



Maitland Valley Conservation Authority

Working for a Healthy Environment

2009 Stream Sampling ACLA-MVCA

The 2009 sampling marked the ninth 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 2009 was conducted every other week from April 28th to October 13 for a total of 13 sampling events. The samples were analyzed by ALS Laboratory Group, London. 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 2009 sampling include:

- The geometric mean for all but 1 sample location exceeded the recreation limit of 100cfu/100mL.
- Sample location A5 (Near Kingsbridge) had the highest geometric mean for E. coli for the 2009 sample season.
- None of the samples from A5 tested lower than the recreation limit of 100cfu/100mL
- Griffins Creek (A6) had the highest levels of Nitrate.
- A5 (Near Kingsbridge) had the highest levels of Total Phosphorus.
- Overall Griffins Creek (A6) ranked the worst in water quality for the 2009 sample season.
- Grades have been assigned to the sample locations based upon the Watershed Report Card criteria established by Conservation Ontario. These will assist in detecting changes through time.
- The summer of 2009 was a dry. A level 1 low water advisory was issued for the watershed at the beginning of August. A level 2 low water advisory was issued at the beginning of September. The low water advisories were lifted in the middle of October. A MVCA sample site on Griffins Creek near the mouth of the stream was not sampled between June 9th and September 30th due to a lack of flow.



Olborne Lakefront Association Sampling 2009

E. COLI (cfu/100ml)

Site	Date													
	Apr 28/09	May 12/09	May 26/09	Jun 9/09	Jun 23/09	Jul 7/09	Jul 21/09	Aug 4/09	Aug 18/09	Sep 01/09	Sep 17/09	Sep 29/09	Oct 13/09	
River	A1	360	90	120	1040	70	30	190	200	20	30	460	100	
	A2	160	120	10	780	20	20	200	460	190	130	2740	610	
	A3	3470	250	230	25000	820	260						170	
	A4	130	60	100	8300	270	530	660	450	220	310	70	1180	
Lige	A5	660	130	260	19400	960	1560					13700	240	
	A6	1900	90	300	3070	440	1320	1590	260	1830	910	53000	790	
r	A7	2200	70	20	1520	70	180	110	10			1770	60	
	A8	330	100	10	450	70	100	100	180	180	40	130	1380	
Creek	A9	610	70	10	720	330	550	280	300	3900	170	18900	350	
	C1	1460	130	20	620	570	1410	270	200	6900	60	2700	40	
	C2	710	20	50	120	330	140	220	140	2900	100	180	1050	
	C3	40	100	10	15	10	10	30	30	1270	30	550	30	
		538.7793	88.83263	43.26826	1152.82	164.6938	196.5653	215.7835	147.5247	670.2352	103.362	155.1025	2428.234	134.0853

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 of 10
 Geometric mean across all sites was 242.02 cfu/100mL

GeoMean	Percent of Samples above:		Grade	Rank
	100CFU/100	1000cfu/100mL		
119.988	58%	8%	C	2
153.957	77%	8%	C	5
783.217	100%	29%	C	10
301.553	85%	15%	C	8
1099.192	100%	38%	D	12
1084.145	92%	50%	D	11
152.696	60%	38%	C	4
126.731	69%	8%	C	3
406.830	83%	17%	C	9
287.417	69%	31%	C	7
216.715	85%	15%	C	6
42.420	23%	8%	B	1

NITRATE as N (mg/l)

