TABLE 2-4
GROUNDWATER QUALITY

	Units	MDL	PWQO CRITERIA	CEQG PAL CRITERIA	ODWS CRITERIA	CDWQG CRITERIA	Upper Attawapiskat Formation 0 to 75 m depth (n = 6 samples)		Lower Attawapiskat and Ekwan / Severn River Formations 75 to 220 m depth (n = 16 samples)		30 Day Pump Test (Country Rock) 216 m depth (n = 5 samples)		Overburden Trench 161 m depth (n = 6 samples)		Central Quarry Wells up to 31 m depth (n = 10 samples)		Upper Attawapiskat Formation 0 to 75 m Depth (n = 5 samples)		Lower Attawapiskat and Ekwan / Severn River Formations 75 to 220 m Depth (n = 20 samples)		Upper Attawapiskat Formation 0 to 75 m depth (n = 8 samples)		Lower Attawapiskat and Ekwan / Severn River Formations 75 to 220 m depth (n = 23 samples)	
							Mean	75th Percentile	Mean	75th Percentile	Mean	75th Percentile	Mean	75th Percentile	Mean	75th Percentile	Mean	75th Percentile	Mean	75th Percentile	Mean	75th Percentile	Mean	75th Percentile
							General Exploration Area Wells*										Transition Area Wells				Nayshkootayaow River Area wells			
GENERAL PARAMETERS																								
Ammonia as N	(mg/L)	0.025					<0.4477	0.6950	0.943	1.175	1.130	1.22	-	-	0.447	0.580	1.495	1.513	1.402	1.260	1.077	1.435	2.326	2.510
Bromide	(mg/L)	0.1					-	-	4.61	3.35	2.16	2.3	-	-	<0.10	<0.10	0.77	1.10	12.76	17.55	<4.96	6.60	8.75	12.90
Chloride	(mg/L)	0.1			250 (AO)	250 (AO)	584.3	622.3	803.4	729.0	732.2	735	1853.3	1865.0	3.24	3.40	216.62	337.00	3448.2	4657.5	2353.5	3400.0	2682.3	3530.0
Conductivity	(µs/cm)	1					1540.0	1540.0	2557.4	3020.0	2974.0	3020	1388.3	1457.5	529.8	556.3	1759.0	2335.0	10844.5	14400.0	6340.6	10282.5	8450.4	11150.0
Hardness (CaCO3)	(mg/L)	0.3			80-100 (OG)		278.0	278.0	924.8	748.8	527.7	540	1615.0	1810.0	268.8	294.5	316.6	367.9	1778.5	2902.1	914	1220	1356.8	1480.0
Nitrate as N	(mg/L)	0.1			10 [+]		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.13	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.22	<0.10
Nitrite as N	(mg/L)	0.1			1		<0.10	<0.10	<0.11	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.16	0.20	<0.09	<0.10	<0.10	<0.10	<0.10	<0.10
pH			6.5-8.5	6.5-9	6.5-8.5	6.5-8.5	7.687	7.760	7.509	7.563	7.564	7.57	7.043	7.103	7.314	7.335	7.804	7.930	7.477	7.683	7.856	7.765	7.443	7.590
Sulphate	(mg/L)	0.1			500 (AO)[++]	500 (AO)[++]	235.8	260.5	439.9	382.5	363.8	363	632.5	655.8	1.23	1.98	<73.02	106.00	993.1	1362.5	526.38	791.00	859.8	976.0
Total Alkalinity (CaCO3)	(mg/L)	1			30-500 (OG)		221.0	207.5	170.3	207.8	209.0	211	174.0	178.5	315.30	332.75	306.4	337.0	151.1	172.5	165.4	193.5	139.0	149.0
Total Dissolved Solids (Theo)	(mg/L)	10			500 (AO)	500 (AO)	1271.3	1360.0	2436.9	2095.0	1846.0	1870	4540.0	4532.5	354.6	381.8	683.2	846.0	7540.1	10650.0	4556.3	6445.0	6167.0	7515.0
Total Suspended Solids	(mg/L)	2					<3.8	5.0	49.4	75.5	13.4	20	-	-	2348.8	3495.0	894.0	473.0	408.6	53.8	1119.7	1124.3	108.7	18.0
Total Phosphorus	(mg/L)	0.01	0.03[I]				-	-	0.086	0.080	0.148	0.10	0.160	0.250	0.052	0.060	0.073	0.11	0.703	0.063	0.058	0.050	<0.0238	0.023
TOTAL METALS															-	-								
Aluminum	(mg/L)	0.005		0.10	0.10 (OG)	0.1 (OG)	0.0122	0.0175	0.2094	0.1698	0.0876	0.140	<0.3193	<0.1535	0.0318	0.0203	1.915	2.12	0.615	0.117	0.4990	0.8460	<0.3617	0.0155
Antimony	(mg/L)	0.001	0.02			0.006 [II]	<0.0010	<0.0010	<0.0010	<0.0010	-	-	<0.0010	<0.0010	-	-	-	-	-	-	-	-	-	-
