park (see Section xx).

10. Investigate the possibility of rehabilitating the compacted soils of mountain bike circuits through a combination of levelling the circuits and undertaking planting trials in publicly owned natural areas. This could be combined with a community education program and involve local volunteers. Some publicly owned natural areas that would benefit include ME8, CL39, CL1, and MI17.

11. Confirm the continued presence and health of the butternut in the City's natural areas. A recommended approach could be to dedicate an hour at natural areas that are in public ownership searching appropriate habitat (forest edges and successional areas) for butternut trees. All individuals should have their location identified with a handheld GPS unit. At confirmed locations, continued monitoring of butternut is warranted and contact should be made with the Butternut Conservation Coalition to determine if any conservation strategies have been developed

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APPENDIX 1: REPORTS EXAMINED FOR BACKGROUND REVIEW

Appendix 1: Reports examined for background review.

The format of this appendix follows Appendix 2 in the Natural Areas Survey (Geomatics 1996). The numbers correspond to those used in the database for literature references.

217 McCormick Rankin Corporation and Ecoplans Limited. 2003. Queen Elizabeth Way Hurontario Street Interchange.

218 Dougan & Associates, Ecological Outlook and Philips Engineering Limited. 2004. Creditview Wetland Conservation Plan.

219 Dougan & Associates. 2003. Environmental Inventory & Analysis, 2266 and 2700 Lakeshore Road West, City of Mississauga.

220 Aboud & Associates Incorporated. 2003. Environmental Impact Study, 2725 Speakman Drive, Sheridan Research Park, City of Mississauga.

221 LGL Environmental Research Associates. 2002. Sawmill Valley IV Scoped Environmental Impact Study.

222 ENVision - The Hough Group. 2004. Mississauga Garden Park, Basic Park Development, Environmental Impact Study.

223 ENVision - The Hough Group. 2003. Mississauga Garden Park, Environmental Management Plan for Basic Park Development and Future Phases.

224 Halton/North Peel Naturalist Club (HNPNC). 2003. Salamander Monitoring Project.

APPENDIX 2: FIELDWORK IDENTIFIED AND DATE COMPLETED

Appendix 2. Natural areas for which the need for a field visit was identified based on aerial photograph interpretation and literature review. Natural areas are grouped into categories based on the type of change identified either within or adjacent to the natural area. Field Visit indicates the type of visit the natural area received, field work or a road side visit (see section 2.2 for an explanation). Ownership indicates whether the natural area is privately owned and therefore required access permission or whether it is a City owned site (*i.e.*, parkland or greenbelt).

Natural Area	Reason for Field Visit (based on review of aerial photography and literature)	Field Visit		Ownership	Date
		Type	Timing		
Minor Development Adjacent to Natural Area					
CL21	Residential development adjacent - minor boundary revision required	field work	breeding birds	greenbelt	24/06/04
			spring flora		14/05/04
			summer flora		26/08/04
CL26	Residential development adjacent - minor boundary revision required	field work	breeding birds	parkland	29/06/04
			spring flora		21/05/04
			summer flora		25/08/04
CL8	Residential development on Bexhill Road and Watersedge Road	field work	breeding birds	private/greenbelt	23/06/04
			spring flora		27/05/04
			summer flora		25/08/04
CL9	Residential development on Meadow Wood Road, community boundaries require revision	field work	breeding birds	parkland	30/06/04
			spring flora		14/05/04
			summer flora		07/07/04
SH6	Development adjacent east of Summerwood Court	field work	breeding birds	parkland/private	29/06/04
			spring flora		21/05/04
			summer flora		25/08/04
SP3	Parking lot expansion	field work	breeding birds	private	28/06/04
Major Development Adjacent to Natural Area					
MI1	Residential development on Orano Avenue	field work	breeding birds	private/greenbelt	29/06/04
			spring flora		21/05/04
			summer flora		25/08/04

Natural Area	Reason for Field Visit (based on review of aerial photography and literature)	Field Visit		Ownership	Date
		Type	Timing		
Minor Development Within Natural Area					
CL22	Residential development on Birchview Drive	field work	breeding birds	private	24/06/04
CL39	Development on Birchwood Drive	field work	breeding birds	parkland/private	24/06/04
			spring flora		14/05/04
			summer flora		26/08/04
CL42	Residential development requires minor boundary revision and removal of Special Management Area (SMA)	field work	breeding birds	greenbelt/private	24/06/04
			spring flora		21/05/04
			summer flora		26/08/04
CL43	Parking lot expansion off of Lakeshore Road West	field work	breeding birds	parkland/greenbelt	24/06/04
			spring flora		14/05/04
			summer flora		26/08/04
EM4	Scoped Environmental Impact Study (LGL Ltd. 2002)	field work	summer flora	parkland/greenbelt	31/08/04
SD4	North portion of site west of Tennis Club removed - boundary revision required	field work	breeding birds	private	23/06/04
			summer flora		08/09/04
Major Development Within Natural Areas					
SP1	Environmental Impact Study (Aboud & Associates 2003)	field work	breeding birds	private	28/06/04
MI7	Residential development east of Stavebank Road	field work	breeding birds	private	30/06/04
			summer flora		25/08/04
PC3	Residential development	road visit	not applicable	private	25/08/04
No Change					
CL1	No change	field work	breeding birds	parkland	23/06/04
			spring flora		14/05/04
			summer flora		07/07/04

Natural Area	Reason for Field Visit (based on review of aerial photography and literature)	Field Visit		Ownership	Date
		Type	Timing		
No Change					
CL13	minor boundary revision required	field work	breeding birds	greenbelt/private	28/06/04
			spring flora		21/05/04
			summer flora		26/08/04
CL15	No change	field work	breeding birds	private	23/06/04
			summer flora		26/08/04
CL17	Minor boundary revision required	road visit	not applicable	private	25/08/04
CL24	No change	field work	breeding birds	greenbelt	24/06/04
			spring flora		14/05/04
			summer flora		07/07/04
CL31	No change	field work	breeding birds	greenbelt	24/06/04
			spring flora		14/05/04
			summer flora		07/07/04
CL52	Minor boundary revision required	field visit	breeding birds	parkland	23/06/04
			spring flora		14/05/04
			summer flora		07/07/04
CRR9	No change	field work	breeding birds and flora	parkland	27/05/04
ETO8	No change	field work	breeding birds	private/parkland	30/06/04
			spring flora		21/05/04
			summer flora		10/09/04
LV14	Minor boundary revision required	field work	breeding birds	private	30/06/04
			spring flora		21/05/04
			summer flora		10/09/04

Natural Area	Reason for Field Visit (based on review of aerial photography and literature)	Field Visit		Ownership	Date
		Type	Timing		
No Change					
LV2	No change	field work	breeding birds	private	01/07/04
			summer flora		10/09/04
LV3	Minor boundary revision required	field work	breeding birds	parkland	29/06/04
			spring flora		21/05/04
			summer flora		10/09/04
LV4	Minor boundary revision required	field work	breeding birds	greenbelt	29/06/04
			spring flora		21/05/04
			summer flora		10/09/04
LV5	Minor boundary revision required	road visit	not applicable	private	10/09/04
LV6	No change	field work	breeding birds	private	29/06/04
			spring flora		21/05/04
			summer flora		10/09/04
LV7	No change	field work	breeding birds	parkland	29/06/04
			spring flora		21/05/04
			summer flora		10/09/04
MI17	No change	field work	breeding birds	parkland/private	30/06/04
			spring flora		21/05/04
			summer flora		25/08/04
MI4	Residential woodland	field work	breeding birds	private	30/06/04
PC1	Minor boundary revision required	field work	breeding birds	parkland	29/06/04
			spring flora		21/05/04
			summer flora		25/08/04

Natural Area	Reason for Field Visit (based on review of aerial photography and literature)	Field Visit		Ownership	Date
		Type	Timing		
No Change					
PC2	Minor boundary revision required	field work	breeding birds	parkland	27/05/04
			spring flora		27/05/04
			summer flora		25/08/04
SD5	No change	field work	breeding birds	Petro Canada	23/06/04
			spring flora		14/05/04
			summer flora		07/07/04
Confirmation and Adjustment of Communities/Inventory Based on Literature					
NE9	TRCA Habitat Implementation Plan	field work	summer flora	parkland	31/08/04
ET07	TRCA Habitat Implementation Plan - Summerville Court, possible new SMA	field work	summer flora	greenbelt	31/08/04
ETO3	TRCA field work and ELC classification	road visit	not applicable	private	31/08/04
LV1	TRCA field work and ELC classification	field work	breeding birds	parkland	01/07/04
			spring flora		21/05/04
			summer flora		10/09/04
CRR1	Credit Valley Sanitary Trunk Sewer Extension EA, MNR Wetland Evaluation	field work	summer flora	parkland	31/08/04
SD1	Environmental Inventory and Analysis (Dougan & Associates 2003), also parking lot expansion north of Lakeshore Rd West	field work	breeding birds	private/City	23/06/04
			summer flora		16/09/04
SD7	Environmental Inventory and Analysis (Dougan & Associates 2003)	field work	breeding birds	parkland/private	23/06/04
			spring flora		14/05/04
			summer flora		08/09/04
EC13	Creditview Wetland Conservation Plan (Dougan & Associates 2004)	field work	perimeter walk	parkland	31/08/04
MV12	MNR Wetland Evaluation, stormwater development	field work	summer flora	parkland	31/08/04