Site	Date												
	Apr 28/09	May 12/09	May 26/09	Jun 9/09	Jun 23/09	Jul 7/09	Jul 21/09	Aug 4/09	Aug 18/09	Sep 01/09	Sep 17/09	Sep 29/09	Oct 13/09
River	A1	5.32	6.26	3.37	8.17	3.65	3.21	0.1	0.1	0.1	0.1	0.1	7.85
	A2	4.93	4.56	2.64	5.77	2.58	1.98	0.34	0.24	0.1	0.1	0.1	5.65
	A3	5.01	4.25	0.68	15.7	1.19	2.31						1.85
	A4	5.24	5.07	3.63	7.22	3.54	4.37	2.6	2.08	1.45	2.28	1.77	1.97
Lige	A5	5.62	5.2	2.3	15	2.37	4.05					2.87	5.79
	A6	6.26	6.54	3.31	14	2.5	4.07	0.22	0.26	0.1	0.1	2.87	8.15
r	A7	5.32	5.61	1.71	9.84	1.42	4.9	0.1	0.23			2.78	5.22
	A8	1.7	1.35	1.11	1.2	1	1.03	1.03	1	0.82	0.87	0.9	1.25
Creek	A9	3.39	2.72	1.81	2.41	2.13	2.38	0.79	0.43	0.15	0.17	2.37	5.16
	C1	3.74	3.91	1.54	3.49	3.89	2.73	0.34	0.27	0.12	0.1	5.88	5.23
	C2	5.42	4.66	2.74	4.52	4.81	2.92	2.06	1.64	1.08	2.06	2.04	1.6
	C3	3.98	4.35	2.31	2.89	1.5	0.89	0.27	0.36	0.39	0.035	0.17	4.12
		5.345	5.3025	2.8825	10.88	3.5675	4.055	0.97	0.8575	0.82	0.87	1.5525	2.825

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.
 75th percentile across all sites was 4.36mg/L

75th Percentile	Percent of samples above:		Grade	Rank
	Aquatic Protection Limit (2.93 mg/L as N)	Drinking Water Guideline (10 mg/L as N)		
5.56	58%	0%	B	10
4.56	31%	0%	B	6
4.63	43%	14%	B	7
4.82	54%	0%	B	8
5.66	63%	13%	B	11
6.33	50%	8%	B	12
5.30	50%	0%	B	9
1.25	0%	0%	A	1
2.49	17%	0%	A	2
3.89	60%	0%	B	4
4.52	38%	0%	B	5
2.89	23%	0%	A	3

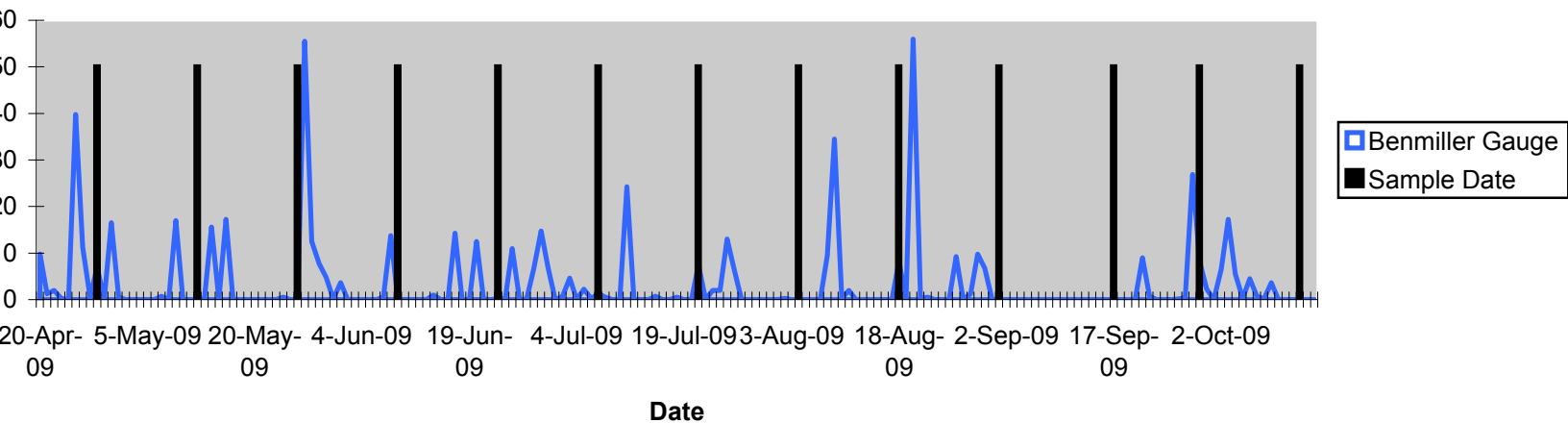
TOTAL PHOSPHORUS P (mg/l)