Arsenic	(mg/L)	0.001	0.1	0.05	0.025 [II]	0.025 [II]	<0.0010	<0.0010	<0.0013	<0.0010	<0.0018	<0.002	<0.0010	<0.0010	0.0013	0.0015	<0.002	0.0030	<0.0022	0.0030	<0.0015	0.0020	<0.0011	<0.0010
Barium	(mg/L)	0.005			1.0	1.0	0.0194	0.0220	0.0244	0.0235	0.0200	0.024	0.054	0.066	0.0762	0.1005	0.1104	0.1400	<0.0354	0.0428	0.0779	0.0885	<0.0176	0.0103
Boron	(mg/L)	0.01			5.0 [II]	5.0 [II]	-	-	0.676	0.908	0.405	0.45	0.307	0.368	0.0567	0.07	0.287	0.310	0.555	0.670	0.679	0.895	0.658	0.804
Cadmium	(mg/L)	0.0001	0.0002	0.0002	0.005	0.005	<0.00017	<0.00010	<0.00010	<0.00010	<0.00010	<0.0001	<0.00010	<0.00010	<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Calcium	(mg/L)	0.05					69.47	74.98	165.86	132.00	86.66	87.8	294.8	344.3	83.13	94.50	57.30	70.70	335.07	528.50	139.8	145.8	180.30	202.00
Chromium	(mg/L)	0.001	0.0089 (as Cr III)	0.002	0.05	0.05	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.001	<0.0012	<0.0010	<0.0012	0.001	0.0026	0.0030	<0.0017	<0.0010	<0.0030	0.0040	<0.0013	<0.0010
Cobalt	(mg/L)	0.0005	0.0009				<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0005	<0.0005	<0.0005	<0.00050	<0.00050	<0.00180	<0.0005	<0.00078	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Copper	(mg/L)	0.001	0.005	0.002	1.0 (AO)	1.0 (AO)	<0.0042	<0.0010	<0.0016	<0.0010	<0.0010	<0.001	<0.0015	<0.0010	<0.001	<0.001	<0.0048	0.0040	<0.0029	0.0048	0.004	0.006	0.002	<0.001
Iron	(mg/L)	0.01	0.3	0.3	0.30 (AO)	0.30 (AO)	0.660	1.175	0.455	0.685	0.646	0.85	3.058	3.860	0.390	0.265	3.002	3.640	<0.848	1.125	1.43	1.97	1.229	1.255
Lead	(mg/L)	0.001	0.025	0.007	0.01	0.010	<0.0103	<0.001	<0.0012	<0.0010	<0.0012	<0.001	<0.001	0.002	<0.001	<0.001	0.0028	0.0030	<0.0016	0.0020	<0.0029	0.0025	<0.0015	0.0020
Magnesium	(mg/L)	0.05					62.42	64.98	110.53	112.00	75.58	78.6	213.7	231.3	16.703	19.225	42.10	44.70	276.56	381.50	114.8	201.0	204.8	267.0
Manganese	(mg/L)	0.005				0.05(AO)	0.0178	0.0130	<0.0421	0.0188	<0.0076	0.009	0.3177	0.3715	<0.060	0.08075	0.0988	0.0810	<0.0256	0.0420	0.030	0.038	0.019	0.028
Mercury	(mg/L)	0.0001		0.0001	0.001	0.001	<0.00015	0.0002	<0.00010	<0.0001	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00011	<0.00010	<0.00011	<0.00010
Molybdenum	(mg/L)	0.005	0.04[I]				<0.0050	<0.0050	<0.0050	<0.0050	-	-	<0.0050	<0.0050	-	-	-	-	-	-	-	-	-	-
Nickel	(mg/L)	0.005	0.025	0.025			<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0076	<0.0050	<0.0056	<0.0050	<0.0050	<0.0050	<0.0058	<0.0050
Phosphorus	(mg/L)	0.005	0.03[I]				<0.0305	0.0525	<0.0117	0.0150	-	-	0.262	0.262	-	-	7.1115	10.65575	<0.005	<0.0050	0.0463	0.0585	<0.0057	0.0060
Potassium	(mg/L)	0.05					22.02	23.00	14.87	17.80	17.34	17.5	10.475	10.725	5.49	7.605	12.46	13.4	34.41	44.30	45.691	61.600	46.505	72.925
Selenium	(mg/L)	0.001				0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.001	<0.0010	<0.0010	-	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Silicon	(mg/L)	0.05					-	-	4.425	4.655	-	-	5.283	6.425	-	-	212.0	212.0	<0.0010	<0.0010	-	-	-	-
Sodium	(mg/L)	0.05			200 (AO), (20)[2]	200 (AO), (20)[2]	361.7	458	371.7	453.5	424.8	422	973.2	1033.0	6.374	8.488	123.26	43.7	1543.54	1970.00	1271.3	1922.5	1555.9	1965.0
Zinc	(mg/L)	0.005	0.03	0.03	5.0 (AO)	5.0 (AO)	<0.0092	0.0130	<0.0062	<0.0050	<0.0050	<0.005	<0.006	0.007	<0.005	<0.005	0.0163	0.01975	<0.0123	0.0108	<0.0241	0.0375	<0.0079	<0.0050
DISSOLVED METALS																								