Natural Area	Reason for Field Visit (based on review of aerial photography and literature)	Field Visit		Ownership	Date
		Type	Timing		
Inventory of Community Services Naturalization Projects					
CL30	Review Community Services Naturalization Study	field work	breeding birds	parkland	24/06/04
			spring flora		14/05/04
			summer flora		26/08/04
CL16	Review Community Services Naturalization Study	field work	breeding birds	parkland	23/06/04
			spring flora		14/05/04
			summer flora		25/08/04

APPENDIX 3: COMPARISON OF NATURAL AREAS (1996 TO 2004)

Appendix 3. Comparison of changes within natural areas evaluated in 2004. All changes between 1996 and 2004 are shown for natural areas where changes occurred. Blank cells represent no change from the previous year. Abbreviations as follows: SNS = Significant Natural Site, NS = Natural Site, NGS = Natural Green Space, Increase = ↑, Decrease = ↓. Some of the increases or decreases are significant in the context of the natural areas program while others are considered minor. Native FQI and native mean coefficient as well as definitions for provincially and regionally significant species are defined in the Natural Areas Survey (Geomatics 1996). Condition is explained in the Natural Areas Survey (Geomatics 1996). Credit Valley Conservation (CVC) Species of Conservation Interest are discussed in North-South (2000).

Site #	Site Code	Year	Classification	Designation	Area		Flora							Fauna					Condition
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
1	SD1	96	NS		19.5	48.16	96	27 (28.1%)	30.22	3.64	5	0	4	13	4	2	0	0	Fair
		98																	
		99			↓19.35	↓47.78													
		00																	
		01																	
		02																	
		04			↑19.55	↑48.28	↑170	↑67 (39.41%)	↑35.96	↓3.54	↑6	↑1	↑10	↑113	↑7			↑6	
2	SD4	96	NS		26.58	65.65	65	16 (24.6%)	26.14	3.73	1	0	2	0	0	0	0	0	n/a
		98																	
		99																	
		00																	
		01																	
		02																	
		04			↓23.66	↓58.45	↑106	↑24 (22.64%)	↑31.69	↓3.50	↑6			↑13				↑2	Fair

Site #	Site Code	Year	Classification	Designation	Area		Flora							Fauna					Condition
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
3	SD5	96	SNS		10.14	25.05	38	4 (10.5%)	28.13	4.82	2	0	2	2	0	0	0	0	Good
		98																	
		99					↑48	↑ 7 (14.6%)	↑ 28.74	↓4.49			↑3	↑3	↑ 1				
		00																	
		01																	
		02																	
		04					↑80	↑17 (21.25%)	↑34.65	↓4.37	↑3		↑5	↑14		↑1		↑2	
4	CL52	96	NGS		6.67	16.47	34	18 (52.9%)	12.75	3.19	1	0	0	10	1	0	0	0	Poor
		98																	
		99			↑6.69	↑16.53	↑44	↑24 (54.5%)	↑15.21	↑3.40				↑11		↑2			
		00																	
		01																	
		02																	
		04	↑NS				↑73	↑43 (58.90%)	↓14.61	↓2.67				↑25				↑3	
5	CL1	96	SNS		3.59	8.86	38	4 (10.5%)	28.13	4.82	1	0	2	2	0	0	0	0	Good
		98																	
		99					↑48	↑7 (14.6%)	↑28.74	↓4.49			↑3	↑3	↑1				
		00																	
		01																	
		02																	
		04					↑80	↑17 (21.25%)	↑34.65	↓4.37			↑5	↑14		↑1		↑2	

Site #	Site Code	Year	Classification	Designation	Area		Flora							Fauna					Condition
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
6	CL9	96	SNS	ESA,ANSI,wetland	46.89	115.82	491	156 (31.40%)	80.10	4.38	13	2	125	200	23	22	1	0	Good
		98					↑496	↑161 (32.30%)				↓0	↑132						
		99					↓495		↓79.83	↓4.37			↓131						
		00			↓46.81	↓115.63						↑1	↓130		↓22	↓21	↓0	↑8	
		01					↑496	↓159 (32.06%)	↑79.86	↓4.35			↑133						
		02							↑80.10	↑4.36							↑1		
		04			↓45.62	↓112.68	↑501	↑163 (32.53%)	↑80.30	↑4.37				↑203			↑3	↑14	
7	CL8	96	SNS	wetland	11.28	27.86	48	9 (18.8%)	19.86	3.18	7	0	2	13	10	1	0	0	Good
		98					↑57	↑10 (17.5%)	↑ 21.73	↑ 3.17			↑4						
		99					↑ 73	↑20 (27.4%)	↑22.94	↑ 3.15	↑8		↑5	↑14					
		00																	
		01																	
		02																	
		04					↑85	↑24 (28.24%)	↑24.58				↑6	↑28				↑5	
8	CL15	96	NS		0.83	2.05	44	9 (18.2%)	24.51	4.14	1	0	3	2	2	0	0	0	Fair
		98																	
		99					↑ 46	8 10 (21.7%)	↓22.12	↑4.17									
		00																	
		01																	
		02																	
		04					↑54	9 (16.67%)	↑25.79	↓3.84				↑10	↑3			↑1	

Site #	Site Code	Year	Classification	Designation	Area		Flora							Fauna					Condition
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
9	CL16	96	NS		8.52	21.04	119	33 (26.9%)	37.63	4.06	5	0	11	37	16	0	0	0	Fair-Poor
		98					↑134	↑ 42 (30.6%)	↑38.47	↓4.01			↑13	↑38	↑17				
		99					↑138	↑ 46 (33.3%)	↓37.95	↓3.96			↑14						
		00					↑147	↓44 (29.93%)										↑5	
		01																	
		02																	
		04	↑SNS		↑11.79	↑29.12	↑161	↑49 (30.43%)	↑39.02	↓3.84	↑6	↑1	↑15	↑42				↑6	
10	CL17	96	RW		33.28	82.20	71	13 (18.6%)	0.00	0.00	1	0	17	0	0	4	0	0	n/a
		98											↑18						
		99			↑33.48	↑82.70													
		00					↑73	↑15 (20.55%)					↑19						
		01																	
		02																	
		04			↓33.28	↓82.21													
11	CL13	96	NGS		1.50	3.70	40	23 (55.00%)	8.25	1.94	2	0	0	2	0	0	0	0	Poor
		98																	
		99	↑NS		↑8.42	↑20.79	↑61	↑34 (55.74%)	↑13.47	↑2.59			↑1	↑5					
		00																	
		01					↑74	↑43 (58.11%)	↑14.37	↓2.58	↑3			↑8					
		02																	
		04			↓7.03	↓17.35	↑86	↑49 (56.98%)	↑15.04	↑2.54				↑11	↑1			↑1	

Site #	Site Code	Year	Classification	Designation	Area		Flora							Fauna					Condition
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
12	CL43	96	NS		4.16	10.28	68	11 (16.2%)	29.27	3.88	2	0	5	5	1	0	0	0	Fair
		98																	
		99			↓4.14	↓10.24													
		00																	
		01																	
		02																	
		04			↑4.16	↑10.27	↑87	↑18 (20.69%)	↑31.18	↓3.75			↑6	↑14	↑2			↑1	↓Fair-Poor
13	CL42	96	NS		8.87	21.91	103	28 (27.2%)	35.80	4.13	3	0	9	4	1	0	0	0	Fair-Poor
		98																	
		99			↑8.88	↑21.93	↑115	↑34 (29.6%)	↑37.33	↑4.15			↑12						
		00																	
		01																	
		02																	
		04			↓8.31	↓20.54	↑119		↓37.31	↓4.05				↑18				↑4	
14	CL21	96	SNS	ESA,ANSI,wetland	9.36	23.12	97	22 (21.6%)	38.91	4.49	3	0	18	2	0	1	0	0	Fair
		98		↓ESA,wetland									↑20						
		99																	↓Fair-Poor
		00																	
		01																	
		02																	
		04			↓9.05	↓22.34	↑112	↑23 (20.54%)	↑41.23	↓4.37				↑17	↑3			↑3	

