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SUBJECT: VALLEY SEGMENTS, DON, ROUGE AND HIGHLAND CREEK WATERSHEDS

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Introduction

As part of the natural science investigations currently underway along the watercourses within the Toronto and Region Conservation Authority, a study has been initiated to investigate stream geomorphology. This phase of the work involves the collection of baseline geomorphic information from representative stream sections within the Don River, Rouge River and Highland Creek watersheds. This work like earlier efforts on the Humber River, Etobicoke and Mimico Creeks utilizes map interpretation to stratify the rivers into relatively homogenous geomorphic units or "valley segments". Sampling within these strata will enable extrapolation of conditions to unsampled segments within the sample area. Thus this exercise represents a parameter estimation survey as defined by Stanfield et. al., (2000).

Methods

Valley segments are defined as relatively homogenous sections of watercourses that exhibit distinct physical elements. As such, valley segment boundaries are determined by primary features of the watersheds such as topography, geology, climate and hydrography (drainage network) Kilgour and Stanfield (2000). Climate is considered to have only a minor influence on local scales and is not considered in this assessment. The attributes used to delineate valley segments for these systems were: differences in hydrography (stream order), catchment size, stream slope and surficial geology.

Development in a watershed can dramatically modify the conditions of a river from its primary state. Measuring the response of these systems to development is one of the main objectives of the natural science surveys in the GTA. Therefor, we also attempted to sample equal proportions of urbanized and rural segments.

This work consisted of three components:

1. Delineation of the watercourses into valley segments.
2. Classification of these segments into distinct morphological units.
3. Assigning sampling sites to a representative number of valley segments

Valley Segment Partitioning :

River segments were delineated usin g a hierarchy of rules as outlined by Kilgour and Stanfield (2000), whereby segments were first partitioned based on the drainage network. Segment boundaries were identified where two tributaries merged resulting in an increase in the Strahler (1952) stre am order, or where the system met with a lake or wetland of surface area greater than 1 ha. Topographic mapping (1:50,000) was used to determine the stream order. All third order (and larger) streams were considered in the assessment. In addition, as a re sult of the difficulty in locating first order streams (due to burial and piping) in the developed lands south of Steeles, second order streams were also evaluated in these areas.

These watersheds drain through large areas of glacial outwash and lake bed materials, with only a small area of the basin associated with the Oak Ridge Moraine. Instead adjacent surficial geology type was considered to be a better characteristic for delineating river segments, as it would pick up local sources or sinks of basef low. Therefore additional segment boundaries were placed where watercourses crossed a boundary that separated two distinct geological units of differing porosity (e.g. sandy material to clayey material), provided the boundaries were not in conjunction (i. e., within 200 m) with an existing hydrologic junction. For this analysis the surficial geology maps of the Bolton (Russell and White, 1997), Markham (Sharpe and Barrett, 1997) and the Toronto and surrounding area (Sharpe 1980) were used. As a precursor to this analysis each deposit type was categorized into high, medium and low hydraulic conductivity (i.e., speed of water passing through the materials), (see Table 1).

Table 1. Porosity Rating of Surficial deposits found in the Greater Toronto area.

Id #	Name	Description	Hydraulic conductivity
1	Paleozoic bedrock	Limy mudrock and clastic sedimentary rock	Low
2	Lower drift deposits	Till, fine-medium sand and laminated silt and clay	Medium
3	Glacial deposits (till)	Sandy silt to sand	Medium
4	Glacial deposits (till)	Clayey silt to silt	Medium
5	Moraine deposits	Fine sand to gravel	High
6	Glacial river deposits	Sand and gravel	High
7	Glacial lake deposits	Silt and clay	Low
8	Glacial lake deposits	Sand and gravel	High
9	Organic deposits	Peat, muck and marl	High
10	River Deposits	Sand and gravel	High
11	Recent Deposits	Gravel and diamicton	High

Additional segments were identified where gradient changed dramatically within one of the previously identified segments. Typically this occurred where channels dramatically changed confinement, such as where it passed through a gorge or onto a large floodplain. Finally, segment boundaries were placed at the boundary of large dams/reservoirs or where boundaries existed between channelized and natural sections.

Valley Segment Classification:

Following the delineation of the valley segments, the next step was to classify the segments into distinct geomorphic units (Kilgour and Stanfield, 2000). Catchment area, slope and adjacent surficial geology (see below) were used as primary classification features. Rural and urban landuse designations were used as a secondary classification feature that was used during the site selection process to ensure balance in the sampling regime. Details of each proces s are provided below.

