

## Inventory of Certified Reference Waters for Major Ions & Nutrients

	AES-07 Rain Water lot 1014		BATTLE-02 River Water lot 0314		BURTAP-05 Drinking Water lot 0914		CRANBERRY-05 Lake Water lot 0313		ION-96.4 River Water lot 0314	
	Value	±2σ	Value	±2σ	Value	±2σ	Value	±2σ	Value	±2σ
	Alkalinity, Gran (as CaCO <sub>3</sub> )									
Alkalinity, Total (as CaCO <sub>3</sub> )			296	13.8	81.4	3.71	40.0	2.60	245	11.3
Aluminum	0.01*									
Ammonia (as N)	0.255	0.0250								
Boron			0.263	0.0305	0.0265	0.00564	0.01*		0.0435	0.0064
Calcium	0.224	0.0375	25.0	2.25	36.1	2.11	13.0	1.0	95.3	7.52
Chloride	0.283	0.0391	42.5	2.58	29.5	1.60	35.4	2.01	73.9	3.21
Colour (Hazen Units)			20.5	6.29			19.1	6.3	14.1	3.59
Conductivity (µS/cm, 25°C)	7.81	1.27	964	34.2	349	14.3	219	6.76	829	26.9
Dissolved Inorganic Carbon (DIC)			69.1	6.33	19.2	1.97	9.35	0.85	57.8	5.85
Dissolved Organic Carbon (DOC)			8.12	1.29	1.48	0.520	3.57	0.55	4.66	0.635
Fluoride			0.194	0.0449	0.555	0.0776	0.068	0.025	0.122	0.0355
Hardness, Total (as CaCO <sub>3</sub> )			152	11.2	128	7.6	55.6	3.50	343	24.5
Magnesium	0.0479	0.0064	21.7	1.8	8.92	0.622	5.65	0.42	25.5	2.04
Nitrate + Nitrite (as N)	0.199	0.0158	0.09*		0.442	0.0464	0.158	0.023	2.84	0.282
pH	5.42	0.312	8.56	0.158	8.05	0.205	7.71	0.32	8.37	0.143
Potassium	0.0413	0.0105	5.52	0.561	1.75	0.139	0.70	0.08	3.51	0.307
Silica (as Si)			0.255	0.0435	0.309	0.0354	2.70	0.26	0.276	0.0367
Sodium	0.225	0.0311	163	13.3	18.9	1.34	20.1	1.76	43.3	4.55
Sulfate (as SO <sub>4</sub> )	1.11	0.090	150	9.40	42.1	2.19	8.86	0.70	76.2	3.93
Total Kjeldahl Nitrogen (TKN)			0.528	0.112	0.12*		0.210	0.07	0.451	0.165
Total Nitrogen	0.467	0.0611	0.589	0.157	0.557	0.0711	0.346	0.073	3.19	0.299
Turbidity (JTU/NTU)							0.171	0.068		