Site #	Site Code	Year	Classification	Designation	Area		Flora							Fauna					Condition
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
15	CL39	96	SNS		12.98	32.06	245	69 (28.0%)	54.51	4.13	2	0	41	6	2	8	0	0	Fair
		98					↑250	↑72 (28.4%)	↑54.72	↓4.10			↓40	↑22	↑5				
		99			↓12.90	↓31.87	↑265	↑79 (29.8%)	↑56.46	↑4.14			↑43	↑25					
		00																	
		01																	
		02																	
		04			↓12.59	↓31.10	↑271		↑57.23	↓4.13				↑39	↑6			↑7	
16	CL22	96	SNS	ESA,ANSI	17.85	44.09	131	45 (34.4%)	37.74	4.07	1	2	13	2	1	6	0	0	Good
		98										↓1	↑15						
		99			↓17.78	↓43.92													
		00																	
		01																	
		02																	
		04			↓17.75	↓43.84	↑134	↑46 (34.33%)	↓37.31	↓3.98			↓13						
17	CL30	96	SNS	ESA,ANSI	0.06	0.14	24	8 (33.30%)	0.00	0.00	1	2	11	0	0	0	0	0	Poor
		98					↑46	↑16 (34.80%)	↑25.56	↑4.67		↓1							↑Fair-Poor
		99					↑51	↑18 (35.30%)	↓25.29	↓4.58			↑14						↑Fair
		00					↑80	↑31 (38.75%)	↑28.00	↓4.00			↑20						
		01					↑81		↑27.72	↓3.92									
		04					↑83	↑33 (39.76%)	↑27.86	↑3.94				↑1					

Site #	Site Code	Year	Classification	Designation	Area		Flora							Fauna					Condition
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
18	CL31	96	SNS	ESA,ANSI	2.78	6.87	50	26 (50.0%)	0.00	0.00	1	0	2	1	0	0	0	0	Poor
		98																	
		99			↓2.61	↓6.45	↑59		↑19.32	↑3.36				↑4					
		00																	
		01																	
		02																	
		04			↓2.55	↓6.29	↑82	↑34 (41.46%)	↑23.09	↓3.33			↑3		↑1				
19	CL24	96	SNS		7.8	19.27	213	51 (23.0%)	58.06	4.56	3	0	31	6	1	0	0	0	Good
		98		↑ESA, ANSI			↑216						↑36						
		99					↑235	↑62 (26.4%)	↑59.23	↓4.50	↑4		↑37	↑10					
		00																	
		01																	
		02																	
		04			↓7.76	↓19.16	↑245	↑65 (26.53%)	↑59.89	↓4.46	↑5	↑1	↓36	↑20		↑1		↑3	
20	CL26	96	NS		4.34	10.72	157	58 (35.70%)	31.66	3.18	2	0	14	5	2	0	0	0	Fair
		98											↑15						
		99			↑4.76	↑11.75	↑178	↑68 (38.20%)	↑34.52	↑3.29			↑18	↑18	↑7				
		00																	
		01			↓2.01	↓4.96		↑65 (36.52%)	↑34.05	↓3.20	↓1		↓17						
		02																	
		04	↑SNS		↓1.97	↓4.86	↑189	↑70 (37.04%)	↑36.03	↑3.30		↑1		↑19					

Site #	Site Code	Year	Classification	Designation	Area		Flora						Fauna					Condition
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
21	PC1	96	NS		1.09	2.69	87	39 (44.8%)	26.56	3.83	1	0	9	68	1	0	0	0	Poor
		98																	
		99					↑92	↑44 (47.8%)					↓6						
		00																	
		01																	
		02																	
		04			↓1.03	↓2.54	↑101	↑49 (48.51%)	↓25.17	↓3.56			↑7	↑69				↑1	
22	PC2	96	NGS		4.37	10.79	0	0	0	0	1	0	0	0	0	0	0	0	Poor
		98																	
		99					↑18	↑10 (55.6%)						↑5					
		00																	
		01																	
		02																	
		04					↑26	↑15 (57.69%)								↑1			
23	PC3	96	NS		1.73	4.27	11	3 (27.27%)	0	0	1	0	0	0	0	0	0	0	n/a
		98																	
		99																	
		00																	
		01																	
		02																	
		04	Removed																Removed

Site #	Site Code	Year	Classification	Designation	Area		Flora							Fauna					Condition
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
24	CRR9	96	SNS	ESA,ANSI,wetland	25.63	63.30	37	14 (37.84%)	17.10	3.57	3	0	12	10	1	13	0	0	Fair
		98																	
		99																	
		00																	
		01					↑45	↑15 (33.33%)	↑21.00	↑3.83			↑16	↑27		↑10		↑6	
		02																	
		04					↑49	↑17 (34.69%)	↓20.86	↓3.69			↑17	↑40			↑2	↑9	
25	MI4	96	RW		165.14	407.9	97	27 (24.7%)	36.65	4.32	1	0	5	0	0	3	0	0	Fair
		98					↑134	↑41 (30.6%)	↑40.13	4.16			↑14	↑2					
		99			↓153.28	↓378.6	↓28		↓ 0.00	↓ 0.00			↓1	↓0	↓0	↓0			
		00																	
		01																	
		02																	
		04			↑154.31	↑381.15		↓16 (57.14%)											
26	MI1	96	NS		6.31	15.59	9	4 (44.44%)	n/a	n/a	1	0	0	0	0	0	0	0	Fair
		98																	
		99																	
		00																	
		01			↓5.63	↓13.91	↑16	↑5 (31.25%)			↑2			↑50					
		02																	
		04			↑5.64	↑13.94	↑57	↑36 (63.16%)			↑4			↑51	↑2			↑2	

Site #	Site Code	Year	Classification	Designation	Area		Flora						Fauna					Condition
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
27	LV3	96	NS		3.54	8.74	80	34 (40.0%)	24.33	3.59	3	0	0	18	2	0	0	0	Fair
		98																	
		99			↑3.55	↑8.76	↑83	↑34 (41.0%)	↑25.43	↑3.63			↑1	↑20	↑3				
		00																	
		01																	
		02																	
		04			↓3.54	↓8.75	↑94	↑36 (38.30%)	↑28.23	↑3.71	↑5			↑34				↑4	
28	LV4	96	NGS		0.95	2.35	n/a	n/a	0.00	0.00	1	0	0	0	0	0	0	0	Poor
		98																	
		99	↑NS		↑1.09	↑2.68	↑44	↑26 (59.1%)	↑10.61	↑2.50			↑2	↑5					
		00																	
		01																	
		02																	
		04			↑2.31	↑5.70	↑51	↑27 (52.94%)	↑11.29	↓2.30	↑5			↑20	↑1			↑1	
29	LV5	96	NGS		1.09	2.69	0	0	0	0	1	0	0	0	0	0	0	0	Poor
		98																	
		99			↓0.95	↓2.34													
		00																	
		01																	
		02																	
		04			↑1.12	↑2.77													

Site #	Site Code	Year	Classification	Designation	Area		Flora							Fauna					Condition
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
30	LV2	96	NS		2.09	5.16	26	11 (38.5%)	11.62	3.00	1	0	0	3	0	0	0	0	Poor
		98																	
		99																	
		00																	
		01																	
		02																	
		04					↑40	↑13 (32.50%)	↑13.09	↓2.52				↑12	↑1			↑2	
31	LV1	96	SNS		14.03	34.65	82	34 (40.2%)	23.09	3.33	4	1	0	8	0	0	0	0	Fair
		98	↓NS				↑83					↓0							
		99			↑14.22	↑35.12	↑93	↑38 (40.9%)	↑24.54	↓3.31	↑5		↑1						
		00																	
		01																	
		02																	
		04	↑SNS				↑123	↑46 (37.40%)	↑29.74	↑3.39		↑1		↑27	↑2			↑5	
32	ETO8	96	SNS		16.67	41.17	85	34 (37.6%)	26.05	3.65	3	0	3	2	4	1	0	0	Fair
		98																	
		99																	
		00																	
		01																	
		02																	
		04					↑101	↑37 (36.63%)	↑29.21		↑4		↑4	↑26	↑6			↑5	

Site #	Site Code	Year	Classification	Designation	Area		Flora							Fauna					Condition
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
33	LV14	96	NGS		1.95	4.82	35	17 (45.7%)	13.67	3.22	1	0	0	0	0	0	0	0	Poor
		98																	
		99					↑40		↑13.76	↓3.16				↑1					
		00																	
		01																	
		02																	
		04	↑NS		↓1.86	↓4.59	↑51	↑24 (47.06%)	↑15.20	↓2.93				↑10				↑1	
34	LV6	96	NS		2.02	4.99	61	19 (29.5%)	24.38	3.76	1	0	3	0	0	0	0	0	Fair
		98																	
		99			↑2.03	↑5.01	↑64	↑20 (31.3%)	↑25.48	↑3.84			↑4	↑1	↑1				
		00																	
		01																	
		02																	
		04					↑82	↑24 (29.27%)	↑29.41	↑3.86				↑7				↑1	
35	LV7	96	SNS	ESA,ANSI	21.56	53.25	292	101 (33.9%)	57.67	4.17	2	0	46	65	6	3	1	0	Good
		98					↑300	↑103 (34.0%)	↑58.71	↑4.18			↑49	↑68	↑7	↑5			
		99		↑ESA,ANSI,wetland			↑331	↑110 (33.2%)	↑62.84	↑4.25			↑60						
		00						↓107 (32.33%)					↑61	↓67				↑3	
		01																	
		02						↑108 (32.63%)	↑62.88	↓4.21									
		04					↑336	↑110 (32.74%)	↑63.66	↑4.23		↑1	↑62	↑68				↑5	

