

**CHESTER SPRINGS MARSH EAST COMMUNITY STEWARDSHIP
PROGRAM:**

2003 REPORT

Prepared for: Task Force to Bring Back the Don
Prepared by: Steve Gillis
Date: March 2004

EXECUTIVE SUMMARY

The Chester Springs Marsh East Stewardship Program involves Task Force to Bring Back the Don volunteers in data collection and maintenance activities. The Stewardship Program has been implemented at the marsh for seven years.

In 2003, volunteers managed non-native invasive species, collected litter, planted native trees and shrubs, cared for planted vegetation, maintained formal walking paths, and blocked informal paths. In addition, information on wildlife inhabiting and using the ponds, vegetation growing in and around the ponds, and surface water levels were collected. The information allows the Task Force to Bring Back the Don to assess the ecological conditions of the site and evaluate past and ongoing restoration efforts.

Notable observations include:

- Native wetland plants dominate the marsh's edge. Non-native herbaceous species tend to dominate the upper drier areas of the marsh. Vegetation at the marsh is dense with maturing native tree and shrub species.
- Invasive species of concern at the wetland include Japanese knotweed, dog strangling vine, Manitoba maple, and purple loosestrife.
- Other wildlife species observed in 2003 include muskrat, vole, and American toad tadpoles. Additionally, a male deer was observed on the west bank of the river across from Chester Springs Marsh East.

The Stewardship Program will continue at the marsh over the next several years.

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1.0 Chester Springs Marsh Background Information

The majority of wetlands in the Don Watershed had disappeared by the early 20th century. The restoration of wetlands throughout the Don Watershed is seen as a key step in restoring the health of the Don River, and ultimately the Toronto Waterfront. The location where Chester Springs Marsh sits was landfilled between 1912 and 1925. Chester Springs Marsh was created in 1996 and has provided a model for other restoration projects to follow.

The marsh is located in downtown Toronto, adjacent to the Don River, just south of the Bloor Street Viaduct. The marsh was built, and is being maintained and monitored, by an innovative partnership between the Task Force to Bring Back the Don and a number of public and private sector organizations (Appendix A).

Chester Springs Marsh has been designed to attract a wide variety of wildlife, while providing an opportunity for public users seeking an experience with nature. The marsh is roughly three hectares in size, and has been planted with many species of native vegetation. Innovative habitat features such as sunning logs, perching stumps, bird boxes and snake hibernaculi were built into the design of the marsh in order to provide the appropriate conditions for resident and migratory birds, small mammals, reptiles and amphibians.

The Don River is the main water source for the marsh. During heavy precipitation events, the Don River overflows into the wetland. Precipitation and ground water are other sources of water feeding the marsh.

2.0 Community Stewardship Program Background Information

The Community Stewardship Program involves volunteers in data collection and maintenance activities. This is the sixth year that the Task Force to Bring Back the Don has coordinated the Community Stewardship Program for Chester Springs Marsh.

The goal of the Stewardship Program is to help Chester Springs Marsh become a functional natural ecosystem and to involve the community in the naturalization of the site.

The objectives for the Stewardship Program are as follows:

1. to ensure that planted vegetation is not out-competed by invasive species encroachments;
2. to install and maintain habitat structures;
3. to monitor the changes of the area over time, including colonization by both native and non-native species;
4. to provide information to signal maintenance requirements, such as control of invasive vegetation;
5. to involve interested groups and individuals in restoration activities;
6. to educate the community about the natural environment; and
7. to train the community in proper naturalization techniques.

3.0 Report Objectives

The purpose of this report is to:

1. provide a description of the 2003 Community Stewardship Program;
2. provide a comprehensive up-to-date description of the Chester Springs Marsh ecosystem;
3. provide an integration and interpretation of the data generated by the Stewardship Program in its seventh year of operation; and
4. provide recommendations for maintenance activities to be implemented at the marsh.