	HAMIL-20.2 Harbour Water lot 0314		KEJIM-02 Soft Lake Water lot 0914		LON-07 Natural Lake Water lot 0414		MAURI-09 Soft Lake Water lot 0913		PERADE-09 River Water lot 0314	
	Value	±2σ	Value	±2σ	Value	±2σ	Value	±2σ	Value	±2σ
	Alkalinity, Gran (as CaCO <sub>3</sub> )							6.98	1.06	9.74
Alkalinity, Total (as CaCO <sub>3</sub> )	110	5.4			92.0	5.83				
Aluminum			0.159	0.0212			0.0766	0.0112	0.0743	0.0168
Ammonia (as N)										
Boron	0.0548	0.0077			0.025*					
Calcium	46.3	3.69	0.852	0.0850	34.9	2.45	2.95	0.291	4.18	0.344
Chloride	72.0	3.09	5.79	0.411	22.4	1.50	1.47	0.132	1.89	0.143
Colour (Hazen Units)	5.35	2.87	72.4	18.96			46.0	9.93	23.2	4.75
Conductivity (µS/cm, 25°C)	549	16.9	32.3	1.90	308	14.2	32.2	2.11	40.3	2.06
Dissolved Inorganic Carbon (DIC)	26.0	3.27	0.37*		22.0	2.78	1.68	0.257	2.43	0.435
Dissolved Organic Carbon (DOC)	3.00	0.554	7.15	0.844			6.02	0.065	3.61	0.407
Fluoride	0.283	0.0446	0.02*		0.116	0.0332	0.04*		0.04*	
Hardness, Total (as CaCO <sub>3</sub> )	167	14.5	4.2*		123	8.5	11*			
Magnesium	12.7	1.04	0.467	0.0376	8.78	0.745	0.750	0.0616	0.815	0.0528
Nitrate + Nitrite (as N)	1.99	0.210			0.444	0.0619	0.130	0.0150	0.354	0.0276
pH	8.15	0.214	5.36	0.139	8.09	0.278	6.91	0.292	7.10	0.319
Potassium	3.98	0.338	0.224	0.0322	1.58	0.145	0.406	0.0343	0.505	0.0513
Silica (as Si)	0.884	0.091	0.792	0.0854	0.380	0.0527	2.52	0.215	3.09	0.196
Sodium	42.4	3.64	3.80	0.321	12.9	1.01	2.19	0.153	2.13	0.135
Sulfate (as SO <sub>4</sub> )	43.4	3.11	2.42	0.303	26.3	1.92	3.78	0.226	3.86	0.244
Total Kjeldahl Nitrogen (TKN)	0.303	0.127	0.23*							
Total Nitrogen	2.24	0.209	0.221	0.0378	0.577	0.113	0.300	0.0601	0.462	0.0570
Turbidity (JTU/NTU)			0.19*							

All values are in mg/L unless otherwise specified.

\*Informational values only

All items are unpreserved and must be stored at 4°C

Expiry dates are 1 year from the date of shipment



## Inventory of Certified Reference Waters for Trace Elements

	TM-9.2 lot 0314		TM-23.4 lot 0314		TM-25.4 lot 0914		TM-26.4 lot 0314		TM-28.4 lot 0914	
	Value	$\pm 2\sigma$	Value	$\pm 2\sigma$	Value	$\pm 2\sigma$	Value	$\pm 2\sigma$	Value	$\pm 2\sigma$
Aluminum	36.3	3.26	94.3	9.26	30.1	3.47	74.3	6.76	54.3	6.07
Antimony	4.35	0.499	3.26	0.318	23.8	2.43	2.82	0.31	3.42	0.293
Arsenic	20.0	1.67	8.12	0.631	27.1	2.56	8.69	0.791	6.27	0.558
Barium	56.4	3.10	14.3	1.03	27.0	1.81	26.1	1.94	16.0	1.05
Beryllium	5.94	0.630	2.02	0.194	25.8	2.69	3.48	0.455	3.35	0.419
Bismuth	1.59	0.482	3.48	1.01	19.1	7.72	2.94	1.05	2.10	0.619
Boron	29.4	3.34	18.1	2.67	40.2	4.84	46.0	5.80	18.4	2.78
Cadmium	3.83	0.283	2.91	0.279	23.5	1.80	7.13	0.559	1.91	0.146
Chromium	3.98	0.360	6.77	0.634	24.0	1.73	12.4	0.97	4.90	0.381
Cobalt	2.00	0.223	7.08	0.549	27.5	2.17	8.12	0.571	3.54	0.370
Copper	33.8	2.52	8.52	0.829	26.7	2.25	15.0	1.33	6.52	0.730
Gallium	2.9*				9.03	0.736			12.0	1.01
Iron	113	13.4	14.7	2.37	31.0	5.24	21.4	3.35	17.8	3.11
Lead	8.42	0.691	2.98	0.270	27.0	2.35	10.4	0.982	4.35	0.368
Lithium	4.18	0.473	2.02	0.301	23.7	2.21	4.97	0.581	3.46	0.551
Manganese	9.86	0.651	8.78	0.626	25.1	1.73	10.9	0.82	6.96	0.450
Molybdenum	12.6	1.53	4.19	0.441	27.5	2.29	7.69	0.763	3.78	0.678
Nickel	19.0	1.52	4.96	0.619	16.2	1.35	11.2	0.93	9.87	0.944
Rubidium	4.4*		0.756	0.0718	19.4	1.26	10.7	0.76	2.36	0.207
Selenium	15.4	2.22	4.61	0.671	28.9	4.22	5.38	0.829	4.54	0.654
Silver	3.7*		4.78	0.432	22.0	1.51	6.90	0.580	3.85	0.314
Strontium	111	6.4	111	7.31	73.4	5.03	106	7.5	72.6	4.75
Thallium	1.99	0.157	3.97	0.333	30.5	2.87	5.24	0.433	3.93	0.325
Tin	2.91	0.318	2.80	0.299	23.8	1.98	5.75	0.622	3.81	0.561
Titanium	8.00	0.886	3.15	0.523	25.2	1.83	6.15	0.763	8.13	0.694
Tungsten					10*					
Uranium	1.90	0.146	5.00	0.387	27.3	2.04	7.41	0.515	5.89	0.415
Vanadium	3.13	0.367	1.92	0.215	27.4	2.49	12.6	1.23	3.18	0.324
Zinc	52.1	4.10			44.5	4.83	38.2	3.97	29.5	3.71