Site #	Site Code	Year	Classification	Designation	Area		Flora						Fauna					Condition
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
36	ETO7	96	SNS	ESA	27.18	67.13	84	35(39.3%)	21.39	3.04	2	0	2	11	2	11	2	0	Fair
		98																	
		99			↑27.36	↑67.59	↑96		↑25.1	↑3.21			↑4						
		00			↓21.14	↓52.29		↑36 (37.11)					↑5					↑1	
		01																	
		02			↑27.37	↑67.61	↑97	↓33 (34.02%)	↓24.89	↓3.11	↑3		↑6				↑3		
		04			↑32.40	↑80.02	↑103	↑38 (36.89%)	↓24.82	↓3.08									
37	SP1	96	NS		9.05	22.36	108	27 (24.3%)	33.99	3.80	5	0	11	4	1	0	0	0	Fair
		98																	
		99																	
		00																	
		01																	
		02			↓7.17	↓17.7	↑185	↑73 (39.46%)	↓38.65	↓3.65			↑16	↑20					
		04					↑194	↑77 (39.69%)	↑39.57	↑3.66			↑17	↑27	↑7			↑4	
38	SP3	96	SNS	ANSI	8.84	21.84	134	30 (21.8%)	41.09	4.05	5	0	11	5	2	1	0	0	Good
		98		↓															
		99																	
		00																	
		01																	
		02																	
		04			↓8.54	↓21.09								↑13				↑2	

Site #	Site Code	Year	Classification	Designation	Area		Flora						Fauna					Condition
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
39	SH6	96	NS		6.85	16.92	70	32 (46.4%)	21.37	3.51	2	0	1	4	0	0	0	0	Poor
		98																	
		99			↓6.44	↓15.91	↑80	↑38 (47.5%)	↑23.30	↑3.60			↑2	↑6	↑1				
		00																	
		01																	
		02																	
		04			↓6.28	↓15.51	↑104	↑49 (47.12%)	↑24.68	↓3.33	↑4			↑12	↑3			↑1	
57	EM4	96	SNS	ESA,ANSI	46.82	115.65	225	61 (26.70%)	55.05	4.30	8	2	28	67	4	6	0	0	Good - Fair
		98					↑228					↓1	↑30						
		99			↓43.18	↓106.65	↑235	↑64 (27.20%)	↑56.28				↑31		↑5				
		00																	
		01			↓42.98	↓106.17		↓62 (26.38%)	↓55.96	↓4.25		↑2						↑2	
		02																	
		04					↑240	↑66 (27.50%)	↑56.25	↑4.26			↑32						
96	EC13	96	SNS	wetland	4.61	11.39	162	29 (16.7%)	50.73	4.40	4	0	68	89	6	11	0	0	Excellent
		98					↑168		↑53.01	↑ 4.50			↓65						
		99																	
		00						↑27 (16.07%)						↓86				↑12	
		01																	
		02					↑169		↓52.78	↓4.43			↑66					↑13	
		04			↓4.39	↓10.84	↑186	↑31 (16.67%)	↑54.62	↓4.39			↑71	↑88					

Site #	Site Code	Year	Classification	Designation	Area		Flora						Fauna					Condition
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
118	NE9	96	NS		45.21	111.67	46	24 (50.0%)	n/a	n/a	4	0	1	5	0	0	0	0	Fair
		98			↓43.66	↓107.88	↑67	↑27 (40.3%)	↑20.55	↑3.25			↑5	↑12	↑1	↑1			
		99																	
		00																	
		01																	
		02			↑44.47	↑109.84	↑194	↑76 (39.18%)	↑37.74	↑3.47			↑27	↑38	↑3	↑4		↑5	
		04	↑SNS		↑46.00	↑113.66	↑197	↑78 (39.59%)				↑1		↑39					
137	CRR1	96	SNS	ESA,ANSI	71.40	176.36	41	12 (26.80%)	0.00	0.00	5	0	2	2	2	1	0	0	Fair
		98		↓ESA			↑76	↑23 (30.26%)	↑26.65	↑3.66			↑4	↑6					
		99																	
		00																	
		01							↓25.55	↓3.51				↑29	↑4	↑7		↑4	
		02					↑249	↑82 (32.93%)	↑48.66	↑3.77			↑37						
		04		↑ESA, wetland	↓69.82	↓172.52	↑252		↑49.07	↓3.76	↑10	↑1			↑5				
141	MV12	96	SNS		13.28	32.80	103	32 (31.07%)	33.94	4.03	3	0	7	5	4	0	0	0	Fair
		98	↓NS		↑13.38	↑33.06	↑115	↑35 (30.40%)	↑35.33	↓3.95									
		99																	
		00			↓11.08	↓27.41	↑121		↑36.23	↓3.91									
		01			↓8.71	↓21.50					↓2			↑8					
		02			↓8.63	↓21.32	↑125		↑36.26	↓3.82									
		04			↓8.27	↓20.43													

Site #	Site Code	Year	Classification	Designation	Area		Flora							Fauna					Condition
					(ha)	(acres)	total	# non-native (proportion)	native FQI	native mean C	# veg. comm.	prov. sig. species	reg. sig. species	# birds	# mammals	# herptiles	prov. sig. species	CVC	
150	SD7	96																	
		98																	
		99	NGS		2.01	4.97	34	16 (47.1%)			2				1				Poor
		00																	
		01																	
		02																	
		04	↑SNS		↑3.81	↑9.41	↑94	↑49 (52.13%)	↑18.84	↑2.84	↑3	↑1	↑5	↑54				↑1	
151	MI17	96																	
		98																	
		99	NS		6.04	14.92	145	45 (31.0%)	42.20	4.22	2	0	15	6	2	3	0	0	Fair
		00	↑SNS					↓44 (30.34%)						↓5					
		01																	
		02																	
		04			↓5.98	↓14.77	↑167	↑54 (32.34%)	↑43.56	↓4.10			↑16	↑19	↑8			↑3	
152	MI7	96																	
		98																	
		99	SNS		5.95	14.69	125	39 (31.2%)	39.90	4.30	2		7	1	5				Poor
		00																	
		01																	
		02																	
		04			↓4.98	↓9.41						↑1		↑10	↓4			↑2	

APPENDIX 4: COMPARISON OF CLASSIFICATIONS (1996 TO 2004)

Appendix 4. Comparison of natural area classes for the City of Mississauga between 1996 and 2004*.

Comparison Categories	Year	Classification				
		Significant Natural Site (SNS)	Natural Site (NS)	Natural Green Space (NGS)	Residential Woodland (RW)	TOTAL
Number of Sites	1996	51	59	31	3	144
	1998	45	64	31	3	143
	1999	46	68	28	3	145
	2000	45	70	27	3	145
	2001	47	67	26	3	143
	2002	47	66	24	3	140
	2004	62	53	21	3	139
Total Area (ha)	1996	1530.17	349.92	197.05	252	2329.14
	1998	1423.39	426.35	171.55	252	2273.29
	1999	1425.44	445.66	160.18	239.93	2271.21
	2000	1416.56	456.57	148.86	237.42	2259.41
	2001	1413.16	433.64	145.89	237.42	2230.11
	2002	1388.21	428.56	133.63	237.42	2182.82
	2004	1552.40	267.64	123.15	238.25	2181.44
Proportion of Natural Areas System	1996	74%	17%	9%	-	100%
	1998	70%	21%	9%	-	100%
	1999	70%	22%	8%	-	100%
	2000	70%	23%	7%	-	100%
	2001	71%	22%	7%	-	100%
	2002	71%	22%	7%	-	100%
	2004	80%	14%	6%	-	100%
Proportion of the City	1996	5.23%	1.2%	0.67%	-	7.10%
	1998	4.91%	1.41%	0.60%	-	6.92%
	1999	4.87%	1.52%	0.55%	-	6.94%
	2000	4.84%	1.56%	0.51%	-	6.91%
	2001	4.83%	1.48%	0.50%	-	6.81%
	2002	4.73%	1.46%	0.46%	-	6.65%
	2004	5.30%	0.91%	0.42%	-	6.63%

*Note: Residential Woodlands were not used in the calculations for proportion of natural areas system or proportion of the City.

