



Appendix G.1

Surface Water Baseline Analytical Results
Completed for the Updated 2021 Beaver Dam Mine EIS

Table G.1-1: General Chemistry

Sampling Date		CCME FAL	MMER	MDMER	SW-1									
					9-Oct-14	13-Nov-14	18-Dec-14	22-Jan-15	22-Jan-15	29-Apr-15	28-May-15	30-Jun-15	29-Jul-15	24-Aug-15
Calculated Parameters	Units								SW-1D (DUP)					
Anion Sum	me/L				0.140	0.170	0.100	0.120	0.120	0.060	0.0900	0.0800	0.0800	0.100
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L				<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Calculated TDS	mg/L				14	16	10	12	13	6	8.0	9.0	10	12
Carb. Alkalinity (calc. as CaCO ₃)	mg/L				<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L				0.290	0.290	0.190	0.210	0.210	0.110	0.160	0.170	0.180	0.230
Hardness (CaCO ₃)	mg/L				5.5	5.0	3.3	3.5	3.5	1.6	2.6	2.9	3.3	4.0
Ion Balance (% Difference)	%				34.9	26.1	31.0	27.3	27.3	29.4	28.0	36.0	38.5	39.4
Langelier Index (@ 20C)	N/A				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Langelier Index (@ 4C)	N/A				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Nitrate (N)	mg/L	2.935			<0.050	0.061	<0.050	0.087	0.080	0.052	<0.050	0.062	0.051	<0.050
Saturation pH (@ 20C)	N/A				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Saturation pH (@ 4C)	N/A				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Inorganics														
Total Alkalinity (Total as CaCO ₃)	mg/L				<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Chloride (Cl)	mg/L				5.1	5.8	3.4	4.0	4.2	1.9	3.1	2.6	2.8	3.7
Colour	TCU				150	160	99	83	100	85	110	170	160	230
Nitrate + Nitrite	mg/L				<0.050	0.061	<0.050	0.087	0.080	0.052	<0.050	0.062	0.051	<0.050
Nitrite (N)	mg/L	0.06			<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾			<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.10	<0.050	<0.050	<0.050
Total Organic Carbon (C)	mg/L				13	18	8.2	7.0	7.5	6.3	7.5	12	12	11 (1)
Orthophosphate (P)	mg/L				<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	6.5-9	6-9.5	6-9.5	5.55	4.59	5.23	4.87	4.91	5.19	5.85	6.00	5.57	5.59
Reactive Silica (SiO ₂)	mg/L				2.5	3.9	2.7	3.8	4.0	1.9	1.1	2.1	2.6	3.2
Dissolved Sulphate (SO ₄)	mg/L				<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Turbidity	NTU				1.1	0.64	0.59	0.62	0.69	0.76	1.1	1.2	1.1	1.2
Conductivity	uS/cm				30	33	25	27	27	14	16	17	18	21
Total Suspended Solids					-	-	-	-	-	-	-	-	-	-
Field Parameters														
Temperature	°C				15.57	8	4.2	0.16	-	3.62	19.14	19.69	19.90	-
Conductivity	µS/cm				39	36	26.7	25	-	16	22	24	-	-
Total Dissolved Solids	g/L				0.031	0.035	-	0.029	-	-	-	-	-	-
Dissolved Oxygen	mg/L	5.5-9.5⁽²⁾			9.99	14.31	13.32	37.9	-	14.97	10.63	9.6	-	-
pH		6.5-9	6-9.5	6-9.5	3.97	2.63	4.1	2.89	-	6.48	5.25	5.49	5.3	-

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

MDMER - Federal Metal and Diamond Mining Effluent Regulations - guidelines shown represent maximum authorized concentration in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table G.1-1: General Chemistry

Sampling Date		CCME FAL	MMER	MDMER	SW-2A										
					9-Oct-14	13-Nov-14	18-Dec-14	18-Dec-14	22-Jan-15	29-Apr-15	28-May-15	28-May-15	30-Jun-15	29-Jul-15	24-Aug-15
Calculated Parameters	Units							SW-2AD (DUP)				SW-2AD (DUP)			
Anion Sum	me/L				0.150	0.180	0.100	0.110	0.130	0.0500	0.0900	0.0900	0.0800	0.0800	0.100
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L				<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Calculated TDS	mg/L				14	17	10	10	13	6.0	7.0	7.0	8.0	9.0	12
Carb. Alkalinity (calc. as CaCO ₃)	mg/L				<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L				0.290	0.300	0.180	0.180	0.210	0.110	0.140	0.140	0.160	0.180	0.220
Hardness (CaCO ₃)	mg/L				5.1	4.9	2.9	2.8	3.4	1.4	2.1	2.0	2.6	2.9	3.6
Ion Balance (% Difference)	%				31.8	25.0	28.6	24.1	23.5	37.5	21.7	21.7	33.3	38.5	37.5
Langelier Index (@ 20C)	N/A				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Langelier Index (@ 4C)	N/A				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Nitrate (N)	mg/L	2.935			0.11	0.065	<0.050	<0.050	0.079	<0.050	<0.050	<0.050	0.055	<0.050	<0.050
Saturation pH (@ 20C)	N/A				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Saturation pH (@ 4C)	N/A				NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Inorganics															
Total Alkalinity (Total as CaCO ₃)	mg/L				<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Chloride (Cl)	mg/L				5.0	6.3	3.6	3.8	4.2	1.6	3.1	3.1	2.8	2.8	3.7
Colour	TCU				160	160	100	100	110	96	120	120	170	180	230
Nitrate + Nitrite	mg/L				0.11	0.065	<0.050	<0.050	0.079	<0.050	<0.050	<0.050	0.055	<0.050	<0.050
Nitrite (N)	mg/L	0.06			<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾			<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.052	<0.050	<0.050	<0.050	0.084
Total Organic Carbon (C)	mg/L				14	19	8.9	9.1	7.4	5.5	7.9	8.1	12	13	14 (1)
Orthophosphate (P)	mg/L				<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	6.5-9	6-9.5	6-9.5	5.06	4.54	4.88	4.75	4.75	5.08	5.59	5.36	5.29	5.26	5.16
Reactive Silica (SiO ₂)	mg/L				2.7	3.9	2.8	2.7	3.7	1.9	1.1	1.1	1.9	2.6	3.2
Dissolved Sulphate (SO ₄)	mg/L				<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Turbidity	NTU				1.1	0.50	0.59	0.23	0.70	0.29	1.5	1.4	0.99	0.97	1.9
Conductivity	uS/cm				31	33	25	25	28	13	16	15	17	19	21
Total Suspended Solids					-	-	-	-	-	-	-	-	-	-	-
Field Parameters															
Temperature	°C				13.57	7.89	4.2	-	0.27	3.34	20.64	-	18.81	21.2	-
Conductivity	µS/cm				38	37	27.4	-	25	16	23	-	24	-	-
Total Dissolved Solids	g/L				0.031	0.036	-	-	0.03	-	-	-	-	-	-
Dissolved Oxygen	mg/L	5.5-9.5⁽²⁾			8.97	13.07	12.88	-	36.14	15.35	9.91	-	9.18	-	-
pH		6.5-9	6-9.5	6-9.5	4.09	3.08	3.75	-	3.56	6.53	4.63	-	4.00	4.94	-

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

MDMER - Federal Metal and Diamond Mining Effluent Regulations - guidelines shown represent maximum authorized concentration in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table G.1-1: General Chemistry

Sampling Date		CCME FAL	MMER	MDMER	SW-4A									
					9-Oct-14	13-Nov-14	13-Nov-14	18-Dec-14	22-Jan-15	29-Apr-15	28-May-15	30-Jun-15	29-Jul-15	24-Aug-15
Calculated Parameters	Units						SW-4AD (DUP)		No Sample					
Anion Sum	me/L				0.150	0.180	0.180	0.110		0.0400	0.110	0.0700	0.0700	0.110
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L				<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0
Calculated TDS	mg/L				15	16	16	11		6.0	9.0	8.0	9.0	12
Carb. Alkalinity (calc. as CaCO ₃)	mg/L				<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L				0.300	0.300	0.300	0.200		0.120	0.180	0.170	0.190	0.230
Hardness (CaCO ₃)	mg/L				5.9	5.6	5.6	3.5		1.6	3.1	3.0	3.6	3.9
Ion Balance (% Difference)	%				33.3	25.0	25.0	29.0		50.0	24.1	41.7	46.2	35.3
Langelier Index (@ 20C)	N/A				NC	NC	NC	NC		NC	NC	NC	NC	NC
Langelier Index (@ 4C)	N/A				NC	NC	NC	NC		NC	NC	NC	NC	NC
Nitrate (N)	mg/L	2.935			0.093	0.062	<0.050	<0.050		<0.050	<0.050	0.064	<0.050	<0.050
Saturation pH (@ 20C)	N/A				NC	NC	NC	NC		NC	NC	NC	NC	NC
Saturation pH (@ 4C)	N/A				NC	NC	NC	NC		NC	NC	NC	NC	NC
Inorganics														
Total Alkalinity (Total as CaCO ₃)	mg/L				<5.0	<5.0	<5.0	<5.0		<5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Chloride (Cl)	mg/L				5.0	6.2	6.4	3.9		1.3	3.8	2.2	2.6	3.7
Colour	TCU				120	130	130	88		100	130	160	170	260
Nitrate + Nitrite	mg/L				0.093	0.062	<0.050	<0.050		<0.050	<0.050	0.064	<0.050	<0.050
Nitrite (N)	mg/L	0.06			<0.010	<0.010	<0.010	<0.010		<0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾			<0.050	<0.050	<0.050	<0.050		0.073	0.092	<0.050	<0.050	<0.050
Total Organic Carbon (C)	mg/L				9.3	16	16	8.2		5.5	9.7	12	18	14 (1)
Orthophosphate (P)	mg/L				<0.010	<0.010	<0.010	<0.010		<0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	6.5-9	6-9.5	6-9.5	5.57	4.76	4.71	4.96		5.14	5.74	5.42	5.09	4.93
Reactive Silica (SiO ₂)	mg/L				3.4	3.5	3.6	2.9		2.5	1.5	2.0	2.3	3.0
Dissolved Sulphate (SO ₄)	mg/L				<2.0	<2.0	<2.0	<2.0		<2.0	<2.0	<2.0	<2.0	<2.0
Turbidity	NTU				1.4	0.68	0.65	0.80		0.38	1.4	1.3	0.81	1.0
Conductivity	uS/cm				29	31	31	24		15	18	17	19	21
Total Suspended Solids					-	-	-	-		-	-	-	-	-
Field Parameters														
Temperature	°C				10.85	8.98	-	5.1		5.98	22.45	20.72	22.4	-
Conductivity	µS/cm				34	35	-	24.9		31	27	32	-	-
Total Dissolved Solids	g/L				0.03	0.033	-	-		-	-	-	-	-
Dissolved Oxygen	mg/L	5.5-9.5⁽²⁾			7.11	10.4	-	7.82		13.48	7.88	6.8	-	-
pH		6.5-9	6-9.5	6-9.5	4.27	3.71	-	3.75		6.56	5.34	5.34	4.92	-

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

MDMER - Federal Metal and Diamond Mining Effluent Regulations - guidelines shown represent maximum authorized concentration in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table G.1-1: General Chemistry

Sampling Date		CCME FAL	MMER	MDMER	SW-5									
					9-Oct-14	9-Oct-14	13-Nov-14	18-Dec-14	22-Jan-15	29-Apr-15	28-May-15	30-Jun-15	29-Jul-15	24-Aug-15
Calculated Parameters	Units					SW-5D (DUP)								
Anion Sum	me/L				0.480	0.480	0.520	0.340	0.400	0.100	0.360	0.350	0.360	0.410
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L				14	14	11	6.1	8.0	<1.0	7.8	9.3	11	13
Calculated TDS	mg/L				28	28	33	23	27	12	21	21	21	25
Carb. Alkalinity (calc. as CaCO ₃)	mg/L				<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L				0.480	0.470	0.510	0.340	0.430	0.240	0.350	0.350	0.340	0.420
Hardness (CaCO ₃)	mg/L				16	16	17	10	14	7.3	11	12	12	15
Ion Balance (% Difference)	%				0.00	1.05	0.970	0.00	3.61	41.2	1.41	0.00	2.86	1.20
Langelier Index (@ 20C)	N/A				(2.56)	(2.54)	-2.74	-3.79	-3.17	NC	-3.22	-3.00	-2.84	-2.55
Langelier Index (@ 4C)	N/A				(2.81)	(2.80)	-2.99	-4.04	-3.42	NC	-3.48	-3.26	-3.09	-2.80
Nitrate (N)	mg/L	2.935			0.10	0.15	0.051	0.094	0.096	0.870	<0.050	0.063	<0.050	0.055
Saturation pH (@ 20C)	N/A				9.43	9.46	9.52	10.0	9.77	NC	9.84	9.76	9.66	9.50
Saturation pH (@ 4C)	N/A				9.69	9.71	9.77	10.3	10.0	NC	10.1	10.0	9.92	9.75
Inorganics														
Total Alkalinity (Total as CaCO ₃)	mg/L				14	14	11	6.1	8.0	<5.0	7.8	9.3	11	13
Dissolved Chloride (Cl)	mg/L				4.0	4.1	5.2	4.0	5.0	1.5	3.4	1.9	1.7	2.2
Colour	TCU				22	23	26	30	23	28	27	23	24	37
Nitrate + Nitrite	mg/L				0.10	0.15	0.051	0.094	0.096	0.087	<0.050	0.063	<0.050	0.055
Nitrite (N)	mg/L	0.06			<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾			<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.052	<0.050	<0.050
Total Organic Carbon (C)	mg/L				4.1	4.3	3.5	4.0	3.1	3.5	3.6	4.1	5.3	4.3
Orthophosphate (P)	mg/L				<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	<0.010	<0.010	0.011
pH	pH	6.5-9	6-9.5	6-9.5	6.88	6.92	6.78	6.23	6.60	6.14	6.62	6.76	6.83	6.95
Reactive Silica (SiO ₂)	mg/L				1.8	1.8	3.1	3.0	3.1	2.3	<0.50	0.92	0.77	2.5
Dissolved Sulphate (SO ₄)	mg/L				3.5	3.6	7.0	4.6	4.4	2.5	5.0	5.0	4.5	3.6
Turbidity	NTU				0.44	0.81	1.4	6.2	2.4	0.69	1.2	0.83	0.91	1.2
Conductivity	uS/cm				48	47	49	35	45	28	34	35	32	40
Total Suspended Solids					-	-	-	-	-	-	-	-	-	-
Field Parameters														
Temperature	°C				13.98	-	7.76	4.6	1.75	2.7	20.84	20.51	22.4	-
Conductivity	µS/cm				53	-	49	35.7	36	27	40	40	-	-
Total Dissolved Solids	g/L				0.044	-	0.048	-	0.041	-	-	-	-	-
Dissolved Oxygen	mg/L	5.5-9.5⁽²⁾			8.26	-	15.04	13.08	39.05	14.95	8.59	9.13	-	-
pH		6.5-9	6-9.5	6-9.5	5.46	-	4.61	5.94	4.8	6.67	6.56	6.34	6.39	-

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

MDMER - Federal Metal and Diamond Mining Effluent Regulations - guidelines shown represent maximum authorized concentration in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table G.1-1: General Chemistry

Sampling Date		CCME FAL	MMER	MDMER	SW-6A									
					9-Oct-14	13-Nov-14	18-Dec-14	22-Jan-15	29-Apr-15	28-May-15	30-Jun-15	30-Jun-15	29-Jul-15	24-Aug-15
Calculated Parameters	Units									No Sample		SW-6AD (DUP)		
Anion Sum	me/L				0.130	0.160	0.110	0.120		0.0700	0.0700	0.0700	0.0700	0.100
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L				<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0
Calculated TDS	mg/L				13	15	11	12		7.0	7.0	7.0	8.0	12
Carb. Alkalinity (calc. as CaCO ₃)	mg/L				<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L				0.240	0.270	0.190	0.210		0.140	0.170	0.160	0.170	0.240
Hardness (CaCO ₃)	mg/L				4.5	5.0	3.5	3.9		2.5	2.8	2.8	3.2	4.4
Ion Balance (% Difference)	%				29.7	25.6	26.7	27.3		33.3	41.7	39.1	41.7	41.2
Langelier Index (@ 20C)	N/A				NC	NC	NC	NC		NC	NC	NC	NC	NC
Langelier Index (@ 4C)	N/A				NC	NC	NC	NC		NC	NC	NC	NC	NC
Nitrate (N)	mg/L	2.935			0.080	<0.050	<0.050	<0.050		<0.050	0.053	0.059	<0.050	<0.050
Saturation pH (@ 20C)	N/A				NC	NC	NC	NC		NC	NC	NC	NC	NC
Saturation pH (@ 4C)	N/A				NC	NC	NC	NC		NC	NC	NC	NC	NC
Inorganics														
Total Alkalinity (Total as CaCO ₃)	mg/L				<5.0	<5.0	<5.0	<5.0		<5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Chloride (Cl)	mg/L				4.3	5.8	3.8	4.2		2.5	2.2	2.2	2.4	3.5
Colour	TCU				80	99	87	82		88	140	130	140	220
Nitrate + Nitrite	mg/L				0.080	<0.050	<0.050	<0.050		<0.050	0.053	0.059	<0.050	<0.050
Nitrite (N)	mg/L	0.06			<0.010	<0.010	<0.010	<0.010		<0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾			<0.050	<0.050	<0.050	<0.050		<0.050	0.22	<0.050	<0.050	<0.050
Total Organic Carbon (C)	mg/L				9.1	13	8.1	8.9		7.3	10	11	13	12 (1)
Orthophosphate (P)	mg/L				<0.010	<0.010	<0.010	<0.010		<0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	6.5-9	6-9.5	6-9.5	5.73	5.05	5.13	5.09		5.76	5.79	5.64	5.50	5.37
Reactive Silica (SiO ₂)	mg/L				3.3	3.5	2.8	3.4		1.1	1.3	1.2	1.6	2.7
Dissolved Sulphate (SO ₄)	mg/L				<2.0	<2.0	<2.0	<2.0		<2.0	<2.0	<2.0	<2.0	<2.0
Turbidity	NTU				0.30	0.69	0.42	0.44		0.43	0.65	1.1	0.49	0.54
Conductivity	uS/cm				25	28	24	25		16	16	16	16	20
Total Suspended Solids					-	-	-	-		-	-	-	-	-
Field Parameters														
Temperature	°C				10.98	8.04	4.6	1.15		17.4	18.09	-	20.4	-
Conductivity	µS/cm				31	32	25.7	23		34	22	-	-	-
Total Dissolved Solids	g/L				0.028	0.032	-	0.027		-	-	-	-	-
Dissolved Oxygen	mg/L	5.5-9.5⁽²⁾			8.88	14.49	12.01	42.34		10.89	9.17	-	-	-
pH		6.5-9	6-9.5	6-9.5	3.56	3.43	4.49	3.98		5.72	8.73	-	5.02	-

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

MDMER - Federal Metal and Diamond Mining Effluent Regulations - guidelines shown represent maximum authorized concentration in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table G.1-1: General Chemistry

Sampling Date	Units	CCME FAL	MMER	MDMER	SW-9									
					9-Oct-14	13-Nov-14	18-Dec-14	22-Jan-15	29-Apr-15	28-May-15	30-Jun-15	29-Jul-15	29-Jul-15	24-Aug-15
Calculated Parameters	Units											SW-9 (DUP)		
Anion Sum	me/L				0.310	0.200	0.140	0.180	0.100	0.170	0.130	0.250	0.250	0.150
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L				5.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	5.6	5.5	<1.0
Calculated TDS	mg/L				23	17	12	16	9	13	13	18	18	15
Carb. Alkalinity (calc. as CaCO ₃)	mg/L				<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L				0.420	0.340	0.230	0.290	0.180	0.260	0.310	0.330	0.340	0.330
Hardness (CaCO ₃)	mg/L				10	6.4	4.1	5.0	2.8	4.7	7.4	8.0	8.2	7.5
Ion Balance (% Difference)	%				15.1	25.9	24.3	23.4	28.6	20.9	40.9	13.8	15.3	37.5
Langelier Index (@ 20C)	N/A				(4.22)	NC	NC	NC	NC	NC	NC	-3.90	-3.83	NC
Langelier Index (@ 4C)	N/A				(4.47)	NC	NC	NC	NC	NC	NC	-4.16	-4.08	NC
Nitrate (N)	mg/L	2.935			0.091	<0.050	<0.050	0.051	<0.050	<0.050	<0.050	0.064	<0.050	<0.050
Saturation pH (@ 20C)	N/A				10.2	NC	NC	NC	NC	NC	NC	10.3	10.3	NC
Saturation pH (@ 4C)	N/A				10.4	NC	NC	NC	NC	NC	NC	10.5	10.5	NC
Inorganics														
Total Alkalinity (Total as CaCO ₃)	mg/L				5.8	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.6	5.5	<5.0
Dissolved Chloride (Cl)	mg/L				6.7	7.2	4.8	6.2	3.4	6.1	4.8	4.8	4.9	5.4
Colour	TCU				160	140	110	73	82	80	150	130	130	180
Nitrate + Nitrite	mg/L				0.091	<0.050	<0.050	0.051	<0.050	<0.050	<0.050	0.064	<0.050	<0.050
Nitrite (N)	mg/L	0.06			<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾			<0.050	<0.050	<0.050	<0.050	0.082	<0.050	0.14	<0.050	<0.050	<0.050
Total Organic Carbon (C)	mg/L				17	18	8.9	7.0	6.1	6.7	12	12	12	11 (1)
Orthophosphate (P)	mg/L				<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	6.5-9	6-9.5	6-9.5	5.94	4.96	5.06	5.44	5.77	6.17	6.33	6.36	6.43	6.05
Reactive Silica (SiO ₂)	mg/L				3.2	3.1	2.4	3.5	1.6	1.5	2.2	2.7	2.6	2.3
Dissolved Sulphate (SO ₄)	mg/L				<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Turbidity	NTU				1.5	0.74	0.49	0.77	1.0	0.72	0.99	1.0	0.93	0.82
Conductivity	uS/cm				39	35	27	32	19	29	29	30	30	29
Total Suspended Solids					-	-	-	-	-	-	-	-	-	-
Field Parameters														
Temperature	°C				16.03	7.84	4	0.07	2.72	20.69	18.96	20.3	-	-
Conductivity	µS/cm				47	36	28.2	26	20	34	34	-	-	-
Total Dissolved Solids	g/L				0.037	0.037	-	0.033	-	-	-	-	-	-
Dissolved Oxygen	mg/L	5.5-9.5⁽²⁾			9.82	12.85	12.34	21.9	15.27	10.89	9.9	-	-	-
pH		6.5-9	6-9.5	6-9.5	4.90	3.17	4.66	3.68	6.6	5.72	8.04	6.14	-	-

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

MDMER - Federal Metal and Diamond Mining Effluent Regulations - guidelines shown represent maximum authorized concentration in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table G.1-1: General Chemistry

Sampling Date	Units	CCME FAL	MMER	MDMER	SW-10				SW-11	SW-12
					30-Jun-15	29-Jul-15	24-Aug-15	24-Aug-15	5-Oct-17	Oct-5-2017
Calculated Parameters	Units							SW-10 (DUP)		
Anion Sum	me/L				0.450	0.580	0.770	0.780	0.150	0.130
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L				8.0	11	25	25	<1.0	<1.0
Calculated TDS	mg/L				32	39	55	55	15	13
Carb. Alkalinity (calc. as CaCO ₃)	mg/L				<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L				0.450	0.510	0.960	0.960	0.250	0.230
Hardness (CaCO ₃)	mg/L				15	20	30	30	4.9	4.1
Ion Balance (% Difference)	%				0.00	6.42	11.0	10.3	25.0	27.8
Langelier Index (@ 20C)	N/A				-3.05	-3.09	-2.67	-2.60	NC	NC
Langelier Index (@ 4C)	N/A				-3.31	-3.35	-2.92	-2.85	NC	NC
Nitrate (N)	mg/L	2.935			0.060	0.070	<0.050	<0.050	<0.050	<0.050
Saturation pH (@ 20C)	N/A				9.70	9.46	8.91	8.91	NC	NC
Saturation pH (@ 4C)	N/A				9.96	9.71	9.16	9.16	NC	NC
Inorganics										
Total Alkalinity (Total as CaCO ₃)	mg/L				8.0	11	25	25	<5.0	<5.0
Dissolved Chloride (Cl)	mg/L				2.9	2.2	2.9	3.1	5.3	4.6
Colour	TCU				9.4	<5.0	100	110	230 (1)	170 (1)
Nitrate + Nitrite	mg/L				0.060	0.070	<0.050	<0.050	<0.050	<0.050
Nitrite (N)	mg/L	0.06			<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾			<0.050	<0.050	0.10	0.19	<0.050	<0.050
Total Organic Carbon (C)	mg/L				2.1	1.8	7.6	7.4	24 (1)	23.0
Orthophosphate (P)	mg/L				<0.010	0.012	0.064	0.064	<0.010	<0.010
pH	pH	6.5-9	6-9.5	6-9.5	6.65	6.37	6.24	6.31	5.65	5.30
Reactive Silica (SiO ₂)	mg/L				4.7	6.0	7.0	7.0	3.9	3.5
Dissolved Sulphate (SO ₄)	mg/L				9.6	14	8.8	8.9	<2.0	<2.0
Turbidity	NTU				1.0	<0.10	10	8.3	1.3	0.67
Conductivity	uS/cm				46	54	75	76	34	35
Total Suspended Solids					-	-	-	-	-	-
Field Parameters										
Temperature	°C				14.14	17.6	-	-	-	-
Conductivity	µS/cm				51	-	-	-	-	-
Total Dissolved Solids	g/L				-	-	-	-	-	-
Dissolved Oxygen	mg/L	5.5-9.5⁽²⁾			11.8	-	-	-	-	-
pH		6.5-9	6-9.5	6-9.5	6.55	5.88	-	-	-	-

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

MDMER - Federal Metal and Diamond Mining Effluent Regulations - guidelines shown represent maximum authorized concentration in a grab sample (provided for reference)

(1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet).

(2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table).

- denotes not analyzed

NC = not calculated

Table G.1-1: Metals

Sampling Date	Units	CCME FAL	Tier 1 EQS	MMER	MDMER	SW-1									
						9-Oct-14	13-Nov-14	18-Dec-14	22-Jan-15	22-Jan-15	29-Apr-15	28-May-15	30-Jun-15	29-Jul-15	24-Aug-15
Metals	Units									SW-1D (DUP)					
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾	5			330	320	220	200	200	140	190	280	280	400
Total Antimony (Sb)	ug/L		20			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	5.0	5.0	1000	1000	2.7	1.5	1.3	<1.0	<1.0	<1.0	2.6	2.5	3.7	1.3
Total Barium (Ba)	ug/L		1000			5.8	5.6	3.1	3.3	3.4	1.7	2.4	3.0	3.2	4.6
Total Beryllium (Be)	ug/L		5.3			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L					<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	1500	1200			<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾	0.04			0.024	0.029	0.023	0.012	0.022	0.012	<0.010	0.028	0.014	0.022
Total Calcium (Ca)	ug/L					1200	1100	780	720	740	350	630	690	790	770
Total Chromium (Cr)	ug/L					<1.0	<1.0	<1.0	1.6	<1.0	<1.0	3.0	<1.0	<1.0	<1.0
Total Cobalt (Co)	ug/L		10			0.51	0.52	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.53
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	2	600	600	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Iron (Fe)	ug/L	300	300			670	630	330	350	340	240	360	580	750	1000
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	1	400	400	0.51	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.54	<0.50	0.57
Total Magnesium (Mg)	ug/L					590	560	330	400	410	170	240	290	310	420
Total Manganese (Mn)	ug/L		820			79	68	41	51	53	27	31	37	43	58
Total Mercury (Hg)	ug/L	0.026				<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	0.015	<0.013	<0.013	0.032
Total Molybdenum (Mo)	ug/L	73	73			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	25	1000	1000	<2.0	<2.0	<2.0	<2.0	2.6	<2.0	<2.0	<2.0	<2.0	<2.0
Total Phosphorus (P)	ug/L					<100	<100	<100	<100	<100	<100	<100	150	170	140
Total Potassium (K)	ug/L					570	550	380	380	370	330	340	170	210	170
Total Selenium (Se)	ug/L	1	1			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Silver (Ag)	ug/L	0.1	0.25			<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L					3100	3000	2100	2300	2400	1200	1800	1900	1900	2300
Total Strontium (Sr)	ug/L		21000			11.0	10	5.8	6.3	6.6	2.9	4.6	5.9	6.3	7.4
Total Thallium (Tl)	ug/L	0.8	0.8			<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L					<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L					3.8	3.2	3.3	2.4	2.2	3.2	2.7	3.7	3.7	5.0
Total Uranium (U)	ug/L	15	300			<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Vanadium (V)	ug/L		6			<2.0	2.3	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	30	30	1000	1000	5.0	5.1	7.8	<5.0	<5.0	<5.0	6.8	<5.0	<5.0	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

Tier 1 EQS - Nova Scotia Environment Tier 1 Environmental Quality Standards for Freshwater Surface Water (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

MDMER - Federal Metal and Diamond Mining Effluent Regulations - guidelines shown represent maximum authorized concentration in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (ug/L) = $10^{(0.83(\log(\text{hardness}))-2.46)}$ for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (ug/L) = $e^{0.8545(\ln(\text{hardness}))-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 ug/L for hardness <82 mg/L and an upper limit of 4 ug/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (ug/L) = $e^{1.273(\ln(\text{hardness}))-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 ug/L for hardness <60 mg/L and an upper limit of 7 ug/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (ug/L) = $e^{0.76(\ln(\text{hardness}))+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 ug/L for hardness <60 mg/L and an upper limit of 150 ug/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table G.1-1: Metals

Sampling Date	Units	CCME FAL	Tier 1 EQS	MMER	MDMER	SW-2A										
						9-Oct-14	13-Nov-14	18-Dec-14	18-Dec-14	22-Jan-15	29-Apr-15	28-May-15	28-May-15	30-Jun-15	29-Jul-15	24-Aug-15
Metals									SW-2AD (DUP)				SW-2AD (DUP)			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾	5			330	340	210	210	210	140	190	190	280	300	400
Total Antimony (Sb)	ug/L		20			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	5.0	5.0	1000	1000	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	1.1	1.1	<1.0	1.5	1.3
Total Barium (Ba)	ug/L		1000			5.6	5.8	3.2	3.0	3.3	1.6	2.2	2.2	3.0	3.5	4.6
Total Beryllium (Be)	ug/L		5.3			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L					<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	1500	1200			<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾	0.04			0.026	0.028	0.017	0.017	0.013	<0.010	0.013	0.013	0.012	0.017	0.022
Total Calcium (Ca)	ug/L					1100	1000	640	590	680	290	470	460	580	620	770
Total Chromium (Cr)	ug/L					1.4	1.6	<1.0	<1.0	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0
Total Cobalt (Co)	ug/L		10			0.49	0.58	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.53
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	2	600	600	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Iron (Fe)	ug/L	300	300			740	700	360	350	340	260	410	400	590	820	1000
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	1	400	400	0.78	0.55	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.55	0.62	0.57
Total Magnesium (Mg)	ug/L					570	570	320	310	410	160	220	210	280	330	420
Total Manganese (Mn)	ug/L		820			77	71	43	42	51	25	27	27	35	40	58
Total Mercury (Hg)	ug/L	0.026				<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	0.013	0.013	<0.013	<0.013	0.035
Total Molybdenum (Mo)	ug/L	73	73			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	25	1000	1000	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Phosphorus (P)	ug/L					<100	110	<100	<100	<100	<100	<100	<100	150	170	140
Total Potassium (K)	ug/L					600	600	370	340	380	330	290	290	160	200	170
Total Selenium (Se)	ug/L	1	1			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Silver (Ag)	ug/L	0.1	0.25			<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L					3100	3100	2100	2000	2400	1200	1600	1600	1900	1900	2300
Total Strontium (Sr)	ug/L		21000			11.0	9.5	5.6	5.2	6.6	3.0	4.1	3.9	5.0	6.3	7.4
Total Thallium (Tl)	ug/L	0.8	0.8			<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L					<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L					4.2	3.8	2.6	2.6	2.2	3.2	2.0	2.4	3.6	4.6	5.0
Total Uranium (U)	ug/L	15	300			<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Vanadium (V)	ug/L		6			<2.0	2.5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	30	30	1000	1000	6.9	6.2	5.5	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

Tier 1 EQS - Nova Scotia Environment Tier 1 Environmental Quality Standards for Freshwater Surface Water (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

MDMER - Federal Metal and Diamond Mining Effluent Regulations - guidelines shown represent maximum authorized concentration in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = 10^{0.83(log(hardness))-2.46} for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = e^{0.8545(ln(hardness))-1.465} * 0.2 for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = e^{1.273(ln(hardness))-4.705} for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = e^{0.76(ln(hardness))+1.06} for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table G.1-1: Metals

Sampling Date	Units	CCME FAL	Tier 1 EQS	MMER	MDMER	SW-4A									
						9-Oct-14	13-Nov-14	13-Nov-14	18-Dec-14	22-Jan-15	29-Apr-15	28-May-15	30-Jun-15	29-Jul-15	24-Aug-15
Metals								SW-4AD (DUP)		No Sample					
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾	5			250	300	310	220		130	240	300	350	390
Total Antimony (Sb)	ug/L		20			<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	5.0	5.0	1000	1000	5.8	2.9	2.8	2.0		1.1	7.3	5.4	5.6	5.6
Total Barium (Ba)	ug/L		1000			3.4	4.6	4.4	3.2		1.7	2.8	2.8	3.7	3.4
Total Beryllium (Be)	ug/L		5.3			<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L					<2.0	<2.0	<2.0	<2.0		<2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	1500	1200			<50	<50	<50	<50		<50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾	0.04			0.015	0.024	0.025	0.044		0.012	0.013	0.016	0.014	0.021
Total Calcium (Ca)	ug/L					1500	1300	1300	810		350	780	710	860	930
Total Chromium (Cr)	ug/L					<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0
Total Cobalt (Co)	ug/L		10			0.43	0.53	0.59	<0.40		<0.40	0.42	<0.40	0.63	0.48
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	2	600	600	<2.0	<2.0	<2.0	<2.0		<2.0	<2.0	<2.0	<2.0	<2.0
Total Iron (Fe)	ug/L	300	300			690	540	540	320		160	580	650	840	1100
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	1	400	400	0.54	<0.50	<0.50	<0.50		<0.50	<0.50	0.52	0.56	0.55
Total Magnesium (Mg)	ug/L					540	590	590	350		170	280	290	360	370
Total Manganese (Mn)	ug/L		820			53	58	58	41		20	37	32	42	51
Total Mercury (Hg)	ug/L	0.026				<0.013	<0.013	<0.013	<0.013		<0.013	0.015	<0.013	<0.013	0.028
Total Molybdenum (Mo)	ug/L	73	73			<2.0	<2.0	<2.0	<2.0		<2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	25	1000	1000	<2.0	<2.0	<2.0	<2.0		<2.0	<2.0	<2.0	<2.0	<2.0
Total Phosphorus (P)	ug/L					<100	100	100	<100		<100	<100	140	150	150
Total Potassium (K)	ug/L					450	500	520	480		290	280	140	180	200
Total Selenium (Se)	ug/L	1	1			<1.0	<1.0	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0
Total Silver (Ag)	ug/L	0.1	0.25			<0.10	<0.10	<0.10	<0.10		<0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L					3200	3100	3200	2300		1300	1900	1900	1700	2200
Total Strontium (Sr)	ug/L		21000			10	9.1	9.2	5.7		2.8	5.1	5.0	6.4	7.2
Total Thallium (Tl)	ug/L	0.8	0.8			<0.10	<0.10	<0.10	<0.10		<0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L					<2.0	<2.0	<2.0	<2.0		<2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L					5	3.7	3.9	2.3		2.4	4.7	3.8	3.8	4.9
Total Uranium (U)	ug/L	15	300			<0.10	<0.10	<0.10	<0.10		<0.10	<0.10	<0.10	<0.10	<0.10
Total Vanadium (V)	ug/L		6			<2.0	2.9	2.8	<2.0		<2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	30	30	1000	1000	19	7.8	6.9	12		<5.0	7.5	<5.0	<5.0	6.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

Tier 1 EQS - Nova Scotia Environment Tier 1 Environmental Quality Standards for Freshwater Surface Water (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

MDMER - Federal Metal and Diamond Mining Effluent Regulations - guidelines shown represent maximum authorized concentration in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = 10^[0.83(log(hardness))-2.46] for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = e^{0.8545(ln(hardness))-1.465} * 0.2 for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = e^{1.273(ln(hardness))-4.705} for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = e^{0.76(ln(hardness))+1.06} for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table G.1-1: Metals

Sampling Date	Units	CCME FAL	Tier 1 EQS	MMER	MDMER	SW-5									
						9-Oct-14	9-Oct-14	13-Nov-14	18-Dec-14	22-Jan-15	29-Apr-15	28-May-15	30-Jun-15	29-Jul-15	24-Aug-15
Metals	Units						SW-5D (DUP)								
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾	5			28	29	100	460	210	98	61	45	43	52
Total Antimony (Sb)	ug/L		20			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	5.0	5.0	1000	1000	29	30	15	17	22	15	41	32	20	47
Total Barium (Ba)	ug/L		1000			4.5	4.6	5.5	6.1	6.1	4.6	4.4	3.6	4.1	4.5
Total Beryllium (Be)	ug/L		5.3			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L					<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	1500	1200			<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾	0.04			<0.010	0.016	<0.010	0.010	0.011	0.018	<0.010	<0.010	<0.010	<0.010
Total Calcium (Ca)	ug/L					5000	4900	5300	3000	4100	2200	3500	3600	3800	4500
Total Chromium (Cr)	ug/L					<1.0	<1.0	<1.0	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Cobalt (Co)	ug/L		10			<0.40	<0.40	<0.40	<0.40	0.44	0.61	<0.40	<0.40	<0.40	<0.40
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	2	600	600	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Iron (Fe)	ug/L	300	300			400	400	470	730	680	560	880	530	610	750
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	1	400	400	<0.50	<0.50	<0.50	0.57	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Magnesium (Mg)	ug/L					940	920	970	640	780	430	600	640	720	870
Total Manganese (Mn)	ug/L		820			60	59	28	25	150	200	65	50	45	97
Total Mercury (Hg)	ug/L	0.026				<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	0.015	<0.013	<0.013	0.027
Total Molybdenum (Mo)	ug/L	73	73			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	25	1000	1000	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Phosphorus (P)	ug/L					<100	<100	<100	<100	<100	<100	<100	140	170	150
Total Potassium (K)	ug/L					730	710	1000	720	740	480	670	580	350	450
Total Selenium (Se)	ug/L	1	1			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Silver (Ag)	ug/L	0.1	0.25			<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L					2700	2700	2900	2200	2700	1400	1700	1800	1500	2000
Total Strontium (Sr)	ug/L		21000			28.0	27	26	15	21	11	18	20	25	27
Total Thallium (Tl)	ug/L	0.8	0.8			<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L					<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L					<2.0	<2.0	3.2	14	4.2	<2.0	<2.0	<2.0	<2.0	<2.0
Total Uranium (U)	ug/L	15	300			<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Vanadium (V)	ug/L		6			<2.0	<2.0	3.1	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	30	30	1000	1000	<5.0	<5.0	<5.0	<5.0	<5.0	5.4	<5.0	<5.0	<5.0	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

Tier 1 EQS - Nova Scotia Environment Tier 1 Environmental Quality Standards for Freshwater Surface Water (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

MDMER - Federal Metal and Diamond Mining Effluent Regulations - guidelines shown represent maximum authorized concentration in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{[0.83(\ln(\text{hardness})) - 2.46]}$ for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545(\ln(\text{hardness})) - 1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273(\ln(\text{hardness})) - 4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76(\ln(\text{hardness})) + 1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table G.1-1: Metals

Sampling Date	Units	CCME FAL	Tier 1 EQS	MMER	MDMER	SW-6A								
						9-Oct-14	13-Nov-14	18-Dec-14	22-Jan-15	28-May-15	30-Jun-15	30-Jun-15	29-Jul-15	24-Aug-15
Metals												SW-6AD (DUP)		
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾	5			220	290	240	250	220	290	39	320	470
Total Antimony (Sb)	ug/L		20			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	5.0	5.0	1000	1000	4.0	1.9	1.1	1.0	3.2	3.0	130	2.8	7.6
Total Barium (Ba)	ug/L		1000			3.2	4.1	3.1	3.0	2.3	2.6	5.4	3.1	3.8
Total Beryllium (Be)	ug/L		5.3			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L					<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	1500	1200			<50	<50	<50	<50	<50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾	0.04			0.024	0.021	0.014	0.011	<0.010	0.016	0.061	0.012	0.031
Total Calcium (Ca)	ug/L					1000	1200	790	880	620	670	4900	770	1000
Total Chromium (Cr)	ug/L					<1.0	<1.0	1.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Cobalt (Co)	ug/L		10			<0.40	0.44	<0.40	<0.40	<0.40	<0.40	1.8	<0.40	1.0
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	2	600	600	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	3.0	<2.0	<2.0
Total Iron (Fe)	ug/L	300	300			500	480	330	380	370	550	1400	750	1500
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	1	400	400	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Magnesium (Mg)	ug/L					470	510	360	410	230	270	660	310	430
Total Manganese (Mn)	ug/L		820			50	51	39	46	29	33	110	38	100
Total Mercury (Hg)	ug/L	0.026				<0.013	<0.013	<0.013	<0.013	0.017	<0.013	0.013	<0.013	0.035
Total Molybdenum (Mo)	ug/L	73	73			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	25	1000	1000	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	7.2	<2.0	<2.0
Total Phosphorus (P)	ug/L					<100	<100	<100	<100	<100	140	140	160	150
Total Potassium (K)	ug/L					340	470	300	300	280	190	640	200	240
Total Selenium (Se)	ug/L	1	1			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Silver (Ag)	ug/L	0.1	0.25			<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L					2800	3000	2200	2300	1700	1800	1900	1700	2200
Total Strontium (Sr)	ug/L		21000			7.1	7.7	5.9	6.1	4.4	4.8	19	5.5	7.6
Total Thallium (Tl)	ug/L	0.8	0.8			<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L					<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L					2.7	3.1	2.8	2.6	2.8	3.4	<2.0	3.5	4.3
Total Uranium (U)	ug/L	15	300			<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Vanadium (V)	ug/L		6			<2.0	2.2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	30	30	1000	1000	<5.0	5.5	<5.0	<5.0	5.7	<5.0	13	<5.0	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

Tier 1 EQS - Nova Scotia Environment Tier 1 Environmental Quality Standards for Freshwater Surface Water (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

MDMER - Federal Metal and Diamond Mining Effluent Regulations - guidelines shown represent maximum authorized concentration in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (ug/L) = $10^{(0.83(\log(\text{hardness}))-2.46)}$ for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (ug/L) = $e^{0.8545(\ln(\text{hardness}))-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 ug/L for hardness <82 mg/L and an upper limit of 4 ug/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (ug/L) = $e^{1.273(\ln(\text{hardness}))-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 ug/L for hardness <60 mg/L and an upper limit of 7 ug/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (ug/L) = $e^{0.76(\ln(\text{hardness}))+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 ug/L for hardness <60 mg/L and an upper limit of 150 ug/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table G.1-1: Metals

Sampling Date	Units	CCME FAL	Tier 1 EQS	MMER	MDMER	SW-9									
						9-Oct-14	13-Nov-14	18-Dec-14	22-Jan-15	29-Apr-15	28-May-15	30-Jun-15	29-Jul-15	29-Jul-15	24-Aug-15
Metals													SW-1 (DUP)		
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾	5			410	330	310	210	160	170	280	260	270	320
Total Antimony (Sb)	ug/L		20			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	5.0	5.0	1000	1000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Barium (Ba)	ug/L		1000			6.6	5.7	3.5	3.4	2.1	2.4	3.3	3.4	3.3	4.2
Total Beryllium (Be)	ug/L		5.3			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L					<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	1500	1200			<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾	0.04			0.024	0.025	0.019	0.010	0.014	<0.010	0.014	<0.010	<0.010	0.015
Total Calcium (Ca)	ug/L					2300	1400	890	1100	640	1100	1700	1800	1900	1700
Total Chromium (Cr)	ug/L					<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.3	<1.0
Total Cobalt (Co)	ug/L		10			<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	2	600	600	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Iron (Fe)	ug/L	300	300			620	500	280	290	220	210	440	490	510	580
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	1	400	400	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Magnesium (Mg)	ug/L					1100	700	450	530	300	480	740	830	840	810
Total Manganese (Mn)	ug/L		820			140	75	51	51	36	34	57	56	60	76
Total Mercury (Hg)	ug/L	0.026				<0.013	<0.013	<0.013	<0.013	<0.013	0.013	<0.013	<0.013	0.013	0.032
Total Molybdenum (Mo)	ug/L	73	73			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	25	1000	1000	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Phosphorus (P)	ug/L					<100	<100	<100	<100	<100	<100	150	160	170	160
Total Potassium (K)	ug/L					640	530	340	350	300	270	200	210	240	180
Total Selenium (Se)	ug/L	1	1			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Silver (Ag)	ug/L	0.1	0.25			<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L					4000	3900	2900	3900	2400	3500	3100	3300	3500	3500
Total Strontium (Sr)	ug/L		21000			10	7.7	5.0	5.6	2.8	4.2	5.9	6.5	5.9	6.6
Total Thallium (Tl)	ug/L	0.8	0.8			<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L					<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L					4.8	4.1	3.5	2.8	3.1	3.0	3.1	3.6	4.9	4.3
Total Uranium (U)	ug/L	15	300			0.11	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.12	0.13	0.11
Total Vanadium (V)	ug/L		6			<2.0	2.3	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	30	30	1000	1000	5.2	7.5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

Tier 1 EQS - Nova Scotia Environment Tier 1 Environmental Quality Standards for Freshwater Surface Water (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

MDMER - Federal Metal and Diamond Mining Effluent Regulations - guidelines shown represent maximum authorized concentration in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = $10^{[0.83(\log(\text{hardness})) - 2.46]}$ for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = $e^{0.8545[\ln(\text{hardness})] - 1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = $e^{1.273[\ln(\text{hardness})] - 4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = $e^{0.76[\ln(\text{hardness})] + 1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

Table G.1-1: Metals

Sampling Date	Units	CCME FAL	Tier 1 EQS	MMER	MDMER	SW-10				SW-11	SW-12
						30-Jun-15	29-Jul-16	24-Aug-15	24-Aug-15	Oct-5-2017	5-Oct-17
Metals									SW-10 (DUP)		
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾	5			39	28	220	210	420	430
Total Antimony (Sb)	ug/L		20			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	5.0	5.0	1000	1000	130	36	380	370	1.4	1.9
Total Barium (Ba)	ug/L		1000			5.4	7.3	7.1	6.9	3.9	3.5
Total Beryllium (Be)	ug/L		5.3			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L					<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	1500	1200			<50	<50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾	0.04			0.061	0.10	0.011	<0.010	0.022	0.021
Total Calcium (Ca)	ug/L					4900	6400	10000	10000	1100	830
Total Chromium (Cr)	ug/L					<1.0	<1.0	<1.0	<1.0	1.1	<1.0
Total Cobalt (Co)	ug/L		10			1.8	1.4	2.2	2.3	<0.40	0.73
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	2	600	600	3.0	3.6	<2.0	<2.0	<2.0	<2.0
Total Iron (Fe)	ug/L	300	300			1400	78	6000	5900	1200	1000
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	1	400	400	<0.50	<0.50	1.1	1.2	0.75	0.60
Total Magnesium (Mg)	ug/L					660	900	1200	1200	530	500
Total Manganese (Mn)	ug/L		820			110	78	290	280	41	54
Total Mercury (Hg)	ug/L	0.026				<0.013	<0.013	0.025	0.028	-	-
Total Molybdenum (Mo)	ug/L	73	73			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	25	1000	1000	7.2	8.7	6.2	6.1	<2.0	<2.0
Total Phosphorus (P)	ug/L					140	170	140	140	<100	<100
Total Potassium (K)	ug/L					640	790	1000	1000	180	160
Total Selenium (Se)	ug/L	1	1			<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Silver (Ag)	ug/L	0.1	0.25			<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L					1900	2100	2500	2400	2300	2400
Total Strontium (Sr)	ug/L		21000			19	26	33	33	9.0	7.1
Total Thallium (Tl)	ug/L	0.8	0.8			<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L					<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L					<2.0	<2.0	2.8	2.9	4.5	3.3
Total Uranium (U)	ug/L	15	300			<0.10	<0.10	0.21	0.20	<0.10	<0.10
Total Vanadium (V)	ug/L		6			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	30	30	1000	1000	13	19	<5.0	<5.0	5.0	<5.0

Notes

CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference)

Tier 1 EQS - Nova Scotia Environment Tier 1 Environmental Quality Standards for Freshwater Surface Water (provided for reference)

MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference)

MDMER - Federal Metal and Diamond Mining Effluent Regulations - guidelines shown represent maximum authorized concentration in a grab sample (provided for reference)

(1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table).