The first step in the classification was to group valley segments into units based on catchment size (small, < 10 km^2; medium, 10 – 200 km^2 and large > 200 km^2) and slope, (resulting in a total of nine possible classes. Segments were further classified based on the hydraulic conductivity of the adjacent surficial geology type. The three categories described above were used for this. Where the rivers straddled two different deposits, the deposit with the greater porosity was used to cl assify the stream. Including surficial geology- hydraulic conductivity increased the number of categories of valley segments to a total of 27 (3 x 3 x 3).

Finally each valley segment was assigned a development designation based on whether it was flowed through or was within the zone of influence of an urban center or was flowing through a rural setting. None of the segments were considered to be flowing through wilderness area.

Selecting Valley Segments and sites for sampling:

The valley length of eac h segment was measured manually [1] off the 1:50 000 topographic maps. Valley segments were assigned to each of the 27 classes.

A total of 50 sampling sites[2] were allocated to the valley segments using the following criteria. Every segment and modifier cat egory was allocated at least one site. Then, we allocated approximately one site for every two additional segments in each category. Finally minor adjustments were made to the allocation to ensure site allocation reflected the length of available stream for sampling within each watershed.

Site locations were chosen randomly by summing the length of stream in each class and randomly choosing distances for each site in each class. Next, cumulative distance was determined for each class and the random and cumulative distances were compared to determine the location (measured from the bottom of the segment) of each site. Only the first site was chosen for each segment (with re -sampling occurring where duplication or

[1] This method underestimates river length. If the proponent cho oses to select locations of sites based on river length rather than valley length, a correction factor would need to first be calculated and then applied to the methods described above.

[2] This number is based on previous experience, logistical and cost considerations. The number should be compared to the preferred statistical value for each strata once baseline data is available to calculate the coefficient of variation for the critical parameter.

imbalances in distribution occurred). Si te locations were located on the 1:50 000 topographic maps and were then transferred to the figures in this report.

Results:

A total of 109 valley segments totalling approximately 226 km of valley length were established in all of the watersheds (Table 2). There were 53 segments in the Rouge River watershed (Figure1), 39 for the Don River watershed (Figure 2) and only 17 for Highland Creek (Figure 3).

Table 2. Number of valley segments in each watershed and subwatershed.

Watershed	Subwatershed	No of valley segments	Length of segments
Don	Don East	12	18.9
	Don West	14	48.7
	German Mills Ck	2	3.5
	Taylor Ck	4	9
	Wilket Ck	2	2.5
	Westminster Ck	1	2.6
	Newtonbrook Ck	1	2.5
	Unnamed trib	2	2.3
	Sunnybrook	1	1.1
	Sub Total	39	91.05
Rouge	Beaver Ck	1	0.5
	Berczy Ck	4	8
	Bruce Ck	7	14.1
	Katabokokonk Ck	5	3.6
	Little Rouge	18	30.7
	Main branch	18	45.7
	Sub Total	53	102.6
Highland	Main branch	7	11.4
	West Highland	7	15.3
	Malvern Trib	1	4
	Southwest Highland Ck	2	1.8
	Sub Total	17	32.5
	Total	109	226.15

Six of the primary classes of segments were found within the three watersheds (Table 3). None of the systems were large enough to surpass the 200 km^2 threshold, so no segments were identified from large watersheds. At least one s egment was identified for each of the 18 secondary categories (including surficial geology). The most common segment classes were those from moderate slope and small drainage areas and the majority of these were located in urban settings (i.e., the Don an d Highland Rivers). The rarest segment classes were those from the high gradient and moderate sized watersheds, which contained only 5 segments in total. Not surprisingly, the distribution of segment classes was not balanced between the rural and urban c lassed sites (Table 4).

Table 3. Primary Classification and distribution of valley segments based on Catchment area and channel gradient.

		Catchment area (km^2)		
		Small (< 10)	Medium (10-200)	Large (> 200)
Slope (%)	Low (0-0.39)	**Class 1** **24**	**Class 4** **26**	**Class 7** **0**
	Moderate (0.40-1.09)	**Class 2** **20**	**Class 5** **24**	**Class 8** **0**
	High (1.10 – 5.00)	**Class 3** **11**	**Class 6** **4**	**Class 9** **0**

Table 4. Valley segments of given category and the number of sites where field data will be collected.

