

Last saved by: DOBRER(2023-03-15) Last Plotted: 2023-03-15  
Filename: C:\01\_AECOM\001\PROJECT\23\_02-23-2023 - GOLDBROOK LAKE-FIG 5, FIG 7\Figure 7 - GOLDBROOK LAKE + SEAL HARBOUR - SURFACE WATER SAMPLE LOCATION PLAN.DWG



**LEGEND**

- ☐ SURFACE WATER SAMPLES
- ☐ SAMPLE EXCEEDS GUIDELINES FOR ONE OR MORE OF THE FOLLOWING PARAMETERS: METALS
- ☐ SAMPLE DOES NOT EXCEED GUIDELINES

**DRAWING NOTES**

- COORDINATE SYSTEM: NAD83 (CSRS.2010) NOVA SCOTIA ZONE 4.
- IMAGERY SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/ AIRBUS DS, USDA, USGS, AEROGRID.

**Issue Status: DRAFT**

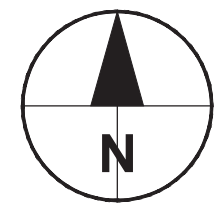
**PHASE II ENVIRONMENTAL SITE ASSESSMENT**

**SURFACE WATER SAMPLE LOCATION PLAN**




Nova Scotia Lands Inc., Gold Brook Lake and Seal Harbour Mine Site  
Project No.: 60680068 Date: 2023-03-15



**Figure: 7**

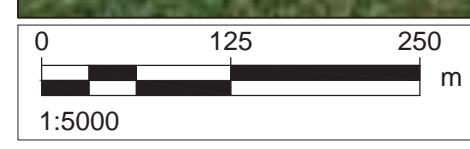
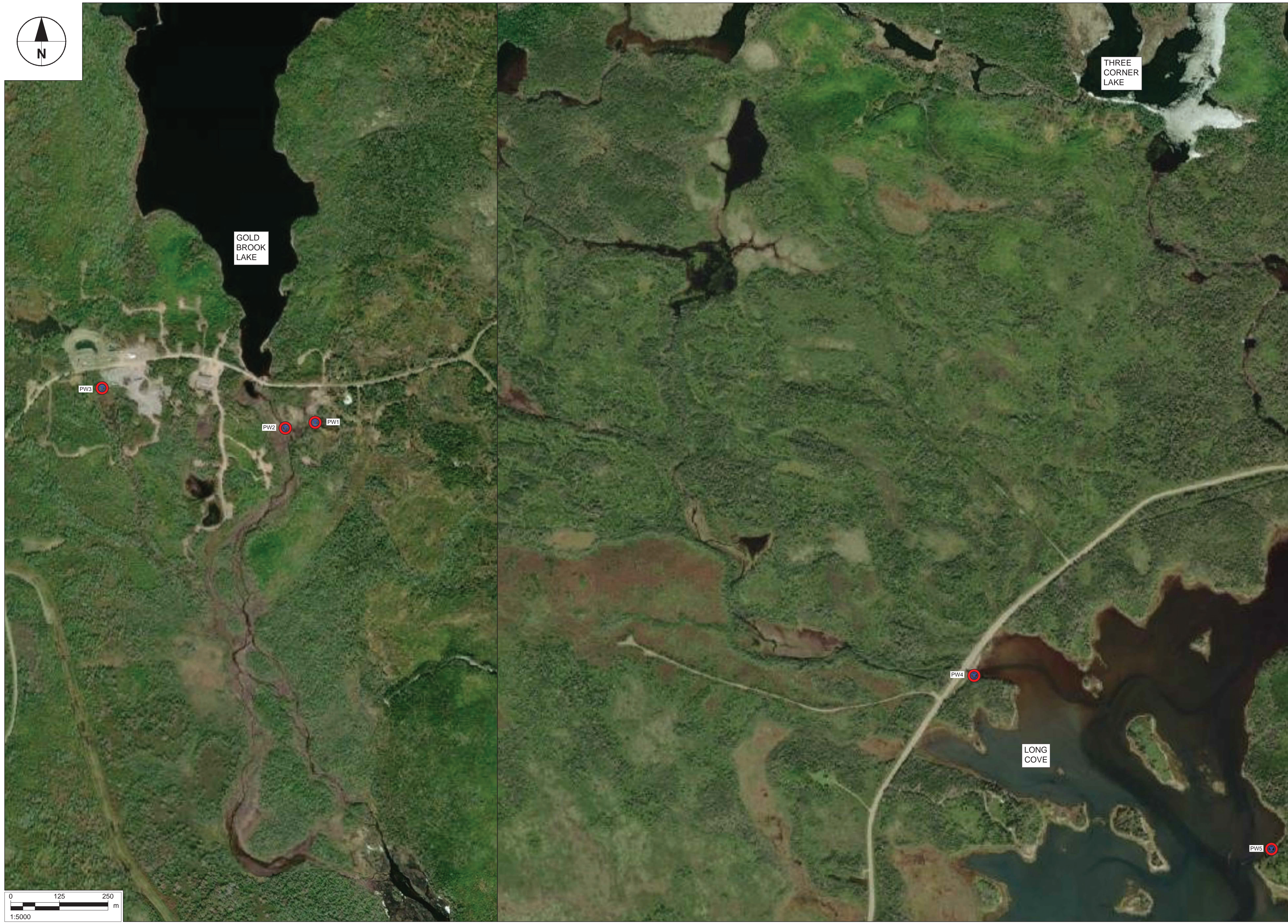


**LEGEND**

-  POREWATER SAMPLES
-  SAMPLE EXCEEDS GUIDELINES FOR ONE OR MORE OF THE FOLLOWING PARAMETERS: METALS
-  SAMPLE DOES NOT EXCEED GUIDELINES

**DRAWING NOTES**

1. COORDINATE SYSTEM: NAD83 (CSRS.2010) NOVA SCOTIA ZONE 4.
2. IMAGERY SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/ AIRBUS DS, USDA, USGS, AEROGIRD.



Last saved by: DOBRER(2023-03-15) Last Plotted: 2023-03-15  
 Filename: C:\01\_AECOM\001\PROJECT\23\_02-23-2023 - GOLDBROOK LAKE-FIG 5, FIG 7\Figure 8 - GOLDBROOK LAKE - SEAL HARBOUR - POREWATER SAMPLE LOCATION PLAN.DWG

**Issue Status: DRAFT**

**PHASE II ENVIRONMENTAL SITE ASSESSMENT**

**POREWATER SAMPLE LOCATION PLAN**

Nova Scotia Lands Inc., Gold Brook Lake and Seal Harbour Mine Site  
 Project No.: 60680068 Date: 2023-03-15



**Figure: 8**

Last saved by: DOBRER(2023-03-15) Last Plotted: 2023-03-15  
Filename: C:\01\_AECOM\001\PROJECT\23\_02-23-2023 - GOLDBROOK LAKE-FIG 5, FIG 7\Figure 9 - GOLDBROOK LAKE + SEAL HARBOUR - SEDIMENT SAMPLE LOCATION PLAN.DWG



**LEGEND**

- SEDIMENT SAMPLES
- SAMPLE EXCEEDS GUIDELINES FOR ONE OR MORE OF THE FOLLOWING PARAMETERS: METALS
- SAMPLE DOES NOT EXCEED GUIDELINES

**DRAWING NOTES**

- COORDINATE SYSTEM: NAD83 (CSRS.2010) NOVA SCOTIA ZONE 4.
- IMAGERY SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/ AIRBUS DS, USDA, USGS, AEROGRID.

