



Kipawa Lake Preservation Society

Kipawa Lake 2017 Water Quality Sampling Results





Figure 1. Map of Baie des Anglais (Kipawa Lake), 2017 sampling site location ($46^{\circ}48'18.00''$ N, $78^{\circ}59'00.70''$ W) indicated by black circle.

Table 1. Concentration of metals and pH of surface water collected on August 16th 2015 at 1:30 pm along the upper Kipawa River near Lake Sheffield (46°48'27.78" N, 78°31'00.18" W), October 4th 2015 at approximately 11 am at Red Pine Chutes (46°50'23.45" N, 78°36'45.70" W) and November 16th 2017 at approximately 10 am at Kipawa (Baie des Anglais; 46°48'18.00" N, 78°59'00.70" W). Water samples were 'grab' samples collected at the surface. Water samples were transported to Testmark Laboratories in Garson ON within 48 hours of collection for analysis. MDL (Minimum Detection Limit) indicates the minimal level detected by the test method used. Health Canada (2014) MAC (Maximum Allowable Concentration) for drinking water, Ontario PWQOs (Provincial Water Quality Objectives; Ontario Ministry of Environment and Energy 1994) and Quebec Standards for the protection of aquatic life (Gouvernement du Québec 2015) are provided as a standard of comparison. Quebec guidelines include levels that result in chronic and acute toxicity as well as the level permitted for release via effluent. Parameters outside of the established guidelines are indicated in bold text.

Parameter	Units	MDL	Health Canada drinking water MAC	Ontario PWQOs	Protection of aquatic life Quebec			Lake Sheffield	Red Pine Chutes			Kipawa (Baie Des Anglais)
					Chronic toxicity	Acute toxicity	Permitted in effluent		1	2	3	
Iron (II)	mg	0.2	-	-	-	-	-	<0.2	0.22	<0.	<0.2	0.32
Iron (III)	mg	0.2	-	-	-	-	-	<0.2	<0.2	0.2	0.25	<0.2
Total Iron	µg/	20	-	300	1300	3400	6900	119	247	259	252	<20
Iron	µg/	20	-	300	1300	3400	6900	135	226	232	221	<20
Aluminum	µg/	1	-	75	87	750	1500	145	61	62.	60.1	53.2
Antimony	µg/	0.5	6	20	240	1100	2300	0.64	<0.5	<0.	<0.5	<0.5
Arsenic	µg/	1	10	5	150	340	680	<1	<1	<1	<1	<1
Barium	µg/	1	1000	-	38	110	220	9	9.65	9.5	9.6	9.5
Beryllium	µg/	0.5	-	11	0.0071	0.064	0.13	<0.5	<0.5	<0.	<0.5	<0.5
Bismuth	µg/	1	-	-	-	-	-	<1	<1	<1	<1	<1
Boron	µg/	2	5000	200	5000	28000	55000	5.9	4.35	4.1	3.6	<2
Cadmium	µg/	0.1	5	0.1	0.049	0.21	0.41	<0.1	<0.1	<0.	<0.1	<0.1
Calcium	µg/	50	-	-	-	-	-	1850	1900	187	1920	1790

Cerium	µg/	1	-	-	-	-	-	<1	<1	<1	<1	<1
Cesium	µg/	1	-	-	-	-	-	<1	<1	<1	<1	<1
Chromium	µg/	1	50	1 Cr (VI)	11 Cr (VI)	16 Cr (VI)	32 Cr (VI)	<1	<1	<1	<1	<1
	L			8.9 Cr			550 Cr (III)					
Cobalt	µg/	0.1	-	0.9	100	370	740	<0.1	0.12	0.1	<0.1	<0.1
Copper	µg/	1	-	1	1.3	1.6	3.2	1.7	<1	<1	<1	<1
Europium	µg/	1	-	-	-	-	-	<1	<1	<1	<1	<1
Gallium	µg/	1	-	-	-	-	-	<1	<1	<1	<1	<1
Lanthanu	µg/	1	-	-	-	-	-	<1	<1	<1	<1	<1
Lead	µg/	0.1	10	1	0.17	4.4	8.7	0.14	0.16	0.1	0.19	<0.1
Lithium	µg/	5	-	-	440	910	1800	<5	<5	<5	<5	<5
Magnesi	µg/	4	-	-	-	-	-	433	565.	567	560	567
Manganes	µg/	1	-	-	260	550	1100	24	83.3	83.	78	1.9
Mercury	µg/	0.1	1	0.2	0.91	1.6	3.3	<0.1	<0.1	<0.	<0.1	<0.1
Molybden	µg/	1	-	40	3200	29000	58000	<0.5	<1	<1	<1	<1
Nickel	µg/	1	-	25	7.4	67	130	<1	<1	<1	<1	<1
Niobium	µg/	1	-	-	-	-	-	<1	<1	<1	<1	<1
Phosphor	µg/	50	-	-	-	-	-	-	<50	<50	<50	-
Potassium	µg/	100	-	-	-	-	-	360	475	470	480	490
Rubidium	µg/	1	-	-	-	-	-	1.2	1.4	1.4	1.4	1.5
Scandium	µg/	1	-	-	-	-	-	<1	<1	<1	<1	<1
Selenium	µg/	1	50	100	5	62	120	<1	<1	<1	<1	<1
Silicon	µg/	600	-	-	-	-	-	1370	1810	178	1800	1400
Silver	µg/	0.1	-	0.1	0.1	0.039	0.077	<0.1	<0.1	<0.	<0.1	<0.1