APPENDIX 5: COMPARISON OF LANDFORMS (1996 TO 2004)

Appendix 5. Comparison of major landform types for the City of Mississauga between 1996 and 2004.*

Comparison Categories	Year	Landform Type			
		valleylands and associated tablelands	tablelands	wetlands and associated valleylands	TOTAL
Number of Sites	1996	73	60	6	139
	1998	73	59	6	138
	1999	76	58	6	140
	2000	76	58	6	140
	2001	79	53	6	138
	2002	78	52	5	135
	2004	77	52	5	134
Total Area (ha)	1996	1626.3	339.9	103.7	2069.9
	1998	1588.0	328.5	100.4	2016.9
	1999	1622.1	301.6	100.3	2024
	2000	1594.8	319.7	100.3	2014.7
	2001	1593.9	291.2	100.3	1985.4
	2002	1555.3	285.2	97.7	1938.1
	2004	1554.8	285.1	96.0	1935.9
Mean Size (ha)	1996	22.3	5.7	17.3	-
	1998	21.8	5.6	16.7	-
	1999	21.3	5.2	16.7	-
	2000	20.2	5.3	16.7	-
	2001	19.4	5.3	16.7	-
	2002	19.2	5.4	19.5	-
	2004	19.4	5.4	19.2	-
Proportion of Natural Areas System	1996	78.3%	16.4%	5.0%	99.7%
	1998	78.5%	16.2%	5.0%	99.7%
	1999	79.9%	14.8%	4.9%	99.7%
	2000	79.1%	15.8%	4.9%	99.8%
	2001	80.3%	14.7%	5.0%	100%
	2002	80.3%	14.7%	5.0%	100%
	2004	80.3%	14.7%	5.0%	100%
Proportion of the City	1996	5.60%	1.16%	0.36%	7.1%
	1998	5.43%	1.12%	0.34%	6.9%
	1999	5.55%	1.03%	0.34%	6.92%
	2000	5.45%	1.09%	0.34%	6.88%
	2001	5.45%	0.99%	0.34%	6.78%
	2002	5.31%	0.97%	0.33%	6.62%
	2004	5.31%	0.97%	0.33%	6.61%

*Note: two small areas that did not readily fall into these three categories and the residential woodlands were omitted from this analysis so figures differ slightly from those provided elsewhere in the report.

APPENDIX 6: COMPARISON OF COMMUNITY SIZE (1996 TO 2004)

Appendix 6. A comparison of the area (in hectares) of vegetation communities mapped for the City of Mississauga from 1996 to 2004 (grouped according to six broad categories). Communities are based on classifications of Bakowsky (1995) and Kavanaugh and McKay-Kuja (1992) see Geomatics (1996). See North-South (2000), Appendix 5, for a comparison of the vegetation communities with the Ecological Land Classification (Lee *et al.* 1998).

Code	Vegetation Community	# Occurrences							Area (hectares)						
		1996	1998	1999	2000	2001	2002	2004	1996	1998	1999	2000	2001	2002	2004
	Valleylands														
A	wooded slope	19	20	20	20	22	22	22	347.36	348.54	348.72	340.69	347.85	341.65	335.38
B	floodplain	22	21	21	21	23	23	23	458.42	426.21	426.10	426.10	426.32	393.50	390.48
G	golf course	4	4	4	4	4	4	4	101.18	101.19	101.19	101.13	101.13	99.73	99.73
J	wooded non-native valleylands	18	18	20	20	22	22	24	93.43	94.36	100.27	100.22	109.09	109.09	115.56
K	open with open slopes valleylands	31	32	33	33	33	33	33	229.02	210.58	217.50	217.62	215.34	197.49	196.47
L	wooded native valleylands	5	5	5	5	5	5	5	39.77	39.78	39.64	39.64	38.64	38.64	33.49
M	open with wooded slopes valleylands	2	2	2	2	1	1	1	5.26	5.25	5.25	5.25	0.82	0.82	0.82
N	open with manicured slopes valleylands	2	2	3	2	2	2	2	22.16	22.15	22.15	22.15	22.15	22.15	22.15
O	manicured with wooded slopes valleylands	1	1	1	1	0	0	0	5.17	5.17	5.17	5.17	0.00	0.00	0.00
	Totals								*1301.77*	*1253.23*	*1265.99*	*1257.98*	*1261.35*	*1203.0*	*1194.08*
	Woodlands														
BB	red ash-American elm forest	14	15	15	15	16	16	18	35.32	35.61	37.35	37.16	36.40	36.40	48.14
CC	sugar maple forest	7	7	7	7	7	7	7	14.79	13.12	13.12	13.12	13.12	11.62	11.62
DD	sugar maple-American beech forest	15	16	16	17	16	16	16	108.35	102.44	100.07	100.07	95.15	97.23	93.06
EE	sugar maple-white ash forest	9	9	9	9	9	9	9	63.06	62.18	62.18	61.73	61.27	61.20	61.07
FF	sugar maple-red oak forest	10	10	10	9	9	9	10	42.48	44.96	44.96	43.12	42.76	42.70	43.44
GG	sugar maple-eastern hemlock forest	1	1	1	1	1	1	1	16.03	16.07	16.07	16.07	15.97	15.97	15.97
II	sugar maple-black cherry forest	1	1	1	1	1	1	1	1.93	1.94	1.94	1.94	1.94	1.94	1.94
KK	sugar maple-American beech-red oak forest	5	5	5	5	5	5	5	29.46	29.46	29.46	29.46	29.46	28.92	28.92
LL	sugar maple-American beech-eastern hemlock forest	1	1	1	1	1	1	1	4.44	4.45	4.44	4.45	4.45	4.45	4.45
MM	white pine-eastern hemlock-sugar maple forest	1	1	1	1	1	1	1	6.77	6.77	5.69	5.69	5.69	5.69	5.69
NN	eastern hemlock forest	3	3	3	3	3	4	4	4.09	4.11	4.11	4.11	4.11	5.20	5.20
OO	red maple-red oak forest	5	6	6	6	6	6	6	30.24	30.24	30.42	30.42	30.42	30.42	29.89
PP	American beech forest	1	1	1	1	1	1	1	2.56	2.56	2.56	2.56	2.56	2.56	2.56

Code	Vegetation Community	# Occurrences							Area (hectares)						
		1996	1998	1999	2000	2001	2002	2004	1996	1998	1999	2000	2001	2002	2004
QQ	bur oak-American beech forest	1	1	1	1	0	0	0	2.24	2.24	2.24	2.24	0.00	0.00	0.00
RR	oak-ash forest	8	9	9	10	10	9	9	28.61	28.57	24.75	27.34	27.34	24.23	23.94
SS	oak-hickory forest	5	7	7	7	7	8	8	24.20	23.56	23.55	23.31	22.58	27.22	26.92
TT	ash-hickory forest	3	3	3	3	3	3	4	6.94	6.68	6.68	6.68	6.21	6.21	8.88
VV	black cherry-eastern hemlock-white ash forest	1	1	1	1	1	1	1	2.02	2.03	2.03	2.03	2.03	2.03	2.03
WW	bur oak-black walnut forest	1	1	1	1	0	0	0	0.90	0.90	0.90	0.90	0.00	0.00	0.00
ZZ	oak-white pine forest	0	0	2	2	2	2	2	0	0	2.35	2.35	2.35	2.35	2.35
	Totals								*424.43*	*417.89*	*414.87*	*414.73*	*403.81*	*406.32*	*416.07*
	Successional														
C	old field	26	27	27	27	32	36	40	88.45	95.33	95.33	95.30	97.75	109.12	116.24
D	hedgerow	5	5	4	4	4	4	4	7.68	7.01	6.95	6.95	5.46	5.46	5.46
E	early successional forest	9	10	10	10	7	9	12	21.68	14.66	14.66	12.82	7.68	11.12	24.33
P	hawthorn thicket	4	4	4	4	4	5	5	14.54	14.35	14.35	14.35	14.35	14.57	14.36
XX	birch forest	1	1	1	1	1	1	1	0.46	0.46	0.46	0.46	0.46	0.46	0.46
YY	poplar forest	1	2	2	2	2	2	4	2.37	1.69	1.69	1.69	1.69	1.69	3.11
	Totals								*135.18*	*133.5*	*133.44*	*131.56*	*127.39*	*142.41*	*163.96*
	Wetland														
V	cattail marsh	13	14	14	14	15	16	16	27.73	26.99	26.99	26.99	27.07	27.21	27.10
W	open water marsh	6	6	6	6	7	7	8	22.70	22.70	22.70	22.70	22.56	22.56	21.29
X	willow-buttonbush swamp thicket	1	1	1	1	1	1	1	2.77	2.77	2.77	2.77	2.77	2.77	2.77
Y	wet meadow	1	3	3	3	3	4	5	3.43	3.72	3.72	3.72	3.72	4.23	10.91
Z	willow-ash forest	2	2	2	2	2	2	3	0.55	0.56	0.56	0.56	0.56	0.56	1.15
AA	silver maple forest	5	5	5	5	3	3	3	18.59	18.14	18.14	17.58	7.24	7.24	7.24
	Totals								*75.77*	*74.88*	*74.88*	*74.32*	*63.92*	*64.56*	*70.45*
	Anthropogenic														
F	manicured	11	11	11	12	13	12	16	72.41	75.16	75.16	76.28	72.99	61.25	58.52
H	urban lake	2	2	2	2	2	2	2	7.26	7.26	7.26	7.26	7.26	7.26	7.26

Code	Vegetation Community	# Occurrences							Area (hectares)						
		1996	1998	1999	2000	2001	2002	2004	1996	1998	1999	2000	2001	2002	2004
I	wooded residential	3	3	3	3	3	3	3	251.59	251.59	239.93	237.43	237.43	237.43	238.26
T	plantation	11	11	11	13	12	13	14	21.58	21.57	21.60	21.73	20.80	20.92	22.67
UU	black walnut grove	1	1	1	1	1	1	1	0.17	0.17	0.17	0.17	0.17	0.17	0.08
	Totals								*353.01*	*355.75*	*344.12*	*342.87*	*338.65*	*327.03*	*326.79*
	Other														
R	beach	3	3	4	4	4	4	6	2.36	1.96	2.18	2.18	2.18	2.18	2.72
S	tall grass prairie	1	1	1	1	1	1	1	0.06	0.06	0.06	0.06	0.06	0.06	0.06
U	unknown	5	3	3	3	3	3	1	35.65	35.64	35.68	35.68	35.68	35.68	7.33
	Totals								*38.07*	*37.66*	*37.92*	*37.92*	*37.91*	*37.91*	*10.11*

APPENDIX 7: COMPARISON OF COMMUNITY PROPORTION (1996 TO 2004)

Appendix 7. A comparison of the proportion of the vegetation communities within the Natural Areas System and the City of Mississauga from 1996 to 2004 (grouped according to six broad categories). Communities are based on classifications of Bakowsky (1995) and Kavanaugh and McKay-Kuja (1992) see Geomatics (1996). North-South (2000) Appendix 5 shows a comparison of the vegetation communities with the Ecological Land Classification (Lee *et al.* 1998).

