

Phase 2, E-Coli testing project report

Aug. 2013.

This year we built on information learned from last year's testing program. Of concern were the high levels of E-Coli in the Tay at one site tested in Stewart Park after rain and significantly higher E-Coli counts in general when the temperatures were higher on re-testing before rain at the other sites.

Samples were taken from three sites this year, all popular swimming spots in Perth, before and after rain. All three showed high levels of E-Coli after rain but not before, likely due to untreated storm water being channeled quickly into the Tay. Before-rain E-Coli levels were higher this year even though the temperatures were a little lower, possibly due to more and heavier rains this year resulting in near-flooding conditions along the river and strong currents. Please see the accompanying charts etc.

One outcome of the testing program so far has been the Town of Perth's agreement to post a detailed warning sign at the outdoor pool about health risks including E-coli and sharp objects on the river bed. This sign was posted in July 2013. The public in general seems more aware of these risks now as there have been several articles in the local Perth Courier, two radio interviews with Lake 88, and displays of testing results at the Stewart Park Festival and Watershed Discovery Day and the Rideau Ferry Regatta.

Costs:

2012 grant from the Perth and District Community Foundation:	\$826.31
Expenses for last year's program paid for from this grant:	\$398.10
Cost for this year's program paid from the balance:	\$263.86
Remaining balance to be applied to next year's program:	\$154.35

Respectfully submitted,

Peggy Land

for the Friends of the Tay
Watershed Association.

2013 E-Coli in the Tay River, Perth before and after rain



	1 Near Big Ben Outflow	2 Mill Street Outdoor Pool	3 Last Duel Park Dock
July 16 no rain 	All samples were less than 100 e-coli per 100 ml. The geo mean was 62.	All samples were less than 100 e-coli per 100 ml. The geo mean was 55.	All samples were less than 100 e-coli per 100 ml. The geo mean was 61.
August 2 after rain 	1 sample was 1000 e-coli per 100 ml. 4 samples were over 200 e-coli per 100 ml but less than 1000.	All samples were over 200 e-coli per 100 ml but less than 1000.	1 sample was over 200 e-coli per 100 ml. 3 samples were over 100 e-coli per 100 ml and one sample was less than 100.

Commonly Asked Questions

Q: What are E-Coli?

A: E-Coli are a group of bacteria that live in the intestines of warm-blooded animals.

Q: Why are E-Coli levels important health indicators in river ecology?

A: E-Coli are considered to be an “indicator species” because in surface water they can often be accompanied by other bacteria, protozoa and viruses, all of which can cause mild to serious illness in humans.

Q: Are they normally found in natural waters like the Tay River?

A: E-Coli are commonly present in feces of wildlife that live along the river and also in household pets. They can live for several days in their host’s feces after elimination. Feces not scooped up by pet owners can get washed into the Tay River in Perth by way of storm-water sewers when it rains.

Q: Is there a safe level of E-Coli in water?

A: The safe level for E-Coli in drinking water is 0 bacteria per 100 ml. of water. The safe level for E-Coli for swimmers in natural waters is a maximum of 99 bacteria per 100 ml. of water.

Q: Why doesn’t storm water in Perth all go to the sewage lagoons for treatment as previously?

A: In the 1970’s the sewage lagoons were filling up, so the Town decided to gradually divide all of the sewers so that now only “sanitary” sewage goes to the lagoons. As a result, untreated storm-water now goes into the river through many storm sewer lines and culverts that empty directly into the Tay in Perth.

Q: What effect has this had on E-Coli levels in the river?

A: Regular testing by the Rideau Valley Conservation Authority between 1998 and 2011 at 3 sites in Perth, taking one sample per site, showed a steady increase in E-Coli levels with approximately half of the samples exceeding the safe swimming limit. See the chart of test results from 1998 to 2011.

Q: Why were five samples per site sampled recently?

A: As you can see from the numbers, every sample showed a different number of E-Coli. For warning purposes, taking five samples is recommended and practiced by our local Health Unit when testing at its currently “designated” beaches. The Health Unit used to test in Perth at the outdoor pool until about fifteen years ago.

The Friends of the Tay Watershed Association and the Perth and District Canadian Federation of University Women funded and obtained funding from the Perth and District Community Foundation for E-Coli tests along the Tay and have strictly adhered to Health Unit testing guidelines.

Q: Why aren’t the five totals just averaged arithmetically instead of the geo(metric) mean being applied?

A: The geomean is a fancier way of averaging, designed to reduce the effects of outliers and this is also a requirement of analysis by the Health Unit.

Q: In what ways can the Tay be made safer for swimming?

A: More warning signs about E-Coli levels being higher after rain and about additional hazards including sharp objects on the river bed and swift current are needed.