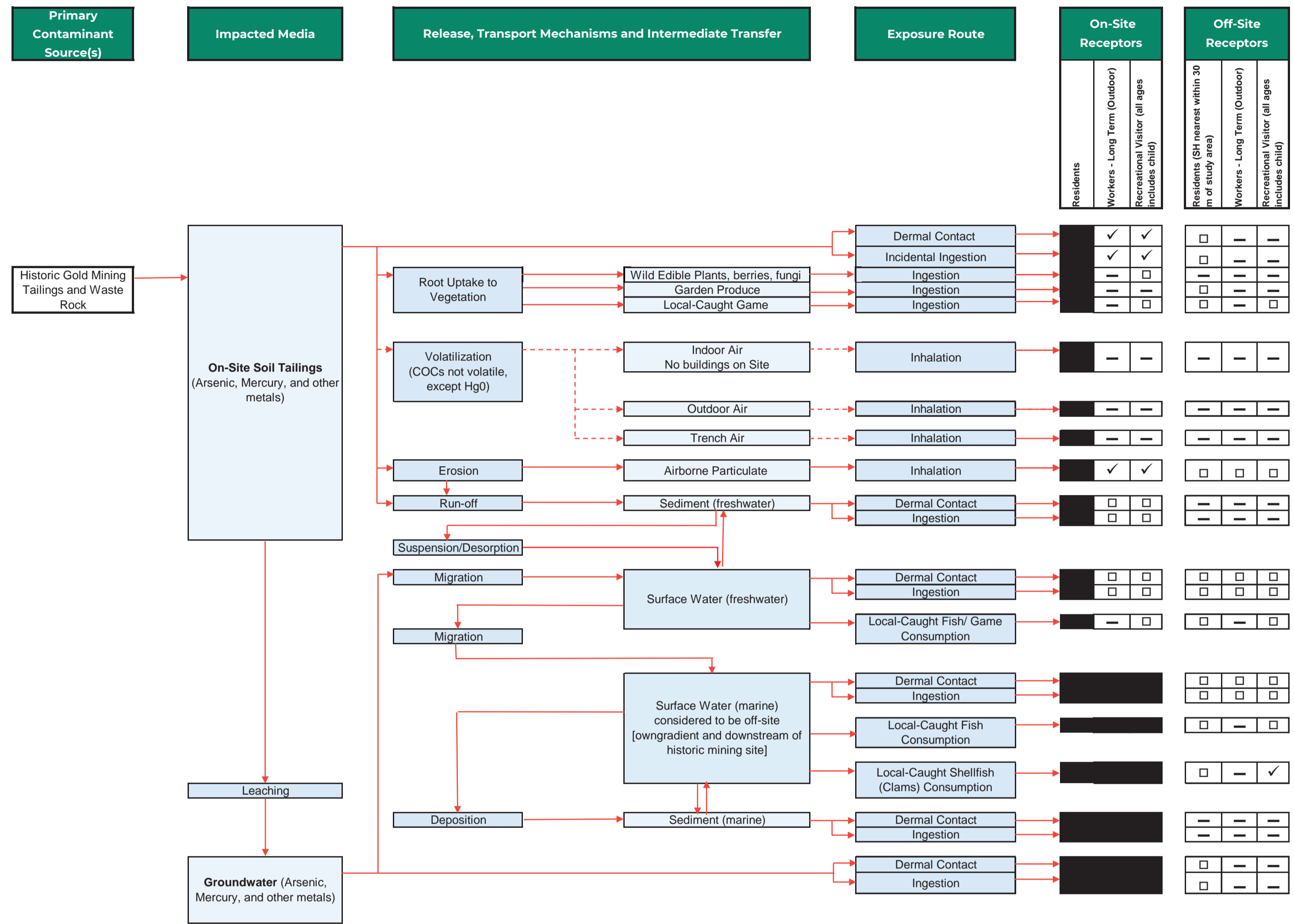
**Issue Status: DRAFT**

**PHASE II ENVIRONMENTAL SITE ASSESSMENT**

**SEDIMENT SAMPLE LOCATION PLAN**

Nova Scotia Lands Inc., Gold Brook Lake and Seal Harbour Mine Site  
Project No.: 60680068 Date: 2023-03-15

### HUMAN HEALTH EXPOSURE CONCEPTUAL SITE MODEL

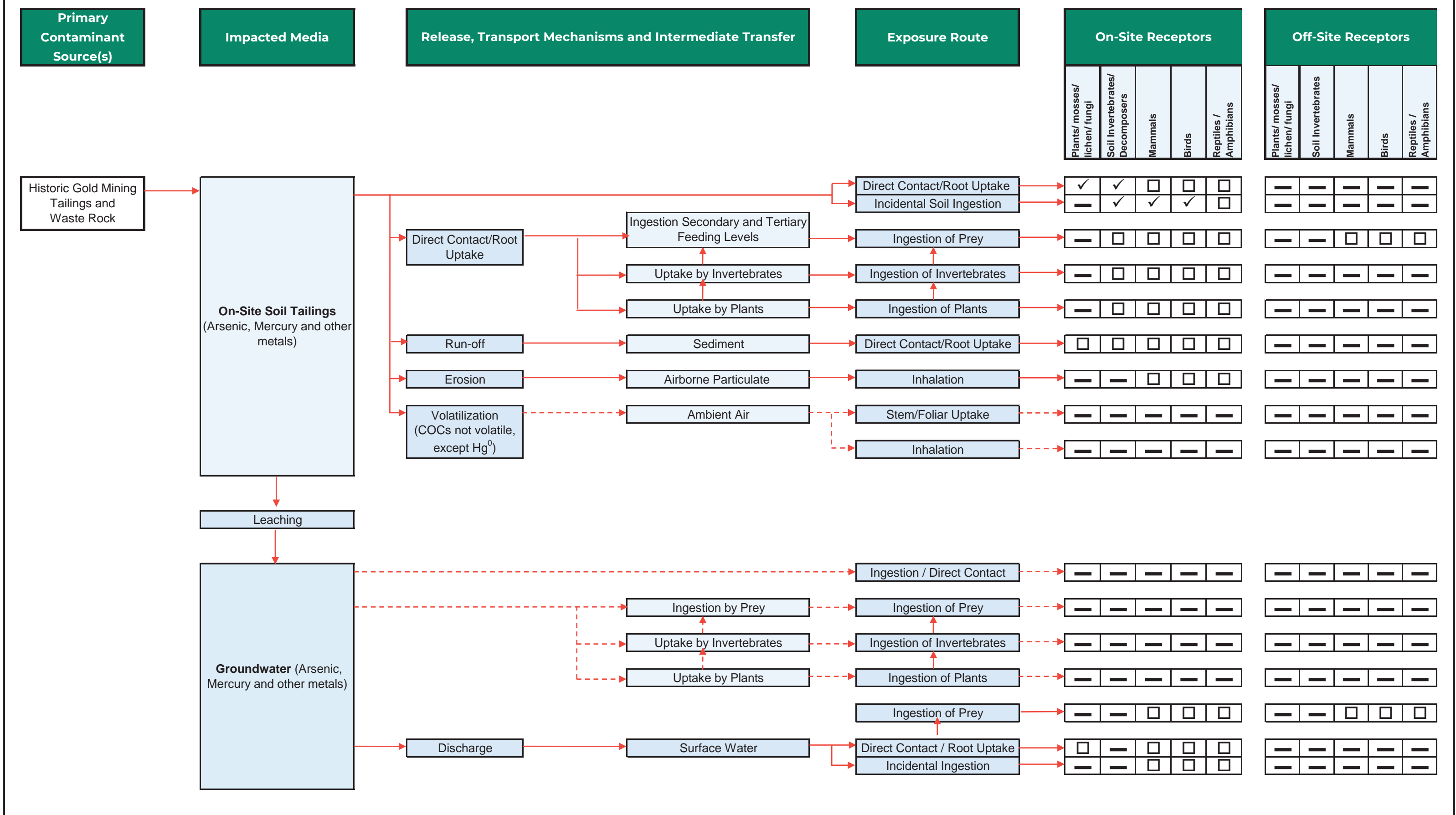


**LEGEND:**  
 [✓] - Exposure pathway operable  
 [□] - Exposure pathway possibly operable, data/knowledge gap  
 [—] - Exposure pathway not operable  
 [- -] - Potential Exposure Pathway Not considered Significant  
 [■] - Receptor not present; not assessed in screening HHRA



Project No.: 60680068      Figure No.: 10  
 Project: Preliminary Problem Formulation HHRA Conceptual Site Model, Seal Harbour and Goldbrook Lake Historical Gold Mining Tailings and Waste Rock Site, Nova Scotia  
 Date: March 2023      Drawn: RJ      Approved: MES