	TMDA-53.3 lot 0914		TMDA-54.5 lot 0314		TMDA-64.2 lot 0313		TMDA-70.2 lot 0913		TMRAIN-04 lot 0913		TM-DWS.3 lot 0913	
	Value	$\pm 2\sigma$	Value	$\pm 2\sigma$	Value	$\pm 2\sigma$	Value	$\pm 2\sigma$	Value	$\pm 2\sigma$	Value	$\pm 2\sigma$
Aluminum	363	31.6	399	33.5	290	26.5	424	37.9	2.13	0.754	57.0	6.64
Antimony	16.8	1.85	27.8	2.26	128	12.2	22.0	2.39	0.353	0.0715	3.39	0.413
Arsenic	34.1	3.43	45.2	3.95	162	15.4	42.2	3.84	1.14	0.173	4.75	0.493
Barium	283	21.1	333	22.5	290	23.5	320	18.8	0.870	0.118	146	8.56
Beryllium	13.1	1.56	17.3	1.68	160	15.6	16.3	1.90	0.378	0.0688	14.1	1.48
Bismuth	12.7	5.17	16.3	5.29	133	27.3	12.7	3.97	0.6*		13*	
Boron	10*		60.3	7.04	282	23.8	36.3	5.54	1.2*		80.2	9.62
Cadmium	118	9.3	157	10.0	266	21.3	139	8.69	0.524	0.0602	4.80	0.401
Chromium	341	25.0	438	30.1	290	19.6	397	23.5	0.866	0.165	43.9	3.03
Cobalt	251	20.2	317	23.3	254	17.6	288	20.6	0.246	0.0583	51.1	3.42
Copper	309	24.9	417	37.0	275	23.3	408	33.3	7.03	0.803	163	10.8
Gallium			12.6	1.55	53*							
Iron	325	30.7	382	32.5	306	27.4	376	37.9	24.7	4.12	223	22.5
Lead	349	33.1	514	37.9	288	25.2	452	34.3	0.346	0.0695	6.87	0.612
Lithium	10.9	1.47	22.8	2.50	151	16.2	22.0	2.10	0.520	0.136	20.0	1.75
Manganese	359	27.3	284	21.9	295	21.5	312	24.3	6.70	0.660	47.4	3.68
Molybdenum	253	16.8	300	20.5	290	25.4	265	20.9	0.226	0.0741	65.5	5.46
Nickel	311	25.2	336	23.8	263	19.3	331	21.6	0.908	0.118	82.7	5.40
Rubidium	0.402	0.0546	14.9	1.09	30.6	2.9	0.6*		0.03*		0.5*	
Selenium	22.4	3.40	35.5	3.87	155	18.3	27.8	3.46	0.836	0.236	9.20	1.17
Silver	14.5	1.71	13.3	1.42	13*		8.7*				9*	
Strontium	368	23.7	591	37.2	641	46.5	448	29.1	1.82	0.261	238	14.9
Thallium	15.3	1.48	28.2	2.84	146	13.8	20.9	2.15	0.377	0.0599	8.47	0.722
Tin	18.4	2.30	46.0	3.63	289	37.0			0.734	0.133		
Titanium			33.4	2.33	128	9.1			0.537	0.187		
Tungsten			8.54	0.818	0.09*							
Uranium	32.5	3.16	58.8	4.36	142	13.8	58.1	4.65	0.292	0.0256	14.4	1.17
Vanadium	314	20.6	349	22.1	289	21.0	315	21.0	0.683	0.0898	45.1	3.22
Zinc	386	38.0	545	46.8	310	27.7	494	45.2	8.47	2.11	388	34.3

All values are in µg/L unless otherwise specified.