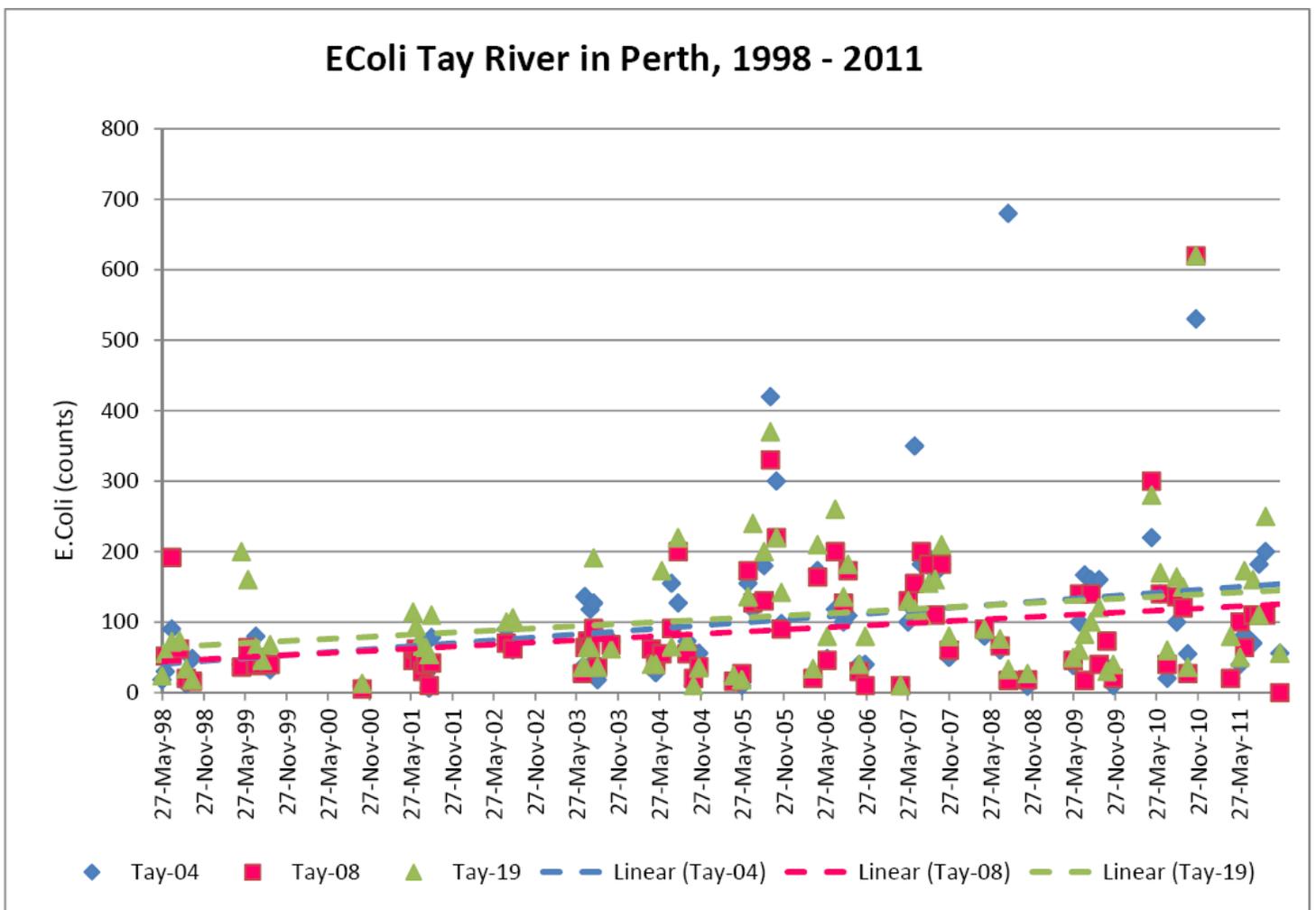
Picking up after dogs is needed.

Enforcement by the Town of the Stoop and Scoop bylaw with its \$75 fine for not picking up after pets if also needed.

Shoreline naturalization helps to reduce storm water run-off by adding trees, shrubbery and ornamental plants along the shoreline of the Tay so that entry isn't so easy for pet feces and people, especially unsupervised children.

If none of the above measures are implemented or are successful in reducing E-Coli entry into the river, holding ponds or tanks will be necessary to reduce the risk for swimmers.

Never ever swallow the water!



Appendices

Caduceon Environmental Laboratories Certificates of Analysis for July 16 and August 1

Caduceon invoices

 <p>CADUCEON™ ENVIRONMENTAL LABORATORIES <i>Client committed. Quality assured.</i></p>	<p>CERTIFICATE OF ANALYSIS</p> <p>Final Report-Microbiology</p>
C.O.C.: G33913	REPORT No. B13-18165
<p>Report To: Friends Of Tay Watershed 58 Cockburn St, Perth Ontario K7H 2B6 Canada Attention: Peggy Land</p>	<p>Caduceon Environmental Laboratories 285 Dalton Ave Kingston Ontario K7K 6Z1 Tel: 613-544-2001 Fax: 613-544-2770</p>
DATE RECEIVED: 16-Jul-13	JOB/PROJECT NO.:
DATE REPORTED: 17-Jul-13	P.O. NUMBER:
SAMPLE MATRIX: Drinking Water	WATERWORKS NO.