## TERRESTRIAL ECOLOGICAL EXPOSURE CONCEPTUAL SITE MODEL

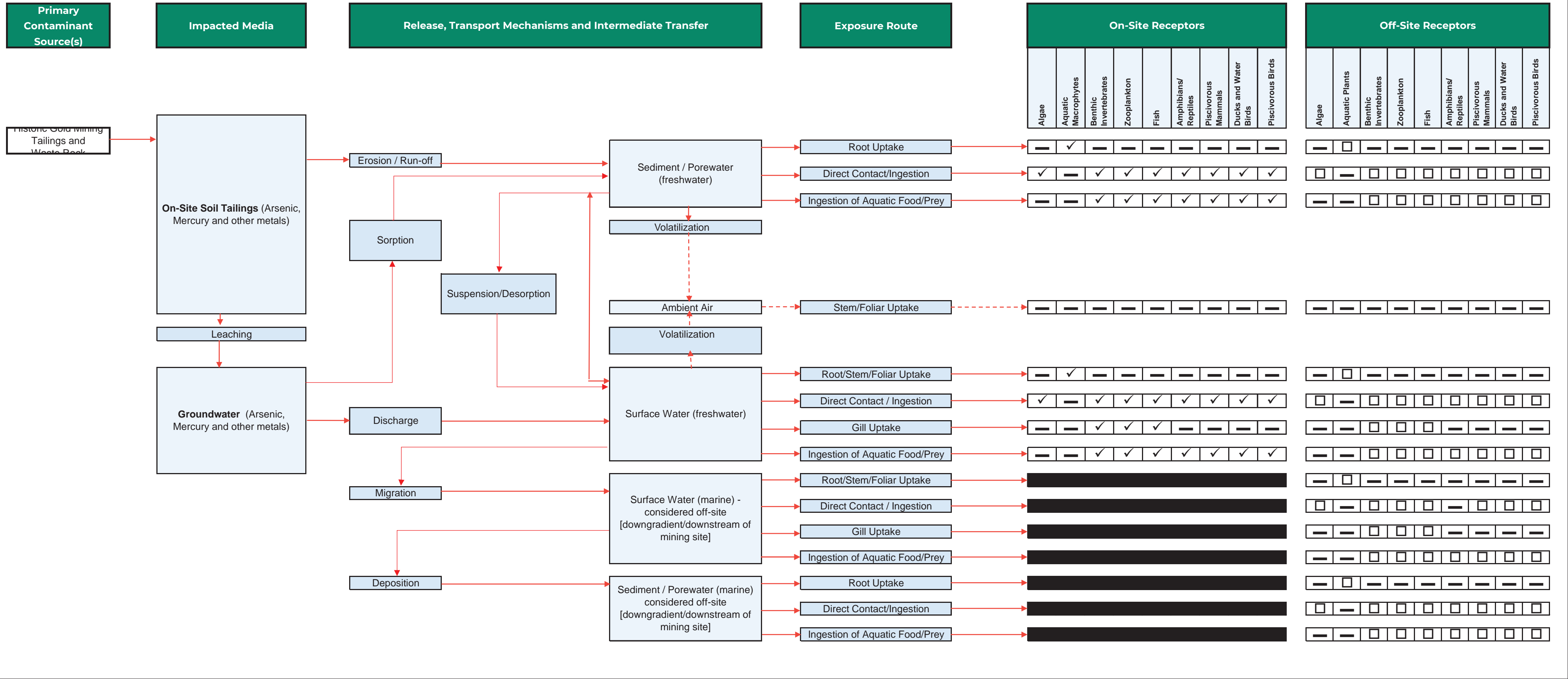


**LEGEND:**  
 [✓] - Exposure pathway operable  
 [□] - Exposure pathway possibly operable, data/knowledge gap  
 [—] - Exposure pathway not operable  
 [->] - Potential Exposure Pathway Not considered Significant



Project No.: 60680068		Figure No.: 11
Project: Preliminary Problem Formulation ERA Conceptual Site Model, Seal Harbour and Goldbrook Lake Historical Gold Mining Tailings and Waste Rock Site, Nova Scotia		
Date: March 2023	Drawn: RJ	Approved: MES

### AQUATIC ECOLOGICAL EXPOSURE CONCEPTUAL SITE MODEL



**LEGEND:**  
 [✓] - Exposure pathway operable  
 [□] - Exposure pathway possibly operable, data/knowledge gap  
 [—] - Exposure pathway not operable  
 [->] - Potential Exposure Pathway Not considered Significant



<b>Project No.:</b> 60680068	<b>Figure No.:</b> 12
<b>Project:</b> Preliminary Problem Formulation ERA Conceptual Site Model, Seal Harbour and Goldbrook Lake Historical Gold Mining Tailings and Waste Rock Site, Nova Scotia	
<b>Date:</b> March 2023	<b>Drawn:</b> RJ
<b>Approved:</b> MES	

# Appendix B. Analytical Tables

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		Sample Location	BG 1	BG 2	BG 3	BG 4	BG 5
		Sample Date	7/5/2022	7/5/2022	7/5/2022	7/5/2022	7/5/2022
		Sample Depth (m bgs)	0.2 - 0.3	0 - 0.25	0.03 - 0.28	0.1 - 0.35	0 - 0.03
		Type <sup>0</sup>	N	N	N	N	N
Parameter	NS-EQS (T1A)/SO/RES/POT/ COARSE <sup>1</sup>	Units					
Aluminum	15400	mg/kg	5600	1400	2900	8200	1000
Antimony	7.5	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
Arsenic	10	mg/kg	2.1	2.1	4.7	4	2
Barium	350	mg/kg	23	46	5.3	29	5.1
Beryllium	1	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Bismuth	NS	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
Boron	4300	mg/kg	<50	<50	<50	<50	<50
Cadmium	1	mg/kg	<0.30	0.4	<0.30	<0.30	<0.30
Chromium	220	mg/kg	7.2	<2.0	4.1	4.5	<2.0
Cobalt	22	mg/kg	1.6	1	<1.0	1.5	<1.0
Copper	250	mg/kg	5.5	4.2	<2.0	4.7	<2.0
Iron	11000	mg/kg	4200	2900	4300	2600	630
Lead	120	mg/kg	16	17	3.4	22	9.5
Lithium	NS	mg/kg	3.2	<2.0	2.6	2	<2.0
Manganese	360	mg/kg	41	170	31	80	16
Mercury	6.6	mg/kg	0.16	0.3	<0.10	0.24	<0.10
Molybdenum	15	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
Nickel	70	mg/kg	5.5	4.2	4.3	4.9	<2.0
Rubidium	NS	mg/kg	4.1	<2.0	2.8	<2.0	<2.0
Selenium	<b>1</b>	mg/kg	0.5	0.92	<0.50	<b>1.8</b>	<0.50
Silver	77	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
Strontium	9400	mg/kg	6.9	61	<5.0	22	<5.0
Thallium	1	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Tin	9400	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Uranium	23	mg/kg	0.32	<0.10	0.15	0.41	0.14
Vanadium	39	mg/kg	7.8	3.3	7.5	5.8	2
Zinc	300	mg/kg	15	56	7.6	76	<5.0

**Notes:**<sup>0</sup> Type: N=normal, FD=field duplicate<sup>1</sup> NS-EQS (T1A)/SO/RES/POT/COARSE: NSE potable residential.

yyyy/mm/dd: year/month/day

mbgs: meters below ground surface

mg/kg: milligrams per kilogram

&lt; :Denotes concentration less than indicated detection limit

- :Not analyzed or not applicable

NS: No Standard

**EXCEEDS CRITERIA**

Table 1: Soil Analytical Results

## Metals

Parameter	NS-EQS (T1A)/SO/RES/POT/ COARSE <sup>1</sup>	QC REL <sup>2</sup>	QC TEL <sup>3</sup>	Units	Sample Location	Sample Date	Sample Depth (m bgs)	Type <sup>0</sup>	SS22-1	SS22-2	SS22-2B 30-37 CM	SS22-3	SS22-4	SS22-5				
Aluminum	<b>15400</b>			mg/kg	12000	<b>20000</b>	8200	2900	7500	3800								
Antimony	<b>7.5</b>			mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0								
Arsenic	<b>10</b>			mg/kg	<b>2700</b>	<b>6200</b>	<b>680</b>	<b>25</b>	<b>95</b>	<b>96</b>								
Barium	350			mg/kg	61	120	38	5.6	15	7.9								
Beryllium	<b>1</b>			mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0								
Bismuth	NS			mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0								
Boron	4300			mg/kg	<50	<50	<50	<50	<50	<50								
Cadmium	<b>1</b>			mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30								
Chromium	220			mg/kg	17	28	8.8	4.2	9.2	7.1								
Cobalt	22			mg/kg	<1.0	3.4	2.9	<1.0	<1.0	<1.0								
Copper	250			mg/kg	7.7	43	21	2.4	3.4	<2.0								
Cyanide	6.5			mg/kg	-	-	-	-	-	-								
Iron	<b>11000</b>			mg/kg	<b>21000</b>	<b>39000</b>	10000	5900	<b>20000</b>	10000								
Lead	<b>120</b>			mg/kg	36	44	26	3.5	17	8.3								
Lithium	NS			mg/kg	25	44	11	2.2	5.3	2.2								
Manganese	<b>360</b>			mg/kg	290	<b>520</b>	150	20	30	31								
Mercury	<b>6.6</b>			mg/kg	<b>7.9</b>	4.1	2.5	<0.10	0.24	<0.10								
Methyl Mercury	-	0.094	0.17	mg/kg	-	-	-	-	-	-								
Molybdenum	15			mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0								
Nickel	70			mg/kg	8.2	19	19	<2.0	5	4.5								
Rubidium	NS			mg/kg	38	72	19	2.5	3.1	2.7								
Selenium	<b>1</b>			mg/kg	<0.50	<0.50	0.86	<0.50	<b>1.1</b>	<0.50								
Silver	77			mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50								
Strontium	9400			mg/kg	9.5	16	7.3	<5.0	6.5	<5.0								
Thallium	<b>1</b>			mg/kg	0.28	0.52	0.14	<0.10	<0.10	<0.10								
Tin	9400			mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0								
Uranium	23			mg/kg	0.21	0.37	0.61	0.34	0.26	0.16								
Vanadium	<b>39</b>			mg/kg	20	33	9.8	20	28	33								
Zinc	<b>300</b>			mg/kg	37	78	41	8.1	18	7.7								

**Notes:**<sup>0</sup> Type: N=normal, FD=field duplicate<sup>1</sup> NS-EQS (T1A)/SO/RES/POT/COARSE: NSE potable residential.<sup>2</sup> Quebec Threshold Effect Level<sup>3</sup> Quebec Rare Effect Level

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Table 1: Soil Analytical Results