Catchment/ slope class	Hydraulic Conductivity of adjacent soils	Number of segments Rural	Urban	Number of survey sites Rural	Urban
1	Low	3	0	1	0
	Moderate	7	3	2	1
	High	8	3	4	1
2	Low	1	2	1	1
	Moderate	2	13	1	4 **
	High	1	1	1	1
3	Low	2	3	1	1
	Moderate	2	2	1	1
	High	0	2	0	1
4	Low	2	5	1	3**
	Moderate	7	4	4*	1*
	High	2	6	1	3
5	Low	0	3	0	1
	Moderate	8	6	4	3
	High	4	3	2	1
6	Low	0	2	0	1
	Moderate	0	1	0	1
	High	1	0	1	0
Total		**50**	**59**	**25**	**25**

Note*: added one site to rural and removed one from urban based on length of stream avaialable for sampling.
Note **: took one site from class 2 and added to 4 to provide more balance

Site Selection and Location

Given the lengths that we measured on each stream the target allocation was calculated to be 23, 20 and 7 sites for the three watersheds (Rouge, Don and Highland). The number of sites to be sampled from within each class of valley segment and shown in Table 4. The approximate location of the field sampling sites for the various watersheds are illustrated on Figures 1, 2 and 3. Specific locations are described in Appendix A and are available from the original 1:50 000 topographic maps if required. The final distribution of sites between the streams was 26, 17 and 7 between the Rouge, Don and Highland watersheds, closely reflecting the target allocation. Some segment classes were under represented in the data set for the Don River, necessitating the small imbalance. There was a good distribution of sites between the stream ordering (Table 5).

Table 5: Distribut ion of sample sites by watershed and stream order.

Watershed	Stream Order				
	2nd	3rd	4th	5th	Total
Don	4	3	9	1	17
Highland	4	3			7
Rouge		14	8	4	26
Subtotal	8	20	17	5	50

All of the segments identified are listed in Appendix B. The exact location o f sites will be determined in the field, when the UTM co-ordinates and location on the stream will be determined.

References

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Appendix A

Sample Site Locations

River	VS Id #	VS Class	Development status	geology class	Distance [1]	location
Don West	1	2	R	M	1.9	WONDERLAND TRIB
Don West	3	5	U	M	0.5	TO HWY 7
Don West	4	5	U	M	3.0	ROSS DAM TO HOGGS HOLLOW
Don East	5	1	R	M	0.6	CARRVILLE T
Don East	7	2	U	L	0.39	HWY 7
Don East	13	6	U	L	1.7	BAYVIEW VILLAGE
German Mills Ck	14	5	U	M	1.4	GERMAN MILLS
Don East	17	4	U	H	1	YORK HEIGHTS
Don West	19	5	U	L	2.1	JUNCTION OF DON WEST
Don West	20	4	U	L	4.1	UPSTREAM OF TREATMENT PLANT
Taylor Ck	22	2	U	M	1.7	KENNEDY CEMETARY TO L. IROQUOIS S.
Wilket Ck	26	2	U	M	0.4	UPSTREAM OF LAWRENCE
Unnamed t rib	30	3	U	H	1.4	PARKWAY EAST
Sunnybrook	31	3	U	M	0.4	SUNNYBROOK HOSPITAL
Don West	3b	4	U	M	0.8	N. OF STEELES TO ROSS RESERVOIR
Don West	4A	4	U	H	2.4	LAWRENCE PARK
Don West	4B	6	U	M	0.7	W OF WILKET CR.
West Highland	1	2	U	M	3	AGINCOURT
Highland Ck	9	5	U	H	2.5	U OF TORONTO
Highland Ck	10	4	U	H	0.8	COL. DANFORTH PARK
SW Highland Ck	12	1	U	M	0.5	S. OF WOBURN
West Highland	2a	2	U	H	0.69	JUNCTION OF S.W. HIGHLAND
West Highland	2b	1	U	H	0.39	W. OF MARKHAM
West Highland	4a	2	U	M	0.7	CENTENNIAL COL LEGE
Rouge	2	1	R	H	0.07	HEADFORD
Rouge	4	1	R	H	0.3	TOWN LINE TR
Rouge	5	1	R	M	1.4	TOWN LINE TR
Rouge	7	4	R	L	3.6	TOWN LINE TR
Berczy Ck	10	3	R	L	0.9	17TH LINE
Berczy Ck	11	1	R	H	0	SMALL LENSE OF GRAVEL
Berczy Ck	12	4	U	L	0.5	TO JUNCTION WITH BRUCE CK
Bruce Ck	13	3	R	M	1.1	W. OF BETHESDA
Bruce Ck	14	2	R	L	0.4	N. OF BRUCE'S MILL
Bruce Ck	16	1	R	L	0.3	CONTAINS 2 PONDS
Bruce Ck	17	5	R	H	2	CASHEL 3 PONDS
Rouge	21	4	U	L	1.6	TO MILNE POND
Rouge	25	4	R	M	3.7	BOX GROVE
Rouge	26	5	R	M	2.6	METRO TOR ZOO (NORTH END)
Rouge	27	5	R	H	2.2	METRO TOR ZOO (SOUTH END)
Little Rouge	32	1	R	H	3.9	WEST TRIB TOWN LIMITS
Little Rouge	33	2	R	H	0.2	SW DICKSON HILL
Little Rouge	37	4	R	M	0.1	NE MOUNT JOY
Little Rouge	38	4	R	M	1.7	TO JUNCTION WITH KATABOKOKONK
Katabokokonk Ck	39	1	R	M	1.2	W MONGOLIA
Little Rouge	45	4	R	H	0.91	LOCUST HILL
Little Rouge	47	4	R	M	0.9	NE CEDAR GROVE
Little Rouge	50	5	R	M	0.1	TOWN LINE
Little Rouge	51	5	R	M	1	NE METRO TOR ZOO
Little Rouge	52	6	R	H	1.68	METRO TOR ZOO (OLD DUMP)
Little Rouge	53	5	R	M	1.4	ROUGE PARK

