A Baseline and Watershed Assessment in the Lynx Creek, Brenot Creek and Portage Creek Watersheds, near Hudson's Hope, B.C.

Summary Report

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Purpose and Objectives:

With the potential for oil and gas development, including coal bed gas (CBG), the Ministry has designed a monitoring program to provide a baseline on which to determine the effects of future developments, such as CBG, and expansion of agriculture and forest harvesting, as well as the effects of current land use activities on water quality and quantity.

The monitoring program is the first phase of a water quality and quantity management process. During this phase the main land use sectors were identified and a baseline monitoring program designed to determine the effects of these general sectors.

The typical phases of a water quality/quantity management process are:

1st: Baseline monitoring and problem identification.
2nd: Identification of sources of any water quality impacts.
3rd: Source management, where required.

Purpose of this Report:

This document is a summary of the 1st year baseline monitoring results for the Lynx, Brenot and Portage watersheds, following completion of the planned one year program.

Project Description:

The project included water quality sampling at 18 sites within the above watersheds during five different flow regimes over one year between September 2003 and August 2004. The sampled flow regimes included summer (Aug 2004) and fall low flows (Sep 2003), ice cover (Nov 2003), spring run off (May 2004) and high flows after a heavy summer rain event (Jul 2004).

The streams were divided into relatively large sections where forestry activities are separated from agriculture, etc.. Sample sites are located up- and downstream of each of these sections (see **Figure 9**) with B1, L1 and P1 at the mouth of Brenot, Lynx and Portage Creeks, respectively, each downstream of forested and residential land, B2, L3 and P2 downstream of most agricultural land in the watersheds and B3, L7 and P3N upstream of most cleared agricultural land.

The water samples have been analyzed for 70 parameters (contaminants) that may potentially be affected by land use activities, such as agriculture, forestry, road development, residential development and CBG produced water discharges. The parameters include general ions, nutrients, total and dissolved metals, extractable petroleum hydrocarbons, volatile petroleum hydrocarbons, polycyclic aromatic hydrocarbons, benzene, toluene, ethylbenzene and xylene.

Results and Discussion

Most analysed parameters were clearly within B.C. Water Quality Guidelines; however, specific conductance, true colour, total organic carbon, total and dissolved manganese, total cadmium, E.coli, enterococci, fecal coliforms and fecal streptococci concentrations frequently exceeded water quality guidelines at some locations. Aluminium and cobalt values infrequently surpassed aesthetic drinking water guidelines in some of the tributaries, but not the Lynx Creek mainstem. Total dissolved solids were elevated in the lower Lynx Creek during low flow periods, exceeding the aesthetic drinking water guidelines once (**Appendix**).

All sampled streams had a slightly alkaline pH and showed relatively high specific conductance, particularly during times of high groundwater influence on the creek (**Figure 1**). A similar seasonal trend was observed for total dissolved solids and total and dissolved manganese (**Figure 2**); however, limited introduction from surface runoff

seems to also have contributed to the aesthetic drinking water guideline exceedance for manganese during summer of 2004 at B1, L3 and L4 (**Figure 7**).

The colour of water is attributed to the presence of organic and inorganic materials. True colour in all three creeks appears to intensify after surface runoff events, indicating introduction from land use activities. However, the high colour values in the upper Brenot Creek and the middle reach of Portage Creek may reflect introduction from upstream wetlands with naturally intense colour. The aesthetic drinking water guideline of 15 colour units was exceeded in all three streams at various sites (**Figure 3**).

Total organic carbon (TOC), a measure of dissolved and particulate organic carbon (mainly humic substance and partly degraded plant and animal materials), exceeded the chlorination guideline of 4mg/L consistently at all sites. The guideline applies exclusively to source water to be chlorinated for drinking water use, which may or may not be relevant for the two domestic water licences in the Lynx and Brenot Creek systems. No significant temporal or spatial trend was observed, except after a heavy summer rain event in 2004, indicating TOC introduction from surface runoff into the lower Lynx Creek.

Cadmium concentrations in all sampled streams were at least one order of magnitude below the drinking water guidelines of 5ug/L; however, aquatic life guidelines were frequently exceeded in the lower stream sections after surface runoff (**Figure 4**).

Bacteria data provide an estimate of the degree of fecal contamination from combined human and animal sources (including livestock and wildlife), which can lead to illnesses if drinking water is not adequately disinfected. **Figures 5-8** show the bacteria counts in comparison to drinking water, recreation and livestock watering guidelines. Bacteria numbers in all samples exceeded raw drinking water guidelines with the exception of L7 in Lynx Creek, where fecal contamination was not detected during most sampling events. Most spring and summer samples exceeded the recreation primary contact and the disinfection and partial treatment drinking water guidelines, meaning water from the creeks – swallowed during recreation or consumed as drinking water during this period – could potentially cause illness even if disinfected and treated by filtration or sedimentation.

E.coli and fecal coliform counts are clearly higher during the open water periods and generally highest during spring or summer, indicating introduction from surface runoff and potentially longer survival in the environment during this period. The cause of the high winter Enterococci counts at L6 and L1 during ice cover is unclear, but introduction from aquatic wildlife (such as beaver), from subsurface sources (i.e. leaking septic tanks) or through groundwater need to be considered as possible sources. In general the data indicate introduction of high fecal bacteria concentrations especially in the upper Lynx Creek between L7 and L6. Bacteria concentrations also increase gradually between L5 and L2 in Lynx Creek. Both sections are adjacent to agricultural, range and/or forestry land use. In addition, Lynx Creek has high beaver activity. Bacterial introduction through runoff in Brenot Creek was most prominent above Beryl Prairie road (downstream of a series of wetlands and agricultural use) and between B2 and the mouth (a forested section with harvesting and range use activities). A large fecal streptococci peak in Portage Creek upstream of most agriculture (P3N) may be due to direct livestock access to the stream in this area. Evidence of such access was observed during this sampling event.

Recommendations

The high bacteria and colour values indicate the potential for health issues by recreational and domestic water use (domestic water licences in Lynx and Brenot Creek). A multiple barrier approach – from contaminant management in the watershed to appropriate drinking water treatment – is recommended to reduce potential risks.

After spatially narrowing the bacteria and other contaminant sources to specific stream sections, source identification needs to be refined for contaminants that are frequently exceeding the water quality guidelines and that are clearly introduced via surface runoff or direct introduction from human or animal activity.

For 2005, a more refined bacteria source tracking method is recommended for critical sections to determine whether fecal pollution originated from human, livestock or wildlife. Various source tracking methods are available. At this point, we recommend using a simple cost efficient method that can distinguish between human and ruminant sources. Even if this method will not distinguish between livestock and wildlife ruminants and cannot quantify the bacteria from each source, it will be useful in determining whether these two groups were one of the sources or whether unidentified animal groups (i.e. beaver) were responsible for the high bacteria concentrations. In addition, sample sites should be selected to distinguish between areas mainly used by livestock and those more likely used by wildlife.

The high specific conductance and the high concentration of total dissolved solids and some metals in the creeks need to be considered when surface water discharge of coal bed gas produced water (which may contribute to further elevation of these contaminants) is contemplated.

For further project information or a detailed interim report, please contact Gabi Matscha at (250) 565-7103 or Dave Sutherland at (250) 565-6465 of the Prince George WLAP office.

Literature Cited

Ministry of Water, Land and Air Protection (2001). British Columbia Approved Water Quality Guidelines (Criteria) 1998 Edition, updated August 2001.
Ministry of Environment, Lands and Parks, Land Data BC, Geographic Data BC (1997). Guidelines for Interpreting Water Quality Data.

Acknowledgements

We want to thank the following persons, corporations and agencies for their input into the baseline and watershed assessment project: Ben Jones of the Peace River Corporation for co-financing the monitoring project; Jeff Timmins, Sandra Meidinger & Brent Esau of Alpine Environmental Ltd. for field sampling; the District of Hudson's Hope, and especially Mayor Lenore Harwood, and Bill Lindsay for their information and co-operation in organising this project; Derek Brown, Vic Levson and Mary Coward of the Ministry of Energy and Mines and Devin Scheck, Corey Jonsson and Brian McBride of the Oil and Gas Commission for relaying available tenure and drilling permit information to our office and for organising open house events in the community of Hudson's Hope on the subject of coal bed methane development and ongoing monitoring events. We also want to thank the local landowners for allowing Ministry and Alpine staff to enter their properties for sample site access, for their interest in the project and for providing land use information.

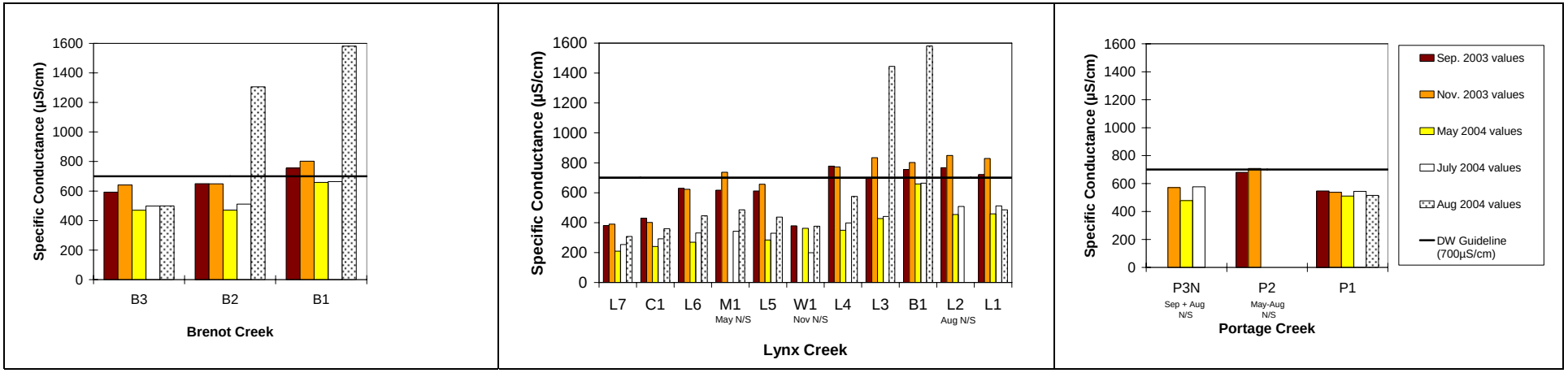


Figure 1: Specific conductance in Brenot, Lynx and Portage Creeks from upstream sample sites (B3, L7, P3N) to the mouths (B1, L1, P1) in comparison to the aesthetic drinking water guideline. (N/S = not sampled).

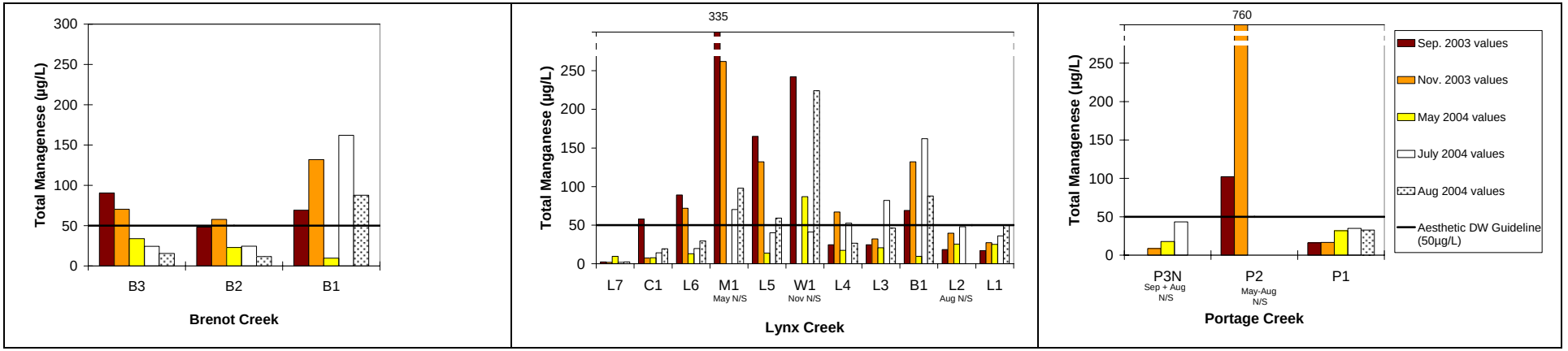


Figure 2: Total manganese in Brenot, Lynx and Portage Creeks from upstream sample sites (B3, L7, P3N) to the mouths (B1, L1, P1) in comparison to the aesthetic drinking water guideline. (N/S = not sampled).

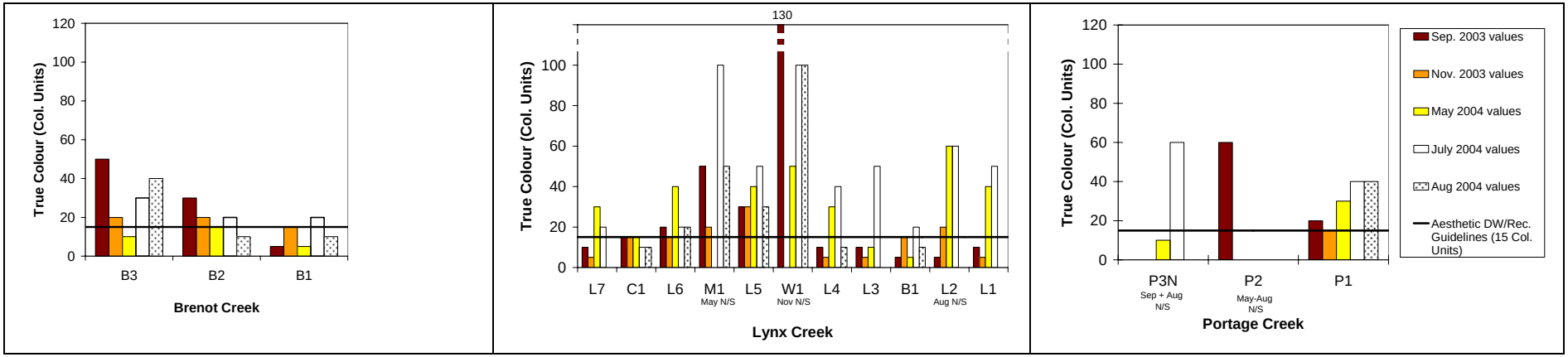


Figure 3: True colour in Brenot, Lynx and Portage Creeks from upstream sample sites (B3, L7, P3N) to the mouths (B1, L1, P1) in comparison to the aesthetic drinking water guideline. (N/S = not sampled).

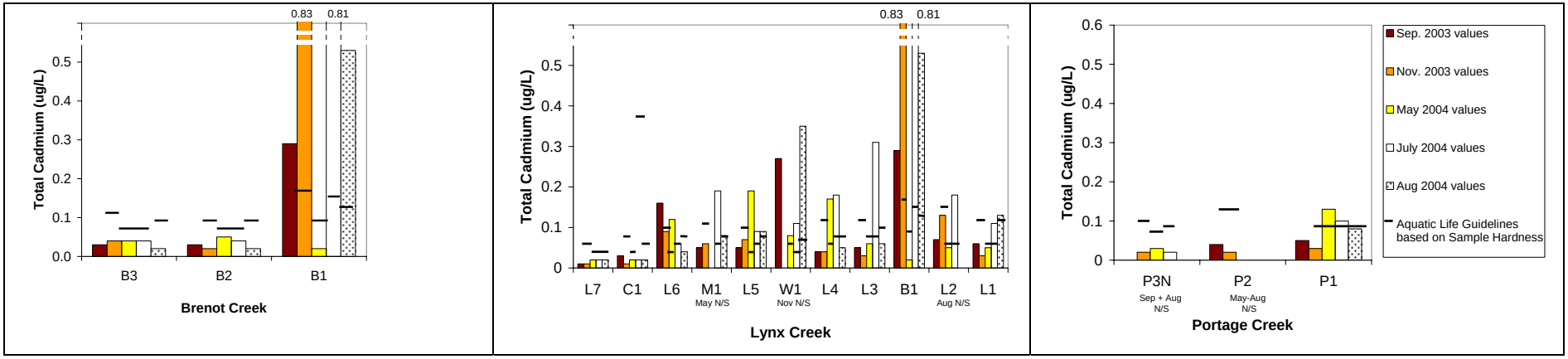


Figure 4: Cadmium in Brenot, Lynx and Portage Creeks from upstream sample sites (B3, L7, P3N) to the mouths (B1, L1, P1) in comparison to the hardness dependent aquatic life guideline. (N/S = not sampled).