## Metals

Parameter	NS-EQS (T1A)/SO/RES/POT/ COARSE <sup>1</sup>	QC REL <sup>2</sup>	QC TEL <sup>3</sup>	Units	Sample Location	Sample Date	Sample Depth (m bgs)	Sample Type <sup>0</sup>	SS22-6	SS22-6	SS22-7	SS22-8	SS22-9	SS22-10			
Aluminum	<b>15400</b>			mg/kg	15000	7/5/2022	0.01 - 0.23	N	15000	2300	10000	4200	1300	6900			
Antimony	<b>7.5</b>			mg/kg	5.3	7/5/2022	0.03 - 0.40	N	5.3	<2.0	<2.0	<2.0	<2.0	<2.0			
Arsenic	<b>10</b>			mg/kg	<b>5400</b>	7/5/2022	0 - 0.30	N	<b>5400</b>	<b>20</b>	<b>5100</b>	<b>20</b>	9.3	<b>29</b>			
Barium	350			mg/kg	60	7/5/2022	0.06 - 0.15	N	60	28	61	<5.0	11	<5.0			
Beryllium	<b>1</b>			mg/kg	<1.0	7/5/2022	0.08 - 0.16	N	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0			
Bismuth	NS			mg/kg	<2.0	7/5/2022	0.09 - 0.14	N	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0			
Boron	4300			mg/kg	<50				<50	<50	<50	<50	<50	<50			
Cadmium	<b>1</b>			mg/kg	<0.30				<0.30	0.3	0.77	<0.30	<0.30	<0.30			
Chromium	220			mg/kg	21				21	2.7	15	5.3	<2.0	7.2			
Cobalt	22			mg/kg	2.5				2.5	<1.0	15	<1.0	<1.0	<1.0			
Copper	250			mg/kg	31				31	5.7	17	<2.0	<2.0	<2.0			
Cyanide	6.5			mg/kg	-				-	-	-	-	-	-			
Iron	<b>11000</b>			mg/kg	<b>32000</b>				<b>32000</b>	2400	<b>46000</b>	<b>12000</b>	3500	<b>21000</b>			
Lead	<b>120</b>			mg/kg	79				79	14	43	3.8	4.4	7.3			
Lithium	NS			mg/kg	24				24	2.1	11	2.2	<2.0	<2.0			
Manganese	<b>360</b>			mg/kg	300				300	37	<b>2000</b>	19	10	19			
Mercury	<b>6.6</b>			mg/kg	<b>8.5</b>				<b>8.5</b>	0.29	2.4	<0.10	<0.10	0.14			
Methyl Mercury	-	0.094	0.17	mg/kg	-				-	-	-	-	-	-			
Molybdenum	15			mg/kg	<2.0				<2.0	<2.0	<2.0	<2.0	<2.0	<2.0			
Nickel	70			mg/kg	12				12	4.7	22	<2.0	<2.0	<2.0			
Rubidium	NS			mg/kg	34				34	2.3	11	<2.0	<2.0	<2.0			
Selenium	<b>1</b>			mg/kg	<0.50				<0.50	<b>1.2</b>	<b>1.4</b>	0.53	<0.50	0.96			
Silver	77			mg/kg	0.61				0.61	0.75	<0.50	<0.50	<0.50	<0.50			
Strontium	9400			mg/kg	12				12	29	29	<5.0	<5.0	<5.0			
Thallium	<b>1</b>			mg/kg	0.27				0.27	<0.10	0.22	<0.10	<0.10	<0.10			
Tin	9400			mg/kg	1.6				1.6	<1.0	1.7	<1.0	<1.0	<1.0			
Uranium	23			mg/kg	0.42				0.42	0.12	3	0.25	0.15	0.26			
Vanadium	<b>39</b>			mg/kg	24				24	3.6	21	21	11	<b>41</b>			
Zinc	<b>300</b>			mg/kg	41				41	17	150	5	5.2	5.7			

**Notes:**<sup>0</sup> Type: N=normal, FD=field duplicate<sup>1</sup> NS-EQS (T1A)/SO/RES/POT/COARSE: NSE potable residential.<sup>2</sup> Quebec Threshold Effect Level<sup>3</sup> Quebec Rare Effect Level

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Table 1: Soil Analytical Results

## Metals

Parameter	NS-EQS (T1A)/SO/RES/POT/ COARSE <sup>1</sup>	QC REL <sup>2</sup>	QC TEL <sup>3</sup>	Units	Sample Location	Sample Date	Sample Depth (m bgs)	Type <sup>0</sup>	SS22-11	SS22-12	SS22-13	SS22-14	SS22-15	SS22-15				
Aluminum	<b>15400</b>			mg/kg	9300	15000	14000	1100	14000	11000								
Antimony	<b>7.5</b>			mg/kg	<2.0	<2.0	<2.0	<2.0	4.7	4.8								
Arsenic	<b>10</b>			mg/kg	<b>840</b>	<b>78</b>	<b>3600</b>	<b>48</b>	<b>1700</b>	<b>1800</b>								
Barium	350			mg/kg	37	28	71	<5.0	67	68								
Beryllium	<b>1</b>			mg/kg	<1.0	<1.0	<b>1.2</b>	<1.0	<1.0	<1.0								
Bismuth	NS			mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0								
Boron	4300			mg/kg	<50	<50	<50	<50	<50	<50								
Cadmium	<b>1</b>			mg/kg	0.37	<0.30	<b>1.7</b>	<0.30	0.35	0.35								
Chromium	220			mg/kg	9.6	19	21	<2.0	33	33								
Cobalt	22			mg/kg	1.7	4.1	21	<1.0	10	9.8								
Copper	250			mg/kg	12	10	51	<2.0	51	130								
Cyanide	6.5			mg/kg	-	-	<5.0	-	-	-								
Iron	<b>11000</b>			mg/kg	<b>13000</b>	<b>16000</b>	<b>31000</b>	1200	<b>38000</b>	<b>41000</b>								
Lead	<b>120</b>			mg/kg	32	10	<b>240</b>	0.96	<b>310</b>	<b>300</b>								
Lithium	NS			mg/kg	3.7	13	32	<2.0	16	14								
Manganese	<b>360</b>			mg/kg	64	170	<b>560</b>	5.3	<b>620</b>	<b>650</b>								
Mercury	<b>6.6</b>			mg/kg	2	0.13	1.5	<0.10	4.1	3.4								
Methyl Mercury	-	0.094	0.17	mg/kg	-	-	0.00158	-	-	-								
Molybdenum	15			mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.5								
Nickel	70			mg/kg	8.3	12	54	<2.0	18	20								
Rubidium	NS			mg/kg	7.4	12	26	<2.0	14	14								
Selenium	<b>1</b>			mg/kg	<b>1.4</b>	0.74	0.65	<0.50	0.94	0.92								
Silver	77			mg/kg	<0.50	1	<0.50	<0.50	0.56	0.54								
Strontium	9400			mg/kg	12	7.9	29	<5.0	11	13								
Thallium	<b>1</b>			mg/kg	<0.10	<0.10	0.33	<0.10	0.3	0.31								
Tin	9400			mg/kg	<1.0	<1.0	1.3	<1.0	21	25								
Uranium	23			mg/kg	0.29	0.39	0.99	<0.10	0.45	0.51								
Vanadium	<b>39</b>			mg/kg	8.4	23	25	4.9	27	23								
Zinc	<b>300</b>			mg/kg	16	28	<b>850</b>	<5.0	190	210								

**Notes:**<sup>0</sup> Type: N=normal, FD=field duplicate<sup>1</sup> NS-EQS (T1A)/SO/RES/POT/COARSE: NSE potable residential.<sup>2</sup> Quebec Threshold Effect Level<sup>3</sup> Quebec Rare Effect Level

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Table 1: Soil Analytical Results

## Metals

Parameter	NS-EQS (T1A)/SO/RES/POT/ COARSE <sup>1</sup>	QC REL <sup>2</sup>	QC TEL <sup>3</sup>	Units	Sample Location	Sample Date	Sample Depth (m bgs)	Type <sup>0</sup>	SS22-16	SS22-17	SS22-18	SS22-19	SS22-20				
Aluminum	15400			mg/kg	6700	11000	11000	6500	1600								
Antimony	7.5			mg/kg	<2.0	6	8.9	<2.0	<2.0								
Arsenic	10			mg/kg	170	14000	5900	140	8.4								
Barium	350			mg/kg	14	56	65	8.5	<5.0								
Beryllium	1			mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0								
Bismuth	NS			mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0								
Boron	4300			mg/kg	<50	<50	<50	<50	<50								
Cadmium	1			mg/kg	<0.30	<0.30	0.3	<0.30	<0.30								
Chromium	220			mg/kg	12	17	17	13	2.2								
Cobalt	22			mg/kg	1.7	6	4.3	1.2	<1.0								
Copper	250			mg/kg	3.8	17	21	2.2	2.2								
Cyanide	6.5			mg/kg	-	-	-	-	-								
Iron	11000			mg/kg	15000	32000	25000	28000	1000								
Lead	120			mg/kg	20	72	110	9	6.1								
Lithium	NS			mg/kg	7.6	19	17	3.2	<2.0								
Manganese	360			mg/kg	65	230	210	48	4.9								
Mercury	6.6			mg/kg	0.26	5.9	7.8	0.19	0.13								
Methyl Mercury	-	0.094	0.17	mg/kg	-	-	-	-	-								
Molybdenum	15			mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0								
Nickel	70			mg/kg	7.8	15	14	5.3	2.1								
Rubidium	NS			mg/kg	4.4	30	22	2.9	<2.0								
Selenium	1			mg/kg	1.2	<0.50	0.69	1.5	<0.50								
Silver	77			mg/kg	<0.50	0.59	1.2	<0.50	<0.50								
Strontium	9400			mg/kg	<5.0	11	12	<5.0	<5.0								
Thallium	1			mg/kg	<0.10	0.29	0.3	<0.10	<0.10								
Tin	9400			mg/kg	1	<1.0	<1.0	<1.0	<1.0								
Uranium	23			mg/kg	0.33	0.32	0.34	0.38	0.18								
Vanadium	39			mg/kg	21	19	20	33	2.2								
Zinc	300			mg/kg	15	41	32	13	<5.0								