Note 1: Distances are measured from the downstream segment boundaries

Appendix B
Don River Valley Segments

River	Id #	order	Length (km)	Slope	Surf. Geology	Geology class	Dev. State	area	location
Don West	1	3	2	M	4	M	R	1	WONDERLAND TRIB
Don West	2	3	5	M	4	M	U	1	SHERWOOD
Don West	3	4	7.5	M	3	M	U	2	TO HWY 7
Don West	3A	4	0.8	L	3	H	U	2	S. W. OF CONCORD
Don West	3b	4	4.3	L	3	M	U	2	N. OF STEELES TO ROSS RESERVOIR
Don West	3c	Pond	1	L	3	M	U	2	ROSS RESERVOIR PROPER
Westminster Cr	3d	3	2.6	M	3	M	U	2	FISHERVILLE
Don West	4	4	8.1	M	3	M	U	2	ROSS DAM TO HOGGS HOLLOW
Don West	4A	4	2.5	L	3	H	U	2	LAWRENCE PARK
Don West	4B	4	0.5	H	3	M	U	2	W OF WILKET CR.
Don West	4C	4	3	H	10	L	U	2	TO DON EAST, L. IROQUOIS SHORELINE
Don East	5	3	0.9	H	7	M	R	1	CARRVILLE T
Don East	6	3	1.3	H	7	M	U	1	YONGEHURST T.
Don East	7	4	1.5	M	7	L	U	1	HWY 7
Don East	8	4	0.5	M	3	M	U	1	LANGSTAFF
Don East	9	3	0.7	H	7	L	R	1	HWY 7
Don East	9a	3	0.5	L	3	M	R	1	S. OF HWY 7
Don East	10	4	1.5	M	3	M	U	2	THORNHILL
Don East	11	4	0.6	M	7	L	U	2	BY SEWAGE TREATMENT PLANT
Don East	12	4	1.6	M	8	H	U	2	TO STEELES
Don East	13	4	2.75	H	7	L	U	2	BAYVIEW VILLAGE
German Mills Ck	14	3	2.5	M	3	M	U	2	GERMAN MILLS
German Mills Ck	15	3	1	M	7	L	U	2	GERMAN MILLS
Don East	16	4	2	L	7	M	U	2	BAYVIEW VILLAGE
Don East	17	4	5	L	8	H	U	2	YORK HEIGHTS
Don West	18	4	0.5	M	3	M	U	2	TO L. IROQUOIS SHORELINE
Don West	19	4	5	M	10	L	U	2	JUNCTION OF DON WEST
Don West	20	5	5.5	L	10	L	U	2	TO CHANNELIZED SECTION
Don West	21	5	3	L	10	L	U	2	CHANNELIZED DVP
Taylor Ck	22	2	4	M	3	M	U	1	KENNEDY CEMETARY TO L. IROQUOIS S.
Taylor Ck	23	2	3.5	M	10	L	U	1	PARKVIEW HILL
Taylor Ck	24	2	0.5	H	10	L	U	1	TO PARKVIEW HILL TRIB
Taylor Ck	25	3	1	H	10	L	U	1	TO DON R AND DVP
Wilket Ck	26	2	2	M	3	M	U	1	UPSTREAM OF LAWRENCE
Wilket Ck	27	2	0.5	H	10	L	U	1	L IROQUOIS SHORELINE
Newtonbrook Cr	28	2	2.5	M	3	M	U	1	BAYVIEW VILLAGE
Unnamed trib	29	2	0.5	M	3	M	U	1	PARKWAY EAST
Unnamed trib	30	2	1.8	H	8	H	U	1	PARKWAY EAST
Sunnybrook	31	2	1.1	H	3	M	U	1	SUNNYBROOK HOSPITAL