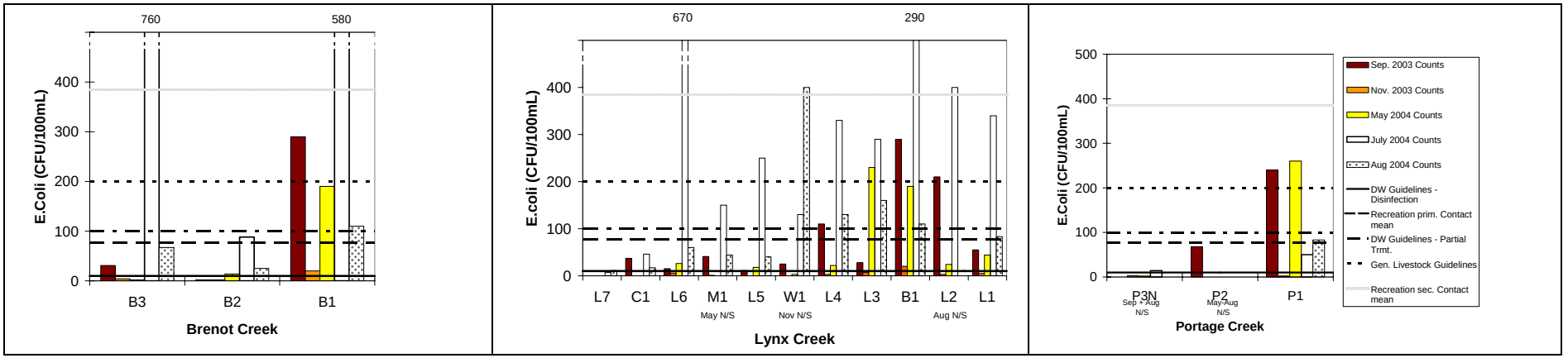


Figure 5: E.coli numbers in Brenot, Lynx and Portage Creeks from upstream sample sites (B3, L7, P3N) to the mouths (B1, L1, P1) in comparison to various drinking water and livestock use guidelines. (N/S = not sampled).

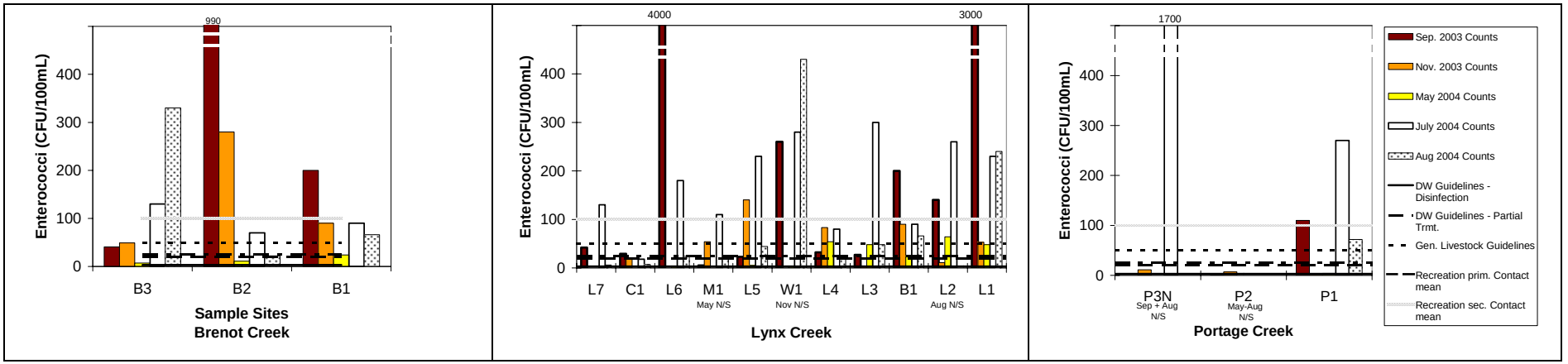


Figure 6: Enterococci in Brenot, Lynx and Portage Creeks from upstream sample sites (B3, L7, P3N) to the mouths (B1, L1, P1) in comparison to the various drinking water and livestock use guidelines. (N/S = not sampled).

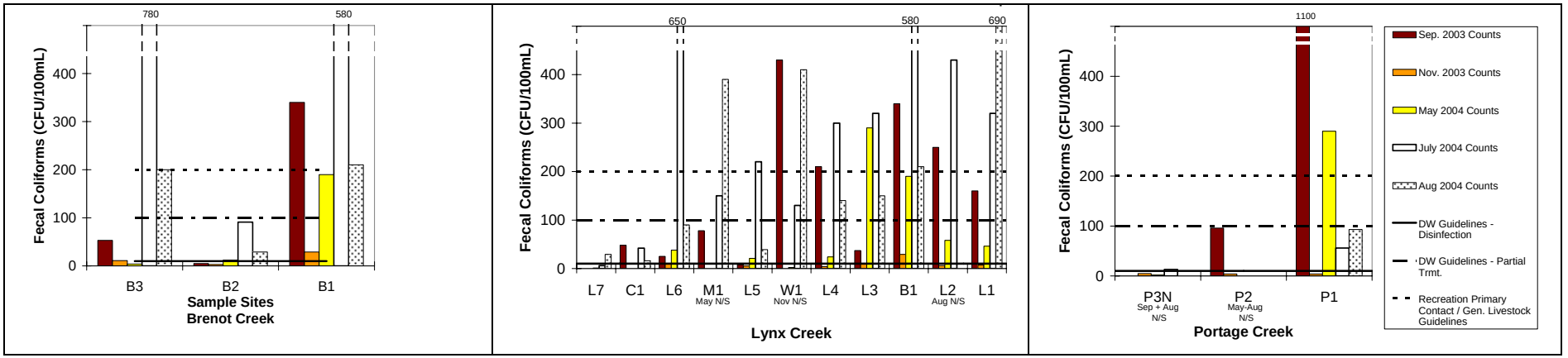


Figure 7: Fecal coliforms in Brenot, Lynx and Portage Creeks from upstream sample sites (B3, L7, P3N) to the mouths (B1, L1, P1) in comparison to various drinking water and livestock use guidelines. (N/S = not sampled).

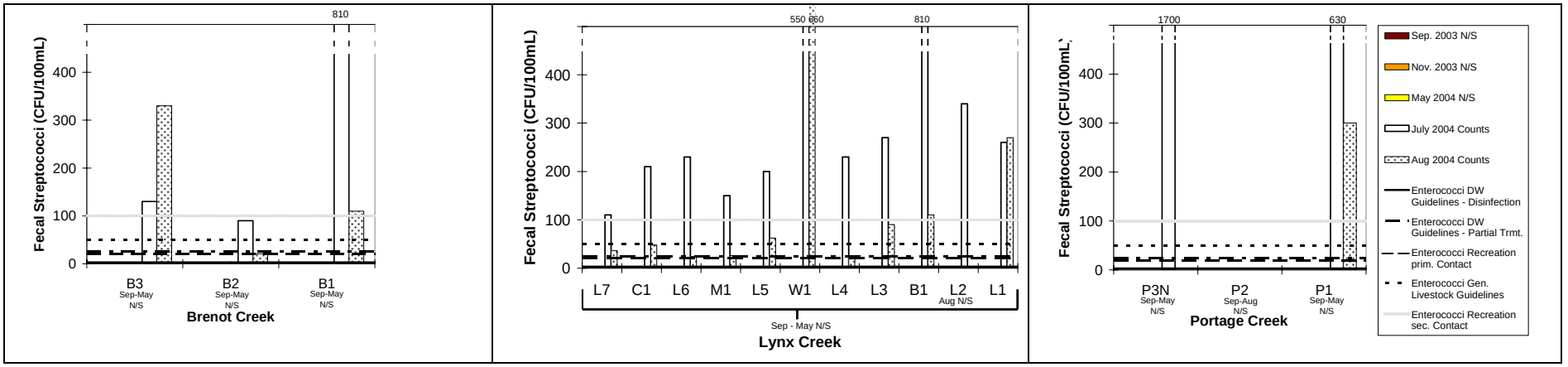
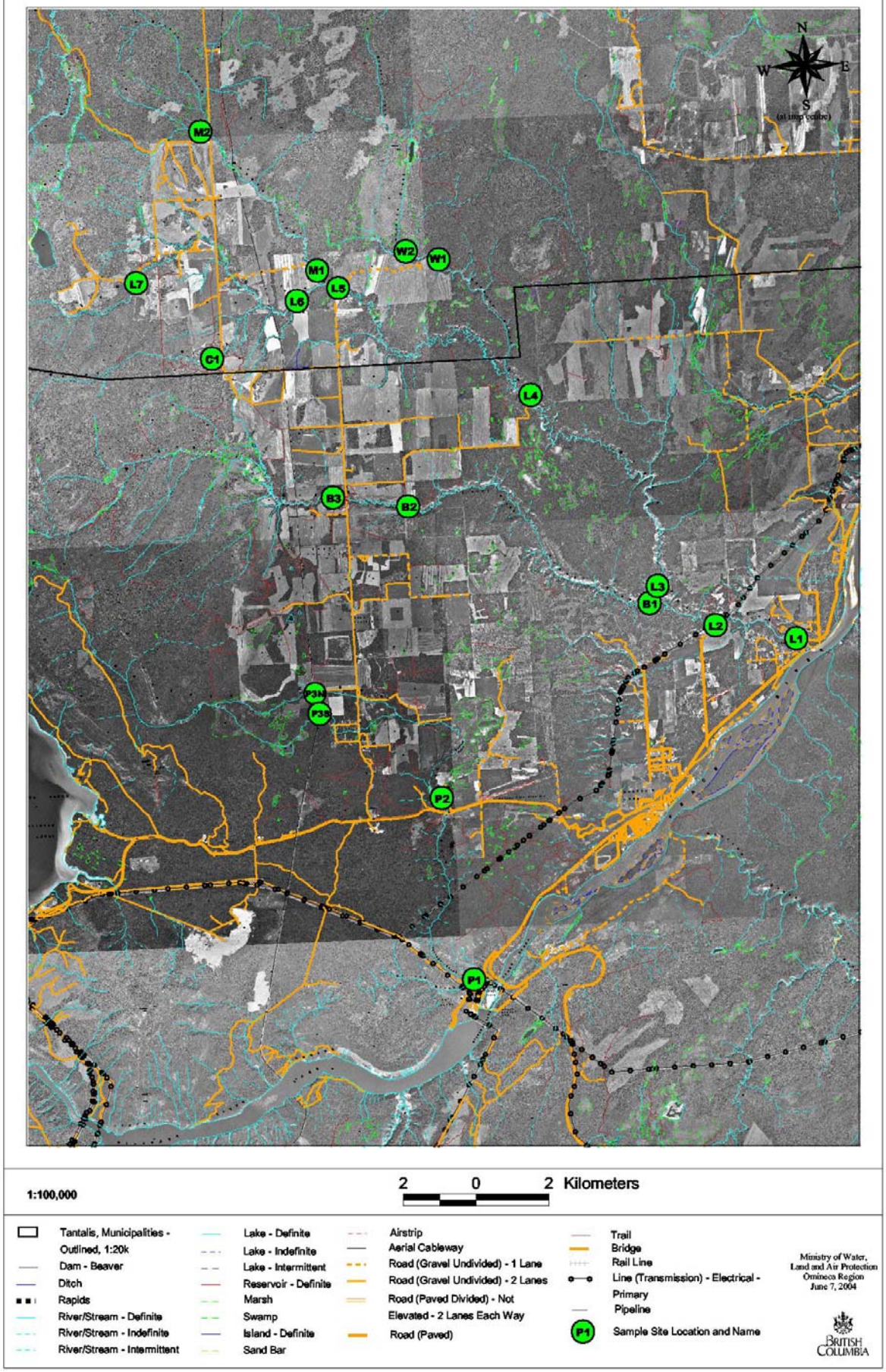


Figure 8: Fecal streptococci in Brenot, Lynx and Portage Creeks from upstream sample sites (B3, L7, P3N) to the mouths (B1, L1, P1) in comparison to various drinking water and livestock use guidelines. (N/S = not sampled).

Figure 9: Baseline and Watershed Assessment – Sample Locations



APPENDIX

Table A 1(a): L5-L7 LYNX CREEK 2003/04 Data Means - Sep. 2003 - Aug. 2004

Parameter	Unit	MDL	n	Average	Stdev	Min	Max	n	Average	Stdev	Min	Max	n	Average	Stdev	Min	Max
			L7					L6					L5				
Field Data																	
Specific Conductance	uS/cm		5	308.4	78.69117	209	390	5	459.8	164.9142	269	630	5	463.8	166.2128	284	657
Temp in Stream	^{o}C		5	5.84	4.459036	0.2	9.4	5	8.14	6.098196	0.1	13.6	5	9.12	6.77547	0.2	15.5
Turbidity	NTU		3	2.674	2.819243	0.85	7.61	5	54.52	57.15428	17.2	155	5	79.42	92.99775	24	244
pH			5	8.01	0.189077	7.8	8.31	4	7.95	0.675623	6.97	8.51	5	8.318	0.382649	7.94	8.96
Diss. Oxygen	mg/L		2	11.55	2.05061	10.1	13	2	10.15	1.484924	9.1	11.2	2	10.1	2.687006	8.2	12
Bacteria			5														
E.Coli	CFU/100mL		5	3.9	4.865696	0.5	11	5	155.4	288.3969	6	670	5	63.9	105.0348	<1	250
Enterococci	CFU/100mL		5	35.8	55.43532	0.5	130	5	841.7	1767.109	0.5	4000	5	88.4	94.75917	5	230
Fecal Coliform	CFU/100mL		5	7.4	12.29532	0.5	29	5	162.6	274.1237	10	650	5	58.6	91.21568	5	220
Fecal Streptococci	CFU/100mL		2	73	52.3259	36	110	2	127	145.664	24	230	2	131	97.58074	62	200
Chemistry																	
pH		0.10000	3	8.2	0.173205	8	8.3	3	8.266667	0.23094	8	8.4	3	8.2	0.34641	7.8	8.4
Colour True	Col. Unit	5.00000	5	13.50	11.40	2.5	30	5	23	9.746794	15	40	5	36	8.944272	30	50
Specific Conductance	uS/cm	1.00000	4	191.25	132.62	2	303	3	348	91.83137	261	444	3	354	88.05112	277	450
Residue Nonfilterable (TSS)	mg/L	4.00000	4	46.60	98.06	2	222	5	37.2	41.88317	6	109	5	48.2	59.6213	8	153
Residue Filterable (TDS)	mg/L	10.00000	4	169.00	39.07	132	220	3	273.2	94.76919	168	374	5	276.4	86.87232	182	382
Turbidity	NTU	0.10000	3	2.11	1.74	0.85	4.09	3	47.9	56.46618	12.2	113	3	77.23333	82.93819	28.8	173
Total Hardness	mg/L		4	157.50	43.29	112	213	4	235	88.86319	151	354	4	241.75	89.44784	161	361
Diss. Hardness	mg/L		4	163.75	46.31	116	223	4	235	86.42916	149	346	4	244.5	98.58161	155	373
Alkalinity	mg/L	0.50000	2	148.00	19.80	134	162	2	219	43.84062	188	250	2	214.5	54.44722	176	253
Chloride (diss.)	mg/L	0.50000	5	0.30	0.11	0.25	0.5	5	0.58	0.301247	0.25	0.8	5	0.71	0.384708	0.25	1.2
Langelier Index			2	0.60	0.14	0.5	0.7	2	1	0.141421	0.9	1.1	2	1.05	0.212132	0.9	1.2
Saturation pH	pH units		2	7.70	0.14	7.6	7.8	2	7.4	0.141421	7.3	7.5	2	7.35	0.212132	7.2	7.5
Total Org. Carbon	mg/L	0.50000	5	6.26	2.33	3.9	8.9	5	7.6	1.412445	5.8	9.2	5	9.18	1.826746	7.3	12.2
Total Kieldahl N	mg/L		5	0.26	0.10	0.17	0.4	5	0.338	0.087864	0.21	0.43	5	0.43	0.105594	0.31	0.58
Total N	mg/L	0.02000	5	0.40	0.31	0.22	0.94	5	0.448	0.266308	0.25	0.91	5	0.532	0.248536	0.32	0.94
Total Org. N	mg/L		5	0.26	0.10	0.17	0.4	5	0.338	0.087864	0.21	0.43	5	0.424	0.108074	0.3	0.58
Ammonia N	mg/L	0.00500	5	<0.005	N/A	N/A	N/A	5	<0.005	N/A	<0.005	<0.005	5	0.008	0.006154	0.0025	0.017
Nitrate N (diss.)	mg/L		5	0.135	0.23	0.026	0.54	5.000	0.109	0.207	0.006	0.480	5.000	0.097	0.197	0.007	0.450
Nitrate + Nitrite (N)	mg/L	0.00200	5	0.139	0.22	0.031	0.54	5.000	0.110	0.207	0.003	0.480	5.000	0.100	0.196	0.005	0.451
Nitrite N	mg/L	0.00200	5	0.004	0.00	0.002	0.006	5.000	0.004	0.003	0.001	0.008	5.000	0.004	0.002	0.002	0.007
Ortho-Phosphorus (P)	mg/L	0.00100	5	0.002	0.00	0.0005	0.004	5.000	0.004	0.002	0.002	0.006	5.000	0.003	0.002	0.001	0.007
Phosphorus Total (P) (diss.)	mg/L	0.00200	5	0.002	0.00	0.001	0.004	5	0.0042	0.002864	0.001	0.008	5	0.0062	0.00455	0.001	0.011