(2) Cadmium guideline (updated for 2014) (µg/L) = 10^{[0.83(log[hardness]-2.46)]} for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet).

(3) Copper guideline based on sample hardness: copper guideline (µg/L) = e^{0.8545[ln(hardness)]-1.465} * 0.2 for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 µg/L for hardness <82 mg/L and an upper limit of 4 µg/L for hardness >180 mg/L (see CCME Summary Table).

(4) Lead guideline based on sample hardness: lead guideline (µg/L) = e^{1.273[ln(hardness)]-4.705} for hardness >60 to ≤180 mg/L, or a lower limit of 1 µg/L for hardness <60 mg/L and an upper limit of 7 µg/L for hardness >180 mg/L (see CCME Summary Table).

(5) Nickel guideline based on sample hardness: nickel guideline (µg/L) = e^{0.76[ln(hardness)]+1.06} for hardness >60 to ≤180 mg/L, or a lower limit of 25 µg/L for hardness <60 mg/L and an upper limit of 150 µg/L for hardness >180 mg/L (see CCME Summary Table).

- denotes not analyzed

TABLE G.1-1: General Chemistry

Sampling Date		CCME FWAL	RDL	SW1A			
				21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Inorganics	Units						
Acidity	mg/L	ns	5.0	<5.0	<5.0	<5.0	<5.0
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	6.9	12	<5.0
Total Chemical Oxygen Demand	mg/L	ns	20	26	28	51	37
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	3.0	4.4	5.5	5.9
Colour	TCU	narrative ¹	5.0	100	120	180	150
Total Dissolved Solids	mg/L	ns	10	34	31	54	43
Dissolved Fluoride (F ⁻)	mg/L	0.12	0.10	<0.10	<0.10	<0.10	<0.10
Nitrate + Nitrite (N)	mg/L	ns	0.050	<0.050	<0.050	<0.050	0.054
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	0.052	<0.050	<0.050
Total Organic Carbon (C)	mg/L	ns	0.50	8.1	9.6	17	16
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	6.5 - 9.0	N/A	6.60	6.82	7.14	6.26
Total Phosphorus	mg/L	ns	0.020	<0.020	0.020	0.029	<0.020
Salinity	N/A	ns	2.0	<2.0	<2.0	<2.0	<2.0
Reactive Silica (SiO ₂)	mg/L	ns	0.50	1.7	1.3	3.7	4.1
Total Suspended Solids	mg/L	narrative ²	1.0	15	6.0	40	12
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Total Cyanide (CN)	mg/L	0.005	0.0050	<0.0050	<0.0050	<0.0030	<0.0050
Turbidity	NTU	narrative ³	0.10	4.3	3.1	<0.0050	2.4
WAD Cyanide (Free)	mg/L	ns	0.0030	<0.0030	<0.0030	20	<0.0030
Conductivity	uS/cm	ns	1.0	21	25	43	29
Calculated Parameters							
Anion Sum	me/L	ns	N/A	0.0800	0.260	0.390	0.170
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	6.9	12	<1.0
Calculated TDS	mg/L	ns	1.0	11	17	47	26
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.330	0.340	1.79	0.860
Hardness (CaCO ₃)	mg/L	ns	1.0	12	11	81	35
Ion Balance (% Difference)	%	ns	N/A	61.0	13.3	64.2	67.0
Langelier Index (@ 20C)	N/A	ns		NC	-3.25	-1.86	NC
Langelier Index (@ 4C)	N/A	ns		NC	-3.51	-2.11	NC
Nitrate (N)	mg/L	13	0.050	<0.050	<0.050	<0.050	0.054
Saturation pH (@ 20C)	N/A	ns		NC	10.1	9.00	NC
Saturation pH (@ 4C)	N/A	ns		NC	10.3	9.25	NC
Radionuclide							
Radium -226	Bq/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
Chlorophyll a	Units	CCME FWAL	RDL				
Chlorophyll a (Acidification Technique)	µg/L	ns		0.561	2.21	3.94	0.264
Chlorophyll a (Non-Acidification)	µg/L	ns		0.602	3.16	6.65	0.48
Field Parameters	Units	CCME FWAL					
Temperature	°C	narrative ¹		6.9	20.8	13.2	3.3
Pressure	mmHg	ns		741.2	752.7	743.3	739.7
Dissolved Oxygen	%	ns		101.1	78	94	95.1
Dissolved Oxygen	mg/L	narrative ³		11.99	6.92	9.64	12.37
Turbidity	NTU	narrative ²		10.4	19.4	17.1	21.3
Conductivity	uS/cm	ns		12.4	18.3	22.8	19.1
Salinity	ppt	ns		0.01	0.01	0.01	0.01
pH	pH	6.5 - 9.0		4.67	5.19	5.56	4.48
Oxidation Reduction Potential	mV	ns		238.4	250.8	218	293.4

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)**Notes:**

mg/L - milligrams per litre
me/L - milliequivalent per litre
uS/cm - microsiemens
TCU - Total Colour Units
NTU - Nephelometric Turbidity Units
TDS - Total Dissolved Solids
ND - Not Detected
ns - no standard listed
ug/L - microgram per litre
RDL - Reportable Detection Limit
g/L - gram per litre
°C - Degrees Celcius
uS/cm - microsiemens
ppt - parts per trillion

Narrative (Gen Chem):

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.

² Maximum increase of 25 mg/L from background levels for any short-term (24-h period)

³ Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

Narrative (field parameters):

¹ Thermal Stratification: Thermal additions to receiving waters should be such that thermal stratification and subsequent turnover dates are not altered from those existing prior to the addition of heat from artificial origins

² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

³ Lowest acceptable dissolved oxygen concentration:

- for warm water biota: early life stages = 6000 µg/L
- for warm water biota: other life stages = 5500 µg/L
- for cold water biota: early life stages = 9500 µg/L
- for cold water biota: other life stages = 6500 µg/L

TABLE G.1-1: General Chemistry

Sampling Date		CCME FWAL	RDL	SW2A				
				10-Apr-19	12-Jun-19	12-Sep-19	2-Dec-19	2-Dec-19
Inorganics	Units						(DUP)	
Acidity	mg/L	ns	5.0	5.0	7.0	11	9.0	8.6
Total Alkalinity (Total as CaCO3)	mg/L	ns	5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Total Chemical Oxygen Demand	mg/L	ns	20	<20	44	60	37	35
Dissolved Chloride (Cl-)	mg/L	640	1.0	4.0	2.7	4.9	3.4	3.4
Colour	TCU	narrative ¹	5.0	69	140	190	110	110
Total Dissolved Solids	mg/L	ns	10	23	33	54	37	35
Dissolved Fluoride (F-)	mg/L	0.12	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrate + Nitrite (N)	mg/L	ns	0.050	0.067	<0.050	<0.050	<0.050	<0.050
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.020
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Total Organic Carbon (C)	mg/L	ns	0.50	7.3	16	20	12	11
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	6.5 - 9.0	N/A	5.97	5.77	5.71	5.63	5.28
Total Phosphorus	mg/L	ns	0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Salinity	N/A	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Reactive Silica (SiO2)	mg/L	ns	0.50	1.8	1.7	3.4	2.7	2.8
Total Suspended Solids	mg/L	narrative ²	1.0	<1.0	12	2.6	<1.0	<1.0
Dissolved Sulphate (SO4)	mg/L	ns	2.0	<2.0	<2.0	3.6	<2.0	<2.0
Total Cyanide (CN)	mg/L	0.005	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Turbidity	NTU	narrative ³	0.10	0.61	4.3	2.2	1.0	0.93
WAD Cyanide (Free)	mg/L	ns	0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Conductivity	uS/cm	ns	1.0	20	18	29	22	22
Calculated Parameters								
Anion Sum	me/L	ns	N/A	0.120	0.0800	0.210	0.100	0.0900
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Calculated TDS	mg/L	ns	1.0	9.0	8.0	17	9.0	9.0
Carb. Alkalinity (calc. as CaCO3)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.140	0.150	0.260	0.150	0.140
Hardness (CaCO3)	mg/L	ns	1.0	2.4	2.3	4.6	2.5	2.4
Ion Balance (% Difference)	%	ns	N/A	7.69	30.4	10.6	20.0	21.7
Langelier Index (@ 20C)	N/A	ns		NC	NC	NC	NC	NC
Langelier Index (@ 4C)	N/A	ns		NC	NC	NC	NC	NC
Nitrate (N)	mg/L	13	0.050	0.067	<0.050	<0.050	<0.050	<0.050
Saturation pH (@ 20C)	N/A	ns		NC	NC	NC	NC	NC
Saturation pH (@ 4C)	N/A	ns		NC	NC	NC	NC	NC
Radionuclide								
Radium -226	Bq/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Chlorophyll a	Units	CCME FWAL	RDL					
Chlorophyll a (Acidification Technique)	µg/L	ns		1.13	5.32	1.56	1.48	0.291
Chlorophyll a (Non-Acidification)	µg/L	ns		1.16	6.28	1.63	1.7	0.507
Field Parameters								
Temperature	°C	narrative ¹		3.9	18	15.8	-	0.3
Pressure	mmHg	ns		740.5	746.6	752	-	746.4
Dissolved Oxygen	%	ns		101.6	93	77.2	-	83
Dissolved Oxygen	mg/L	narrative ³		13.03	8.67	7.61	-	11.85
Turbidity	NTU	narrative ²		1.48	5.06	1.78	-	0.88
Conductivity	uS/cm	ns		13.5	18	24.7	-	14.7
Salinity	ppt	ns		0.01	0.01	0.01	-	0.01
pH	pH	6.5 - 9.0		4.9	4.98	4.56	-	4.18
Oxidation Reduction Potential	mV	ns		211.5	201.7	281.5	-	279

TABLE G.1-1: General Chemistry

Sampling Date	Units	CCME FWAL	RDL	SW4A							
				10-Apr-19	12-Jun-19	12-Sep-19	2-Dec-19	21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Inorganics											
Acidity	mg/L	ns	5.0	5.6	8.4	15	11	<5.0	5.6	14	7.8
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Total Chemical Oxygen Demand	mg/L	ns	20	<20	32	53	28	23	33	53	30
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	3.8	2.9	5.8	3.9	3.0	5.0	5.1	6.0
Colour	TCU	narrative ¹	5.0	58	150	180	89	85	150	170	130
Total Dissolved Solids	mg/L	ns	10	17	31	57	36	41	27	52	24
Dissolved Fluoride (F ⁻)	mg/L	0.12	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrate + Nitrite (N)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.072
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.078	<0.050	<0.050
Total Organic Carbon (C)	mg/L	ns	0.50	6.5	14	20	11	7.0	11	22	13
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	6.5 - 9.0	N/A	5.70	5.74	5.54	6.12	5.25	5.73	5.14	5.15
Total Phosphorus	mg/L	ns	0.020	<0.020	<0.020	0.022	<0.020	<0.020	<0.020	<0.020	<0.020
Salinity	N/A	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Reactive Silica (SiO ₂)	mg/L	ns	0.50	2.1	1.7	2.8	2.8	2.0	1.7	3.8	4.3
Total Suspended Solids	mg/L	narrative ²	1.0	2.0	3.0	5.2	1.0	1.2	9.6	1.2	1.0
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	<2.0	<2.0	4.7	<2.0	<2.0	<2.0	<2.0	<2.0
Total Cyanide (CN)	mg/L	0.005	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0030	<0.0050
Turbidity	NTU	narrative ³	0.10	0.82	1.9	5.1	0.68	0.82	1.6	<0.0050	0.53
WAD Cyanide (Free)	mg/L	ns	0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	1.8	<0.0030
Conductivity	uS/cm	ns	1.0	19	18	33	25	16	22	30	29
Calculated Parameters											
Anion Sum	me/L	ns	N/A	0.110	0.0800	0.260	0.110	0.0900	0.140	0.140	0.170
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Calculated TDS	mg/L	ns	1.0	9.0	8.0	20	10	8.0	11	14	16
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.150	0.160	0.310	0.150	0.140	0.210	0.250	0.240
Hardness (CaCO ₃)	mg/L	ns	1.0	2.5	2.7	6.1	2.8	2.3	3.1	4.6	4.3
Ion Balance (% Difference)	%	ns	N/A	15.4	33.3	8.77	15.4	21.7	20.0	28.2	17.1
Langlier Index (@ 20C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC
Langlier Index (@ 4C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC
Nitrate (N)	mg/L	13	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.072
Saturation pH (@ 20C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC
Saturation pH (@ 4C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC
Radionuclide											
Radium -226	Bq/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Chlorophyll a											
Chlorophyll a (Acidification Technique)	µg/L	ns		1.46	1.41	1.59	1.02	0.574	0.877	3.92	0.239
Chlorophyll a (Non-Acidification)	µg/L	ns		1.38	1.59	1.79	1.26	0.634	1.41	5.04	0.376
Field Parameters											
Temperature	°C	narrative ¹		4.3	16.3	15.1	1.4	10.4	20.8	13.7	3.1
Pressure	mmHg	ns		740.7	746	751.7	745.4	740.8	751.4	743.7	739.1
Dissolved Oxygen	%	ns		80.7	68.2	48.8	43.2	85.4	22.7	55.2	67.3
Dissolved Oxygen	mg/L	narrative ³		10.24	6.57	4.83	5.94	9.26	2.03	5.59	8.78
Turbidity	NTU	narrative ²		1.07	1.47	4.5	1.21	1.19	1.46	1.9	1.41
Conductivity	uS/cm	ns		13.5	17.2	27.3	16.7	14.6	23.4	27.9	19
Salinity	ppt	ns		0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01
pH	pH	6.5 - 9.0		5.06	5.24	4.81	4.42	4.83	4.25	5.23	4.55
Oxidation Reduction Potential	mV	ns		200.1	204.1	236	325.2	237.1	235.3	247.7	266

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

mg/L - milligrams per litre
me/L - milliequivalent per litre
uS/cm - microsiemens
TCU - Total Colour Units
NTU - Nephelometric Turbidity Units
TDS - Total Dissolved Solids
ND - Not Detected
ns - no standard listed
ug/L - microgram per litre
RDL - Reportable Detection Limit
g/L - gram per litre
°C - Degrees Celcius
uS/cm - microsiemens
ppt - parts per trillion

Narrative (Gen Chem):

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.
² Maximum increase of 25 mg/L from background levels for any short-term (24-h period)
³ Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

Narrative (field parameters):

¹ Thermal Stratification: Thermal additions to receiving waters should be such that thermal stratification and subsequent turnover dates are not altered from those existing prior to the addition of heat from artificial origins
² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).
³ Lowest acceptable dissolved oxygen concentration:
- for warm water biota: early life stages = 6000 µg/L
- for warm water biota: other life stages = 5500 µg/L
- for cold water biota: early life stages = 9500 µg/L
- for cold water biota: other life stages = 6500 µg/L

TABLE G.1-1: General Chemistry

Sampling Date		CCME FWAL	RDL	SW5										
				10-Apr-19	12-Jun-19	12-Jun-19	12-Sep-19	2-Dec-19	21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20		
Inorganics														
Acidity	mg/L	ns	5.0	<5.0	<5.0	<5.0	42	5.2	<5.0	5.0	<5.0	<5.0	<5.0	
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	6.2	8.7	8.3	30	6.0	<5.0	8.9	9.2	7.1		
Total Chemical Oxygen Demand	mg/L	ns	20	<20	<20	<20	25	<20	<20	<20	<20	<20		
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	3.2	2.8	2.6	3.4	3.6	2.8	4.0	4.1	4.9		
Colour	TCU	narrative ¹	5.0	17	18	17	68	23	22	30	27	26		
Total Dissolved Solids	mg/L	ns	10	17	20	28	67	25	33	30	40	25		
Dissolved Fluoride (F ⁻)	mg/L	0.12	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10		
Nitrate + Nitrite (N)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050	0.063	<0.050	<0.050	<0.050	0.053		
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010		
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050	0.12	<0.050	<0.050	<0.050	<0.050	<0.050		
Total Organic Carbon (C)	mg/L	ns	0.50	2.9	4.2	4.5	5.9	3.9	2.8	3.7	4.8	4.2		
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010	<0.010	0.036	<0.010	<0.010	<0.010	0.010	<0.010		
pH	pH	6.5 - 9.0	N/A	6.48	6.65	6.61	6.52	6.67	6.38	6.65	6.76	6.79		
Total Phosphorus	mg/L	ns	0.020	<0.020	<0.020	<0.020	0.061	<0.020	<0.020	0.024	<0.020	<0.020		
Salinity	N/A	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0		
Reactive Silica (SiO ₂)	mg/L	ns	0.50	1.7	1.2	1.2	7.6	2.9	1.6	0.63	2.0	3.3		
Total Suspended Solids	mg/L	narrative ²	1.0	1.2	3.0	3.4	23	2.4	1.6	6.8	5.8	2.0		
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	2.9	2.8	3.2	12.0	6.6	5.0	4.0	4.0	7.1		
Total Cyanide (CN)	mg/L	0.005	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0030	<0.0050		
Turbidity	NTU	narrative ³	0.10	0.81	1.4	1.3	10	1.5	0.74	1.9	<0.0050	1.0		
WAD Cyanide (Free)	mg/L	ns	0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	1.5	<0.0030		
Conductivity	uS/cm	ns	1.0	25	33	32	95	35	25	33	36	43		
Calculated Parameters														
Anion Sum	me/L	ns	N/A	0.280	0.310	0.310	0.950	0.360	0.180	0.370	0.380	0.430		
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	6.2	8.6	8.3	30	6.0	<1.0	8.9	9.2	7.0		
Calculated TDS	mg/L	ns	1.0	16	19	19	65	23	15	22	23	28		
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		
Cation Sum	me/L	ns	N/A	0.230	0.330	0.320	1.12	0.300	0.250	0.370	0.350	0.410		
Hardness (CaCO ₃)	mg/L	ns	1.0	6.6	11	11	38	9.7	7.5	11	10	13		
Ion Balance (% Difference)	%	ns	N/A	9.80	3.13	1.59	8.21	9.09	16.3	0.00	4.11	2.38		
Langelier Index (@ 20C)	N/A	ns		-3.70	-3.17	-3.24	-2.22	-3.36	NC	-3.17	-3.10	-3.05		
Langelier Index (@ 4C)	N/A	ns		-3.95	-3.42	-3.49	-2.47	-3.61	NC	-3.43	-3.36	-3.30		
Nitrate (N)	mg/L	13	0.050	<0.050	<0.050	<0.050	<0.050	0.063	<0.050	<0.050	<0.050	0.053		
Saturation pH (@ 20C)	N/A	ns		10.2	9.82	9.85	8.74	10.0	NC	9.82	9.86	9.84		
Saturation pH (@ 4C)	N/A	ns		10.4	10.1	10.1	8.99	10.3	NC	10.1	10.1	10.1		
Radionuclide														
Radium -226	Bq/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		
Chlorophyll a		Units	CCME FWAL	RDL										
Chlorophyll a (Acidification Technique)	µg/L	ns		1.16	2.55	2.55	0.015	0.858	0.781	2.35	0.489	1.51		
Chlorophyll a (Non-Acidification)	µg/L	ns		1.12	1.94	2.31	0.01	1.04	0.773	4.34	1.76	1.95		
Field Parameters		Units	CCME FWAL											
Temperature	°C	narrative ¹		4.7	18.4	-	10.5	0.9	8.8	20.9	15.2	3		
Pressure	mmHg	ns		740.7	745.3	-	751.3	731.8	740.7	753.7	743.4	738.6		
Dissolved Oxygen	%	ns		100.2	83.6	-	5.7	92.6	93.9	91.4	81.9	95.1		
Dissolved Oxygen	mg/L	narrative ³		12.56	7.7	-	0.63	12.73	10.64	8.23	8.06	12.46		
Turbidity	NTU	narrative ²		1.26	1.1	-	0.92	20.9	0.97	2.47	1.15	1.15		
Conductivity	uS/cm	ns		16.6	32.4	-	78	0.02	20.3	36.2	27	27.4		
Salinity	ppt	ns		0.01	0.02	-	0.05	2.31	0.01	0.02	0.01	0.02		
pH	pH	6.5 - 9.0		6.27	6.44	-	5.98	6.11	5.97	6.59	6.65	6.28		
Oxidation Reduction Potential	mV	ns		132.4	102.4	-	73.4	229.6	167.6	243	123	193.4		

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)**Notes:**

mg/L - milligrams per litre
me/L - milliequivalent per litre
uS/cm - microsiemens
TCU - Total Colour Units
NTU - Nephelometric Turbidity Units
TDS - Total Dissolved Solids
ND- Not Detected
ns - no standard listed
ug/L - microgram per litre
RDL- Reportable Detection Limit
g/L - gram per litre
°C - Degrees Celcius
uS/cm - microsiemens
ppt - parts per trillion

Narrative (Gen Chem):

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.
² Maximum increase of 25 mg/L from background levels for any short-term (24-h period)
³ Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

Narrative (field parameters):

¹ Thermal Stratification: Thermal additions to receiving waters should be such that thermal stratification and subsequent turnover dates are not altered from those existing prior to the addition of heat from artificial origins
² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).
³ Lowest acceptable dissolved oxygen concentration:
- for warm water biota: early life stages = 6000 µg/L
- for warm water biota: other life stages = 5500 µg/L
- for cold water biota: early life stages = 9500 µg/L
- for cold water biota: other life stages = 6500 µg/L

TABLE G.1-1. General Chemistry

Sampling Date		CCME FWAL	RDL	SW5A			
				21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Inorganics							
Acidity	mg/L	ns	5.0	5.4	5.4	6.8	6.4
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	<5.0	<5.0	<5.0
Total Chemical Oxygen Demand	mg/L	ns	20	23	28	49	35
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	2.9	4.4	5.0	5.5
Colour	TCU	narrative ¹	5.0	93	130	150	120
Total Dissolved Solids	mg/L	ns	10	36	26	54	56
Dissolved Fluoride (F ⁻)	mg/L	0.12	0.10	<0.10	<0.10	<0.10	<0.10
Nitrate + Nitrite (N)	mg/L	ns	0.050	<0.050	<0.050	<0.050	0.057
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050
Total Organic Carbon (C)	mg/L	ns	0.50	7.5	10	18	12
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	6.5 - 9.0	N/A	5.30	5.68	5.19	5.18
Total Phosphorus	mg/L	ns	0.020	<0.020	0.021	0.021	<0.020
Salinity	N/A	ns	2.0	<2.0	<2.0	<2.0	<2.0
Reactive Silica (SiO ₂)	mg/L	ns	0.50	1.8	1.2	3.9	4.4
Total Suspended Solids	mg/L	narrative ²	1.0	1.0	4.0	1.8	1.0
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	2.5	<2.0	<2.0	<2.0
Total Cyanide (CN)	mg/L	0.005	0.0050	<0.0050	<0.0050	<0.0030	<0.0050
Turbidity	NTU	narrative ³	0.10	1.0	2.5	<0.0050	0.98
WAD Cyanide (Free)	mg/L	ns	0.0030	<0.0030	<0.0030	1.8	<0.0030
Conductivity	uS/cm	ns	1.0	16	18	29	29
Calculated Parameters							
Anion Sum	me/L	ns	N/A	0.140	0.120	0.140	0.160
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Calculated TDS	mg/L	ns	1.0	10	9.0	14	16
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.140	0.170	0.260	0.260
Hardness (CaCO ₃)	mg/L	ns	1.0	2.3	2.5	4.7	5.5
Ion Balance (% Difference)	%	ns	N/A	0.00	17.2	30.0	23.8
Langelier Index (@ 20C)	N/A	ns		NC	NC	NC	NC
Langelier Index (@ 4C)	N/A	ns		NC	NC	NC	NC
Nitrate (N)	mg/L	13	0.050	<0.050	<0.050	<0.050	0.057
Saturation pH (@ 20C)	N/A	ns		NC	NC	NC	NC
Saturation pH (@ 4C)	N/A	ns		NC	NC	NC	NC
Radionuclide							
Radium -226	Bq/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
Chlorophyll a	Units	CCME FWAL	RDL				
Chlorophyll a (Acidification Technique)	µg/L	ns		0.627	2	1.26	0.326
Chlorophyll a (Non-Acidification)	µg/L	ns		0.588	3.27	4.15	0.496
Field Parameters							
Temperature	°C	narrative ¹		7.4	19.6	14.3	3.3
Pressure	mmHg	ns		740.8	753.6	743.6	738.8
Dissolved Oxygen	%	ns		84.9	46.7	65.9	83.6
Dissolved Oxygen	mg/L	narrative ³		9.85	4.26	6.61	10.85
Turbidity	NTU	narrative ²		0.87	2.05	1.56	0.93
Conductivity	uS/cm	ns		13.7	17.8	24.1	18.8
Salinity	ppt	ns		0.01	0.01	0.01	0.01
pH	pH	6.5 - 9.0		4.82	5.1	5.56	4.95
Oxidation Reduction Potential	mV	ns		218.2	290	199.9	239.8

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

mg/L - milligrams per litre
me/L - milliequivalent per litre
uS/cm - microsiemens
TCU - Total Colour Units
NTU - Nephelometric Turbidity Units
TDS - Total Dissolved Solids
ND- Not Detected
ns - no standard listed
ug/L - microgram per litre
RDL- Reportable Detection Limit
g/L - gram per litre
°C - Degrees Celcius
uS/cm - microsiemens
ppt - parts per trillion

Narrative (Gen Chem):

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.

² Maximum increase of 25 mg/L from background levels for any short-term (24-h period)

³ Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

Narrative (field parameters):

¹ Thermal Stratification: Thermal additions to receiving waters should be such that thermal stratification and subsequent turnover dates are not altered from those existing prior to the addition of heat from artificial origins

² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

³ Lowest acceptable dissolved oxygen concentration:

- for warm water biota: early life stages = 6000 µg/L
- for warm water biota: other life stages = 5500 µg/L
- for cold water biota: early life stages = 9500 µg/L
- for cold water biota: other life stages = 6500 µg/L

TABLE G.1-1: General Chemistry

Sampling Date		CCME FWAL	RDL	SW6A								
				10-Apr-19	12-Jun-19	12-Sep-19	2-Dec-19	21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20	
Inorganics												
Acidity	mg/L	ns	5.0	<5.0	6.6	8.6	7.8	8.8	8.8	8.6	6.6	
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
Total Chemical Oxygen Demand	mg/L	ns	20	<20	25	41	30	21	31	51	30	
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	3.7	2.9	4.6	3.8	2.5	4.4	5.2	6.3	
Colour	TCU	narrative ¹	5.0	57	110	130	91	78	120	110	120	
Total Dissolved Solids	mg/L	ns	10	14	17	39	35	24	24	46	28	
Dissolved Fluoride (F ⁻)	mg/L	0.12	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Nitrate + Nitrite (N)	mg/L	ns	0.050	<0.050	<0.050	<0.050	0.12	0.066	<0.050	<0.050	0.071	
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.063	<0.050	<0.050	
Total Organic Carbon (C)	mg/L	ns	0.50	5.8	11	13	11	7.0	9.4	16	13	
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	
pH	pH	6.5 - 9.0	N/A	6.1	5.73	5.44	5.14	5.97	5.59	5.46	5.13	
Total Phosphorus	mg/L	ns	0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.030	<0.020	<0.020	
Salinity	N/A	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	
Reactive Silica (SiO ₂)	mg/L	ns	0.50	2.0	1.7	2.0	2.8	1.8	1.5	2.1	4.4	
Total Suspended Solids	mg/L	narrative ²	1.0	<1.0	1.2	1.2	1.0	<1.0	7.2	<1.0	3.2	
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	<2.0	<2.0	5.4	<2.0	<2.0	<2.0	<2.0	3.3	
Total Cyanide (CN)	mg/L	0.005	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0030	<0.0050	
Turbidity	NTU	narrative ³	0.10	0.30	0.89	1.2	0.43	0.51	2.7	<0.0050	0.71	
WAD Cyanide (Free)	mg/L	ns	0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	1.0	<0.0030	
Conductivity	uS/cm	ns	1.0	19	18	24	22	16	19	30	29	
Calculated Parameters												
Anion Sum	me/L	ns	N/A	0.110	0.0800	0.240	0.120	0.0800	0.120	0.150	0.250	
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Calculated TDS	mg/L	ns	1.0	9.0	8.0	17	11	7.0	11	13	19	
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Cation Sum	me/L	ns	N/A	0.140	0.160	0.240	0.170	0.130	0.220	0.270	0.240	
Hardness (CaCO ₃)	mg/L	ns	1.0	2.5	2.8	4.0	3.2	2.1	2.8	5.3	4.4	
Ion Balance (% Difference)	%	ns	N/A	12.0	33.3	0.00	17.2	23.8	29.4	28.6	2.04	
Langelier Index (@ 20C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC	
Langelier Index (@ 4C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC	
Nitrate (N)	mg/L	13	0.050	<0.050	<0.050	<0.050	0.12	0.066	<0.050	<0.050	0.071	
Saturation pH (@ 20C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC	
Saturation pH (@ 4C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC	
Radionuclide												
Radium -226	Bq/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	
Chlorophyll a												
Chlorophyll a (Acidification Technique)	µg/L	ns		0.363	1.18	1.03	0.439	0.595	0.697	0.794	0.525	
Chlorophyll a (Non-Acidification)	µg/L	ns		0.38	1.2	1.14	0.569	0.765	1.1	2.27	0.725	
Field Parameters												
Temperature	°C	narrative ¹		2.7	14.1	14.8	0.3	6.4	18.7	17.4	0.3	
Pressure	mmHg	ns		740.3	746	750.6	745.9	734.2	751.3	---	753.2	
Dissolved Oxygen	%	ns		102	90.7	61.8	84.3	84	45.8	---	88.5	
Dissolved Oxygen	mg/L	narrative ³		13.46	9.12	6.2	12	9.98	4.18	---	12.69	
Turbidity	NTU	narrative ²		0.45	0.59	1.27	0.78	0.64	1.32	1.15	0.67	
Conductivity	uS/cm	ns		11.7	16	11.3	14.2	12.7	17.9	34	17.3	
Salinity	ppt	ns		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
pH	pH	6.5 - 9.0		5.26	5.18	4.92	4.47	4.59	4.35	4.14	4.39	
Oxidation Reduction Potential	mV	ns		161	212.8	268	354	272.1	283.2	---	311.9	

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)**Notes:**

mg/L - milligrams per litre
me/L - milliequivalent per litre

uS/cm - microsiemens

TCU - Total Colour Units

NTU - Nephelometric Turbidity Units

TDS - Total Dissolved Solids

ND- Not Detected

ns - no standard listed

ug/L - microgram per litre

RDL- Reportable Detection Limit

g/L - gram per litre

°C - Degrees Celcius

uS/cm - microsiemens

ppt - parts per trillion

Narrative (Gen Chem):

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.

² Maximum increase of 25 mg/L from background levels for any short-term (24-h period)

³ Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

Narrative (field parameters):

¹ Thermal Stratification: Thermal additions to receiving waters should be such that thermal stratification and subsequent turnover dates are not altered from those existing prior to the addition of heat from artificial origins

² Maximum increase of 8 NTUs from background levels for a short-term exposure

(e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

³ Lowest acceptable dissolved oxygen concentration:

- for warm water biota: early life stages = 6000 µg/L

- for warm water biota: other life stages = 5500 µg/L

- for cold water biota: early life stages = 9500 µg/L

- for cold water biota: other life stages = 6500 µg/L

TABLE G.1-1: General Chemistry

Sampling Date		CCME FWAL	RDL	SW9			
				10-Apr-19	12-Jun-19	12-Sep-19	2-Dec-19
Inorganics							
Acidity	mg/L	ns	5.0	<5.0	5.4	<5.0	8.0
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	<5.0	7.6	<5.0
Total Chemical Oxygen Demand	mg/L	ns	20	<20	34	43	37
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	5.6	5.1	6.0	4.7
Colour	TCU	narrative ¹	5.0	67	120	140	110
Total Dissolved Solids	mg/L	ns	10	29	41	53	39
Dissolved Fluoride (F ⁻)	mg/L	0.12	0.10	<0.10	<0.10	<0.10	<0.10
Nitrate + Nitrite (N)	mg/L	ns	0.050	<0.050	<0.050	<0.050	0.053
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050
Total Organic Carbon (C)	mg/L	ns	0.50	7.3	13	15	12
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	6.5 - 9.0	N/A	6.48	6.49	6.57	5.75
Total Phosphorus	mg/L	ns	0.020	0.020	<0.020	0.023	<0.020
Salinity	N/A	ns	2.0	<2.0	<2.0	<2.0	<2.0
Reactive Silica (SiO ₂)	mg/L	ns	0.50	1.8	1.8	2.6	2.3
Total Suspended Solids	mg/L	narrative ²	1.0	1.6	1.6	2.6	<1.0
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	<2.0	<2.0	3.9	<2.0
Total Cyanide (CN)	mg/L	0.005	0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Turbidity	NTU	narrative ³	0.10	0.99	0.95	3.1	1.3
WAD Cyanide (Free)	mg/L	ns	0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Conductivity	uS/cm	ns	1.0	29	29	35	24
Calculated Parameters							
Anion Sum	me/L	ns	N/A	0.160	0.140	0.400	0.140
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	7.6	<1.0
Calculated TDS	mg/L	ns	1.0	13	13	25	12
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.250	0.280	0.400	0.210
Hardness (CaCO ₃)	mg/L	ns	1.0	4.9	6.2	10	4.2
Ion Balance (% Difference)	%	ns	N/A	22.0	33.3	0.00	20.0
Langelier Index (@ 20C)	N/A	ns		NC	NC	-3.51	NC
Langelier Index (@ 4C)	N/A	ns		NC	NC	-3.76	NC
Nitrate (N)	mg/L	13	0.050	<0.050	<0.050	<0.050	0.053
Saturation pH (@ 20C)	N/A	ns		NC	NC	10.1	NC
Saturation pH (@ 4C)	N/A	ns		NC	NC	10.3	NC
Radionuclide							
Radium -226	Bq/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
Chlorophyll a	Units	CCME FWAL	RDL				
Chlorophyll a (Acidification Technique)	µg/L	ns		1.06	1.32	1.54	0.463
Chlorophyll a (Non-Acidification)	µg/L	ns		1.04	1.3	1.61	0.593
Field Parameters							
Temperature	°C	narrative ¹		2.8	16.9	16.5	0.6
Pressure	mmHg	ns		745.9	747.7	754	751.4
Dissolved Oxygen	%	ns		104.7	99.2	83.9	90.2
Dissolved Oxygen	mg/L	narrative ³		13.92	9.45	8.11	12.82
Turbidity	NTU	narrative ²		0.97	1.08	2.96	1.34
Conductivity	uS/cm	ns		17.6	25.7	29.3	14.9
Salinity	ppt	ns		0.01	0.01	0.02	0.01
pH	pH	6.5 - 9.0		6.07	5.98	5.92	4.69
Oxidation Reduction Potential	mV	ns		115.6	164.3	204.9	145.6

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)**Notes:**

mg/L - milligrams per litre
me/L - milliequivalent per litre
uS/cm - microsiemens
TCU - Total Colour Units
NTU - Nephelometric Turbidity Units
TDS - Total Dissolved Solids
ND- Not Detected
ns - no standard listed
ug/L - microgram per litre
RDL- Reportable Detection Limit
g/L - gram per litre
°C - Degrees Celcius
uS/cm - microsiemens
ppt - parts per trillion

Narrative (Gen Chem):

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.

² Maximum increase of 25 mg/L from background levels for any short-term (24-h period)

³ Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

Narrative (field parameters):

¹ Thermal Stratification: Thermal additions to receiving waters should be such that thermal stratification and subsequent turnover dates are not altered from those existing prior to the addition of heat from artificial origins

² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

³ Lowest acceptable dissolved oxygen concentration:

- for warm water biota: early life stages = 6000 µg/L
- for warm water biota: other life stages = 5500 µg/L
- for cold water biota: early life stages = 9500 µg/L
- for cold water biota: other life stages = 6500 µg/L

TABLE G.1-1: General Chemistry

Sampling Date		CCME FWAL	RDL	SW10			
				10-Apr-19	12-Jun-19	12-Sep-19	2-Dec-19
Inorganics							
Acidity	mg/L	ns	5.0	11	17	<5.0	13
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	10	12	10	7.7
Total Chemical Oxygen Demand	mg/L	ns	20	<20	<20	22	<20
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	3.8	2.7	2.7	3.7
Colour	TCU	narrative ¹	5.0	16	38	28	28
Total Dissolved Solids	mg/L	ns	10	31	36	26	44
Dissolved Fluoride (F ⁻)	mg/L	0.12	0.10	<0.10	<0.10	<0.10	<0.10
Nitrate + Nitrite (N)	mg/L	ns	0.050	0.066	<0.050	<0.050	0.069
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050
Total Organic Carbon (C)	mg/L	ns	0.50	2.3	4.5	5.0	4.2
Orthophosphate (P)	mg/L	ns	0.010	<0.010	0.012	0.011	<0.010
pH	pH	6.5 - 9.0	N/A	6.65	6.30	6.84	6.17
Total Phosphorus	mg/L	ns	0.020	0.034	<0.020	0.026	<0.020
Salinity	N/A	ns	2.0	<2.0	<2.0	<2.0	<2.0
Reactive Silica (SiO ₂)	mg/L	ns	0.50	4.2	4.6	1.5	4.4
Total Suspended Solids	mg/L	narrative ²	1.0	1.2	2.6	5.6	<1.0
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	8.5	8.6	6.0	10
Total Cyanide (CN)	mg/L	0.005	0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Turbidity	NTU	narrative ³	0.10	4.0	4.1	0.50	4.6
WAD Cyanide (Free)	mg/L	ns	0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Conductivity	uS/cm	ns	1.0	51	50	35	47
Calculated Parameters							
Anion Sum	me/L	ns	N/A	0.490	0.500	0.410	0.480
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	10	12	10	7.7
Calculated TDS	mg/L	ns	1.0	33	34	24	33
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.480	0.490	0.360	0.460
Hardness (CaCO ₃)	mg/L	ns	1.0	17	17	11	15
Ion Balance (% Difference)	%	ns	N/A	1.03	1.01	6.49	2.13
Langelier Index (@ 20C)	N/A	ns		-2.91	-3.17	-2.91	-3.57
Langelier Index (@ 4C)	N/A	ns		-3.16	-3.42	-3.16	-3.82
Nitrate (N)	mg/L	13	0.050	0.066	<0.050	<0.050	0.069
Saturation pH (@ 20C)	N/A	ns		9.56	9.47	9.75	9.74
Saturation pH (@ 4C)	N/A	ns		9.81	9.72	10.0	9.99
Radionuclide							
Radium -226	Bq/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
Chlorophyll a	Units	CCME FWAL	RDL				
Chlorophyll a (Acidification Technique)	µg/L	ns		0.237	2.36	0.129	0.234
Chlorophyll a (Non-Acidification)	µg/L	ns		0.273	2.23	0.089	0.227
Field Parameters							
Temperature	°C	narrative ¹		2.9	8.4	16.1	4.6
Pressure	mmHg	ns		740.3	744.9	751.6	746.6
Dissolved Oxygen	%	ns		47.5	47.3	58.8	38.6
Dissolved Oxygen	mg/L	narrative ³		6.25	5.43	5.72	4.9
Turbidity	NTU	narrative ²		0.37	1.88	1.94	0.42
Conductivity	uS/cm	ns		20.4	38.9	29.8	37.3
Salinity	ppt	ns		0.02	0.03	0.02	0.03
pH	pH	6.5 - 9.0		6.01	5.92	6.32	5.72
Oxidation Reduction Potential	mV	ns		107.9	45.4	103.9	165.9

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)**Notes:**

mg/L - milligrams per litre
me/L - milliequivalent per litre
uS/cm - microsiemens
TCU - Total Colour Units
NTU - Nephelometric Turbidity Units
TDS - Total Dissolved Solids
ND- Not Detected
ns - no standard listed
ug/L - microgram per litre
RDL- Reportable Detection Limit
g/L - gram per litre
°C - Degrees Celcius
uS/cm - microsiemens
ppt - parts per trillion

Narrative (Gen Chem):

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.