**Notes:**<sup>0</sup> Type: N=normal, FD=field duplicate<sup>1</sup> NS-EQS (T1A)/SO/RES/POT/COARSE: NSE potable residential.<sup>2</sup> Quebec Threshold Effect Level<sup>3</sup> Quebec Rare Effect Level

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Table 1: Soil Analytical Results

## Metals

Parameter	NS-EQS (T1A)/SO/RES/POT/ COARSE <sup>1</sup>	QC REL <sup>2</sup>	QC TEL <sup>3</sup>	Units	Sample Location	SM22-1	SM22-2 5-35 CM	SM22-2B 35-45 CM	SM22-3	SM22-4	SM22-5 0-5 CM
					Sample Date	7/5/2022	7/5/2022	7/5/2022	7/5/2022	7/5/2022	7/5/2022
					Sample Depth (m bgs)	0.0 - 0.2	0.05 - 0.35	0.35 - 0.45	0.08 - 0.28	0.08 - 0.23	0.0 - 0.05
					Type <sup>0</sup>	N	N	N	N	N	N
Aluminum	<b>15400</b>			mg/kg	6200	7900	7100	7200	8400	5000	
Antimony	<b>7.5</b>			mg/kg	<b>40</b>	4.7	5.3	<b>17</b>	2.6	<b>10</b>	
Arsenic	<b>10</b>			mg/kg	<b>50000</b>	<b>6700</b>	<b>8700</b>	<b>46000</b>	<b>4900</b>	<b>26000</b>	
Barium	350			mg/kg	53	110	110	290	35	53	
Beryllium	<b>1</b>			mg/kg	<1.0	<b>1.5</b>	<1.0	<1.0	<1.0	<1.0	
Bismuth	NS			mg/kg	2.9	<2.0	<2.0	2.2	<2.0	<2.0	
Boron	4300			mg/kg	<50	<50	<50	<50	<50	<50	
Cadmium	<b>1</b>			mg/kg	<0.30	<b>1.9</b>	<b>1.1</b>	<0.30	<0.30	<0.30	
Chromium	220			mg/kg	12	9	11	16	13	5	
Cobalt	22			mg/kg	3.5	15	18	1.4	4.2	3.4	
Copper	250			mg/kg	25	40	33	13	21	17	
Cyanide	6.5			mg/kg	-	-	-	-	-	-	
Iron	<b>11000</b>			mg/kg	<b>70000</b>	<b>24000</b>	<b>39000</b>	<b>63000</b>	<b>30000</b>	<b>37000</b>	
Lead	<b>120</b>			mg/kg	<b>320</b>	120	<b>180</b>	<b>230</b>	56	87	
Lithium	NS			mg/kg	11	12	14	10	8.5	4.4	
Manganese	<b>360</b>			mg/kg	200	<b>500</b>	<b>380</b>	170	140	78	
Mercury	<b>6.6</b>			mg/kg	5.1	1.1	2.4	<b>43</b>	3.7	<b>9.2</b>	
Methyl Mercury	-	0.094	0.17	mg/kg	-	-	-	-	-	-	
Molybdenum	15			mg/kg	7.3	12	8.6	2.8	3.1	2.4	
Nickel	70			mg/kg	12	31	35	6.8	10	5.5	
Rubidium	NS			mg/kg	17	8.3	12	25	7.5	5.5	
Selenium	<b>1</b>			mg/kg	<b>1.1</b>	<b>1.2</b>	<b>2.5</b>	0.97	0.88	0.53	
Silver	77			mg/kg	0.98	<0.50	<0.50	1.7	<0.50	<0.50	
Strontium	9400			mg/kg	7.7	150	81	8.5	7.7	31	
Thallium	<b>1</b>			mg/kg	0.28	<b>1.6</b>	<b>2.9</b>	0.34	0.11	0.18	
Tin	9400			mg/kg	9.6	2.9	2.3	12	2	<1.0	
Uranium	23			mg/kg	0.36	0.43	0.37	0.25	0.46	0.26	
Vanadium	<b>39</b>			mg/kg	19	20	22	21	20	7.6	
Zinc	<b>300</b>			mg/kg	27	110	150	25	25	35	

**Notes:**<sup>0</sup> Type: N=normal, FD=field duplicate<sup>1</sup> NS-EQS (T1A)/SO/RES/POT/COARSE: NSE potable residential.<sup>2</sup> Quebec Threshold Effect Level<sup>3</sup> Quebec Rare Effect Level

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Table 1: Soil Analytical Results

## Metals

Parameter	NS-EQS (T1A)/SO/RES/POT/ COARSE <sup>1</sup>	QC REL <sup>2</sup>	QC TEL <sup>3</sup>	Units	Sample Location	SM22-5 0-5 CM	SM22-5B 5-25 CM	SS22-B06	SS22-B38	SS22-B38B 26-50 CM	SS22-B40
					Sample Date	7/5/2022	7/5/2022	7/7/2022	7/7/2022	7/7/2022	7/6/2022
					Sample Depth (m bgs)	0.0 - 0.05	0.05 - 0.25	0.00 - 0.23	0.28 - 0.50	0.26 - 0.50	0.02 - 0.30
					Type <sup>0</sup>	FD	N	N	N	N	N
Aluminum	<b>15400</b>			mg/kg	5400	8100	1800	12000	10000	10000	
Antimony	<b>7.5</b>			mg/kg	<b>23</b>	5	<2.0	<2.0	<2.0	2.4	
Arsenic	<b>10</b>			mg/kg	<b>46000</b>	<b>20000</b>	<b>40</b>	<b>4000</b>	<b>4000</b>	<b>5600</b>	
Barium	350			mg/kg	110	66	14	81	81	56	
Beryllium	<b>1</b>			mg/kg	<1.0	<1.0	<1.0	<b>1.2</b>	<1.0	<1.0	
Bismuth	NS			mg/kg	2.1	<2.0	<2.0	<2.0	<2.0	<2.0	
Boron	4300			mg/kg	<50	<50	<50	<50	<50	<50	
Cadmium	<b>1</b>			mg/kg	0.37	<0.30	0.55	0.48	0.38	<0.30	
Chromium	220			mg/kg	7.4	15	<2.0	17	13	15	
Cobalt	22			mg/kg	6.5	3.7	<1.0	5.5	6	6.5	
Copper	250			mg/kg	28	14	4.1	21	17	42	
Cyanide	6.5			mg/kg	-	-	-	3.7	-	-	
Iron	<b>11000</b>			mg/kg	<b>60000</b>	<b>39000</b>	2800	<b>18000</b>	<b>15000</b>	<b>22000</b>	
Lead	<b>120</b>			mg/kg	<b>250</b>	100	17	39	25	110	
Lithium	NS			mg/kg	4.7	15	<2.0	20	14	18	
Manganese	<b>360</b>			mg/kg	160	190	16	360	310	250	
Mercury	<b>6.6</b>			mg/kg	<b>12</b>	<b>25</b>	0.22	5.6	3.8	4.4	
Methyl Mercury	-	0.094	0.17	mg/kg	-	-	-	0.00242	-	-	
Molybdenum	15			mg/kg	5.9	<2.0	<2.0	<2.0	<2.0	<2.0	
Nickel	70			mg/kg	12	12	<2.0	19	18	9.2	
Rubidium	NS			mg/kg	7.5	24	4.2	29	21	26	
Selenium	<b>1</b>			mg/kg	0.82	<0.50	0.63	0.7	<b>2.4</b>	<0.50	
Silver	77			mg/kg	0.78	0.91	<0.50	<0.50	<0.50	0.52	
Strontium	9400			mg/kg	37	19	13	34	46	8.8	
Thallium	<b>1</b>			mg/kg	0.2	0.22	<0.10	0.25	0.19	0.2	
Tin	9400			mg/kg	<1.0	2.5	<1.0	<1.0	<1.0	6.6	
Uranium	23			mg/kg	0.26	0.24	0.14	1.1	1.2	0.33	
Vanadium	<b>39</b>			mg/kg	11	17	2.7	19	14	19	
Zinc	<b>300</b>			mg/kg	88	44	10	150	140	54	

**Notes:**<sup>0</sup> Type: N=normal, FD=field duplicate<sup>1</sup> NS-EQS (T1A)/SO/RES/POT/COARSE: NSE potable residential.<sup>2</sup> Quebec Threshold Effect Level<sup>3</sup> Quebec Rare Effect Level