Aluminum	(mg/L)	0.005	0.075^^		0.10 (OG)	0.10 (OG)	<0.0104	0.0150	<0.0050	<0.0050	<0.0050	<0.005	<0.011	<0.0050	-	-	<0.0050	<0.0050	<0.0059	<0.0050	<0.011	0.008	<0.006	0.005
Antimony	(mg/L)	0.001				0.006 [II]	<0.0010	<0.0010	<0.0010	<0.0010	-	-	<0.0010	<0.0010	-	-	-	-	-	-	-	-	-	-
Arsenic	(mg/L)	0.001			0.025 [II]	0.025 [II]	<0.0010	<0.0010	<0.0011	<0.0010	0.0013	0.001	<0.0010	<0.0010	-	-	<0.0014	0.002	<0.0016	0.0020	<0.0010	<0.0010	<0.0010	<0.0010
Barium	(mg/L)	0.005			1.0	1.0	0.0154	0.0180	<0.0161	0.0180	0.0150	0.018	0.053	0.060	-	-	0.0724	0.089	<0.0343	0.0545	0.0424	0.056	0.0159	0.008
Boron	(mg/L)	0.01			5.0 [II]	5.0 [II]	-	-	0.513	0.853	0.300	0.38	0.288	0.338	-	-	0.174	0.220	0.373	0.435	0.537	0.735	0.464	0.535
Cadmium	(mg/L)	0.0001			0.005	0.005	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010	<0.0001	<0.00010	<0.00010	-	-	<0.00010	<0.00010	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010	<0.00010
Calcium	(mg/L)	0.05					73.24	73.2	165.34	115.25	86.20	86.8	240	258.250	-	-	50.20	54.40	291.65	501.50	129.2	140.0	176.5	194.3
Chromium	(mg/L)	0.001			0.05	0.05	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.001	<0.0010	<0.0010	-	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0010	<0.0010	<0.0010
Cobalt	(mg/L)	0.0005					<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0005	<0.0005	<0.0005	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Copper	(mg/L)	0.001			1.0 (AO)	1.0 (AO)	<0.0014	<0.0010	0.0011	<0.0010	<0.0010	<0.001	0.002	0.003	-	-	<0.0010	<0.0010	<0.0012	<0.0010	<0.0016	0.0015	<0.0011	<0.0010
Iron	(mg/L)	0.01			0.30 (AO)	0.30 (AO)	<0.010	<0.010	0.020	<0.010	0.0232	0.016	<0.385	0.400	-	-	<0.012	<0.010	<0.017	0.015	<0.17	0.28	<0.02	0.03
Lead	(mg/L)	0.001			0.01	0.010	<0.0018	<0.0010	<0.0010	<0.0010	<0.0010	<0.001	<0.0010	<0.0010	-	-	<0.0010	<0.0010	<0.0025	0.0015	<0.001	<0.001	<0.001	<0.001
Magnesium	(mg/L)	0.05					63.54	64	103.23	98.73	74.36	78.4	200.5	202.8	-	-	37.02	36.90	219.02	365.50	130.79	219.00	174.61	254.25
Manganese	(mg/L)	0.005				0.05(AO)	<0.0086	0.011	0.015	0.010	<0.0066	0.009	0.2920	0.3328	-	-	0.0392	0.0530	<0.0215	0.0230	<0.019	0.022	<0.013	0.022
Mercury	(mg/L)	0.0001	0.0002^^		0.001	0.001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.0001	<0.00010	<0.00010	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Molybdenum	(mg/L)	0.005					<0.005	<0.0050	<0.0050	<0.0050	-	-	<0.0050	<0.0050	-	-	-	-	<0.0050	<0.0050	-	-	-	-
Nickel	(mg/L)	0.005					<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.005	<0.0050	<0.0050	-	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phosphorus	(mg/L)	0.005					<0.005	<0.0050	<0.0050	<0.0050	-	-	0.005	0.005	-	-	<0.037	<0.05	<0.045	<0.050	0.030	0.050	<0.034	<0.050
Potassium	(mg/L)	0.05					21.94	22.3	13.95	17.70	16.76	17.3	10.450	10.750	-	-	12.31	11.90	32.21	42.5	43.3	62.8	47.47	72.53
Selenium	(mg/L)	0.001				0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.001	<0.0010	<0.0010	-	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Silicon	(mg/L)	0.05					-	-	4.225	4.500	-	-	4.122	4.363	-	-	<0.0010	<0.0010	<0.0010	<0.0010	-	-	-	-
Sodium	(mg/L)	0.05			200 (AO), (20)[2]	200 (AO), (20)[2]	453.0	467	388.5	441.5	417.8	406	967.2	995.3	-	-	149.5	210	1320.9	1775.0	1199.6	1940.0	1433.1	1627.5
Zinc	(mg/L)	0.005			5.0 (AO)	5.0 (AO)	<0.0070	0.007	0.0058	<0.0050	<0.0050	<0.005	<0.0052	<0.0050	-	-	<0.0050	<0.005	<0.0053	<0.0050	<0.008	0.010	<0.0051	<0.0050