Site	Date												
	Apr 28/09	May 12/09	May 26/09	Jun 9/09	Jun 23/09	Jul 7/09	Jul 21/09	Aug 4/09	Aug 18/09	Sep 01/09	Sep 17/09	Sep 29/09	Oct 13/09
River	A1	0.0357	0.0119	0.0153	0.0716	0.0674	0.0317	0.0321	0.0243	0.0462	0.0159	0.0459	0.0192
	A2	0.0405	0.0162	0.0142	0.089	0.0156	0.0235	0.0257	0.0127	0.021	0.0059	0.0391	0.0143
	A3	0.0519	0.0185	0.0406	0.138	0.057	0.05						0.0575
	A4	0.0271	0.0122	0.0168	0.183	0.0285	0.0185	0.0189	0.0242	0.023	0.0038	0.0275	0.0306
Lige	A5	0.15	0.0201	0.0244	0.329	0.0528	0.0355					0.252	0.0549
	A6	0.0849	0.0248	0.0336	0.123	0.0296	0.0739	0.144	0.245	0.449	0.112	0.389	0.0624
r	A7	0.408	0.0183	0.0168	0.0467	0.0269	0.026	0.191	0.168			0.158	0.0206
	A8	0.0371	0.0139	0.0109	0.0223	0.0241	0.0178	0.0207	0.0153	0.0191	0.203	0.0096	0.104
Creek	A9	0.0835	0.0186	0.0267	0.0161	0.0438	0.181	0.138	0.0317	0.117	0.0474	0.188	0.0203
	C1	0.0323	0.0078	0.0221	0.0261	0.0328	0.0334	0.197	0.0297	0.0733	0.024	0.0238	0.161
	C2	0.0585	0.0095	0.0184	0.0143	0.0346	0.0289	0.0306	0.0126	0.0565	0.0159	0.0244	0.0422
	C3	0.012	0.0237	0.0098	0.0087	0.031	0.0141	0.0129	0.0053	0.0211	0.0077	0.0902	0.0056
		0.08385	0.018975	0.024975	0.12675	0.04605	0.039125	0.1425	0.0312	0.0733	0.0474	0.026725	0.1745

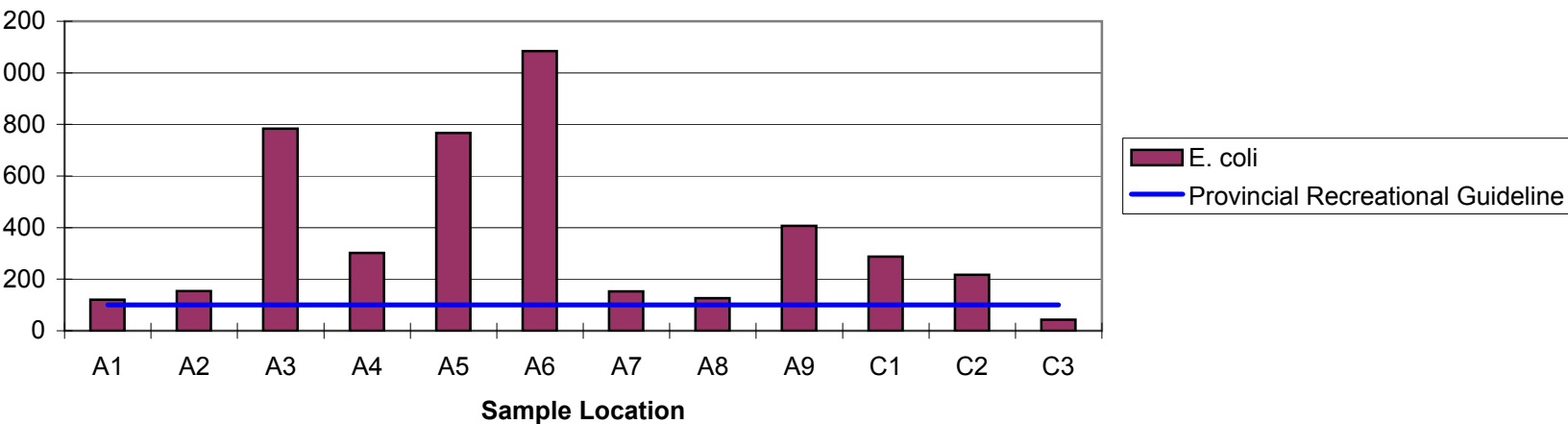
Exceeds MVCA target to avoid excessive algae growth of .03mg/L Total Phosphorus as P (Intrm Prov. Water Quality objective for streams and rivers is .03mg/L)
 Less than the detection limit
 75th percentile across all sites was 0.057mg/L