Table A 1(a) (cont.): L5-L7 LYNX CREEK 2003/04 Data Means - Sep. 2003 - Aug. 2004

Parameter	Unit	MDL	n	Average	Stdev	Min	Max	n	Average	Stdev	Min	Max	n	Average	Stdev	Min	Max
			L7					L6					L5				
TOTAL METALS																	
Aluminium	ug/L	0.30000	5	32.38	46.58	2.7	114	5	141.2	97.96275	63	306	5	154.84	111.7075	89.1	353
Antimony	ug/L	0.00500	5	0.107	0.01	0.093	0.118	5.000	0.140	0.028	0.109	0.186	5.000	0.163	0.008	0.153	0.170
Arsenic	ug/L	0.10000	5	0.240	0.05	0.2	0.3	5.000	0.740	0.230	0.500	1.100	5.000	1.200	0.660	0.600	2.300
Barium	ug/L	0.02000	5	141.080	36.85	92.4	189	5.000	198.600	51.418	128.000	262.000	5.000	211.400	63.775	136.000	301.000
Beryllium	ug/L	0.02000	5	0.02	0.01	0.01	0.04	5	0.032	0.017889	0.01	0.06	5	0.044	0.016733	0.03	0.07
Bismuth	ug/L	0.02000	5	0.01	0.01	0.01	0.03	5	0.018	0.013038	0.01	0.04	5	0.016	0.008944	0.01	0.03
Cadmium	ug/L	0.01000	5	0.02	0.01	0.01	0.02	5	0.094	0.047749	0.04	0.16	5	0.098	0.054037	0.05	0.19
Calcium	mg/L	0.05000	5	43.68	11.86	28.9	56.4	5	65.14	21.63315	38.9	87.9	5	66.84	21.73736	41.6	90.1
Chromium	ug/L	0.20000	5	1.875	2.15	0.1	5	5.000	1.080	1.105	0.100	2.600	5.000	2.840	3.729	0.200	9.100
Cobalt	ug/L	0.00500	5	0.070	0.06	0.0025	0.167	5.000	0.331	0.271	0.148	0.803	5.000	0.362	0.077	0.293	0.485
Copper	ug/L	0.05000	5	0.92	0.26	0.57	1.21	5	1.302	0.462947	0.72	1.88	5	1.422	0.632195	0.76	2.24
Lead	ug/L	0.01000	5	0.02	0.02	0.005	0.05	5	0.324	0.230282	0.12	0.66	5	0.354	0.227442	0.13	0.71
Lithium	ug/L	0.05000	5	3.49	0.87	2.21	4.49	5	8.004	5.053858	3.34	14.8	5	7.814	3.986337	4.09	12.8
Magnesium	mg/L	0.05000	4	13.67	3.81	9.69	18.6	4	20.55	8.692334	13.1	32.7	4	21.15	8.67967	13.8	33.1
Manganese	ug/L	0.00800	5	2.37	0.47	1.9	3.03	5	50.74	29.06825	19.9	89.1	5	89.4	55.60724	40.1	165
Molybdenum	ug/L	0.05000	5	0.37	0.09	0.26	0.47	5	1.346	0.516169	0.87	2.16	5	1.84	0.628291	1.06	2.55
Nickel	ug/L	0.05000	5	1.23	0.70	0.36	2.2	5	2.636	1.123312	1.36	4.36	5	2.55	0.638005	1.79	3.14
Selenium	ug/L	0.20000	5	0.40	0.20	0.1	0.6	5	0.24	0.167332	0.1	0.5	5	0.26	0.181659	0.1	0.5
Silver	ug/L	0.02000	5	<0.02	N/A	N/A	N/A	5	<0.02	N/A	<0.02	<0.02	5	<0.02	N/A	<0.02	<0.02
Sodium	ug/L	0.05000	5	2.39	0.82	1.48	3.5	5	6.242	4.561625	2.24	12.3	5	6.31	3.835987	2.7	10.5
Strontium	ug/L	0.00500	5	65.66	15.89	43.1	83.2	5	142.52	69.58169	67.4	224	5	152.88	62.95849	78.4	222
Thallium	ug/L	0.00200	5	0.002	0.00	0.001	0.004	5	0.006	0.002236	0.003	0.009	5	0.008	0.00255	0.005	0.012
Tin	ug/L	0.01000	5	0.01	0.00	0.01	0.02	5	0.013	0.009747	0.005	0.03	5	0.01	0.006124	0.005	0.02
Uranium	ug/L	0.00200	5	0.29	0.15	0.141	0.495	5	0.8634	0.562917	0.352	1.6	5	0.872	0.466287	0.433	1.58
Vanadium	ug/L	0.06000	5	0.76	0.93	0.22	2.41	5	1.616	1.011944	0.76	3.27	5	2.382	1.108724	1.27	3.77
Zinc	ug/L	0.10000	5	1.66	2.38	0.3	5.9	5	1.91	1.602498	0.05	3.9	5	1.96	1.201249	1.3	4.1
DISSOLVED METALS																	
Aluminium	ug/L	0.30000	5	4.10	3.98	0.9	10.6	5	5.22	4.542796	1.2	11.8	5	5.96	5.307824	1.3	11.8
Antimony	ug/L	0.00500	5	0.102	0.02	0.082	0.118	5.000	0.129	0.025	0.104	0.167	5.000	0.146	0.009	0.135	0.155
Arsenic	ug/L	0.10000	5	0.20	0.07	0.1	0.3	5	0.5	0.122474	0.3	0.6	5	0.7	0.254951	0.4	1.1
Barium	ug/L	0.02000	5	133.46	32.02	90.3	176	5	185.4	47.03509	115	237	5	187.4	63.9007	105	272
Beryllium	ug/L	0.02000	5	0.01	0.01	0.01	0.03	5	0.018	0.013038	0.01	0.04	5	0.014	0.008944	0.01	0.03
Bismuth	ug/L	0.02000	5	0.02	0.02	0.01	0.05	5	0.014	0.008944	0.01	0.03	5	0.012	0.004472	0.01	0.02
Cadmium	ug/L	0.01000	5	0.02	0.01	0.01	0.02	5	0.014	0.005477	0.01	0.02	5	0.012	0.004472	0.01	0.02
Calcium	mg/L	0.05000	4	41.80	11.84	29.8	57	4	59.6	20.89992	38	85.5	4	62	24.05452	40	92.8
Chromium	ug/L	0.20000	5	1.26	1.76	0.1	4.3	5	0.66	0.585662	0.1	1.6	5	2.6	3.757659	0.1	9.1
Cobalt	ug/L	0.00500	5	0.057	0.05	0.0025	0.139	5	0.1806	0.148374	0.084	0.444	5	0.2042	0.097225	0.13	0.371
Copper	ug/L	0.05000	5	0.88	0.26	0.55	1.16	5	0.86	0.258457	0.6	1.16	5	0.95	0.345036	0.5	1.35
Lead	ug/L	0.01000	5	0.01	0.00	0.005	0.01	5	0.015	0.013693	0.005	0.03	5	0.03	0.040466	0.005	0.1
Lithium	ug/L	0.05000	5	3.25	0.85	1.97	4.14	5	7.634	4.782231	3.01	13.8	5	7.262	4.027371	3.18	12.3
Magnesium	mg/L		4	14.40	4.05	10	19.5	4	20.875	8.362765	13.1	32.1	4	21.8	9.333452	13.5	34.3
Manganese	ug/L	0.00800	5	1.51	0.29	1.05	1.76	5	21.472	19.89326	3.46	53.9	5	55.44	52.71255	12.5	122
Molybdenum	ug/L	0.05000	5	0.36	0.08	0.26	0.43	5	1.324	0.613743	0.6	2.22	5	1.568	0.711386	0.7	2.41
Nickel	ug/L	0.05000	5	1.01	0.50	0.26	1.47	5	2.114	0.891813	1.04	3.35	5	1.938	0.403448	1.52	2.38
Selenium	ug/L	0.20000	5	0.44	0.11	0.3	0.6	5	0.22	0.164317	0.1	0.5	5	0.24	0.134164	0.1	0.4
Silver	ug/L	0.02000	5	<0.02	N/A	N/A	N/A	5	<0.02	N/A	<0.02	<0.02	5	<0.02	N/A	<0.02	<0.02
Strontium	ug/L	0.00500	5	51.16	26.61	10.1	79	5	134.24	62.38119	62.7	205	5	143.48	63.46067	69.7	215
Thallium	ug/L	0.00200	5	0.002	0.00	0.001	0.004	5	0.0028	0.001789	0.001	0.005	5	0.0038	0.001643	0.002	0.005
Tin	ug/L	0.01000	5	0.01	0.01	0.005	0.02	5	0.01	0.01118	0.005	0.03	5	0.006	0.002236	0.005	0.01
Uranium	ug/L	0.00200	5	0.275	0.13	0.15	0.459	5.000	0.804	0.518	0.321	1.440	5.000	0.808	0.469	0.389	1.530
Vanadium	ug/L	0.06000	5	0.496	0.66	0.14	1.66	5.000	0.816	0.766	0.230	1.660	5.000	1.300	1.214	0.290	2.840
Zinc	ug/L	0.10000	5	1.45	2.34	0.05	5.6	5	0.29	0.143178	0.05	0.4	5	0.55	0.41833	0.05	1.2

Table A 1(a) (cont.): L5-L7 LYNX CREEK 2003/04 Data Means - Sep. 2003 - Aug. 2004

Parameter	Unit	MDL	n	Average	Stdev	Min	Max	n	Average	Stdev	Min	Max	n	Average	Stdev	Min	Max
			L7					L6					L5				
HYDROCARBONS																	
TEH Extraction-Water																	
VH C6-C10			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
EPHw C10-19			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
LEPHw			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
EPHw C19-32			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
HEPHw			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
VPHw			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
PAH Extraction-Water																	
Acenaphtene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
Acenaphtylene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
Acridine			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
Anthracene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
Benzo(a)anthracene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
Benzo(b+j)flouranthe			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
Benzo(k)fluoranthene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
Benzo(g,h,i)perylene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
Benzo(a)pyrene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
Chrysene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
Dibenz(a,h)anthracene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
Fluoranthene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
Fluorene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
Indeno(1,2,3-c,d)pyrene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
2-Methylnaphthalene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
Naphthalene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
Phenanthrene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
Pyrene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
Quinoline			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
Total PAHs (calc)			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
Total Low MW PAH's			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
Total High MW PAH's			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
Volatile Organic-MAH																	
Benzene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
Ethylbenzene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
Styrene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
Toluene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
Xylenes			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
m,p - Xylene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
o - Xylene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
Methyl t-butyl ether			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A

N/S = Not sampled

N/A = Non applicable

* Average, standard deviation, miniumum and maximum were calculated using 1/2 DL, for data below the DL.

Grey shading for data exceeding BC Water Quality Guidelines.

Table A 1(b): L1-L4 LYNX CREEK 2003/04 Data Means - Sep. 2003 - Aug. 2004

Parameter	Unit	MDL	n	Average	Stdev	Min	Max	n	Average	Stdev	Min	Max	n	Average	Stdev	Min	Max	n	Average	Stdev	Min	Max
			L4					L3					L2					L1				
Field Data																						
Specific Conductance	uS/cm		5	574.8	201.4738	350	778	5	769.8	414.7134	428	1444	4	644.75	192.7665	454	849	5	601.6	164.2659	459	829
Temp in Stream	°C		5	8.5	5.580771	0.1	13.3	5	7.12	4.863846	0.4	13.6	4	6.65	5.239911	0.3	11	5	9.46	6.680419	0.2	16.6
Turbidity	NTU		5	47.1	57.55351	4	131	5	51.1025	76.03467	3	163	4	285.2	366.1931	15	807	5	247.82	346.6885	8	834
pH			4	8.205	0.328887	7.87	8.64	5	8.466	0.312538	8.04	8.84	3	8.376667	0.080208	8.3	8.46	4	8.4	0.380614	8.18	8.97
Diss. Oxygen	mg/L		3	12.82667	3.695962	9.9	16.98	3	12.06667	0.85049	11.2	12.9	3	12.24667	1.120952	11.1	13.34	2	10.9	1.838478	9.6	12.2
Bacteria																						
E.Coli	CFU/100mL		5	119	129.9885	3	330	5	143	123.681	7	290	4	159.25	185.5108	3	400	5	105.4	134.0981	5	340
Enterococci	CFU/100mL		5	54.6	26.92211	24	83	5	85.4	121.3334	4	300	4	118.75	108.0289	11	260	5	714.2	1281.133	48	3000
Fecal Coliform	CFU/100mL		5	135.6	124.8551	4	300	5	161.2	141.8827	9	320	4	186	193.5769	6	430	5	244.6	277.0917	7	690
Fecal Streptococci	CFU/100mL		2	127.5	144.9569	25	230	2	180	127.2792	90	270	1	340	N/A	340	340	2	265	7.071068	260	270
Chemistry																						
pH		0.10000	3	8.366667	0.057735	8.3	8.4	3	8.433333	0.11547	8.3	8.5	2	8.4	0.141421	8.3	8.5	3	8.4	0	8.4	8.4
Colour True	Col. Unit	5.00000	5	19	15.16575	5	40	5	15.5	19.55761	2.5	50	4	36.25	28.09953	5	60	5	21.5	21.9089	2.5	50
Specific Conductance	uS/cm	1.00000	3	445	130.4569	343	592	3	496.6667	108.3159	417	620	2	471	63.63961	426	516	3	540.6667	118.6269	439	671
Residue Nonfilterable (TSS)	mg/L	4.00000	5	213.4	421.7177	2	966	5	626	1305.622	2	2960	4	233.5	284.7508	6	630	5	186	221.0283	7	528
Residue Filterable (TDS)	mg/L	10.00000	5	346.8	110.9829	230	470	5	375.2	110.6851	246	514	4	384	116.1493	258	514	5	396.8	103.8711	270	536
Turbidity	NTU	0.10000	3	355.2333	513.5204	15.7	946	3	384.0333	518.9343	32.1	980	2	383	255.9727	202	564	3	328.5333	290.7594	81.6	649
Total Hardness	mg/L		4	307.75	117.6644	193	461	4	323.25	106.2054	224	466	3	367.3333	171.3748	250	564	4	345.75	97.15752	245	451
Diss. Hardness	mg/L		4	305.25	119.7897	193	455	4	325.25	109.2837	235	471	3	329.6667	137.4057	224	485	4	349.75	103.6866	251	478
Alkalinity	mg/L	0.50000	2	271.5	86.97413	210	333	2	263	70.71068	213	313	1	246	N/A	246	246	2	285.5	55.86144	246	325
Chloride (diss.)	mg/L	0.50000	5	0.69	0.381445	0.25	1.3	5	0.77	0.315436	0.25	1.1	5	0.7625	0.398696	0.25	1.2	5	1.06	0.240832	0.8	1.4
Langelier Index			2	1.25	0.212132	1.1	1.4	2	1.3	0.141421	1.2	1.4	1	1.2	N/A	1.2	1.2	2	1.2	0.141421	1.1	1.3
Saturation pH	pH units		2	7.15	0.212132	7	7.3	2	7.2	0.141421	7.1	7.3	1	7.3	N/A	7.3	7.3	2	7.2	0.141421	7.1	7.3
Total Org. Carbon	mg/L	0.50000	5	7.06	3.09241	4.3	12.1	5	7.24	3.460202	4.6	13.2	4	6.45	4.162131	3.1	11.8	5	6.16	3.563425	3.2	11.9
Total Kieldahl N	mg/L		5	0.376	0.213963	0.19	0.67	5	0.424	0.281123	0.19	0.84	4	0.3625	0.194143	0.15	0.56	5	0.312	0.193184	0.15	0.55
Total N	mg/L	0.02000	5	0.446	0.333811	0.19	0.99	5	0.48	0.37343	0.19	1.08	4	0.465	0.261852	0.23	0.78	5	0.398	0.268738	0.16	0.78
Total Org. N	mg/L		5	0.366	0.209595	0.18	0.65	5	0.42	0.27377	0.19	0.82	4	0.3475	0.198389	0.15	0.56	5	0.308	0.188733	0.15	0.55
Ammonia N	mg/L	0.00500	5	0.011	0.010143	0.0025	0.022	5	0.0067	0.006751	0.0025	0.018	4	0.0145	0.017209	0.0025	0.039	5	0.005	0.00559	0.0025	0.015
Nitrate N (diss.)	mg/L		5.000	0.069	0.135	0.001	0.310	5.000	0.055	0.098	0.001	0.230	4.000	0.101	0.130	0.010	0.290	5.000	0.082	0.120	0.001	0.290
Nitrate + Nitrite (N)	mg/L	0.00200	5.000	0.073	0.138	0.003	0.319	5.000	0.057	0.103	0.001	0.241	4.000	0.106	0.129	0.019	0.295	5.000	0.085	0.121	0.003	0.292
Nitrite N	mg/L	0.00200	5.000	0.005	0.003	0.003	0.011	5.000	0.003	0.004	0.001	0.011	4.000	0.003	0.002	0.001	0.005	5.000	0.004	0.002	0.002	0.006
Ortho-Phosphorus (P)	mg/L	0.00100	5.000	0.006	0.003	0.004	0.010	5.000	0.016	0.007	0.006	0.024	4.000	0.009	0.005	0.004	0.014	5.000	0.010	0.004	0.004	0.014
Phosphorus Total (P) (diss.)	mg/L	0.00200	5	0.0056	0.00493	0.001	0.013	5	0.021	0.00728	0.01	0.03	4	0.0105	0.008963	0.001	0.02	5	0.0104	0.00757	0.001	0.019