4.0 2003 Stewardship Program

4.1 Participants

The following groups participated in the Chester Springs Marsh Stewardship Program in 2003: Community Stewardship Team (4 participants), bird surveyors, Covenant House, Serve Canada, summer students, Bloomberg News group, Stewardship Crew

4.2 Stewardship Activities

The following maintenance activities were completed:

- Blocking informal pathways with woody debris.
- Clearing vegetation from around trees and shrubs
- Collecting and disposing of litter.
- Cutting back new growth from Manitoba maple and Siberian elm stumps.
- Cutting/digging out Manitoba maple and Siberian elm saplings.
- Maintaining formal paths by trimming back vegetation.
- Removing tree guards from trees that outgrew them.
- Watering trees and shrubs planted in 2001.
- Weeding non-native invasive species: dog strangling vine, japanese knotweed, garlic mustard, purple loosestrife, Virginia creeper, Wild grape, Ragweed, Curled dock, Bull thistle, Bidweed and Tansy
- Hardware cloth was wrapped around trees with a diameter greater than 5cm, as protection from beavers
- Cutting of Japanese knotweed, followed by herbicide treatment of knotweed in cut areas by newly planted section
- Herbicide treatment of Dog Strangling Vine along main pathway
- Native trees and shrubs were planted in the spring of 2003
- Birds, vegetation and water levels were monitored by volunteers

The following monitoring activities were completed:

- Bird survey
- Amphibian survey
- Incidental observations
- Vegetation survey

- Water level monitoring

5.0 2003 CHESTER SPRINGS MARSH MONITORING RESULTS

5.1 Results and Summaries

5.1.1 Surface Water Levels

The Stewardship Team from July 14th to September 9th, 2003 monitored water levels. The measurements were taken from a one-metre staff gauge located in cell B in order to determine and record the variances in water levels in the marsh. See Appendix B for a map of Chester Springs Marsh with cells labeled A through D.

A water level recording of zero does not necessarily reflect zero water throughout the marsh, but it does indicate very low water levels. If a water level reading of zero is taken, water may exist, in minimal amounts, in the north cell (D) and the north-central cell (C); however, the south cell (A) and the south-central cell (B) may be completely dry.

Table 2: Water levels recorded at Chester Springs Marsh during the 2001, 2002 and 2003 monitoring season by volunteers. (1998 through 2000 in Appendix C)

Parameter	2001			2002			2003		
	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max
Water Level (m)	0	0	0	0	0.28	1+	0	0.011	0.034
Dates when water depth recorded as zero	June 14 – August 29			July 10 August 8 – September 8			July 14 July 23 Sept 9		
Number of times river overflowed into marsh	0			1			No data		

The water levels of the marsh in 2003 was lower than the 2002 season. This is possibly due to a lower amount of rainfall in the spring and early summer.

5.1.2 Vegetation

Volunteers compiled a list of identified/known vegetation species growing at the marsh, and noted the location where the vegetation was observed. The volunteers added to the list during each stewardship outing in an attempt to record the majority of species growing at the marsh.