Sodium	µg/	100	-	-	-	-	-	820	910	920	930	760
Strontium	µg/	1	-	-	21000	40000	81000	15.5	18.1	18	17.8	16.9
Sulphur	µg/	800	-	-	-	-	-	<800	1960	950	960	840
Tellurium	µg/	1	-	-	-	-	-	<1	<1	<1	<1	<1
Thallium	µg/	0.1	-	0.3	7.2	47	94	<0.1	<0.1	<0.1	<0.1	<0.1
Thorium	µg/	1	-	-	-	-	-	<1	<1	<1	<1	<1
Tin	µg/	1	-	-	-	-	-	<1	<1	<1	<1	<1
Titanium	µg/	1	-	-	-	-	-	1.6	<1	<1	<1	<1
Tungsten	µg/	1	-	30	-	-	-	1.9	<1	<1	<1	<1
Uranium	µg/	1	20	5	14	320	640	<1	<1	<1	<1	<1
Vanadium	µg/	1	-	6	12	110	220	<0.5	<1	<1	<1	<1
Yttrium	µg/	1	-	-	-	-	-	<1	<1	<1	<1	<1
Zinc	µg/	1	5000	20	17	17	34	1.9	1.9	1.9	3.9	<1
Zirconium	µg/	1	-	4	-	-	-	<1	<1	<1	<1	2
pH	pH	-	6.5-8.5	6.5-8.5	6.5 - 9	6.5 - 9	6 - 9	6.46	6.45	6.2	6.18	-

Note: Allowable concentration of metals (Silver, Barium, Beryllium, Cadmium, Chromium III, Copper, Manganese, Nickel, Lead, and Zinc) from Quebec standards based upon hardness of 10 mg CaCO₃/L and may vary if hardness differs from this value.

'-' indicates no data available or no established guideline

Table 2. Bacteria, chlorophyll and phosphorus levels measured in surface water collected on August 16th 2015 at 1:30 pm along the upper Kipawa River near Lake Sheffield (46°48'27.78" N, 78°31'0.18" W) and on November 16th 2017 near Kipawa (Baie Des Anglais; 46°48'18.00" N, 78°59'00.70" W). Water samples were 'grab' samples collected at the surface. Water samples were transported to Testmark Laboratories in Garson ON within 48 hours of collection for analysis. MDL (Minimum Detection Limit) indicates the minimal level detected by the test method used. Health Canada (2014) MAC (Maximum Allowable Concentration) for drinking water, Ontario PWQOs (Provincial Water Quality Objectives; Ontario Ministry of Environment and Energy 1994) and Quebec Standards for the protection of aquatic life (Gouvernement du Québec 2015) are provided as a standard of comparison. Quebec guidelines include levels that result in chronic and acute toxicity as well as the level permitted for release via effluent. Parameters outside of the established guidelines are indicated in bold text.

Parameter	Units	MDL	Heath Canada drinking water MAC	Ontario PWQO	Protection of aquatic life Quebec		Lake Sheffield August 16 th 2015	Kipawa (Baie des Anglais) Nov. 16 th 2017
					Indirect contact (canoeing, fishing)	Direct contact (swimmin g)		
Dissolved Total	mg/L	0.00	-	-	-	-	<0.004	0.0038*
<i>E. coli</i>	CFU/ 100 mL	1	0	<100	-	-	2	0
Total coliforms	CFU/ 100 mL	1	-	-	<1000	<200	-	6.5
Chlorophyll a	µg/L	0.5	-	-	-	-	-	<0.5

“-“ Indicates no data available or no established guideline

* phosphorus measured on July 24th 2017 as part of the Government of Ontario Lake Partner Program, a Secchi disc reading of 6 meters was also taken on this date and at this location.

References:

Gouvernement du Québec. 2015. Critères de qualité de l'eau de surface. Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques, Gouvernement du Québec. http://www.mddelcc.gouv.qc.ca/eau/criteres_eau/index.asp

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Ontario Ministry of Environment and Energy. 1994. Water Management Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of Environment and Energy. Ministry of Environment and Energy. <https://www.ontario.ca/document/water-management-policies-guidelines-provincial-water-quality-objectives>