\*Informational values only

All items are preserved in 0.2% nitric acid.



### Certified Reference Sediments for Trace Elements

Element $\mu\text{g/g}$	WQB-1	WQB-3	TH-1	TH-2	HR-1	SUD-1
<b>Aluminum</b>	<b>78134</b>	<b>52700</b>	<b>55597</b>	<b>64799</b>	<b>59250</b>	<b>58049</b>
<b>Arsenic</b>	<b>23.00</b>	<b>18.8</b>		<b>8.70</b>		
<b>Cadmium</b>				<b>5.22</b>		
<b>Chromium</b>			<b>125</b>	<b>123</b>	<b>126</b>	<b>81.2</b>
<b>Cobalt</b>	<b>20.1</b>	<b>15.3</b>		<b>15.7</b>		<b>44.2</b>
<b>Copper</b>	<b>79.6</b>	<b>81.6</b>	<b>103</b>	<b>124</b>	<b>79.9</b>	<b>561</b>
<b>Iron</b>	<b>47358</b>	<b>60000</b>	<b>35032</b>	<b>35361</b>	<b>30579</b>	<b>32688</b>
<b>Lead</b>	<b>83.7</b>	<b>240</b>	<b>257</b>	<b>194</b>	<b>139</b>	<b>56.3</b>
<b>Manganese</b>	<b>2237</b>	<b>1264</b>	<b>583</b>	<b>584</b>	<b>549</b>	<b>578</b>
<b>Mercury</b>	<b>1.09</b>	<b>2.75</b>		<b>0.62</b>		
<b>Nickel</b>	<b>61.5</b>	<b>52</b>	<b>45.5</b>	<b>43</b>	<b>39.4</b>	<b>936</b>
<b>Selenium</b>	<b>1.02</b>	<b>1.15</b>		<b>0.825</b>		
<b>Vanadium</b>	<b>129</b>	<b>90.7</b>	<b>89.2</b>	<b>89.2</b>	<b>84.1</b>	<b>67.8</b>
<b>Zinc</b>	<b>275</b>	<b>1396</b>	<b>1527</b>	<b>908</b>	<b>1105</b>	<b>768</b>

#### Information values - not certified ( $\mu\text{g/g}$ )

Antimony	3.59	3.04		3.22	1.59	0.727
Arsenic			9.59		6.29	31.1
Barium	606	416		573	532	488
Beryllium	2.42	1.83		2.11	1.65	1.30
Bismuth	10.42	7.16		6.27	0.453	1.84
Boron	170	138		84.0	55.7	42.3
Cadmium	2	3.87	5.41		3.88	1.88
Calcium	11672	49200		77806	67660	11636
Cerium	77.6	60.2		73.9	60.2	51.8
Cesium	7.04	5.34		3.73	2.92	2.03
Chromium	89.1	119				
Cobalt			15.6		14.0	
Gallium	22.9	14.8		17.3	14.9	14.3
Lanthanum	37.9	27.5		33.0	28.4	24.4
Lithium	59.7	37.7		35.1	29.9	19.1
Magnesium	14248	16053		15846	14328	10501
Mercury			0.44		0.342	0.098
Molybdenum	2.09	2.26		1.18	1.42	1.92
Niobium	7.46	7.91		8.82	11.5	6.68
Phosphorus	1563	1371		1832	1264	686
Potassium	30496	20256		22313	20828	19718
Rubidium	152	91.4		94	80.2	77.1
Scandium	59.3	46.5		13.5	11.4	11.0
Selenium			0.911		0.713	2.75
Silver	1.04	1.89		5.47		
Sodium	7232	7999		10956	12027	15798
Strontium	146	177		273	287	202
Thallium	1.32	1.09	0.623	0.663	0.502	0.513
Tin	3.90	14.5		10.77	9.87	1.63
Titanium	2862	2501		3015	3096	2203
Tungsten	1.60	3.02		1.33	2.00	0.996
Uranium	5.39	2.51		2.08	1.99	1.72
Yttrium	26.5	21.3		25.1	22.3	12.5

Certified values are typed in bold face.