

2012 Stream Sampling ACLA-MVCA

The 2012 sampling marked the twelfth year of a cooperative arrangement between the Ashfield-Colborne Lakefront Association and the Maitland Valley Conservation Authority. Since 2003, the annual program has had the purpose of general monitoring of the major watercourses sampled in 2001.

Sampling in 2012 was conducted roughly every other week from April 18th to October 4th for a maximum of 12 sampling events at 12 locations. The drought and lack of flow meant several locations could only be sampled less than half as many times. To help improve the statistical analysis of the data and provide a summary of the past 5 years all data from 2008-2012 has been incorporated into the report. The samples were analyzed by ALS Laboratory Group, Waterloo. Samples were tested for *Escherichia coli* (E. coli), nitrate and total phosphorus. The results are on the following pages.

Key findings as a result of the 2012 sampling include:

- Only the Nine Mile River and Maitland River consistently have E. coli concentrations of less than 100 cfu/100ml.
- The Nine Mile River has the lowest nitrate concentrations of the study sites.
- The Maitland River has the lowest total phosphorus concentrations of the study sites
- Griffins Creek consistently has the highest values of E. coli, nitrate as N and total phosphorus concentrations.
- Although the smaller streams have greater concentrations of bacteria and nutrients their load contribution to Lake Huron will be smaller than the larger streams.

A graph depicting the total daily precipitation has been included.

Ashfield-Colborne Lakefront Association Sampling 2012

Stream Name	Site	E.COLI (cfu/100ml)												Count	2008-2012 GeoMean	2012 GeoMean	Percent of 2012 Samples above:		Grade	Rank
		Date															100CFU/100mL	1000cfu/100mL		
		Apr 18/12	May 2/12	May 17/12	May 30/12	Jun 12/12	Jun 27/12	Jul 11/12	Jul 25/12	Aug 8/12	Sep 5/12	Sep 25/12	Oct 4/12							
Boyd Creek	A1	10	10	221	270	2740	290							6	101	125	67%	17%	C	7
Eighteen Mile River	A2	20	10	23	260	1460	250							6	100	89	33%	17%	B	5
Kintail Creek	A3			16	110	490								3	200	96	67%	0%	B	6
Kerry's Creek	A4	10	10	18	150	370	200	170	140	100	170	100	10	12	144	69	67%	0%	B	1
Near Kingsbridge	A5	10	20	90		920								4	400	70	25%	0%	B	2
Griffins Creek	A6	20	210	222	410	680	2020							6	749	245	83%	17%	C	12
Near Midhuron	A7	10	260	288	290	530								5	158	150	80%	0%	C	11
Nine Mile River	A8	10	20	60	190	970	90		250	50	90	100	30	11	96	80	36%	0%	B	3
Boundary Creek	A9	20	50	105	140	1630	210							6	277	126	67%	17%	C	8
Bogies Road Creek	C1	450	80	97	190	460	90					270	30	8	166	141	50%	0%	C	10
Allans Creek	C2	10	10	102	220	3060	60	240	320	110	190	620	60	12	149	128	67%	8%	C	9
Maitland River	C3	10	30	128	140	740	110	60	90	100	150	240	10	12	44	83	58%	0%	B	4
GeoMean		17	31	80	201	926	190	135	178	86	145	209	22							

- Exceeds recreation limit (100cfu/100mL) but less than 1000.
- Exceeds limit for recreation by 10x.
- Microbiologists often consider an order of magnitude (10 fold) as a significant difference.
- Less than the detection limit