² Maximum increase of 25 mg/L from background levels for any short-term (24-h period)

³ Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

Narrative (field parameters):

¹ Thermal Stratification: Thermal additions to receiving waters should be such that thermal stratification and subsequent turnover dates are not altered from those existing prior to the addition of heat from artificial origins

² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

³ Lowest acceptable dissolved oxygen concentration:

- for warm water biota: early life stages = 6000 µg/L
- for warm water biota: other life stages = 5500 µg/L
- for cold water biota: early life stages = 9500 µg/L
- for cold water biota: other life stages = 6500 µg/L

TABLE G.1-1: General Chemistry

Sampling Date	Units	CCME FWAL	RDL	SW11									
				10-Apr-19	12-Jun-19	12-Sep-19	2-Dec-19	21-22-Apr-20	21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20	15-16-Dec-20
Inorganics										(DUP)		(DUP)	
Acidity	mg/L	ns	5.0	9.0	11	21	14	9.4	9.6	6.8	21	6.2	7.0
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Total Chemical Oxygen Demand	mg/L	ns	20	<20	41	72	51	30	33	46	82	57	49
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	4.0	2.4	5.6	3.7	2.7	3.0	5.5	7.2	6.8	6.8
Colour	TCU	narrative ¹	5.0	45.0	180	240	130	120	120	210	220	170	170
Total Dissolved Solids	mg/L	ns	10	13	32	57	46	46	35	27	66	38	66
Dissolved Fluoride (F ⁻)	mg/L	0.12	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrate + Nitrite (N)	mg/L	ns	0.050	<0.050	<0.050	<0.050	0.052	<0.050	<0.050	<0.050	<0.050	0.057	<0.050
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Total Organic Carbon (C)	mg/L	ns	0.50	6.4	19	23	18.0	9.8	10	16	32	18	18
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	6.5 - 9.0	N/A	5.68	4.94	4.95	5.71	5.14	5.30	6.16	4.78	5.78	5.46
Total Phosphorus	mg/L	ns	0.020	0.040	<0.020	0.027	<0.020	<0.020	<0.020	<0.020	0.023	<0.020	<0.020
Salinity	N/A	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Reactive Silica (SiO ₂)	mg/L	ns	0.50	2.6	1.5	3.2	2.4	1.7	1.6	1.3	1.9	4.0	3.9
Total Suspended Solids	mg/L	narrative ²	1.0	2.2	1.2	2.6	20	1.0	1.0	1.6	6.4	<1.0	1.6
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Cyanide (CN)	mg/L	0.005	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0030	<0.0050	<0.0050
Turbidity	NTU	narrative ³	0.10	0.62	0.57	1.5	4.8	0.89	1.1	0.56	<0.0050	1.3	1.4
WAD Cyanide (Free)	mg/L	ns	0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	0.84	<0.0030	<0.0030
Conductivity	uS/cm	ns	1.0	23	20	35	24	16	17	20	42	31	32
Calculated Parameters													
Anion Sum	me/L	ns	N/A	0.110	0.0700	0.160	0.110	0.0800	0.0900	0.150	0.200	0.200	0.190
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Calculated TDS	mg/L	ns	1.0	10	7.0	15	11	7.0	8.0	11	16	17	17
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.160	0.150	0.320	0.200	0.140	0.150	0.190	0.360	0.320	0.320
Hardness (CaCO ₃)	mg/L	ns	1.0	2.9	2.3	5.8	3.7	2.6	2.8	4.2	7.7	8.4	8.3
Ion Balance (% Difference)	%	ns	N/A	18.5	36.4	33.3	29.0	27.3	25.0	11.8	28.6	23.1	25.5
Langelier Index (@ 20C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Langelier Index (@ 4C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Nitrate (N)	mg/L	13	0.050	<0.050	<0.050	<0.050	0.052	<0.050	<0.050	<0.050	<0.050	0.057	<0.050
Saturation pH (@ 20C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Saturation pH (@ 4C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Radionuclide													
Radium -226	Bq/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Chlorophyll a	Units	CCME FWAL	RDL										
Chlorophyll a (Acidification Technique)	µg/L	ns		3.29	1.62	2.98	0.468	0.68	0.614	3.96	8.06	0.105	0.109
Chlorophyll a (Non-Acidification)	µg/L	ns		3.14	1.7	3.2	0.542	0.719	0.677	5.98	20.9	0.18	0.291
Field Parameters													
Temperature	°C		narrative ¹	0.9	17	15.1	3.3	5.2	-	19.8	17.5	-	3.8
Pressure	mmHg		ns	739.6	742.6	748.6	745.6	733.4	-	754.1	---	-	736.5
Dissolved Oxygen	%		ns	65.2	88	30.3	37.4	70.1	-	3.7	42.7	-	62.1
Dissolved Oxygen	mg/L		narrative ³	8.94	8.32	2.99	4.89	8.64	-	0.33	4.94	-	7.92
Turbidity	NTU		narrative ²	0.74	0.68	1.46	1.66	1.46	-	0.89	3.49	-	1.22
Conductivity	uS/cm		ns	15.2	19.3	28.7	26	12.9	-	20.7	51	-	20.8
Salinity	ppt		ns	0.01	0.01	0.02	0.02	0.01	-	0.01	0.02	-	0.02
pH	pH		6.5 - 9.0	4.71	4.92	4.5	5.09	4.8	-	4.04	4.43	-	5.03
Oxidation Reduction Potential	mV		ns	164.6	177.9	275.2	85.7	265.4	-	217.5	---	-	266.7

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)**Notes:**

mg/L - milligrams per litre

me/L - milliequivalent per litre

uS/cm - microsiemens

TCU - Total Colour Units

NTU - Nephelometric Turbidity Units

TDS - Total Dissolved Solids

ND- Not Detected

ns - no standard listed

ug/L - microgram per litre

RDL- Reportable Detection Limit

g/L - gram per litre

°C - Degrees Celcius

uS/cm - microsiemens

ppt - parts per trillion

Narrative (Gen Chem):¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.² Maximum increase of 25 mg/L from background levels for any short-term (24-h period)³ Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).**Narrative (field parameters):**¹ Thermal Stratification: Thermal additions to receiving waters should be such that thermal stratification and subsequent turnover dates are not altered from those existing prior to the addition of heat from artificial origins² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).³ Lowest acceptable dissolved oxygen concentration:

- for warm water biota: early life stages = 6000 µg/L

- for warm water biota: other life stages = 5500 µg/L

- for cold water biota: early life stages = 9500 µg/L

- for cold water biota: other life stages = 6500 µg/L

TABLE G.1-1: General Chemistry

Sampling Date		CCME FWAL	RDL	SW12								
				10-Apr-19	12-Jun-19	12-Sep-19	2-Dec-19	21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20	
Inorganics												
Acidity	mg/L	ns	5.0	7.4	11	22	12	9.0	9.2	19	12	
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
Total Chemical Oxygen Demand	mg/L	ns	20	<20	44	74	42	<20	50	88	51	
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	4.0	2.6	5.3	3.7	2.5	4.9	8.2	7.6	
Colour	TCU	narrative ¹	5.0	72	180	150	130	64	160	200	150	
Total Dissolved Solids	mg/L	ns	10	18	29	62	47	26	27	74	53	
Dissolved Fluoride (F ⁻)	mg/L	0.12	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Nitrate + Nitrite (N)	mg/L	ns	0.050	<0.050	<0.050	<0.050	0.13	0.062	<0.050	<0.050	0.056	
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050	0.055	<0.050	0.12	<0.050	<0.050	
Total Organic Carbon (C)	mg/L	ns	0.50	7.8	17	29	16	6.7	20 (1)	34 (1)	20	
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.013	<0.010	
pH	pH	6.5 - 9.0	N/A	5.75	5.25	4.58	5.35	5.51	4.88	4.34	4.47	
Total Phosphorus	mg/L	ns	0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	
Salinity	N/A	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	
Reactive Silica (SiO ₂)	mg/L	ns	0.50	2.2	1.5	3.7	2.5	2.2	1.0	3.2	3.7	
Total Suspended Solids	mg/L	narrative ²	1.0	4.8	<1.0	2.2	1.0	2.4	66	1.4	1.8	
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	
Total Cyanide (CN)	mg/L	0.005	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0030	<0.0050	
Turbidity	NTU	narrative ³	0.10	0.91	0.77	2.3	1.6	0.58	26	<0.0050	0.59	
WAD Cyanide (Free)	mg/L	ns	0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	2.4	<0.0030	
Conductivity	uS/cm	ns	1.0	21	20	48	28	17	24	54	37	
Calculated Parameters												
Anion Sum	me/L	ns	N/A	0.110	0.0700	0.150	0.110	0.0800	0.140	0.230	0.220	
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Calculated TDS	mg/L	ns	1.0	10	7.0	15	11	8.0	10	18	16	
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Cation Sum	me/L	ns	N/A	0.150	0.140	0.310	0.180	0.120	0.200	0.370	0.260	
Hardness (CaCO ₃)	mg/L	ns	1.0	2.5	1.9	5.1	2.3	2.0	2.2	6.4	3.6	
Ion Balance (% Difference)	%	ns	N/A	15.4	33.3	34.8	24.1	20.0	17.7	23.3	8.33	
Langelier Index (@ 20C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC	
Langelier Index (@ 4C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC	
Nitrate (N)	mg/L	13	0.050	<0.050	<0.050	<0.050	0.13	0.062	<0.050	<0.050	0.056	
Saturation pH (@ 20C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC	
Saturation pH (@ 4C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC	
Radionuclide												
Radium -226	Bq/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	
Chlorophyll a												
Chlorophyll a (Acidification Technique)	µg/L	ns		5.76	2.52	1.69	0.756	0.413	40.4	0.342	0.112	
Chlorophyll a (Non-Acidification)	µg/L	ns		5.92	2.55	1.68	0.759	0.45	75.7	1.01	0.285	
Field Parameters												
Temperature	°C		narrative ¹	0.5	13	12.9	0.7	4.7	23.7	13.7	3.5	
Pressure	mmHg		ns	739.1	744.8	748.9	745.7	732.9	754.3	741.8	737.2	
Dissolved Oxygen	%		ns	99.5	89.9	26.5	66.8	65.3	48	78.3	70.8	
Dissolved Oxygen	mg/L		narrative ³	13.94	9.25	2.75	9.39	8.08	4.03	7.92	9.11	
Turbidity	NTU		narrative ²	0.85	3.16	0.68	0.92	1.86	1.19	1.06	0.93	
Conductivity	uS/cm		ns	14.9	17.6	32.4	19.3	18.4	24.1	47.4	25.4	
Salinity	ppt		ns	0.01	0.01	0.02	0.02	0.01	0.01	0.03	0.02	
pH	pH		6.5 - 9.0	4.66	4.98	4.28	4.15	4.34	4.37	4.75	4.12	
Oxidation Reduction Potential	mV		ns	202.1	225.8	271.8	383.8	268.3	227.8	308	292.1	

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)**Notes:**

mg/L - milligrams per litre
me/L - milliequivalent per litre
uS/cm - microsiemens
TCU - Total Colour Units
NTU - Nephelometric Turbidity Units
TDS - Total Dissolved Solids
ND- Not Detected
ns - no standard listed
ug/L - microgram per litre
RDL- Reportable Detection Limit
g/L - gram per litre
°C - Degrees Celcius
uS/cm - microsiemens
ppt - parts per trillion

Narrative (Gen Chem):

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.

² Maximum increase of 25 mg/L from background levels for any short-term (24-h period)

³ Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

Narrative (field parameters):

¹ Thermal Stratification: Thermal additions to receiving waters should be such that thermal stratification and subsequent turnover dates are not altered from those existing prior to the addition of heat from artificial origins

² Maximum increase of 8 NTUs from background levels for a short-term exposure

(e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

³ Lowest acceptable dissolved oxygen concentration:

- for warm water biota: early life stages = 6000 µg/L
- for warm water biota: other life stages = 5500 µg/L
- for cold water biota: early life stages = 9500 µg/L
- for cold water biota: other life stages = 6500 µg/L

TABLE G.1-1: General Chemistry

Sampling Date		CCME FWAL	RDL	SW14				
				21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	24-25-Sep-20 (DUP)	15-16-Dec-20
Inorganics	Units							
Acidity	mg/L	ns	5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	9.5	7.4	7.9	9.3
Total Chemical Oxygen Demand	mg/L	ns	20	<20	<20	<20	<20	<20
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	2.8	2.7	4.5	8.9	5.6
Colour	TCU	narrative ¹	5.0	19	33	18	14	25
Total Dissolved Solids	mg/L	ns	10	48	28	30	29	67
Dissolved Fluoride (F ⁻)	mg/L	0.12	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrate + Nitrite (N)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Nitrite (N)	mg/L	ns	0.010	0.032	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Total Organic Carbon (C)	mg/L	ns	0.50	3.0	4.4	4.2	4.1	4.1
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	6.5 - 9.0	N/A	6.43	6.78	6.51	6.63	6.64
Total Phosphorus	mg/L	ns	0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Salinity	N/A	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Reactive Silica (SiO ₂)	mg/L	ns	0.50	1.6	0.56	0.83	0.79	3.1
Total Suspended Solids	mg/L	narrative ²	1.0	4.6	3.8	1.0	1.0	1.0
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	5.6	3.9	4.4	4.4	5.5
Total Cyanide (CN)	mg/L	0.005	0.0050	<0.0050	<0.0050	<0.0030	<0.0030	<0.0050
Turbidity	NTU	narrative ³	0.10	1.4	1.5	<0.0050	<0.0050	1.0
WAD Cyanide (Free)	mg/L	ns	0.0030	<0.0030	<0.0030	0.89	0.98	<0.0030
Conductivity	uS/cm	ns	1.0	24	34	34	34	43
Calculated Parameters								
Anion Sum	me/L	ns	N/A	0.190	0.350	0.360	0.500	0.460
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	9.5	7.4	7.9	9.3
Calculated TDS	mg/L	ns	1.0	15	21	20	25	28
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.240	0.360	0.300	0.310	0.420
Hardness (CaCO ₃)	mg/L	ns	1.0	7.3	11	7.9	8.2	13
Ion Balance (% Difference)	%	ns	N/A	11.6	1.41	9.09	23.5	4.55
Langelier Index (@ 20C)	N/A	ns		NC	-3.01	-3.57	-3.41	-3.11
Langelier Index (@ 4C)	N/A	ns		NC	-3.27	-3.83	-3.66	-3.36
Nitrate (N)	mg/L	13	0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Saturation pH (@ 20C)	N/A	ns		NC	9.80	10.1	10.0	9.74
Saturation pH (@ 4C)	N/A	ns		NC	10.0	10.3	10.3	9.99
Radionuclide								
Radium -226	Bq/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Chlorophyll a	Units	CCME FWAL	RDL					
Chlorophyll a (Acidification Technique)	µg/L	ns		1.7	1.37	0.896	0.979	2.14
Chlorophyll a (Non-Acidification)	µg/L	ns		1.65	1.87	2.48	2.73	2.77
Field Parameters								
Temperature	°C	narrative ¹		7.9	21.6	14.3	-	3
Pressure	mmHg	ns		740.6	752.9	743.3	-	738.6
Dissolved Oxygen	%	ns		59.7	63.4	57.6	-	78.7
Dissolved Oxygen	mg/L	narrative ³		6.88	5.33	5.75	-	10.29
Turbidity	NTU	narrative ²		1.69	2.43	0.75	-	4.46
Conductivity	uS/cm	ns		25.8	33.2	31.3	-	27.5
Salinity	ppt	ns		0.02	0.02	0.02	-	0.02
pH	pH	6.5 - 9.0		5.94	5.85	6.58	-	6.27
Oxidation Reduction Potential	mV	ns		120.2	232.4	130.8	-	254.6

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)**Notes:**

mg/L - milligrams per litre
me/L - milliequivalent per litre
uS/cm - microsiemens
TCU - Total Colour Units
NTU - Nephelometric Turbidity Units
TDS - Total Dissolved Solids
ND - Not Detected
ns - no standard listed
ug/L - microgram per litre
RDL- Reportable Detection Limit
g/L - gram per litre
°C - Degrees Celcius
uS/cm - microsiemens
ppt - parts per trillion

Narrative (Gen Chem):

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.
² Maximum increase of 25 mg/L from background levels for any short-term (24-h period)
³ Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

Narrative (field parameters):

¹ Thermal Stratification: Thermal additions to receiving waters should be such that thermal stratification and subsequent turnover dates are not altered from those existing prior to the addition of heat from artificial origins
² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).
³ Lowest acceptable dissolved oxygen concentration:
- for warm water biota: early life stages = 6000 µg/L
- for warm water biota: other life stages = 5500 µg/L
- for cold water biota: early life stages = 9500 µg/L
- for cold water biota: other life stages = 6500 µg/L

TABLE G.1-1: General Chemistry

Sampling Date	Units	CCME FWAL	RDL	SW19					
				21-22-Apr-20	17-18-Jun-20	17-18-Jun-20	24-25-Sep-20	24-25-Sep-20	15-16-Dec-20
Inorganics						(DUP)		(DUP)	
Acidity	mg/L	ns	5.0	6.6	7.6	5.6	13	13	7.8
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Total Chemical Oxygen Demand	mg/L	ns	20	26	38	31	72	70	47
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	2.3	3.8	3.7	5.8	5.8	5.7
Colour	TCU	narrative ¹	5.0	100	160	170	200	190	160
Total Dissolved Solids	mg/L	ns	10	27	<10	23	62	45	31
Dissolved Fluoride (F ⁻)	mg/L	0.12	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrate + Nitrite (N)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050	0.093	<0.050	<0.050
Total Organic Carbon (C)	mg/L	ns	0.50	8.1	11	11	27	27	18
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	6.5 - 9.0	N/A	5.17	5.40	5.11	4.60	4.97	4.85
Total Phosphorus	mg/L	ns	0.020	<0.020	<0.020	<0.020	0.029	0.021	<0.020
Salinity	N/A	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Reactive Silica (SiO ₂)	mg/L	ns	0.50	1.7	1.0	1.5	4.0	4.0	4.1
Total Suspended Solids	mg/L	narrative ²	1.0	<1.0	2.0	1.2	2.2	1.4	<1.0
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.6
Total Cyanide (CN)	mg/L	0.005	0.0050	<0.0050	<0.0050	<0.0050	<0.0030	<0.0030	<0.0050
Turbidity	NTU	narrative ³	0.10	0.64	0.86	1.6	<0.0050	<0.0050	0.65
WAD Cyanide (Free)	mg/L	ns	0.0030	<0.0030	<0.0030	<0.0030	1.7	2.5	<0.0030
Conductivity	uS/cm	ns	1.0	17	19	19	37	37	30
Calculated Parameters									
Anion Sum	me/L	ns	N/A	0.0600	0.110	0.100	0.160	0.160	0.220
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Calculated TDS	mg/L	ns	1.0	6.0	8.0	8.0	16	16	17
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.120	0.140	0.150	0.300	0.280	0.220
Hardness (CaCO ₃)	mg/L	ns	1.0	1.6	2.0	2.0	5.1	5.1	3.5
Ion Balance (% Difference)	%	ns	N/A	33.3	12.0	20.0	30.4	27.3	0.00
Langelier Index (@ 20C)	N/A	ns		NC	NC	NC	NC	NC	NC
Langelier Index (@ 4C)	N/A	ns		NC	NC	NC	NC	NC	NC
Nitrate (N)	mg/L	13	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Saturation pH (@ 20C)	N/A	ns		NC	NC	NC	NC	NC	NC
Saturation pH (@ 4C)	N/A	ns		NC	NC	NC	NC	NC	NC
Radionuclide									
Radium -226	Bq/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Chlorophyll a	Units	CCME FWAL	RDL						
Chlorophyll a (Acidification Technique)	µg/L	ns		0.558	0.822	0.794	1.63	1.33	0.204
Chlorophyll a (Non-Acidification)	µg/L	ns		0.546	1.3	1.27	5.1	4.47	0.346
Field Parameters		Units	CCME FWAL						
Temperature	°C	narrative ¹		7.1	20.5	-	14.1	-	0
Pressure	mmHg	ns		734.7	756.8	-	743.5	-	758.8
Dissolved Oxygen	%	ns		94	67.6	-	88.1	-	93.4
Dissolved Oxygen	mg/L	narrative ³		11	6.02	-	8.86	-	13.51
Turbidity	NTU	narrative ²		0.71	0.8	-	0.93	-	0.76
Conductivity	uS/cm	ns		13.9	18.1	-	32.5	-	18.8
Salinity	ppt	ns		0.01	0.01	-	0.02	-	0.02
pH	pH	6.5 - 9.0		4.42	3.98	-	4.88	-	4.04
Oxidation Reduction Potential	mV	ns		289.9	357.2	-	310	-	307.4

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)**Notes:**

mg/L - milligrams per litre
me/L - milliequivalent per litre
uS/cm - microsiemens
TCU - Total Colour Units
NTU - Nephelometric Turbidity Units
TDS - Total Dissolved Solids
ND - Not Detected
ns - no standard listed
ug/L - microgram per litre
RDL - Reportable Detection Limit
g/L - gram per litre
°C - Degrees Celcius
uS/cm - microsiemens
ppt - parts per trillion

Narrative (Gen Chem):

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.
² Maximum increase of 25 mg/L from background levels for any short-term (24-h period)
³ Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

Narrative (field parameters):

¹ Thermal Stratification: Thermal additions to receiving waters should be such that thermal stratification and subsequent turnover dates are not altered from those existing prior to the addition of heat from artificial origins
² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).
³ Lowest acceptable dissolved oxygen concentration:
- for warm water biota: early life stages = 6000 µg/L
- for warm water biota: other life stages = 5500 µg/L
- for cold water biota: early life stages = 9500 µg/L
- for cold water biota: other life stages = 6500 µg/L

TABLE G.1-1: General Chemistry

Sampling Date		CCME FWAL	RDL	SW26		
				21-22-Apr-20	17-18-Jun-20	15-16-Dec-20
Inorganics		Units				
Acidity	mg/L	ns	5.0	6.6	5.0	9.6
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	<5.0	<5.0
Total Chemical Oxygen Demand	mg/L	ns	20	26	45	25
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	2.9	3.2	5.4
Colour	TCU	narrative ¹	5.0	90	130	87
Total Dissolved Solids	mg/L	ns	10	27	19	23
Dissolved Fluoride (F ⁻)	mg/L	0.12	0.10	<0.10	<0.10	<0.10
Nitrate + Nitrite (N)	mg/L	ns	0.050	<0.050	<0.050	0.055
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050
Total Organic Carbon (C)	mg/L	ns	0.50	7.7	14 (1)	11
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010	<0.010
pH	pH	6.5 - 9.0	N/A	5.10	5.55	5.19
Total Phosphorus	mg/L	ns	0.020	<0.020	0.045	<0.020
Salinity	N/A	ns	2.0	<2.0	<2.0	<2.0
Reactive Silica (SiO ₂)	mg/L	ns	0.50	1.8	1.2	4.5
Total Suspended Solids	mg/L	narrative ²	1.0	<1.0	49	<1.0
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	2.2	<2.0	<2.0
Total Cyanide (CN)	mg/L	0.005	0.0050	<0.0050	<0.0050	<0.0050
Turbidity	NTU	narrative ³	0.10	0.87	20	0.98
WAD Cyanide (Free)	mg/L	ns	0.0030	<0.0030	<0.0030	<0.0030
Conductivity	uS/cm	ns	1.0	17	19	27
Calculated Parameters						
Anion Sum	me/L	ns	N/A	0.130	0.0900	0.160
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0
Calculated TDS	mg/L	ns	1.0	10	8.0	15
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.130	0.180	0.230
Hardness (CaCO ₃)	mg/L	ns	1.0	1.9	2.6	4.3
Ion Balance (% Difference)	%	ns	N/A	0.00	33.3	18.0
Langelier Index (@ 20C)	N/A	ns		NC	NC	NC
Langelier Index (@ 4C)	N/A	ns		NC	NC	NC
Nitrate (N)	mg/L	13	0.050	<0.050	<0.050	0.055
Saturation pH (@ 20C)	N/A	ns		NC	NC	NC
Saturation pH (@ 4C)	N/A	ns		NC	NC	NC
Radionuclide						
Radium -226	Bq/L	ns	0.010	<0.010	<0.010	<0.010
Chlorophyll a		Units		CCME FWAL RDL		
Chlorophyll a (Acidification Technique)	µg/L	ns		0.687	0.914	0.124
Chlorophyll a (Non-Acidification)	µg/L	ns		0.63	1.52	0.245
Field Parameters		Units		CCME FWAL		
Temperature	°C	narrative ¹		9.2	22.1	3.8
Pressure	mmHg	ns		741	753.4	739.1
Dissolved Oxygen	%	ns		86.6	39.1	70.6
Dissolved Oxygen	mg/L	narrative ³		9.74	3.55	9.07
Turbidity	NTU	narrative ²		0.89	41.5	0.95
Conductivity	uS/cm	ns		14.7	22.6	18.7
Salinity	ppt	ns		0.01	0.01	0.01
pH	pH	6.5 - 9.0		4.8	4.91	4.47
Oxidation Reduction Potential	mV	ns		236.1	270.3	254.6

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)**Notes:**

mg/L - milligrams per litre
me/L - milliequivalent per litre
uS/cm - microsiemens
TCU - Total Colour Units
NTU - Nephelometric Turbidity Units
TDS - Total Dissolved Solids
ND - Not Detected
ns - no standard listed
µg/L - microgram per litre
RDL - Reportable Detection Limit
g/L - gram per litre
°C - Degrees Celcius
uS/cm - microsiemens
ppt - parts per trillion

Narrative (Gen Chem):

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.
² Maximum increase of 25 mg/L from background levels for any short-term (24-h period)
³ Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

Narrative (field parameters):

¹ Thermal Stratification: Thermal additions to receiving waters should be such that thermal stratification and subsequent turnover dates are not altered from those existing prior to the addition of heat from artificial origins
² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).
³ Lowest acceptable dissolved oxygen concentration:
- for warm water biota: early life stages = 6000 µg/L
- for warm water biota: other life stages = 5500 µg/L
- for cold water biota: early life stages = 9500 µg/L
- for cold water biota: other life stages = 6500 µg/L

TABLE G.1-1: General Chemistry

		CCME FWAL	RDL	26A 24-25-Sep-20
Sampling Date				
Inorganics				
Acidity	mg/L	ns	5.0	7.6
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0
Total Chemical Oxygen Demand	mg/L	ns	20	56
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	5.2
Colour	TCU	narrative ¹	5.0	170
Total Dissolved Solids	mg/L	ns	10	39
Dissolved Fluoride (F ⁻)	mg/L	0.12	0.10	<0.10
Nitrate + Nitrite (N)	mg/L	ns	0.050	<0.050
Nitrite (N)	mg/L	ns	0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050
Total Organic Carbon (C)	mg/L	ns	0.50	21
Orthophosphate (P)	mg/L	ns	0.010	<0.010
pH	pH	6.5 - 9.0	N/A	5.02
Total Phosphorus	mg/L	ns	0.020	<0.020
Salinity	N/A	ns	2.0	<2.0
Reactive Silica (SiO ₂)	mg/L	ns	0.50	4.1
Total Suspended Solids	mg/L	narrative ²	1.0	2.0
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	<2.0
Total Cyanide (CN)	mg/L	0.005	0.0050	<0.0030
Turbidity	NTU	narrative ³	0.10	<0.0050
WAD Cyanide (Free)	mg/L	ns	0.0030	1.6
Conductivity	uS/cm	ns	1.0	30
Calculated Parameters				
Anion Sum	me/L	ns	N/A	0.150
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0
Calculated TDS	mg/L	ns	1.0	15
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0
Cation Sum	me/L	ns	N/A	0.260
Hardness (CaCO ₃)	mg/L	ns	1.0	4.6
Ion Balance (% Difference)	%	ns	N/A	26.8
Langelier Index (@ 20C)	N/A	ns		NC
Langelier Index (@ 4C)	N/A	ns		NC
Nitrate (N)	mg/L	13	0.050	<0.050
Saturation pH (@ 20C)	N/A	ns		NC
Saturation pH (@ 4C)	N/A	ns		NC
Radionuclide				
Radium -226	Bq/L	ns	0.010	<0.010
Chlorophyll a	Units	CCME FWAL	RDL	
Chlorophyll a (Acidification Technique)	µg/L	ns		6.69
Chlorophyll a (Non-Acidification)	µg/L	ns		6.22
Field Parameters				
Temperature	°C	narrative ¹		14
Pressure	mmHg	ns		743.8
Dissolved Oxygen	%	ns		68.6
Dissolved Oxygen	mg/L	narrative ³		6.9
Turbidity	NTU	narrative ²		1.66
Conductivity	uS/cm	ns		25
Salinity	ppt	ns		0.01
pH	pH	6.5 - 9.0		5.29
Oxidation Reduction Potential	mV	ns		258.6

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)**Notes:**

mg/L - milligrams per litre
me/L - milliequivalent per litre
uS/cm - microsiemens
TCU - Total Colour Units
NTU - Nephelometric Turbidity Units
TDS - Total Dissolved Solids
ND- Not Detected
ns - no standard listed
ug/L - microgram per litre
RDL- Reportable Detection Limit
g/L - gram per litre
°C - Degrees Celcius
uS/cm - microsiemens
ppt - parts per trillion

Narrative (Gen Chem):

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.

² Maximum increase of 25 mg/L from background levels for any short-term (24-h period)

³ Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

Narrative (field parameters):

¹ Thermal Stratification: Thermal additions to receiving waters should be such that thermal stratification and subsequent turnover dates are not altered from those existing prior to the addition of heat from artificial origins

² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

³ Lowest acceptable dissolved oxygen concentration:

- for warm water biota: early life stages = 6000 µg/L
- for warm water biota: other life stages = 5500 µg/L
- for cold water biota: early life stages = 9500 µg/L
- for cold water biota: other life stages = 6500 µg/L

TABLE G.1-1: General Chemistry

Sampling Date		CCME FWAL	RDL	SW28	
				24-25-Sep-20	15-16-Dec-20
Inorganics					
	Units				
Acidity	mg/L	ns	5.0	19	5.8
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	7.2
Total Chemical Oxygen Demand	mg/L	ns	20	75	47
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	9.0	7.3
Colour	TCU	narrative ¹	5.0	180	180
Total Dissolved Solids	mg/L	ns	10	60	59
Dissolved Fluoride (F ⁻)	mg/L	0.12	0.10	<0.10	<0.10
Nitrate + Nitrite (N)	mg/L	ns	0.050	<0.050	<0.050
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050
Total Organic Carbon (C)	mg/L	ns	0.50	30 (1)	19
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010
pH	pH	6.5 - 9.0	N/A	4.36	6.17
Total Phosphorus	mg/L	ns	0.020	<0.020	<0.020
Salinity	N/A	ns	2.0	<2.0	<2.0
Reactive Silica (SiO ₂)	mg/L	ns	0.50	4.4	5.1
Total Suspended Solids	mg/L	narrative ²	1.0	<1.0	<1.0
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	<2.0	<2.0
Total Cyanide (CN)	mg/L	0.005	0.0050	<0.0030	<0.0050
Turbidity	NTU	narrative ³	0.10	<0.0050	0.79
WAD Cyanide (Free)	mg/L	ns	0.0030	1.5	<0.0030
Conductivity	uS/cm	ns	1.0	52	35
Calculated Parameters					
Anion Sum	me/L	ns	N/A	0.250	0.350
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	7.1
Calculated TDS	mg/L	ns	1.0	21	25
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.370	0.410
Hardness (CaCO ₃)	mg/L	ns	1.0	6.1	12
Ion Balance (% Difference)	%	ns	N/A	19.4	7.89
Langelier Index (@ 20C)	N/A	ns		NC	-3.95
Langelier Index (@ 4C)	N/A	ns		NC	-4.20
Nitrate (N)	mg/L	13	0.050	<0.050	<0.050
Saturation pH (@ 20C)	N/A	ns		NC	10.1
Saturation pH (@ 4C)	N/A	ns		NC	10.4
Radionuclide					
Radium -226	Bq/L	ns	0.010	<0.010	<0.010
Chlorophyll a	Units	CCME FWAL	RDL		
Chlorophyll a (Acidification Technique)	µg/L	ns		0.336	0.094
Chlorophyll a (Non-Acidification)	µg/L	ns		0.978	0.114
Field Parameters	Units	CCME FWAL			
Temperature	°C	narrative ¹		11.6	3.4
Pressure	mmHg	ns		742.1	738.1
Dissolved Oxygen	%	ns		69.9	88.9
Dissolved Oxygen	mg/L	narrative ³		7.42	11.51
Turbidity	NTU	narrative ²		1.02	1.88
Conductivity	uS/cm	ns		43	23
Salinity	ppt	ns		0.03	0.02
pH	pH	6.5 - 9.0		4.9	5.79
Oxidation Reduction Potential	mV	ns		307	257.3

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)**Notes:**

mg/L - milligrams per litre
me/L - milliequivalent per litre
uS/cm - microsiemens
TCU - Total Colour Units
NTU - Nephelometric Turbidity Units
TDS - Total Dissolved Solids
ND - Not Detected
ns - no standard listed
ug/L - microgram per litre
RDL - Reportable Detection Limit
g/L - gram per litre
°C - Degrees Celcius
uS/cm - microsiemens
ppt - parts per trillion

Narrative (Gen Chem):

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.

² Maximum increase of 25 mg/L from background levels for any short-term (24-h period)

³ Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

Narrative (field parameters):

¹ Thermal Stratification: Thermal additions to receiving waters should be such that thermal stratification and subsequent turnover dates are not altered from those existing prior to the addition of heat from artificial origins

² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

³ Lowest acceptable dissolved oxygen concentration:

- for warm water biota: early life stages = 6000 µg/L
- for warm water biota: other life stages = 5500 µg/L
- for cold water biota: early life stages = 9500 µg/L
- for cold water biota: other life stages = 6500 µg/L

TABLE G.1-1: General Chemistry

Sampling Date		CCME FWAL	RDL	SW29			
				21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Inorganics							
Acidity	mg/L	ns	5.0	8.0	6.8	13	8.6
Total Alkalinity (Total as CaCO3)	mg/L	ns	5.0	<5.0	<5.0	<5.0	<5.0
Total Chemical Oxygen Demand	mg/L	ns	20	23	36	65	44
Dissolved Chloride (Cl-)	mg/L	640	1.0	2.2	3.7	5.4	5.5
Colour	TCU	narrative ¹	5.0	0.0	150	180	160
Total Dissolved Solids	mg/L	ns	10	28	21	51	34
Dissolved Fluoride (F-)	mg/L	0.12	0.10	<0.10	<0.10	<0.10	<0.10
Nitrate + Nitrite (N)	mg/L	ns	0.050	0.052	<0.050	<0.050	0.053
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050
Total Organic Carbon (C)	mg/L	ns	0.50	7.9	11	24	18
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	6.5 - 9.0	N/A	5.00	5.20	4.89	4.62
Total Phosphorus	mg/L	ns	0.020	<0.020	<0.020	<0.020	<0.020
Salinity	N/A	ns	2.0	<2.0	<2.0	<2.0	<2.0
Reactive Silica (SiO2)	mg/L	ns	0.50	1.7	1.5	2.6	4.0
Total Suspended Solids	mg/L	narrative ²	1.0	<1.0	1.8	<1.0	1.0
Dissolved Sulphate (SO4)	mg/L	ns	2.0	<2.0	<2.0	<2.0	2.3
Total Cyanide (CN)	mg/L	0.005	0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Turbidity	NTU	narrative ³	0.10	0.81	1.2	<0.0050	0.96
WAD Cyanide (Free)	mg/L	ns	0.0030	<0.0030	<0.0030	1.1	<0.0030
Conductivity	uS/cm	ns	1.0	17	18	33	31
Calculated Parameters							
Anion Sum	me/L	ns	N/A	0.0700	0.100	0.150	0.210
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Calculated TDS	mg/L	ns	1.0	7.0	8.0	13	17
Carb. Alkalinity (calc. as CaCO3)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.120	0.140	0.260	0.240
Hardness (CaCO3)	mg/L	ns	1.0	1.5	1.9	4.3	3.6
Ion Balance (% Difference)	%	ns	N/A	26.3	16.7	26.8	6.67
Langelier Index (@ 20C)	N/A	ns		NC	NC	NC	NC
Langelier Index (@ 4C)	N/A	ns		NC	NC	NC	NC
Nitrate (N)	mg/L	13	0.050	0.052	<0.050	<0.050	0.053
Saturation pH (@ 20C)	N/A	ns		NC	NC	NC	NC
Saturation pH (@ 4C)	N/A	ns		NC	NC	NC	NC
Radionuclide							
Radium -226	Bq/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
Chlorophyll a	Units	CCME FWAL	RDL				
Chlorophyll a (Acidification Technique)	µg/L	ns		0.739	1.37	1.2	1.23
Chlorophyll a (Non-Acidification)	µg/L	ns		0.728	2.55	3.66	1.86
Field Parameters							
Temperature	°C	narrative ¹		7.6	18.9	16.4	0.7
Pressure	mmHg	ns		734.6	757.3	---	752.7
Dissolved Oxygen	%	ns		93.1	71.7	---	88.1
Dissolved Oxygen	mg/L	narrative ³		10.76	6.71	---	12.5
Turbidity	NTU	narrative ²		0.71	1.4	1.14	1.04
Conductivity	uS/cm	ns		14.2	16.7	40	18.5
Salinity	ppt	ns		0.01	0.01	0.01	0.02
pH	pH	6.5 - 9.0		4.31	3.82	3.64	3.95
Oxidation Reduction Potential	mV	ns		295.4	348.9	---	312.8

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)**Notes:**

mg/L - milligrams per litre
me/L - milliequivalent per litre
uS/cm - microsiemens
TCU - Total Colour Units
NTU - Nephelometric Turbidity Units
TDS - Total Dissolved Solids
ND- Not Detected
ns - no standard listed
ug/L - microgram per litre
RDL- Reportable Detection Limit
g/L - gram per litre
°C - Degrees Celcius
uS/cm - microsiemens
ppt - parts per trillion

Narrative (Gen Chem):

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.

² Maximum increase of 25 mg/L from background levels for any short-term (24-h period)

³ Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

Narrative (field parameters):

¹ Thermal Stratification: Thermal additions to receiving waters should be such that thermal stratification and subsequent turnover dates are not altered from those existing prior to the addition of heat from artificial origins

² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

³ Lowest acceptable dissolved oxygen concentration:

- for warm water biota: early life stages = 6000 µg/L
- for warm water biota: other life stages = 5500 µg/L
- for cold water biota: early life stages = 9500 µg/L
- for cold water biota: other life stages = 6500 µg/L

TABLE G.1-1: General Chemistry

Sampling Date		CCME FWAL	RDL	SW30			
				21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Inorganics							
	Units						
Acidity	mg/L	ns	5.0	8.0	13	19	8.4
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	<5.0	<5.0	<5.0
Total Chemical Oxygen Demand	mg/L	ns	20	21	38	63	49
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	3.0	4.5	5.9	5.7
Colour	TCU	narrative ¹	5.0	0.0	140	180	120
Total Dissolved Solids	mg/L	ns	10	28	30	54	<20
Dissolved Fluoride (F ⁻)	mg/L	0.12	0.10	<0.10	<0.10	<0.10	<0.10
Nitrate + Nitrite (N)	mg/L	ns	0.050	<0.050	0.063	<0.050	0.064
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	0.072	<0.050	<0.050
Total Organic Carbon (C)	mg/L	ns	0.50	7.5	11	23	15 (1)
Orthophosphate (P)	mg/L	ns	0.010	<0.010	0.014	0.015	<0.010
pH	pH	6.5 - 9.0	N/A	5.01	5.73	4.80	4.71
Total Phosphorus	mg/L	ns	0.020	<0.020	0.041	<0.020	0.021
Salinity	N/A	ns	2.0	<2.0	<2.0	<2.0	<2.0
Reactive Silica (SiO ₂)	mg/L	ns	0.50	2.9	5.8	5.0	5.2
Total Suspended Solids	mg/L	narrative ²	1.0	1.4	1.4	<1.0	4.2
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	<2.0	<2.0	<2.0	3.0
Total Cyanide (CN)	mg/L	0.005	0.0050	<0.0050	<0.0050	<0.0030	<0.0050
Turbidity	NTU	narrative ³	0.10	0.36	3.1	<0.0050	3.6
WAD Cyanide (Free)	mg/L	ns	0.0030	<0.0030	<0.0030	0.51	<0.0030
Conductivity	uS/cm	ns	1.0	20	23	34	31
Calculated Parameters							
Anion Sum	me/L	ns	N/A	0.0800	0.130	0.170	0.230
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Calculated TDS	mg/L	ns	1.0	9.0	15	17	19
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.150	0.200	0.300	0.240
Hardness (CaCO ₃)	mg/L	ns	1.0	1.9	3.3	5.4	3.5
Ion Balance (% Difference)	%	ns	N/A	30.4	21.2	27.7	2.13
Langelier Index (@ 20C)	N/A	ns		NC	NC	NC	NC
Langelier Index (@ 4C)	N/A	ns		NC	NC	NC	NC
Nitrate (N)	mg/L	13	0.050	<0.050	0.063	<0.050	0.064
Saturation pH (@ 20C)	N/A	ns		NC	NC	NC	NC
Saturation pH (@ 4C)	N/A	ns		NC	NC	NC	NC
Radionuclide							
Radium -226	Bq/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
Chlorophyll a	Units	CCME FWAL	RDL				
Chlorophyll a (Acidification Technique)	µg/L	ns		3.8	0.739	0.223	2.21
Chlorophyll a (Non-Acidification)	µg/L	ns		3.05	1.21	0.449	3.71
Field Parameters							
Temperature	°C	narrative ¹		5.2	10.9	14.6	2
Pressure	mmHg	ns		734.7	756.9	---	752.8
Dissolved Oxygen	%	ns		80.5	41.2	---	69.6
Dissolved Oxygen	mg/L	narrative ³		9.38	4.89	---	9.34
Turbidity	NTU	narrative ²		1.68	5.12	4.85	0.82
Conductivity	uS/cm	ns		15.2	17.9	42	19
Salinity	ppt	ns		0.01	0.01	0.02	0.02
pH	pH	6.5 - 9.0		4.63	4.06	4.2	4.37
Oxidation Reduction Potential	mV	ns		290.2	300	---	298.4

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

mg/L - milligrams per litre
me/L - milliequivalent per litre
uS/cm - microsiemens
TCU - Total Colour Units
NTU - Nephelometric Turbidity Units
TDS - Total Dissolved Solids
ND- Not Detected
ns - no standard listed
ug/L - microgram per litre
RDL- Reportable Detection Limit
g/L - gram per litre
°C - Degrees Celcius
uS/cm - microsiemens
ppt - parts per trillion

Narrative (Gen Chem):

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.