Rouge River

River	Id#	order	Length (km)	Slope	Surf. Geology	Geology class	Dev. state	area	location
Beaver Ck	1	3	0.5	L	7	M	R	1	BROWN'S CORNERS
Rouge	2	3	2.7	L	8	H	R	1	HEADFORD
Rouge	3	3	0.6	L	3	M	R	1	HEADFORD
Rouge	4	3	0.6	L	8	H	R	1	TOWN LINE TR
Rouge	5	3	1.5	L	3	M	R	1	TOWN LINE TR
Rouge	6	3	0.7	L	3	M	R	1	TOWN LINE TR
Rouge	7	4	4	L	7	L	R	2	TOWN LINE TR
Rouge	8	4	5.5	M	8	H	U	2	S OF HWY 7
Berczy Ck	9	3	1.3	L	8	H	R	1	MARKHAM TOWN LINE
Berczy Ck	10	3	2.1	M	7	L	R	1	17TH LINE
Berczy Ck	11	3	0.6	M	8	H	R	1	SMALL LENSE OF GRAVEL
Berczy Ck	12	3	4	M	7	L	U	2	TO JUNCTION WITH BRUCE CK
Bruce Ck	13	3	1.8	M	4	M	R	1	W. OF BETHESDA
Bruce Ck	14	3	0.5	L	7	L	R	1	N. OF BRUCE'S MILL
Bruce Ck	15	3	0.9	M	8	H	R	1	BRUCE'S MILL LENSE
Bruce Ck	16	3	2	L	7	L	R	1	CONTAINS 2 PONDS
Bruce Ck	17	3	4.5	M	9	H	R	2	CASHEL 3 PONDS
Bruce Ck	18	3	3	L	7	L	R	2	4 PONDS
Bruce Ck	19	4	1.4	L	8	H	U	2	TO TOOGOOD POND
Rouge	20	5	0.7	L	8	H	U	2	N OF HWY 7
Rouge	21	5	2.5	L	7	L	U	2	TO MILNE POND
Rouge	22	POND	1.5	L	3	M	U	2	MILNE POND
Rouge	23	3	0.4	L	9	H	R	1	MOUNT JOY 16TH AVE, trib
Rouge	24	3	2.2	L	3	M	U	1	16TH TO MILNE POND, unnamed trib
Rouge	25	5	8.1	M	3	M	R	2	BOX GROVE
Rouge	26	5	5.1	H	3	M	R	2	METRO TOR ZOO (NORTH END)
Rouge	27	5	2.3	M	8	H	R	2	METRO TOR ZOO (SOUTH END)
Rouge	28	5	3.6	M	3	M	R	2	ROUGE PARK
Rouge	29	5	2.1	M	3	M	R	2	WELL DRAINED ON ONE SIDE
Rouge	30	5	1.6	L	3	M	R	2	TO LAKE - WETLAND
Little Rouge	31	3	0.5	M	4	M	R	1	NEAR AIRFIELD
Little Rouge	32	3	4.5	M	9	H	R	1	WEST TRIB TOWN LIMITS
Li ttle Rouge	33	3	0.9	M	9	H	R	1	SW DICKSON HILL
Little Rouge	34	4	2.1	M	9	H	R	2	MARKHAM FAIRGROUNDS
Little Rouge	35	4	0.7	L	3	M	R	2	NARROW LENSE OF FINER MATTER
Little Rouge	36	4	0.8	L	8	H	R	2	NE MOUNT JOY
Little Rouge	37	4	0.7	L	3	M	R	2	NE MOUNT JOY
Li ttle Rouge	38	4	2.6	L	3	M	R	2	TO JUNCTION WITH KATABOKOKONK
Katabokokonk Ck	39	3	1.5	L	3	M	R	1	W MONGOLIA