Table A 1(b): L1-L4 LYNX CREEK 2003/04 Data Means - Sep. 2003 - Aug. 2004

Parameter	Unit	MDL	n	Average	Stdev	Min	Max	n	Average	Stdev	Min	Max	n	Average	Stdev	Min	Max	n	Average	Stdev	Min	Max
			L4					L3					L2					L1				
TOTAL METALS																						
Aluminium	ug/L	0.30000	5	137.64	153.2365	17.6	323	5	204.06	174.7969	44.8	454	4	145.275	99.24439	90.4	294	5	126.98	75.31349	52.9	235
Antimony	ug/L	0.00500	5.000	0.163	0.078	0.094	0.289	5.000	0.211	0.056	0.151	0.281	4.000	0.179	0.053	0.125	0.238	5.000	0.191	0.043	0.133	0.251
Arsenic	ug/L	0.10000	5.000	1.060	0.195	0.800	1.200	5.000	1.020	0.363	0.700	1.500	4.000	1.125	0.310	0.700	1.400	5.000	1.140	0.385	0.600	1.600
Barium	ug/L	0.02000	5.000	184.200	31.736	142.000	216.000	5.000	125.900	32.420	79.500	153.000	4.000	115.275	21.609	86.100	136.000	5.000	110.680	21.813	78.500	132.000
Beryllium	ug/L	0.02000	5	0.03	0.015811	0.01	0.05	5	0.044	0.04219	0.01	0.11	4	0.0225	0.025	0.01	0.06	5	0.026	0.021909	0.01	0.05
Bismuth	ug/L	0.02000	5	0.018	0.017889	0.01	0.05	5	0.018	0.013038	0.01	0.04	4	<0.02	N/A	<0.02	<0.02	5	0.014	0.008944	0.01	0.03
Cadmium	ug/L	0.01000	5	0.096	0.072319	0.04	0.18	5	0.102	0.116919	0.03	0.31	4	0.1075	0.05909	0.05	0.18	5	0.076	0.04219	0.03	0.13
Calcium	mg/L	0.05000	5	78.98	23.64735	48.5	105	5	75.04	18.12879	55.4	104	4	80.35	25.4983	57.9	116	5	72.26	14.08804	56.7	91.3
Chromium	ug/L	0.20000	5.000	1.180	1.402	0.100	3.500	5.000	0.460	0.462	0.100	1.200	4.000	1.125	1.162	0.100	2.600	5.000	1.340	2.499	0.100	5.800
Cobalt	ug/L	0.00500	5.000	0.314	0.128	0.170	0.415	5.000	0.916	0.578	0.392	1.810	4.000	0.562	0.432	0.263	1.190	5.000	0.309	0.253	0.003	0.672
Copper	ug/L	0.05000	5	1.444	1.113566	0.51	2.91	5	2.342	1.520007	0.98	4.68	4	2.02	1.335091	0.91	3.78	5	1.988	1.128636	0.86	3.59
Lead	ug/L	0.01000	5	0.34	0.35433	0.04	0.75	5	0.278	0.390794	0.01	0.96	4	0.33	0.207043	0.16	0.63	5	0.258	0.192406	0.09	0.52
Lithium	ug/L	0.05000	5	13.09	6.727094	5.19	20.5	5	20.7	9.220629	9.4	31.6	4	19.975	8.770167	10.7	29.6	5	20.532	7.559042	9.96	28.6
Magnesium	mg/L	0.05000	4	29.675	13.79163	17.4	48.2	4	32.325	13.37096	20.8	50.2	3	40.46667	22.79393	25.5	66.7	4	39.025	14.20642	25.1	54.2
Manganese	ug/L	0.00800	5	44	18.02595	24.7	67	5	39.96	26.23191	14.6	82.1	4	30.65	15.63767	16.4	48	5	29.04	14.73442	14.4	50.4
Molybdenum	ug/L	0.05000	5	3.488	1.549006	1.99	5.73	5	3.566	1.304849	1.96	5.19	4	3.7775	1.58359	1.86	5.4	5	4.266	1.087373	2.92	5.42
Nickel	ug/L	0.05000	5	2.228	0.921287	0.75	3.02	5	5.746	2.315714	3.05	8.71	4	3.5975	2.510808	1.69	7.18	5	3.634	2.197471	1.58	7.03
Selenium	ug/L	0.20000	5	0.36	0.250998	0.1	0.6	5	0.36	0.378153	0.1	1	4	0.8	0.23094	0.6	1	5	0.9	0.353553	0.4	1.3
Silver	ug/L	0.02000	5	<0.02	N/A	<0.02	<002	5	<0.02	N/A	<0.02	<0.02	4	<0.02	N/A	<0.02	<0.02	5	0.012	0.004472	0.01	0.02
Sodium	ug/L	0.05000	5	7.446	3.609748	3.73	12	5	11.68	5.730048	5.37	17.6	4	13.0725	6.021137	7.02	18.3	5	13.358	5.270903	6.91	18.6
Strontium	ug/L	0.00500	5	269.2	122.4059	143	397	5	269	92.81164	165	359	4	353.75	158.2095	201	525	5	366	140.7356	198	524
Thallium	ug/L	0.00200	5	0.0088	0.004266	0.004	0.013	5	0.0098	0.004658	0.003	0.016	4	0.00875	0.0035	0.007	0.014	5	0.0084	0.002302	0.006	0.012
Tin	ug/L	0.01000	5	0.015	0.007071	0.005	0.02	5	0.011	0.005477	0.005	0.02	4	0.01	0.007071	0.005	0.02	5	0.01	0.006124	0.005	0.02
Uranium	ug/L	0.00200	5	1.8408	0.902759	0.854	2.85	5	2.072	0.678506	1.28	2.9	4	2.74	1.173229	1.69	3.81	5	2.708	1.005719	1.61	3.74
Vanadium	ug/L	0.06000	5	1.958	1.33928	0.56	3.77	5	1.578	0.699979	0.8	2.53	4	2.415	2.059458	0.57	5.36	5	1.95	1.441562	0.51	4.36
Zinc	ug/L	0.10000	5	1.67	1.679881	0.05	4.3	5	6.08	5.72643	2.4	16.2	4	3.725	2.591492	2.2	7.6	5	2.58	1.293058	1.4	4.3
DISSOLVED METALS																						
Aluminium	ug/L	0.30000	5	3.78	4.296161	0.7	9.8	5	57.96	48.1716	20	132	4	27.7	42.05718	5.1	90.7	5	28.34	39.57933	2.9	96.9
Antimony	ug/L	0.00500	5.000	0.150	0.072	0.084	0.258	5.000	0.200	0.060	0.136	0.277	4.000	0.158	0.047	0.115	0.216	5.000	0.185	0.043	0.129	0.246
Arsenic	ug/L	0.10000	5	0.7	0.187083	0.4	0.9	5	0.86	0.167332	0.7	1.1	4	0.875	0.298608	0.5	1.2	5	1.04	0.250998	0.6	1.2
Barium	ug/L	0.02000	5	166.8	34.67276	118	197	5	109.42	28.12636	68.9	134	4	95.85	16.82171	73.6	112	5	95.84	14.66434	74.9	113
Beryllium	ug/L	0.02000	5	0.012	0.004472	0.01	0.02	5	0.014	0.008944	0.01	0.03	4	<0.02	N/A	<0.02	<0.02	5	0.014	0.008944	0.01	0.03
Bismuth	ug/L	0.02000	5	<0.02	N/A	<0.02	<0.02	5	<0.02	N/A	<0.02	<0.02	4	<0.02	N/A	<0.02	<0.02	5	<0.02	N/A	<0.02	<0.02
Cadmium	ug/L	0.01000	5	0.02	0.007071	0.01	0.03	5	0.026	0.005477	0.02	0.03	4	0.01625	0.011087	0.005	0.03	5	0.015	0.01	0.005	0.03
Calcium	mg/L	0.05000	4	72.975	25.38456	48.4	104	4	75.625	21.51083	58.1	105	3	70.16667	23.05045	51.7	96	4	73.15	17.15896	57.7	96.9
Chromium	ug/L	0.20000	5	0.78	1.015874	0.1	2.5	5	0.34	0.378153	0.1	1	4	0.575	0.660177	0.1	1.5	5	1.12	2.064461	0.1	4.8
Cobalt	ug/L	0.00500	5	0.169	0.08834	0.104	0.322	5	0.5436	0.195446	0.246	0.716	4	0.33	0.233773	0.143	0.654	5	0.2718	0.165654	0.132	0.52
Copper	ug/L	0.05000	5	0.992	0.640874	0.39	1.77	5	1.776	1.013178	0.83	3.16	4	1.355	0.95	0.55	2.59	5	1.44	0.965091	0.66	2.96
Lead	ug/L	0.01000	5	0.019	0.023822	0.005	0.06	5	<0.01	N/A	<0.01	<0.01	4	0.01375	0.0175	0.005	0.04	5	0.008	0.006708	0.005	0.02
Lithium	ug/L	0.05000	5	12.436	6.441388	4.58	18.8	5	19.698	8.477029	8.69	28.7	4	18.92	9.007715	9.18	28.3	5	20.22	7.209161	10.5	27.8
Magnesium	mg/L		4	29.9	13.73827	17.6	47.5	4	33.175	13.51083	21.9	50.7	3	37.43333	19.41039	23	59.5	4	40.55	15.24675	25.9	57.3
Manganese	ug/L	0.00800	5	20.378	24.0671	2.02	60.6	5	14.738	10.12679	4.16	30.5	4	10.765	4.619152	4.95	16	5	10.206	7.003119	3.2	21.7
Molybdenum	ug/L	0.05000	5	3.184	1.527442	1.49	5.06	5	3.34	1.184483	2.06	4.52	4	3.605	1.64261	1.95	5.12	5	3.806	1.316237	2.22	5.17
Nickel	ug/L	0.05000	5	1.692	0.679169	0.71	2.36	5	4.782	1.619373	2.83	6.49	4	2.8225	2.102544	1.21	5.76	5	3.008	1.909652	1.45	6.14
Selenium	ug/L	0.20000	5	0.24	0.194936	0.1	0.5	5	0.34	0.336155	0.1	0.9	4	0.575	0.330404	0.1	0.8	5	0.7	0.254951	0.4	1.1
Silver	ug/L	0.02000	5	<0.02	N/A	<0.02	<0.02	5	0.01	0	0.01	0.01	4	0.01	0	0.01	0.01	5	<0.02	N/A	<0.02	<0.02
Strontium	ug/L	0.00500	5	255.2	116.849	130	381	5	255.8	86.8516	162	354	4	326.75	155.7955	173	503	5	340.8	127.7545	199	514
Thallium	ug/L	0.00200	5	0.0058	0.001643	0.004	0.008	5	0.006	0.002236	0.003	0.009	4	0.005	0.002449	0.002	0.007	5	0.0062	0.001483	0.004	0.008
Tin	ug/L	0.01000	5	0.007	0.002739	0.005	0.01	5	0.006	0.002236	0.005	0.01	4	<0.01	N/A	<0.01	<0.01	5	0.007	0.002739	0.005	0.01
Uranium	ug/L	0.00200	5.000	1.717	0.879	0.775	2.740	5.000	1.962	0.677	1.200	2.960	4.000	2.588	1.238	1.470	3.780	5.000	2.674	0.954	1.660	3.740
Vanadium	ug/L	0.06000	5.000	0.838	0.765	0.280	2.160	5.000	0.792	0.651	0.390	1.940	4.000	1.550	1.898	0.130	4.330	5.000	0.888	0.764	0.140	2.160
Zinc	ug/L	0.10000	5	0.32	0.284165	0.05	0.7	5	1.33	1.498166	0.05	3.7	4	0.5625	0.446047	0.05	1.1	5	0.44	0.437893	0.05	1.1

Table A 1(b): L1-L4 LYNX CREEK 2003/04 Data Means - Sep. 2003 - Aug. 2004

Parameter	Unit	MDL	n	Average	Stdev	Min	Max	n	Average	Stdev	Min	Max	n	Average	Stdev	Min	Max	n	Average	Stdev	Min	Max
			L4					L3					L2					L1				
HYDROCARBONS																						
TEH Extraction-Water																						
VH C6-C10			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	3	<0.1	N/A	<0.1	<0.1
EPHw C10-19			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.1	N/A	<0.1	<0.1
LEPHw			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.1	N/A	<0.1	<0.1
EPHw C19-32			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.1	N/A	<0.1	<0.1
HEPHw			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.1	N/A	<0.1	<0.1
VPHw			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	3	<0.1	N/A	<0.1	<0.1
PAH Extraction-Water																						
Acenaphtene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00001	N/A	<0.00001	<0.00001
Acenaphtylene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00001	N/A	<0.00001	<0.00001
Acridine			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00005	N/A	<0.00005	<0.00005
Anthracene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00001	N/A	<0.00001	0.000005
Benzo(a)anthracene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00001	N/A	<0.00001	0.000005
Benzo(b+j)flouranthe			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00001	N/A	<0.00001	0.000005
Benzo(k)fluoranthene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00001	N/A	<0.00001	0.000005
Benzo(g,h,i)perylene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00002	N/A	<0.00002	<0.00002
Benzo(a)pyrene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	0.000005	8.04E-14	0.000005	0.000005
Chrysene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	0.000013	0.000012	0.000005	0.00003
Dibenz(a,h)anthracene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00002	N/A	<0.00002	<0.00002
Fluoranthene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	0.000008	0.000007	0.000005	0.00002
Fluorene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	0.000008	0.000007	0.000005	0.00002
Indeno(1,2,3-c,d)pyrene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00002	0.000000	<0.00002	<0.00002
2-Methylnaphthalene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	0.000118	0.000148	0.000005	0.00035
Naphthalene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	0.000056	0.000066	0.000005	0.00016
Phenanthrene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	0.000086	0.000105	0.000005	0.00025
Pyrene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	0.000011	0.000011	0.000005	0.00003
Quinoline			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00005	N/A	<0.00005	<0.00005
Total PAHs (calc)			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	0.00029	0.000354	0.000025	0.00085
Total Low MW PAH's			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	0.00026	0.000331	0.000005	0.00078
Total High MW PAH's			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	0.000025	0.000029	0.000005	0.00007
Volatile Organic-MAH																						
Benzene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.5	N/A	<0.5	<0.5
Ethylbenzene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.5	N/A	<0.5	<0.5
Styrene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.1	N/A	<0.1	<0.1
Toluene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.5	N/A	<0.5	<0.5
Xylenes			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.5	N/A	<0.5	<0.5
m,p - Xylene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.5	N/A	<0.5	<0.5
o - Xylene			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.5	N/A	<0.5	<0.5
Methyl t-butyl ether			0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<4	N/A	<4	<4

N/S = Not sampled
N/A = Non applicable
* Average, standard deviation, miniumum and maximum were calculated using 1/2 DL, for data below the DL.
Grey shading for data exceeding BC Water Quality Guidelines.