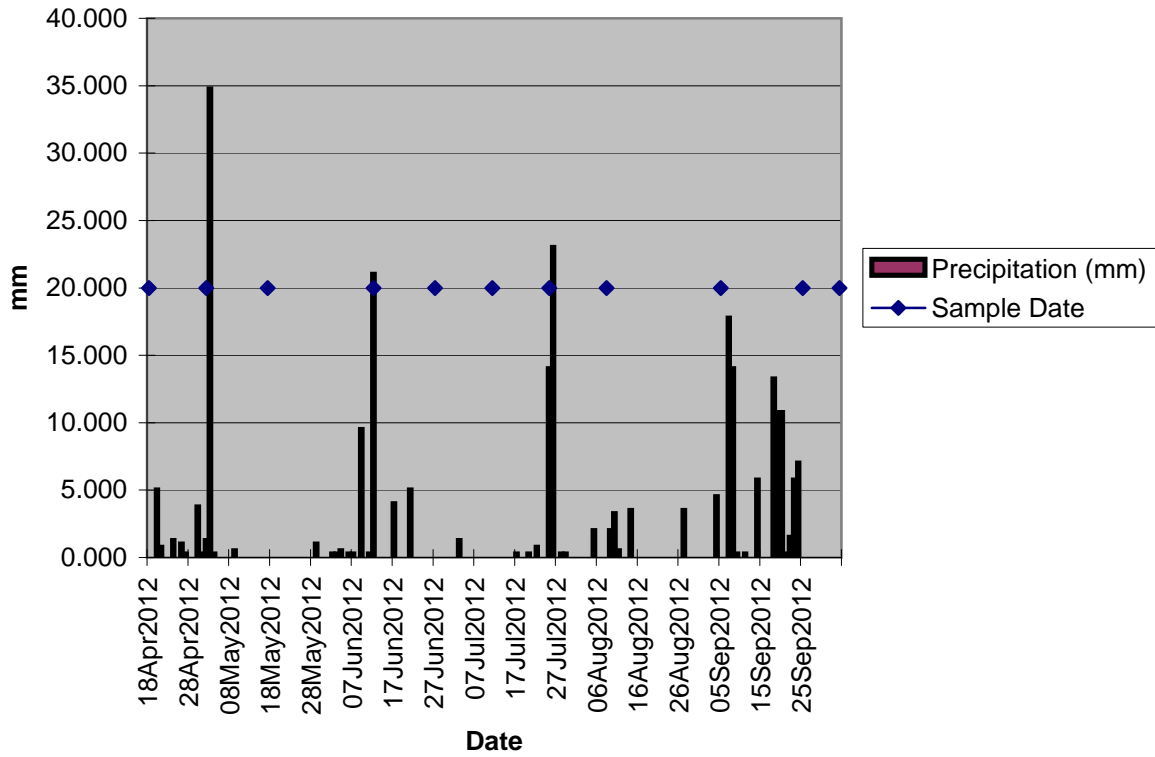
Stream Name	Site	NITRATE as N (mg/l)												Count	2008-2012 75th Percentile	2012 75th Percentile	Percent of 2012 Samples above:		Grade	Rank
		Date															Aquatic Protection Limit (2.93 mg/L as N)	Drinking Water Guideline (10 mg/L as N)		
		Apr 18/12	May 2/12	May 17/12	May 30/12	Jun 12/12	Jun 27/12	Jul 11/12	Jul 25/12	Aug 8/12	Sep 5/12	Sep 25/12	Oct 4/12							
Boyd Creek	A1	2.46	1.26	2.31	0.66	19	1.31							6	7.125	2.68	17%	17%	A	7
Eighteen Mile River	A2	2.95	2.44	2.81	0.96	5.03	1.53							6	5.03	2.93	33%	0%	A	10
Kintail Creek	A3			1.12	0.1	7.11								3	5.45	3.95	33%	0%	B	12
Kerry's Creek	A4	2.86	3.3	2.67	0.8	8.19	1.59	0.3		0.14		0.16	0.53	10	4.835	2.88	20%	0%	A	8
Near Kingsbridge	A5	2.44	1.77	2.24		9.39								4	6.33	2.90	25%	0%	B	9
Griffins Creek	A6	3.42	3.12	1.39	0.4	10.6	0.77							6	7.47	3.27	50%	17%	B	11
Near Midhuron	A7	0.64	0.17	0.39	0.12	8.56								5	6.08	2.34	20%	0%	A	4
Nine Mile River	A8	1.63	1.58	1.23	0.91	1.61	0.72			0.51	0.98	0.63	0.75	10	1.56	1.60	0%	0%	A	1
Boundary Creek	A9	2.16	2.19	1.47	0.85	3.2	0.31							6	3.42	2.55	17%	0%	A	6
Bogies Road Creek	C1	2.37	1.74	2.47	0.22	1.96	0.22					0.1	0.1	8	4.9	2.37	0%	0%	A	5
Allans Creek	C2	2.48	2.31	1.67	0.75	0.79	0.3	0.1		0.12	0.24	0.55	0.25	11	4.7	1.83	0%	0%	A	2
Maitland River	C3	2.91	2.33	1.26	0.15	2.13	0.89	0.1		0.1	0.1	0.1	0.19	11	4	2.18	9%	0%	A	3
75th Percentile		2.885	2.385	2.35	0.825	8.7675	1.31	0.2		0.2325	0.61	0.55	0.53							

- Exceeds proposed Canadian Aquatic Objective of 2.9 mg/L of nitrate as N
- Exceeds Drinking Water Guidelines of 10 mg/L of nitrate as N
- Less than the detection limit.