² Maximum increase of 25 mg/L from background levels for any short-term (24-h period)

³ Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

Narrative (field parameters):

¹ Thermal Stratification: Thermal additions to receiving waters should be such that thermal stratification and subsequent turnover dates are not altered from those existing prior to the addition of heat from artificial origins

² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

³ Lowest acceptable dissolved oxygen concentration:

- for warm water biota: early life stages = 6000 µg/L
- for warm water biota: other life stages = 5500 µg/L
- for cold water biota: early life stages = 9500 µg/L
- for cold water biota: other life stages = 6500 µg/L

TABLE G.1-1: General Chemistry

Sampling Date		CCME FWAL	RDL	SW31				
				21-22-Apr-20	17-18-Jun-20	17-18-Jun-20 (DUP)]	24-25-Sep-20	15-16-Dec-20
Inorganics	Units							
Acidity	mg/L	ns	5.0	7.6	8.2	8.6	18	11
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Total Chemical Oxygen Demand	mg/L	ns	20	33	38	40	86	51
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	2.7	4.6	4.6	7.0	6.1
Colour	TCU	narrative ¹	5.0	0.0	170	160	210	180
Total Dissolved Solids	mg/L	ns	10	32	35	31	73	33
Dissolved Fluoride (F ⁻)	mg/L	0.12	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrate + Nitrite (N)	mg/L	ns	0.050	<0.050	0.061	0.063	<0.050	<0.050
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Total Organic Carbon (C)	mg/L	ns	0.50	9.5	12	13	34	21
Orthophosphate (P)	mg/L	ns	0.010	<0.010	0.015	0.016	0.012	<0.010
pH	pH	6.5 - 9.0	N/A	4.72	5.02	4.87	4.34	4.40
Total Phosphorus	mg/L	ns	0.020	<0.020	0.033	0.037	<0.020	<0.020
Salinity	N/A	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Reactive Silica (SiO ₂)	mg/L	ns	0.50	3.5	6.6	6.7	6.1	6.0
Total Suspended Solids	mg/L	narrative ²	1.0	<1.0	1.4	1.0	<1.0	1.0
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	2.1
Total Cyanide (CN)	mg/L	0.005	0.0050	<0.0050	<0.0050	<0.0050	<0.0030	<0.0050
Turbidity	NTU	narrative ³	0.10	0.58	1.2	1.1	<0.0050	0.38
WAD Cyanide (Free)	mg/L	ns	0.0030	<0.0030	<0.0030	<0.0030	0.67	<0.0030
Conductivity	uS/cm	ns	1.0	23	25	24	47	38
Calculated Parameters								
Anion Sum	me/L	ns	N/A	0.0800	0.140	0.130	0.200	0.220
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Calculated TDS	mg/L	ns	1.0	9.0	15	15	19	19
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.150	0.180	0.180	0.330	0.270
Hardness (CaCO ₃)	mg/L	ns	1.0	1.5	2.1	2.1	4.7	3.4
Ion Balance (% Difference)	%	ns	N/A	30.4	12.5	16.1	24.5	10.2
Langelier Index (@ 20C)	N/A	ns		NC	NC	NC	NC	NC
Langelier Index (@ 4C)	N/A	ns		NC	NC	NC	NC	NC
Nitrate (N)	mg/L	13	0.050	<0.050	0.061	0.063	<0.050	<0.050
Saturation pH (@ 20C)	N/A	ns		NC	NC	NC	NC	NC
Saturation pH (@ 4C)	N/A	ns		NC	NC	NC	NC	NC
Radionuclide								
Radium -226	Bq/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Chlorophyll a	Units	CCME FWAL	RDL					
Chlorophyll a (Acidification Technique)	µg/L	ns		0.187	0.73	0.868	0.061	0.041
Chlorophyll a (Non-Acidification)	µg/L	ns		0.199	1.12	1.33	0.16	0.06
Field Parameters								
Temperature	°C	narrative ¹		4	9.6	-	14.3	1.7
Pressure	mmHg	ns		736.4	758.9	-	---	754.3
Dissolved Oxygen	%	ns		92.4	72.2	-	---	88.2
Dissolved Oxygen	mg/L	narrative ³		11.74	8.2	-	---	12.22
Turbidity	NTU	narrative ²		1.55	1.23	-	0.35	0.42
Conductivity	uS/cm	ns		17.8	18.8	-	50	25.2
Salinity	ppt	ns		0.01	0.01	-	0.03	0.02
pH	pH	6.5 - 9.0		4.27	3.47	-	3.89	3.79
Oxidation Reduction Potential	mV	ns		320.4	365.1	-	---	335.3

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)**Notes:**

mg/L - milligrams per litre
me/L - milliequivalent per litre
uS/cm - microsiemens
TCU - Total Colour Units
NTU - Nephelometric Turbidity Units
TDS - Total Dissolved Solids
ND - Not Detected
ns - no standard listed
ug/L - microgram per litre
RDL- Reportable Detection Limit
g/L - gram per litre
°C - Degrees Celcius
uS/cm - microsiemens
ppt - parts per trillion

Narrative (Gen Chem):

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.

² Maximum increase of 25 mg/L from background levels for any short-term (24-h period)

³ Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

Narrative (field parameters):

¹ Thermal Stratification: Thermal additions to receiving waters should be such that thermal stratification and subsequent turnover dates are not altered from those existing prior to the addition of heat from artificial origins

² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

³ Lowest acceptable dissolved oxygen concentration:

- for warm water biota: early life stages = 6000 µg/L
- for warm water biota: other life stages = 5500 µg/L
- for cold water biota: early life stages = 9500 µg/L
- for cold water biota: other life stages = 6500 µg/L

TABLE G.1-1 General Chemistry

Sampling Date		CCME FWAL	RDL	SW1A			
				21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Inorganics							
	Units						
Acidity	mg/L	ns	5.0	<5.0	<5.0	<5.0	<5.0
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	14	9.7	<5.0
Total Chemical Oxygen Demand	mg/L	ns	20	26	26	49	42
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	3.1	3.2	5.1	5.8
Colour	TCU	narrative ¹	5.0	96	120	140	140
Total Dissolved Solids	mg/L	ns	10	38	30	46	35
Dissolved Fluoride (F ⁻)	mg/L	0.12	0.10	<0.10	<0.10	<0.10	<0.10
Nitrate + Nitrite (N)	mg/L	ns	0.050	<0.050	<0.050	<0.050	0.059
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050
Total Organic Carbon (C)	mg/L	ns	0.50	7.6	8.7	18	16
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	6.5 - 9.0	N/A	6.39	7.28	7.19	6.19
Total Phosphorus	mg/L	ns	0.020	<0.020	0.021	0.028	<0.020
Salinity	N/A	ns	2.0	<2.0	<2.0	<2.0	<2.0
Reactive Silica (SiO ₂)	mg/L	ns	0.50	1.8	1.0	3.8	4.2
Total Suspended Solids	mg/L	narrative ²	1.0	1.6	<2.0	28	3.2
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	2.3	<2.0	<2.0	2.2
Total Cyanide (CN)	mg/L	0.005	0.0050	<0.0050	<0.0050	<0.0030	<0.0050
Turbidity	NTU	narrative ³	0.10	1.1	1.8	<0.0050	1.7
WAD Cyanide (Free)	mg/L	ns	0.0030	<0.0030	<0.0030	7.7	<0.0030
Conductivity	uS/cm	ns	1.0	18	38	39	30
Calculated Parameters							
Anion Sum	me/L	ns	N/A	0.140	0.370	0.340	0.210
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	14	9.7	<1.0
Calculated TDS	mg/L	ns	1.0	11	21	31	20
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.210	0.420	0.910	0.370
Hardness (CaCO ₃)	mg/L	ns	1.0	6.2	15	37	11
Ion Balance (% Difference)	%	ns	N/A	20.0	6.33	45.6	27.6
Langelier Index (@ 20C)	N/A	ns		NC	-2.32	-2.22	NC
Langelier Index (@ 4C)	N/A	ns		NC	-2.57	-2.47	NC
Nitrate (N)	mg/L	13	0.050	<0.050	<0.050	<0.050	0.059
Saturation pH (@ 20C)	N/A	ns		NC	9.60	9.41	NC
Saturation pH (@ 4C)	N/A	ns		NC	9.85	9.66	NC
Radionuclide							
Radium -226	Bq/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
Chlorophyll a	Units	CCME FWAL	RDL				
Chlorophyll a (Acidification Technique)	µg/L	ns		0.505	1.33	2.57	0.264
Chlorophyll a (Non-Acidification)	µg/L	ns		0.561	1.94	8.57	0.522
Field Parameters							
Temperature	°C	narrative ¹		6.6	20.1	13.3	-0.1
Pressure	mmHg	ns		741.6	753.7	744.5	755.1
Dissolved Oxygen	%	ns		101.6	91.4	96.7	98.2
Dissolved Oxygen	mg/L	narrative ³		12.18	8.23	10.12	14.31
Turbidity	NTU	narrative ²		2.16	2.47	16.3	3.79
Conductivity	uS/cm	ns		13.8	36.2	26.2	16.1
Salinity	ppt	ns		0.01	0.02	0.01	0.01
pH	pH	6.5 - 9.0		5.62	6.59	5.56	5.23
Oxidation Reduction Potential	mV	ns		192.4	243	218	266.1

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

mg/L - milligrams per litre
me/L - milliequivalent per litre
uS/cm - microsiemens
TCU - Total Colour Units
NTU - Nephelometric Turbidity Units
TDS - Total Dissolved Solids
ND- Not Detected
ns - no standard listed
ug/L - microgram per litre
RDL- Reportable Detection Limit
g/L - gram per litre
°C - Degrees Celcius
uS/cm - microsiemens
ppt - parts per trillion

Narrative (Gen Chem):

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.

² Maximum increase of 25 mg/L from background levels for any short-term (24-h period)

³ Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

Narrative (field parameters):

¹ Thermal Stratification: Thermal additions to receiving waters should be such that thermal stratification and subsequent turnover dates are not altered from those existing prior to the addition of heat from artificial origins

² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

³ Lowest acceptable dissolved oxygen concentration:

- for warm water biota: early life stages = 6000 µg/L
- for warm water biota: other life stages = 5500 µg/L
- for cold water biota: early life stages = 9500 µg/L
- for cold water biota: other life stages = 6500 µg/L

TABLE G.1-2. Filtered General Chemistry

Sampling Date		CCME FWAL	RDL	SW1											
				10-Apr-19	10-Apr-19	12-Jun-19	12-Sep-19	12-Sep-19	2-Dec-19	21-22-Apr-20	21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20	15-16-Dec-20
Inorganics					(DUP)			(DUP)			(DUP)			(DUP)	
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	3.8	3.3	2.7	5.2	5.2	3.4	2.6	3.0	4.3	4.9	5.7	5.7
Colour	TCU	narrative ¹	25	59	73	140	170	130	110	92	92	120	150	140	140
Nitrate + Nitrite (N)	mg/L	ns	0.050	0.096	0.094	<0.050	<0.050	<0.050	0.060	<0.050	<0.050	<0.050	<0.050	0.063	0.056
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dissolved Organic Carbon (C)	mg/L	ns	0.5	7.0	6.9	13	20	14	12	7.4	7.9	9.2	17	16	16
Total Organic Carbon (C)	mg/L	ns	0.50	6.8	6.8	15	20	14	12	7.7	7.7	9.2	16	16	16
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	6.5 - 9.0	N/A	5.45	5.12	5.82	5.74	6.67	4.96	5.78	5.05	6.14	5.61	4.93	5.00
Reactive Silica (SiO ₂)	mg/L	ns	0.50	1.8	1.8	1.6	3.9	2.6	2.7	1.8	1.8	1.2	3.6	4.0	4.0
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	<2.0	<2.0	6.8	<2.0
Turbidity	NTU	narrative ²	0.10	0.90	0.97	0.34	0.25	0.41	0.73	0.22	0.36	0.31	0.38	0.38	1.5
Conductivity	uS/cm	ns	1.0	21	20	17	30	36	22	17	17	18	28	30	30
Calculated Parameters															
Anion Sum	me/L	ns	N/A	0.110	0.100	0.0800	0.150	0.280	0.100	0.0700	0.130	0.120	0.140	0.310	0.170
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	6.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Calculated TDS	mg/L	ns	1.0	9.0	9.0	8.0	15	19	9.0	7.0	9.0	10	14	22	15
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.150	0.150	0.150	0.250	0.370	0.150	0.120	0.130	0.180	0.250	0.240	0.230
Hardness (CaCO ₃)	mg/L	ns	1.0	2.3	2.4	2.6	4.7	9.7	2.6	2.0	2.0	2.9	4.7	4.1	4.1
Ion Balance (% Difference)	%	ns	N/A	15.4	20.0	30.4	25.0	13.9	20.0	26.3	0.00	20.0	28.2	12.7	15.0
Langelier Index (@ 20C)	N/A	ns		NC	NC	NC	NC	-3.46	NC	NC	NC	NC	NC	NC	NC
Langelier Index (@ 4C)	N/A	ns		NC	NC	NC	NC	-3.72	NC	NC	NC	NC	NC	NC	NC
Nitrate (N)	mg/L	13	0.050	0.096	0.094	<0.050	<0.050	<0.050	0.060	<0.050	<0.050	<0.050	<0.050	0.063	0.056
Saturation pH (@ 20C)	N/A	ns		NC	NC	NC	NC	10.1	NC	NC	NC	NC	NC	NC	NC
Saturation pH (@ 4C)	N/A	ns		NC	NC	NC	NC	10.4	NC	NC	NC	NC	NC	NC	NC

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

mg/L - milligrams per litre

me/L - milliequivalent per litre

uS/cm - microsiemens

TCU - Total Colour Units

NTU - Nephelometric Turbidity Units

TDS - Total Dissolved Solids

RDL - Reportable Detection Limit

ns - no standard listed

NC - Not Calculated

Narrative:

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.

² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

TABLE G.1-2: Filtered General Chemistry

Sampling Date		CCME FWAL	RDL	SW1A			
				21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Inorganics	Units						
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	2.7	4.4	5.0	5.8
Colour	TCU	narrative ¹	25	96	120	150	150
Nitrate + Nitrite (N)	mg/L	ns	0.050	0.055	<0.050	<0.050	0.062
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050
Dissolved Organic Carbon (C)	mg/L	ns	0.5	7.5	9.5	17	16
Total Organic Carbon (C)	mg/L	ns	0.50	7.9	9.1	17	16
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	6.5 - 9.0	N/A	5.71	6.65	5.72	5.16
Reactive Silica (SiO ₂)	mg/L	ns	0.50	1.8	1.3	3.8	4.1
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	2.1	<2.0	<2.0	<2.0
Turbidity	NTU	narrative ²	0.10	0.13	0.37	0.61	0.26
Conductivity	uS/cm	ns	1.0	16	24	28	29
Calculated Parameters							
Anion Sum	me/L	ns	N/A	0.120	0.120	0.140	0.170
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Calculated TDS	mg/L	ns	1.0	10	11	15	16
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.140	0.240	0.280	0.260
Hardness (CaCO ₃)	mg/L	ns	1.0	2.8	6.1	6.4	5.8
Ion Balance (% Difference)	%	ns	N/A	7.69	33.3	33.3	20.9
Langelier Index (@ 20C)	N/A	ns		NC	NC	NC	NC
Langelier Index (@ 4C)	N/A	ns		NC	NC	NC	NC
Nitrate (N)	mg/L	13	0.050	0.055	<0.050	<0.050	0.062
Saturation pH (@ 20C)	N/A	ns		NC	NC	NC	NC
Saturation pH (@ 4C)	N/A	ns		NC	NC	NC	NC

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

mg/L - milligrams per litre
me/L - milliequivalent per litre
uS/cm - microsiemens
TCU - Total Colour Units
NTU - Nephelometric Turbidity Units
TDS - Total Dissolved Solids
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated

Narrative:

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.

² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

TABLE G.1-2: Filtered General Chemistry

Sampling Date		CCME FWAL	RDL	SW2A				
				10-Apr-19	12-Jun-19	12-Sep-19	2-Dec-19	2-Dec-19
Inorganics	Units						(DUP)	
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	3.3	2.7	3.9	3.3	3.4
Colour	TCU	narrative ¹	25	69	150	190	120	110
Nitrate + Nitrite (N)	mg/L	ns	0.050	0.056	<0.050	<0.050	0.056	0.063
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.020
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dissolved Organic Carbon (C)	mg/L	ns	0.5	6.9	14	20	13	13
Total Organic Carbon (C)	mg/L	ns	0.50	7.1	15	20	12	13
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	6.5 - 9.0	N/A	5.46	5.86	5.77	5.16	4.86
Reactive Silica (SiO ₂)	mg/L	ns	0.50	1.9	1.7	3.3	2.7	3.1
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Turbidity	NTU	narrative ²	0.10	0.10	0.49	0.36	0.43	0.78
Conductivity	uS/cm	ns	1.0	21	18	31	23	23
Calculated Parameters								
Anion Sum	me/L	ns	N/A	0.100	0.0800	0.110	0.100	0.100
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Calculated TDS	mg/L	ns	1.0	9.0	8.0	12	9.0	10
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.150	0.140	0.240	0.150	0.160
Hardness (CaCO ₃)	mg/L	ns	1.0	2.2	2.3	4.3	2.4	2.4
Ion Balance (% Difference)	%	ns	N/A	20.0	27.3	37.1	20.0	23.1
Langelier Index (@ 20C)	N/A	ns		NC	NC	NC	NC	NC
Langelier Index (@ 4C)	N/A	ns		NC	NC	NC	NC	NC
Nitrate (N)	mg/L	13	0.050	0.056	<0.050	<0.050	0.056	0.063
Saturation pH (@ 20C)	N/A	ns		NC	NC	NC	NC	NC
Saturation pH (@ 4C)	N/A	ns		NC	NC	NC	NC	NC

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

mg/L - milligrams per litre

me/L - milliequivalent per litre

uS/cm - microsiemens

TCU - Total Colour Units

NTU - Nephelometric Turbidity Units

TDS - Total Dissolved Solids

RDL - Reportable Detection Limit

ns - no standard listed

NC - Not Calculated

Narrative:

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.

² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

TABLE G.1-2: Filtered General Chemistry

Sampling Date		CCME FWAL	RDL	SW4A								
				10-Apr-19	12-Jun-19	12-Sep-19	2-Dec-19	21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20	
Inorganics	Units											
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	3.6	2.9	5.0	3.9	2.8	3.9	5.7	6.0	6.0
Colour	TCU	narrative ¹	25	62	130	180	91	86	150	180	120	120
Nitrate + Nitrite (N)	mg/L	ns	0.050	0.071	<0.050	<0.050	0.057	<0.050	<0.050	<0.050	<0.050	0.079
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dissolved Organic Carbon (C)	mg/L	ns	0.5	6.5	13	18	11	6.7	12	21	14	14
Total Organic Carbon (C)	mg/L	ns	0.50	6.1	14	20	11	6.7	11	19	14	14
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	6.5 - 9.0	N/A	5.71	5.78	5.43	5.02	5.39	6.09	5.00	4.89	4.89
Reactive Silica (SiO ₂)	mg/L	ns	0.50	2.2	1.7	3.1	2.5	2.0	1.3	3.9	4.3	4.3
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	<2.0	<2.0	<2.0	2.2	<2.0	<2.0	<2.0	<2.0	<2.0
Turbidity	NTU	narrative ²	0.10	0.11	0.31	0.36	0.21	<0.10	0.64	0.64	0.25	0.25
Conductivity	uS/cm	ns	1.0	21	19	35	23	17	23	31	30	30
Calculated Parameters												
Anion Sum	me/L	ns	N/A	0.110	0.0800	0.140	0.160	0.0800	0.110	0.160	0.160	0.180
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Calculated TDS	mg/L	ns	1.0	9.0	8.0	14	12	8.0	10	15	16	16
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.150	0.160	0.300	0.160	0.130	0.210	0.270	0.240	0.240
Hardness (CaCO ₃)	mg/L	ns	1.0	2.5	2.7	5.9	2.8	2.2	3.3	4.9	4.2	4.2
Ion Balance (% Difference)	%	ns	N/A	15.4	33.3	36.4	0.00	23.8	31.3	25.6	14.3	14.3
Langelier Index (@ 20C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC	NC
Langelier Index (@ 4C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC	NC
Nitrate (N)	mg/L	13	0.050	0.071	<0.050	<0.050	0.057	<0.050	<0.050	<0.050	<0.050	0.079
Saturation pH (@ 20C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC	NC
Saturation pH (@ 4C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC	NC

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)**Notes:**

mg/L - milligrams per litre
me/L - milliequivalent per litre
uS/cm - microsiemens
TCU - Total Colour Units
NTU - Nephelometric Turbidity Units
TDS - Total Dissolved Solids
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated

Narrative:

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.
² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

TABLE G.1-2: Filtered General Chemistry

Sampling Date		CCME FWAL	RDL	SW5								
				10-Apr-19	12-Jun-19	12-Jun-19	12-Sep-19	2-Dec-19	21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Inorganics	Units					(DUP)						
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	8.1	7.6	29	6.1	<5.0	9.6	9.7	7.0
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	3.2	2.7	2.6	3.8	3.6	2.6	3.9	4.2	6.5
Colour	TCU	narrative ¹	25	16	18	18	170	23	21	29	25	27
Nitrate + Nitrite (N)	mg/L	ns	0.050	0.10	<0.050	<0.050	<0.050	0.078	<0.050	<0.050	<0.050	0.060
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050	0.11	<0.050	<0.050	<0.050	<0.050	<0.050
Dissolved Organic Carbon (C)	mg/L	ns	0.5	2.9	4.1	4.3	5.9	3.6	2.7	3.6	5.0	4.3
Total Organic Carbon (C)	mg/L	ns	0.50	2.8	4.8	4.4	6.1	4.0	2.9	3.8	4.4	5.2
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010	<0.010	0.059	<0.010	<0.010	<0.010	0.011	<0.010
pH	pH	6.5 - 9.0	N/A	6.49	6.76	6.89	6.66	6.73	6.46	6.82	6.80	6.66
Reactive Silica (SiO ₂)	mg/L	ns	0.50	1.7	1.1	1.1	7.8	3.1	1.6	0.76	2.0	3.4
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	2.8	3.1	3.3	12	5.8	4.4	3.8	3.8	7.0
Turbidity	NTU	narrative ²	0.10	0.12	0.84	0.28	0.29	0.42	0.11	0.42	0.54	0.18
Conductivity	uS/cm	ns	1.0	26	33	32	99	35	26	35	36	44
Calculated Parameters												
Anion Sum	me/L	ns	N/A	0.160	0.300	0.290	0.950	0.350	0.160	0.380	0.390	0.470
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	8.1	7.6	29	6.1	<1.0	9.6	9.7	7.0
Calculated TDS	mg/L	ns	1.0	13	18	18	65	23	13	21	23	30
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.230	0.300	0.310	1.10	0.310	0.230	0.330	0.350	0.400
Hardness (CaCO ₃)	mg/L	ns	1.0	6.8	10	10	38	10	7.2	11	10	13
Ion Balance (% Difference)	%	ns	N/A	18.0	0.00	3.33	7.32	6.06	18.0	7.04	5.41	8.05
Langelier Index (@ 20C)	N/A	ns		NC	-3.11	-3.00	-2.09	-3.28	NC	-2.97	-3.01	-3.19
Langelier Index (@ 4C)	N/A	ns		NC	-3.36	-3.25	-2.35	-3.53	NC	-3.22	-3.27	-3.44
Nitrate (N)	mg/L	13	0.050	0.10	<0.050	<0.050	<0.050	0.078	<0.050	<0.050	<0.050	0.060
Saturation pH (@ 20C)	N/A	ns		NC	9.87	9.89	8.75	10.0	NC	9.78	9.82	9.85
Saturation pH (@ 4C)	N/A	ns		NC	10.1	10.1	9.00	10.3	NC	10.0	10.1	10.1

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

mg/L - milligrams per litre

me/L - milliequivalent per litre

uS/cm - microsiemens

TCU - Total Colour Units

NTU - Nephelometric Turbidity Units

TDS - Total Dissolved Solids

RDL - Reportable Detection Limit

ns - no standard listed

NC - Not Calculated

Narrative:

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.

² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

TABLE G.1-2: Filtered General Chemistry

Sampling Date		CCME FWAL	RDL	SW5A			
				21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Inorganics	Units						
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	3.1	4.3	5.2	5.6
Colour	TCU	narrative ¹	25	92	130	160	110
Nitrate + Nitrite (N)	mg/L	ns	0.050	<0.050	<0.050	<0.050	0.066
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050
Dissolved Organic Carbon (C)	mg/L	ns	0.5	7.8	9.0	18	12
Total Organic Carbon (C)	mg/L	ns	0.50	8.3 (1)	9.2	17	12
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	6.5 - 9.0	N/A	5.30	6.01	5.27	5.35
Reactive Silica (SiO ₂)	mg/L	ns	0.50	1.9	1.3	3.9	4.3
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Turbidity	NTU	narrative ²	0.10	0.26	0.71	0.46	0.35
Conductivity	uS/cm	ns	1.0	17	19	41	29
Calculated Parameters							
Anion Sum	me/L	ns	N/A	0.0900	0.120	0.150	0.160
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Calculated TDS	mg/L	ns	1.0	8.0	9.0	15	16
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.130	0.170	0.270	0.260
Hardness (CaCO ₃)	mg/L	ns	1.0	2.0	2.8	4.8	5.8
Ion Balance (% Difference)	%	ns	N/A	18.2	17.2	28.6	23.8
Langelier Index (@ 20C)	N/A	ns		NC	NC	NC	NC
Langelier Index (@ 4C)	N/A	ns		NC	NC	NC	NC
Nitrate (N)	mg/L	13	0.050	<0.050	<0.050	<0.050	0.066
Saturation pH (@ 20C)	N/A	ns		NC	NC	NC	NC
Saturation pH (@ 4C)	N/A	ns		NC	NC	NC	NC

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

mg/L - milligrams per litre

me/L - milliequivalent per litre

uS/cm - microsiemens

TCU - Total Colour Units

NTU - Nephelometric Turbidity Units

TDS - Total Dissolved Solids

RDL - Reportable Detection Limit

ns - no standard listed

NC - Not Calculated

Narrative:

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.

² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

TABLE G.1-2: Filtered General Chemistry

Sampling Date		CCME FWAL	RDL	SW6A								
				10-Apr-19	12-Jun-19	12-Sep-19	2-Dec-19	21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20	
Inorganics	Units											
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	3.6	2.9	4.3	4.1	2.5	3.3	5.3	6.2	
Colour	TCU	narrative ¹	25	43	99	130	94	78	120	110	120	
Nitrate + Nitrite (N)	mg/L	ns	0.050	2.9	<0.050	<0.050	0.060	0.067	0.052	<0.050	0.068	
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.065	<0.050	<0.050	
Dissolved Organic Carbon (C)	mg/L	ns	0.5	5.8	11	12	11	6.6	11	15	13	
Total Organic Carbon (C)	mg/L	ns	0.50	5.7	12	12	11	6.6	9.5	13	14	
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	
pH	pH	6.5 - 9.0	N/A	4.13	6.13	5.98	5.60	5.96	5.87	5.84	5.46	
Reactive Silica (SiO ₂)	mg/L	ns	0.50	2.0	1.7	2.3	2.6	1.1	1.5	2.3	4.5	
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	3.2	
Turbidity	NTU	narrative ²	0.10	<0.10	0.43	0.17	0.67	0.16	0.74	0.37	0.36	
Conductivity	uS/cm	ns	1.0	81	17	25	22	17	20	46	31	
Calculated Parameters												
Anion Sum	me/L	ns	N/A	0.310	0.0800	0.120	0.120	0.0700	0.100	0.150	0.250	
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Calculated TDS	mg/L	ns	1.0	22	8.0	11	11	7.0	9.0	13	19	
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Cation Sum	me/L	ns	N/A	0.220	0.160	0.220	0.170	0.140	0.190	0.260	0.240	
Hardness (CaCO ₃)	mg/L	ns	1.0	2.5	2.8	3.8	3.2	2.3	2.9	5.2	4.5	
Ion Balance (% Difference)	%	ns	N/A	17.0	33.3	29.4	17.2	33.3	31.0	26.8	2.04	
Langelier Index (@ 20C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC	
Langelier Index (@ 4C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC	
Nitrate (N)	mg/L	13	0.050	2.9	<0.050	<0.050	0.060	0.067	0.052	<0.050	0.068	
Saturation pH (@ 20C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC	
Saturation pH (@ 4C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC	

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)**Notes:**

mg/L - milligrams per litre
me/L - milliequivalent per litre
uS/cm - microsiemens
TCU - Total Colour Units
NTU - Nephelometric Turbidity Units
TDS - Total Dissolved Solids
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated

Narrative:

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.
² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

TABLE G.1-2: Filtered General Chemistry

Sampling Date		CCME FWAL	RDL	SW9			
				10-Apr-19	12-Jun-19	12-Sep-19	2-Dec-19
Inorganics	Units						
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	<5.0	6.7	<5.0
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	5.9	5.3	4.8	5.7
Colour	TCU	narrative ¹	25	72	110	140	120
Nitrate + Nitrite (N)	mg/L	ns	0.050	0.056	<0.050	<0.050	<0.050
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050
Dissolved Organic Carbon (C)	mg/L	ns	0.5	7.4	13	14	13
Total Organic Carbon (C)	mg/L	ns	0.50	7.3	14	14	13
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010	<0.010	0.047
pH	pH	6.5 - 9.0	N/A	5.83	6.36	6.63	5.24
Reactive Silica (SiO ₂)	mg/L	ns	0.50	1.9	1.8	2.8	2.3
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Turbidity	NTU	narrative ²	0.10	0.80	0.18	0.37	0.59
Conductivity	uS/cm	ns	1.0	28	30	36	27
Calculated Parameters							
Anion Sum	me/L	ns	N/A	0.170	0.150	0.270	0.170
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	6.7	<1.0
Calculated TDS	mg/L	ns	1.0	14	13	19	13
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.270	0.290	0.370	0.210
Hardness (CaCO ₃)	mg/L	ns	1.0	5.0	6.3	9.7	4.1
Ion Balance (% Difference)	%	ns	N/A	22.7	31.8	15.6	10.5
Langelier Index (@ 20C)	N/A	ns		NC	NC	-3.49	NC
Langelier Index (@ 4C)	N/A	ns		NC	NC	-3.74	NC
Nitrate (N)	mg/L	13	0.050	0.056	<0.050	<0.050	<0.050
Saturation pH (@ 20C)	N/A	ns		NC	NC	10.1	NC
Saturation pH (@ 4C)	N/A	ns		NC	NC	10.4	NC

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

mg/L - milligrams per litre
me/L - milliequivalent per litre
uS/cm - microsiemens
TCU - Total Colour Units
NTU - Nephelometric Turbidity Units
TDS - Total Dissolved Solids
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated

Narrative:

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.

² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

TABLE G.1-2: Filtered General Chemistry

Sampling Date		CCME FWAL	RDL	SW10			
				10-Apr-19	12-Jun-19	12-Sep-19	2-Dec-19
Inorganics	Units						
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	11	12	9.3	7.6
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	3.7	3.0	3.5	3.8
Colour	TCU	narrative ¹	25	29	43	27	42
Nitrate + Nitrite (N)	mg/L	ns	0.050	0.23	<0.050	<0.050	0.072
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	0.050	<0.050	<0.050	<0.050
Dissolved Organic Carbon (C)	mg/L	ns	0.5	2.3	4.4	4.9	4.2
Total Organic Carbon (C)	mg/L	ns	0.50	2.3	4.2	5.0	4.5
Orthophosphate (P)	mg/L	ns	0.010	<0.010	0.015	0.010	0.015
pH	pH	6.5 - 9.0	N/A	6.32	6.74	6.73	6.35
Reactive Silica (SiO ₂)	mg/L	ns	0.50	4.2	4.6	1.5	4.6
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	8.0	7.9	3.2	10
Turbidity	NTU	narrative ²	0.10	<0.10	0.30	0.27	0.91
Conductivity	uS/cm	ns	1.0	54	50	34	51
Calculated Parameters							
Anion Sum	me/L	ns	N/A	0.510	0.490	0.350	0.480
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	11	12	9.3	7.6
Calculated TDS	mg/L	ns	1.0	34	33	21	34
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.510	0.490	0.340	0.460
Hardness (CaCO ₃)	mg/L	ns	1.0	18	17	11	15
Ion Balance (% Difference)	%	ns	N/A	0.00	0.00	1.45	2.13
Langelier Index (@ 20C)	N/A	ns		-3.18	-2.72	-3.07	-3.38
Langelier Index (@ 4C)	N/A	ns		-3.44	-2.97	-3.32	-3.63
Nitrate (N)	mg/L	13	0.050	0.23	<0.050	<0.050	0.072
Saturation pH (@ 20C)	N/A	ns		9.50	9.46	9.80	9.73
Saturation pH (@ 4C)	N/A	ns		9.75	9.72	10.0	9.99

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

mg/L - milligrams per litre
me/L - milliequivalent per litre
uS/cm - microsiemens
TCU - Total Colour Units
NTU - Nephelometric Turbidity Units
TDS - Total Dissolved Solids
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated

Narrative:

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.

² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

TABLE G.1-2: Filtered General Chemistry

Sampling Date		CCME FWAL	RDL	SW11									
				10-Apr-19	12-Jun-19	12-Sep-19	2-Dec-19	21-22-Apr-20	21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20	15-16-Dec-20
Inorganics	Units								(DUP)			(DUP)	
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	3.8	2.4	5.3	3.6	3.1	2.7	4.0	7.0	6.7	6.8
Colour	TCU	narrative ¹	25	46	180	230	130	120	120	200	220	170	160
Nitrate + Nitrite (N)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.057
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dissolved Organic Carbon (C)	mg/L	ns	0.5	5.9	17	22	15	9.8	9.7	14	29 (1)	18	18
Total Organic Carbon (C)	mg/L	ns	0.50	6.0	19	23	15	10	9.8	15	27	20	18
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	6.5 - 9.0	N/A	5.20	5.23	5.49	5.16	5.12	5.21	5.95	4.72	5.85	5.45
Reactive Silica (SiO ₂)	mg/L	ns	0.50	2.6	1.6	2.9	2.3	1.6	1.5	1.5	2.0	3.9	4.1
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Turbidity	NTU	narrative ²	0.10	0.14	0.28	0.36	0.11	0.24	0.23	0.36	0.36	0.64	0.27
Conductivity	uS/cm	ns	1.0	24	19	37	25	17	17	20	44	33	32
Calculated Parameters													
Anion Sum	me/L	ns	N/A	0.110	0.0700	0.150	0.100	0.130	0.0800	0.110	0.200	0.190	0.200
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Calculated TDS	mg/L	ns	1.0	10	7.0	14	9.0	10	7.0	10	16	17	17
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.170	0.140	0.290	0.170	0.140	0.140	0.210	0.360	0.310	0.320
Hardness (CaCO ₃)	mg/L	ns	1.0	2.9	2.2	5.6	3.3	2.8	2.6	4.7	7.6	8.3	8.3
Ion Balance (% Difference)	%	ns	N/A	21.4	33.3	31.8	25.9	3.70	27.3	31.3	28.6	24.0	23.1
Langelier Index (@ 20C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Langelier Index (@ 4C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Nitrate (N)	mg/L	13	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.057
Saturation pH (@ 20C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Saturation pH (@ 4C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC	NC	NC

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

mg/L - milligrams per litre
me/L - milliequivalent per litre
uS/cm - microsiemens
TCU - Total Colour Units
NTU - Nephelometric Turbidity Units
TDS - Total Dissolved Solids
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated

Narrative:

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.

² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

TABLE G.1-2: Filtered General Chemistry

Sampling Date		CCME FWAL	RDL	SW12								
				10-Apr-19	12-Jun-19	12-Sep-19	2-Dec-19	21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20	
Inorganics	Units											
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	3.7	2.6	5.0	3.8	2.4	4.8	8.0	7.3	7.3
Colour	TCU	narrative ¹	25	34	180	170	140	67	190	170	87	87
Nitrate + Nitrite (N)	mg/L	ns	0.050	6.3	<0.050	<0.050	<0.050	0.084	<0.050	<0.050	<0.050	<0.050
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	0.065	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dissolved Organic Carbon (C)	mg/L	ns	0.5	7.6	18	24	16	7.5	14	23	9.6	9.6
Total Organic Carbon (C)	mg/L	ns	0.50	6.5	20	23	16	7.9	15	25 (1)	9.4	9.4
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	6.5 - 9.0	N/A	3.4	5.34	5.14	4.61	5.84	4.99	4.43	4.71	4.71
Reactive Silica (SiO ₂)	mg/L	ns	0.50	2.3	1.5	3.4	2.6	2.1	1.4	3.4	4.0	4.0
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Turbidity	NTU	narrative ²	0.10	0.45	0.31	0.25	1.6	0.36	0.79	0.52	0.59	0.59
Conductivity	uS/cm	ns	1.0	180	21	44	28	18	25	51	34	34
Calculated Parameters												
Anion Sum	me/L	ns	N/A	0.550	0.0700	0.140	0.110	0.0700	0.140	0.220	0.200	0.200
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Calculated TDS	mg/L	ns	1.0	37	7.0	14	10	8.0	10	18	16	16
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.530	0.150	0.290	0.170	0.130	0.170	0.350	0.240	0.240
Hardness (CaCO ₃)	mg/L	ns	1.0	2.6	2.0	5.1	2.3	2.0	2.2	6.5	3.6	3.6
Ion Balance (% Difference)	%	ns	N/A	1.85	36.4	34.9	21.4	30.0	9.68	22.8	9.09	9.09
Langelier Index (@ 20C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC	NC
Langelier Index (@ 4C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC	NC
Nitrate (N)	mg/L	13	0.050	6.3	<0.050	<0.050	<0.050	0.084	<0.050	<0.050	<0.050	<0.050
Saturation pH (@ 20C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC	NC
Saturation pH (@ 4C)	N/A	ns		NC	NC	NC	NC	NC	NC	NC	NC	NC

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)**Notes:**

mg/L - milligrams per litre
me/L - milliequivalent per litre
uS/cm - microsiemens
TCU - Total Colour Units
NTU - Nephelometric Turbidity Units
TDS - Total Dissolved Solids
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated

Narrative:

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.
² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

TABLE G.1-2: Filtered General Chemistry

Sampling Date		CCME FWAL	RDL	SW14				
				21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	24-25-Sep-20	15-16-Dec-20
Inorganics	Units						(DUP)	
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	9.0	7.3	7.5	9.1
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	2.9	2.9	4.8	4.4	4.9
Colour	TCU	narrative ¹	25	19	32	18	19	24
Nitrate + Nitrite (N)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050	0.054
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dissolved Organic Carbon (C)	mg/L	ns	0.5	2.9	4.6	4.3	4.2	4.1
Total Organic Carbon (C)	mg/L	ns	0.50	2.9	4.2	3.9	3.6	4.6
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	6.5 - 9.0	N/A	6.44	6.91	6.54	6.73	6.66
Reactive Silica (SiO ₂)	mg/L	ns	0.50	1.6	0.50	0.73	0.80	3.3
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	4.3	4.0	5.3	4.2	7.2
Turbidity	NTU	narrative ²	0.10	0.17	0.89	0.43	0.62	0.21
Conductivity	uS/cm	ns	1.0	26	35	37	34	44
Calculated Parameters								
Anion Sum	me/L	ns	N/A	0.170	0.340	0.390	0.360	0.470
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	9.0	7.3	7.4	9.1
Calculated TDS	mg/L	ns	1.0	14	20	22	20	29
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.230	0.330	0.310	0.310	0.400
Hardness (CaCO ₃)	mg/L	ns	1.0	7.3	11	8.3	8.2	13
Ion Balance (% Difference)	%	ns	N/A	15.0	1.49	11.4	7.46	8.05
Langelier Index (@ 20C)	N/A	ns		NC	-2.90	-3.53	-3.33	-3.07
Langelier Index (@ 4C)	N/A	ns		NC	-3.16	-3.78	-3.58	-3.32
Nitrate (N)	mg/L	13	0.050	<0.050	<0.050	<0.050	<0.050	0.054
Saturation pH (@ 20C)	N/A	ns		NC	9.81	10.1	10.1	9.73
Saturation pH (@ 4C)	N/A	ns		NC	10.1	10.3	10.3	9.98

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

mg/L - milligrams per litre

me/L - milliequivalent per litre

uS/cm - microsiemens

TCU - Total Colour Units

NTU - Nephelometric Turbidity Units

TDS - Total Dissolved Solids

RDL - Reportable Detection Limit

ns - no standard listed

NC - Not Calculated

Narrative:

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.

² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

TABLE G.1-2: Filtered General Chemistry

Sampling Date		CCME FWAL	RDL	SW19					
				21-22-Apr-20	17-18-Jun-20	17-18-Jun-20	24-25-Sep-20	24-25-Sep-20	15-16-Dec-20
Inorganics	Units					(DUP)		(DUP)	
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	2.6	3.8	3.8	6.0	6.1	5.6
Colour	TCU	narrative ¹	25	97	160	170	190	250	160
Nitrate + Nitrite (N)	mg/L	ns	0.050	<0.050	0.053	0.050	0.053	<0.050	0.057
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dissolved Organic Carbon (C)	mg/L	ns	0.5	7.9	10	10	26	26	17
Total Organic Carbon (C)	mg/L	ns	0.50	8.1	11	11	25	24	18
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	6.5 - 9.0	N/A	5.41	5.21	5.09	4.65	4.59	4.73
Reactive Silica (SiO ₂)	mg/L	ns	0.50	1.8	1.5	1.5	3.9	4.1	4.1
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.6
Turbidity	NTU	narrative ²	0.10	0.24	0.63	0.98	0.67	1.3	0.26
Conductivity	uS/cm	ns	1.0	17	19	19	40	38	32
Calculated Parameters									
Anion Sum	me/L	ns	N/A	0.0700	0.110	0.110	0.170	0.170	0.220
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Calculated TDS	mg/L	ns	1.0	7.0	9.0	9.0	16	16	17
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.120	0.150	0.150	0.300	0.300	0.230
Hardness (CaCO ₃)	mg/L	ns	1.0	1.8	2.0	1.9	5.2	5.3	3.6
Ion Balance (% Difference)	%	ns	N/A	26.3	15.4	15.4	27.7	27.7	2.22
Langelier Index (@ 20C)	N/A	ns		NC	NC	NC	NC	NC	NC
Langelier Index (@ 4C)	N/A	ns		NC	NC	NC	NC	NC	NC
Nitrate (N)	mg/L	13	0.050	<0.050	0.053	0.050	0.053	<0.050	0.057
Saturation pH (@ 20C)	N/A	ns		NC	NC	NC	NC	NC	NC
Saturation pH (@ 4C)	N/A	ns		NC	NC	NC	NC	NC	NC

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

mg/L - milligrams per litre

me/L - milliequivalent per litre

uS/cm - microsiemens

TCU - Total Colour Units

NTU - Nephelometric Turbidity Units

TDS - Total Dissolved Solids

RDL - Reportable Detection Limit

ns - no standard listed

NC - Not Calculated

Narrative:

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.

² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

TABLE G.1-2: Filtered General Chemistry

Sampling Date		CCME FWAL	RDL	SW26			
				21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Inorganics	Units						
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	2.9	3.3	6.4	5.5
Colour	TCU	narrative ¹	25	87	140	160	73
Nitrate + Nitrite (N)	mg/L	ns	0.050	<0.050	<0.050	<0.050	0.053
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050
Dissolved Organic Carbon (C)	mg/L	ns	0.5	7.5	9.9	20	12
Total Organic Carbon (C)	mg/L	ns	0.50	7.7	10	21 (1)	13
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	6.5 - 9.0	N/A	5.22	5.59	5.00	5.33
Reactive Silica (SiO ₂)	mg/L	ns	0.50	1.8	1.3	3.8	4.6
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	2.4	<2.0	<2.0	2.9
Turbidity	NTU	narrative ²	0.10	0.21	0.74	1.7	0.19
Conductivity	uS/cm	ns	1.0	17	19	31	27
Calculated Parameters							
Anion Sum	me/L	ns	N/A	0.130	0.0900	0.180	0.220
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Calculated TDS	mg/L	ns	1.0	10	8.0	16	18
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.130	0.170	0.260	0.210
Hardness (CaCO ₃)	mg/L	ns	1.0	2.0	2.6	4.6	4.3
Ion Balance (% Difference)	%	ns	N/A	0.00	30.8	18.2	2.33
Langelier Index (@ 20C)	N/A	ns		NC	NC	NC	NC
Langelier Index (@ 4C)	N/A	ns		NC	NC	NC	NC
Nitrate (N)	mg/L	13	0.050	<0.050	<0.050	<0.050	0.053
Saturation pH (@ 20C)	N/A	ns		NC	NC	NC	NC
Saturation pH (@ 4C)	N/A	ns		NC	NC	NC	NC

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

mg/L - milligrams per litre

me/L - milliequivalent per litre

uS/cm - microsiemens

TCU - Total Colour Units

NTU - Nephelometric Turbidity Units

TDS - Total Dissolved Solids

RDL - Reportable Detection Limit

ns - no standard listed

NC - Not Calculated

Narrative:

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.

² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

TABLE G.1-2: Filtered General Chemistry

Sampling Date		CCME FWAL	RDL	SW28	
				24-25-Sep-20	15-16-Dec-20
Inorganics	Units				
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	7.1
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	8.5	7.3
Colour	TCU	narrative ¹	25	200	190
Nitrate + Nitrite (N)	mg/L	ns	0.050	<0.050	0.052
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050
Dissolved Organic Carbon (C)	mg/L	ns	0.5	30	20
Total Organic Carbon (C)	mg/L	ns	0.50	29	20
Orthophosphate (P)	mg/L	ns	0.010	0.034	<0.010
pH	pH	6.5 - 9.0	N/A	4.39	6.19
Reactive Silica (SiO ₂)	mg/L	ns	0.50	4.5	5.1
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	<2.0	<2.0
Turbidity	NTU	narrative ²	0.10	0.83	1.9
Conductivity	uS/cm	ns	1.0	54	37
Calculated Parameters					
Anion Sum	me/L	ns	N/A	0.240	0.350
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	7.1
Calculated TDS	mg/L	ns	1.0	21	25
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.390	0.400
Hardness (CaCO ₃)	mg/L	ns	1.0	6.4	12
Ion Balance (% Difference)	%	ns	N/A	23.8	6.67
Langelier Index (@ 20C)	N/A	ns		NC	-3.90
Langelier Index (@ 4C)	N/A	ns		NC	-4.15
Nitrate (N)	mg/L	13	0.050	<0.050	0.052
Saturation pH (@ 20C)	N/A	ns		NC	10.1
Saturation pH (@ 4C)	N/A	ns		NC	10.3

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

mg/L - milligrams per litre
me/L - milliequivalent per litre
uS/cm - microsiemens
TCU - Total Colour Units
NTU - Nephelometric Turbidity Units
TDS - Total Dissolved Solids
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated

Narrative:

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.

² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

TABLE G.1-2: Filtered General Chemistry

Sampling Date		CCME FWAL	RDL	SW29			
				21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Inorganics	Units						
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	2.2	3.7	5.5	5.5
Colour	TCU	narrative ¹	25	99	160	180	160
Nitrate + Nitrite (N)	mg/L	ns	0.050	<0.050	<0.050	<0.050	0.064
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050
Dissolved Organic Carbon (C)	mg/L	ns	0.5	8.2	11	23	18
Total Organic Carbon (C)	mg/L	ns	0.50	8.4	11	20	18
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	6.5 - 9.0	N/A	5.17	5.13	4.60	5.63
Reactive Silica (SiO ₂)	mg/L	ns	0.50	1.6	1.5	2.5	4.0
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Turbidity	NTU	narrative ²	0.10	0.24	0.62	0.21	0.14
Conductivity	uS/cm	ns	1.0	17	18	35	32
Calculated Parameters							
Anion Sum	me/L	ns	N/A	0.0600	0.100	0.150	0.160
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Calculated TDS	mg/L	ns	1.0	6.0	8.0	13	14
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.120	0.140	0.270	0.210
Hardness (CaCO ₃)	mg/L	ns	1.0	1.6	2.0	4.4	3.4
Ion Balance (% Difference)	%	ns	N/A	33.3	16.7	28.6	13.5
Langelier Index (@ 20C)	N/A	ns		NC	NC	NC	NC
Langelier Index (@ 4C)	N/A	ns		NC	NC	NC	NC
Nitrate (N)	mg/L	13	0.050	<0.050	<0.050	<0.050	0.064
Saturation pH (@ 20C)	N/A	ns		NC	NC	NC	NC
Saturation pH (@ 4C)	N/A	ns		NC	NC	NC	NC

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

mg/L - milligrams per litre

me/L - milliequivalent per litre

uS/cm - microsiemens

TCU - Total Colour Units

NTU - Nephelometric Turbidity Units

TDS - Total Dissolved Solids

RDL - Reportable Detection Limit

ns - no standard listed

NC - Not Calculated

Narrative:

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.

² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

TABLE G.1-2: Filtered General Chemistry

Sampling Date		CCME FWAL	RDL	SW30			
				21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Inorganics	Units						
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	2.4	4.7	6.0	5.9
Colour	TCU	narrative ¹	25	100	150	170	130
Nitrate + Nitrite (N)	mg/L	ns	0.050	0.16	0.067	<0.050	0.094
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	0.057	<0.050	<0.050
Dissolved Organic Carbon (C)	mg/L	ns	0.5	7.5	10	24	17
Total Organic Carbon (C)	mg/L	ns	0.50	7.7	11	20	17
Orthophosphate (P)	mg/L	ns	0.010	0.011	0.018	0.015	<0.010
pH	pH	6.5 - 9.0	N/A	5.09	5.49	4.73	5.25
Reactive Silica (SiO ₂)	mg/L	ns	0.50	3.0	5.8	5.0	5.3
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	<2.0	<2.0	<2.0	2.2
Turbidity	NTU	narrative ²	0.10	0.12	0.34	0.38	0.44
Conductivity	uS/cm	ns	1.0	20	23	36	36
Calculated Parameters							
Anion Sum	me/L	ns	N/A	0.0800	0.140	0.170	0.220
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Calculated TDS	mg/L	ns	1.0	9.0	15	17	19
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.140	0.210	0.300	0.230
Hardness (CaCO ₃)	mg/L	ns	1.0	1.9	3.4	5.3	3.8
Ion Balance (% Difference)	%	ns	N/A	27.3	20.0	27.7	2.22
Langelier Index (@ 20C)	N/A	ns		NC	NC	NC	NC
Langelier Index (@ 4C)	N/A	ns		NC	NC	NC	NC
Nitrate (N)	mg/L	13	0.050	0.16	0.067	<0.050	0.094
Saturation pH (@ 20C)	N/A	ns		NC	NC	NC	NC
Saturation pH (@ 4C)	N/A	ns		NC	NC	NC	NC

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

mg/L - milligrams per litre
me/L - milliequivalent per litre
uS/cm - microsiemens
TCU - Total Colour Units
NTU - Nephelometric Turbidity Units
TDS - Total Dissolved Solids
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated

Narrative:

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.

² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

TABLE G.1-2: Filtered General Chemistry

Sampling Date		CCME FWAL	RDL	SW31				
				21-22-Apr-20	17-18-Jun-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Inorganics	Units					(DUP)]		
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	2.9	4.6	4.6	6.8	7.1
Colour	TCU	narrative ¹	25	110	170	160	190	170
Nitrate + Nitrite (N)	mg/L	ns	0.050	<0.050	0.067	0.18	<0.050	0.070
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dissolved Organic Carbon (C)	mg/L	ns	0.5	9.6	12	13	31 (1)	21
Total Organic Carbon (C)	mg/L	ns	0.50	9.5	13	13	29	22
Orthophosphate (P)	mg/L	ns	0.010	<0.010	0.017	0.019	0.013	<0.010
pH	pH	6.5 - 9.0	N/A	4.79	4.90	4.89	4.46	5.06
Reactive Silica (SiO ₂)	mg/L	ns	0.50	3.5	6.7	6.8	6.2	5.6
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Turbidity	NTU	narrative ²	0.10	0.43	0.53	0.98	0.36	0.76
Conductivity	uS/cm	ns	1.0	23	25	25	50	39
Calculated Parameters								
Anion Sum	me/L	ns	N/A	0.0800	0.140	0.140	0.190	0.200
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Calculated TDS	mg/L	ns	1.0	9.0	16	16	19	18
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.140	0.180	0.190	0.320	0.250
Hardness (CaCO ₃)	mg/L	ns	1.0	1.5	2.1	2.1	4.6	3.5
Ion Balance (% Difference)	%	ns	N/A	27.3	12.5	15.2	25.5	11.1
Langelier Index (@ 20C)	N/A	ns		NC	NC	NC	NC	NC
Langelier Index (@ 4C)	N/A	ns		NC	NC	NC	NC	NC
Nitrate (N)	mg/L	13	0.050	<0.050	0.067	0.18	<0.050	0.070
Saturation pH (@ 20C)	N/A	ns		NC	NC	NC	NC	NC
Saturation pH (@ 4C)	N/A	ns		NC	NC	NC	NC	NC

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

mg/L - milligrams per litre

me/L - milliequivalent per litre

uS/cm - microsiemens

TCU - Total Colour Units

NTU - Nephelometric Turbidity Units

TDS - Total Dissolved Solids

RDL - Reportable Detection Limit

ns - no standard listed

NC - Not Calculated

Narrative:

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.

² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

TABLE G.1-2: Filtered General Chemistry

Sampling Date		CCME FWAL	RDL	SW1A			
				21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Inorganics	Units						
Total Alkalinity (Total as CaCO ₃)	mg/L	ns	5.0	<5.0	14	6.2	<5.0
Dissolved Chloride (Cl ⁻)	mg/L	640	1.0	2.9	3.2	5.2	5.8
Colour	TCU	narrative ¹	25	97	120	200	140
Nitrate + Nitrite (N)	mg/L	ns	0.050	<0.050	<0.050	<0.050	0.081
Nitrite (N)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	ns	0.050	<0.050	<0.050	<0.050	<0.050
Dissolved Organic Carbon (C)	mg/L	ns	0.5	7.3	9.0	18	16
Total Organic Carbon (C)	mg/L	ns	0.50	8.0	9.2	17	16
Orthophosphate (P)	mg/L	ns	0.010	<0.010	<0.010	<0.010	<0.010
pH	pH	6.5 - 9.0	N/A	6.19	7.26	6.35	5.96
Reactive Silica (SiO ₂)	mg/L	ns	0.50	1.9	1.5	3.8	4.2
Dissolved Sulphate (SO ₄)	mg/L	ns	2.0	<2.0	<2.0	<2.0	2.3
Turbidity	NTU	narrative ²	0.10	0.16	0.58	0.67	0.48
Conductivity	uS/cm	ns	1.0	18	39	32	29
Calculated Parameters							
Anion Sum	me/L	ns	N/A	0.0800	0.370	0.270	0.220
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	14	6.2	<1.0
Calculated TDS	mg/L	ns	1.0	8.0	21	19	19
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	ns	N/A	0.170	0.410	0.330	0.290
Hardness (CaCO ₃)	mg/L	ns	1.0	4.6	15	8.7	7.4
Ion Balance (% Difference)	%	ns	N/A	36.0	5.13	10.0	13.7
Langelier Index (@ 20C)	N/A	ns		NC	-2.34	-3.84	NC
Langelier Index (@ 4C)	N/A	ns		NC	-2.60	-4.10	NC
Nitrate (N)	mg/L	13	0.050	<0.050	<0.050	<0.050	0.081
Saturation pH (@ 20C)	N/A	ns		NC	9.60	10.2	NC
Saturation pH (@ 4C)	N/A	ns		NC	9.86	10.4	NC

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

mg/L - milligrams per litre

me/L - milliequivalent per litre

uS/cm - microsiemens

TCU - Total Colour Units

NTU - Nephelometric Turbidity Units

TDS - Total Dissolved Solids

RDL - Reportable Detection Limit

ns - no standard listed

NC - Not Calculated

Narrative:

¹ Apparent Colour The mean percent transmission of white light per metre shall not be significantly less than the seasonally adjusted expected value for the system under consideration.

² Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).

TABLE G.1-3: Total Metals

Sampling Date	Units	CCME FWAL	Teir 1 EQS	RDL	SW1											
					10-Apr-19	10-Apr-19 (DUP)	12-Jun-19	12-Sep-19	12-Sep-19 (DUP)	2-Dec-19	21-22-Apr-20	21-22-Apr-20 (DUP)	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20 (DUP)	15-16-Dec-20
Total Aluminum (Al)	ug/L	Narrative ¹	5	5.0	140	130	260	370	250	220	160	150	250	300	280	300
Total Antimony (Sb)	ug/L	ns	20	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	5	5	1.0	<1.0	<1.0	2.2	2.0	<1.0	<1.0	1.1	<1.0	3.9	1.6	1.1	1.1
Total Barium (Ba)	ug/L	ns	1000	1.0	2.3	2.1	3.1	6.0	5.5	2.8	2.2	2.1	2.7	4.4	4.2	4.3
Total Beryllium (Be)	ug/L	ns	5.3	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	1,500	1200	50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	Narrative ²	0.04	0.010	0.017	0.012	0.015	0.032	0.011	0.012	0.012	0.013	0.010	0.017	0.020	0.022
Total Calcium (Ca)	ug/L	ns		100	510	510	1300	1100	2100	560	430	430	630	1000	850	910
Total Chromium (Cr)	ug/L	ns		1.0	1.0	<1.0	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Cobalt (Co)	ug/L	ns	10	0.40	<0.40	<0.40	<0.40	0.55	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.45
Total Copper (Cu)	ug/L	Narrative ²	2	0.50	<0.50	<0.50	0.83	0.54	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Iron (Fe)	ug/L	300	300	50	210	210	480	850	700	340	230	220	630	680	510	490
Total Lead (Pb)	ug/L	Narrative ²	1	0.50	<0.50	<0.50	<0.50	0.56	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Magnesium (Mg)	ug/L	ns		100	270	270	290	540	1100	290	220	220	290	510	460	490
Total Manganese (Mn)	ug/L	ns	820	2.0	45	44	38	63	92	32	25	25	39	50	45	45
Total Molybdenum (Mo)	ug/L	73	73	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	22	<2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	Narrative ²	25	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Phosphorus (P)	ug/L	ns		100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Total Potassium (K)	ug/L	ns		100	300	330	150	220	220	110	220	230	240	220	230	280
Total Selenium (Se)	ug/L	1	1	1.0	<1.0	<1.0	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Silver (Ag)	ug/L	0.25	0.25	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L	ns		100	1800	1800	1900	2900	3500	1800	1700	1600	2200	3000	2800	2900
Total Strontium (Sr)	ug/L	ns	21000	2.0	4.0	4.1	5.8	10	7.7	5.3	4.2	4.2	5.2	9.3	8.4	8.2
Total Thallium (Tl)	ug/L	0.8	0.8	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L	ns		2.0	2.2	2.1	3.7	4.8	5.0	3.3	<2.0	<2.0	4.1	3.3	2.4	3.0
Total Tungsten (W)	ug/L	ns		1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Uranium (U)	ug/L	15	300	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Vanadium (V)	ug/L	ns	6	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zirconium	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	30	30	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Total Mercury (Hg)	ug/L	0.026		0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL) or Teir 1 EQS guidelines

Notes:

ug/L - microgram per litre
 RDL - Reportable Detection Limit
 ns - no standard listed
 NC - Not Calculated

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
 100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-3: Total Metals

Sampling Date		CCME FWAL	Teir 1 EQS	RDL	SW1A			
					21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Metals	Units							
Total Aluminum (Al)	ug/L	Narrative ¹	5	5.0	180	240	410	360
Total Antimony (Sb)	ug/L	ns	20	1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	5	5	1.0	1.2	3.6	2.3	1.7
Total Barium (Ba)	ug/L	ns	1000	1.0	4.8	4.6	14	7.1
Total Beryllium (Be)	ug/L	ns	5.3	1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	1,500	1200	50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	Narrative ²	0.04	0.010	0.012	0.010	0.016	0.024
Total Calcium (Ca)	ug/L	ns		100	2600	2400	17000	7400
Total Chromium (Cr)	ug/L	ns		1.0	<1.0	<1.0	<1.0	<1.0
Total Cobalt (Co)	ug/L	ns	10	0.40	<0.40	<0.40	0.50	0.47
Total Copper (Cu)	ug/L	Narrative ²	2	0.50	<0.50	<0.50	0.87	<0.50
Total Iron (Fe)	ug/L	300	300	50	300	570	1200	720
Total Lead (Pb)	ug/L	Narrative ²	1	0.50	<0.50	0.56	1.6	1.1
Total Magnesium (Mg)	ug/L	ns		100	1300	1100	9300	3900
Total Manganese (Mn)	ug/L	ns	820	2.0	81	82	430	200
Total Molybdenum (Mo)	ug/L	73	73	2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	Narrative ²	25	2.0	<2.0	<2.0	<2.0	<2.0
Total Phosphorus (P)	ug/L	ns		100	<100	<100	<100	<100
Total Potassium (K)	ug/L	ns		100	220	250	250	280
Total Selenium (Se)	ug/L	1	1	1.0	<0.50	<0.50	<0.50	<0.50
Total Silver (Ag)	ug/L	0.25	0.25	0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L	ns		100	1700	2300	2800	2900
Total Strontium (Sr)	ug/L	ns	21000	2.0	6.1	6.7	22	14
Total Thallium (Tl)	ug/L	0.8	0.8	0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L	ns		2.0	4.4	2.8	4.3	3.4
Total Tungsten (W)	ug/L	ns		1.0	<1.0	<1.0	<1.0	<1.0
Total Uranium (U)	ug/L	15	300	0.10	<0.10	<0.10	<0.10	<0.10
Total Vanadium (V)	ug/L	ns	6	2.0	<2.0	<2.0	<2.0	<2.0
Total Zirconium	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	30	30	5.0	<5.0	<5.0	<5.0	<5.0
Total Mercury (Hg)	ug/L	0.026		0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL) or Teir 1 EQS guidelines

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-3: Total Metals

Sampling Date		CCME FWAL	Teir 1 EQS	RDL	SW2A				
					10-Apr-19	12-Jun-19	12-Sep-19	2-Dec-19	2-Dec-19
Metals	Units						(DUP)		
Total Aluminum (Al)	ug/L	Narrative ¹	5	5.0	440	290	370	230	230
Total Antimony (Sb)	ug/L	ns	20	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	5	5	1.0	<1.0	<1.0	1.1	<1.0	<1.0
Total Barium (Ba)	ug/L	ns	1000	1.0	2.3	3.2	5.6	2.7	2.7
Total Beryllium (Be)	ug/L	ns	5.3	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	1,500	1200	50	<50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	Narrative ²	0.04	0.010	0.020	0.020	0.030	<0.010	<0.010
Total Calcium (Ca)	ug/L	ns		100	510	500	990	520	490
Total Chromium (Cr)	ug/L	ns		1.0	1.1	<1.0	1.1	<1.0	<1.0
Total Cobalt (Co)	ug/L	ns	10	0.40	<0.40	<0.40	0.45	<0.40	<0.40
Total Copper (Cu)	ug/L	Narrative ²	2	0.50	<0.50	<0.50	<0.50	0.55	<0.50
Total Iron (Fe)	ug/L	300	300	50	220	580	860	370	350
Total Lead (Pb)	ug/L	Narrative ²	1	0.50	<0.50	0.51	0.60	<0.50	<0.50
Total Magnesium (Mg)	ug/L	ns		100	270	260	520	290	280
Total Manganese (Mn)	ug/L	ns	820	2.0	43	30	54	31	30
Total Molybdenum (Mo)	ug/L	73	73	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	Narrative ²	25	2.0	<2.0	<2.0	<2.0	2.9	<2.0
Total Phosphorus (P)	ug/L	ns		100	<100	<100	<100	<100	<100
Total Potassium (K)	ug/L	ns		100	320	150	190	120	<100
Total Selenium (Se)	ug/L	1	1	1.0	<1.0	<1.0	<0.50	<0.50	<0.50
Total Silver (Ag)	ug/L	0.25	0.25	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L	ns		100	1800	1700	2900	1800	1800
Total Strontium (Sr)	ug/L	ns	21000	2.0	3.8	5.0	9.8	5.7	4.8
Total Thallium (Tl)	ug/L	0.8	0.8	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L	ns		2.0	<2.0	3.5	4.7	3.8	4.1
Total Tungsten (W)	ug/L	ns		1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Uranium (U)	ug/L	15	300	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Vanadium (V)	ug/L	ns	6	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zirconium	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	30	30	5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Total Mercury (Hg)	ug/L	0.026		0.013	0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL) or Teir 1 EQS guidelines

Notes:

ug/L - microgram per litre

RDL - Reportable Detection Limit

ns - no standard listed

NC - Not Calculated

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5

² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-3: Total Metals

Sampling Date		CCME FWAL	Teir 1 EQS	RDL	SW4A								
					10-Apr-19	12-Jun-19	12-Sep-19	2-Dec-19	21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20	
Metals	Units												
Total Aluminum (Al)	ug/L	Narrative ¹	5	5.0	130	260	370	170	160	230	290	270	
Total Antimony (Sb)	ug/L	ns	20	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Arsenic (As)	ug/L	5	5	1.0	1.8	5.0	5.4	1.4	1.8	7.9	1.3	2.5	
Total Barium (Ba)	ug/L	ns	1000	1.0	2.0	2.9	5.5	2.1	1.9	2.8	3.9	3.8	
Total Beryllium (Be)	ug/L	ns	5.3	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Bismuth (Bi)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	
Total Boron (B)	ug/L	1,500	1200	50	<50	<50	<50	<50	<50	<50	<50	<50	
Total Cadmium (Cd)	ug/L	Narrative ²	0.04	0.010	0.014	0.014	0.022	0.010	0.013	<0.010	0.016	0.016	
Total Calcium (Ca)	ug/L	ns		100	560	640	1400	610	520	680	1000	970	
Total Chromium (Cr)	ug/L	ns		1.0	<1.0	1.1	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Cobalt (Co)	ug/L	ns	10	0.40	<0.40	<0.40	0.77	<0.40	<0.40	0.50	<0.40	0.48	
Total Copper (Cu)	ug/L	Narrative ²	2	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Total Iron (Fe)	ug/L	300	300	50	210	520	840	230	230	800	660	420	
Total Lead (Pb)	ug/L	Narrative ²	1	0.50	<0.50	<0.50	0.63	<0.50	<0.50	0.50	<0.50	<0.50	
Total Magnesium (Mg)	ug/L	ns		100	270	270	610	300	230	330	510	460	
Total Manganese (Mn)	ug/L	ns	820	2.0	41	32	73	35	24	46	52	44	
Total Molybdenum (Mo)	ug/L	73	73	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	
Total Nickel (Ni)	ug/L	Narrative ²	25	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	4.7	<2.0	<2.0	
Total Phosphorus (P)	ug/L	ns		100	<100	<100	<100	<100	<100	<100	<100	<100	
Total Potassium (K)	ug/L	ns		100	320	140	260	<100	170	270	310	210	
Total Selenium (Se)	ug/L	1	1	1.0	<1.0	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Total Silver (Ag)	ug/L	0.25	0.25	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Total Sodium (Na)	ug/L	ns		100	1900	1900	3400	2000	1700	2500	2800	2900	
Total Strontium (Sr)	ug/L	ns	21000	2.0	4.4	5.1	11	4.7	3.8	5.1	7.8	7.8	
Total Thallium (Tl)	ug/L	0.8	0.8	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Total Tin (Sn)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	
Total Titanium (Ti)	ug/L	ns		2.0	<2.0	2.2	5.2	3.2	<2.0	3.4	2.3	2.2	
Total Tungsten (W)	ug/L	ns		1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Uranium (U)	ug/L	15	300	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Total Vanadium (V)	ug/L	ns	6	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	
Total Zirconium	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	
Total Zinc (Zn)	ug/L	30	30	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
Total Mercury (Hg)	ug/L	0.026		0.013	0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL) or Teir 1 EQS guidelines

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-3: Total Metals

Sampling Date		CCME FWAL	Teir 1 EQS	RDL	SW5								
					10-Apr-19	12-Jun-19	12-Jun-19	12-Sep-19	2-Dec-19	21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Metals	Units				(DUP)								
Total Aluminum (Al)	ug/L	Narrative ¹	5	5.0	74	56	59	190	110	78	110	52	83
Total Antimony (Sb)	ug/L	ns	20	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	5	5	1.0	12	27	28	290	15	18	53	32	22
Total Barium (Ba)	ug/L	ns	1000	1.0	3.3	4.4	4.4	9.3	3.2	3.3	5.1	3.4	3.9
Total Beryllium (Be)	ug/L	ns	5.3	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	1,500	1200	50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	Narrative ²	0.04	0.010	<0.010	<0.010	<0.010	0.015	<0.010	<0.010	<0.010	<0.010	<0.010
Total Calcium (Ca)	ug/L	ns		100	2000	3300	3300	13000	3000	2300	3300	3000	3900
Total Chromium (Cr)	ug/L	ns		1.0	<1.0	<1.0	<1.0	1.1	<1.0	<1.0	<1.0	<1.0	<1.0
Total Cobalt (Co)	ug/L	ns	10	0.40	<0.40	<0.40	<0.40	2.4	<0.40	<0.40	0.64	<0.40	<0.40
Total Copper (Cu)	ug/L	Narrative ²	2	0.50	<0.50	0.78	0.65	1.9	0.68	<0.50	0.85	0.82	0.56
Total Iron (Fe)	ug/L	300	300	50	380	550	560	5700	420	570	1400	720	590
Total Lead (Pb)	ug/L	Narrative ²	1	0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	<0.50	<0.50	<0.50
Total Magnesium (Mg)	ug/L	ns		100	400	590	570	1500	540	410	620	650	740
Total Manganese (Mn)	ug/L	ns	820	2.0	43	66	66	310	22	31	150	81	16
Total Molybdenum (Mo)	ug/L	73	73	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	Narrative ²	25	2.0	<2.0	<2.0	<2.0	7.1	<2.0	<2.0	<2.0	<2.0	<2.0
Total Phosphorus (P)	ug/L	ns		100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Total Potassium (K)	ug/L	ns		100	420	560	570	1000	470	370	620	480	600
Total Selenium (Se)	ug/L	1	1	1.0	<1.0	<1.0	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Silver (Ag)	ug/L	0.25	0.25	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L	ns		100	1600	1900	1800	2900	1900	1600	2000	2500	2700
Total Strontium (Sr)	ug/L	ns	21000	2.0	9.8	17	17	43	15	12	18	17	19
Total Thallium (Tl)	ug/L	0.8	0.8	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L	ns		2.0	<2.0	<2.0	<2.0	4.3	2.1	2.4	3.3	<2.0	<2.0
Total Tungsten (W)	ug/L	ns		1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Uranium (U)	ug/L	15	300	0.10	<0.10	<0.10	<0.10	0.19	<0.10	<0.10	<0.10	<0.10	<0.10
Total Vanadium (V)	ug/L	ns	6	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zirconium	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	30	30	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Total Mercury (Hg)	ug/L	0.026		0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL) or Teir 1 EQS guidelines

Notes:

ug/L - microgram per litre
 RDL - Reportable Detection Limit
 ns - no standard listed
 NC - Not Calculated

Narrative:

¹ Aluminum guideline variable:
 5 ug/L if pH < 6.5
 100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-3: Total Metals

Sampling Date		CCME FWAL	Teir 1 EQS	RDL	SW5A			
					21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Metals	Units							
Total Aluminum (Al)	ug/L	Narrative ¹	5	5.0	150	210	300	240
Total Antimony (Sb)	ug/L	ns	20	1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	5	5	1.0	1.5	3.2	1.2	4.7
Total Barium (Ba)	ug/L	ns	1000	1.0	2.2	2.4	4.3	3.8
Total Beryllium (Be)	ug/L	ns	5.3	1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	1,500	1200	50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	Narrative ²	0.04	0.010	0.012	<0.010	0.015	0.016
Total Calcium (Ca)	ug/L	ns		100	520	590	1000	1400
Total Chromium (Cr)	ug/L	ns		1.0	<1.0	<1.0	<1.0	<1.0
Total Cobalt (Co)	ug/L	ns	10	0.40	<0.40	<0.40	<0.40	<0.40
Total Copper (Cu)	ug/L	Narrative ²	2	0.50	<0.50	<0.50	<0.50	<0.50
Total Iron (Fe)	ug/L	300	300	50	230	530	600	420
Total Lead (Pb)	ug/L	Narrative ²	1	0.50	<0.50	<0.50	<0.50	<0.50
Total Magnesium (Mg)	ug/L	ns		100	230	260	510	510
Total Manganese (Mn)	ug/L	ns	820	2.0	25	33	54	37
Total Molybdenum (Mo)	ug/L	73	73	2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	Narrative ²	25	2.0	<2.0	<2.0	<2.0	<2.0
Total Phosphorus (P)	ug/L	ns		100	<100	<100	<100	<100
Total Potassium (K)	ug/L	ns		100	220	220	400	290
Total Selenium (Se)	ug/L	1	1	1.0	<0.50	<0.50	<0.50	<0.50
Total Silver (Ag)	ug/L	0.25	0.25	0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L	ns		100	1600	2100	2900	2800
Total Strontium (Sr)	ug/L	ns	21000	2.0	4.6	4.7	9.1	11
Total Thallium (Tl)	ug/L	0.8	0.8	0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L	ns		2.0	2.5	3.6	3.9	2.7
Total Tungsten (W)	ug/L	ns		1.0	<1.0	<1.0	<1.0	<1.0
Total Uranium (U)	ug/L	15	300	0.10	<0.10	<0.10	<0.10	<0.10
Total Vanadium (V)	ug/L	ns	6	2.0	<2.0	<2.0	<2.0	<2.0
Total Zirconium	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	30	30	5.0	<5.0	<5.0	<5.0	<5.0
Total Mercury (Hg)	ug/L	0.026		0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL) or Teir 1 EQS guidelines

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-3: Total Metals

Sampling Date		CCME FWAL	Teir 1 EQS	RDL	SW6A							
					10-Apr-19	12-Jun-19	12-Sep-19	2-Dec-19	21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Metals	Units											
Total Aluminum (Al)	ug/L	Narrative ¹	5	5.0	140	270	290	260	160	310	320	320
Total Antimony (Sb)	ug/L	ns	20	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	5	5	1.0	<1.0	3.1	4.4	1.3	1.6	12	3.2	1.5
Total Barium (Ba)	ug/L	ns	1000	1.0	2.1	2.9	3.7	2.7	1.9	2.9	4.9	3.9
Total Beryllium (Be)	ug/L	ns	5.3	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	1,500	1200	50	<50	<50	<50	<50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	Narrative ²	0.04	0.010	0.015	0.017	0.018	0.010	<0.010	0.016	0.020	0.016
Total Calcium (Ca)	ug/L	ns		100	570	640	910	720	490	640	1300	1000
Total Chromium (Cr)	ug/L	ns		1.0	<1.0	1.1	1.2	<1.0	<1.0	<1.0	<1.0	<1.0
Total Cobalt (Co)	ug/L	ns	10	0.40	<0.40	<0.40	0.64	<0.40	<0.40	0.80	0.70	0.44
Total Copper (Cu)	ug/L	Narrative ²	2	0.50	<0.50	0.82	0.58	<0.50	<0.50	<0.50	<0.50	<0.50
Total Iron (Fe)	ug/L	300	300	50	180	460	870	340	260	1600	690	480
Total Lead (Pb)	ug/L	Narrative ²	1	0.50	<0.50	<0.50	0.62	<0.50	<0.50	0.75	<0.50	<0.50
Total Magnesium (Mg)	ug/L	ns		100	270	290	410	330	220	290	520	470
Total Manganese (Mn)	ug/L	ns	820	2.0	39	35	64	40	22	72	60	47
Total Molybdenum (Mo)	ug/L	73	73	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	Narrative ²	25	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Phosphorus (P)	ug/L	ns		100	<100	<100	<100	<100	<100	<100	<100	<100
Total Potassium (K)	ug/L	ns		100	230	130	180	<100	170	220	280	200
Total Selenium (Se)	ug/L	1	1	1.0	<1.0	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Silver (Ag)	ug/L	0.25	0.25	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L	ns		100	1800	1900	2800	2000	1600	2000	2900	2900
Total Strontium (Sr)	ug/L	ns	21000	2.0	3.9	4.9	7.1	5.6	3.8	4.7	9.4	8.2
Total Thallium (Tl)	ug/L	0.8	0.8	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L	ns		2.0	<2.0	3.2	4.5	2.9	2.2	6.1	4.1	2.3
Total Tungsten (W)	ug/L	ns		1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Uranium (U)	ug/L	15	300	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Vanadium (V)	ug/L	ns	6	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zirconium	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	30	30	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Total Mercury (Hg)	ug/L	0.026		0.013	<0.013	<0.013	<0.013	<0.013	<0.013	0.023	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL) or Teir 1 EQS guidelines

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-3: Total Metals

Sampling Date		CCME FWAL	Teir 1 EQS	RDL	SW9			
					10-Apr-19	12-Jun-19	12-Sep-19	2-Dec-19
Metals	Units							
Total Aluminum (Al)	ug/L	Narrative ¹	5	5.0	150	250	260	260
Total Antimony (Sb)	ug/L	ns	20	1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	5	5	1.0	<1.0	<1.0	<1.0	<1.0
Total Barium (Ba)	ug/L	ns	1000	1.0	2.9	4.4	5.9	3.8
Total Beryllium (Be)	ug/L	ns	5.3	1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	1,500	1200	50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	Narrative ²	0.04	0.010	0.017	0.014	0.014	0.014
Total Calcium (Ca)	ug/L	ns		100	1100	1400	2200	900
Total Chromium (Cr)	ug/L	ns		1.0	<1.0	1.2	1.4	2.1
Total Cobalt (Co)	ug/L	ns	10	0.40	<0.40	<0.40	<0.40	<0.40
Total Copper (Cu)	ug/L	Narrative ²	2	0.50	<0.50	0.59	0.94	<0.50
Total Iron (Fe)	ug/L	300	300	50	210	320	740	320
Total Lead (Pb)	ug/L	Narrative ²	1	0.50	<0.50	<0.50	<0.50	<0.50
Total Magnesium (Mg)	ug/L	ns		100	540	680	1200	470
Total Manganese (Mn)	ug/L	ns	820	2.0	48	50	96	43
Total Molybdenum (Mo)	ug/L	73	73	2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	Narrative ²	25	2.0	<2.0	<2.0	<2.0	<2.0
Total Phosphorus (P)	ug/L	ns		100	<100	<100	<100	<100
Total Potassium (K)	ug/L	ns		100	300	170	230	160
Total Selenium (Se)	ug/L	1	1	1.0	<1.0	<1.0	<0.50	<0.50
Total Silver (Ag)	ug/L	0.25	0.25	0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L	ns		100	3100	3300	3700	2500
Total Strontium (Sr)	ug/L	ns	21000	2.0	4.4	5.3	8.3	5.0
Total Thallium (Tl)	ug/L	0.8	0.8	0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L	ns		2.0	2.7	3.0	4.6	4.3
Total Tungsten (W)	ug/L	ns		1.0	<1.0	<1.0	<1.0	<1.0
Total Uranium (U)	ug/L	15	300	0.10	<0.10	<0.10	<0.10	<0.10
Total Vanadium (V)	ug/L	ns	6	2.0	<2.0	<2.0	<2.0	<2.0
Total Zirconium	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	30	30	5.0	<5.0	<5.0	<5.0	<5.0
Total Mercury (Hg)	ug/L	0.026		0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL) or Teir 1 EQS guidelines

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-3: Total Metals

Sampling Date		CCME FWAL	Teir 1 EQS	RDL	SW10			
					10-Apr-19	12-Jun-19	12-Sep-19	2-Dec-19
Metals	Units							
Total Aluminum (Al)	ug/L	Narrative ¹	5	5.0	57	130	28	130
Total Antimony (Sb)	ug/L	ns	20	1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	5	5	1.0	42	99	49	71
Total Barium (Ba)	ug/L	ns	1000	1.0	4.6	5.6	3.1	5.0
Total Beryllium (Be)	ug/L	ns	5.3	1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	1,500	1200	50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	Narrative ²	0.04	0.010	0.027	0.039	<0.010	0.021
Total Calcium (Ca)	ug/L	ns		100	5500	5500	3300	4800
Total Chromium (Cr)	ug/L	ns		1.0	<1.0	<1.0	<1.0	<1.0
Total Cobalt (Co)	ug/L	ns	10	0.40	1.0	1.5	<0.40	1.3
Total Copper (Cu)	ug/L	Narrative ²	2	0.50	1.1	2.5	<0.50	1.5
Total Iron (Fe)	ug/L	300	300	50	1300	1500	710	1700
Total Lead (Pb)	ug/L	Narrative ²	1	0.50	<0.50	0.54	<0.50	<0.50
Total Magnesium (Mg)	ug/L	ns		100	770	740	750	710
Total Manganese (Mn)	ug/L	ns	820	2.0	89	120	82	100
Total Molybdenum (Mo)	ug/L	73	73	2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	Narrative ²	25	2.0	4.6	6.3	<2.0	4.7
Total Phosphorus (P)	ug/L	ns		100	<100	<100	<100	<100
Total Potassium (K)	ug/L	ns		100	500	610	410	490
Total Selenium (Se)	ug/L	1	1	1.0	<1.0	<1.0	<0.50	<0.50
Total Silver (Ag)	ug/L	0.25	0.25	0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L	ns		100	1900	1900	2300	2000
Total Strontium (Sr)	ug/L	ns	21000	2.0	20	21	19	18
Total Thallium (Tl)	ug/L	0.8	0.8	0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0
Total Tungsten (W)	ug/L	ns		1.0	<1.0	<1.0	<1.0	<1.0
Total Uranium (U)	ug/L	15	300	0.10	<0.10	<0.10	<0.10	<0.10
Total Vanadium (V)	ug/L	ns	6	2.0	<2.0	<2.0	<2.0	<2.0
Total Zirconium	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	30	30	5.0	5.7	10	<5.0	8.0
Total Mercury (Hg)	ug/L	0.026		0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL) or Teir 1 EQS guidelines

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-3: Total Metals

Sampling Date		CCME FWAL	Teir 1 EQS	RDL	SW11									
					10-Apr-19	12-Jun-19	12-Sep-19	2-Dec-19	21-22-Apr-20	21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20	15-16-Dec-20
Metals	Units									(DUP)			(DUP)	
Total Aluminum (Al)	ug/L	Narrative ¹	5	5.0	280	280	450	500	180	190	270	470	390	400
Total Antimony (Sb)	ug/L	ns	20	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	5	5	1.0	<1.0	<1.0	1.8	<1.0	<1.0	<1.0	1.1	1.5	<1.0	<1.0
Total Barium (Ba)	ug/L	ns	1000	1.0	2.6	1.9	4.3	3.0	1.6	1.5	2.1	5.1	3.0	3.1
Total Beryllium (Be)	ug/L	ns	5.3	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	1,500	1200	50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	Narrative ²	0.04	0.010	0.018	0.011	0.026	0.019	<0.010	<0.010	0.013	0.027	0.019	0.015
Total Calcium (Ca)	ug/L	ns		100	470	490	1300	700	540	550	860	1700	1600	1500
Total Chromium (Cr)	ug/L	ns		1.0	1.1	1.1	1.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Cobalt (Co)	ug/L	ns	10	0.40	0.60	<0.40	0.47	0.41	<0.40	<0.40	<0.40	0.48	<0.40	<0.40
Total Copper (Cu)	ug/L	Narrative ²	2	0.50	<0.50	0.61	0.61	0.76	<0.50	<0.50	<0.50	0.48	<0.50	<0.50
Total Iron (Fe)	ug/L	300	300	50	240	590	1200	880	330	350	560	1100	630	610
Total Lead (Pb)	ug/L	Narrative ²	1	0.50	<0.50	<0.50	0.78	0.75	<0.50	<0.50	<0.50	0.75	0.67	0.62
Total Magnesium (Mg)	ug/L	ns		100	410	250	650	460	310	340	510	880	1100	1100
Total Manganese (Mn)	ug/L	ns	820	2.0	34	21	52	33	23	24	33	58	47	47
Total Molybdenum (Mo)	ug/L	73	73	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	Narrative ²	25	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Phosphorus (P)	ug/L	ns		100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Total Potassium (K)	ug/L	ns		100	290	<100	320	<100	160	160	190	420	170	170
Total Selenium (Se)	ug/L	1	1	1.0	<1.0	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Silver (Ag)	ug/L	0.25	0.25	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L	ns		100	1900	1600	3100	2200	1500	1600	2200	1900	3300	3000
Total Strontium (Sr)	ug/L	ns	21000	2.0	4.1	4.0	9.6	4.7	3.3	3.4	5.2	12	7.2	7.4
Total Thallium (Tl)	ug/L	0.8	0.8	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L	ns		2.0	2.1	2.9	6.2	6.3	2.4	2.8	2.2	4.3	3.3	3.2
Total Tungsten (W)	ug/L	ns		1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Uranium (U)	ug/L	15	300	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Vanadium (V)	ug/L	ns	6	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zirconium	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	30	30	5.0	<5.0	5.9	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	<5.0	<5.0
Total Mercury (Hg)	ug/L	0.026		0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL) or Teir 1 EQS guidelines

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-3: Total Metals

Sampling Date		CCME FWAL	Teir 1 EQS	RDL	SW12							
					10-Apr-19	12-Jun-19	12-Sep-19	2-Dec-19	21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Metals	Units											
Total Aluminum (Al)	ug/L	Narrative ¹	5	5.0	230	310	540	290	270	340	590	360
Total Antimony (Sb)	ug/L	ns	20	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	5	5	1.0	<1.0	1.8	2.1	1.0	<1.0	2.5	1.9	1.2
Total Barium (Ba)	ug/L	ns	1000	1.0	1.8	2.0	4.9	1.9	1.8	2.5	5.2	2.9
Total Beryllium (Be)	ug/L	ns	5.3	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	1,500	1200	50	<50	<50	<50	<50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	Narrative ²	0.04	0.010	0.015	0.014	0.029	0.015	0.012	0.019	0.032	0.020
Total Calcium (Ca)	ug/L	ns		100	510	370	1000	450	420	410	1200	650
Total Chromium (Cr)	ug/L	ns		1.0	<1.0	1.1	1.3	<1.0	<1.0	<1.0	<1.0	<1.0
Total Cobalt (Co)	ug/L	ns	10	0.40	<0.40	<0.40	0.77	<0.40	<0.40	<0.40	0.45	<0.40
Total Copper (Cu)	ug/L	Narrative ²	2	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Iron (Fe)	ug/L	300	300	50	310	610	1000	500	180	610	850	580
Total Lead (Pb)	ug/L	Narrative ²	1	0.50	<0.50	<0.50	0.81	0.52	<0.50	0.53	0.83	0.52
Total Magnesium (Mg)	ug/L	ns		100	290	250	630	290	230	300	800	480
Total Manganese (Mn)	ug/L	ns	820	2.0	40	20	67	23	17	24	53	30
Total Molybdenum (Mo)	ug/L	73	73	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	Narrative ²	25	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Phosphorus (P)	ug/L	ns		100	<100	<100	<100	<100	<100	<100	<100	<100
Total Potassium (K)	ug/L	ns		100	230	<100	210	<100	120	300	610	150
Total Selenium (Se)	ug/L	1	1	1.0	<1.0	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Silver (Ag)	ug/L	0.25	0.25	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L	ns		100	1900	1800	3200	2400	1600	2300	3400	3000
Total Strontium (Sr)	ug/L	ns	21000	2.0	2.9	3.6	8.9	3.5	2.9	4.1	10	5.9
Total Thallium (Tl)	ug/L	0.8	0.8	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L	ns		2.0	2.2	2.9	6.5	4.0	<2.0	3.0	4.2	3.1
Total Tungsten (W)	ug/L	ns		1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Uranium (U)	ug/L	15	300	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Vanadium (V)	ug/L	ns	6	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zirconium	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	30	30	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	6.3	<5.0	<5.0
Total Mercury (Hg)	ug/L	0.026		0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL) or Teir 1 EQS guidelines