Table A 2: CAREY CREEK (C1) 2003/04 Data Means - Sep. 2003 - Aug. 2004

Parameter	Unit	MDL	n	Average*	Stdev*	Min*	Max*
Field Data							
Specific Conductance	uS/cm		5	344.6	78.1332196	240	430
Temp in Stream	^{o}C		5	7.22	4.8766792	0.6	11.2
Turbidity	NTU		5	26.575	46.2838089	3.16	96
pH			4	8.1775	0.20172176	7.9	8.35
Diss. Oxygen	mg/L		2	10.45	2.47487373	8.7	12.2
Lab Data							
Bacteria							
E.Coli	CFU/100mL		5	33.3333333	14.8436294	17	46
Enterococci	CFU/100mL		5	18.75	9.10585892	7	29
Fecal Coliform	CFU/100mL		5	35.3333333	17.0098011	16	48
Fecal Streptococci	CFU/100mL		2	129	114.551299	48	210
pH		0.1	3	8.26666667	0.15275252	8.1	8.4
Colour True	Col. Unit	5	5	13	2.73861279	10	15
Specific Conductance	uS/cm	1	3	264.666667	85.1899838	196	360
Residue Nonfilterable (TSS)	mg/L	4	5	<4	N/A	<4	<4
Residue Filterable (TDS)	mg/L	10	5	198.8	45.620171	138	244
Turbidity	NTU	0.1	3	1.55	0.47947888	1.22	2.1
Total Hardness	mg/L		4	553	735.069158	132	1654
Dissolved Hardness	mg/L		4	184.75	45.9156836	134	239
Alkalinity	mg/L	0.5	2	177.5	28.991378	157	198
Chloride (diss.)	mg/L	0.5	5	0.3	0.1118034	0.25	0.5
Langelier Index			2	0.8	0.14142136	0.7	0.9
Saturation pH	pH units		2	7.55	0.07071068	7.5	7.6
Total Org. Carbon	mg/L	0.5	5	5.94	1.33154046	4.1	7.7
Total Kieldahl N	mg/L		5	0.254	0.06913754	0.16	0.34
Total N	mg/L	0.02	5	0.418	0.3051557	0.22	0.95
Total Org. N	mg/L		5	0.254	0.06913754	0.16	0.34
Ammonia N	mg/L	0.005	5	<0.005	N/A	<0.005	<0.005
Nitrate N (diss.)	mg/L		5	0.1606	0.26838741	0.02	0.64
Nitrate + Nitrite (N)	mg/L	0.002	5	0.1654	0.2697078	0.022	0.647
Nitrite N	mg/L	0.002	5	0.0038	0.00216795	0.002	0.007
Ortho-Phosphorus (P)	mg/L	0.001	5	0.0024	0.00267862	0.0005	0.007
Phosphorus Total (P) (diss.)	mg/L	0.002	5	0.0024	0.00167332	0.001	0.005

Table A 2 (Cont.): CAREY CREEK (C1) 2003/04 Data Means - Sep. 2003 - Aug. 2004

Parameter	Unit	MDL	n	Average*	Stdev*	Min*	Max*
TOTAL METALS							
Aluminum	ug/L	0.3	5	16.7	16.4959086	2.6	44.1
Antimony	ug/L	0.005	5	0.099	0.00868907	0.087	0.111
Arsenic	ug/L	0.1	5	0.26	0.08944272	0.2	0.4
Barium	ug/L	0.02	5	189.6	52.0797465	120	261
Beryllium	ug/L	0.02	5	0.026	0.0167332	0.01	0.05
Bismuth	ug/L	0.02	5	0.016	0.01341641	0.01	0.04
Cadmium	ug/L	0.01	5	0.02	0.00707107	0.01	0.03
Calcium	ug/L	0.05	5	49.02	12.2170782	32.9	63.6
Chromium	ug/L	0.2	5	2.6	3.58259682	0.1	8.8
Cobalt	ug/L	0.005	5	0.146	0.15184532	0.029	0.411
Copper	ug/L	0.05	5	0.774	0.3314061	0.39	1.2
Lead	ug/L	0.01	5	0.017	0.00974679	0.005	0.03
Lithium	ug/L	0.05	5	3.138	0.68309589	2.16	3.94
Magnesium	mg/L	0.05	4	16.3	3.58980037	12.1	20.5
Manganese	ug/L	0.008	5	21.4	21.0489952	7.38	58
Molybdenum	ug/L	0.05	5	0.566	0.23071628	0.32	0.93
Nickel	ug/L	0.05	5	1.502	0.44324937	0.8	1.95
Selenium	ug/L	0.2	5	0.3	0.15811388	0.1	0.5
Silver	ug/L	0.02	5	<0.02	N/A	<0.02	<0.02
Sodium	ug/L	0.05	5	1.782	0.30523761	1.35	2.1
Strontium	ug/L	0.005	5	70.88	16.0242629	46.8	84.6
Thallium	ug/L	0.002	5	0.0016	0.00089443	0.001	0.003
Tin	ug/L	0.01	5	0.011	0.00547723	0.005	0.02
Uranium	ug/L	0.002	5	0.2878	0.09357991	0.177	0.388
Vanadium	ug/L	0.06	5	0.996	1.09173257	0.19	2.49
Zinc	ug/L	0.1	5	0.45	0.32015621	0.05	0.9
DISSOLVED METALS							
Aluminum	ug/L	0.3	5	2.58	1.62234398	1	5
Antimony	ug/L	0.005	5	0.0878	0.01287245	0.073	0.106
Arsenic	ug/L	0.1	5	0.24	0.08944272	0.2	0.4
Barium	ug/L	0.02	5	181.2	49.886872	112	244
Beryllium	ug/L	0.02	5	<0.02	N/A	<0.02	<0.02
Bismuth	ug/L	0.02	5	<0.02	N/A	<0.02	<0.02
Cadmium	ug/L	0.01	5	0.011	0.00547723	0.005	0.02
Calcium	mg/L	0.05	5	46.525	12.1784988	33.2	60
Chromium	ug/L	0.2	5	2.14	2.51256841	0.1	6.3
Cobalt	ug/L	0.005	5	0.116	0.120938	0.028	0.328
Copper	ug/L	0.05	5	0.676	0.22210358	0.41	0.91
Lead	ug/L	0.01	5	0.006	0.00223607	0.005	0.01
Lithium	ug/L	0.05	5	2.92	0.72453433	1.9	3.62
Magnesium	mg/L	0.05	5	16.625	3.89818334	12.4	21.7
Manganese	ug/L	0.008	5	13.794	12.1059523	5.28	35
Molybdenum	ug/L	0.05	5	0.52	0.14508618	0.32	0.67
Nickel	ug/L	0.05	5	1.306	0.45719799	0.58	1.79
Selenium	ug/L	0.2	5	0.34	0.16733201	0.1	0.5
Silver	ug/L	0.02	5	<0.02	N/A	<0.02	<0.02
Strontium	ug/L	0.005	5	68.74	17.0466419	44	85.6
Thallium	ug/L	0.002	5	0.0018	0.00109545	0.001	0.003
Tin	ug/L	0.01	5	0.007	0.00273861	0.005	0.01
Uranium	ug/L	0.002	5	0.2878	0.09131374	0.184	0.406
Vanadium	ug/L	0.06	5	0.584	0.84010714	0.03	2.04
Zinc	ug/L	0.1	5	0.31	0.23021729	0.05	0.6

N/S = Not sampled

N/A = Non applicable

* Average, standard deviation, miniumum and maximum were calculated using 1/2 DL, for data below the DL.

Grey shading for data exceeding BC Water Quality Guidelines.

Table A 3: MACKLE CREEK 2003/04 Data Means - Sep. 2003 - Aug. 2004

Parameter	Unit	MDL	M2					M1				
			n	Average	Stdev	Min	Max	n	Average	Stdev	Min	Max
Field Data												
Specific Conductance	uS/cm		5	521.2	129.3201	371	688	4	545.5	170.04	342	737.00
Temp in Stream	°C		5	7.78	4.88641	0.3	12.9	4	8.425	6.28	0.2	14.50
Turbidity	NTU		5	34.38	16.52852	22.4	63	4	88.775	110.43	26.4	254.00
pH			4	7.86	0.309516	7.4	8.07	3	8.056667	0.23	7.81	8.27
Diss. Oxygen	mg/L		3	10.8	0.43589	10.3	11.1	2	10.2	5.09	6.6	13.80
Lab Data												
Bacteria												
E.Coli	CFU/100mL		5	1.90	2.86	0.50	7.00	4	59.00	63.75	1.00	150.00
Enterococci	CFU/100mL		5	9.00	10.17	0.50	25.00	4	47.75	46.21	5.00	110.00
Fecal Coliform	CFU/100mL		5	7.00	9.29	0.50	23.00	4	154.63	168.37	0.50	390.00
Fecal Streptococci	CFU/100mL		2	30.50	10.61	23.00	38.00	2	88.00	87.68	26.00	150.00
pH		0.10	3	8.20	0.10	8.10	8.3	2	8.3	0.00	8.3	8.3
Colour True	Col. Unit	5.00	5	56.00	19.49	30.00	70.00	4	55.00	33.17	20	100
Specific Conductance	uS/cm	1.00	3	454.67	106.81	368.00	574.00	2	419.00	98.99	349	489
Residue Nonfilterable (TSS)	mg/L	4.00	5	58.40	77.33	9.00	195.00	4	37.50	47.40	7	108
Residue Filterable (TDS)	mg/L	10.00	5	337.20	89.75	224.00	430.00	4	360.00	101.44	246	484
Turbidity	NTU	0.10	3	31.50	13.23	17.80	44.20	2	111.15	107.27	35.3	187
Total Hardness	mg/L		4	287.00	86.51	200.00	392.00	3	300.33	103.74	213	415
Diss Hardness	mg/L		4	296.25	92.81	207.00	406.00	3	305.33	120.43	197	435
Alkalinity	mg/L	0.50	2	278.00	72.12	227.00	329.00	2	226.50	62.93	182	271
Chloride (diss.)	mg/L	0.50	5	0.80	0.67	0.25	1.90	4	0.79	0.37	0.25	1.1
Langelier Index			2	1.10	0.28	0.90	1.30	2	1.00	0.14	0.9	1.1
Saturation pH	pH units		2	7.15	0.21	7.00	7.30	2	7.30	0.14	7.2	7.4
Total Org. Carbon	mg/L	0.500	5	19.080	4.198	11.800	21.900	4	21.125	2.506	17.7	23.7
Total Kieldahl N	mg/L		5	0.836	0.121	0.710	1.030	4	0.855	0.192	0.59	1.05
Total N	mg/L	0.020	5	0.852	0.121	0.730	1.050	4	0.863	0.192	0.6	1.06
Total Org. N	mg/L		5	0.790	0.098	0.640	0.910	4	0.853	0.189	0.59	1.04
Ammonia N	mg/L	0.005	5	0.046	0.050	0.003	0.121	4	0.005	0.004	0.0025	0.011
Nitrate N (diss.)	mg/L		5	0.011	0.005	0.006	0.020	4	0.007	0.003	0.004	0.01
Nitrate + Nitrite (N)	mg/L	0.002	5	0.016	0.006	0.010	0.023	4	0.009	0.003	0.004	0.011
Nitrite N	mg/L	0.002	5	0.004	0.002	0.002	0.006	4	0.006	0.001	0.004	0.006
Ortho-Phosphorus (P)	mg/L	0.001	5	0.007	0.003	0.003	0.011	4	0.006	0.002	0.003	0.008
Phosphorus Total (P) (diss.)	mg/L	0.002	5	0.014	0.006	0.008	0.024	4	0.015	0.005	0.007	0.018

Table A 3 (cont.): MACKLE CREEK 2003/04 Data Means - Sep. 2003 - Aug. 2004

Parameter	Unit	MDL	M2					M1				
			n	Average	Stdev	Min	Max	n	Average	Stdev	Min	Max
TOTAL METALS												
Aluminum	ug/L	0.300	5	176.740	120.732	26.000	329.000	4	193.050	135.860	58.2	380
Antimony	ug/L	0.005	5	0.161	0.025	0.138	0.198	4	0.248	0.077	0.151	0.332
Arsenic	ug/L	0.100	5	1.460	0.451	0.800	2.000	4	2.125	0.538	1.5	2.8
Barium	ug/L	0.020	5	208.400	55.098	145.000	277.000	4	215.000	41.944	160	252
Beryllium	ug/L	0.020	5	0.034	0.013	0.020	0.050	4	0.030	0.016	0.01	0.05
Bismuth	ug/L	0.020	5	0.020	0.017	0.010	0.050	4	0.023	0.019	0.01	0.05
Cadmium	ug/L	0.010	5	0.072	0.049	0.050	0.160	4	0.095	0.065	0.05	0.19
Calcium	mg/L	0.050	5	81.020	20.948	54.300	103.000	4	82.450	20.941	58.6	108
Chromium	ug/L	0.200	5	1.380	1.279	0.100	3.100	4	1.550	2.237	0.3	4.9
Cobalt	ug/L	0.005	5	1.012	0.636	0.408	1.780	4	0.705	0.186	0.471	0.927
Copper	ug/L	0.050	5	1.040	0.482	0.450	1.710	4	1.865	1.279	0.73	3.7
Lead	ug/L	0.010	5	0.220	0.226	0.020	0.610	4	0.458	0.492	0.12	1.17
Lithium	ug/L	0.05	5	4.48	0.44	3.77	4.90	4	9.22	2.22	6.09	11.3
Magnesium	mg/L	0.05	4	22.73	7.52	15.70	32.70	3	24.17	10.03	16.1	35.4
Manganese	ug/L	0.01	5	716.20	674.16	178.00	1840.00	4	191.28	127.85	70.2	335
Molybdenum	ug/L	0.05	5	2.14	0.81	1.12	2.98	4	2.77	1.02	1.85	4.23
Nickel	ug/L	0.05	5	3.24	1.43	1.71	5.33	4	4.60	0.26	4.23	4.81
Selenium	ug/L	0.20	5	0.26	0.15	0.10	0.40	4	0.25	0.30	0.1	0.7
Silver	ug/L	0.02	5	<0.02	N/A	<0.02	<0.02	4	<0.02	N/A	<0.02	<0.02
Sodium	ug/L	0.05	5	6.34	0.52	5.53	6.80	4	8.83	3.89	5.17	14.1
Strontium	ug/L	0.01	5	198.00	60.38	123.00	259.00	4	234.75	75.97	142	321
Thallium	ug/L	0.00	5	0.00	0.00	0.00	0.01	4	0.01	0.01	0.002	0.017
Tin	ug/L	0.01	5	0.03	0.03	0.01	0.08	4	0.02	0.01	0.005	0.02
Uranium	ug/L	0.00	5	1.05	0.36	0.68	1.58	4	1.16	0.80	0.694	2.36
Vanadium	ug/L	0.06	5	2.15	1.14	1.19	3.88	4	2.99	1.51	1.37	4.83
Zinc	ug/L	0.10	5	1.68	1.42	0.80	4.10	4	2.13	1.85	1.1	4.9
DISSOLVED METALS												
Aluminum	ug/L	0.30	5	6.72	4.07	2.50	13.00	4	7.63	6.44	2.3	15.6
Antimony	ug/L	0.01	5	0.14	0.02	0.12	0.17	4	0.23	0.08	0.136	0.316
Arsenic	ug/L	0.10	5	0.82	0.15	0.60	1.00	4	1.20	0.37	0.8	1.6
Barium	ug/L	0.02	5	177.60	38.56	124.00	210.00	4	189.50	43.76	134	238
Beryllium	ug/L	0.020	5	0.012	0.004	0.010	0.020	4	0.020	0.012	0.01	0.03
Bismuth	ug/L	0.020	5	0.020	0.014	0.010	0.040	4	0.020	0.014	0.01	0.04
Cadmium	ug/L	0.010	5	0.024	0.009	0.020	0.040	4	0.023	0.005	0.02	0.03
Calcium	mg/L	0.050	5	80.275	25.451	55.700	109.000	4	81.033	30.035	53.4	113
Chromium	ug/L	0.200	5	1.040	1.295	0.100	3.200	4	0.675	0.888	0.1	2
Cobalt	ug/L	0.005	5	0.776	0.501	0.314	1.510	4	0.445	0.235	0.212	0.677
Copper	ug/L	0.050	5	0.900	0.526	0.440	1.710	4	1.423	0.908	0.58	2.71
Lead	ug/L	0.010	5	0.042	0.044	0.005	0.110	4	0.064	0.054	0.005	0.13
Lithium	ug/L	0.050	5	3.900	0.551	3.180	4.470	4	8.243	1.909	5.46	9.77
Magnesium	mg/L	0.050	5	23.300	7.234	16.500	32.600	4	24.967	11.009	15.4	37
Manganese	ug/L	0.008	5	622.400	617.277	152.000	1670.000	4	127.623	120.477	4.39	233
Molybdenum	ug/L	0.050	5	2.102	0.864	1.000	3.000	4	2.533	1.142	1.35	4.08
Nickel	ug/L	0.050	5	2.768	1.209	1.300	4.410	4	4.008	0.385	3.6	4.53
Selenium	ug/L	0.200	5	0.220	0.130	0.100	0.400	4	0.250	0.191	0.1	0.5
Silver	ug/L	0.020	5	<0.02	N/A	<0.02	<0.02	4	<0.02	N/A	<0.02	<0.02
Strontium	ug/L	0.005	5	181.800	52.931	112.000	238.000	4	223.500	81.053	128	322
Thallium	ug/L	0.002	5	0.001	0.001	0.001	0.002	4	0.004	0.003	0.001	0.008
Tin	ug/L	0.010	5	0.014	0.015	0.005	0.040	4	0.006	0.003	0.005	0.01
Uranium	ug/L	0.002	5	0.944	0.250	0.667	1.310	4	1.081	0.802	0.596	2.28
Vanadium	ug/L	0.060	5	0.726	0.550	0.280	1.630	4	1.365	0.879	0.54	2.61
Zinc	ug/L	0.100	5	0.810	1.132	0.050	2.800	4	0.513	0.397	0.05	1

N/S = Not sampled

N/A = Non applicable

* Average, standard deviation, miniumum and maximum were calculated using 1/2 DL, for data below the DL.

