TUSNOVICS
INSTRUMENTS SP. Z O.O.

INVENTORY OF MAJOR IONS AND NUTRIENTS IN WATER
MATRIX REFERENCE MATERIALS

*denotes a measurand which was removed from the previous lot#

*denotes a new lot #, new RM or newly added measurand.

	AES-15 Rain Water lot 1024 Value in mg/L	BATTLE-19 River Water lot 0425 Value in mg/L	BIGMOOSE-14 Lake Water lot 1123 Value in mg/L	BURTAP-22 Drinking Water lot 1025 Value in mg/L	CRANBERRY-20 Lake Water lot 0425 Value in mg/L
Acidity to pH 8.3					
Alkalinity, Gran (as $CaCO_3$)					
Alkalinity, Total (as $CaCO_3$)		191 ± 8		92.3 ± 4.1	42.6 ± 3.7
Aluminum	0.00913 ± 0.00582		0.157 ± 0.016		
Ammonia (as N)	0.157 ± 0.012		0.0503 ± 0.0084		
Boron		0.0773 ± 0.0130			
Calcium	0.112 ± 0.022	30.6 ± 1.8	1.42 ± 0.12	34.6 ± 2.2	10.9 ± 0.8
Chloride	0.299 ± 0.034	16.8 ± 0.7		27.3 ± 1.4	34.2 ± 1.2
Colour (Hazen Units)		10.5 ± 3.3	22.3 ± 5.5		
Conductivity (µS/cm, 25°C)	5.25 ± 0.75	575 ± 18		320 ± 12	209 ± 8
Dissolved Inorganic Carbon (DIC)	0.395 ± 0.168	44.9 ± 5.0			10.1 ± 1.7
Dissolved Organic Carbon (DOC)		5.42 ± 0.65	4.17 ± 0.53		
Fluoride		0.0988 ± 0.0181	0.0445 ± 0.0083	0.693 ± 0.068	0.0710 ± 0.0159
Magnesium	0.0343 ± 0.0063	17.0 ± 1.4	0.224 ± 0.016	8.75 ± 0.74	5.15 ± 0.46
Nitrate + Nitrite (as N)	0.123 ± 0.010		0.267 ± 0.019	0.369 ± 0.037	
pH (units, 25°C)	5.58 ± 0.24	8.34 ± 0.20	6.15 ± 0.25	8.01 ± 0.32	
Potassium		4.25 ± 0.41	0.303 ± 0.030	1.68 ± 0.15	0.644 ± 0.096
Silica (as Si)			1.57 ± 0.13		
Silicates (as SiO_2)		4.15 ± 0.27		1.03 ± 0.09	2.70 ± 0.18
Sodium	0.238 ± 0.024	70.1 ± 4.8	0.674 ± 0.064	14.8 ± 1.0	
Sulfate (as SO_4)	0.558 ± 0.056	84.6 ± 4.1	2.48 ± 0.14	24.1 ± 1.3	4.63 ± 0.39
Total Kjeldahl Nitrogen (TKN)		0.337 ± 0.075			
Total Nitrogen		0.358 ± 0.078	0.444 ± 0.048	0.482 ± 0.053	0.326 ± 0.067
Hardness, Total (as $CaCO_3$)		147 ± 9			48.9 ± 3.4