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-3: Total Metals

Sampling Date		CCME FWAL	Teir 1 EQS	RDL	SW14				
					21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	24-25-Sep-20 (DUP)	15-16-Dec-20
Metals	Units								
Total Aluminum (Al)	ug/L	Narrative ¹	5	5.0	65	87	20	27	73
Total Antimony (Sb)	ug/L	ns	20	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	5	5	1.0	12	28	7.4	7.9	19
Total Barium (Ba)	ug/L	ns	1000	1.0	3.3	4.5	3.2	3.1	3.7
Total Beryllium (Be)	ug/L	ns	5.3	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	1,500	1200	50	<50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	Narrative ²	0.04	0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Total Calcium (Ca)	ug/L	ns		100	2300	3300	2200	2200	4100
Total Chromium (Cr)	ug/L	ns		1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Cobalt (Co)	ug/L	ns	10	0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Total Copper (Cu)	ug/L	Narrative ²	2	0.50	0.53	0.52	<0.50	<0.50	0.56
Total Iron (Fe)	ug/L	300	300	50	450	1100	290	310	570
Total Lead (Pb)	ug/L	Narrative ²	1	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Magnesium (Mg)	ug/L	ns		100	400	610	610	640	770
Total Manganese (Mn)	ug/L	ns	820	2.0	19	100	30	28	8.0
Total Molybdenum (Mo)	ug/L	73	73	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	Narrative ²	25	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Phosphorus (P)	ug/L	ns		100	<100	<100	<100	<100	<100
Total Potassium (K)	ug/L	ns		100	350	630	580	610	640
Total Selenium (Se)	ug/L	1	1	1.0	<0.50	<0.50	<0.50	<0.50	<0.50
Total Silver (Ag)	ug/L	0.25	0.25	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L	ns		100	1500	2000	2700	2700	2700
Total Strontium (Sr)	ug/L	ns	21000	2.0	11	18	13	14	20
Total Thallium (Tl)	ug/L	0.8	0.8	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Tungsten (W)	ug/L	ns		1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Uranium (U)	ug/L	15	300	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Vanadium (V)	ug/L	ns	6	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zirconium	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	30	30	5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Total Mercury (Hg)	ug/L	0.026		0.013	<0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL) or Teir 1 EQS guidelines

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-3: Total Metals

Sampling Date		CCME FWAL	Teir 1 EQS	RDL	SW19					
					21-22-Apr-20	17-18-Jun-20	17-18-Jun-20	24-25-Sep-20	24-25-Sep-20	15-16-Dec-20
Metals	Units					(DUP)		(DUP)		
Total Aluminum (Al)	ug/L	Narrative ¹	5	5.0	140	200	200	370	370	270
Total Antimony (Sb)	ug/L	ns	20	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	5	5	1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0
Total Barium (Ba)	ug/L	ns	1000	1.0	1.7	2.2	2.2	5.9	6.5	3.7
Total Beryllium (Be)	ug/L	ns	5.3	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	1,500	1200	50	<50	<50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	Narrative ²	0.04	0.010	<0.010	0.011	0.011	0.023	0.028	0.014
Total Calcium (Ca)	ug/L	ns		100	330	430	430	1100	1100	690
Total Chromium (Cr)	ug/L	ns		1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Cobalt (Co)	ug/L	ns	10	0.40	<0.40	<0.40	<0.40	0.43	0.40	<0.40
Total Copper (Cu)	ug/L	Narrative ²	2	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Iron (Fe)	ug/L	300	300	50	240	430	430	850	850	580
Total Lead (Pb)	ug/L	Narrative ²	1	0.50	<0.50	<0.50	<0.50	0.66	0.66	<0.50
Total Magnesium (Mg)	ug/L	ns		100	190	230	220	560	570	420
Total Manganese (Mn)	ug/L	ns	820	2.0	21	27	26	53	59	41
Total Molybdenum (Mo)	ug/L	73	73	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	Narrative ²	25	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Phosphorus (P)	ug/L	ns		100	<100	<100	<100	<100	<100	<100
Total Potassium (K)	ug/L	ns		100	190	170	170	290	340	200
Total Selenium (Se)	ug/L	1	1	1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Silver (Ag)	ug/L	0.25	0.25	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L	ns		100	1500	1800	1800	2900	3000	2600
Total Strontium (Sr)	ug/L	ns	21000	2.0	3.3	3.7	3.8	10	10	7.4
Total Thallium (Tl)	ug/L	0.8	0.8	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L	ns		2.0	2.5	<2.0	2.5	4.3	3.7	2.5
Total Tungsten (W)	ug/L	ns		1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Uranium (U)	ug/L	15	300	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Vanadium (V)	ug/L	ns	6	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zirconium	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	30	30	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Total Mercury (Hg)	ug/L	0.026		0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL) or Teir 1 EQS guidelines

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-3: Total Metals

Sampling Date		CCME FWAL	Teir 1 EQS	RDL	SW26			
					21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Metals	Units							
Total Aluminum (Al)	ug/L	Narrative ¹	5	5.0	150	330	320	270
Total Antimony (Sb)	ug/L	ns	20	1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	5	5	1.0	1.0	14	<1.0	4.3
Total Barium (Ba)	ug/L	ns	1000	1.0	2.0	3.0	4.7	4.3
Total Beryllium (Be)	ug/L	ns	5.3	1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	1,500	1200	50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	Narrative ²	0.04	0.010	0.011	0.018	0.020	0.020
Total Calcium (Ca)	ug/L	ns		100	410	580	1000	950
Total Chromium (Cr)	ug/L	ns		1.0	<1.0	<1.0	<1.0	<1.0
Total Cobalt (Co)	ug/L	ns	10	0.40	<0.40	<0.40	<0.40	<0.40
Total Copper (Cu)	ug/L	Narrative ²	2	0.50	<0.50	0.59	1.1	<0.50
Total Iron (Fe)	ug/L	300	300	50	210	650	720	280
Total Lead (Pb)	ug/L	Narrative ²	1	0.50	<0.50	0.57	<0.50	<0.50
Total Magnesium (Mg)	ug/L	ns		100	210	290	510	480
Total Manganese (Mn)	ug/L	ns	820	2.0	23	32	48	27
Total Molybdenum (Mo)	ug/L	73	73	2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	Narrative ²	25	2.0	<2.0	<2.0	<2.0	<2.0
Total Phosphorus (P)	ug/L	ns		100	<100	<100	<100	<100
Total Potassium (K)	ug/L	ns		100	200	260	250	200
Total Selenium (Se)	ug/L	1	1	1.0	<0.50	<0.50	<0.50	<0.50
Total Silver (Ag)	ug/L	0.25	0.25	0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L	ns		100	1600	2100	2900	2800
Total Strontium (Sr)	ug/L	ns	21000	2.0	3.8	5.0	9.1	8.5
Total Thallium (Tl)	ug/L	0.8	0.8	0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L	ns		2.0	2.3	5.9	3.2	2.1
Total Tungsten (W)	ug/L	ns		1.0	<1.0	<1.0	<1.0	<1.0
Total Uranium (U)	ug/L	15	300	0.10	<0.10	<0.10	<0.10	<0.10
Total Vanadium (V)	ug/L	ns	6	2.0	<2.0	<2.0	<2.0	<2.0
Total Zirconium	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	30	30	5.0	<5.0	6.7	<5.0	<5.0
Total Mercury (Hg)	ug/L	0.026		0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL) or Teir 1 EQS guidelines

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-3: Total Metals

Sampling Date		CCME FWAL	Teir 1 EQS	RDL	SW28	
					24-25-Sep-20	15-16-Dec-20
Metals	Units					
Total Aluminum (Al)	ug/L	Narrative ¹	5	5.0	520	370
Total Antimony (Sb)	ug/L	ns	20	1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	5	5	1.0	4.7	3.1
Total Barium (Ba)	ug/L	ns	1000	1.0	4.7	2.4
Total Beryllium (Be)	ug/L	ns	5.3	1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L	ns		2.0	<2.0	<2.0
Total Boron (B)	ug/L	1,500	1200	50	<50	<50
Total Cadmium (Cd)	ug/L	Narrative ²	0.04	0.010	0.028	0.012
Total Calcium (Ca)	ug/L	ns		100	1200	2200
Total Chromium (Cr)	ug/L	ns		1.0	<1.0	<1.0
Total Cobalt (Co)	ug/L	ns	10	0.40	0.66	<0.40
Total Copper (Cu)	ug/L	Narrative ²	2	0.50	<0.50	<0.50
Total Iron (Fe)	ug/L	300	300	50	1100	670
Total Lead (Pb)	ug/L	Narrative ²	1	0.50	0.74	0.67
Total Magnesium (Mg)	ug/L	ns		100	750	1500
Total Manganese (Mn)	ug/L	ns	820	2.0	70	61
Total Molybdenum (Mo)	ug/L	73	73	2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	Narrative ²	25	2.0	<2.0	<2.0
Total Phosphorus (P)	ug/L	ns		100	<100	<100
Total Potassium (K)	ug/L	ns		100	450	170
Total Selenium (Se)	ug/L	1	1	1.0	<0.50	<0.50
Total Silver (Ag)	ug/L	0.25	0.25	0.10	<0.10	<0.10
Total Sodium (Na)	ug/L	ns		100	3600	3200
Total Strontium (Sr)	ug/L	ns	21000	2.0	12	6.9
Total Thallium (Tl)	ug/L	0.8	0.8	0.10	<0.10	<0.10
Total Tin (Sn)	ug/L	ns		2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L	ns		2.0	5.3	4.3
Total Tungsten (W)	ug/L	ns		1.0	<1.0	<1.0
Total Uranium (U)	ug/L	15	300	0.10	<0.10	<0.10
Total Vanadium (V)	ug/L	ns	6	2.0	<2.0	<2.0
Total Zirconium	ug/L	ns		2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	30	30	5.0	<5.0	<5.0
Total Mercury (Hg)	ug/L	0.026		0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL) or Teir 1 EQS guidelines

Notes:

ug/L - microgram per litre

RDL - Reportable Detection Limit

ns - no standard listed

NC - Not Calculated

Narrative:¹ Aluminum guideline variable:

5 ug/L if pH < 6.5

100 ug/L if pH ≥ 6.5

² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-3: Total Metals

Sampling Date		CCME FWAL	Teir 1 EQS	RDL	SW29			
					21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Metals	Units							
Total Aluminum (Al)	ug/L	Narrative ¹	5	5.0	140	200	370	300
Total Antimony (Sb)	ug/L	ns	20	1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	5	5	1.0	<1.0	<1.0	<1.0	<1.0
Total Barium (Ba)	ug/L	ns	1000	1.0	1.7	2.1	5.2	3.8
Total Beryllium (Be)	ug/L	ns	5.3	1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	1,500	1200	50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	Narrative ²	0.04	0.010	<0.010	0.011	0.020	0.015
Total Calcium (Ca)	ug/L	ns		100	320	400	840	690
Total Chromium (Cr)	ug/L	ns		1.0	<1.0	<1.0	<1.0	<1.0
Total Cobalt (Co)	ug/L	ns	10	0.40	<0.40	<0.40	<0.40	<0.40
Total Copper (Cu)	ug/L	Narrative ²	2	0.50	<0.50	<0.50	<0.50	<0.50
Total Iron (Fe)	ug/L	300	300	50	250	450	860	600
Total Lead (Pb)	ug/L	Narrative ²	1	0.50	<0.50	<0.50	0.66	<0.50
Total Magnesium (Mg)	ug/L	ns		100	180	210	530	460
Total Manganese (Mn)	ug/L	ns	820	2.0	20	24	49	41
Total Molybdenum (Mo)	ug/L	73	73	2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	Narrative ²	25	2.0	<2.0	<2.0	<2.0	<2.0
Total Phosphorus (P)	ug/L	ns		100	<100	<100	<100	<100
Total Potassium (K)	ug/L	ns		100	170	170	220	190
Total Selenium (Se)	ug/L	1	1	1.0	<0.50	<0.50	<0.50	<0.50
Total Silver (Ag)	ug/L	0.25	0.25	0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L	ns		100	1400	1700	2900	2800
Total Strontium (Sr)	ug/L	ns	21000	2.0	3.3	4.0	8.8	7.3
Total Thallium (Tl)	ug/L	0.8	0.8	0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L	ns		2.0	2.5	2.6	4.5	2.9
Total Tungsten (W)	ug/L	ns		1.0	<1.0	<1.0	<1.0	<1.0
Total Uranium (U)	ug/L	15	300	0.10	<0.10	<0.10	<0.10	<0.10
Total Vanadium (V)	ug/L	ns	6	2.0	<2.0	<2.0	<2.0	<2.0
Total Zirconium	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	30	30	5.0	<5.0	<5.0	<5.0	<5.0
Total Mercury (Hg)	ug/L	0.026		0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL) or Teir 1 EQS guidelines

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-3: Total Metals

Sampling Date		CCME FWAL	Teir 1 EQS	RDL	SW30			
					21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Metals	Units							
Total Aluminum (Al)	ug/L	Narrative ¹	5	5.0	140	230	330	280
Total Antimony (Sb)	ug/L	ns	20	1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	5	5	1.0	2.9	7.0	8.6	4.0
Total Barium (Ba)	ug/L	ns	1000	1.0	2.0	3.4	4.8	4.0
Total Beryllium (Be)	ug/L	ns	5.3	1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	1,500	1200	50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	Narrative ²	0.04	0.010	0.018	0.022	0.029	0.031
Total Calcium (Ca)	ug/L	ns		100	390	830	1300	700
Total Chromium (Cr)	ug/L	ns		1.0	<1.0	<1.0	<1.0	<1.0
Total Cobalt (Co)	ug/L	ns	10	0.40	<0.40	<0.40	0.53	0.49
Total Copper (Cu)	ug/L	Narrative ²	2	0.50	<0.50	<0.50	<0.50	<0.50
Total Iron (Fe)	ug/L	300	300	50	160	470	800	430
Total Lead (Pb)	ug/L	Narrative ²	1	0.50	<0.50	0.54	0.60	0.57
Total Magnesium (Mg)	ug/L	ns		100	220	310	530	430
Total Manganese (Mn)	ug/L	ns	820	2.0	27	37	62	46
Total Molybdenum (Mo)	ug/L	73	73	2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	Narrative ²	25	2.0	<2.0	<2.0	<2.0	<2.0
Total Phosphorus (P)	ug/L	ns		100	<100	<100	<100	<100
Total Potassium (K)	ug/L	ns		100	270	230	300	320
Total Selenium (Se)	ug/L	1	1	1.0	<0.50	<0.50	<0.50	<0.50
Total Silver (Ag)	ug/L	0.25	0.25	0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L	ns		100	2000	2400	3200	3000
Total Strontium (Sr)	ug/L	ns	21000	2.0	3.2	6.1	8.7	6.5
Total Thallium (Tl)	ug/L	0.8	0.8	0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L	ns		2.0	2.3	3.2	3.3	2.9
Total Tungsten (W)	ug/L	ns		1.0	<1.0	<1.0	<1.0	<1.0
Total Uranium (U)	ug/L	15	300	0.10	<0.10	<0.10	<0.10	<0.10
Total Vanadium (V)	ug/L	ns	6	2.0	<2.0	<2.0	<2.0	<2.0
Total Zirconium	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	30	30	5.0	<5.0	<5.0	<5.0	<5.0
Total Mercury (Hg)	ug/L	0.026		0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL) or Teir 1 EQS guidelines

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-3: Total Metals

Sampling Date		CCME FWAL	Teir 1 EQS	RDL	SW31				
					21-22-Apr-20	17-18-Jun-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Metals	Units					(DUP)]			
Total Aluminum (Al)	ug/L	Narrative ¹	5	5.0	160	220	230	480	340
Total Antimony (Sb)	ug/L	ns	20	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	5	5	1.0	<1.0	2.1	2.0	2.0	<1.0
Total Barium (Ba)	ug/L	ns	1000	1.0	1.5	2.0	2.0	5.0	3.3
Total Beryllium (Be)	ug/L	ns	5.3	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	1,500	1200	50	<50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	Narrative ²	0.04	0.010	0.016	0.015	0.016	0.037	0.028
Total Calcium (Ca)	ug/L	ns		100	300	450	470	910	630
Total Chromium (Cr)	ug/L	ns		1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Cobalt (Co)	ug/L	ns	10	0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Total Copper (Cu)	ug/L	Narrative ²	2	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Iron (Fe)	ug/L	300	300	50	120	240	240	580	310
Total Lead (Pb)	ug/L	Narrative ²	1	0.50	<0.50	<0.50	<0.50	0.75	0.52
Total Magnesium (Mg)	ug/L	ns		100	190	240	240	590	460
Total Manganese (Mn)	ug/L	ns	820	2.0	11	13	12	27	19
Total Molybdenum (Mo)	ug/L	73	73	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	Narrative ²	25	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Phosphorus (P)	ug/L	ns		100	<100	<100	<100	<100	<100
Total Potassium (K)	ug/L	ns		100	280	300	300	410	240
Total Selenium (Se)	ug/L	1	1	1.0	<0.50	<0.50	<0.50	<0.50	<0.50
Total Silver (Ag)	ug/L	0.25	0.25	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L	ns		100	2000	2500	2400	3600	3300
Total Strontium (Sr)	ug/L	ns	21000	2.0	3.0	4.0	4.0	9.7	6.7
Total Thallium (Tl)	ug/L	0.8	0.8	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L	ns		2.0	3.1	2.8	2.6	4.2	3.8
Total Tungsten (W)	ug/L	ns		1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Uranium (U)	ug/L	15	300	0.10	0.11	0.24	0.23	0.25	0.16
Total Vanadium (V)	ug/L	ns	6	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zirconium	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	30	30	5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Total Mercury (Hg)	ug/L	0.026		0.013	<0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL) or Teir 1 EQS guidelines

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-3: Total Metals

Sampling Date		CCME FWAL	Teir 1 EQS	RDL	SW32			
					21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Metals	Units							
Total Aluminum (Al)	ug/L	Narrative ¹	5	5.0	160	160	430	310
Total Antimony (Sb)	ug/L	ns	20	1.0	<1.0	<1.0	<1.0	<1.0
Total Arsenic (As)	ug/L	5	5	1.0	1.0	3.2	2.8	1.2
Total Barium (Ba)	ug/L	ns	1000	1.0	3.5	5.9	11	5.2
Total Beryllium (Be)	ug/L	ns	5.3	1.0	<1.0	<1.0	<1.0	<1.0
Total Bismuth (Bi)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0
Total Boron (B)	ug/L	1,500	1200	50	<50	<50	<50	<50
Total Cadmium (Cd)	ug/L	Narrative ²	0.04	0.010	0.010	0.010	0.017	0.027
Total Calcium (Ca)	ug/L	ns		100	1400	3500	8100	2300
Total Chromium (Cr)	ug/L	ns		1.0	<1.0	<1.0	<1.0	<1.0
Total Cobalt (Co)	ug/L	ns	10	0.40	<0.40	<0.40	0.70	0.46
Total Copper (Cu)	ug/L	Narrative ²	2	0.50	<0.50	<0.50	0.80	<0.50
Total Iron (Fe)	ug/L	300	300	50	230	410	1100	570
Total Lead (Pb)	ug/L	Narrative ²	1	0.50	<0.50	<0.50	1.4	0.57
Total Magnesium (Mg)	ug/L	ns		100	650	1600	4100	1200
Total Manganese (Mn)	ug/L	ns	820	2.0	45	39	300	84
Total Molybdenum (Mo)	ug/L	73	73	2.0	<2.0	<2.0	<2.0	<2.0
Total Nickel (Ni)	ug/L	Narrative ²	25	2.0	<2.0	<2.0	<2.0	<2.0
Total Phosphorus (P)	ug/L	ns		100	<100	<100	<100	<100
Total Potassium (K)	ug/L	ns		100	210	260	230	280
Total Selenium (Se)	ug/L	1	1	1.0	<0.50	<0.50	<0.50	<0.50
Total Silver (Ag)	ug/L	0.25	0.25	0.10	<0.10	<0.10	<0.10	<0.10
Total Sodium (Na)	ug/L	ns		100	1700	2000	2800	2900
Total Strontium (Sr)	ug/L	ns	21000	2.0	4.7	7.8	14	9.7
Total Thallium (Tl)	ug/L	0.8	0.8	0.10	<0.10	<0.10	<0.10	<0.10
Total Tin (Sn)	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0
Total Titanium (Ti)	ug/L	ns		2.0	5.7	2.6	4.6	2.4
Total Tungsten (W)	ug/L	ns		1.0	<1.0	<1.0	<1.0	<1.0
Total Uranium (U)	ug/L	15	300	0.10	<0.10	<0.10	<0.10	<0.10
Total Vanadium (V)	ug/L	ns	6	2.0	<2.0	<2.0	<2.0	<2.0
Total Zirconium	ug/L	ns		2.0	<2.0	<2.0	<2.0	<2.0
Total Zinc (Zn)	ug/L	30	30	5.0	<5.0	<5.0	<5.0	<5.0
Total Mercury (Hg)	ug/L	0.026		0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL) or Teir 1 EQS guidelines

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-4: Dissolved Metals

Sampling Date		CCME FWAL	RDL	SW1												
				10-Apr-19	10-Apr-19	12-Jun-19	12-Sep-19	12-Sep-19	2-Dec-19	21-22-Apr-20	21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20	15-16-Dec-20	
Metals	Units			(DUP)		(DUP)		(DUP)		(DUP)		(DUP)		(DUP)		(DUP)
Dissolved Aluminum (Al)	ug/L	Narrative ¹	5.0	130	130	240	340	210	210	140	140	190	280	280	280	280
Dissolved Antimony (Sb)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Arsenic (As)	ug/L	5	1.0	<1.0	<1.0	1.8	1.8	<1.0	<1.0	<1.0	<1.0	3.1	1.2	<1.0	<1.0	1.0
Dissolved Barium (Ba)	ug/L	ns	1.0	2.2	2.2	3.1	6.1	5.4	2.7	2.0	1.9	2.6	4.4	4.1	4.3	4.3
Dissolved Beryllium (Be)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Bismuth (Bi)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Boron (B)	ug/L	1,500	50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Dissolved Cadmium (Cd)	ug/L	Narrative ²	0.010	0.014	0.010	0.020	0.025	0.016	0.016	0.012	0.015	0.010	0.015	0.017	0.022	0.022
Dissolved Calcium (Ca)	ug/L	ns	100	480	480	600	1000	2100	550	450	440	680	1100	850	850	850
Dissolved Chromium (Cr)	ug/L	ns	1.0	<1.0	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Cobalt (Co)	ug/L	ns	0.40	<0.40	<0.40	<0.40	0.49	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Dissolved Copper (Cu)	ug/L	Narrative ²	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Iron (Fe)	ug/L	300	50	190	190	360	680	430	310	200	200	350	530	440	450	450
Dissolved Lead (Pb)	ug/L	Narrative ²	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Magnesium (Mg)	ug/L	ns	100	280	290	270	510	1000	290	220	210	290	500	480	470	470
Dissolved Manganese (Mn)	ug/L	ns	2.0	47	47	35	61	59	31	23	23	38	44	46	50	50
Dissolved Molybdenum (Mo)	ug/L	73	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	5.5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Nickel (Ni)	ug/L	Narrative ²	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Phosphorus (P)	ug/L	ns	100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Dissolved Potassium (K)	ug/L	ns	100	330	320	150	230	260	150	220	200	250	270	260	250	250
Dissolved Selenium (Se)	ug/L	1	1.0	<1.0	<1.0	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Silver (Ag)	ug/L	0.25	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Sodium (Na)	ug/L	ns	100	1900	1900	1800	2900	3500	1800	1600	1500	2400	3000	2800	2700	2700
Dissolved Strontium (Sr)	ug/L	ns	2.0	4.2	4.5	5.4	9.9	7.6	4.7	4.1	3.9	5.5	9.1	8.2	8.5	8.5
Dissolved Thallium (Tl)	ug/L	0.8	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Tin (Sn)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Titanium (Ti)	ug/L	ns	2.0	<2.0	<2.0	<2.0	2.7	2.1	2.3	<2.0	<2.0	2.1	3.0	2.6	2.1	2.1
Dissolved Tungsten (W)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Uranium (U)	ug/L	15	0.10	<0.10	<0.10	<0.10	<0.10	0.16	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Vanadium (V)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Zirconium (Zr)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Zinc (Zn)	ug/L	30	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	9.8	6.3	<5.0	<5.0	<5.0	5.3	5.3
Methylmercury (Net CH ₃ Hg)	ng/L	4	0.08	~0.07	~0.07	0.26	0.30	0.28	0.07	0.07	0.08	0.36	0.42	0.11	0.09	0.09
Dissolved Mercury (Hg)	ug/L	0.026	0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

ug/L - microgram per litre
 RDL - Reportable Detection Limit
 ns - no standard listed
 NC - Not Calculated
 ng/L - nanogram per litre

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
 100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-4: Dissolved Metals

Sampling Date		CCME FWAL	RDL	SW1A			
				21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Metals	Units						
Dissolved Aluminum (Al)	ug/L	Narrative ¹	5.0	140	190	290	280
Dissolved Antimony (Sb)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Arsenic (As)	ug/L	5	1.0	<1.0	3.3	1.2	1.1
Dissolved Barium (Ba)	ug/L	ns	1.0	2.4	3.5	4.7	4.4
Dissolved Beryllium (Be)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Bismuth (Bi)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Boron (B)	ug/L	1,500	50	<50	<50	<50	<50
Dissolved Cadmium (Cd)	ug/L	Narrative ²	0.010	<0.010	<0.010	0.015	0.020
Dissolved Calcium (Ca)	ug/L	ns	100	630	1500	1500	1300
Dissolved Chromium (Cr)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Cobalt (Co)	ug/L	ns	0.40	<0.40	<0.40	<0.40	<0.40
Dissolved Copper (Cu)	ug/L	Narrative ²	0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Iron (Fe)	ug/L	300	50	200	370	520	460
Dissolved Lead (Pb)	ug/L	Narrative ²	0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Magnesium (Mg)	ug/L	ns	100	300	580	640	600
Dissolved Manganese (Mn)	ug/L	ns	2.0	31	54	59	58
Dissolved Molybdenum (Mo)	ug/L	73	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Nickel (Ni)	ug/L	Narrative ²	2.0	<2.0	6.3	<2.0	<2.0
Dissolved Phosphorus (P)	ug/L	ns	100	<100	<100	<100	<100
Dissolved Potassium (K)	ug/L	ns	100	200	260	270	240
Dissolved Selenium (Se)	ug/L	1	1.0	<0.50	<0.50	<0.50	<0.50
Dissolved Silver (Ag)	ug/L	0.25	0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Sodium (Na)	ug/L	ns	100	1600	2200	2900	2700
Dissolved Strontium (Sr)	ug/L	ns	2.0	4.1	6.2	9.0	9.1
Dissolved Thallium (Tl)	ug/L	0.8	0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Tin (Sn)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Titanium (Ti)	ug/L	ns	2.0	<2.0	2.0	2.8	2.6
Dissolved Tungsten (W)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Uranium (U)	ug/L	15	0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Vanadium (V)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Zirconium (Zr)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<1.0
Dissolved Zinc (Zn)	ug/L	30	5.0	5.7	<5.0	<5.0	<5.0
Methylmercury (Net CH ₃ Hg)	ng/L	4	0.08	0.09	0.40	0.40	0.12
Dissolved Mercury (Hg)	ug/L	0.026	0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated
ng/L - nanogram per litre

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-4: Dissolved Metals

Sampling Date		CCME FWAL	RDL	SW2A				
				10-Apr-19	12-Jun-19	12-Sep-19	2-Dec-19	2-Dec-19
Metals	Units						(DUP)	
Dissolved Aluminum (Al)	ug/L	Narrative ¹	5.0	130	240	340	220	220
Dissolved Antimony (Sb)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Arsenic (As)	ug/L	5	1.0	<1.0	<1.0	1.1	<1.0	<1.0
Dissolved Barium (Ba)	ug/L	ns	1.0	2.2	2.9	5.9	2.7	2.6
Dissolved Beryllium (Be)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Bismuth (Bi)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Boron (B)	ug/L	1,500	50	<50	<50	<50	<50	<50
Dissolved Cadmium (Cd)	ug/L	Narrative ²	0.010	0.014	0.019	0.024	<0.010	0.012
Dissolved Calcium (Ca)	ug/L	ns	100	430	500	920	500	490
Dissolved Chromium (Cr)	ug/L	ns	1.0	1.0	1.0	<1.0	<1.0	<1.0
Dissolved Cobalt (Co)	ug/L	ns	0.40	<0.40	<0.40	0.47	<0.40	<0.40
Dissolved Copper (Cu)	ug/L	Narrative ²	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Iron (Fe)	ug/L	300	50	200	380	680	330	340
Dissolved Lead (Pb)	ug/L	Narrative ²	0.50	<0.50	<0.50	0.50	<0.50	<0.50
Dissolved Magnesium (Mg)	ug/L	ns	100	280	260	500	280	290
Dissolved Manganese (Mn)	ug/L	ns	2.0	46	30	53	29	30
Dissolved Molybdenum (Mo)	ug/L	73	2.0	<2.0	<2.0	<2.0	<2.0	2.1
Dissolved Nickel (Ni)	ug/L	Narrative ²	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Phosphorus (P)	ug/L	ns	100	<100	<100	<100	<100	<100
Dissolved Potassium (K)	ug/L	ns	100	310	150	230	150	150
Dissolved Selenium (Se)	ug/L	1	1.0	<1.0	<1.0	<0.50	<0.50	<0.50
Dissolved Silver (Ag)	ug/L	0.25	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Sodium (Na)	ug/L	ns	100	1900	1800	2800	1800	1800
Dissolved Strontium (Sr)	ug/L	ns	2.0	4.0	4.9	9.7	4.8	4.5
Dissolved Thallium (Tl)	ug/L	0.8	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Tin (Sn)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Titanium (Ti)	ug/L	ns	2.0	<2.0	<2.0	<2.0	2.9	2.6
Dissolved Tungsten (W)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Uranium (U)	ug/L	15	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Vanadium (V)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Zirconium (Zr)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Zinc (Zn)	ug/L	30	5.0	<5.0	<5.0	5.3	<5.0	<5.0
Methylmercury (Net CH ₃ Hg)	ng/L	4	0.08	0.08	0.39	0.27	0.07	0.07
Dissolved Mercury (Hg)	ug/L	0.026	0.013	<0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated
ng/L - nanogram per litre

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-4: Dissolved Metals

Sampling Date		CCME FWAL	RDL	SW4A							
				10-Apr-19	12-Jun-19	12-Sep-19	2-Dec-19	21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Metals	Units										
Dissolved Aluminum (Al)	ug/L	Narrative ¹	5.0	130	250	310	170	150	220	300	270
Dissolved Antimony (Sb)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Arsenic (As)	ug/L	5	1.0	1.9	4.6	4.9	1.4	1.7	8.3	1.3	2.6
Dissolved Barium (Ba)	ug/L	ns	1.0	2.0	2.8	5.6	2.3	2.0	3.2	4.5	3.7
Dissolved Beryllium (Be)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Bismuth (Bi)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Boron (B)	ug/L	1,500	50	<50	<50	<50	<50	<50	<50	<50	<50
Dissolved Cadmium (Cd)	ug/L	Narrative ²	0.010	0.010	0.013	0.021	0.013	<0.010	0.013	0.017	0.018
Dissolved Calcium (Ca)	ug/L	ns	100	530	630	1400	620	490	750	1000	920
Dissolved Chromium (Cr)	ug/L	ns	1.0	<1.0	1.0	1.1	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Cobalt (Co)	ug/L	ns	0.40	<0.40	<0.40	0.73	<0.40	<0.40	0.45	<0.40	0.45
Dissolved Copper (Cu)	ug/L	Narrative ²	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Iron (Fe)	ug/L	300	50	190	450	700	220	210	730	650	400
Dissolved Lead (Pb)	ug/L	Narrative ²	0.50	<0.50	<0.50	0.51	<0.50	<0.50	0.51	<0.50	<0.50
Dissolved Magnesium (Mg)	ug/L	ns	100	280	280	580	300	230	360	570	460
Dissolved Manganese (Mn)	ug/L	ns	2.0	42	32	68	36	23	49	57	45
Dissolved Molybdenum (Mo)	ug/L	73	2.0	<2.0	<2.0	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Nickel (Ni)	ug/L	Narrative ²	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Phosphorus (P)	ug/L	ns	100	<100	<100	<100	<100	<100	<100	<100	<100
Dissolved Potassium (K)	ug/L	ns	100	300	180	280	120	180	340	320	210
Dissolved Selenium (Se)	ug/L	1	1.0	<1.0	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Silver (Ag)	ug/L	0.25	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Sodium (Na)	ug/L	ns	100	2000	1900	3400	2000	1700	2500	3100	2900
Dissolved Strontium (Sr)	ug/L	ns	2.0	4.1	5.0	11	4.7	3.9	5.7	8.4	8.1
Dissolved Thallium (Tl)	ug/L	0.8	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Tin (Sn)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Titanium (Ti)	ug/L	ns	2.0	<2.0	<2.0	2.5	<2.0	<2.0	3.5	3.7	<2.0
Dissolved Tungsten (W)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Uranium (U)	ug/L	15	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Vanadium (V)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Zirconium (Zr)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Dissolved Zinc (Zn)	ug/L	30	5.0	<5.0	<5.0	<5.0	<5.0	10	6.2	5.1	<5.0
Methylmercury (Net CH ₃ Hg)	ng/L	4	0.08	0.11	0.56	0.60	0.13	0.26	1.45	0.35	0.23
Dissolved Mercury (Hg)	ug/L	0.026	0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated
ng/L - nanogram per litre

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-4: Dissolved Metals

Sampling Date		CCME FWAL	RDL	SW5								
				10-Apr-19	12-Jun-19	12-Jun-19 (DUP)	12-Sep-19	2-Dec-19	21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Metals	Units											
Dissolved Aluminum (Al)	ug/L	Narrative ¹	5.0	47	27	27	150	71	40	29	30	54
Dissolved Antimony (Sb)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Arsenic (As)	ug/L	5	1.0	9.0	12	12	280	9.3	7.8	31	33	23
Dissolved Barium (Ba)	ug/L	ns	1.0	3.3	3.7	3.8	9.7	3.1	3.2	4.5	3.3	3.7
Dissolved Beryllium (Be)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Bismuth (Bi)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Boron (B)	ug/L	1,500	50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Dissolved Cadmium (Cd)	ug/L	Narrative ²	0.010	<0.010	<0.010	0.013	0.011	<0.010	<0.010	<0.010	<0.010	<0.010
Dissolved Calcium (Ca)	ug/L	ns	100	2000	3200	3200	13000	3100	2200	3300	3000	4000
Dissolved Chromium (Cr)	ug/L	ns	1.0	<1.0	<1.0	<1.0	1.1	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Cobalt (Co)	ug/L	ns	0.40	<0.40	<0.40	<0.40	2.4	<0.40	<0.40	<0.40	<0.40	<0.40
Dissolved Copper (Cu)	ug/L	Narrative ²	0.50	<0.50	0.66	0.64	0.98	0.56	<0.50	0.70	<0.50	<0.50
Dissolved Iron (Fe)	ug/L	300	50	230	210	220	5300	240	220	550	410	360
Dissolved Lead (Pb)	ug/L	Narrative ²	0.50	<0.50	<0.50	<0.50	0.74	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Magnesium (Mg)	ug/L	ns	100	420	560	570	1400	560	400	600	680	730
Dissolved Manganese (Mn)	ug/L	ns	2.0	44	30	30	310	9.0	15	50	75	20
Dissolved Molybdenum (Mo)	ug/L	73	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Nickel (Ni)	ug/L	Narrative ²	2.0	<2.0	<2.0	<2.0	6.8	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Phosphorus (P)	ug/L	ns	100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Dissolved Potassium (K)	ug/L	ns	100	420	540	540	1000	470	350	590	540	590
Dissolved Selenium (Se)	ug/L	1	1.0	<1.0	<1.0	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Silver (Ag)	ug/L	0.25	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Sodium (Na)	ug/L	ns	100	1700	1800	1800	2800	2000	1600	1900	2500	2600
Dissolved Strontium (Sr)	ug/L	ns	2.0	9.8	16	17	44	15	11	18	17	20
Dissolved Thallium (Tl)	ug/L	0.8	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Tin (Sn)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Titanium (Ti)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Tungsten (W)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Uranium (U)	ug/L	15	0.10	<0.10	<0.10	<0.10	0.21	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Vanadium (V)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Zirconium (Zr)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Dissolved Zinc (Zn)	ug/L	30	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	6.1	16	<5.0	<5.0
Methylmercury (Net CH ₃ Hg)	ng/L	4	0.08	~0.06	0.17	0.20	0.04	0.08	0.16	0.26	0.12	---
Dissolved Mercury (Hg)	ug/L	0.026	0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated
ng/L - nanogram per litre

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-4: Dissolved Metals

Sampling Date		CCME FWAL	RDL	SW5A			
				21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Metals	Units						
Dissolved Aluminum (Al)	ug/L	Narrative ¹	5.0	140	190	290	220
Dissolved Antimony (Sb)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Arsenic (As)	ug/L	5	1.0	<1.0	3.0	1.3	4.1
Dissolved Barium (Ba)	ug/L	ns	1.0	2.1	2.4	4.4	3.9
Dissolved Beryllium (Be)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Bismuth (Bi)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Boron (B)	ug/L	1,500	50	<50	<50	<50	<50
Dissolved Cadmium (Cd)	ug/L	Narrative ²	0.010	0.014	<0.010	0.014	0.013
Dissolved Calcium (Ca)	ug/L	ns	100	440	640	1000	1500
Dissolved Chromium (Cr)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Cobalt (Co)	ug/L	ns	0.40	<0.40	<0.40	<0.40	<0.40
Dissolved Copper (Cu)	ug/L	Narrative ²	0.50	<0.50	<0.50	0.51	0.55
Dissolved Iron (Fe)	ug/L	300	50	200	320	530	370
Dissolved Lead (Pb)	ug/L	Narrative ²	0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Magnesium (Mg)	ug/L	ns	100	220	280	550	500
Dissolved Manganese (Mn)	ug/L	ns	2.0	24	35	57	38
Dissolved Molybdenum (Mo)	ug/L	73	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Nickel (Ni)	ug/L	Narrative ²	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Phosphorus (P)	ug/L	ns	100	<100	<100	<100	<100
Dissolved Potassium (K)	ug/L	ns	100	220	240	430	280
Dissolved Selenium (Se)	ug/L	1	1.0	<0.50	<0.50	<0.50	<0.50
Dissolved Silver (Ag)	ug/L	0.25	0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Sodium (Na)	ug/L	ns	100	1600	2100	3100	2700
Dissolved Strontium (Sr)	ug/L	ns	2.0	3.8	5.2	9.2	11
Dissolved Thallium (Tl)	ug/L	0.8	0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Tin (Sn)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Titanium (Ti)	ug/L	ns	2.0	<2.0	2.1	3.1	<2.0
Dissolved Tungsten (W)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Uranium (U)	ug/L	15	0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Vanadium (V)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Zirconium (Zr)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<1.0
Dissolved Zinc (Zn)	ug/L	30	5.0	7.9	15	5.9	<5.0
Methylmercury (Net CH ₃ Hg)	ng/L	4	0.08	0.08	0.39	0.35	0.07
Dissolved Mercury (Hg)	ug/L	0.026	0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated
ng/L - nanogram per litre

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-4: Dissolved Metals

Sampling Date		CCME FWAL	RDL	SW6A							
				10-Apr-19	12-Jun-19	12-Sep-19	2-Dec-19	21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Metals	Units										
Dissolved Aluminum (Al)	ug/L	Narrative ¹	5.0	150	270	270	250	160	220	310	300
Dissolved Antimony (Sb)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Arsenic (As)	ug/L	5	1.0	<1.0	3.1	3.8	1.1	1.6	7.2	3.0	1.3
Dissolved Barium (Ba)	ug/L	ns	1.0	2.0	2.7	3.8	2.9	1.9	2.8	4.7	4.0
Dissolved Beryllium (Be)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Bismuth (Bi)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Boron (B)	ug/L	1,500	50	<50	<50	<50	<50	<50	<50	<50	<50
Dissolved Cadmium (Cd)	ug/L	Narrative ²	0.010	0.014	0.014	0.017	0.012	0.011	0.016	0.018	0.016
Dissolved Calcium (Ca)	ug/L	ns	100	550	650	900	730	550	690	1200	1000
Dissolved Chromium (Cr)	ug/L	ns	1.0	<1.0	1.1	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Cobalt (Co)	ug/L	ns	0.40	<0.40	<0.40	0.68	<0.40	<0.40	0.64	0.59	0.47
Dissolved Copper (Cu)	ug/L	Narrative ²	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.66	<0.50	<0.50
Dissolved Iron (Fe)	ug/L	300	50	170	400	680	330	250	790	620	450
Dissolved Lead (Pb)	ug/L	Narrative ²	0.50	<0.50	<0.50	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Magnesium (Mg)	ug/L	ns	100	280	280	380	340	240	290	520	480
Dissolved Manganese (Mn)	ug/L	ns	2.0	41	35	62	40	23	62	60	49
Dissolved Molybdenum (Mo)	ug/L	73	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Nickel (Ni)	ug/L	Narrative ²	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.1
Dissolved Phosphorus (P)	ug/L	ns	100	<100	<100	<100	<100	<100	<100	<100	<100
Dissolved Potassium (K)	ug/L	ns	100	230	170	220	150	170	240	290	200
Dissolved Selenium (Se)	ug/L	1	1.0	<1.0	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Silver (Ag)	ug/L	0.25	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Sodium (Na)	ug/L	ns	100	1900	1900	2600	2100	1700	2100	3000	2900
Dissolved Strontium (Sr)	ug/L	ns	2.0	4.2	4.8	7.2	5.6	4.1	5.2	9.2	8.5
Dissolved Thallium (Tl)	ug/L	0.8	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Tin (Sn)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Titanium (Ti)	ug/L	ns	2.0	<2.0	<2.0	3.5	2.2	<2.0	2.7	3.9	<2.0
Dissolved Tungsten (W)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Uranium (U)	ug/L	15	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Vanadium (V)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Zirconium (Zr)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Zinc (Zn)	ug/L	30	5.0	<5.0	<5.0	<5.0	<5.0	8.9	7.7	5.0	<5.0
Methylmercury (Net CH ₃ Hg)	ng/L	4	0.08	0.15	0.75	1.65	0.27	0.48	10.00	1.37	0.41
Dissolved Mercury (Hg)	ug/L	0.026	0.013	0.013	<0.013	0.0	<0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated
ng/L - nanogram per litre