75th Percentile	Percent of samples above:		Grade	Rank
	Provincial Water Quality Objective (0.03mg/L)			
0.0460	58%		B	7
0.0257	23%		A	3
0.0573	71%		B	8
0.0275	15%		A	4
0.1755	75%		D	12
0.1693	83%		C	11
0.1655	50%		C	10
0.0241	23%		A	2
0.1223	67%		C	9
0.0334	46%		B	5
0.0346	42%		B	6
0.0211	15%		A	1

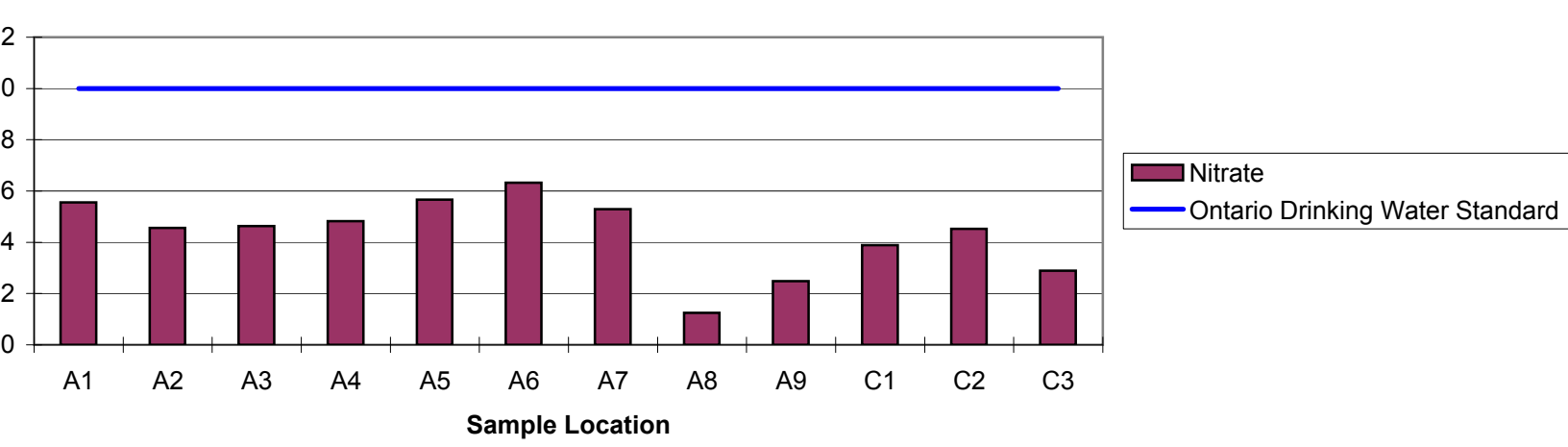
Daily Total Precipitation Throughout the 2009 Sample Season