River	Id#	order	Length (km)	Slope	Surf. Geology	Geology class	Dev. state	area	location
Katabokokonk Ck	40	3	0.4	L	7	L	R	1	SW MONGOLIA
Katabokokonk Ck	41	3	0.2	L	9	H	R	1	SW MONGOLIA
Katabokokonk Ck	42	3	0.2	L	7	L	R	1	SW MONGOLIA
Katabokokonk Ck	43	3	1.3	L	7	M	R	1	TO LITTLE ROUGE
Little Rouge	44	4	2.3	L	3	M	R	2	N LOCUST HILL
Little Rouge	45	4	1.7	L	8	H	R	2	LOCUST HILL
Little Rouge	46	4	1	L	3	M	R	2	S LOCUST HILL AT CPR
Little Rouge	47	4	3.4	M	3	M	R	2	NE CEDAR GROVE
Little Rouge	48	4	0.9	M	3	H	R	2	E CEDAR GROVE
Little Rouge	49	4	0.4	M	3	M	R	2	S CEDAR GROVE
Little Rouge	50	4	1.2	M	3	M	R	2	TOWN LINE
Little Rouge	51	4	2.4	M	3	M	R	2	NE METRO TOR ZOO
Little Rouge	52	4	2.5	M	8	H	R	2	METRO TOR ZOO (OLD DUMP)
Little Rouge	53	4	2.1	M	3	M	R	2	ROUGE PARK

Highland Creek

River	Id#	order	Length (km)	Slope	Surf. Geology	Geology class	Dev. state	area	location
West Highland	1	2	4.5	L	3	M	U	1	AGINCOURT
West Highland	2	2	7	M	3	M	U	1	BENDALE
West Highland	2a	2	0.7	M	8	H	U	1	JUNCTION OF S.W. HIGHLAND
West Highland	2b	3	1.1	M	8	H	U	1	W. OF MARKHAM
West Highland	2c	3	2.7	H	3	M	U	1	E. OF MARKHAM
West Highland	3	2	2.1	L	3	H	U	1	WOBURN
Malvern trib	4	2	4	L	3	M	U	1	MALVERN
West Highland	4a	2	1.7	M	3	M	U	1	CENTENNIAL COLLEGE
Highland C k	5	2	1.3	L	3	M	U	1	BROWN'S CORNERS
Highland Ck	6	2	0.9	L	8	H	U	1	E OF RAILWAY YARD
Highland Ck	7	2	1.8	M	3	M	U	1	CENTENNIAL COLLEGE
Highland Ck	8	3	2.6	M	3	M	U	1	MORNINGSIDE PARK
Highland Ck	9	3	3	M	8	H	U	2	U OF TORONTO
Highland Ck	10	3	1.2	L	8	H	U	2	COL. DANFORTH PARK
Highland Ck	11	3	0.6	L	7	L	U	2	TO L. ONTARIO
Southwest Highland Ck	12	2	1.3	M	3	M	U	1	S. OF WOBURN
Southwest Highland Ck	13	2	0.5	H	8	H	U	1	S. OF WOBURN

Definitions:
Slope: L = 0 - .39 %; M = 0.40 – 1.09 %; H = > 1.10 %
Surficial Geology: See Table 1
Geology Class: See Table 1: (L = low, M = Medium, H = high hydraulic conductivity)
Dev. State: U = Urban development, R = Rural Development
Area: 1 = < 10 km^2, 2 = 10 – 200 km^2

Appendix III

Existing sample stations from these watersheds[1]