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-4: Dissolved Metals

Sampling Date		CCME FWAL	RDL	SW9			
				10-Apr-19	12-Jun-19	12-Sep-19	2-Dec-19
Metals	Units						
Dissolved Aluminum (Al)	ug/L	Narrative ¹	5.0	140	230	200	240
Dissolved Antimony (Sb)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Arsenic (As)	ug/L	5	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Barium (Ba)	ug/L	ns	1.0	2.9	4.2	5.4	3.5
Dissolved Beryllium (Be)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Bismuth (Bi)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Boron (B)	ug/L	1,500	50	<50	<50	<50	<50
Dissolved Cadmium (Cd)	ug/L	Narrative ²	0.010	0.012	0.012	0.011	0.014
Dissolved Calcium (Ca)	ug/L	ns	100	1100	1400	2100	860
Dissolved Chromium (Cr)	ug/L	ns	1.0	<1.0	1.1	1.0	<1.0
Dissolved Cobalt (Co)	ug/L	ns	0.40	<0.40	<0.40	<0.40	<0.40
Dissolved Copper (Cu)	ug/L	Narrative ²	0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Iron (Fe)	ug/L	300	50	170	230	420	270
Dissolved Lead (Pb)	ug/L	Narrative ²	0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Magnesium (Mg)	ug/L	ns	100	570	670	1100	480
Dissolved Manganese (Mn)	ug/L	ns	2.0	49	44	60	40
Dissolved Molybdenum (Mo)	ug/L	73	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Nickel (Ni)	ug/L	Narrative ²	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Phosphorus (P)	ug/L	ns	100	<100	<100	<100	<100
Dissolved Potassium (K)	ug/L	ns	100	310	170	250	160
Dissolved Selenium (Se)	ug/L	1	1.0	<1.0	<1.0	<0.50	<0.50
Dissolved Silver (Ag)	ug/L	0.25	0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Sodium (Na)	ug/L	ns	100	3500	3500	3500	2500
Dissolved Strontium (Sr)	ug/L	ns	2.0	4.6	5.0	8.1	4.7
Dissolved Thallium (Tl)	ug/L	0.8	0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Tin (Sn)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Titanium (Ti)	ug/L	ns	2.0	<2.0	<2.0	2.1	3.3
Dissolved Tungsten (W)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Uranium (U)	ug/L	15	0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Vanadium (V)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Zirconium (Zr)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Zinc (Zn)	ug/L	30	5.0	5.5	<5.0	<5.0	<5.0
Methylmercury (Net CH ₃ Hg)	ng/L	4	0.08	0.08	0.13	0.29	0.07
Dissolved Mercury (Hg)	ug/L	0.026	0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated
ng/L - nanogram per litre

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-4: Dissolved Metals

Sampling Date		CCME FWAL	RDL	SW10			
				10-Apr-19	12-Jun-19	12-Sep-19	2-Dec-19
Metals	Units						
Dissolved Aluminum (Al)	ug/L	Narrative ¹	5.0	60	120	21	120
Dissolved Antimony (Sb)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Arsenic (As)	ug/L	5	1.0	43	83	29	67
Dissolved Barium (Ba)	ug/L	ns	1.0	4.7	5.8	3.2	5.0
Dissolved Beryllium (Be)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Bismuth (Bi)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Boron (B)	ug/L	1,500	50	<50	<50	<50	<50
Dissolved Cadmium (Cd)	ug/L	Narrative ²	0.010	0.022	0.040	<0.010	0.024
Dissolved Calcium (Ca)	ug/L	ns	100	5600	5600	3300	4800
Dissolved Chromium (Cr)	ug/L	ns	1.0	<1.0	1.0	<1.0	<1.0
Dissolved Cobalt (Co)	ug/L	ns	0.40	1.0	1.4	<0.40	1.2
Dissolved Copper (Cu)	ug/L	Narrative ²	0.50	0.84	1.8	<0.50	1.2
Dissolved Iron (Fe)	ug/L	300	50	1400	1300	400	1600
Dissolved Lead (Pb)	ug/L	Narrative ²	0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Magnesium (Mg)	ug/L	ns	100	850	770	700	720
Dissolved Manganese (Mn)	ug/L	ns	2.0	100	120	60	98
Dissolved Molybdenum (Mo)	ug/L	73	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Nickel (Ni)	ug/L	Narrative ²	2.0	4.6	6.9	<2.0	4.6
Dissolved Phosphorus (P)	ug/L	ns	100	<100	<100	<100	<100
Dissolved Potassium (K)	ug/L	ns	100	540	620	430	530
Dissolved Selenium (Se)	ug/L	1	1.0	<1.0	<1.0	<0.50	<0.50
Dissolved Silver (Ag)	ug/L	0.25	0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Sodium (Na)	ug/L	ns	100	2100	2000	2100	2000
Dissolved Strontium (Sr)	ug/L	ns	2.0	21	22	19	19
Dissolved Thallium (Tl)	ug/L	0.8	0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Tin (Sn)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Titanium (Ti)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Tungsten (W)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Uranium (U)	ug/L	15	0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Vanadium (V)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Zirconium (Zr)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Zinc (Zn)	ug/L	30	5.0	8.8	12	<5.0	9.3
Methylmercury (Net CH ₃ Hg)	ng/L	4	0.08	~0.01	0.02	0.13	~0.011
Dissolved Mercury (Hg)	ug/L	0.026	0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated
ng/L - nanogram per litre

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-4: Dissolved Metals

Sampling Date		CCME FWAL	RDL	SW11									
				10-Apr-19	12-Jun-19	12-Sep-19	2-Dec-19	21-22-Apr-20	21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20	15-16-Dec-20
Metals	Units								(DUP)		(DUP)		
Dissolved Aluminum (Al)	ug/L	Narrative ¹	5.0	280	270	410	280	180	170	260	460	370	360
Dissolved Antimony (Sb)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Arsenic (As)	ug/L	5	1.0	<1.0	<1.0	1.4	<1.0	<1.0	<1.0	1.3	1.3	<1.0	<1.0
Dissolved Barium (Ba)	ug/L	ns	1.0	2.6	1.9	4.8	2.2	1.6	1.4	2.5	4.9	3.0	3.8
Dissolved Beryllium (Be)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Bismuth (Bi)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Boron (B)	ug/L	1,500	50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Dissolved Cadmium (Cd)	ug/L	Narrative ²	0.010	0.020	0.014	0.019	0.017	<0.010	<0.010	<0.010	0.028	0.014	0.013
Dissolved Calcium (Ca)	ug/L	ns	100	450	460	1200	660	570	530	990	1600	1600	1600
Dissolved Chromium (Cr)	ug/L	ns	1.0	<1.0	1.2	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Cobalt (Co)	ug/L	ns	0.40	0.58	<0.40	0.55	<0.40	<0.40	<0.40	<0.40	0.45	<0.40	<0.40
Dissolved Copper (Cu)	ug/L	Narrative ²	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Iron (Fe)	ug/L	300	50	210	570	1000	410	290	290	550	1000	570	580
Dissolved Lead (Pb)	ug/L	Narrative ²	0.50	<0.50	<0.50	0.71	<0.50	<0.50	<0.50	<0.50	0.68	0.59	0.61
Dissolved Magnesium (Mg)	ug/L	ns	100	440	250	610	400	330	310	530	850	1000	1100
Dissolved Manganese (Mn)	ug/L	ns	2.0	37	22	50	29	24	23	35	56	46	47
Dissolved Molybdenum (Mo)	ug/L	73	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Nickel (Ni)	ug/L	Narrative ²	2.0	<2.0	<2.0	<2.0	6.5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Phosphorus (P)	ug/L	ns	100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Dissolved Potassium (K)	ug/L	ns	100	290	<100	370	<100	170	140	190	410	180	160
Dissolved Selenium (Se)	ug/L	1	1.0	<1.0	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Silver (Ag)	ug/L	0.25	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Sodium (Na)	ug/L	ns	100	2000	1600	2900	2000	1500	2900	1500	2000	3300	2800
Dissolved Strontium (Sr)	ug/L	ns	2.0	4.0	4.0	9.7	4.2	3.5	3.4	5.4	11	7.2	6.8
Dissolved Thallium (Tl)	ug/L	0.8	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Tin (Sn)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Titanium (Ti)	ug/L	ns	2.0	<2.0	2.1	2.7	2.2	<2.0	<2.0	<2.0	3.9	2.3	2.4
Dissolved Tungsten (W)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Uranium (U)	ug/L	15	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Vanadium (V)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Zirconium (Zr)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Dissolved Zinc (Zn)	ug/L	30	5.0	<5.0	<5.0	5.9	<5.0	<5.0	7.8	11	7.5	<5.0	6.7
Methylmercury (Net CH ₃ Hg)	ng/L	4	0.08	0.13	0.30	0.69	0.32	0.17	0.19	0.80	1.06	0.17	0.16
Dissolved Mercury (Hg)	ug/L	0.026	0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated
ng/L - nanogram per litre

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-4: Dissolved Metals

Sampling Date		CCME FWAL	RDL	SW12							
				10-Apr-19	12-Jun-19	12-Sep-19	2-Dec-19	21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Metals	Units										
Dissolved Aluminum (Al)	ug/L	Narrative ¹	5.0	250	300	510	290	250	280	520	340
Dissolved Antimony (Sb)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Arsenic (As)	ug/L	5	1.0	<1.0	1.6	2.0	<1.0	<1.0	2.1	1.4	<1.0
Dissolved Barium (Ba)	ug/L	ns	1.0	1.9	2.2	5.5	1.8	1.7	2.5	5.7	3.5
Dissolved Beryllium (Be)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Bismuth (Bi)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Boron (B)	ug/L	1,500	50	<50	<50	<50	<50	<50	<50	<50	<50
Dissolved Cadmium (Cd)	ug/L	Narrative ²	0.010	0.014	0.015	0.048	0.011	0.014	<0.010	0.031	0.039
Dissolved Calcium (Ca)	ug/L	ns	100	520	400	1000	430	410	400	1300	670
Dissolved Chromium (Cr)	ug/L	ns	1.0	<1.0	1.1	1.2	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Cobalt (Co)	ug/L	ns	0.40	0.48	<0.40	0.51	<0.40	<0.40	<0.40	0.65	0.49
Dissolved Copper (Cu)	ug/L	Narrative ²	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Iron (Fe)	ug/L	300	50	230	560	900	470	180	510	600	210
Dissolved Lead (Pb)	ug/L	Narrative ²	0.50	<0.50	<0.50	0.71	<0.50	<0.50	<0.50	0.55	<0.50
Dissolved Magnesium (Mg)	ug/L	ns	100	310	250	610	290	230	300	780	460
Dissolved Manganese (Mn)	ug/L	ns	2.0	46	20	51	23	19	22	59	32
Dissolved Molybdenum (Mo)	ug/L	73	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Nickel (Ni)	ug/L	Narrative ²	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Phosphorus (P)	ug/L	ns	100	<100	<100	<100	<100	<100	<100	<100	<100
Dissolved Potassium (K)	ug/L	ns	100	210	<100	290	<100	130	220	480	120
Dissolved Selenium (Se)	ug/L	1	1.0	<1.0	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Silver (Ag)	ug/L	0.25	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Sodium (Na)	ug/L	ns	100	2000	1800	3200	2000	1800	2100	3500	3200
Dissolved Strontium (Sr)	ug/L	ns	2.0	3.8	3.3	9.7	3.8	3.0	3.7	10	6.2
Dissolved Thallium (Tl)	ug/L	0.8	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Tin (Sn)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Titanium (Ti)	ug/L	ns	2.0	<2.0	2.2	3.5	2.5	<2.0	<2.0	3.5	<2.0
Dissolved Tungsten (W)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Uranium (U)	ug/L	15	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Vanadium (V)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Zirconium (Zr)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Dissolved Zinc (Zn)	ug/L	30	5.0	<5.0	<5.0	5.5	<5.0	9.6	12	7.7	<5.0
Methylmercury (Net CH ₃ Hg)	ng/L	4	0.08	0.09	0.42	0.22	0.12	0.06	1.14	0.11	0.12
Dissolved Mercury (Hg)	ug/L	0.026	0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

ug/L - microgram per litre

RDL - Reportable Detection Limit

ns - no standard listed

NC - Not Calculated

ng/L - nanogram per litre

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5

² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-4: Dissolved Metals

Sampling Date		CCME FWAL	RDL	SW14				
				21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	24-25-Sep-20	15-16-Dec-20
Metals	Units						(DUP)	
Dissolved Aluminum (Al)	ug/L	Narrative ¹	5.0	38	30	14	14	46
Dissolved Antimony (Sb)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Arsenic (As)	ug/L	5	1.0	7.2	19	5.5	5.4	13
Dissolved Barium (Ba)	ug/L	ns	1.0	3.2	4.6	3.1	3.1	3.6
Dissolved Beryllium (Be)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Bismuth (Bi)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Boron (B)	ug/L	1,500	50	<50	<50	<50	<50	<50
Dissolved Cadmium (Cd)	ug/L	Narrative ²	0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Dissolved Calcium (Ca)	ug/L	ns	100	2300	3200	2200	2200	4000
Dissolved Chromium (Cr)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Cobalt (Co)	ug/L	ns	0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Dissolved Copper (Cu)	ug/L	Narrative ²	0.50	<0.50	0.57	<0.50	<0.50	<0.50
Dissolved Iron (Fe)	ug/L	300	50	230	600	170	170	310
Dissolved Lead (Pb)	ug/L	Narrative ²	0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Magnesium (Mg)	ug/L	ns	100	410	600	650	650	740
Dissolved Manganese (Mn)	ug/L	ns	2.0	19	92	28	27	7.0
Dissolved Molybdenum (Mo)	ug/L	73	2.0	<2.0	2.8	<2.0	<2.0	<2.0
Dissolved Nickel (Ni)	ug/L	Narrative ²	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Phosphorus (P)	ug/L	ns	100	<100	<100	<100	<100	<100
Dissolved Potassium (K)	ug/L	ns	100	350	590	650	630	650
Dissolved Selenium (Se)	ug/L	1	1.0	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Silver (Ag)	ug/L	0.25	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Sodium (Na)	ug/L	ns	100	1500	1900	2700	2800	2600
Dissolved Strontium (Sr)	ug/L	ns	2.0	11	18	14	13	20
Dissolved Thallium (Tl)	ug/L	0.8	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Tin (Sn)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Titanium (Ti)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Tungsten (W)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Uranium (U)	ug/L	15	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Vanadium (V)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Zirconium (Zr)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Dissolved Zinc (Zn)	ug/L	30	5.0	14	22	<5.0	<5.0	<5.0
Methylmercury (Net CH ₃ Hg)	ng/L	4	0.08	0.08	0.28	0.10	0.12	0.08
Dissolved Mercury (Hg)	ug/L	0.026	0.013	<0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated
ng/L - nanogram per litre

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-4: Dissolved Metals

Sampling Date		CCME FWAL	RDL	SW19					
				21-22-Apr-20	17-18-Jun-20	17-18-Jun-20	24-25-Sep-20	24-25-Sep-20	15-16-Dec-20
Metals	Units					(DUP)	(DUP)		
Dissolved Aluminum (Al)	ug/L	Narrative ¹	5.0	130	180	200	370	370	270
Dissolved Antimony (Sb)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Arsenic (As)	ug/L	5	1.0	<1.0	1.0	1.1	<1.0	<1.0	<1.0
Dissolved Barium (Ba)	ug/L	ns	1.0	1.8	2.6	2.4	6.1	6.5	3.9
Dissolved Beryllium (Be)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Bismuth (Bi)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Boron (B)	ug/L	1,500	50	<50	<50	<50	<50	<50	<50
Dissolved Cadmium (Cd)	ug/L	Narrative ²	0.010	<0.010	<0.010	0.011	0.026	0.025	0.016
Dissolved Calcium (Ca)	ug/L	ns	100	420	430	390	1100	1100	730
Dissolved Chromium (Cr)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Cobalt (Co)	ug/L	ns	0.40	<0.40	<0.40	<0.40	0.41	0.41	<0.40
Dissolved Copper (Cu)	ug/L	Narrative ²	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Iron (Fe)	ug/L	300	50	240	390	400	780	800	530
Dissolved Lead (Pb)	ug/L	Narrative ²	0.50	<0.50	1.6	<0.50	0.62	0.64	<0.50
Dissolved Magnesium (Mg)	ug/L	ns	100	190	230	230	590	590	440
Dissolved Manganese (Mn)	ug/L	ns	2.0	21	27	28	54	54	40
Dissolved Molybdenum (Mo)	ug/L	73	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Nickel (Ni)	ug/L	Narrative ²	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Phosphorus (P)	ug/L	ns	100	<100	<100	<100	<100	<100	<100
Dissolved Potassium (K)	ug/L	ns	100	190	190	180	330	330	220
Dissolved Selenium (Se)	ug/L	1	1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Silver (Ag)	ug/L	0.25	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Sodium (Na)	ug/L	ns	100	1600	1900	2000	3100	3100	2600
Dissolved Strontium (Sr)	ug/L	ns	2.0	3.2	4.0	3.9	11	11	7.3
Dissolved Thallium (Tl)	ug/L	0.8	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Tin (Sn)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Titanium (Ti)	ug/L	ns	2.0	<2.0	<2.0	<2.0	2.9	3.3	<2.0
Dissolved Tungsten (W)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Uranium (U)	ug/L	15	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Vanadium (V)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Zirconium (Zr)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Zinc (Zn)	ug/L	30	5.0	13	15	9.9	7.0	6.4	5.2
Methylmercury (Net CH ₃ Hg)	ng/L	4	0.08	0.09	0.40	0.40	0.27	0.25	0.10
Dissolved Mercury (Hg)	ug/L	0.026	0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

ug/L - microgram per litre

RDL - Reportable Detection Limit

ns - no standard listed

NC - Not Calculated

ng/L - nanogram per litre

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5

² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-4: Dissolved Metals

Sampling Date		CCME FWAL	RDL	SW26			
				21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Metals	Units						
Dissolved Aluminum (Al)	ug/L	Narrative ¹	5.0	140	190	310	250
Dissolved Antimony (Sb)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Arsenic (As)	ug/L	5	1.0	<1.0	2.5	<1.0	3.9
Dissolved Barium (Ba)	ug/L	ns	1.0	2.0	2.7	4.6	3.6
Dissolved Beryllium (Be)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Bismuth (Bi)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Boron (B)	ug/L	1,500	50	<50	<50	<50	<50
Dissolved Cadmium (Cd)	ug/L	Narrative ²	0.010	0.013	0.020	0.017	0.021
Dissolved Calcium (Ca)	ug/L	ns	100	430	590	1000	930
Dissolved Chromium (Cr)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Cobalt (Co)	ug/L	ns	0.40	<0.40	<0.40	<0.40	<0.40
Dissolved Copper (Cu)	ug/L	Narrative ²	0.50	<0.50	0.51	<0.50	<0.50
Dissolved Iron (Fe)	ug/L	300	50	200	350	590	180
Dissolved Lead (Pb)	ug/L	Narrative ²	0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Magnesium (Mg)	ug/L	ns	100	220	280	500	470
Dissolved Manganese (Mn)	ug/L	ns	2.0	23	30	47	22
Dissolved Molybdenum (Mo)	ug/L	73	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Nickel (Ni)	ug/L	Narrative ²	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Phosphorus (P)	ug/L	ns	100	<100	<100	<100	<100
Dissolved Potassium (K)	ug/L	ns	100	190	270	280	150
Dissolved Selenium (Se)	ug/L	1	1.0	<0.50	<0.50	<0.50	<0.50
Dissolved Silver (Ag)	ug/L	0.25	0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Sodium (Na)	ug/L	ns	100	1600	2200	3000	2600
Dissolved Strontium (Sr)	ug/L	ns	2.0	3.7	5.0	8.8	8.5
Dissolved Thallium (Tl)	ug/L	0.8	0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Tin (Sn)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Titanium (Ti)	ug/L	ns	2.0	<2.0	2.4	2.5	<2.0
Dissolved Tungsten (W)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Uranium (U)	ug/L	15	0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Vanadium (V)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Zirconium (Zr)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<1.0
Dissolved Zinc (Zn)	ug/L	30	5.0	8.1	45	5.2	<5.0
Methylmercury (Net CH ₃ Hg)	ng/L	4	0.08	0.09	0.41	0.36	0.06
Dissolved Mercury (Hg)	ug/L	0.026	0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated
ng/L - nanogram per litre

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-4: Dissolved Metals

Sampling Date		CCME FWAL	RDL	SW28	
				24-25-Sep-20	15-16-Dec-20
Metals	Units				
Dissolved Aluminum (Al)	ug/L	Narrative ¹	5.0	530	340
Dissolved Antimony (Sb)	ug/L	ns	1.0	<1.0	<1.0
Dissolved Arsenic (As)	ug/L	5	1.0	4.9	3.1
Dissolved Barium (Ba)	ug/L	ns	1.0	5.5	2.3
Dissolved Beryllium (Be)	ug/L	ns	1.0	<1.0	<1.0
Dissolved Bismuth (Bi)	ug/L	ns	2.0	<2.0	<2.0
Dissolved Boron (B)	ug/L	1,500	50	<50	<50
Dissolved Cadmium (Cd)	ug/L	Narrative ²	0.010	0.025	0.010
Dissolved Calcium (Ca)	ug/L	ns	100	1300	2200
Dissolved Chromium (Cr)	ug/L	ns	1.0	<1.0	<1.0
Dissolved Cobalt (Co)	ug/L	ns	0.40	0.77	<0.40
Dissolved Copper (Cu)	ug/L	Narrative ²	0.50	<0.50	<0.50
Dissolved Iron (Fe)	ug/L	300	50	1100	630
Dissolved Lead (Pb)	ug/L	Narrative ²	0.50	0.77	0.61
Dissolved Magnesium (Mg)	ug/L	ns	100	770	1500
Dissolved Manganese (Mn)	ug/L	ns	2.0	77	61
Dissolved Molybdenum (Mo)	ug/L	73	2.0	<2.0	<2.0
Dissolved Nickel (Ni)	ug/L	Narrative ²	2.0	<2.0	<2.0
Dissolved Phosphorus (P)	ug/L	ns	100	<100	<100
Dissolved Potassium (K)	ug/L	ns	100	530	190
Dissolved Selenium (Se)	ug/L	1	1.0	<0.50	<0.50
Dissolved Silver (Ag)	ug/L	0.25	0.10	<0.10	<0.10
Dissolved Sodium (Na)	ug/L	ns	100	3800	3200
Dissolved Strontium (Sr)	ug/L	ns	2.0	14	7.2
Dissolved Thallium (Tl)	ug/L	0.8	0.10	<0.10	<0.10
Dissolved Tin (Sn)	ug/L	ns	2.0	<2.0	<2.0
Dissolved Titanium (Ti)	ug/L	ns	2.0	5.3	3.3
Dissolved Tungsten (W)	ug/L	ns	1.0	<1.0	<1.0
Dissolved Uranium (U)	ug/L	15	0.10	<0.10	<0.10
Dissolved Vanadium (V)	ug/L	ns	2.0	<2.0	<2.0
Dissolved Zirconium (Zr)	ug/L	ns	2.0	<2.0	<1.0
Dissolved Zinc (Zn)	ug/L	30	5.0	6.7	<5.0
Methylmercury (Net CH ₃ Hg)	ng/L	4	0.08	0.16	0.25
Dissolved Mercury (Hg)	ug/L	0.026	0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated
ng/L - nanogram per litre

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-4: Dissolved Metals

Sampling Date		CCME FWAL	RDL	SW29			
				21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Metals	Units						
Dissolved Aluminum (Al)	ug/L	Narrative ¹	5.0	130	190	360	270
Dissolved Antimony (Sb)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Arsenic (As)	ug/L	5	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Barium (Ba)	ug/L	ns	1.0	1.8	2.3	5.3	3.6
Dissolved Beryllium (Be)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Bismuth (Bi)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Boron (B)	ug/L	1,500	50	<50	<50	<50	<50
Dissolved Cadmium (Cd)	ug/L	Narrative ²	0.010	<0.010	<0.010	0.021	0.020
Dissolved Calcium (Ca)	ug/L	ns	100	340	420	890	670
Dissolved Chromium (Cr)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Cobalt (Co)	ug/L	ns	0.40	<0.40	<0.40	<0.40	<0.40
Dissolved Copper (Cu)	ug/L	Narrative ²	0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Iron (Fe)	ug/L	300	50	240	380	790	560
Dissolved Lead (Pb)	ug/L	Narrative ²	0.50	<0.50	<0.50	0.61	<0.50
Dissolved Magnesium (Mg)	ug/L	ns	100	190	230	530	420
Dissolved Manganese (Mn)	ug/L	ns	2.0	20	25	50	40
Dissolved Molybdenum (Mo)	ug/L	73	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Nickel (Ni)	ug/L	Narrative ²	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Phosphorus (P)	ug/L	ns	100	<100	<100	<100	<100
Dissolved Potassium (K)	ug/L	ns	100	250	170	250	190
Dissolved Selenium (Se)	ug/L	1	1.0	<0.50	<0.50	<0.50	<0.50
Dissolved Silver (Ag)	ug/L	0.25	0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Sodium (Na)	ug/L	ns	100	1600	1800	2900	2600
Dissolved Strontium (Sr)	ug/L	ns	2.0	3.3	3.8	9.1	7.5
Dissolved Thallium (Tl)	ug/L	0.8	0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Tin (Sn)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Titanium (Ti)	ug/L	ns	2.0	<2.0	<2.0	4.0	2.3
Dissolved Tungsten (W)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Uranium (U)	ug/L	15	0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Vanadium (V)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Zirconium (Zr)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Zinc (Zn)	ug/L	30	5.0	<5.0	7.8	5.2	<5.0
Methylmercury (Net CH ₃ Hg)	ng/L	4	0.08	0.08	0.38	0.24	0.10
Dissolved Mercury (Hg)	ug/L	0.026	0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated
ng/L - nanogram per litre

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-4: Dissolved Metals

Sampling Date		CCME FWAL	RDL	SW30			
				21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Metals	Units						
Dissolved Aluminum (Al)	ug/L	Narrative ¹	5.0	130	220	330	220
Dissolved Antimony (Sb)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Arsenic (As)	ug/L	5	1.0	2.8	7.2	8.3	2.6
Dissolved Barium (Ba)	ug/L	ns	1.0	1.9	3.3	4.7	3.0
Dissolved Beryllium (Be)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Bismuth (Bi)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Boron (B)	ug/L	1,500	50	<50	<50	<50	<50
Dissolved Cadmium (Cd)	ug/L	Narrative ²	0.010	0.049	0.017	0.036	0.027
Dissolved Calcium (Ca)	ug/L	ns	100	400	810	1200	800
Dissolved Chromium (Cr)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Cobalt (Co)	ug/L	ns	0.40	<0.40	<0.40	0.61	<0.40
Dissolved Copper (Cu)	ug/L	Narrative ²	0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Iron (Fe)	ug/L	300	50	160	420	800	280
Dissolved Lead (Pb)	ug/L	Narrative ²	0.50	<0.50	<0.50	0.53	<0.50
Dissolved Magnesium (Mg)	ug/L	ns	100	220	330	540	430
Dissolved Manganese (Mn)	ug/L	ns	2.0	26	39	61	30
Dissolved Molybdenum (Mo)	ug/L	73	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Nickel (Ni)	ug/L	Narrative ²	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Phosphorus (P)	ug/L	ns	100	<100	<100	<100	<100
Dissolved Potassium (K)	ug/L	ns	100	260	230	340	390
Dissolved Selenium (Se)	ug/L	1	1.0	<0.50	<0.50	<0.50	<0.50
Dissolved Silver (Ag)	ug/L	0.25	0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Sodium (Na)	ug/L	ns	100	2000	2700	3300	3000
Dissolved Strontium (Sr)	ug/L	ns	2.0	3.4	5.7	9.2	6.8
Dissolved Thallium (Tl)	ug/L	0.8	0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Tin (Sn)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Titanium (Ti)	ug/L	ns	2.0	<2.0	<2.0	3.0	<2.0
Dissolved Tungsten (W)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Uranium (U)	ug/L	15	0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Vanadium (V)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Zirconium (Zr)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Zinc (Zn)	ug/L	30	5.0	<5.0	7.2	6.1	5.5
Methylmercury (Net CH ₃ Hg)	ng/L	4	0.08	0.09	0.52	0.36	0.27
Dissolved Mercury (Hg)	ug/L	0.026	0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated
ng/L - nanogram per litre

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-4: Dissolved Metals

Sampling Date		CCME FWAL	RDL	SW31				
				21-22-Apr-20	17-18-Jun-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Metals	Units			(DUP)]				
Dissolved Aluminum (Al)	ug/L	Narrative ¹	5.0	150	210	210	500	340
Dissolved Antimony (Sb)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Arsenic (As)	ug/L	5	1.0	<1.0	2.1	2.2	2.0	<1.0
Dissolved Barium (Ba)	ug/L	ns	1.0	1.6	1.9	2.0	4.8	3.5
Dissolved Beryllium (Be)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Bismuth (Bi)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Boron (B)	ug/L	1,500	50	<50	<50	<50	<50	<50
Dissolved Cadmium (Cd)	ug/L	Narrative ²	0.010	0.016	0.012	0.013	0.036	0.026
Dissolved Calcium (Ca)	ug/L	ns	100	300	460	430	840	660
Dissolved Chromium (Cr)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Cobalt (Co)	ug/L	ns	0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Dissolved Copper (Cu)	ug/L	Narrative ²	0.50	<0.50	<0.50	<0.50	<0.50	0.59
Dissolved Iron (Fe)	ug/L	300	50	120	230	240	570	990
Dissolved Lead (Pb)	ug/L	Narrative ²	0.50	<0.50	<0.50	<0.50	0.75	0.53
Dissolved Magnesium (Mg)	ug/L	ns	100	190	240	250	600	440
Dissolved Manganese (Mn)	ug/L	ns	2.0	11	13	13	27	25
Dissolved Molybdenum (Mo)	ug/L	73	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Nickel (Ni)	ug/L	Narrative ²	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Phosphorus (P)	ug/L	ns	100	<100	<100	<100	<100	<100
Dissolved Potassium (K)	ug/L	ns	100	240	270	290	430	250
Dissolved Selenium (Se)	ug/L	1	1.0	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Silver (Ag)	ug/L	0.25	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Sodium (Na)	ug/L	ns	100	1900	2600	2600	3600	3000
Dissolved Strontium (Sr)	ug/L	ns	2.0	2.7	3.5	3.9	8.7	6.8
Dissolved Thallium (Tl)	ug/L	0.8	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Tin (Sn)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Titanium (Ti)	ug/L	ns	2.0	<2.0	<2.0	2.5	4.9	2.6
Dissolved Tungsten (W)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Uranium (U)	ug/L	15	0.10	0.10	0.21	0.21	0.24	0.15
Dissolved Vanadium (V)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Zirconium (Zr)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Zinc (Zn)	ug/L	30	5.0	<5.0	9.4	6.0	6.3	5.8
Methylmercury (Net CH ₃ Hg)	ng/L	4	0.08	0.08	0.28	0.29	0.22	---
Dissolved Mercury (Hg)	ug/L	0.026	0.013	<0.013	<0.013	<0.013	0.0	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated
ng/L - nanogram per litre

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-4: Dissolved Metals

Sampling Date		CCME FWAL	RDL	SW32			
				21-22-Apr-20	17-18-Jun-20	24-25-Sep-20	15-16-Dec-20
Metals	Units						
Dissolved Aluminum (Al)	ug/L	Narrative ¹	5.0	140	130	280	290
Dissolved Antimony (Sb)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Arsenic (As)	ug/L	5	1.0	<1.0	2.9	1.4	<1.0
Dissolved Barium (Ba)	ug/L	ns	1.0	2.9	5.2	6.7	4.7
Dissolved Beryllium (Be)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Bismuth (Bi)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Boron (B)	ug/L	1,500	50	<50	<50	<50	<50
Dissolved Cadmium (Cd)	ug/L	Narrative ²	0.010	<0.010	<0.010	0.015	0.019
Dissolved Calcium (Ca)	ug/L	ns	100	1000	3500	2000	1600
Dissolved Chromium (Cr)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Cobalt (Co)	ug/L	ns	0.40	<0.40	<0.40	<0.40	<0.40
Dissolved Copper (Cu)	ug/L	Narrative ²	0.50	<0.50	0.70	<0.50	<0.50
Dissolved Iron (Fe)	ug/L	300	50	180	310	510	440
Dissolved Lead (Pb)	ug/L	Narrative ²	0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Magnesium (Mg)	ug/L	ns	100	480	1600	900	800
Dissolved Manganese (Mn)	ug/L	ns	2.0	34	19	100	63
Dissolved Molybdenum (Mo)	ug/L	73	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Nickel (Ni)	ug/L	Narrative ²	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Phosphorus (P)	ug/L	ns	100	<100	<100	<100	<100
Dissolved Potassium (K)	ug/L	ns	100	180	280	300	260
Dissolved Selenium (Se)	ug/L	1	1.0	<0.50	<0.50	<0.50	<0.50
Dissolved Silver (Ag)	ug/L	0.25	0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Sodium (Na)	ug/L	ns	100	1600	2100	3000	2900
Dissolved Strontium (Sr)	ug/L	ns	2.0	4.5	7.6	9.8	9.1
Dissolved Thallium (Tl)	ug/L	0.8	0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Tin (Sn)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Titanium (Ti)	ug/L	ns	2.0	<2.0	2.5	3.0	2.4
Dissolved Tungsten (W)	ug/L	ns	1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Uranium (U)	ug/L	15	0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Vanadium (V)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Zirconium (Zr)	ug/L	ns	2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Zinc (Zn)	ug/L	30	5.0	8.7	<5.0	<5.0	<5.0
Methylmercury (Net CH ₃ Hg)	ng/L	4	0.08	0.08	0.35	0.40	0.12
Dissolved Mercury (Hg)	ug/L	0.026	0.013	<0.013	<0.013	<0.013	<0.013

Above or outside the Canadian Council of Ministers of the Environment, Water Quality Guidelines for the Protection of Aquatic Life, Freshwater (CCME FWAL)

Notes:

ug/L - microgram per litre
RDL - Reportable Detection Limit
ns - no standard listed
NC - Not Calculated
ng/L - nanogram per litre

Narrative:

¹ Aluminum guideline variable: 5 ug/L if pH < 6.5
100 ug/L if pH ≥ 6.5
² Cadmium, copper, lead, nickel guidelines are variable based on reported hardness (mg/L CaCO₃) concentrations for each sample

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-2
Sampling Date				9-Jun-16
Calculated Parameters	Units			
Anion Sum	me/L			0.160
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			12
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.220
Hardness (CaCO ₃)	mg/L			3.3
Ion Balance (% Difference)	%			15.8
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			4.0
Colour	TCU			270
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050
Total Organic Carbon (C)	mg/L			19
Orthophosphate (P)	mg/L			0.010
pH	pH	6.5-9	6-9.5	4.65
Reactive Silica (SiO ₂)	mg/L			1.7
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO ₄)	mg/L			2.3
Turbidity	NTU			0.95
Conductivity	uS/cm			25

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference); MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference); (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-2
Sampling Date				9-Jun-16
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		350
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	1.9
Total Barium (Ba)	ug/L			2.2
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.014
Total Calcium (Ca)	ug/L			780
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		880
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	0.79
Total Magnesium (Mg)	ug/L			320
Total Manganese (Mn)	ug/L			29
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			180
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			2100
Total Strontium (Sr)	ug/L			4.5
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			4.3
Total Uranium (U)	ug/L	15		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	<5.0

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{(0.83(\log[\text{hardness}]) - 2.46)}$ for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})] - 1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})] - 4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})] + 1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-3
Sampling Date				9-Jun-16
Calculated Parameters	Units			
Anion Sum	me/L			0.100
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			8.0
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.170
Hardness (CaCO ₃)	mg/L			2.8
Ion Balance (% Difference)	%			25.9
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.6
Colour	TCU			220
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050
Total Organic Carbon (C)	mg/L			16
Orthophosphate (P)	mg/L			<0.010
pH	pH	6.5-9	6-9.5	5.07
Reactive Silica (SiO ₂)	mg/L			0.85
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO ₄)	mg/L			<2.0
Turbidity	NTU			0.83
Conductivity	uS/cm			18

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-3
Sampling Date				9-Jun-16
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		320
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	1.2
Total Barium (Ba)	ug/L			2.1
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		<0.010
Total Calcium (Ca)	ug/L			620
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		780
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	0.52
Total Magnesium (Mg)	ug/L			310
Total Manganese (Mn)	ug/L			28
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			170
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			1800
Total Strontium (Sr)	ug/L			4.6
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			3.3
Total Uranium (U)	ug/L	15		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	6.3

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{(0.83(\log[\text{hardness}]) - 2.46)}$ for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})] - 1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})] - 4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})] + 1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-7
Sampling Date				9-Jun-16
Calculated Parameters	Units			
Anion Sum	me/L			0.110
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			11
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.220
Hardness (CaCO ₃)	mg/L			2.9
Ion Balance (% Difference)	%			33.3
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.8
Colour	TCU			230
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050
Total Organic Carbon (C)	mg/L			20
Orthophosphate (P)	mg/L			0.010
pH	pH	6.5-9	6-9.5	4.61
Reactive Silica (SiO ₂)	mg/L			3.2
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO ₄)	mg/L			<2.0
Turbidity	NTU			2.0
Conductivity	uS/cm			28

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-7
Sampling Date				9-Jun-16
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		440
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	<1.0
Total Barium (Ba)	ug/L			3.2
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.013
Total Calcium (Ca)	ug/L			540
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			0.44
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		730
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	0.86
Total Magnesium (Mg)	ug/L			370
Total Manganese (Mn)	ug/L			23
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			190
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			2300
Total Strontium (Sr)	ug/L			6.4
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			4.3
Total Uranium (U)	ug/L	15		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	<5.0

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{(0.83[\ln(\text{hardness})]-2.46)}$ for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-8
Sampling Date				9-Jun-16
Calculated Parameters	Units			
Anion Sum	me/L			0.110
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			10
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.220
Hardness (CaCO ₃)	mg/L			3.9
Ion Balance (% Difference)	%			33.3
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.8
Colour	TCU			220
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050
Total Organic Carbon (C)	mg/L			16
Orthophosphate (P)	mg/L			<0.010
pH	pH	6.5-9	6-9.5	5.56
Reactive Silica (SiO ₂)	mg/L			1.7
Total Suspended Solids	mg/L			7.2
Dissolved Sulphate (SO ₄)	mg/L			<2.0
Turbidity	NTU			0.83
Conductivity	uS/cm			25

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). ' - denotes not analyzed; 'NC = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-8
Sampling Date				9-Jun-16
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		440
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	2.1
Total Barium (Ba)	ug/L			3.8
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.015
Total Calcium (Ca)	ug/L			900
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			0.77
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		1000
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	0.52
Total Magnesium (Mg)	ug/L			390
Total Manganese (Mn)	ug/L			29
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	2.1
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			220
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			2200
Total Strontium (Sr)	ug/L			6.9
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			6.5
Total Uranium (U)	ug/L	15		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	13

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{0.83(\log[\text{hardness}]) - 2.46}$ for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})] - 1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})] - 4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})] + 1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-9
Sampling Date				9-Jun-16
Calculated Parameters	Units			
Anion Sum	me/L			0.100
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			9.0
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.220
Hardness (CaCO ₃)	mg/L			3.6
Ion Balance (% Difference)	%			37.5
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.6
Colour	TCU			120
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050
Total Organic Carbon (C)	mg/L			9.5
Orthophosphate (P)	mg/L			<0.010
pH	pH	6.5-9	6-9.5	5.59
Reactive Silica (SiO ₂)	mg/L			0.68
Total Suspended Solids	mg/L			2.8
Dissolved Sulphate (SO ₄)	mg/L			<2.0
Turbidity	NTU			1.6
Conductivity	uS/cm			20

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-9
Sampling Date				9-Jun-16
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		360
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	<1.0
Total Barium (Ba)	ug/L			17
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.016
Total Calcium (Ca)	ug/L			700
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			0.49
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		930
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	0.52
Total Magnesium (Mg)	ug/L			440
Total Manganese (Mn)	ug/L			63
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			530
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			2400
Total Strontium (Sr)	ug/L			8.0
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			3.6
Total Uranium (U)	ug/L	15		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	5.5

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{[0.83(\log[\text{hardness}]) - 2.46]}$ for hardness between 17-280 mg/L CaCO_3 or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})] - 1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})] - 4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})] + 1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-10
Sampling Date				9-Jun-16
Calculated Parameters	Units			
Anion Sum	me/L			0.110
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			12
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.230
Hardness (CaCO ₃)	mg/L			3.1
Ion Balance (% Difference)	%			35.3
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.8
Colour	TCU			270
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050
Total Organic Carbon (C)	mg/L			19
Orthophosphate (P)	mg/L			0.011
pH	pH	6.5-9	6-9.5	4.67
Reactive Silica (SiO ₂)	mg/L			3.3
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO ₄)	mg/L			<2.0
Turbidity	NTU			1.7
Conductivity	uS/cm			27

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-10
Sampling Date				9-Jun-16
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		500
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	<1.0
Total Barium (Ba)	ug/L			4.2
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.022
Total Calcium (Ca)	ug/L			600
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		980
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	0.88
Total Magnesium (Mg)	ug/L			390
Total Manganese (Mn)	ug/L			28
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			230
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			2300
Total Strontium (Sr)	ug/L			7.2
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			7.6
Total Uranium (U)	ug/L	15		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	5.1

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{0.83(\log[\text{hardness}]) - 2.46}$ for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})] - 1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})] - 4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})] + 1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-11	
Sampling Date				9-Jun-16	9-Jun-16
Calculated Parameters	Units				(DUP 4)
Anion Sum	me/L			0.100	0.110
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0	<1.0
Calculated TDS	mg/L			10	10
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0	<1.0
Cation Sum	me/L			0.210	0.200
Hardness (CaCO ₃)	mg/L			3.0	2.9
Ion Balance (% Difference)	%			35.5	29.0
Langelier Index (@ 20C)	N/A			NC	NC
Langelier Index (@ 4C)	N/A			NC	NC
Nitrate (N)	mg/L	2.935		<0.050	<0.050
Saturation pH (@ 20C)	N/A			NC	NC
Saturation pH (@ 4C)	N/A			NC	NC
Inorganics					
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0	<5.0
Dissolved Chloride (Cl)	mg/L			3.5	3.7
Colour	TCU			220	220
Nitrate + Nitrite	mg/L			<0.050	<0.050
Nitrite (N)	mg/L	0.06		<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050	<0.050
Total Organic Carbon (C)	mg/L			16	15
Orthophosphate (P)	mg/L			0.010	0.010
pH	pH	6.5-9	6-9.5	5.09	4.97
Reactive Silica (SiO ₂)	mg/L			2.3	2.3
Total Suspended Solids	mg/L			2.8	<1.0
Dissolved Sulphate (SO ₄)	mg/L			<2.0	<2.0
Turbidity	NTU			1.2	1.6
Conductivity	uS/cm			24	22

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-11	
Sampling Date				9-Jun-16	9-Jun-16
Metals	Units				(DUP 4)
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		450	430
Total Antimony (Sb)	ug/L			<1.0	<1.0
Total Arsenic (As)	ug/L	5.0	1000	<1.0	<1.0
Total Barium (Ba)	ug/L			4.0	4.0
Total Beryllium (Be)	ug/L			<1.0	<1.0
Total Bismuth (Bi)	ug/L			<2.0	<2.0
Total Boron (B)	ug/L	1500		<50	<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.018	0.012
Total Calcium (Ca)	ug/L			580	570
Total Chromium (Cr)	ug/L			<1.0	<1.0
Total Cobalt (Co)	ug/L			<0.40	<0.40
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0	<2.0
Total Iron (Fe)	ug/L	300		900	770
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	0.74	0.63
Total Magnesium (Mg)	ug/L			370	360
Total Manganese (Mn)	ug/L			36	35
Total Molybdenum (Mo)	ug/L	73		<2.0	<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0	<2.0
Total Phosphorus (P)	ug/L			<100	<100
Total Potassium (K)	ug/L			300	280
Total Selenium (Se)	ug/L	1		<1.0	<1.0
Total Silver (Ag)	ug/L	0.1		<0.10	<0.10
Total Sodium (Na)	ug/L			2400	2300
Total Strontium (Sr)	ug/L			7.2	7.1
Total Thallium (Tl)	ug/L	0.8		<0.10	<0.10
Total Tin (Sn)	ug/L			<2.0	<2.0
Total Titanium (Ti)	ug/L			6.3	5.7
Total Uranium (U)	ug/L	15		<0.10	<0.10
Total Vanadium (V)	ug/L			<2.0	<2.0
Total Zinc (Zn)	ug/L	30	1000	<5.0	<5.0