	HAMIL-20.3 Lake Water lot 1024 Value in mg/L	ION-96.5 Rain Water lot 1024 Value in mg/L	LON-18 Lake Water lot 1025 Value in mg/L	MAURI-17 River Water lot 1024 Value in mg/L	SANGAMON-19 River Water lot 1024 Value in mg/L
Acidity to pH 8.3					
Alkalinity, Gran (as $CaCO_3$)				6.17 ± 0.74	
Alkalinity, Total (as $CaCO_3$)	146 ± 8	215 ± 10	94.2 ± 5.0		248 ± 11
Aluminum					
Ammonia (as N)					
Boron		0.0434 ± 0.0096	0.0232 ± 0.0037		
Calcium	58.4 ± 3.8	93.0 ± 7.0	33.7 ± 2.4	2.24 ± 0.18	60.8 ± 3.9
Chloride	119 ± 6	77.1 ± 3.5	23.4 ± 1.0	1.02 ± 0.08	62.9 ± 2.6
Colour (Hazen Units)				36.7 ± 7.5	
Conductivity (µS/cm, 25°C)	781 ± 24	817 ± 27	308 ± 12	24.2 ± 1.6	767 ± 25
Dissolved Inorganic Carbon (DIC)	34.1 ± 3.8	50.2 ± 5.1	22.1 ± 2.8	1.57 ± 0.35	57.7 ± 6.1
Dissolved Organic Carbon (DOC)			1.86 ± 0.41	5.32 ± 0.63	
Fluoride	0.271 ± 0.054	0.129 ± 0.028	0.107 ± 0.021		0.230 ± 0.046
Magnesium	16.5 ± 1.7	22.5 ± 2.1	8.86 ± 0.68	0.573 ± 0.038	38.4 ± 3.4
Nitrate + Nitrite (as N)		3.11 ± 0.26	0.331 ± 0.039		
pH (units, 25°C)	8.19 ± 0.20	8.30 ± 0.19	8.10 ± 0.21	6.87 ± 0.28	8.33 ± 0.30
Potassium	4.91 ± 0.44	3.05 ± 0.27	1.61 ± 0.16	0.365 ± 0.032	3.62 ± 0.30
Silica (as Si)				1.91 ± 0.14	
Silicates (as SiO_2)	0.370 ± 0.046	0.351 ± 0.038	0.759 ± 0.063		7.29 ± 0.45
Sodium	71.6 ± 5.3	44.8 ± 3.0	13.9 ± 0.9	1.55 ± 0.11	44.5 ± 2.7
Sulfate (as SO_4)	51.1 ± 2.7	88.8 ± 5.1	23.9 ± 1.1	2.03 ± 0.15	69.9 ± 4.0
Total Kjeldahl Nitrogen (TKN)			121 ± 8		
Total Nitrogen	3.13 ± 0.30	3.44 ± 0.34		0.222 ± 0.040	
Hardness, Total (as $CaCO_3$)	215 ± 15	325 ± 19	0.464 ± 0.062		311 ± 19

All values are in mg/L, unless otherwise specified

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	MISSIPPI-14 River Water lot 1024			ONTARIO-12 Lake Water lot 1024			PERADE-17 River Water lot 1024			RAIN-12 Rain Water lot 0425			SUPER-19 Lake Water lot 0425					
	Value in mg/L			Value in mg/L			Value in mg/L			Value in mg/L			Value in mg/L					
Acidity to pH 8.3																			
Alkalinity, Gran (as $CaCO_3$)							9.60	±	0.87										
Alkalinity, Total (as $CaCO_3$)	115	±	6	93.3	±	5.4										43.4	±	3.8	
Aluminum							0.0828	±	0.2820	0.00910	±	0.00175							
Ammonia (as N)										0.0985	±	0.0093							
Boron	0.0203	±	0.0033	0.0257	±	0.0065													
Calcium	39.1	±	3.1	34.1	±	2.4	3.78	±	0.28	0.688	±	0.054				13.4	±	1.1	
Chloride	15.9	±	0.8	22.8	±	1.2	1.44	±	0.10	0.190	±	0.022				1.53	±	0.15	
Colour (Hazen Units)	37.7	±	8.4				36.1	±	7.8										
Conductivity (µS/cm, 25°C)	331	±	12	308	±	11	33.5	±	2.2	17.3	±	1.7				99.1	±	4.0	
Dissolved Inorganic Carbon (DIC)	26.8	±	3.4	21.9	±	2.9	2.39	±	0.38										
Dissolved Organic Carbon (DOC)				1.86	±	0.38										1.32	±	0.32	
Fluoride	0.118	±	0.024	0.113	±	0.024													
Magnesium	12.6	±	1.1	8.76	±	0.60	0.632	±	0.048	0.261	±	0.018				2.88	±	0.21	
Nitrate + Nitrite (as N)	2.93	±	0.23	0.370	±	0.052	0.170	±	0.014	0.315	±	0.019				0.326	±	0.030	
pH (units, 25°C)	8.08	±	0.28	8.09	±	0.24	7.09	±	0.29	4.73	±	0.11				7.76	±	0.40	
Potassium	2.49	±	0.20	1.60	±	0.11	0.417	±	0.040	0.0434	±	0.0118				0.513	±	0.050	
Silica (as Si)							2.56	±	0.19	0.0225	±	0.0124							
Silicates (as SiO_2)	6.21	±	0.44	0.663	±	0.066										2.12	±	0.16	
Sodium	7.82	±	0.65	13.4	±	1.0	1.79	±	0.12	0.0763	±	0.0122				1.52	±	0.13	
Sulfate (as SO_4)	19.4	±	1.1	25.1	±	1.3	2.44	±	0.17	2.89	±	0.17				3.53	±	0.36	
Total Kjeldahl Nitrogen (TKN)				0.156	±	0.064													
Total Nitrogen	3.36	±	0.35	0.506	±	0.068	0.315	±	0.051	0.423	±	0.045				0.422	±	0.052	
Hardness, Total (as $CaCO_3$)	150	±	12	121	±	8										45.8	±	2.6	

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