Code	Vegetation Community	Proportion of Natural Areas (%)							Proportion of City Area (%)						
		1996	1998	1999	2000	2001	2002	2004	1996	1998	1999	2000	2001	2002	2004
	Valleylands														
A	wooded slope	14.92	15.33	15.4	15.08	15.40	15.12	14.84	1.19	15.33	15.35	1.16	1.19	1.17	1.15
B	floodplain	19.69	18.75	18.8	18.86	18.87	17.42	17.28	1.57	18.75	18.76	1.46	1.46	1.34	1.33
G	golf course	4.35	4.45	4.45	4.48	4.48	4.41	4.41	0.35	4.45	4.45	0.35	0.35	0.34	0.34
J	wooded non-native valleylands	4.01	4.15	4.42	4.44	4.83	4.83	5.11	0.32	4.15	4.42	0.34	0.37	0.37	0.39
K	open with open slopes valleylands	9.84	9.26	9.58	9.63	9.53	8.74	8.70	0.78	9.26	9.58	0.74	0.74	0.67	0.67
L	wooded native valleylands	1.71	1.75	1.75	1.75	1.71	1.71	1.48	0.14	1.75	1.75	0.14	0.13	0.13	0.11
M	open with wooded slopes valleylands	0.23	0.23	0.23	0.23	0.04	0.04	0.04	0.02	0.23	0.23	0.02	0.00	0.00	0.00
N	open with manicured slopes valleylands	0.95	0.97	0.97	0.98	0.98	0.98	0.98	0.08	0.97	0.97	0.08	0.08	0.08	0.08
O	manicured with wooded slopes valleylands	0.22	0.23	0.23	0.23	0.00	0.00	0.00	0.02	0.23	0.23	0.02	0.00	0.00	0.00
	Totals	*55.92*	*55.12*	*55.74*	*55.68*	*55.83*	*53.25*	*52.93*	*4.47*	*55.12*	*55.74*	*4.30*	*4.31*	*4.11*	*4.08*
	Woodlands														
BB	red ash-American elm forest	1.52	1.57	1.64	1.64	1.61	1.61	2.13	0.12	1.57	1.64	0.13	0.12	0.12	0.16
CC	sugar maple forest	0.64	0.58	0.58	0.58	0.58	0.51	0.51	0.05	0.58	0.58	0.04	0.04	0.04	0.04
DD	sugar maple-American beech forest	4.65	4.51	4.41	4.43	4.21	4.30	4.12	0.37	4.51	4.41	0.34	0.33	0.33	0.32
EE	sugar maple-white ash forest	2.71	2.74	2.74	2.73	2.71	2.71	2.70	0.22	2.74	2.74	0.21	0.21	0.21	0.21
FF	sugar maple-red oak forest	1.82	1.98	1.98	1.91	1.89	1.89	1.92	0.15	1.98	1.98	0.15	0.15	0.15	0.15
GG	sugar maple-eastern hemlock forest	0.69	0.71	0.71	0.71	0.71	0.71	0.71	0.05	0.71	0.71	0.05	0.05	0.05	0.05
II	sugar maple-black cherry forest	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.01	0.08	0.08	0.01	0.01	0.01	0.01
KK	sugar maple-American beech-red oak forest	1.27	1.30	1.30	1.30	1.30	1.28	1.28	0.10	1.30	1.30	0.10	0.10	0.10	0.10
LL	sugar maple-American beech-eastern hemlock forest	0.19	0.20	0.19	0.20	0.20	0.20	0.20	0.02	0.20	0.19	0.02	0.02	0.02	0.02
MM	white pine-eastern hemlock-sugar maple forest	0.29	0.30	0.25	0.25	0.25	0.25	0.25	0.02	0.30	0.25	0.02	0.02	0.02	0.02

Code	Vegetation Community	Proportion of Natural Areas (%)							Proportion of City Area (%)						
		1996	1998	1999	2000	2001	2002	2004	1996	1998	1999	2000	2001	2002	2004
NN	eastern hemlock forest	0.18	0.18	0.18	0.18	0.18	0.23	0.23	0.01	0.18	0.18	0.01	0.01	0.02	0.02
OO	red maple-red oak forest	1.30	1.33	1.33	1.35	1.35	1.35	1.32	0.10	1.33	1.33	0.10	0.10	0.10	0.10
PP	American beech forest	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.01	0.11	0.11	0.01	0.01	0.01	0.01
QQ	bur oak-American beech forest	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.01	0.10	0.10	0.01	0.00	0.00	0.00
RR	oak-ash forest	1.23	1.26	1.09	1.21	1.21	1.07	1.06	0.10	1.26	1.09	0.09	0.09	0.08	0.08
SS	oak-hickory forest	1.04	1.04	1.04	1.03	1.00	1.20	1.19	0.08	1.04	1.04	0.08	0.08	0.09	0.09
TT	ash-hickory forest	0.30	0.29	0.29	0.30	0.27	0.27	0.39	0.02	0.29	0.29	0.02	0.02	0.02	0.03
VV	black cherry-eastern hemlock-white ash forest	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.01	0.09	0.09	0.01	0.01	0.01	0.01
WW	bur oak-black walnut forest	0.04	0.04	0.04	0.04	0.00	0.00	0.00	0.00	0.04	0.04	0.00	0.00	0.00	0.00
ZZ	oak-white pine forest	0.00	0.00	0.1	0.10	0.10	0.10	0.10	0.00	0.00	0.1	0.01	0.01	0.01	0.01
	Totals	*18.25*	*18.41*	*18.25*	*18.36*	*17.87*	*17.98*	*18.42*	*1.45*	*18.41*	*18.25*	*1.42*	*1.38*	*1.39*	*1.42*
	Successional														
C	old field	3.80	4.19	4.19	4.22	4.33	4.83	5.14	0.30	0.33	0.33	0.33	0.33	0.37	0.40
D	hedgerow	0.33	0.31	0.31	0.31	0.24	0.24	0.24	0.03	0.02	0.02	0.02	0.02	0.02	0.02
E	early successional forest	0.93	0.65	0.65	0.57	0.34	0.49	1.08	0.07	0.05	0.05	0.04	0.03	0.04	0.08
P	hawthorn thicket	0.62	0.63	0.63	0.64	0.64	0.64	0.64	0.05	0.05	0.05	0.05	0.05	0.05	0.05
XX	birch forest	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
YY	poplar forest	0.10	0.07	0.07	0.07	0.07	0.07	0.14	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Totals	*5.8*	*5.87*	*5.87*	*5.82*	*5.64*	*6.30*	*7.26*	*0.46*	*0.46*	*0.46*	*0.46*	*0.44*	*0.49*	*0.56*
	Wetland														
V	cattail marsh	1.19	1.19	1.19	1.19	1.20	1.20	1.20	0.09	0.09	0.09	0.09	0.09	0.09	0.09
W	open water marsh	0.97	1.00	1.00	1.00	1.00	1.00	0.94	0.08	0.08	0.08	0.08	0.08	0.08	0.07
X	willow-buttonbush swamp thicket	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Y	wet meadow	0.15	0.16	0.16	0.16	0.16	0.19	0.48	0.01	0.01	0.01	0.01	0.01	0.01	0.04