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{[0.83(\log[\text{hardness}]) - 2.46]}$ for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})] - 1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})] - 4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})] + 1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-12
Sampling Date				9-Jun-16
Calculated Parameters	Units			
Anion Sum	me/L			0.110
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			13
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.250
Hardness (CaCO ₃)	mg/L			3.5
Ion Balance (% Difference)	%			38.9
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		0.072
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.5
Colour	TCU			290
Nitrate + Nitrite	mg/L			0.072
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		0.062
Total Organic Carbon (C)	mg/L			19
Orthophosphate (P)	mg/L			0.012
pH	pH	6.5-9	6-9.5	4.60
Reactive Silica (SiO ₂)	mg/L			3.9
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO ₄)	mg/L			<2.0
Turbidity	NTU			0.73
Conductivity	uS/cm			28

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-12
Sampling Date				9-Jun-16
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		510
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	<1.0
Total Barium (Ba)	ug/L			4.0
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.020
Total Calcium (Ca)	ug/L			650
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		1100
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	0.98
Total Magnesium (Mg)	ug/L			470
Total Manganese (Mn)	ug/L			20
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			220
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			2500
Total Strontium (Sr)	ug/L			8.0
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			7.3
Total Uranium (U)	ug/L	15		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	<5.0

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{(0.83(\log[\text{hardness}]) - 2.46)}$ for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})] - 1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})] - 4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})] + 1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-13
Sampling Date				9-Jun-16
Calculated Parameters	Units			
Anion Sum	me/L			0.0900
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			10
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.210
Hardness (CaCO ₃)	mg/L			3.0
Ion Balance (% Difference)	%			40.0
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.3
Colour	TCU			190
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050
Total Organic Carbon (C)	mg/L			12
Orthophosphate (P)	mg/L			<0.010
pH	pH	6.5-9	6-9.5	5.00
Reactive Silica (SiO ₂)	mg/L			2.4
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO ₄)	mg/L			<2.0
Turbidity	NTU			1.1
Conductivity	uS/cm			22

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-13
Sampling Date				9-Jun-16
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		420
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	<1.0
Total Barium (Ba)	ug/L			4.4
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.016
Total Calcium (Ca)	ug/L			580
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			0.53
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		830
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	0.70
Total Magnesium (Mg)	ug/L			380
Total Manganese (Mn)	ug/L			54
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			280
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			2500
Total Strontium (Sr)	ug/L			7.2
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			5.8
Total Uranium (U)	ug/L	15		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	<5.0

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{0.83(\log[\text{hardness}]) - 2.46}$ for hardness between 17-280 mg/L CaCO_3 or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})] - 1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})] - 4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})] + 1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-14
Sampling Date				9-Jun-16
Calculated Parameters	Units			
Anion Sum	me/L			0.110
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			12
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.210
Hardness (CaCO ₃)	mg/L			2.5
Ion Balance (% Difference)	%			31.3
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.7
Colour	TCU			130
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050
Total Organic Carbon (C)	mg/L			9.2
Orthophosphate (P)	mg/L			0.010
pH	pH	6.5-9	6-9.5	5.19
Reactive Silica (SiO ₂)	mg/L			3.7
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO ₄)	mg/L			<2.0
Turbidity	NTU			1.3
Conductivity	uS/cm			21

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-14
Sampling Date				9-Jun-16
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		340
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	<1.0
Total Barium (Ba)	ug/L			3.2
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.014
Total Calcium (Ca)	ug/L			490
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			1.2
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		1200
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	<0.50
Total Magnesium (Mg)	ug/L			300
Total Manganese (Mn)	ug/L			100
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			150
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			2400
Total Strontium (Sr)	ug/L			6.0
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			5.4
Total Uranium (U)	ug/L	15		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	<5.0

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{0.83(\log[\text{hardness}]-2.46)}$ for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-15
Sampling Date				9-Jun-16
Calculated Parameters	Units			
Anion Sum	me/L			0.100
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			12
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.200
Hardness (CaCO ₃)	mg/L			3.2
Ion Balance (% Difference)	%			33.3
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.7
Colour	TCU			140
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050
Total Organic Carbon (C)	mg/L			13
Orthophosphate (P)	mg/L			0.010
pH	pH	6.5-9	6-9.5	5.22
Reactive Silica (SiO ₂)	mg/L			4.2
Total Suspended Solids	mg/L			1.8
Dissolved Sulphate (SO ₄)	mg/L			<2.0
Turbidity	NTU			0.75
Conductivity	uS/cm			22

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-15
Sampling Date				9-Jun-16
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		470
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	<1.0
Total Barium (Ba)	ug/L			4.4
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.013
Total Calcium (Ca)	ug/L			720
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			0.66
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		700
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	<0.50
Total Magnesium (Mg)	ug/L			340
Total Manganese (Mn)	ug/L			41
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			160
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			2300
Total Strontium (Sr)	ug/L			7.6
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			6.2
Total Uranium (U)	ug/L	15		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	<5.0

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{(0.83(\log[\text{hardness}]) - 2.46)}$ for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})] - 1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})] - 4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})] + 1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-16
Sampling Date				9-Jun-16
Calculated Parameters	Units			
Anion Sum	me/L			0.110
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			11
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.190
Hardness (CaCO ₃)	mg/L			3.4
Ion Balance (% Difference)	%			26.7
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.9
Colour	TCU			190
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050
Total Organic Carbon (C)	mg/L			17
Orthophosphate (P)	mg/L			0.010
pH	pH	6.5-9	6-9.5	5.02
Reactive Silica (SiO ₂)	mg/L			3.5
Total Suspended Solids	mg/L			3.6
Dissolved Sulphate (SO ₄)	mg/L			<2.0
Turbidity	NTU			0.45
Conductivity	uS/cm			22

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE 2. G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-16
Sampling Date				9-Jun-16
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		460
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	<1.0
Total Barium (Ba)	ug/L			5.1
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.018
Total Calcium (Ca)	ug/L			760
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			0.49
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		520
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	<0.50
Total Magnesium (Mg)	ug/L			370
Total Manganese (Mn)	ug/L			31
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			160
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			2100
Total Strontium (Sr)	ug/L			9.3
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			6.2
Total Uranium (U)	ug/L	15		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	<5.0

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L} = 10^{(0.83[\log[\text{hardness}]] - 2.46)}$ for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L} = e^{0.8545[\ln[\text{hardness}]] - 1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L} = e^{1.273[\ln[\text{hardness}]] - 4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L} = e^{0.76[\ln[\text{hardness}]] + 1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-17	
Sampling Date				9-Jun-16	9-Jun-16
Calculated Parameters	Units				(DUP 3)
Anion Sum	me/L			0.100	0.100
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0	<1.0
Calculated TDS	mg/L			11	11
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0	<1.0
Cation Sum	me/L			0.210	0.200
Hardness (CaCO ₃)	mg/L			3.5	3.3
Ion Balance (% Difference)	%			35.5	33.3
Langelier Index (@ 20C)	N/A			NC	NC
Langelier Index (@ 4C)	N/A			NC	NC
Nitrate (N)	mg/L	2.935		<0.050	<0.050
Saturation pH (@ 20C)	N/A			NC	NC
Saturation pH (@ 4C)	N/A			NC	NC
Inorganics					
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0	<5.0
Dissolved Chloride (Cl)	mg/L			3.7	3.5
Colour	TCU			200	190
Nitrate + Nitrite	mg/L			<0.050	<0.050
Nitrite (N)	mg/L	0.06		<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050	<0.050
Total Organic Carbon (C)	mg/L			16	16
Orthophosphate (P)	mg/L			<0.010	0.010
pH	pH	6.5-9	6-9.5	5.39	5.83
Reactive Silica (SiO ₂)	mg/L			3.2	3.2
Total Suspended Solids	mg/L			6.4	2.6
Dissolved Sulphate (SO ₄)	mg/L			<2.0	<2.0
Turbidity	NTU			0.92	1.2
Conductivity	uS/cm			21	22

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-17	
Sampling Date				9-Jun-16	9-Jun-16
Metals	Units				(DUP 3)
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		400	390
Total Antimony (Sb)	ug/L			<1.0	<1.0
Total Arsenic (As)	ug/L	5.0	1000	<1.0	<1.0
Total Barium (Ba)	ug/L			4.5	4.5
Total Beryllium (Be)	ug/L			<1.0	<1.0
Total Bismuth (Bi)	ug/L			<2.0	<2.0
Total Boron (B)	ug/L	1500		<50	<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.014	0.012
Total Calcium (Ca)	ug/L			790	760
Total Chromium (Cr)	ug/L			<1.0	<1.0
Total Cobalt (Co)	ug/L			0.63	0.58
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0	<2.0
Total Iron (Fe)	ug/L	300		930	850
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	0.53	0.59
Total Magnesium (Mg)	ug/L			360	350
Total Manganese (Mn)	ug/L			46	42
Total Molybdenum (Mo)	ug/L	73		<2.0	<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0	<2.0
Total Phosphorus (P)	ug/L			<100	<100
Total Potassium (K)	ug/L			180	210
Total Selenium (Se)	ug/L	1		<1.0	<1.0
Total Silver (Ag)	ug/L	0.1		<0.10	<0.10
Total Sodium (Na)	ug/L			2200	2300
Total Strontium (Sr)	ug/L			8.2	7.7
Total Thallium (Tl)	ug/L	0.8		<0.10	<0.10
Total Tin (Sn)	ug/L			<2.0	<2.0
Total Titanium (Ti)	ug/L			6.8	6.6
Total Uranium (U)	ug/L	15		<0.10	<0.10
Total Vanadium (V)	ug/L			<2.0	<2.0
Total Zinc (Zn)	ug/L	30	1000	<5.0	<5.0

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L} = 10^{0.83(\log[\text{hardness}]) - 2.46}$) for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L} = e^{0.8545[\ln(\text{hardness})] - 1.465} * 0.2$) for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L} = e^{1.273[\ln(\text{hardness})] - 4.705}$) for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L} = e^{0.76[\ln(\text{hardness})] + 1.06}$) for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-23
Sampling Date				8-Jun-16
Calculated Parameters	Units			
Anion Sum	me/L			0.110
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			13
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.210
Hardness (CaCO ₃)	mg/L			2.7
Ion Balance (% Difference)	%			31.3
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			4.0
Colour	TCU			230
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050
Total Organic Carbon (C)	mg/L			19
Orthophosphate (P)	mg/L			0.010
pH	pH	6.5-9	6-9.5	4.73
Reactive Silica (SiO ₂)	mg/L			4.6
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO ₄)	mg/L			<2.0
Turbidity	NTU			0.94
Conductivity	uS/cm			28

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-23
Sampling Date				8-Jun-16
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		520
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	<1.0
Total Barium (Ba)	ug/L			3.2
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.018
Total Calcium (Ca)	ug/L			490
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		570
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	0.77
Total Magnesium (Mg)	ug/L			350
Total Manganese (Mn)	ug/L			30
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			330
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			2400
Total Strontium (Sr)	ug/L			5.1
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			9.0
Total Uranium (U)	ug/L	15		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	<5.0

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{(0.83(\log[\text{hardness}]) - 2.46)}$ for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})] - 1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})] - 4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})] + 1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-24
Sampling Date				8-Jun-16
Calculated Parameters	Units			
Anion Sum	me/L			0.120
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			13
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.210
Hardness (CaCO ₃)	mg/L			3.2
Ion Balance (% Difference)	%			27.3
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		0.062
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.9
Colour	TCU			230
Nitrate + Nitrite	mg/L			0.062
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050
Total Organic Carbon (C)	mg/L			19
Orthophosphate (P)	mg/L			0.010
pH	pH	6.5-9	6-9.5	4.92
Reactive Silica (SiO ₂)	mg/L			3.9
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO ₄)	mg/L			<2.0
Turbidity	NTU			2.5
Conductivity	uS/cm			24

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-24
Sampling Date				8-Jun-16
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		470
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	<1.0
Total Barium (Ba)	ug/L			4.6
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.020
Total Calcium (Ca)	ug/L			660
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		690
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	0.73
Total Magnesium (Mg)	ug/L			380
Total Manganese (Mn)	ug/L			58
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			180
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			2400
Total Strontium (Sr)	ug/L			6.5
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			7.1
Total Uranium (U)	ug/L	15		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	<5.0

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{(0.83(\log[\text{hardness}]) - 2.46)}$ for hardness between 17-280 mg/L CaCO_3 or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})] - 1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})] - 4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})] + 1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-25
Sampling Date				8-Jun-16
Calculated Parameters	Units			
Anion Sum	me/L			0.110
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			13
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.230
Hardness (CaCO ₃)	mg/L			2.6
Ion Balance (% Difference)	%			35.3
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			4.0
Colour	TCU			230
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050
Total Organic Carbon (C)	mg/L			20
Orthophosphate (P)	mg/L			<0.010
pH	pH	6.5-9	6-9.5	4.69
Reactive Silica (SiO ₂)	mg/L			4.3
Total Suspended Solids	mg/L			2.0
Dissolved Sulphate (SO ₄)	mg/L			<2.0
Turbidity	NTU			2.3
Conductivity	uS/cm			26

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-25
Sampling Date				8-Jun-16
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		740
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	<1.0
Total Barium (Ba)	ug/L			4.6
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.022
Total Calcium (Ca)	ug/L			460
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		750
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	0.91
Total Magnesium (Mg)	ug/L			350
Total Manganese (Mn)	ug/L			31
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			390
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			2700
Total Strontium (Sr)	ug/L			5.6
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			12
Total Uranium (U)	ug/L	15		0.11
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	<5.0

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{0.83(\log[\text{hardness}]) - 2.46}$ for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})] - 1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})] - 4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})] + 1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-26
Sampling Date				8-Jun-16
Calculated Parameters	Units			
Anion Sum	me/L			0.110
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			11
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.190
Hardness (CaCO ₃)	mg/L			2.5
Ion Balance (% Difference)	%			26.7
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			4.1
Colour	TCU			190
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050
Total Organic Carbon (C)	mg/L			16
Orthophosphate (P)	mg/L			<0.010
pH	pH	6.5-9	6-9.5	4.97
Reactive Silica (SiO ₂)	mg/L			2.6
Total Suspended Solids	mg/L			2.0
Dissolved Sulphate (SO ₄)	mg/L			<2.0
Turbidity	NTU			1.1
Conductivity	uS/cm			27

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-26
Sampling Date				8-Jun-16
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		390
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	<1.0
Total Barium (Ba)	ug/L			3.0
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.020
Total Calcium (Ca)	ug/L			460
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		730
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	0.64
Total Magnesium (Mg)	ug/L			330
Total Manganese (Mn)	ug/L			48
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			170
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			2200
Total Strontium (Sr)	ug/L			4.7
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			6.1
Total Uranium (U)	ug/L	15		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	<5.0

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{0.83[\ln(\text{hardness})]-2.46}$ for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5. General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-27
Sampling Date				8-Jun-16
Calculated Parameters	Units			
Anion Sum	me/L			0.120
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			11
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.210
Hardness (CaCO ₃)	mg/L			2.6
Ion Balance (% Difference)	%			27.3
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			4.1
Colour	TCU			280
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050
Total Organic Carbon (C)	mg/L			20
Orthophosphate (P)	mg/L			0.010
pH	pH	6.5-9	6-9.5	4.69
Reactive Silica (SiO ₂)	mg/L			2.9
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO ₄)	mg/L			<2.0
Turbidity	NTU			0.85
Conductivity	uS/cm			28

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-27
Sampling Date				8-Jun-16
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		350
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	<1.0
Total Barium (Ba)	ug/L			3.4
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.019
Total Calcium (Ca)	ug/L			450
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		710
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	0.85
Total Magnesium (Mg)	ug/L			360
Total Manganese (Mn)	ug/L			24
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			210
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			2500
Total Strontium (Sr)	ug/L			5.8
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			4.5
Total Uranium (U)	ug/L	15		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	<5.0

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{(0.83(\log[\text{hardness}]) - 2.46)}$ for hardness between 17-280 mg/L CaCO_3 or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})] - 1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})] - 4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})] + 1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-28
Sampling Date				8-Jun-16
Calculated Parameters	Units			
Anion Sum	me/L			0.110
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			8.0
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.170
Hardness (CaCO ₃)	mg/L			2.0
Ion Balance (% Difference)	%			21.4
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.9
Colour	TCU			150
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050
Total Organic Carbon (C)	mg/L			11
Orthophosphate (P)	mg/L			<0.010
pH	pH	6.5-9	6-9.5	5.23
Reactive Silica (SiO ₂)	mg/L			<0.50
Total Suspended Solids	mg/L			3.2
Dissolved Sulphate (SO ₄)	mg/L			<2.0
Turbidity	NTU			2.6
Conductivity	uS/cm			19

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-28
Sampling Date				8-Jun-16
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		200
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	<1.0
Total Barium (Ba)	ug/L			1.5
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.018
Total Calcium (Ca)	ug/L			350
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		640
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	<0.50
Total Magnesium (Mg)	ug/L			280
Total Manganese (Mn)	ug/L			31
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			320
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			2000
Total Strontium (Sr)	ug/L			3.9
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			4.8
Total Uranium (U)	ug/L	15		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	<5.0

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{(0.83(\log[\text{hardness}]) - 2.46)}$ for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})] - 1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})] - 4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})] + 1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-29
Sampling Date				8-Jun-16
Calculated Parameters	Units			
Anion Sum	me/L			0.100
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			8.0
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.160
Hardness (CaCO ₃)	mg/L			2.8
Ion Balance (% Difference)	%			23.1
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.6
Colour	TCU			100
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050
Total Organic Carbon (C)	mg/L			6.7
Orthophosphate (P)	mg/L			<0.010
pH	pH	6.5-9	6-9.5	5.62
Reactive Silica (SiO ₂)	mg/L			0.97
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO ₄)	mg/L			<2.0
Turbidity	NTU			0.63
Conductivity	uS/cm			18

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-29
Sampling Date				8-Jun-16
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		220
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	<1.0
Total Barium (Ba)	ug/L			2.6
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.019
Total Calcium (Ca)	ug/L			650
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		300
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	<0.50
Total Magnesium (Mg)	ug/L			290
Total Manganese (Mn)	ug/L			41
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			180
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			2000
Total Strontium (Sr)	ug/L			5.3
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			2.4
Total Uranium (U)	ug/L	15		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	<5.0

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{(0.83(\log[\text{hardness}]) - 2.46)}$ for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})] - 1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})] - 4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})] + 1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)'

Sampling Date		CCME FAL	MMER	WC-30
Calculated Parameters				8-Jun-16
	Units			
Anion Sum	me/L			0.100
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			9.0
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.190
Hardness (CaCO ₃)	mg/L			3.3
Ion Balance (% Difference)	%			31.0
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		0.056
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.3
Colour	TCU			140
Nitrate + Nitrite	mg/L			0.056
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies ⁽¹⁾		<0.050
Total Organic Carbon (C)	mg/L			9.8
Orthophosphate (P)	mg/L			<0.010
pH	pH	6.5-9	6-9.5	5.31
Reactive Silica (SiO ₂)	mg/L			1.1
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO ₄)	mg/L			<2.0
Turbidity	NTU			1.3
Conductivity	uS/cm			19

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5. Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-30
Sampling Date				8-Jun-16
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		300
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	<1.0
Total Barium (Ba)	ug/L			3.1
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.016
Total Calcium (Ca)	ug/L			790
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		530
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	<0.50
Total Magnesium (Mg)	ug/L			330
Total Manganese (Mn)	ug/L			60
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			180
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			2100
Total Strontium (Sr)	ug/L			4.6
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			4.6
Total Uranium (U)	ug/L	15		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	<5.0

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{0.83[\log[\text{hardness}]]-2.46}$ for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-31
Sampling Date				8-Jun-16
Calculated Parameters	Units			
Anion Sum	me/L			0.0800
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			10
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.200
Hardness (CaCO ₃)	mg/L			3.5
Ion Balance (% Difference)	%			42.9
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			2.9
Colour	TCU			110
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050
Total Organic Carbon (C)	mg/L			10
Orthophosphate (P)	mg/L			0.011
pH	pH	6.5-9	6-9.5	5.27
Reactive Silica (SiO ₂)	mg/L			3.0
Total Suspended Solids	mg/L			6.6
Dissolved Sulphate (SO ₄)	mg/L			<2.0
Turbidity	NTU			1.9
Conductivity	uS/cm			20

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-31
Sampling Date				8-Jun-16
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		420
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	<1.0
Total Barium (Ba)	ug/L			6.6
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.030
Total Calcium (Ca)	ug/L			720
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		340
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	0.53
Total Magnesium (Mg)	ug/L			400
Total Manganese (Mn)	ug/L			100
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			120
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			2600
Total Strontium (Sr)	ug/L			6.0
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			4.0
Total Uranium (U)	ug/L	15		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	<5.0

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{(0.83[\ln(\text{hardness}))-2.46]}$ for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness}))-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness}))-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness}))+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	SW-41
Sampling Date				23-Jun-16
Calculated Parameters	Units			
Anion Sum	me/L			0.170
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			19
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.210
Hardness (CaCO ₃)	mg/L			2.0
Ion Balance (% Difference)	%			10.5
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		0.58
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			4.5
Colour	TCU			89
Nitrate + Nitrite	mg/L			0.58
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		0.057
Total Organic Carbon (C)	mg/L			6.4
Orthophosphate (P)	mg/L			0.013
pH	pH	6.5-9	6-9.5	4.74
Reactive Silica (SiO ₂)	mg/L			7.8
Total Suspended Solids	mg/L			7.2
Dissolved Sulphate (SO ₄)	mg/L			<2.0
Turbidity	NTU			3.4
Conductivity	uS/cm			37

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	SW-41
Sampling Date				
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		330
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	<1.0
Total Barium (Ba)	ug/L			3.1
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.017
Total Calcium (Ca)	ug/L			380
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		130
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	0.55
Total Magnesium (Mg)	ug/L			250
Total Manganese (Mn)	ug/L			5.3
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			370
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			3200
Total Strontium (Sr)	ug/L			4.3
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			5.9
Total Uranium (U)	ug/L	15		0.72
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	<5.0

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{[0.83(\log[\text{hardness}]) - 2.46]}$ for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})] - 1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})] - 4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})] + 1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	SW-42
Sampling Date				
Calculated Parameters	Units			
Anion Sum	me/L			0.100
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			12
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.190
Hardness (CaCO ₃)	mg/L			1.9
Ion Balance (% Difference)	%			31.0
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		0.058
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.5
Colour	TCU			140
Nitrate + Nitrite	mg/L			0.058
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		0.19
Total Organic Carbon (C)	mg/L			8.5
Orthophosphate (P)	mg/L			<0.010
pH	pH	6.5-9	6-9.5	5.79
Reactive Silica (SiO ₂)	mg/L			4.6
Total Suspended Solids	mg/L			<2.0
Dissolved Sulphate (SO ₄)	mg/L			<2.0
Turbidity	NTU			0.52
Conductivity	uS/cm			24

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	SW-42
Sampling Date				
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		350
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	<1.0
Total Barium (Ba)	ug/L			3.3
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.015
Total Calcium (Ca)	ug/L			350
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		360
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	<0.50
Total Magnesium (Mg)	ug/L			250
Total Manganese (Mn)	ug/L			36
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			190
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			2700
Total Strontium (Sr)	ug/L			4.1
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			4.7
Total Uranium (U)	ug/L	15		0.21
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	<5.0

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{(0.83(\log[\text{hardness}]) - 2.46)}$ for hardness between 17-280 mg/L CaCO_3 or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})] - 1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})] - 4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})] + 1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	SW-43	
Sampling Date				8-Jun-16	8-Jun-16
Calculated Parameters	Units				(DUP 1)
Anion Sum	me/L			0.120	0.110
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0	<1.0
Calculated TDS	mg/L			12	11
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0	<1.0
Cation Sum	me/L			0.300	0.270
Hardness (CaCO ₃)	mg/L			7.0	6.3
Ion Balance (% Difference)	%			42.9	42.1
Langelier Index (@ 20C)	N/A			NC	NC
Langelier Index (@ 4C)	N/A			NC	NC
Nitrate (N)	mg/L	2.935		<0.050	<0.050
Saturation pH (@ 20C)	N/A			NC	NC
Saturation pH (@ 4C)	N/A			NC	NC
Inorganics					
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0	<5.0
Dissolved Chloride (Cl)	mg/L			4.1	3.9
Colour	TCU			280	280
Nitrate + Nitrite	mg/L			<0.050	<0.050
Nitrite (N)	mg/L	0.06		<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050	<0.050
Total Organic Carbon (C)	mg/L			19	19
Orthophosphate (P)	mg/L			0.011	0.011
pH	pH	6.5-9	6-9.5	5.13	5.64
Reactive Silica (SiO ₂)	mg/L			1.2	1.2
Total Suspended Solids	mg/L			7.8	4.4
Dissolved Sulphate (SO ₄)	mg/L			<2.0	<2.0
Turbidity	NTU			11	13
Conductivity	uS/cm			22	24

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

Sampling Date	Units	CCME FAL	MMER	SW-43	
				8-Jun-16	8-Jun-16
Metals					(DUP 1)
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		1000	820
Total Antimony (Sb)	ug/L			<1.0	<1.0
Total Arsenic (As)	ug/L	5.0	1000	3.8	3.0
Total Barium (Ba)	ug/L			10	9.0
Total Beryllium (Be)	ug/L			<1.0	<1.0
Total Bismuth (Bi)	ug/L			<2.0	<2.0
Total Boron (B)	ug/L	1500		<50	<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.016	0.014
Total Calcium (Ca)	ug/L			1400	1300
Total Chromium (Cr)	ug/L			1.4	<1.0
Total Cobalt (Co)	ug/L			0.69	0.61
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	2.3	2.1
Total Iron (Fe)	ug/L	300		1600	1300
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	1.8	1.6
Total Magnesium (Mg)	ug/L			870	750
Total Manganese (Mn)	ug/L			83	75
Total Molybdenum (Mo)	ug/L	73		<2.0	<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0	<2.0
Total Phosphorus (P)	ug/L			<100	<100
Total Potassium (K)	ug/L			600	460
Total Selenium (Se)	ug/L	1		<1.0	<1.0
Total Silver (Ag)	ug/L	0.1		<0.10	<0.10
Total Sodium (Na)	ug/L			1900	2000
Total Strontium (Sr)	ug/L			7.5	7.0
Total Thallium (Tl)	ug/L	0.8		<0.10	<0.10
Total Tin (Sn)	ug/L			<2.0	<2.0
Total Titanium (Ti)	ug/L			24	19
Total Uranium (U)	ug/L	15		<0.10	<0.10
Total Vanadium (V)	ug/L			<2.0	<2.0
Total Zinc (Zn)	ug/L	30	1000	6.0	5.5

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{0.83(\log[\text{hardness}]) - 2.46}$ for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})] - 1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})] - 4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})] + 1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	SW-44
Sampling Date				8-Jun-16
Calculated Parameters	Units			
Anion Sum	me/L			0.100
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			6.0
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.130
Hardness (CaCO ₃)	mg/L			1.9
Ion Balance (% Difference)	%			13.0
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.7
Colour	TCU			210
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050
Total Organic Carbon (C)	mg/L			15
Orthophosphate (P)	mg/L			<0.010
pH	pH	6.5-9	6-9.5	4.97
Reactive Silica (SiO ₂)	mg/L			<0.50
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO ₄)	mg/L			<2.0
Turbidity	NTU			0.61
Conductivity	uS/cm			26

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	SW-44
Sampling Date				8-Jun-16
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		170
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	<1.0
Total Barium (Ba)	ug/L			1.4
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.016
Total Calcium (Ca)	ug/L			370
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		510
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	<0.50
Total Magnesium (Mg)	ug/L			230
Total Manganese (Mn)	ug/L			31
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			100
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			1400
Total Strontium (Sr)	ug/L			2.5
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			3.7
Total Uranium (U)	ug/L	15		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	<5.0

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{0.83(\log[\text{hardness}]-2.46)}$ for hardness between 17-280 mg/L CaCO_3 or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	SW-45
Sampling Date				8-Jun-16
Calculated Parameters	Units			
Anion Sum	me/L			0.110
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			10
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.210
Hardness (CaCO ₃)	mg/L			3.6
Ion Balance (% Difference)	%			31.3
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.7
Colour	TCU			200
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050
Total Organic Carbon (C)	mg/L			14
Orthophosphate (P)	mg/L			0.010
pH	pH	6.5-9	6-9.5	5.21
Reactive Silica (SiO ₂)	mg/L			1.5
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO ₄)	mg/L			<2.0
Turbidity	NTU			0.72
Conductivity	uS/cm			20

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	SW-45
Sampling Date				8-Jun-16
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		310
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	30
Total Barium (Ba)	ug/L			3.2
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.019
Total Calcium (Ca)	ug/L			880
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			0.42
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		920
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	0.61
Total Magnesium (Mg)	ug/L			350
Total Manganese (Mn)	ug/L			61
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	5.7
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			190
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			2100
Total Strontium (Sr)	ug/L			5.0
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			4.6
Total Uranium (U)	ug/L	15		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	<5.0

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{(0.83(\log[\text{hardness}]) - 2.46)}$ for hardness between 17-280 mg/L CaCO_3 or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})] - 1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})] - 4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})] + 1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	SW-46
Sampling Date				8-Jun-16
Calculated Parameters	Units			
Anion Sum	me/L			0.110
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			11
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.240
Hardness (CaCO ₃)	mg/L			4.5
Ion Balance (% Difference)	%			37.1
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		0.065
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.9
Colour	TCU			190
Nitrate + Nitrite	mg/L			0.065
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050
Total Organic Carbon (C)	mg/L			12
Orthophosphate (P)	mg/L			0.010
pH	pH	6.5-9	6-9.5	5.59
Reactive Silica (SiO ₂)	mg/L			2.0
Total Suspended Solids	mg/L			2.0
Dissolved Sulphate (SO ₄)	mg/L			<2.0
Turbidity	NTU			2.8
Conductivity	uS/cm			22

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	SW-46
Sampling Date				8-Jun-16
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		430
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	4.4
Total Barium (Ba)	ug/L			5.1
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.016
Total Calcium (Ca)	ug/L			1100
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		720
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	0.68
Total Magnesium (Mg)	ug/L			440
Total Manganese (Mn)	ug/L			47
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			280
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			2500
Total Strontium (Sr)	ug/L			6.0
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			12
Total Uranium (U)	ug/L	15		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	<5.0

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{0.83(\log[\text{hardness}]-2.46)}$ for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry

		CCME FAL	MMER	SW-47
Sampling Date				8-Jun-16
Calculated Parameters	Units			
Anion Sum	me/L			0.110
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			14
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.350
Hardness (CaCO ₃)	mg/L			7.7
Ion Balance (% Difference)	%			52.2
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		0.17
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.6
Colour	TCU			240
Nitrate + Nitrite	mg/L			0.17
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050
Total Organic Carbon (C)	mg/L			19
Orthophosphate (P)	mg/L			0.011
pH	pH	6.5-9	6-9.5	5.43
Reactive Silica (SiO ₂)	mg/L			2.6
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO ₄)	mg/L			<2.0
Turbidity	NTU			0.99
Conductivity	uS/cm			25

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	SW-47
Sampling Date				8-Jun-16
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		810
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	1.9
Total Barium (Ba)	ug/L			9.3
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.030
Total Calcium (Ca)	ug/L			1800
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			0.89
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		1000
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	1.3
Total Magnesium (Mg)	ug/L			760
Total Manganese (Mn)	ug/L			140
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			260
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			3300
Total Strontium (Sr)	ug/L			10
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			15
Total Uranium (U)	ug/L	15		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	5.6

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{0.83(\log[\text{hardness}]-2.46)}$ for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-19
Sampling Date				8-Jun-16
Calculated Parameters	Units			
Anion Sum	me/L			0.100
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			11
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.230
Hardness (CaCO ₃)	mg/L			2.8
Ion Balance (% Difference)	%			39.4
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.5
Colour	TCU			130
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050
Total Organic Carbon (C)	mg/L			13
Orthophosphate (P)	mg/L			0.010
pH	pH	6.5-9	6-9.5	5.35
Reactive Silica (SiO ₂)	mg/L			2.0
Total Suspended Solids	mg/L			2.4
Dissolved Sulphate (SO ₄)	mg/L			<2.0
Turbidity	NTU			2.1
Conductivity	uS/cm			19

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-19
Sampling Date				8-Jun-16
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		390
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	<1.0
Total Barium (Ba)	ug/L			3.6
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.019
Total Calcium (Ca)	ug/L			560
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			2.3
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		1900
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	<0.50
Total Magnesium (Mg)	ug/L			350
Total Manganese (Mn)	ug/L			280
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			260
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			2100
Total Strontium (Sr)	ug/L			5.5
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			7.7
Total Uranium (U)	ug/L	15		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	<5.0

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{(0.83(\log[\text{hardness}]) - 2.46)}$ for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})] - 1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})] - 4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})] + 1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-20	
Sampling Date				8-Jun-16	8-Jun-16
Calculated Parameters	Units				(DUP 2)
Anion Sum	me/L			0.110	0.120
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0	<1.0
Calculated TDS	mg/L			14	14
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0	<1.0
Cation Sum	me/L			0.250	0.250
Hardness (CaCO ₃)	mg/L			3.0	3.1
Ion Balance (% Difference)	%			38.9	35.1
Langelier Index (@ 20C)	N/A			NC	NC
Langelier Index (@ 4C)	N/A			NC	NC
Nitrate (N)	mg/L	2.935		<0.050	<0.050
Saturation pH (@ 20C)	N/A			NC	NC
Saturation pH (@ 4C)	N/A			NC	NC
Inorganics					
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0	<5.0
Dissolved Chloride (Cl)	mg/L			3.9	4.1
Colour	TCU			250	230
Nitrate + Nitrite	mg/L			<0.050	<0.050
Nitrite (N)	mg/L	0.06		<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050	<0.050
Total Organic Carbon (C)	mg/L			17	18
Orthophosphate (P)	mg/L			0.011	0.012
pH	pH	6.5-9	6-9.5	4.90	4.94
Reactive Silica (SiO ₂)	mg/L			4.7	4.7
Total Suspended Solids	mg/L			1.0	2.2
Dissolved Sulphate (SO ₄)	mg/L			<2.0	<2.0
Turbidity	NTU			1.5	2.5
Conductivity	uS/cm			25	26

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

Sampling Date	Units	CCME FAL	MMER	WC-20	
				8-Jun-16	8-Jun-16 (DUP 2)
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		510	520
Total Antimony (Sb)	ug/L			<1.0	<1.0
Total Arsenic (As)	ug/L	5.0	1000	<1.0	<1.0
Total Barium (Ba)	ug/L			3.1	3.4
Total Beryllium (Be)	ug/L			<1.0	<1.0
Total Bismuth (Bi)	ug/L			<2.0	<2.0
Total Boron (B)	ug/L	1500		<50	<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.018	0.020
Total Calcium (Ca)	ug/L			560	610
Total Chromium (Cr)	ug/L			3.3	<1.0
Total Cobalt (Co)	ug/L			0.81	0.77
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0	<2.0
Total Iron (Fe)	ug/L	300		1800	1700
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	0.80	0.74
Total Magnesium (Mg)	ug/L			390	390
Total Manganese (Mn)	ug/L			120	110
Total Molybdenum (Mo)	ug/L	73		<2.0	<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0	<2.0
Total Phosphorus (P)	ug/L			<100	<100
Total Potassium (K)	ug/L			170	190
Total Selenium (Se)	ug/L	1		<1.0	<1.0
Total Silver (Ag)	ug/L	0.1		<0.10	<0.10
Total Sodium (Na)	ug/L			2400	2500
Total Strontium (Sr)	ug/L			5.5	5.8
Total Thallium (Tl)	ug/L	0.8		<0.10	<0.10
Total Tin (Sn)	ug/L			<2.0	<2.0
Total Titanium (Ti)	ug/L			9.2	7.0
Total Uranium (U)	ug/L	15		<0.10	<0.10
Total Vanadium (V)	ug/L			<2.0	<2.0
Total Zinc (Zn)	ug/L	30	1000	5.2	<5.0

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{0.83(\log[\text{hardness}]-2.46)}$ for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-21
Sampling Date				8-Jun-16
Calculated Parameters	Units			
Anion Sum	me/L			0.110
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			14
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.290
Hardness (CaCO ₃)	mg/L			3.1
Ion Balance (% Difference)	%			45.0
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.9
Colour	TCU			210
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050
Total Organic Carbon (C)	mg/L			18
Orthophosphate (P)	mg/L			0.011
pH	pH	6.5-9	6-9.5	5.05
Reactive Silica (SiO ₂)	mg/L			3.3
Total Suspended Solids	mg/L			3.6
Dissolved Sulphate (SO ₄)	mg/L			<2.0
Turbidity	NTU			2.4
Conductivity	uS/cm			21

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-21
Sampling Date				8-Jun-16
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		500
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	<1.0
Total Barium (Ba)	ug/L			4.4
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.019
Total Calcium (Ca)	ug/L			510
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			2.2
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		3500
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	<0.50
Total Magnesium (Mg)	ug/L			440
Total Manganese (Mn)	ug/L			230
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			170
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			2100
Total Strontium (Sr)	ug/L			6.2
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			8.2
Total Uranium (U)	ug/L	15		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	5.4

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{(0.83(\log[\text{hardness}]) - 2.46)}$ for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})] - 1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})] - 4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})] + 1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-22
Sampling Date				8-Jun-16
Calculated Parameters	Units			
Anion Sum	me/L			0.0900
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			13
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.250
Hardness (CaCO ₃)	mg/L			2.5
Ion Balance (% Difference)	%			47.1
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			3.3
Colour	TCU			120
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050
Total Organic Carbon (C)	mg/L			14
Orthophosphate (P)	mg/L			0.012
pH	pH	6.5-9	6-9.5	5.53
Reactive Silica (SiO ₂)	mg/L			2.7
Total Suspended Solids	mg/L			7.6
Dissolved Sulphate (SO ₄)	mg/L			<2.0
Turbidity	NTU			3.9
Conductivity	uS/cm			19

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	WC-22
Sampling Date				8-Jun-16
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		450
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	<1.0
Total Barium (Ba)	ug/L			4.5
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.022
Total Calcium (Ca)	ug/L			370
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			9.5
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		3000
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	<0.50
Total Magnesium (Mg)	ug/L			380
Total Manganese (Mn)	ug/L			900
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			240
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			2000
Total Strontium (Sr)	ug/L			4.8
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			6.9
Total Uranium (U)	ug/L	15		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	<5.0

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{[0.83(\log[\text{hardness}]) - 2.46]}$ for hardness between 17-280 mg/L CaCO_3 or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})] - 1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})] - 4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})] + 1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.

TABLE G.1-5 General Chemistry (SW Monitoring Haul Road)

		CCME FAL	MMER	SW-40
Sampling Date				8-Jun-16
Calculated Parameters	Units			
Anion Sum	me/L			0.210
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Calculated TDS	mg/L			14
Carb. Alkalinity (calc. as CaCO ₃)	mg/L			<1.0
Cation Sum	me/L			0.280
Hardness (CaCO ₃)	mg/L			2.9
Ion Balance (% Difference)	%			14.3
Langelier Index (@ 20C)	N/A			NC
Langelier Index (@ 4C)	N/A			NC
Nitrate (N)	mg/L	2.935		<0.050
Saturation pH (@ 20C)	N/A			NC
Saturation pH (@ 4C)	N/A			NC
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L			<5.0
Dissolved Chloride (Cl)	mg/L			7.5
Colour	TCU			65
Nitrate + Nitrite	mg/L			<0.050
Nitrite (N)	mg/L	0.06		<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	Varies⁽¹⁾		<0.050
Total Organic Carbon (C)	mg/L			5.5
Orthophosphate (P)	mg/L			<0.010
pH	pH	6.5-9	6-9.5	5.56
Reactive Silica (SiO ₂)	mg/L			0.73
Total Suspended Solids	mg/L			<1.0
Dissolved Sulphate (SO ₄)	mg/L			<2.0
Turbidity	NTU			0.67
Conductivity	uS/cm			32

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Ammonia guideline dependent on temperature and pH, e.g., if T = 10°C, guideline for total ammonia-N varies from 83.88 mg/L at pH = 6.0 to 0.02 mg/L at pH = 10 (see CCME Fact Sheet). (2) Dissolved oxygen - lowest acceptable concentration ranges from 5.5 mg/L for warm water biota at other life stages to 9.5 mg/L for cold water biota at early life stages (see CCME Summary Table). '-' denotes not analyzed; 'NC' = not calculated.

TABLE G.1-5 Metals (SW Monitoring Haul Road)

		CCME FAL	MMER	SW-40
Sampling Date				8-Jun-16
Metals	Units			
Total Aluminum (Al)	ug/L	5 / 100 ⁽¹⁾		200
Total Antimony (Sb)	ug/L			<1.0
Total Arsenic (As)	ug/L	5.0	1000	<1.0
Total Barium (Ba)	ug/L			3.2
Total Beryllium (Be)	ug/L			<1.0
Total Bismuth (Bi)	ug/L			<2.0
Total Boron (B)	ug/L	1500		<50
Total Cadmium (Cd)	ug/L	0.04 - 0.37 ⁽²⁾		0.016
Total Calcium (Ca)	ug/L			660
Total Chromium (Cr)	ug/L			<1.0
Total Cobalt (Co)	ug/L			<0.40
Total Copper (Cu)	ug/L	2 - 4 ⁽³⁾	600	<2.0
Total Iron (Fe)	ug/L	300		210
Total Lead (Pb)	ug/L	1 - 7 ⁽⁴⁾	400	<0.50
Total Magnesium (Mg)	ug/L			300
Total Manganese (Mn)	ug/L			53
Total Molybdenum (Mo)	ug/L	73		<2.0
Total Nickel (Ni)	ug/L	25 - 150 ⁽⁵⁾	1000	<2.0
Total Phosphorus (P)	ug/L			<100
Total Potassium (K)	ug/L			220
Total Selenium (Se)	ug/L	1		<1.0
Total Silver (Ag)	ug/L	0.1		<0.10
Total Sodium (Na)	ug/L			4800
Total Strontium (Sr)	ug/L			5.0
Total Thallium (Tl)	ug/L	0.8		<0.10
Total Tin (Sn)	ug/L			<2.0
Total Titanium (Ti)	ug/L			<2.0
Total Uranium (U)	ug/L	15		<0.10
Total Vanadium (V)	ug/L			<2.0
Total Zinc (Zn)	ug/L	30	1000	<5.0

Notes: CCME FAL - Canadian Council of Ministers of the Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life (provided for reference). MMER - Federal Metal Mining Effluent Regulations - guidelines shown represent maximum authorized concentrations in a grab sample (provided for reference). (1) Aluminum guideline dependent on pH. Guideline is 5 ug/L if pH <6.5 and 100 ug/L if pH ≥ 6.5 (see CCME Summary Table). (2) Cadmium guideline (updated for 2014) ($\mu\text{g/L}$) = $10^{0.83(\log[\text{hardness}]-2.46)}$ for hardness between 17-280 mg/L CaCO₃ or a lower limit of 0.04 ug/L for hardness < 17mg/L or an upper limit of 0.37 ug/L for hardness >280 mg/L (see CCME Fact Sheet). (3) Copper guideline based on sample hardness: copper guideline ($\mu\text{g/L}$) = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ for hardness ≥82 to ≤180 mg/L, or a lower limit of 2 $\mu\text{g/L}$ for hardness <82 mg/L and an upper limit of 4 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (4) Lead guideline based on sample hardness: lead guideline ($\mu\text{g/L}$) = $e^{1.273[\ln(\text{hardness})]-4.705}$ for hardness >60 to ≤180 mg/L, or a lower limit of 1 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 7 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). (5) Nickel guideline based on sample hardness: nickel guideline ($\mu\text{g/L}$) = $e^{0.76[\ln(\text{hardness})]+1.06}$ for hardness >60 to ≤180 mg/L, or a lower limit of 25 $\mu\text{g/L}$ for hardness <60 mg/L and an upper limit of 150 $\mu\text{g/L}$ for hardness >180 mg/L (see CCME Summary Table). '-' denotes not analyzed.