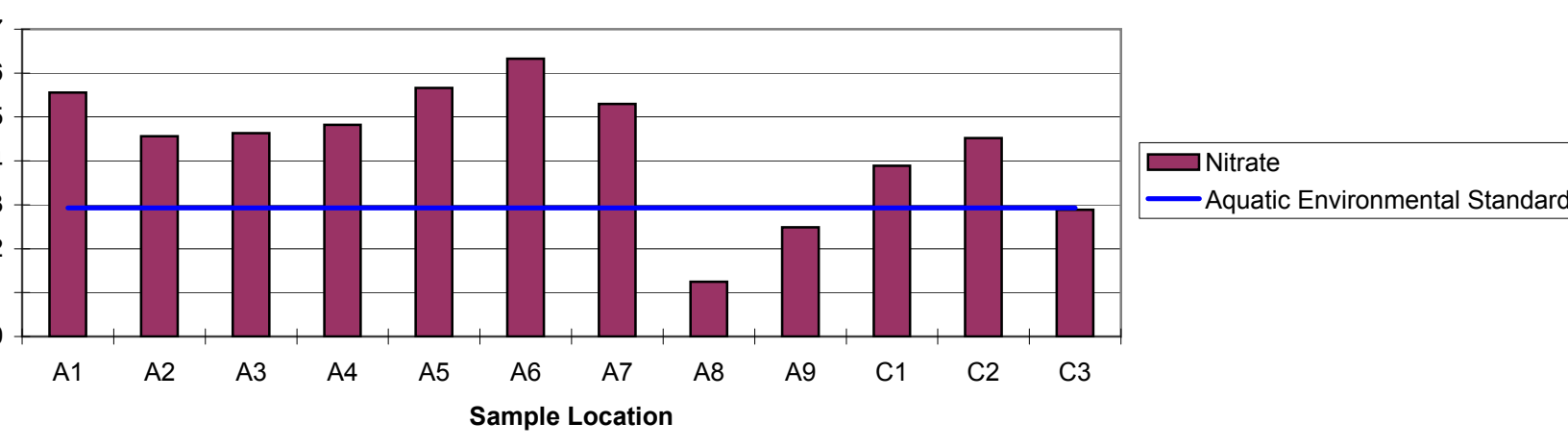
Geometric Mean for E. Coli for the 2009 Sample Season per Sample Location



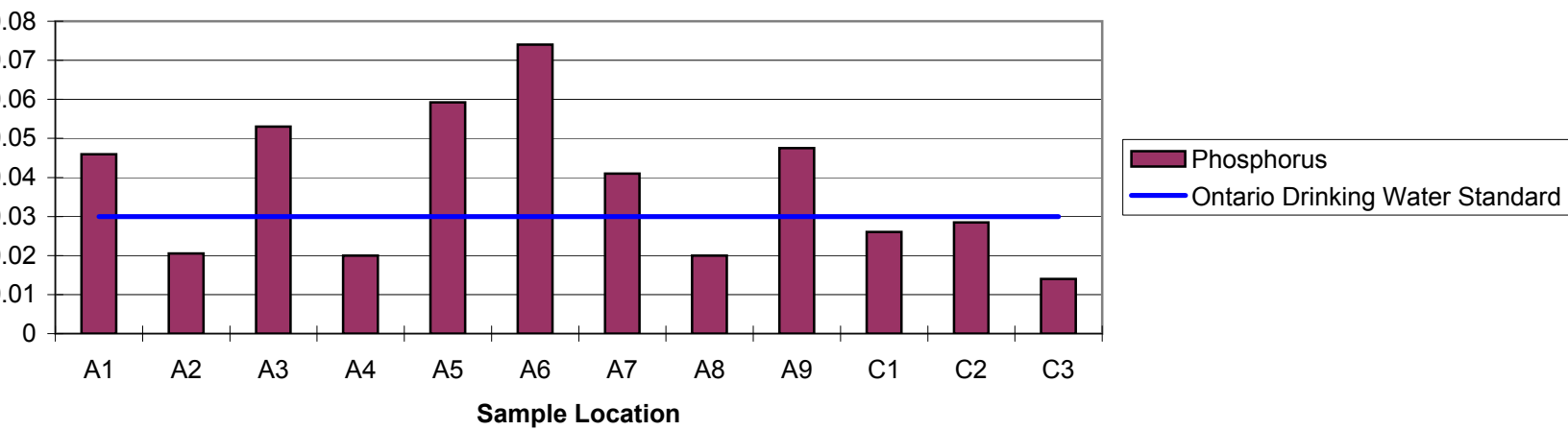
75th Percentile of Nitrate as N for the 2009 Sample Season per Sample Location



75th Percentile of Nitrate as N for the 2009 Sample Season per Sample Location



75th Percentile of Phosphorus for the 2009 Sample Season per Sample Location



**Comparative Rank Between Sample Locations.
Best Water Quality to Worst**