Stream Name	Site Code	UTM Grid	UTM Easting	UTM Northing	Site location
Don	19	17	632399	4836162	SOUTHEAST OF BROADVIEW AVE AND DANFORTH AVE. ACCESS VIA PARK RD. OFF OF BROADVIEW BESIDE RIVERDALE HOSPITAL
Don	25	17	632072.3	4838510	DOWNSTREAM OF POTTERY RD., BRIDGE BEFORE DAM, ACCESS VIA PARK ROAD
Don	DWRU	17	620700	4854375	FROM RUTHERFORD RD., TURN SOUTH ONTO JACOB KEFFER PKWY, LEFT CORINNE ST., DRIVE INTO COLOUR STEEL INC.
Don	PHC1	17	639550	4842450	CEMETRY SOUTH OF FOXRIDGE DRIVE.
Don	ST32	17	628220	4852490	ACROSS JOHN ST., JUST WEST OF TENNIS CLUB
Don	UPCA	17	623500	4855850	NORTH OF CARVILLE ROAD, WEST OF BATHURST,
Don	WWP1	17	638400	4841050	WITHIN WARDEN WOODS PARK, AT ST. CLAIR AND WARDEN,
East Don	11	17	624822	4841586	MAJOR MACKENZIE DRI VE WEST OF YONGE STREET,
East Don	15	17	628380	4855218	EAST OF BAYVIEW AT HIGHWAY 7
East Don	24	17	623543	4855836	NORTHWEST OF RUTHERFORD ROAD AND BATHURST STREET. FIRST TRIBUTARY WEST OF BATHURST STREET
East Don	32	17	628186	4852529	NORTH WEST OF BAYV IEW AVE AND STEELES AVE.
East Don	33	17	626929	4853950	NORTH EAST OF YONGE ST AND KIRK DRIVE
East Don	35	17	634882	4843032	BETWEEN EGLINTON AND LAWRENCE (WYNFORD H. CRT) AT END OF PAVED WALKING PATH
East Don	39	17	623287	4859998	ELGIN MILLS RD. EAST O F BATHURST STREET. FIRST TRIBUTARY EAST OF BATHURST STREET. UPSTREAM OF ELGIN MILLS RD.
East Don	41	17	625253	4853986	SOUTH OF HIGHWAY 7, BETWEEN BATHURST AND YONGE ST..
East Don	42	17	630503	4848315	SOUTH EAST OF BAYVIEW AVE. AND FINCH AVE. IN THE EAST DON PARKLANDS.
East Don	47	17	623618	4857831	SOUTH OF MAJOR MACKENZIE DRIVE, FIRST TRIBUTARY EAST OF BATHURST ST.
East Don	6	17	622794	4857705	ON MAJOR MACKENZIE DR. BETWEEN BATHURST ST. AND DUFFERIN ST.
East Don	60	17	623233.5	4855705	NORTHWE ST OF BATHURST AND RUTHERFORD ROAD. SECOND TRIBUTARY WEST OF BATHURST ST..
East Don	61	17	624061.4	4855290	CARRVILLE RD AT WOODS PARK (WALKING PATH). NORTH EAST OF

Stream Name	Site Code	UTM Grid	UTM Easting	UTM Northing	Site location
					CARRVILLE RD AND BATHURST ST. FIRST TRIBUTARY EAST OF BATHURST
East Don	62				ELGIN MILLS RD., SECOND TRIBUTARY WEST OF BATHURST,
East Don	64				STEELES AVE. WEST OF DON MILLS ROAD;
East Don	EDMP	17	621230	4858942	NORTH OF MAJOR MACKENZIE DRIVE, ON DUFFERIN STREET. STATION IS NORTH OF OLD MNR PROPERTY, SOUTH OF TESTON RD,
Highland	BRDW	17	640460	4846440	THOMSON PARK OFF OF BRIMLY.
Highland	BRUP	17	640100	4846540	BIRKDALE RAVINE PARK
Highland	MCUP	17	642000	4848600	MARKHAM RD. MACDONALDS SITE
Highland	SCDW	17	646540	4848920	350 M. UPSTREAM OF OLD KINGSTON
Highland	SCUP	17	646060	4848880	COLONEL DANFORTH PARK
Rouge	LR02				
Rouge	LR02				
Rouge	RING	17	637375	4870375	Ringwood near Markham Rd

Note [1]: Data source, OMNR stream assessment database (version 2001 master)

Figure 1:

TRCA Regional Monitoring Program

~Rouge River Watershed~

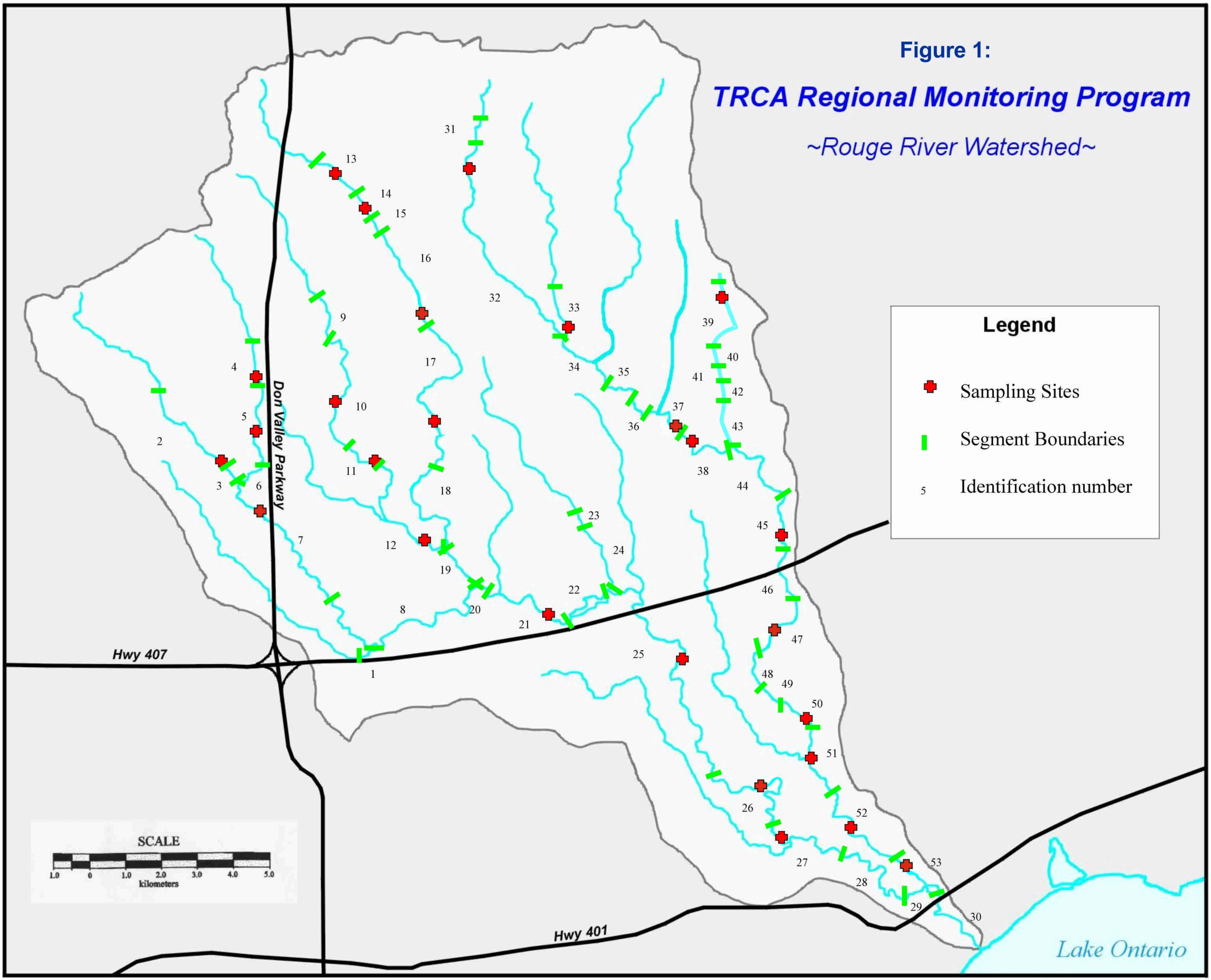

Figure 2:

TRCA Regional Monitoring Program

~ Don River Watershed~

SCALE

1.0 0 1.0 2.0 3.0 4.0 5.0

kilometers

Hwy 407

Hwy 400

Hwy 401

Don Valley Parkway

Lake Ontario

Legend

- Sampling Sites
- Segment Boundaries
- 5 Identification number

SCALE

1.0 0 1.0 2.0 3.0 4.0 5.0

kilometers

Figure 3:

TRCA Regional Monitoring Program

~Highland Creek Watershed~

Hwy 401

Don Valley Parkway

Lake Ontario

1 2 2a 2b 2c 3 4 4a 5 6 7 8 9 10 11 12 13

Legend

- Sampling Sites
- Segment Boundaries
- 5 Identification number