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Parameter	NS-EQS (T1A)/SO/RES/POT/ COARSE <sup>1</sup>	QC REL <sup>2</sup>	QC TEL <sup>3</sup>	Units	Sample Location	Sample Date
					SS22-B47	SS22-C01
					7/6/2022	7/6/2022
					0.01 - 0.12	0.02 -0.19
Type <sup>0</sup>	N		N			
Aluminum	<b>15400</b>			mg/kg	9100	12000
Antimony	<b>7.5</b>			mg/kg	<2.0	<2.0
Arsenic	<b>10</b>			mg/kg	<b>66</b>	<b>410</b>
Barium	350			mg/kg	38	38
Beryllium	<b>1</b>			mg/kg	<1.0	<1.0
Bismuth	NS			mg/kg	<2.0	<2.0
Boron	4300			mg/kg	<50	<50
Cadmium	<b>1</b>			mg/kg	<0.30	<0.30
Chromium	220			mg/kg	17	13
Cobalt	22			mg/kg	5	1.2
Copper	250			mg/kg	11	15
Cyanide	6.5			mg/kg	-	-
Iron	<b>11000</b>			mg/kg	<b>15000</b>	11000
Lead	<b>120</b>			mg/kg	6.9	38
Lithium	NS			mg/kg	22	7.2
Manganese	<b>360</b>			mg/kg	220	120
Mercury	<b>6.6</b>			mg/kg	<0.10	5.7
Methyl Mercury	-	0.094	0.17	mg/kg	-	-
Molybdenum	15			mg/kg	<2.0	<2.0
Nickel	70			mg/kg	14	6.9
Rubidium	NS			mg/kg	19	13
Selenium	<b>1</b>			mg/kg	<0.50	<b>1.4</b>
Silver	77			mg/kg	<0.50	<0.50
Strontium	9400			mg/kg	<5.0	13
Thallium	<b>1</b>			mg/kg	0.14	0.1
Tin	9400			mg/kg	<1.0	1.1
Uranium	23			mg/kg	0.39	0.74
Vanadium	<b>39</b>			mg/kg	19	12
Zinc	<b>300</b>			mg/kg	31	22

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## Metals

Parameter	NS-EQS (T1A)/SO/RES/POT/ COARSE <sup>1</sup>	QC REL <sup>2</sup>	QC TEL <sup>3</sup>	Units	Sample Location	Sample Date	Sample Depth (m bgs)	Sample Type <sup>0</sup>	SS22-C01	SS22-C22	SS22-D21	SS22-D21B 50-60 CM	SS22-E31			
Aluminum	<b>15400</b>			mg/kg	5300	7/6/2022	0.02 - 0.19	FD	5300	10000	9000	9200	<b>17000</b>			
Antimony	<b>7.5</b>			mg/kg	<2.0	7/6/2022	0.0 - 0.35	N	<2.0	7	<b>10</b>	7	<2.0			
Arsenic	<b>10</b>			mg/kg	<b>100</b>				<b>21000</b>	<b>18000</b>	<b>11000</b>	<b>11000</b>	<b>3900</b>			
Barium	350			mg/kg	21				56	56	56	30	95			
Beryllium	<b>1</b>			mg/kg	<1.0				<1.0	<1.0	<1.0	<1.0	<1.0			
Bismuth	NS			mg/kg	<2.0				2.3	<2.0	<2.0	<2.0	<2.0			
Boron	4300			mg/kg	<50				<50	<50	<50	<50	<50			
Cadmium	<b>1</b>			mg/kg	<0.30				<0.30	<0.30	<0.30	0.35	<0.30			
Chromium	220			mg/kg	3.8				17	16	16	9.9	25			
Cobalt	22			mg/kg	<1.0				3	5	5	4.3	4.4			
Copper	250			mg/kg	8.6				12	27	27	19	35			
Cyanide	6.5			mg/kg	-				-	-	5.7	-	-			
Iron	<b>11000</b>			mg/kg	4200				<b>37000</b>	<b>36000</b>	<b>36000</b>	<b>16000</b>	<b>32000</b>			
Lead	<b>120</b>			mg/kg	25				69	94	94	68	26			
Lithium	NS			mg/kg	<2.0				17	16	16	7.2	40			
Manganese	<b>360</b>			mg/kg	53				220	190	190	91	<b>460</b>			
Mercury	<b>6.6</b>			mg/kg	1.9				<b>52</b>	<b>7.3</b>	<b>7.3</b>	4.9	1.4			
Methyl Mercury	-	0.094	0.17	mg/kg	-				-	-	0.018	-	-			
Molybdenum	15			mg/kg	<2.0				<2.0	<2.0	<2.0	<2.0	<2.0			
Nickel	70			mg/kg	3.8				9.8	14	14	11	17			
Rubidium	NS			mg/kg	3.7				32	27	27	11	63			
Selenium	<b>1</b>			mg/kg	<b>1.6</b>				<0.50	<0.50	<0.50	<b>1.4</b>	<0.50			
Silver	77			mg/kg	<0.50				0.77	<0.50	<0.50	<0.50	<0.50			
Strontium	9400			mg/kg	14				7	11	11	10	13			
Thallium	<b>1</b>			mg/kg	<0.10				0.26	0.28	0.28	0.14	0.46			
Tin	9400			mg/kg	<1.0				<1.0	<1.0	1.2	3.5	<1.0			
Uranium	23			mg/kg	0.29				0.32	0.27	0.27	0.54	0.35			
Vanadium	<b>39</b>			mg/kg	3.8				19	17	17	11	29			
Zinc	<b>300</b>			mg/kg	14				31	31	51	35	73			

**Notes:**<sup>0</sup> Type: N=normal, FD=field duplicate<sup>1</sup> NS-EQS (T1A)/SO/RES/POT/COARSE: NSE potable residential.<sup>2</sup> Quebec Threshold Effect Level<sup>3</sup> Quebec Rare Effect Level

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					SS22-E31	SS22-E35	SS22-E35	SS22-E45
					7/7/2022	7/7/2022	7/7/2022	7/6/2022
					0.01 - 0.23	0.00 - 0.15	0.00 - 0.15	0.02 - 0.26
					FD	N	FD	N
Aluminum	<b>15400</b>			mg/kg	<b>17000</b>	7400	7400	6900
Antimony	<b>7.5</b>			mg/kg	<2.0	<b>11</b>	<b>13</b>	<2.0
Arsenic	<b>10</b>			mg/kg	<b>3800</b>	<b>31000</b>	<b>33000</b>	<b>2100</b>
Barium	350			mg/kg	92	45	46	74
Beryllium	<b>1</b>			mg/kg	<1.0	<1.0	<1.0	<1.0
Bismuth	NS			mg/kg	<2.0	<2.0	2.1	<2.0
Boron	4300			mg/kg	<50	<50	<50	<50
Cadmium	<b>1</b>			mg/kg	0.41	<0.30	<0.30	<b>1.4</b>
Chromium	220			mg/kg	24	14	14	9.4
Cobalt	22			mg/kg	7.6	<1.0	1.1	22
Copper	250			mg/kg	33	4.1	4	50
Cyanide	6.5			mg/kg	-	-	-	-
Iron	<b>11000</b>			mg/kg	<b>31000</b>	<b>43000</b>	<b>46000</b>	<b>36000</b>
Lead	<b>120</b>			mg/kg	32	86	93	<b>210</b>
Lithium	NS			mg/kg	40	11	12	8.8
Manganese	<b>360</b>			mg/kg	<b>450</b>	180	190	<b>950</b>
Mercury	<b>6.6</b>			mg/kg	1.3	<b>7.7</b>	<b>9.7</b>	0.87
Methyl Mercury	-	0.094	0.17	mg/kg	-	-	-	-
Molybdenum	15			mg/kg	<2.0	<2.0	<2.0	<2.0
Nickel	70			mg/kg	23	5.2	5.5	61
Rubidium	NS			mg/kg	60	21	21	7.5
Selenium	<b>1</b>			mg/kg	<0.50	0.63	0.7	0.75
Silver	77			mg/kg	<0.50	0.53	0.75	<0.50
Strontium	9400			mg/kg	12	6.2	6.4	64
Thallium	<b>1</b>			mg/kg	0.45	0.22	0.26	0.17
Tin	9400			mg/kg	<1.0	<1.0	<1.0	<1.0
Uranium	23			mg/kg	0.36	0.25	0.24	0.84
Vanadium	<b>39</b>			mg/kg	28	15	15	13
Zinc	<b>300</b>			mg/kg	110	18	18	<b>380</b>