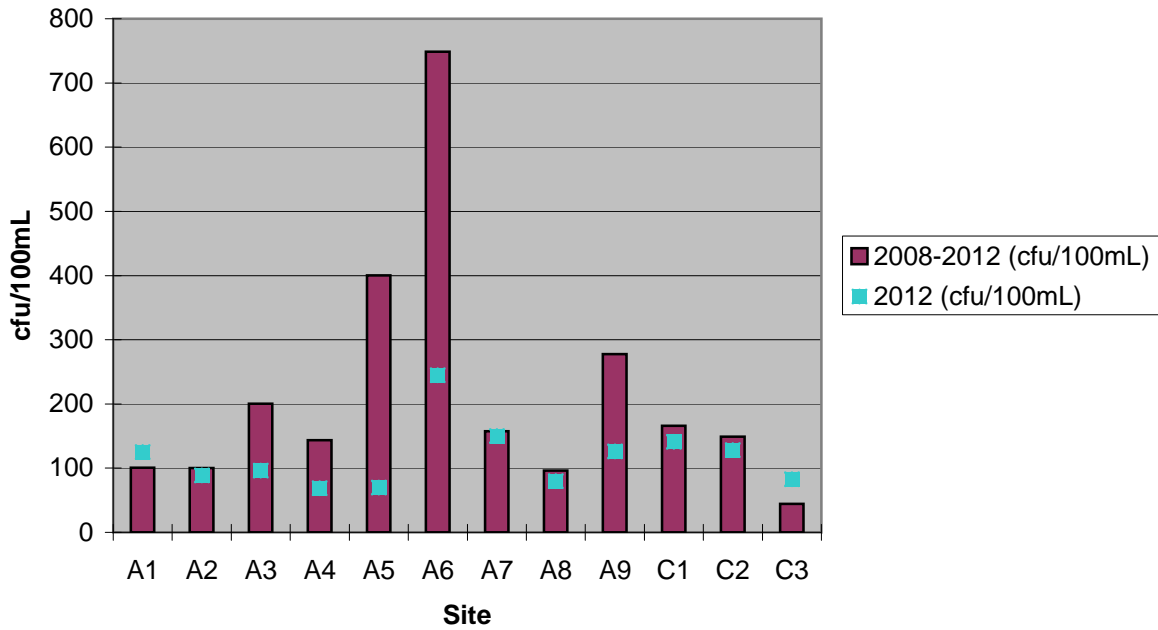
Stream Name	Site	TOTAL PHOSPHORUS P (mg/l)												Count	2008-2012 75th Percentile	75th Percentile	Percent of 2012 Samples above: Provincial Water Quality Objective (0.03mg/L)			
		Date	Apr 18/12	May 3/11	May 17/12	May 30/12	Jun 12/12	Jun 27/12	Jul 11/12	Jul 25/12	Aug 8/12	Sep 5/12	Sep 25/12				Oct 4/12	Grade	Rank	
Boyd Creek	A1		0.0097	0.0064	0.0268	0.0136	0.0469	0.0135							6	0.0321	0.0284	17%	A	6
Eighteen Mile River	A2		0.0083	0.0082	0.0121	0.003	0.0347	0.0302							6	0.0257	0.0301	33%	A	8
Kintail Creek	A3				0.003	0.438	0.0069								3	0.057125	0.1320	33%	D	12
Kerry's Creek	A4		0.0332	0.0077	0.0104	0.0393	0.0085	0.02	0.0444	0.0516	0.0301	0.0287	0.0585	0.0245	12	0.0275	0.0393	50%	B	11
Near Kingsbridge	A5		0.0133	0.0556	0.0224		0.0086								4	0.0549	0.0300	0%	B	7
Griffins Creek	A6		0.0098	0.0089	0.0043	0.0181	0.0084	0.0437							6	0.112	0.0241	17%	A	3
Near Midhuron	A7		0.0088	0.0101	0.0063	0.0692	0.0062								5	0.055125	0.0250	20%	A	4
Nine Mile River	A8		0.007	0.0048	0.003	0.006	0.0097	0.0057		0.0189	0.0207	0.0087	0.0162	0.0101	11	0.0207	0.0169	0%	A	2
Boundary Creek	A9		0.0123	0.0098	0.016	0.0074	0.0262	0.0308							6	0.0474	0.0281	17%	A	5
Bogies Road Creek	C1		0.0116	0.0086	0.0156	0.0212	0.0314	0.0328					0.0384	0.0195	8	0.0328	0.0314	38%	B	9
Allans Creek	C2		0.0096	0.011	0.0154	0.0116	0.0218	0.0128	0.091	0.0865	0.0336	0.029	0.0347	0.0218	12	0.0306	0.0336	33%	B	10
Maitland River	C3		0.0047	0.0043	0.0057	0.0065	0.0138	0.0041	0.004	0.0254	0.0242	0.0089	0.0136	0.0078	12	0.01595	0.0138	0%	A	1
75th Percentile			0.01195	0.00995	0.0157	0.03025	0.0275	0.0308	0.0677	0.060325	0.030975	0.028775	0.0384	0.0218						