Figure 1: Map of Chester Springs Marsh showing vegetation zones

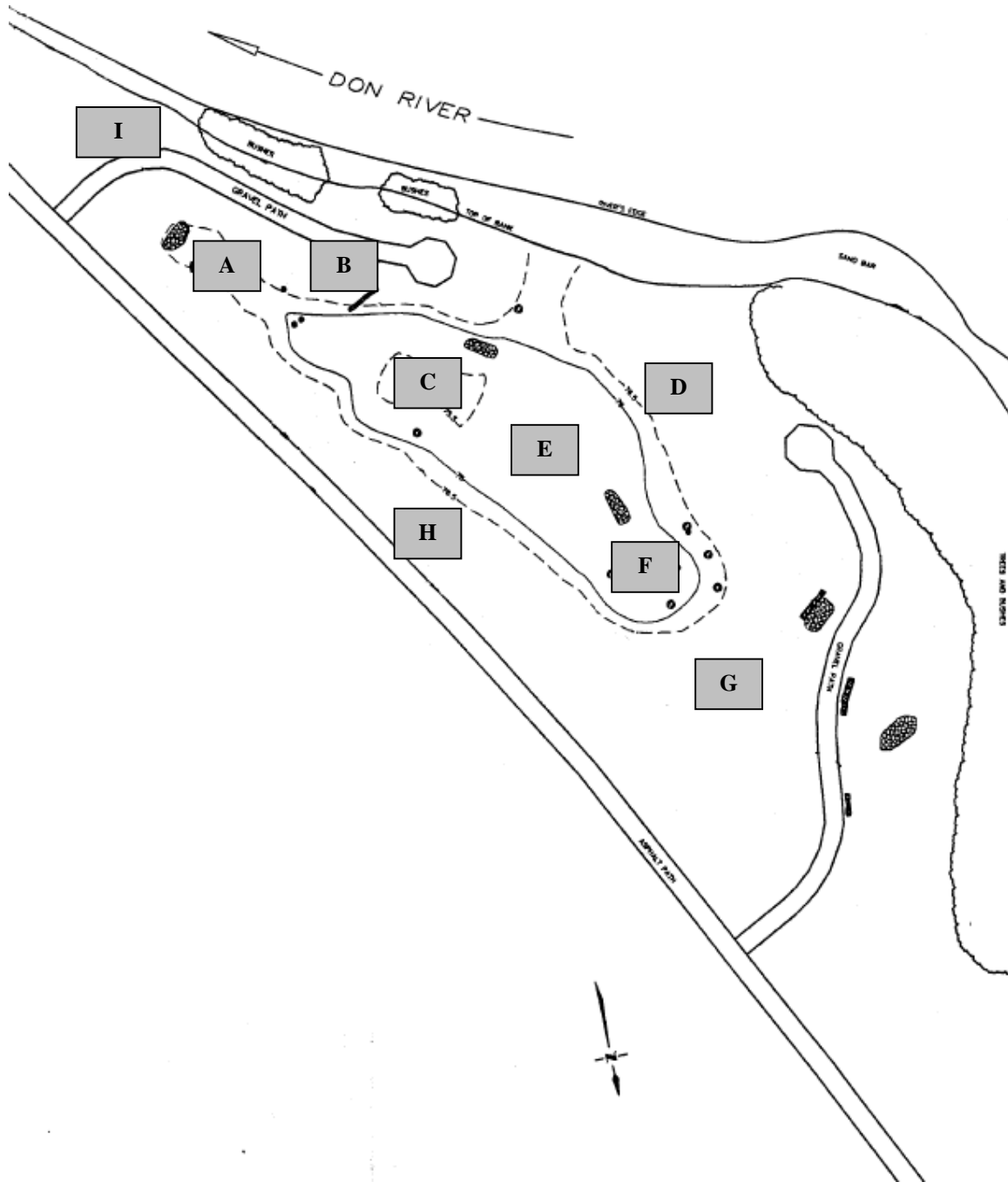


Table 2: Vegetation species recorded at Chester Springs Marsh during the 2003 Stewardship Program.

Vegetation zone	Description of area	Species observed during volunteer surveys
A	Interior and edge of cell A, moist soil conditions	Hairy Willow Herb, Blue Vervain, <i>Verbena hastata</i> Jewelweed, <i>Impatiens capensis</i> Willow, <i>Salix sp.</i> Canada Thistle, <i>Cirsium arvense</i>
B	Between south gravel path and marsh edge, dry soil conditions	
C	Interior and edge of cell B, wet soil conditions	Cattails, <i>Typha sp.</i> Joe Pye Weed, <i>Eupatorium maculatum</i> Swamp Milkweed, <i>Asclepias incarnata</i>
D	North side of inflow channel between marsh edge and river, dry soil conditions	Bittersweet Nightshade, <i>Solanaceae sp.</i> Bull Thistle, <i>Cirsium vulgare</i> Teasel, <i>Dipsacus sylvestris</i> Jewelweed, <i>Impatiens capensis</i> White Vervain, <i>Verbena urticifolia</i> Reed Canary Grass, <i>Phalaris arundinacea</i> Burdock, <i>Arctium sp.</i> Silver Maple, <i>Acer platanoides</i> Eastern Cottonwood, <i>Populus deltoides</i> Curled Dock, <i>Rumex crispus</i> Goldenrod sp., <i>Solidago sp.</i> Smartweed sp., <i>Polygonum sp.</i> Bulrush, <i>Scirpus sp.</i> Willow sp., <i>Salix sp.</i> Staghorn Sumac, <i>Rhus typhina</i> Stinging Nettle, <i>Urtica dioica</i> Common Mullein, <i>Verbascum thapsus</i> Joe Pye Weed, <i>Eupatorium maculatum</i> Common Milkweed, <i>Asclepias syriaca</i> Common Tansy, <i>Tanacetum vulgare</i> Virginia Creeper, <i>Parthenocissus vitecea</i> Blue Flag Iris, <i>Iris versicolor</i>