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			SS22-T1	SS22-T1	SS22-T1B 46-60 CM
			7/7/2022	7/7/2022	7/7/2022
Type <sup>0</sup>			N	FD	N
Aluminum	15400	mg/kg	12000	12000	10000
Antimony	<b>7.5</b>	mg/kg	5.8	3.5	<b>19</b>
Arsenic	<b>10</b>	mg/kg	<b>16000</b>	<b>8400</b>	<b>29000</b>
Barium	350	mg/kg	70	67	79
Beryllium	1	mg/kg	<1.0	<1.0	<1.0
Bismuth	NS	mg/kg	<2.0	<2.0	2.9
Boron	4300	mg/kg	<50	<50	<50
Cadmium	1	mg/kg	0.34	0.31	0.35
Chromium	220	mg/kg	18	19	22
Cobalt	22	mg/kg	2.6	3.9	11
Copper	250	mg/kg	70	52	44
Iron	<b>11000</b>	mg/kg	<b>31000</b>	<b>28000</b>	<b>35000</b>
Lead	<b>120</b>	mg/kg	60	55	<b>200</b>
Lithium	NS	mg/kg	22	22	19
Manganese	360	mg/kg	270	290	250
Mercury	<b>6.6</b>	mg/kg	2.6	3	<b>73</b>
Molybdenum	15	mg/kg	<2.0	<2.0	<2.0
Nickel	70	mg/kg	11	13	26
Rubidium	NS	mg/kg	38	40	32
Selenium	<b>1</b>	mg/kg	<0.50	<0.50	0.98
Silver	77	mg/kg	<0.50	<0.50	1.5
Strontium	9400	mg/kg	10	11	11
Thallium	1	mg/kg	0.33	0.32	0.34
Tin	9400	mg/kg	<1.0	<1.0	3.8
Uranium	23	mg/kg	0.26	0.29	0.55
Vanadium	39	mg/kg	19	20	21
Zinc	300	mg/kg	46	60	79

**Notes:**<sup>0</sup> Type: N=normal, FD=field duplicate<sup>1</sup> NS-EQS (T1A)/SO/RES/POT/COARSE: NSE potable residential.

yyyy/mm/dd: year/month/day

mbgs: meters below ground surface

mg/kg: milligrams per kilogram

&lt; :Denotes concentration less than indicated detection limit

- :Not analyzed or not applicable

NS: No Standard

**EXCEEDS CRITERIA**

Table 2: Tailings Analytical Results

## Metals

		Sample Location	SS22-TD1	SS22-TD2	SS22-TD3 0-45 CM	SS22-TD3B 55-60 CM	SS22-TD4	SS22-TD5	SS22-TD6 0-35 CM	SS22-TD6B 50-63 CM
		Sample Date	7/7/2022	7/7/2022	7/7/2022	7/7/2022	7/7/2022	7/7/2022	7/7/2022	7/7/2022
		Type <sup>0</sup>	N	N	N	N	N	N	N	N
Parameter	NS-EQS (T1A)/SO/RES/POT/COARSE <sup>1</sup>	Units								
Aluminum	15400	mg/kg	11000	12000	9700	11000	4000	13000	11000	15000
Antimony	<b>7.5</b>	mg/kg	<2.0	5.5	<2.0	6.7	<2.0	<2.0	<2.0	<b>9.4</b>
Arsenic	<b>10</b>	mg/kg	<b>600</b>	<b>2700</b>	<b>5500</b>	<b>6000</b>	<b>51</b>	<b>1000</b>	<b>2400</b>	<b>5000</b>
Barium	350	mg/kg	57	64	53	69	25	38	60	83
Beryllium	1	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bismuth	NS	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Boron	4300	mg/kg	<50	<50	<50	<50	<50	<50	<50	<50
Cadmium	1	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	0.38
Chromium	220	mg/kg	23	21	15	20	5.3	17	17	22
Cobalt	22	mg/kg	2.3	1.3	<1.0	4.4	<1.0	1.6	1.1	4.4
Copper	250	mg/kg	22	19	3.6	21	9.4	8.8	6.3	41
Iron	<b>11000</b>	mg/kg	<b>13000</b>	<b>24000</b>	<b>22000</b>	<b>21000</b>	3100	<b>22000</b>	<b>20000</b>	<b>30000</b>
Lead	<b>120</b>	mg/kg	18	<b>130</b>	19	52	26	26	17	79
Lithium	NS	mg/kg	12	19	20	22	<2.0	6.9	24	28
Manganese	360	mg/kg	150	250	240	290	46	88	290	330
Mercury	<b>6.6</b>	mg/kg	<b>7.4</b>	<b>11</b>	1.8	<b>6.8</b>	0.67	2.8	2.3	<b>8.9</b>
Molybdenum	15	mg/kg	3.1	<2.0	<2.0	<2.0	2.5	<2.0	<2.0	<2.0
Nickel	70	mg/kg	11	8.5	7.8	18	3	5.7	7.5	16
Rubidium	NS	mg/kg	18	29	32	40	<2.0	9.5	37	47
Selenium	<b>1</b>	mg/kg	0.54	<0.50	<0.50	<0.50	0.7	<b>1.4</b>	<0.50	<0.50
Silver	77	mg/kg	8.8	0.68	<0.50	<0.50	2	0.99	<0.50	0.56
Strontium	9400	mg/kg	13	13	11	11	24	20	12	8.9
Thallium	1	mg/kg	0.12	0.28	0.23	0.33	<0.10	0.11	0.25	0.4
Tin	9400	mg/kg	1.4	3.3	<1.0	<1.0	<1.0	1.6	<1.0	<1.0
Uranium	23	mg/kg	0.47	0.35	0.22	0.34	0.15	0.41	0.32	0.29
Vanadium	39	mg/kg	16	20	17	21	4.9	24	18	25
Zinc	300	mg/kg	32	37	31	78	16	23	35	69

**Notes:**<sup>0</sup> Type: N=normal, FD=field duplicate<sup>1</sup> NS-EQS (T1A)/SO/RES/POT/COARSE: NSE potable residential.

yyyy/mm/dd: year/month/day

mbgs: meters below ground surface

mg/kg: milligrams per kilogram

&lt; :Denotes concentration less than indicated detection limit

- :Not analyzed or not applicable

NS: No Standard

**EXCEEDS CRITERIA**

		Sample Location	WR-1	WR-2	WR-3	WR-4	WR-5
		Sample Date	7/5/2022	7/5/2022	7/5/2022	7/5/2022	7/5/2022
		Type <sup>0</sup>	N	N	N	N	N
Parameter	Units						
Acid Extractable Aluminum (Al)	mg/kg	6500	16000	9400	6700	5900	
Acid Extractable Antimony (Sb)	mg/kg	<20	<20	<20	<20	<20	
Acid Extractable Arsenic (As)	mg/kg	17	130	20	1300	190	
Acid Extractable Barium (Ba)	mg/kg	<50	120	64	<50	<50	
Acid Extractable Beryllium (Be)	mg/kg	<20	<20	<20	<20	<20	
Acid Extractable Boron (B)	mg/kg	<500	<500	<500	<500	<500	
Acid Extractable Cadmium (Cd)	mg/kg	<3.0	<3.0	<3.0	<3.0	<3.0	
Acid Extractable Chromium (Cr)	mg/kg	<20	24	<20	<20	<20	
Acid Extractable Cobalt (Co)	mg/kg	<10	<10	<10	<10	<10	
Acid Extractable Copper (Cu)	mg/kg	<20	<20	<20	<20	<20	
Acid Extractable Iron (Fe)	mg/kg	12000	27000	16000	10000	11000	
Acid Extractable Lead (Pb)	mg/kg	<5.0	7.8	<5.0	<5.0	<5.0	
Acid Extractable Manganese (Mn)	mg/kg	160	410	280	370	210	
Acid Extractable Mercury (Hg)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	
Acid Extractable Molybdenum (Mo)	mg/kg	<20	<20	<20	<20	<20	
Acid Extractable Nickel (Ni)	mg/kg	<20	26	<20	<20	<20	
Acid Extractable Selenium (Se)	mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	
Acid Extractable Silver (Ag)	mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	
Acid Extractable Strontium (Sr)	mg/kg	<50	<50	<50	<50	<50	
Acid Extractable Thallium (Tl)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	
Acid Extractable Tin (Sn)	mg/kg	<20	<20	<20	<20	<20	
Acid Extractable Uranium (U)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	
Acid Extractable Vanadium (V)	mg/kg	<20	26	20	<20	<20	
Acid Extractable Zinc (Zn)	mg/kg	<50	52	<50	<50	<50	
Total Sulphur (S)	% g/g	0.19	0.024	0.028	1.3	1.1	

**Notes:**<sup>0</sup> Type: N=Normal Sample; FD=Field Duplicate

yyyy/mm/dd: year/month/day

mg/kg: milligrams per kilogram

Elevated concentrations of aluminum, arsenic, barium, chromium, iron, lead and manganese, nickel, vanadium and zinc are present in waste rock samples collected from the site.