Exceeds MVCA target to avoid excessive algae growth of .03mg/L Total Phosphorus as P (Interim Prov. Water Quality objective for streams and rivers is 0.03mg/L)
 Less than the detection limit

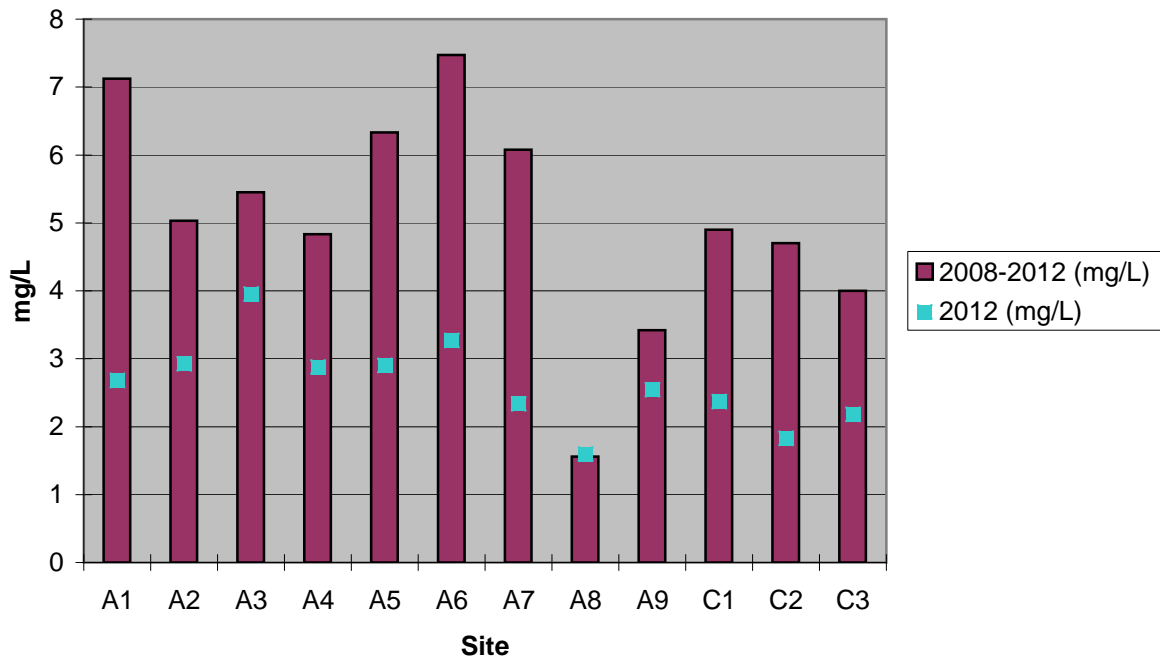
Total Daily Precipitation for 2012



Geometric Mean of E.coli Concentrations



75th Percentile of Nitrate Concentrations



75th Percentile of Total Phosphorus Concentrations