NOTES:

Anomalous values not included in Mean, and 75th Percentile calculations.

* 30 Day Pump Test data is also included in the General Exploration Area Mean and 75th percentile.

TSS analysis was completed after other parameters were analysed. As such, remaining sample used for TSS analysis was not homogeneous, and reported mean and 75th percentile results may be higher than actual concentrations.

PWQO: Provincial Water Quality Guidelines (for the protection of Aquatic Life)

0.04[I]: Interim PWQO

^^: PWQO is an Interim value, and is based on filtered samples.

CEQG PAL: Canadian Environmental Water Quality Guidelines for the Protection of Aquatic Life

ODWS: Ontario Drinking Water Standards OG: Operational Guideline AO: Aesthetic Objective

[+]: Where nitrate and nitrite are both present, the total of the two should not exceed 10 mg/L (as nitrogen)

[++]: When sulphate levels exceed 500 mg/L, water may have a laxative effect on some people.

+++: Local Medical Officer of health should be notified when sodium concentration exceeds 20 mg/L, so that physicians caring for patients on sodium restricted diets may be informed.

[II]: Interim Maximum Acceptable Concentration. All other limits are Maximum Acceptable Concentrations.

CDWQG: Canadian Drinking Water Quality Guidelines OG: Operational Guideline AO: Aesthetic Objective

Exceeds PWQO or CEQG PAL Criteria For reference only, not applicable to groundwater samples.

Exceeds ODWS or CDWQG Criteria

Exceeds CDWQG or ODWS, and PWQO or CEQG. PAL