Grey shading for data exceeding BC Water Quality Guidelines.

Table A 4: WAPOOSE CREEK 2003/04 Data Means - Sep. 2003 - Aug. 2004

Parameter	Unit	MDL	W2					W1				
			n	Average	Stdev	Min	Max	n	Average	Stdev	Min	Max
Field Data												
Specific Conductance	uS/cm		3	288.66667	87.52333022	191	360	4	329.25	87.16412	199	379
Temp in Stream	°C		3	10.1	5.655970297	4.6	15.9	4	9.4375	4.863705	4.4	16
Turbidity	NTU		3	40.8	26.59078788	15.1	68.2	4	140.525	124.8086	23.2	301
pH			3	8.02	0.20880613	7.88	8.26	4	8.01	0.219545	7.83	8.3
Diss. Oxygen	mg/L		1	11.8	N/A	11.8	11.8	2	10.35	2.616295	8.5	12.2
Bacteria												
E.Coli	CFU/100mL		3.00	275.00	190.92	140.00	410.00	4.00	139.50	182.2937	3	400
Enterococci	CFU/100mL		3.00	117.67	130.71	3.00	260.00	4.00	243.25	177.2256	3	430
Fecal Coliform	CFU/100mL		3.00	320.00	254.56	140.00	500.00	4.00	243.00	211.1145	2	430
Fecal Streptococci	CFU/100mL		2.00	215.00	77.78	160.00	270.00	2.00	605.00	77.78175	550	660
pH		0.1	3.00	8.23	0.06	8.20	8.30	3	8.1333333	0.057735	8.1	8.2
Colour True	Col. Unit	5	3.00	75.00	25.00	50.00	100.00	4	97.5	36.85557	50	140
Specific Conductance	uS/cm	1	3.00	290.00	83.81	198.00	362.00	3	309.66667	92.81343	203	372
Residue Nonfilterable (TSS)	mg/L	4	3.00	18.07	15.51	0.20	28.00	4	47	27.34959	16	82
Residue Filterable (TDS)	mg/L	10	3.00	224.67	53.00	182.00	284.00	4	257.5	57.44273	184	308
Turbidity	NTU	0.1	3.00	36.44	25.42	9.12	59.40	3	95.866667	96.89904	23.7	206
Total Hardness	mg/L		3.00	168.00	50.69	115.00	216.00	3	178.66667	50.64912	124	224
Diss. Hardness	mg/L		3.00	167.67	49.80	115.00	214.00	3	178.66667	53.30416	118	218
Alkalinity	mg/L	0.5	2.00	147.45	71.49	96.90	198.00	3	152.45	74.31692	99.9	205
Chloride (diss.)	mg/L	0.5	3.00	0.68	0.39	0.25	1.00	4	0.45	0.261406	0.25	0.8
Langelier Index			2.00	0.55	0.49	0.20	0.90	2	0.55	0.353553	0.3	0.8
Saturation pH	pH units		2.00	7.70	0.42	7.40	8.00	2	7.6	0.424264	7.3	7.9
Total Org. Carbon	mg/L	0.5	3.00	28.53	10.35	17.00	37.00	4	27.925	8.167568	15.7	32.7
Total Kieldahl N	mg/L		3.00	1.19	0.28	0.87	1.38	4	1.295	0.287576	0.87	1.5
Total N	mg/L	0.02	3.00	1.19	0.27	0.88	1.38	4	1.305	0.282666	0.89	1.52
Total Org. N	mg/L		3.00	1.18	0.27	0.87	1.38	4	1.2925	0.292504	0.86	1.5
Ammonia N	mg/L	0.005	3.00	0.01	0.00	0.00	0.01	4	0.00475	0.003069	0.0025	0.009
Nitrate N (diss.)	mg/L		3.00	0.00	0.00	0.001	0.01	4	0.01	N/A	0.01	0.01
Nitrate + Nitrite (N)	mg/L	0.002	3.00	0.01	0.00	0.00	0.01	4	0.01	0.009592	0.001	0.023
Nitrite N	mg/L	0.002	3.00	0.00	0.00	0.00	0.01	4	0.00425	0.002062	0.002	0.007
Ortho-Phosphorus (P)	mg/L	0.001	3.000	0.012	0.007	0.005	0.019	4	0.0115	0.008103	0.004	0.019
Phosphorus Total (P) (diss.)	mg/L	0.002	3.000	0.027	0.007	0.021	0.034	4	0.0235	0.008851	0.014	0.032

Table A 4 (cont.): WAPOOSE CREEK 2003/04 Data Means - Sep. 2003 - Aug. 2004

Parameter	Unit	MDL	W2					W1				
			n	Average	Stdev	Min	Max	n	Average	Stdev	Min	Max
TOTAL METALS												
Aluminium	ug/L	0.3	3.00	302.00	112.12	193.00	417.00	4	1169	1715.354	224	3740
Antimony	ug/L	0.005	3.00	0.19	0.12	0.09	0.32	4	0.25075	0.120461	0.088	0.367
Arsenic	ug/L	0.1	3.00	1.00	0.44	0.70	1.50	4	1.75	1.279323	0.7	3.5
Barium	ug/L	0.02	3.00	81.70	25.05	56.90	107.00	4	118.425	41.35846	60.7	157
Beryllium	ug/L	0.02	3.00	0.03	0.03	0.01	0.07	4	0.0925	0.068496	0.04	0.19
Bismuth	ug/L	0.02	3.00	0.04	0.03	0.01	0.07	4	0.0125	0.005	0.01	0.02
Cadmium	ug/L	0.01	3.00	0.08	0.02	0.06	0.10	4	0.2025	0.128938	0.08	0.35
Calcium	ug/L	0.05	3.00	47.90	15.12	31.80	61.80	4	55.65	14.95248	34.4	67.2
Chromium	ug/L	0.2	3.00	0.83	0.40	0.60	1.30	4	3.425	5.070421	0.4	11
Cobalt	ug/L	0.005	3.000	0.384	0.165	0.238	0.563	4	0.9215	0.647328	0.317	1.59
Copper	ug/L	0.05	3.00	2.16	0.73	1.32	2.68	4	3.7625	1.948904	1.48	5.53
Lead	ug/L	0.01	3.00	0.29	0.13	0.14	0.37	4	1.0675	0.88353	0.22	1.86
Lithium	ug/L	0.05	3.00	6.32	1.59	4.53	7.56	4	7.5	2.569604	4.74	10.8
Magnesium	mg/L	0.05	3.00	11.75	3.07	8.76	14.90	3	12.026667	2.923719	9.28	15.1
Manganese	ug/L	0.008	3.00	72.33	33.30	46.80	110.00	4	148.525	99.58304	41.2	242
Molybdenum	ug/L	0.05	3.00	0.95	0.66	0.21	1.47	4	1.355	0.768613	0.26	1.98
Nickel	ug/L	0.05	3.00	3.09	1.31	1.92	4.51	4	4.7475	2.555209	2.05	7.47
Selenium	ug/L	0.2	3.00	0.20	0.17	0.10	0.40	4	0.275	0.236291	0.1	0.6
Silver	ug/L	0.02	3.00	0.01	0.01	0.01	0.02	4	0.02	0.02	0.01	0.05
Sodium	ug/L	0.05	3.00	3.26	0.60	2.64	3.83	4	3.2375	0.686604	2.27	3.87
Strontium	ug/L	0.005	3.00	105.30	36.17	65.90	137.00	4	120.65	34.21827	70.6	148
Thallium	ug/L	0.002	3.00	0.01	0.00	0.01	0.01	4	0.0255	0.027934	0.008	0.067
Tin	ug/L	0.01	3.00	0.02	0.01	0.01	0.02	4	0.04	0.04761	0.01	0.11
Uranium	ug/L	0.002	3.00	0.34	0.28	0.09	0.64	4	0.584	0.386334	0.115	1.06
Vanadium	ug/L	0.06	3.00	1.87	0.39	1.62	2.32	4	6.1	7.106584	2.01	16.7
Zinc	ug/L	0.1	3.00	2.43	0.75	1.70	3.20	4	10.6	4.665476	4.2	14.9
DISSOLVED METALS												
Aluminium	ug/L	0.3	3.00	14.97	7.35	9.90	23.40	4	13.275	5.268381	9.8	21.1
Antimony	ug/L	0.005	3.00	0.16	0.10	0.07	0.27	4	0.19725	0.108091	0.082	0.34
Arsenic	ug/L	0.1	3.00	0.80	0.26	0.60	1.10	4	0.95	0.341565	0.6	1.4
Barium	ug/L	0.02	3.00	69.83	23.93	46.60	94.40	4	85.1	23.99041	50.4	104
Beryllium	ug/L	0.02	3.00	0.02	0.02	0.01	0.05	4	0.0325	0.028723	0.01	0.07
Bismuth	ug/L	0.02	3.00	0.02	0.01	0.01	0.03	4	0.01	N/A	0.01	0.01
Cadmium	ug/L	0.01	3.00	0.04	0.000000001	0.04	0.04	4	0.0425	0.009574	0.03	0.05
Calcium	mg/L	0.05	3.00	47.50	14.96	31.30	60.80	3	51.666667	16.69082	32.5	63
Chromium	ug/L	0.2	3.00	0.43	0.42	0.10	0.90	4	1.65	2.45017	0.1	5.3
Cobalt	ug/L	0.005	3.00	0.18	0.09	0.11	0.28	4	0.312	0.151598	0.13	0.499
Copper	ug/L	0.05	3.00	1.68	0.65	0.95	2.21	4	2.5725	1.138343	1.09	3.58
Lead	ug/L	0.01	3.00	0.05	0.03	0.03	0.08	4	0.07	0.031623	0.04	0.11
Lithium	ug/L	0.05	3.00	5.92	1.30	4.52	7.08	4	6.215	1.441261	4.2	7.3
Magnesium	mg/L	0.05	3.00	11.90	3.06	9.01	15.10	3	12.083333	2.88805	9.05	14.8
Manganese	ug/L	0.008	3.00	22.89	13.67	8.18	35.20	4	49.65	26.92762	10.6	69
Molybdenum	ug/L	0.05	3.00	0.73	0.46	0.20	1.02	4	1.16	0.630502	0.28	1.78
Nickel	ug/L	0.05	3.00	2.54	1.11	1.45	3.67	4	3.21	1.328106	1.62	4.44
Selenium	ug/L	0.2	3.00	0.20	0.17	0.10	0.40	4	0.25	0.238048	0.1	0.6
Silver	ug/L	0.02	3.00	0.01	N/A	0.01	0.01	4	0.01	N/A	0.01	0.01
Strontium	ug/L	0.005	3.00	97.37	31.83	63.10	126.00	4	107.45	28.52852	65.8	129
Thallium	ug/L	0.002	3.00	0.00	0.0010	0.0010	0.0030	4	0.00425	0.002217	0.002	0.007
Tin	ug/L	0.01	3.00	0.01	0.00	0.01	0.01	4	0.00625	0.0025	0.005	0.01
Uranium	ug/L	0.002	3.000	0.302	0.291	0.052	0.621	4	0.45875	0.369441	0.089	0.969
Vanadium	ug/L	0.06	3.00	0.58	0.16	0.41	0.73	4	1.0525	0.73241	0.37	2.09
Zinc	ug/L	0.1	3.00	0.58	0.49	0.05	1.00	4	2.9	2.409703	1	6.3

N/S = Not sampled

N/A = Non applicable

* Average, standard deviation, miniumum and maximum were calculated using 1/2 DL, for data were below the DL.

Grey shading indicate data exceeding BC Water Quality Guidelines.

Table A 5: BRENOT CREEK 2003/04 Data Means - Sep. 2003 - Aug. 2004

Parameter	Unit	MDL	B3					B2					B1				
			n	Average*	Stdev*	Min*	Max*	n	Average*	Stdev*	Min*	Max*	n	Average*	Stdev*	Min*	Max*
Field Data																	
Specific Conductance	uS/cm		5	540	72.8869	470	641	5	717.6	338.5902	471	1306	5	892.2	389.828	659	1581
Temp in Stream	°C		5	10.18	6.24956	0.1	15.4	5	8.5	5.666127	0.2	15.6	5	6.34	4.3747	0.2	12
Turbidity	NTU		5	28.37	21.60086	9.15	65.5	5	31.3	20.29154	12	57.4	5	542.4	428.023	85	1000
pH			5	8.352	0.291325	8.13	8.85	4	8.1	0.28717	7.68	8.33	5	8.478	0.33722	8.24	9.06
Diss. Oxygen	mg/L		3	10.2	0.818535	9.3	10.9	2	10.1	1.414214	9.1	11.1	3	12.0	0.50332	11.5	12.5
Lab Data																	
Bacteria																	
E.Coli	CFU/100mL		5	172.80	329.31	2.00	760.00	5	26.20	35.85	2.00	88.00	5	238.00	215.57	20.00	580.00
Enterococci	CFU/100mL		5	111.40	130.27	7.00	330.00	5	274.60	414.42	11.00	990.00	5	94.00	65.10	24.00	200.00
Fecal Coliform	CFU/100mL		5	209.60	328.51	4.00	780.00	5	28.00	36.67	3.00	91.00	5	269.80	205.60	29.00	580.00
Fecal Streptococci	CFU/100mL		5	230.00	141.42	130.00	330.00	5	55.50	48.79	21.00	90.00	5	460.00	494.97	110.00	810.00
pH		0.1	5	8.37	0.06	8.30	8.40	5	8.40	0.10	8.30	8.50	3	8.30	0.00	8.30	8.3
Colour True	Col. Unit	5	5	30.00	15.81	10.00	50.00	5	19.00	7.42	10.00	30.00	5	11.00	6.52	5.00	20
Specific Conductance	uS/cm	1	5	494.67	35.30	457.00	527.00	5	501.67	40.67	459.00	540.00	5	654.00	23.64	637.00	681
Residue Nonfilterable (TSS)	mg/L	4	5	16.80	17.68	2.00	47.00	5	27.60	35.70	2.00	88.00	5	1005.60	883.80	117.00	2440
Residue Filterable (TDS)	mg/L	10	5	320.40	52.16	256.00	392.00	5	327.60	46.38	264.00	382.00	5	418.00	43.01	370.00	476
Turbidity	NTU	0.1	3	22.57	21.19	7.50	46.80	3	20.57	18.37	7.62	41.60	3	389.67	273.99	227.00	706
Total Hardness	mg/L		4	310.00	55.85	255.00	387.00	4	309.75	50.20	261.00	380.00	4	517.75	135.96	338.00	659
Diss. Hardness	mg/L		4	317.25	53.59	272.00	391.00	4	322.00	54.80	270.00	398.00	4	400.00	40.55	371.00	457
Alkalinity	mg/L	0.500	2	292.000	16.971	280.000	304.000	2	296.500	21.920	281.000	312.000	2	344.500	19.092	331.000	358
Chloride (diss.)	mg/L	0.500	5	0.700	0.141	0.600	0.900	5	0.750	0.208	0.500	1.000	5	0.860	0.241	0.600	1.2
Langelier Index			2	1.250	0.071	1.200	1.300	2	1.350	0.071	1.300	1.400	2	1.450	0.071	1.400	1.5
Saturation pH	pH units		2	7.150	0.071	7.100	7.200	2	7.100	0.000	7.100	7.100	2	6.850	0.071	6.800	6.9
Total Org. Carbon	mg/L	0.500	5	10.640	2.066	7.100	12.300	5	9.475	2.155	6.900	12.100	5	4.420	2.146	2.700	7.8
Total Kieldahl N	mg/L		5	0.500	0.076	0.410	0.580	5	0.460	0.086	0.380	0.580	5	0.256	0.118	0.140	0.41
Total N	mg/L	0.020	5	0.510	0.075	0.430	0.590	5	0.472	0.082	0.390	0.590	5	0.282	0.122	0.150	0.44
Total Org. N	mg/L		5	0.496	0.082	0.390	0.580	5	0.460	0.086	0.380	0.580	5	0.244	0.120	0.130	0.39
Ammonia N	mg/L	0.005	5	0.007	0.009	0.003	0.023	5	<0.005	0.000	<0.005	<0.005	5	0.013	0.015	0.003	0.036
Nitrate N (diss.)	mg/L		5	0.007	0.004	0.001	0.010	5	0.007	0.004	0.001	0.010	5	0.022	0.012	0.010	0.04
Nitrate + Nitrite (N)	mg/L	0.002	5	0.008	0.007	0.003	0.020	5	0.011	0.009	0.003	0.022	5	0.026	0.012	0.012	0.043
Nitrite N	mg/L	0.002	5	0.003	0.001	0.001	0.004	5	0.004	0.002	0.002	0.007	5	0.004	0.001	0.003	0.006
Ortho-Phosphorus (P)	mg/L	0.001	5	0.004	0.002	0.002	0.007	5	0.004	0.001	0.002	0.006	5	0.005	0.004	0.001	0.01
Phosphorus Total (P) (diss.)	mg/L	0.002	5	0.008	0.002	0.006	0.009	5	0.006	0.003	0.002	0.009	5	0.006	0.004	0.001	0.012