E	Interior and edge of cell C, moist to wet soil conditions	Sedge sp., <i>Carex sp.</i> Smartweed sp., <i>Polygonum sp.</i> Bulrush sp., <i>Scirpus sp.</i> Willow sp., <i>Salix sp.</i> Poplar sp., <i>Populus sp.</i> Canada Thistle, <i>Cirsium arvense</i>
F	Interior and edge of cell D	Smartweed sp., <i>Polygonum sp.</i> Willow sp., <i>Salix sp.</i> Arrowhead, <i>Sagittaria sp.</i>
G	Between north gravel path and marsh edge, dry soil conditions	Raspberry sp., <i>Rubus sp.</i> Rose sp., <i>Rosaceae sp.</i> Teasel, <i>Dipsacus sylvestris</i> Butter and Eggs, <i>Linaria vulgaris</i> Evening Primrose, <i>Oenothera biennis</i> Willow sp., <i>Salix sp.</i> Bull Thistle, <i>Cirsium vulgare</i> Common Milkweed, <i>Asclepias syriaca</i> White Cedar, <i>Thuja occidentalis</i> Common St. John's Wort, <i>Hypericum perforatum</i>
H	Adjacent to asphalt path, dry soil conditions	Tamarack, <i>Larix laricina</i>
I	Between south gravel path and river's edge, dry soil conditions	Common Milkweed, <i>Asclepias syriaca</i> Japanese Knotweed, <i>Polygonum cuspidatum</i> Silver Maple, <i>Acer platanoides</i> Ragweed, <i>Ambrosia artemisiifolia</i> Garlic Mustard, <i>Alliaria petiolata</i> Poppy sp., <i>Papaveraceae sp.</i> Common Tansy, <i>Tanacetum vulgare</i> Wild Carrot, <i>Dacus carota</i> Jerusalem Artichoke, <i>Helianthus tuberosus</i> Bur Oak, <i>Quercus macrocarpa</i>

Vegetation surveys indicate native wetland plants dominate the marsh shoreline. Populations of native cattails, arrowhead, blue flag iris, smartweed, sedges, and water lilies are thriving in and around the cells of the marsh.

The upper dry areas of the marsh tend to be dominated by herbaceous non-native species, particularly creeping thistle, stinging nettle, garlic mustard, Dame's rocket, and teasel. A few species of native plants exist in considerable numbers, including jewelweed, Canada goldenrod, and common milkweed, along with a variety of tree and shrub species.

Many trees and shrubs that have been planted or grown naturally have been very successful at Chester Springs Marsh. Eastern cottonwood, gray dogwood, red osier dogwood, white pine, eastern white-cedars, tamarack, staghorn sumac, green ash, and silver maple are examples of native woody vegetation thriving at the wetland.

5.1.3 Birds

Marsh bird surveys were conducted using the Marsh Monitoring Program (MMP) protocol, a cooperative project of Environment Canada and Bird Studies Canada. The Marsh Bird Monitoring Program provides volunteer monitors with a standard protocol for monitoring marsh birds and amphibians throughout the Great Lakes Basin. As such, the bird populations information gathered by the volunteers is helpful in developing an understanding of the ecological dynamics at Chester Springs Marsh and allowing a comparison with other wetlands in the Great Lakes Basin.

Volunteers conducted the survey on June 22nd and July 7th of 2003. The observations were recorded during a standard ten-minute period between 6:00PM and sunset. The numbers and species observed by sight and call were recorded.

Table 3: Bird species recorded at Chester Springs Marsh during the 1997, 1998, 1999, 2000, 2001, 2002 and 2003 surveys.

Note: Volunteer bird surveys during stewardship activities were not performed in 2003, only for the Marsh Monitoring Program.