Code	Vegetation Community	Proportion of Natural Areas (%)							Proportion of City Area (%)						
		1996	1998	1999	2000	2001	2002	2004	1996	1998	1999	2000	2001	2002	2004
Z	willow-ash forest	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AA	silver maple forest	0.80	0.80	0.80	0.78	0.32	0.32	0.32	0.06	0.06	0.06	0.06	0.02	0.02	0.02
	Totals	*3.25*	*3.29*	*3.29*	*3.29*	*2.83*	*2.86*	*3.12*	*0.25*	*0.25*	*0.25*	*0.25*	*0.22*	*0.22*	*0.24*
	Anthropogenic														
F	manicured	3.11	3.31	3.31	3.38	3.23	2.71	2.59	0.25	0.26	0.26	0.26	0.25	0.21	0.20
H	urban lake	0.31	0.32	0.32	0.32	0.32	0.32	0.32	0.02	0.02	0.02	0.02	0.02	0.02	0.02
I	wooded residential	10.81	11.07	10.56	10.51	10.51	10.51	10.55	0.86	0.86	0.82	0.81	0.81	0.81	0.81
T	plantation	0.93	0.95	0.95	0.96	0.92	0.93	1.00	0.07	0.07	0.07	0.07	0.07	0.07	0.08
UU	black walnut grove	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Totals	*15.17*	*15.66*	*15.15*	*15.18*	*14.99*	*14.47*	14.46	*1.2*	*1.21*	*1.17*	*1.17*	*1.16*	*1.12*	*1.12*
	Other														
R	beach	0.10	0.09	0.10	0.10	0.10	0.10	0.12	0.01	0.01	0.01	0.01	0.01	0.01	0.01
S	tall grass prairie	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
U	unknown	1.53	1.57	1.57	1.57	1.58	1.58	0.32	0.12	0.12	0.12	0.12	0.12	0.12	0.03
	Totals	*1.63*	*1.66*	*1.67*	*1.67*	*1.68*	*1.68*	*0.45*	*0.13*	*0.13*	*0.13*	*0.13*	*0.13*	*0.13*	0.03

APPENDIX 8: UPDATED PROVINCIAL FLORA RARITY

Appendix 8. Updated provincially significant native flora species documented for the City of Mississauga. Provincial rarity status follows (NHIC 2004). Rarity ranks are defined in Appendix 4 of the Natural Areas Survey (Geomatics 1996).

Scientific Name	Common Name	G Rank	S Rank	MNR	COSEWIC	Reg Rank	Location
Astragalus neglectus (Torr. & A. Gray) E. Sheld.	Coopers Milkvetch	G4	S3			1	CRR6
Aureolaria flava (L.) Farw.	Yellow False-foxglove	G5	S3			1	CRR7
Carex amphibola Steud.	Narrow-leaved Sedge	G5	S2			1	CRR6
Carex gracilescens Steud.	Slender Wood Sedge	G5?	S3			1	CRR8
Juglans cinerea L.	Butternut	G3G4	S3?	END	END	3	34 natural areas
Mertensia virginica (L.) Pers. ex Link	Bluebells	G5	S3			1	Clarkson-Lorne Park
Muhlenbergia sylvatica (Torr.) Torr. ex A. Gray var. sylvatica	Woodland Satin Grass	G5	S2			1	EM4, ETO3
Oenothera clelandii W. Dietr., Raven & W.L. Wagner	Clelands Evening-primrose	G3G5	S1			1	Clarkson-Lorne Park
Panax quinquefolius L.	American Ginseng	G3G4	S2		END	2	mentioned in Peel Flora
Potentilla paradoxa Nutt.	Bushy Cinquefoil	G5	S3			1	Lake Ontario shoreline

APPENDIX 9: UPDATED PROVINCIAL FAUNA RARITY

Appendix 9. Updated provincially significant native fauna species documented for the City of Mississauga, including migrant and wintering bird species. Rarity status follows (NHIC 2004). Rarity ranks are defined in Appendix 4 of the Natural Areas Survey (Geomatics 1996).

Common Name	Scientific Name	G Rank	S Rank	COSEWIC	MNR	Historical	Notes
Birds							
red-necked grebe	*Podiceps grisegena*	G5	S3B,SZN	NAR	NAR		migrant
horned grebe	*Podiceps auritus*	G5	S1B,SZN		DD		migrant
red-throated loon	*Gavia stellata*	G5	S1S2B,SZN				migrant
great black-backed gull	*Larus marinus*	G5	S2B,SZN				wintering
Caspian tern	*Sterna caspia*	G5	S3B,SZN	NAR	NAR		migrant
Arctic tern	*Sterna paradisaea*	G5	S2S3B, SZN				accidental
black tern	*Chlidonias niger*	G4	S3B,SZN	NAR	SC		migrant
redhead	*Aythya americana*	G5	S2B,SZN				migrant
canvasback	*Aythya valisineria*	G5	S1B,S2N				wintering
greater scaup	*Aythya marila*	G5	S2B,SZN				wintering
bufflehead	*Bucephala albeola*	G5	S3B,SZN				wintering
long-tailed duck	*Clangula hyemalis*	G5	S2S3B,SZN				wintering
white-winged scoter	*Melanitta fusca*	G5	S1S2B,SZN				migrant
surf scoter	*Melanitta perspicillata*	G5	S1B, SZN				migrant
ruddy duck	*Oxyura jamaicensis*	G5	S2B,SZN				migrant
king eider	*Somateria spectabilis*	G5	S1B,SZN				migrant
tundra swan	*Cygnus columbianus*	G5	S3B,SZN				migrant
least bittern	*Ixobrychus exilis*	G5	S3B,SZN	THR	THR		migrant
great egret	*Casmerodius albus*	G5	S2B,SZN				migrant
black-crowned night-heron	*Nycticorax nycticorax*	G5	S3B,SZN				CRR4, ETO7, CRR9

Common Name	Scientific Name	G Rank	S Rank	COSEWIC	MNR	Historical	Notes
Wilsons phalarope	*Phalaropus tricolor*	G5	S3B,SZN			Yes	migrant
short-billed dowitcher	*Limnodromus griseus*	G5	S2S3B,SZN				migrant
stilt sandpiper	*Calidris himantopus*	G5	S2S3B,SZN				migrant
dunlin	*Calidris alpina*	G5	S3B,SZN				migrant
short-eared owl	*Asio flammeus*	G5	S3S4B,SZN	SC	SC		migrant
red-shouldered hawk	*Buteo lineatus*	G5	S4B,SZN	SC	SC		MV2, LV7
rough-legged hawk	*Buteo lagopus*	G5	S1B,SZN	NAR	NAR		wintering
peregrine falcon	*Falco peregrinus anatum*	G4T3	S2S3B,SZN	THR	END-R		migrant
red-headed woodpecker	*Melanerpes erythrocephalus*	G5	S3B,SZN	SC	SC		CRR10
Acadian flycatcher	*Empidonax virescens*	G5	S2B,SZN	END	END		migrant
northern shrike	*Lanius excubitor*	G5	S2S3B,SZN				wintering
loggerhead shrike	*Lanius ludovicianus*	G5	S2B,SZN	END	END		migrant
yellow-breasted chat	*Icteria virens*	G5	S2S3B,SZN	SC	SC	Yes	HO9
prothonotary warbler	*Protonotaria citrea*	G5	S1S2B,SZN	END	END		migrant
Reptiles and Amphibians							
Jefferson/blue-spotted salamander complex	*Ambystoma jeffersonianum*	G4	S2	THR	THR		LV7, CRR6
Blanding's turtle	*Emydoidea blandingi*	G4	S3		THR		CL9
wood turtle	*Clemmys insculpta*	G4	S2	END	SC	Yes	ETO7
common map turtle	*Graptemys geographica*	G5	S3	SC	SC		CL9, CRR9, CRR8
eastern hognose snake	*Heterodon platirhinos*	G5	S3	THR	THR	Yes	CL9
eastern milk snake	*Lampropeltis triangulum triangulum*	G5	S3	SC	SC		CL9, CM7, CRR3, CRR4, CRR5, CRR7, CRR9, ETO4, ETO7, ME12
ribbon snake	*Thamnophis sauritus*	G5	S3	SC	SC		unknown

APPENDIX 10: UPDATED CVC SPECIES OF CONSERVATION INTEREST

Appendix 11. Updated list of Credit Watershed birds of conservation interest documented from the City of Mississauga including migrant and wintering species listed alphabetically by common name. An asterix indicates an historical record Rarity status follows (NHIC 2004). Rarity ranks are defined in Appendix 4 of the Natural Areas Survey (Geomatics 1996).