Table A 5 (cont.): BRENOT CREEK 2003/04 Data Means - Sep. 2003 - Aug. 2004

Parameter	Unit	MDL	B3					B2					B1				
			n	Average*	Stdev*	Min*	Max*	n	Average*	Stdev*	Min*	Max*	n	Average*	Stdev*	Min*	Max*
TOTAL METALS																	
Aluminium	ug/L	0.300	5	102.860	97.265	19.900	268.000	5	83.860	128.878	13.700	312.000	5	343.400	250.363	138.000	674
Antimony	ug/L	0.005	5	0.185	0.055	0.126	0.274	5	0.188	0.068	0.123	0.301	5	0.176	0.055	0.128	0.251
Arsenic	ug/L	0.100	5	1.580	1.033	0.900	3.400	5	1.180	0.370	0.700	1.600	5	1.980	0.559	1.000	2.4
Barium	ug/L	0.020	5	249.600	38.109	225.000	317.000	5	253.000	35.574	229.000	315.000	5	166.000	38.775	101.000	205
Beryllium	ug/L	0.020	5	0.016	0.013	0.010	0.040	5	0.016	0.009	0.010	0.030	5	0.056	0.046	0.010	0.11
Bismuth	ug/L	0.020	5	0.014	0.009	0.010	0.030	5	<0.02	0.000	<0.02	<0.02	5	0.012	0.004	0.010	0.02
Cadmium	ug/L	0.010	5	0.034	0.009	0.020	0.040	5	0.032	0.013	0.020	0.050	5	0.496	0.347	0.020	0.83
Calcium	mg/L	0.050	5	80.840	13.409	65.800	100.000	5	81.460	11.757	67.200	94.400	5	110.080	30.731	71.300	147
Chromium	ug/L	0.200	5	2.660	3.555	0.100	8.800	5	0.920	1.083	0.100	2.700	5	0.620	0.638	0.100	1.7
Cobalt	ug/L	0.005	5	0.241	0.108	0.164	0.430	5	0.200	0.142	0.098	0.448	5	0.758	0.431	0.141	1.36
Copper	ug/L	0.050	5	0.970	0.228	0.660	1.280	5	0.896	0.287	0.600	1.320	5	2.986	1.865	1.240	6.1
Lead	ug/L	0.01	5	0.13	0.07	0.05	0.22	5	0.10	0.09	0.02	0.26	5	1.43	1.16	0.08	3.21
Lithium	ug/L	0.05	5	8.23	1.75	6.23	10.70	5	9.21	2.34	6.87	12.60	5	21.62	4.47	15.70	26.4
Magnesium	mg/L	0.05	5	27.35	4.77	22.00	33.40	5	27.60	5.32	22.70	35.10	5	56.73	13.29	38.90	70.9
Manganese	ug/L	0.008	5	46.94	32.04	15.50	90.50	5	33.00	19.16	11.70	57.70	5	92.15	58.74	9.75	162
Molybdenum	ug/L	0.05	5	2.23	0.65	1.71	3.28	5	2.30	0.45	1.88	2.96	5	5.96	1.12	4.34	6.99
Nickel	ug/L	0.05	5	1.89	0.67	1.22	2.99	5	1.97	0.76	1.12	2.99	5	31.86	63.82	1.22	146
Selenium	ug/L	0.2	5	0.22	0.16	0.10	0.40	5	0.48	0.40	0.10	1.00	5	0.46	0.30	0.10	0.9
Silver	ug/L	0.02	5	<0.02	0.00	<0.02	<0.02	5	<0.02	0.00	<0.02	<0.02	5	<0.02	0.00	<0.02	<0.02
Sodium	ug/L	0.05	5	4.71	0.87	3.72	6.08	5	4.70	0.77	3.94	5.98	5	10.65	1.81	7.53	11.8
Strontium	ug/L	0.005	5	209.800	28.093	176.000	239.000	5	232.400	40.476	182.000	275.000	5	498.800	77.235	389.000	575
Thallium	ug/L	0.002	5	0.004	0.003	0.001	0.008	5	0.003	0.003	0.001	0.007	5	0.019	0.006	0.012	0.024
Tin	ug/L	0.010	5	0.028	0.029	0.010	0.080	5	0.012	0.008	0.005	0.020	5	0.015	0.007	0.005	0.02
Uranium	ug/L	0.002	5	0.704	0.283	0.395	1.130	5	1.076	0.279	0.769	1.350	5	4.306	0.668	3.520	4.95
Vanadium	ug/L	0.060	5	2.198	1.344	0.760	3.920	5	1.812	1.490	0.630	4.380	5	3.628	2.603	0.790	7.71
Zinc	ug/L	0.100	5	0.680	0.652	0.050	1.600	5	0.600	0.761	0.050	1.900	5	6.200	4.656	0.800	12.8
DISSOLVED METALS																	
Aluminium	ug/L	0.300	5	2.120	1.492	0.900	3.800	5	1.760	1.498	0.500	4.000	5	3.160	2.278	1.000	6.6
Antimony	ug/L	0.005	5	0.173	0.056	0.126	0.270	5	0.182	0.062	0.119	0.283	5	0.149	0.065	0.089	0.24
Arsenic	ug/L	0.100	5	0.900	0.308	0.600	1.400	5	0.820	0.205	0.600	1.000	5	1.300	0.235	1.000	1.5
Barium	ug/L	0.020	5	228.400	31.942	202.000	284.000	5	237.400	28.475	214.000	286.000	5	114.800	7.430	102.000	120
Beryllium	ug/L	0.020	5	0.014	0.009	0.010	0.030	5	0.014	0.009	0.010	0.030	5	0.014	0.009	0.010	0.03
Bismuth	ug/L	0.020	5	<0.02	0.000	<0.02	<0.02	5	<0.02	0.000	<0.02	<0.02	5	<0.02	0.000	<0.02	<0.02
Cadmium	ug/L	0.010	5	0.008	0.003	0.005	0.010	5	0.007	0.003	0.005	0.010	5	0.013	0.007	0.005	0.02
Calcium	mg/L	0.050	5	78.725	12.234	69.900	96.000	5	81.050	12.665	69.400	98.900	5	77.275	7.935	69.300	88
Chromium	ug/L	0.200	5	2.160	3.785	0.100	8.900	5	0.580	0.746	0.100	1.900	5	0.340	0.483	0.100	1.2
Cobalt	ug/L	0.005	5	0.165	0.092	0.110	0.329	5	0.142	0.122	0.075	0.359	5	0.168	0.106	0.091	0.352
Copper	ug/L	0.050	5	0.776	0.186	0.490	0.990	5	0.758	0.238	0.430	1.020	5	0.780	0.380	0.440	1.26
Lead	ug/L	0.010	5	0.011	0.011	0.005	0.030	5	0.010	0.011	0.005	0.030	5	0.010	0.011	0.005	0.03
Lithium	ug/L	0.050	5	7.918	1.691	6.330	10.400	5	8.724	2.092	6.570	11.600	5	20.620	3.981	16.300	25.5
Magnesium	mg/L	0.050	5	29.275	5.720	23.600	36.800	5	29.025	5.613	23.500	36.600	5	50.325	7.305	43.000	57.7
Manganese	ug/L	0.008	5	28.726	26.344	2.770	65.900	5	14.684	20.653	1.150	50.800	5	8.280	6.778	1.310	19.3
Molybdenum	ug/L	0.050	5	2.196	0.647	1.530	3.220	5	2.264	0.359	1.910	2.750	5	5.544	0.774	4.680	6.17
Nickel	ug/L	0.050	5	1.538	0.556	1.000	2.450	5	1.736	0.789	0.800	2.700	5	1.558	0.913	0.200	2.45
Selenium	ug/L	0.200	5	0.260	0.152	0.100	0.400	5	0.400	0.332	0.100	0.800	5	0.480	0.249	0.100	0.7
Silver	ug/L	0.020	5	<0.02	0.000	<0.02	<0.02	5	<0.02	0.000	<0.02	<0.02	5	<0.02	0.000	<0.02	<0.02
Strontium	ug/L	0.005	5	202.800	33.275	169.000	237.000	5	222.000	35.882	179.000	258.000	5	443.000	52.901	389.000	508
Thallium	ug/L	0.002	5	0.002	0.001	0.001	0.003	5	0.002	0.001	0.001	0.003	5	0.008	0.003	0.003	0.011
Tin	ug/L	0.010	5	0.006	0.002	0.005	0.010	5	0.007	0.003	0.005	0.010	5	<0.01	0.000	<0.01	<0.01
Uranium	ug/L	0.002	5	0.679	0.281	0.396	1.080	5	1.032	0.270	0.727	1.350	5	4.114	0.673	3.140	4.86
Vanadium	ug/L	0.060	5	1.436	1.473	0.240	3.300	5	0.730	0.736	0.250	2.030	5	1.416	1.948	0.370	4.89
Zinc	ug/L	0.100	5	0.240	0.227	0.050	0.600	5	0.150	0.154	0.050	0.400	5	0.240	0.192	0.050	0.5

Table A 5 (cont.): BRENOT CREEK 2003/04 Data Means - Sep. 2003 - Aug. 2004

Parameter	Unit	MDL	B3					B2					B1				
			n	Average*	Stdev*	Min*	Max*	n	Average*	Stdev*	Min*	Max*	n	Average*	Stdev*	Min*	Max*
HYDROCARBONS																	
TEH Extraction-Water																	
VH C6-C10	mg/L	0.100	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	<0.1	0.000	<0.1	<0.1
EPHw C10-19	mg/L	0.100	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	<0.1	0.000	<0.1	<0.1
LEPHw	mg/L		0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	<0.1	0.000	<0.1	<0.1
EPHw C19-32	mg/L	0.100	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	<0.1	0.000	<0.1	<0.1
HEPHw	mg/L		0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	<0.1	0.000	<0.1	<0.1
VPHw	mg/L		0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	<0.1	0.000	<0.1	<0.1
PAH Extraction-Water																	
Acenaphtene	mg/L	0.000	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	< 0.00001	0.000	0.000	0.000
Acenaphtylene	mg/L	0.000	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	< 0.00001	0.000	0.000	0.000
Acridine	mg/L	0.00005	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	< 0.00005	0.00	0.00	0.00
Anthracene	mg/L	0.00001	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	< 0.00001	0.00	0.00	0.00
Benzo(a)anthracene	mg/L	0.00001	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	< 0.00001	0.00	0.00	0.00
Benzo(b+j)flouranthe	mg/L	0.00001	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	< 0.00001	0.00	0.00	0.00
Benzo(k)fluoranthene	mg/L	0.00001	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	< 0.00001	0.00	0.00	0.00
Benzo(g,h,i)perylene	mg/L	0.00002	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	< 0.00002	0.00	0.00	0.00
Benzo(a)pyrene	mg/L	0.00001	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	< 0.00001	0.00	0.00	0.00
Chrysene	mg/L	0.00001	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	< 0.00001	0.00	0.00	0.00
Dibenz(a,h)anthracene	mg/L	0.00002	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	< 0.00002	0.00	0.00	0.00
Fluoranthene	mg/L	0.00001	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	0.00	0.00	<0.00001	0.00
Fluorene	mg/L	0.00001	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	< 0.00001	0.00	0.00	0.00
Indeno(1,2,3-c,d)pyrene	mg/L	0.00002	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	< 0.00002	0.00	0.00	0.00
2-Methylnaphthalene	mg/L	0.00001	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	0.00	0.00	0.00001	0.00
Naphthalene	mg/L	0.00001	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	0.00	0.00	0.00001	0.00
Phenanthrene	mg/L	0.00001	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	0.00	0.00	0.00001	0.00
Pyrene	mg/L	0.00001	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	0.00	0.00	0.00001	0.00
Quinoline	mg/L	0.00005	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	<0.00005	0.00	<0.00005	<0.00005
Total PAHs (calc)	mg/L		0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	0.00	0.00	0.00013	0.00
Total Low MW PAH's	mg/L		0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	0.00	0.00	0.00003	0.00
Total High MW PAH's	mg/L		0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	0.00	0.00	0.00001	0.00
Volatile Organic-MAH																	
Benzene	ug/L	0.5	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	<0.5	0.00	<0.5	<0.5
Ethylbenzene	ug/L	0.5	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	<0.5	0.00	<0.5	<0.5
Styrene	ug/L	0.4	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	<0.4	0.00	<0.4	<0.4
Toluene	ug/L	0.5	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	<0.5	0.00	<0.5	<0.5
Xylenes	ug/L	0.5	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	<0.5	0.00	<0.5	<0.5
m,p - Xylene	ug/L	0.5	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	<0.5	0.00	<0.5	<0.5
o - Xylene	ug/L	0.5	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	<0.5	0.00	<0.5	<0.5
Methyl t-butyl ether	ug/L	4	0	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	5	<4	0.00	<4	<4

N/S = Not sampled

N/A = Non applicable

* Average, standard deviation, miniumum and maximum were calculated using 1/2 DL, for data below the DL.

Grey shading for data exceeding BC Water Quality Guidelines.