Common Name	Scientific Name	1997	1998	1999	2000	2001	2002	2003
American Crow	<i>Corvus brachyrhynchos</i>	P	P	P				
American Goldfinch	<i>Carduelis tristis</i>	PC	PC	PC		C		
American Robin	<i>Turdus migratorius</i>	PC	PC	PC	C	C	C	C
Barn Swallow	<i>Hirundo rustica</i>		C	C	C	C		
Belted Kingfisher	<i>Megaceryle alcyon</i>	PC	P	P				
Black-Capped Chickadee	<i>Parus atricapillus</i>		P					
Black-Crowned Night Heron	<i>Nycticorax nycticorax</i>	PC	PC	C	C			C
Black-Throated Blue Warbler	<i>Dendroica caerulescens</i>		P	P				

Black-Throated Green Warbler	<i>Dendroica virens</i>		P	P				
Blue Jay	<i>Cyanocitta cristata</i>	P	P	P				
Brown-Headed Cowbird	<i>Molothrus ater</i>			C				
Canada Goose	<i>Branta canadensis</i>	PC	P	P				
Chimney Swift	<i>Chaetura pelagica</i>				C			
Common Grackle	<i>Quiscalus quiscula</i>	PC	PC	PC				C
Eastern Kingbird	<i>Tyrannus tyrannus</i>	C				C	C	
Eastern Meadowlark	<i>Sturnella magna</i>		P	P				
Eastern Wood Pewee	<i>Contopus virens</i>			C				
Empidonax Flycatcher	<i>Empidonax Sp.</i>			C				
European Starling	<i>Sturnus vulgaris</i>	P	P	PC				
Field Sparrow	<i>Spizella pusilla</i>	P	P	P				
Gadwall	<i>Anas strepera</i>	P						
Gray Catbird	<i>Dumetella carolinensis</i>	P	P	P			C	
Great Blue Heron	<i>Ardea herodias</i>	PC	P					
Herring Gull	<i>Larus argentatus</i>	C	C					
House Finch	<i>Carpodacus mexicanus</i>	P	P	P				
House Wren	<i>Troglodytes aedon</i>			P				
Killdeer	<i>Charadrius vociferus</i>	PC	P	PC		C		C
Mallard	<i>Anas platyrhynchos</i>	PC	PC	C	C		C	C
Mourning Dove	<i>Zenaida macroura</i>	PC	P	PC				
Northern Cardinal	<i>Cardinalis cardinalis</i>	P					C	
Northern Flicker	<i>Colaptes auratus</i>		P			C		
Orchard Oriole	<i>Icterus spurius</i>						C	
Red-Winged Blackbird	<i>Agelaius phoeniceus</i>	PC	PC	PC	C	C	C	C
Ring-Billed Gull	<i>Larus delawarensis</i>	C	C	PC	C	C		C
Sandpiper Sp.	<i>Scolopacidae (Family)</i>			C	C			C
Semipalmated Sandpiper	<i>Calidris pusilla</i>	P						
Song Sparrow	<i>Melospiza melodia</i>	PC	PC	PC	C	C	C	C
Spotted Sandpiper	<i>Actitis macularia</i>	PC	P	P				
Tree Swallow	<i>Iridoprocne bicolor</i>	C	PC	PC	C		C	C
Willow Flycatcher	<i>Empidonax traillii</i>			P				
Woodpecker Sp.	<i>Picidae (Family)</i>		C					
Yellow Warbler	<i>Dendroica petechia</i>		PC	PC		C	C	C
Yellow-Rumped Warbler	<i>Dendroica coronata</i>		P	P				

P: Recorded in professional survey

C: Recorded in volunteer (community) survey

There were a total of 10 bird species observed in the community survey during the 2002 season. The Orchard Oriole (*Icterus spurius*) was observed at the marsh for the first time in 2002. All other species recorded in 2002 have been recorded in previous years.

5.1.4 Amphibians

Marsh bird surveys were conducted using the Marsh Monitoring Program (MMP) protocol, a cooperative project of Environment Canada and Bird Studies Canada. The Marsh Amphibian Monitoring Program provides volunteer monitors with a standard protocol for monitoring marsh amphibians throughout the Great Lakes Basin. As such, the amphibian population information

gathered by the volunteers is helpful in developing an understanding of the ecological dynamics at Chester Springs Marsh and allowing a comparison with other wetlands in the Great Lakes Basin.