Common Name	Scientific Name	G Rank	S Rank	COSEWIC	MNR	Breeding Status	Location
Acadian flycatcher	Empidonax virescens	G5	S2B,SZN	END	END	migrant	CL9
alder flycatcher	Empidonax alnorum	G5	S5B,SZN			possible	CRR10
American bittern	Botaurus lentiginosus	G4	S4B,SZN			possible	CRR9
American black duck	Anas rubripes	G5	S5B,SZN			possible	ETO8
American coot	Fulica americana	G5	S4B,SZN	NAR	NAR	migrant	CL9
American redstart	Setophaga ruticilla	G5	S5B,SZN			probable	CL16, CRR6
bank swallow	Riparia riparia	G5	S5B,SZN			?	CL42, LV3, SD5, SD7
barn swallow	Hirundo rustica	G5	S5B,SZN			possible	CL9, Credit River, MV2, CL52
barred owl	Strix varia	G5	S4S5			migrant	CL9
belted kingfisher	Ceryle alcyon	G5	S5B,SZN			probable	CL9, Credit River, MV2
black tern	Chlidonias niger	G4	S3B,SZN	NAR	SC	migrant	CL9
black-and-white warbler	Mniotilta varia	G5	S5B,SZN			migrant	8 sites
blackburnian warbler	Dendroica fusca	G5	S5B,SZN			migrant	5 sites
black-crowned night-heron	Nycticorax nycticorax	G5	S3B,SZN			probable	Credit River, Etobicoke Creek
black-throated blue warbler	Dendroica caerulescens	G5	S5B,SZN			migrant	5 sites
black-throated green warbler	Dendroica virens	G5	S5B,SZN			migrant	6 sites
blue-gray gnatcatcher	Polioptila caerulea	G5	S4B,SZN			migrant	3 sites
blue-winged warbler	Vermivora pinus	G5	S4B,SZN			migrant	CL9
bobolink	Dolichonyx oryzivorus	G5	S4B,SZN			probable	CRR2, EC13, MV2
broad-winged hawk	Buteo platypterus	G5	S5B,SZN			migrant	CL9
brown creeper	Certhia americana	G5	S5B,SZN			probable	LV7
brown thrasher	Toxostoma rufum	G5	S5B,SZN			probable	CL16, CRR10, EC13, SD4
Canada warbler	Wilsonia canadensis	G5	S5B,SZN			possible	CL8, CRR3
Carolina wren	Thryothorus ludovicianus	G5	S3S4			possible	CL9, Credit River, LV3

Common Name	Scientific Name	G Rank	S Rank	COSEWIC	MNR	Breeding Status	Location
Caspian tern	Sterna caspia	G5	S3B,SZN	NAR	NAR	migrant	CL9, PC1
chestnut-sided warbler	Dendroica pensylvanica	G5	S5B,SZN			possible	CL39
chimney swift	Chaetura pelagica	G5	S5B,SZN			possible	CL42, Credit River, Etobicoke Creek, LV7, SP3
clay-colored sparrow	Spizella pallida	G5	S4B,SZN			probable	EC13
cliff swallow	Petrochelidon pyrrhonota	G5	S5B,SZN			possible	Credit River
common grackle	Quiscalus quiscula	G5	S5B,SZN			probable	city wide
common merganser	Mergus merganser	G5	S5B,SZN			migrant	Lake Ontario shoreline
common moorhen	Gallinula chloropus	G5	S4B,SZN			migrant	CL9
common nighthawk	Chordeiles minor	G5	S4B,SZN			possible	SD1
common snipe	Gallinago gallinago	G5	S5B,SZN			migrant	EC13
common tern	Sterna hirundo	G5	S4B,SZN	NAR	NAR	migrant	Lake Ontario shoreline
Connecticut warbler	Oporornis agilis	G4	S4B,SZN			migrant	CL9
Coopers hawk	Accipiter cooperii	G5	S4B,SZN	NAR	NAR	migrant	CL39, CL9, LV7
dark-eyed junco	Junco hyemalis	G5	S5B,SZN			wintering	11 sites
eastern kingbird	Tyrannus tyrannus	G5	S5B,SZN			probable	10 sites, Credit River
eastern meadowlark	Sturnella magna	G5	S5B,SZN			probable	CRR2, EC13
eastern towhee	Pipilo erythrophthalmus	G5	S4B,SZN			possible	CRR1, EC13
eastern wood-pewee	Contopus virens	G5	S5B,SZN			possible	7 sites, Credit River
evening grosbeak	Coccothraustes vespertinus	G5	S5B,SZN			migrant	MI1, CL9
gadwall	Anas strepera	G5	S4B,SZN			migrant	Lake Ontario shoreline
golden-crowned kinglet	Regulus satrapa	G5	S5B,SZN			migrant	7 sites
golden-winged warbler	Vermivora chrysoptera	G4	S4B,SZN			migrant	CL9, CRR10
grasshopper sparrow	Ammodramus savannarum	G5	S4B,SZN			confirmed	ETO3
gray catbird	Dumetella carolinensis	G5	S5B,SZN			probable	city wide
great blue heron	Ardea herodias	G5	S5B,SZN			possible	CRR10

Common Name	Scientific Name	G Rank	S Rank	COSEWIC	MNR	Breeding Status	Location
green-winged teal	Anas crecca	G5	S4B,SZN			probable	EC13
hairy woodpecker	Picoides villosus	G5	S5			probable	CL9, Credit River, LV3, LV7
herring gull	Larus argentatus	G5	S5B,SZN			probable	CL9
hooded merganser	Lophodytes cucullatus	G5	S5B,SZN			possible	Lake Ontario shoreline
horned lark	Eremophila alpestris	G5	S5B,SZN			probable	EC13, MV2
killdeer	Charadrius vociferus	G5	S5B,SZN			probable	6 sites
least bittern	Ixobrychus exilis	G5	S3B,SZN	THR	THR	migrant	CL9
least flycatcher	Empidonax minimus	G5	S5B,SZN			possible	Credit River
loggerhead shrike	Lanius ludovicianus	G5	S2B,SZN	END	END	migrant	CL9
magnolia warbler	Dendroica magnolia	G5	S5B,SZN			possible	CRR10
marsh wren	Cistothorus palustris	G5	S5B,SZN			possible	CL9
mourning warbler	Oporornis philadelphia	G5	S5B,SZN			possible	CL9, Credit River
Nashville warbler	Vermivora ruficapilla	G5	S5B,SZN			migrant	5 sites
northern goshawk	Accipiter gentilis	G5	S4	NAR	NAR	probable	CRR3
northern harrier	Circus cyaneus	G5	S4B,SZN	NAR	NAR	probable	ETO3
northern mockingbird	Mimus polyglottos	G5	S4B,SZN			possible	CL21, LV1, MV2
northern saw-whet owl	Aegolius acadicus	G5	S4B,SZN			wintering	HO9, MI1
northern waterthrush	Seiurus noveboracensis	G5	S5B,SZN			migrant	CL9, CRR10, EC13, EM4
orchard oriole	Icterus spurius	G5	SZB,SZN			migrant	EC13
osprey	Pandion haliaetus	G5	S4B,SZN			migrant	CL9, CRR1, EC13
ovenbird	Seiurus aurocapillus	G5	S5B,SZN			possible	CRR10
peregrine falcon	Falco peregrinus anatum	G4T3	S2S3B,SZN	END	END-R	migrant	CL9
pied-billed grebe	Podilymbus podiceps	G5	S4B,SZN			migrant	Lake Ontario shoreline
pileated woodpecker	Dryocopus pileatus	G5	S4S5			probable	CL1, CRR10, MV18
pine siskin	Carduelis pinus	G5	S5B,SZN			migrant	CL9
pine warbler	Dendroica pinus	G5	S5B,SZN			possible	CL39, MI17, Credit River

Common Name	Scientific Name	G Rank	S Rank	COSEWIC	MNR	Breeding Status	Location
purple finch	Carpodacus purpureus	G5	S5B,SZN			possible	CRR10
purple martin	Progne subis	G5	S4B,SZN			possible	CL42, CL9
red-breasted nuthatch	Sitta canadensis	G5	S5B,SZN			possible	CL24, CL39, Credit River, MI17
red-headed woodpecker	Melanerpes erythrocephalus	G5	S3B,SZN	SC	SC	possible	CRR10
red-shouldered hawk	Buteo lineatus	G5	S4B,SZN	SC	SC	confirmed	LV7*, MV2
ruffed grouse	Bonasa umbellus	G5	S5			possible	CL9
savannah sparrow	Passerculus sandwichensis	G5	S5B,SZN			probable	6 sites
scarlet tanager	Piranga olivacea	G5	S5B,SZN			possible	CRR10
sharp-shinned hawk	Accipiter striatus	G5	S5B,SZN	NAR	NIAC	migrant	CL9, CRR7, EM30*
short-eared owl	Asio flammeus	G5	S3S4B,SZN	SC	SC	migrant	CL9
turkey vulture	Cathartes aura	G5	S4B,SZN			migrant	6 sites
upland sandpiper	Bartramia longicauda	G5	S4B,SZN			confirmed	ETO3
veery	Catharus fuscescens	G5	S4B,SZN			migrant	CL9, CRR10, HO9, LV7
vesper sparrow	Pooecetes gramineus	G5	S4B,SZN			probable	EC13, MV2
white-throated sparrow	Zonotrichia albicollis	G5	S5B,SZN			migrant	8 sites, Credit River
winter wren	Troglodytes troglodytes	G5	S5B,SZN			probable	CL16, CRR10
wood thrush	Hylocichla mustelina	G5	S5B,SZN			probable	MV2, NE9, ETO8, Credit River
yellow-bellied sapsucker	Sphyrapicus varius	G5	S5B,SZN			probable	CL16
yellow-billed cuckoo	Coccyzus americanus	G5	S4B,SZN			possible	CL8, CL9
yellow-rumped warbler	Dendroica coronata	G5	S5B,SZN			migrant	7 sites, Credit River