Parameter	E coli				
Units	cfu/100mL				
M.D.L.	1				
Reference Method	SM9222B				
Date Analyzed/Site	16-Jul-13/K				

Client I.D.	Sample I.D.	Date Collected	E coli			
Site #1 Big Ben A	B13-18165-1	16-Jul-13	54			
Site #1 Big Ben B	B13-18165-2	16-Jul-13	55			
Site #1 Big Ben C	B13-18165-3	16-Jul-13	62			
Site #1 Big Ben D	B13-18165-4	16-Jul-13	69			
Site #1 Big Ben E	B13-18165-5	16-Jul-13	74			
Site #2 Outdoor Pool A	B13-18165-6	16-Jul-13	56			
Site #2 Outdoor Pool B	B13-18165-7	16-Jul-13	62			
Site #2 Outdoor Pool C	B13-18165-8	16-Jul-13	46			
Site #2 Outdoor Pool D	B13-18165-9	16-Jul-13	53			
Site #2 Outdoor Pool E	B13-18165-10	16-Jul-13	61			
Site #3 Last Duel Park A	B13-18165-11	16-Jul-13	53			
Site #3 Last Duel Park B	B13-18165-12	16-Jul-13	79			
Site #3 Last Duel Park C	B13-18165-13	16-Jul-13	60			
Site #3 Last Duel Park D	B13-18165-14	16-Jul-13	58			
Site #3 Last Duel Park E	B13-18165-15	16-Jul-13	58			

C.O.C.: G33921

REPORT No. B13-19955

Report To:

Friends Of Tay Watershed
 58 Cockburn St,
 Perth Ontario K7H 2B6 Canada
Attention: Peggy Land

Caduceon Environmental Laboratories

285 Dalton Ave
 Kingston Ontario K7K 6Z1
 Tel: 613-544-2001
 Fax: 613-544-2770

DATE RECEIVED: 01-Aug-13

JOB/PROJECT NO.:

DATE REPORTED: 06-Aug-13

P.O. NUMBER:

SAMPLE MATRIX: Surface Water

WATERWORKS NO.

Parameter	E coli				
Units	cfu/100mL				
M.D.L.	1				
Reference Method	SM9222B				
Date Analyzed/Site	01-Aug-13/K				

Client I.D.	Sample I.D.	Date Collected				
Site #1 Big Ben Sample A	B13-19955-1	01-Aug-13	1000			
Site #1 Big Ben Sample B	B13-19955-2	01-Aug-13	> 200			
Site #1 Big Ben Sample C	B13-19955-3	01-Aug-13	> 200			
Site #1 Big Ben Sample D	B13-19955-4	01-Aug-13	> 200			
Site #1 Big Ben Sample E	B13-19955-5	01-Aug-13	> 200			
Site #2 Outdoor Pool A	B13-19955-6	01-Aug-13	> 200			
Site #2 Outdoor Pool B	B13-19955-7	01-Aug-13	> 200			
Site #2 Outdoor Pool C	B13-19955-8	01-Aug-13	> 200			
Site #2 Outdoor Pool D	B13-19955-9	01-Aug-13	> 200			
Site #2 Outdoor Pool E	B13-19955-10	01-Aug-13	> 200			
Site #3 Last Duel Park A	B13-19955-11	01-Aug-13	93			
Site #3 Last Duel Park B	B13-19955-12	01-Aug-13	> 200			
Site #3 Last Duel Park C	B13-19955-13	01-Aug-13	126			
Site #3 Last Duel Park D	B13-19955-14	01-Aug-13	108			
Site #3 Last Duel Park E	B13-19955-15	01-Aug-13	124			

Invoice

Date	Invoice #
18-Jul-13	13-8985

Bill To:
Friends Of Tay Watershed 58 Cockburn St Perth Ontario K7H 2B6 Canada

Quote Number	PO Number	GST Number
P120606_PL		898699194
Currency	Project Number	Terms
CAD		NET 30 2%/month

Line	Item	Ref	Description	Qty	Rate	Amount	
1	Analysis	B13-18165	EC	15	8.00	120.00	
2	Rush Surcharge		25 % Rush Surcharge :	1	30.00	30.00	
3	Environmental		Environmental Surcharge :	15	1.50	22.50	
						Sub Total	172.50
						HST 13%	22.43
						Total	194.93

Credit Available \$ 92.10

Balance Owing \$102.83

Invoice

Date	Invoice #
12-Aug-13	13-9862

Bill To:
Friends Of Tay Watershed 58 Cockburn St Perth Ontario K7H 2B6 Canada

Quote Number	PO Number	GST Number
P120606_PL		898699194
Currency	Project Number	Terms
CAD		NET 30 2%/month

Line	Item	Ref	Description	Qty	Rate	Amount	
1	Analysis	B13-19955	EC	15	8.00	120.00	
2	Environmental		Environmental Surcharge :	15	1.50	22.50	
						Sub Total	142.50
						HST 13%	18.53
						Total	161.03