The amphibian survey was performed by a volunteer on May 26th and June 22nd at dusk. During these surveying sessions, no amphibians were heard calling. For the first visit, lower temperatures could have discouraged the amphibians from calling because the mating temperature was too low. The second visit had a higher temperature, however, the conditions were dry and therefore the amphibians may not have found these ideal conditions to breed.

5.2 Sources of Error

Although volunteers collected the data as accurately as possible, some degree of error is likely to occur. For instance, it is possible that species were misidentified or missed during the surveying period due to limited experience of the volunteers. The data collected by volunteers can be used with reasonable confidence to assess the health of the marsh, as volunteers follow specific protocols and are trained, and frequently accompanied by staff.

6.0 STEWARDSHIP PROGRAM RECOMMENDATIONS

The data gathered through the Stewardship Program are extremely valuable in order to determine maintenance requirements for Chester Springs Marsh. Based on the report findings, the following recommendations are made:

- Care for young trees and shrubs planted at the marsh. The trees will need to be watered during drought periods, mulched, and tall vegetation growing around the trees will need to be clipped back.
- Clear vegetation up to 1-metre deep along the two gravel pathways.
- Collect and dispose of litter.
- Continue to cut back new growth from Manitoba maple and Siberian elm stumps.
- Control the less established invasive non-native species, namely purple loosestrife, Manitoba maple seedlings, Siberian elm seedlings, Japanese hops, dog strangling vine, garlic mustard and Dame's rocket.
- Continue cutting and treatment of Japanese Knotweed throughout the site, but concentrating efforts within planted area in order to allow for more planting in the fall. Assess site after treatment and see if ready to be planted.
- Continue treatment of Dog Strangling Vine in strip of vegetation along the Lower Don Trail and throughout site.

- Identify areas dominated by non-native species, implement appropriate management techniques for these non-native species, and plant the areas with native herbaceous and/or woody species in the fall.
- Monitor vegetation, birds, amphibians, water chemistry and precipitation levels as well as continue to monitor benthic invertebrates in 2004.
- Plant herbaceous and wetland vegetation in fall to compensate for any muskrat damage.
- Remove tree guards from trees that have outgrown them.
- Work with the City of Toronto Parks and Recreation Department to remove mature invasive non-native tree species growing in the vicinity of the wetland to prevent seeding into Chester Springs Marsh and replace these trees with native species.
- Wrap chicken wire or hardware cloth around trees with a diameter greater than 5cm, as protection from beavers.

Appendix A: Chester Springs Marsh Acknowledgments

Chester Springs Marsh monitoring activities have been funded as one of a number of Lower Don River Watershed Habitat Restoration Projects; contributors to this package of environmental restoration projects over the years have included:

Branksome Hall Gaia Club

(also below)

Canada/Ontario Infrastructure Works Program

CCL Industries

City of Toronto

Community Foundation of Greater Toronto

DMR Group Inc.

Environment Canada Great Lakes Sustainability Fund

EcoAction Community Grants Program

Metro Credit Union

Mountain Equipment Co-op

Ontario Ministry of Natural Resources

Shell Environmental Fund

Task Force to Bring Back the Don

TD/Canada Trust Friends of the Environment Foundation

Toronto and Region Conservation Authority

Toronto Economic Development Corporation

City of Toronto - Economic Development, Culture, and Tourism

Toronto Remedial Action Plan

City of Toronto - Urban Planning and Development Services

City of Toronto - Works and Emergency Services

Unilever Canada

Various private donors

Waterfront Regeneration Trust

Appendix C: Chester Springs Marsh Water Levels 1998-2000

Parameter	1998			1999			2000		
Water Level (m)	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max
		0	0.44	1+	0	0.33	1+	0	0.64
Dates when water depth recorded as zero	August 3 – August 7, August 26			June 11 – June 14, June 18 – June 23, July 26/July 27, August 19			August 22-August 24		
Number of times river overflowed into marsh	2			4			6		