Table A 6: PORTAGE CREEK 2003/04 Data Means - Sep. 2003 - Aug. 2004

Parameter	Unit	MDL	P3N					P2					P1				
			n	Average*	Stdev*	Min*	Max*	n	Average*	Stdev*	Min*	Max*	n	Average*	Stdev*	Min*	Max*
Field Data																	
Specific Conductance	uS/cm		3	542	55.506756	478	577	2	694	19.79899	680	708	5	531	16.80774	511	547
Temp in Stream	^{o}C		3	7.3	7.7485483	0.1	15.5	2	8.25	11.52584	0.1	16.4	5	7.86	5.107152	0.1	12
Turbidity	NTU		3	11.393333	12.403041	3.67	25.7	2	24.35	1.909188	23	25.7	5	62.248	96.17545	5.94	232
pH			3	7.9766667	0.1530795	7.8	8.07	2	7.705	0.275772	7.51	7.9	3	8.47	0.17	8.3	8.64
Diss. Oxygen	mg/L		1	10.3	N/A	10.3	10.3	2	4.375	3.924443	1.6	7.15	3	11.63333	1.550269	10.1	13.2
Lab Data																	
Bacteria																	
E.Coli	CFU/100mL		3	6.3333333	6.6583281	2	14	2	34.25	47.72971	0.5	68	5	127	116.1335	2	260
Enterococci	CFU/100mL		3	570.5	978.18978	0.5	1700	2	4	4.242641	1	7	5	91.8	109.6276	3	270
Fecal Coliform	CFU/100mL		3	6.6666667	5.6862407	2	13	2	50	65.05382	4	96	5	308.6	455.4479	4	1100
Fecal Streptococci	CFU/100mL		1	1700	N/A	1700	1700	0	N/A	N/A	N/A	N/A	2	465	233.3452	300	630
pH		0.1	3	8.25	0.0707107	8.2	8.3	0	N/A	N/A	N/A	N/A	5	8.466667	0.057735	8.4	8.5
Colour True	Col. Unit	5	3	24.166667	31.258332	2.5	60	2	31.25	40.65864	2.5	60	5	29	11.40175	15	40
Specific Conductance	uS/cm	1	3	515	87.681241	453	577	0	N/A	N/A	N/A	N/A	5	530.6667	30.92464	495	550
Residue Nonfilterable (TSS)	mg/L	4	3	6.3333333	7.5055535	2	15	2	10	1.414214	9	11	5	47	70.23888	2	169
Residue Filterable (TDS)	mg/L	10	3	326.66667	37.434387	284	354	2	433	35.35534	408	458	5	323.6	16.456	302	342
Turbidity	NTU	0.1	3	8.975	8.8034794	2.75	15.2	0	N/A	N/A	N/A	N/A	3	87.76667	101.1615	19.6	204
Total Hardness	mg/L		3	314.66667	57.178084	252	364	1	481	N/A	481	481	4	319.5	11.26943	308	335
Dissolved Hardness	mg/L		3	319.33333	41.295682	272	348	1	466	N/A	466	466	4	317	18.49324	293	338
Alkalinity	mg/L	0.5	1	323	N/A	323	323	0	N/A	N/A	0	0	2	305	9.899495	298	312
Chloride (diss.)	mg/L	0.5	3	0.7666667	0.057735	0.7	0.8	2	0.425	0.247487	0.25	0.6	5	1.84	1.628803	0.6	4.7
Langelier Index			1	1.3	N/A	1.3	1.3	0	N/A	N/A	N/A	N/A	2	1.4	0	1.4	1.4
Saturation pH	pH units		1	7	N/A	7	7	0	N/A	N/A	N/A	N/A	2	7.1	0	7.1	7.1
Total Org. Carbon	mg/L	0.5	3	11.933333	5.3594154	8.4	18.1	2	13.5	1.979899	12.1	14.9	5	8.14	5.494816	0.5	14.6
Total Kieldahl N	mg/L		3	0.5133333	0.2227854	0.37	0.77	2	0.935	0.007071	0.93	0.94	5	0.356	0.159781	0.17	0.51
Total N	mg/L	0.02	3	0.5233333	0.2311565	0.38	0.79	2	0.965	0.021213	0.95	0.98	5	0.412	0.178241	0.21	0.6
Total Org. N	mg/L		3	0.5133333	0.2227854	0.37	0.77	2	0.7	0.070711	0.65	0.75	5	0.348	0.16285	0.15	0.51
Ammonia N	mg/L	0.005	3	0.0025	4.116E-11	0.0025	0.0025	2	0.238	0.083439	0.179	0.297	5	0.0094	0.007821	0.0025	0.021
Nitrate N (diss.)	mg/L		3	0.0113333	0.0023094	0.01	0.014	2	0.02	0.014142	0.01	0.03	5	0.0526	0.041639	0.01	0.12
Nitrate + Nitrite (N)	mg/L	0.002	3	0.0113333	0.0090738	0.001	0.018	2	0.027	0.028284	0.007	0.047	5	0.0558	0.041179	0.011	0.121
Nitrite N	mg/L	0.002	3	0.0036667	0.0015275	0.002	0.005	2	0.0095	0.007778	0.004	0.015	5	0.0036	0.000894	0.003	0.005
Ortho-Phosphorus (P)	mg/L	0.001	3	0.0056667	0.0040415	0.002	0.01	2	0.005	0.001414	0.004	0.006	5	0.0041	0.00309	0.0005	0.009
Phosphorus Total (P) (diss.)	mg/L	0.002	3	0.0123333	0.0083865	0.007	0.022	2	0.0075	0.002121	0.006	0.009	5	0.0062	0.00249	0.004	0.01

Table A 6 (cont.): PORTAGE CREEK 2003/04 Data Means - Sep. 2003 - Aug. 2004

Parameter	Unit	MDL	P3N					P2					P1				
			n	Average*	Stdev*	Min*	Max*	n	Average*	Stdev*	Min*	Max*	n	Average*	Stdev*	Min*	Max*
TOTAL METALS																	
Aluminum	ug/L	0.3	3	98.866667	123.14667	24.1	241	2	47.2	44.12346	16	78.4	5	293.8	512.3368	50.8	1210
Antimony	ug/L	0.005	3	0.13	0.008	0.122	0.138	2	0.146	0.097581	0.077	0.215	5	0.1866	0.092481	0.092	0.316
Arsenic	ug/L	0.1	3	0.6666667	0.4041452	0.3	1.1	2	4.3	0.989949	3.6	5	5	1.64	0.427785	1	2.2
Barium	ug/L	0.02	3	227.66667	30.664855	208	263	2	400.5	30.40559	379	422	5	221.8	21.25324	195	250
Beryllium	ug/L	0.02	3	0.01	1.646E-10	0.01	0.01	2	0.015	0.007071	0.01	0.02	5	0.02	0.017321	0.01	0.05
Bismuth	ug/L	0.02	3	0.01	1.646E-10	0.01	0.01	2	0.01	0	0.01	0.01	5	0.014	0.008944	0.01	0.03
Cadmium	ug/L	0.01	3	0.0233333	0.0057735	0.02	0.03	2	0.03	0.014142	0.02	0.04	5	0.078	0.039623	0.03	0.13
Calcium	ug/L	0.05	3	86.133333	16.425691	68.5	101	2	117.5	23.33452	101	134	5	79.82	3.803551	74.4	84.7
Chromium	ug/L	0.2	3	1.2	1.4933185	0.1	2.9	2	1.6	1.555635	0.5	2.7	5	1.2	1.962142	0.1	4.7
Cobalt	ug/L	0.005	3	0.121	0.0962341	0.016	0.205	2	0.6455	0.324562	0.416	0.875	5	0.204	0.155052	0.008	0.431
Copper	ug/L	0.05	3	0.5866667	0.1844813	0.43	0.79	2	0.48	0.339411	0.24	0.72	5	1.378	0.775158	0.52	2.44
Lead	ug/L	0.01	3	0.0833333	0.061101	0.03	0.15	2	0.16	0.127279	0.07	0.25	5	0.266	0.239019	0.03	0.64
Lithium	ug/L	0.05	3	5.9566667	0.5904518	5.38	6.56	2	8.755	0.643467	8.3	9.21	5	7.486	0.521852	6.83	8.1
Magnesium	mg/L	0.05	3	24.2	3.9509493	19.7	27.1	1	35.5	N/A	35.5	35.5	5	28.3	1.416569	26.9	30
Manganese	ug/L	0.008	3	23.2	17.991943	8.6	43.3	2	431	465.2763	102	760	5	26.38	9.266984	16.1	34.8
Molybdenum	ug/L	0.05	3	0.97	0.0781025	0.92	1.06	2	2.92	1.046518	2.18	3.66	5	7.44	1.740101	5.66	9.97
Nickel	ug/L	0.05	3	0.9233333	0.7739724	0.07	1.58	2	0.5625	0.76014	0.025	1.1	5	1.387	0.967404	0.025	2.34
Selenium	ug/L	0.2	3	0.2	0.1732051	0.1	0.4	2	0.25	0.212132	0.1	0.4	5	0.42	0.277489	0.2	0.9
Silver	ug/L	0.02	3	0.01	1.646E-10	0.01	0.01	2	0.01	0	0.01	0.01	5	0.012	0.004472	0.01	0.02
Sodium	ug/L	0.05	3	2.8066667	0.5253887	2.33	3.37	2	3.035	0.13435	2.94	3.13	5	5.726	0.835153	4.76	6.82
Strotium	ug/L	0.005	3	151.66667	22.744963	133	177	2	300.5	9.192388	294	307	5	314.2	27.30751	284	343
Thallium	ug/L	0.002	3	0.0023333	0.0011547	0.001	0.003	2	0.001	0	0.001	0.001	5	0.011	0.011662	0.001	0.03
Tin	ug/L	0.01	3	0.0116667	0.0076376	0.005	0.02	2	0.03	0.014142	0.02	0.04	5	0.023	0.017889	0.005	0.05
Uranium	ug/L	0.002	3	0.7313333	0.1770603	0.557	0.911	2	0.2675	0.026163	0.249	0.286	5	1.36	0.328862	1.09	1.9
Vanadium	ug/L	0.06	3	1.7733333	1.3796135	0.74	3.34	2	3.29	2.390021	1.6	4.98	5	2.45	1.659397	1.32	5.24
Zinc	ug/L	0.1	3	1.55	1.6393596	0.05	3.3	2	1.6	0.282843	1.4	1.8	5	1.52	2.239866	0.2	5.5
DISSOLVED METALS																	
Aluminum	ug/L	0.3	3	3.4333333	1.8583146	1.3	4.7	2	1.15	0.636396	0.7	1.6	5	2.64	1.08074	1.3	3.9
Antimony	ug/L	0.005	3	0.129	0.0087178	0.123	0.139	2	0.138	0.100409	0.067	0.209	5	0.1682	0.074496	0.083	0.261
Arsenic	ug/L	0.1	3	0.6333333	0.3511885	0.3	1	2	2.15	0.919239	1.5	2.8	5	1.24	0.304959	0.8	1.6
Barium	ug/L	0.02	3	223.66667	23.692474	209	251	2	347.5	16.26346	336	359	5	205.4	24.40901	179	240
Beryllium	ug/L	0.02	3	0.0133333	0.0057735	0.01	0.02	2	0.01	0	0.01	0.01	5	0.01	0	0.01	0.01
Bismuth	ug/L	0.02	3	0.01	1.646E-10	0.01	0.01	2	0.025	0.021213	0.01	0.04	5	0.012	0.004472	0.01	0.02
Cadmium	ug/L	0.01	3	0.02	0.01	0.01	0.03	2	0.01	0	0.01	0.01	5	0.026	0.005477	0.02	0.03
Calcium	mg/L	0.05	3	85.5	10.025468	74	92.4	1	124	N/A	124	124	5	78.95	5.532028	72.6	86.1
Chromium	ug/L	0.2	3	0.8333333	0.7505553	0.1	1.6	2	0.75	0.919239	0.1	1.4	5	0.94	1.613382	0.1	3.8
Cobalt	ug/L	0.005	3	0.0886667	0.0917624	0.009	0.189	2	0.524	0.387495	0.25	0.798	5	0.0755	0.044323	0.0025	0.118
Copper	ug/L	0.05	3	0.4733333	0.1059874	0.36	0.57	2	0.26	0.226274	0.1	0.42	5	0.952	0.410999	0.46	1.39
Lead	ug/L	0.01	3	0.0183333	0.0125831	0.005	0.03	2	<0.01	N/A	<0.01	<0.01	5	0.011	0.01084	0.005	0.03
Lithium	ug/L	0.05	3	5.8133333	0.9779741	4.98	6.89	2	8.33	0.098995	8.26	8.4	5	6.962	0.460456	6.4	7.5
Magnesium	mg/L	0.05	3	25.766667	3.9004273	21.3	28.5	1	28	N/A	28	28	5	29.1	1.383233	27.1	30.2
Manganese	ug/L	0.008	3	17.576667	12.44872	7.83	31.6	2	373.15	457.9931	49.3	697	5	11.044	4.538208	6.33	16.3
Molybdenum	ug/L	0.05	3	1.0166667	0.0378594	0.99	1.06	2	2.745	0.982878	2.05	3.44	5	7.042	1.415228	5.45	9.18
Nickel	ug/L	0.05	3	0.7283333	0.6662645	0.025	1.35	2	0.4125	0.548008	0.025	0.8	5	0.903	0.655721	0.025	1.48
Selenium	ug/L	0.2	3	0.3	0.2645751	0.1	0.6	2	0.1	0	0.1	0.1	5	0.4	0.4	0.1	1.1
Silver	ug/L	0.02	3	0.01	1.646E-10	0.01	0.01	2	0.01	0	0.01	0.01	5	0.01	0	0.01	0.01
Strontium	ug/L	0.005	3	148.66667	18.502252	137	170	2	284.5	13.43503	275	294	5	300.2	33.31966	262	344
Thallium	ug/L	0.002	3	0.0013333	0.0005774	0.001	0.002	2	0.001	0	0.001	0.001	5	0.0054	0.004159	0.001	0.01
Tin	ug/L	0.01	3	0.0083333	0.0028868	0.005	0.01	2	0.0175	0.017678	0.005	0.03	5	0.008	0.006708	0.005	0.02
Uranium	ug/L	0.002	3	0.735	0.1920703	0.546	0.93	2	0.2535	0.012021	0.245	0.262	5	1.284	0.286932	1	1.74
Vanadium	ug/L	0.06	3	1.2466667	1.3638671	0.4	2.82	2	2.52	1.173797	1.69	3.35	5	1.036	0.726932	0.5	2.31
Zinc	ug/L	0.1	3	1.15	1.4551632	0.05	2.8	2	0.7	0.282843	0.5	0.9	5	0.22	0.160468	0.05	0.4

Table A 6 (cont.): PORTAGE CREEK 2003/04 Data Means - Sep. 2003 - Aug. 2004

Parameter	Unit	MDL	P3N					P2					P1				
			n	Average*	Stdev*	Min*	Max*	n	Average*	Stdev*	Min*	Max*	n	Average*	Stdev*	Min*	Max*
HYDROCARBONS																	
TEH Extraction-Water																	
VH C6-C10	mg/L	0.1	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	4	<0.1	N/A	<0.1	<0.1
EPHw C10-19	mg/L	0.1	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.1	N/A	<0.1	<0.1
LEPHw	mg/L		0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.1	N/A	<0.1	<0.1
EPHw C19-32	mg/L	0.1	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	0.06	0.022361	0.05	0.1
HEPHw	mg/L		0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	0.058	0.023875	0.04	0.1
VPHw	mg/L		0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	4	<0.1	N/A	<0.1	<0.1
PAH Extraction-Water																	
Acenaphtene	mg/L	1E-05	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00001	N/A	<0.00001	<0.00001
Acenaphtylene	mg/L	1E-05	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00001	N/A	<0.00001	<0.00001
Acridine	mg/L	5E-05	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00005	N/A	<0.00005	<0.00005
Anthracene	mg/L	1E-05	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00001	N/A	<0.00001	<0.00001
Benzo(a)anthracene	mg/L	1E-05	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00001	N/A	<0.00001	<0.00001
Benzo(b+j)flouranthe	mg/L	1E-05	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00001	N/A	<0.00001	<0.00001
Benzo(k)fluoranthene	mg/L	1E-05	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00001	N/A	<0.00001	<0.00001
Benzo(g,h,i)perylene	mg/L	2E-05	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00002	N/A	<0.00002	<0.00002
Benzo(a)pyrene	mg/L	1E-05	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00001	N/A	<0.00001	<0.00001
Chrysene	mg/L	1E-05	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00001	N/A	<0.00001	<0.00001
Dibenz(a,h)anthracene	mg/L	2E-05	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00002	N/A	<0.00002	<0.00002
Fluoranthene	mg/L	1E-05	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00001	N/A	<0.00001	<0.00001
Fluorene	mg/L	1E-05	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00001	N/A	<0.00001	<0.00001
Indeno(1,2,3-c,d)pyrene	mg/L	2E-05	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00002	N/A	<0.00002	<0.00002
2-Methylnaphthalene	mg/L	1E-05	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	0.000006	0.000002	0.000005	0.00001
Naphthalene	mg/L	1E-05	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00001	N/A	<0.00001	<0.00001
Phenanthrene	mg/L	1E-05	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	0.000008	0.000007	0.000005	0.00002
Pyrene	mg/L	1E-05	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00001	N/A	<0.00001	<0.00001
Quinoline	mg/L	5E-05	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00005	N/A	<0.00005	<0.00005
Total PAHs (calc)	mg/L		0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00005	N/A	<0.00005	<0.00005
Total Low MW PAH's	mg/L		0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	0.00001	0.000011	0.000005	0.00003
Total High MW PAH's	mg/L		0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.00001	N/A	<0.00001	<0.00001
Volatile Organic-MAH																	
Benzene	ug/L	0.5	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.5	N/A	<0.5	<.5
Ethylbenzene	ug/L	0.5	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.5	N/A	<0.5	<.5
Styrene	ug/L	0.4	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.4	N/A	<0.4	<0.4
Toluene	ug/L	0.5	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.5	N/A	<0.5	<.5
Xylenes	ug/L	0.5	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.5	N/A	<0.5	<.5
m,p - Xylene	ug/L	0.5	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.5	N/A	<0.5	<.5
o - Xylene	ug/L	0.5	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<0.5	N/A	<0.5	<.5
Methyl t-butyl ether	ug/L	4	0	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	5	<4	N/A	<4	<4

N/S = Not sampled

N/A = Non applicable

* Average, standard deviation, miniumum and maximum were calculated using 1/2 DL, for data below the DL.

Grey shading for data exceeding BC Water Quality Guidelines.