Parameter	Sample Location Sample Date Type <sup>0</sup>			MW17-2	MW17-2	MW22A	MW22A	MW23A	MW23A	MW23A	MW27A	MW27A
	NS-EQS <sup>1</sup>	NS-EQS <sup>2</sup> (freshwater)	Units	7/7/2022 N	1/16/2023 N	7/6/2022 N	1/16/2023 N	7/6/2022 N	1/16/2023 N	1/16/2023 FD	7/6/2022 N	1/16/2023 N
Aluminum	NS	<b>50</b>	ug/l	<b>180</b>	<b>170</b>	12	14	<b>270</b>	<b>60</b>	<b>60</b>	94	6.3
Antimony	6	90	ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic	<b>10</b>	<b>50</b>	ug/l	<1.0	<1.0	<b>150</b>	<b>110</b>	1.5	<1.0	<1.0	1.2	1.2
Barium	1000	10000	ug/l	13	14	16	11	13	13	12	7.5	<1.0
Beryllium	4	1.5	ug/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Bismuth	NS	NS	ug/l	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Boron	5000	15000	ug/l	<50	<50	<50	<50	<50	<50	<50	<50	<50
Cadmium	5	0.9	ug/l	0.021	0.026	<0.010	<0.010	<0.010	0.023	0.023	0.024	<0.010
Calcium	NS	NS	ug/l	3300	2400	12000	9000	1100	970	1300	6100	<100
Chromium	50	89	ug/l	<1.0	<1.0	<1.0	<1.0	2.2	<1.0	<1.0	<1.0	<1.0
Cobalt	3.8	10	ug/l	<0.40	0.63	0.69	2.1	2.6	2.5	2.5	1.7	<0.40
Copper	2000	20	ug/l	2.6	1.3	1.7	<0.50	8.8	4.1	2	5.7	<0.50
Iron	NS	<b>3000</b>	ug/l	<50	<50	<b>7700</b>	<b>7200</b>	<b>8800</b>	<b>4300</b>	<b>4100</b>	110	<50
Lead	5	10	ug/l	<0.50	<0.50	<0.50	<0.50	0.65	<0.50	<0.50	<0.50	<0.50
Magnesium	NS	NS	ug/l	490	440	3200	2400	660	560	580	1800	<100
Manganese	<b>120</b>	4300	ug/l	10	13	<b>330</b>	<b>250</b>	<b>350</b>	<b>170</b>	<b>170</b>	<b>260</b>	<2.0
Mercury	1	0.26	ug/l	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013
Molybdenum	70	730	ug/l	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.8	2
Nickel	100	250	ug/l	<2.0	<2.0	<2.0	2.3	11	15	15	6.2	<2.0
Phosphorus	NS	NS	ug/l	<100	<100	<100	110	<100	<100	<100	<100	<100
Potassium	NS	NS	ug/l	820	780	2400	2000	960	700	690	2400	430
Selenium	50	10	ug/l	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	NS	2.5	ug/l	0.17	0.25	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	NS	NS	ug/l	4900	4500	25000	26000	4600	4500	4500	14000	19000
Strontium	NS	210000	ug/l	32	24	100	84	9.8	9.5	9.7	41	<2.0
Thallium	2	8	ug/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Tin	2400	NS	ug/l	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium	NS	NS	ug/l	<2.0	<2.0	<2.0	<2.0	9.1	<2.0	<2.0	6	<2.0
Uranium	20	150	ug/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.14
Vanadium	6.2	1200	ug/l	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Zinc	NS	70	ug/l	<5.0	5.8	6.7	<5.0	23	27	24	9.5	<5.0

**Notes:**<sup>0</sup> Type: N=Normal Sample; FD=Field Duplicate<sup>1</sup> Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for an residential property with coarse textured soil and potable groundwater; Table 4A<sup>2</sup> Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Groundwater Discharging to Surface Water (>10 m from Surface Water Body - Freshwater); Table 3

- :Not analyzed or not applicable

NS: No Standard

**EXCEEDS CRITERIA - NS-EQS****EXCEEDS CRITERIA - NS-EQS (FRESHWATER)**

Parameter	NS-EQS <sup>1</sup>	NS-EQS <sup>2</sup> (Freshwater)	Unit	Sample Location	MW23A	MW23A	MW23A
				Sample Date	7/6/2022	1/16/2023	1/16/2023
				Type <sup>0</sup>	N	N	FD
Anion Sum	-	-	me/L		0.31	0.38	0.38
Bicarb. Alkalinity (calc. as CaCO <sub>3</sub> )	-	-	mg/L		3.9	3.8	3.2
Calculated TDS	-	-	mg/L		31	30	30
Carb. Alkalinity (calc. as CaCO <sub>3</sub> )	-	-	mg/L		<1.0	<1.0	<1.0
Cation Sum	-	-	me/L		0.65	0.46	0.48
Hardness (CaCO <sub>3</sub> )	-	-	mg/L		5.4	4.7	5.6
Ion Balance (% Difference)	-	-	%		35.4	9.52	11.6
Langelier Index (@ 20C)	-	-	N/A		-4.54	-4.7	-4.84
Langelier Index (@ 4C)	-	-	N/A		-4.8	-4.95	-5.09
Nitrate (N)	-	130	mg/L		<0.050	<0.050	<0.050
Saturation pH (@ 20C)	-	-	N/A		10.7	10.7	10.7
Saturation pH (@ 4C)	-	-	N/A		10.9	11	10.9
Total Alkalinity (Total as CaCO <sub>3</sub> )	-	-	mg/L		3.9	3.8	3.2
Dissolved Chloride (Cl <sup>-</sup> )	-	1,200	mg/L		8.2	8	8.1
Colour	-	-	TCU		<5.0	<5.0	<5.0
Nitrate + Nitrite (N)	-	-	mg/L		<0.050	<0.050	<0.050
Nitrite (N)	-	0.6	mg/L		<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	-	*	mg/L		<0.50	<0.050	<0.050
Total Organic Carbon (C)	-	-	mg/L		7.1	5.0	<5.0
Orthophosphate (P)	-	-	mg/L		<0.010	<0.010	<0.010
pH	-	-	pH		6.13	6.03	5.84
Reactive Silica (SiO <sub>2</sub> )	-	-	mg/L		4	4.2	4.2
Dissolved Sulphate (SO <sub>4</sub> )	-	1,280	mg/L		<2.0	3.9	4.2
Turbidity	-	-	NTU		970	50	560
Conductivity	-	-	uS/cm		46	43	42

**Notes:**

<sup>0</sup> Type: N=Normal Sample; FD=Field Duplicate

<sup>1</sup> Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for an residential property with coarse textured soil and potable groundwater; Table 4A

<sup>2</sup> Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Groundwater Discharging to Surface Water (>10 m from Surface Water Body - Freshwater); Table 3

- :Not analyzed or not applicable

NS: No Standard

**EXCEEDS CRITERIA - NS-EQS**

**EXCEEDS CRITERIA - NS-EQS (FRESHWATER)**

\*

pH and temperature dependent; consult CCME fact sheet.

Table 5: Surface Water Analytical Results  
Freshwater - Metals

Sample Location		BG-1	SW-1	SW1	SW1	SW-2	SW2	SW-3	SW3	SW-4	SW-4	SW-5	SW-5	
Sample Date		7/14/2022	7/13/2022	1/18/2023	1/18/2023	7/13/2022	1/18/2023	7/13/2022	1/18/2023	7/13/2022	1/16/2023	7/13/2022	1/16/2023	
Type <sup>0</sup>		N	N	N	FD	N	N	N	N	N	N	N	N	
Parameter	NS-EQS <sup>1</sup> (Freshwater)	Unit	Background Sample											
Aluminum	5	ug/l	300	680	72	75	2100	630	300	1100	290	350	140	130
Antimony	9	ug/l	<1.0	<1.0	1.1	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic	5	ug/l	3.7	6000	2600	2600	7800	1200	41	1800	15	30	150	75
Barium	1000	ug/l	2.1	3	1.7	1.7	23	5.4	2.2	7.2	2.3	3.6	2.5	5.7
Beryllium	0.15	ug/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Bismuth	NS	ug/l	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Boron	1500	ug/l	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Cadmium	0.09	ug/l	0.011	0.024	0.027	0.019	0.046	0.029	0.011	0.039	0.012	0.016	<0.010	0.016
Calcium	NS	ug/l	550	1200	1400	1300	2000	850	610	820	590	860	4100	3800
Chromium	8.9	ug/l	<1.0	1.3	<1.0	<1.0	3.1	1.4	<1.0	2	<1.0	<1.0	<1.0	<1.0
Cobalt	1	ug/l	<0.40	0.67	1.8	1.6	1.7	0.48	<0.40	0.47	<0.40	<0.40	<0.40	<0.40
Copper	2	ug/l	<0.50	1.1	0.89	0.8	2.2	1.2	<0.50	1.5	<0.50	<0.50	<0.50	0.61
Iron	300	ug/l	390	4100	2300	2300	18000	3200	450	5100	400	480	1500	280
Lead	1	ug/l	<0.50	1.4	<0.50	<0.50	9.4	2.1	<0.50	3.9	<0.50	0.61	<0.50	<0.50
Magnesium	NS	ug/l	360	760	760	800	1100	640	360	740	360	520	870	830
Manganese	430	ug/l	14	32	78	77	150	57	15	29	16	22	57	39
Mercury	0.026	ug/l	<0.013	0.05	0.018	0.017	0.09	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013
Molybdenum	73	ug/l	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Nickel	25	ug/l	<2.0	<2.0	2.4	2.3	3	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Phosphorus	NS	ug/l	<100	<100	<100	<100	180	<100	<100	<100	<100	<100	<100	<100
Potassium	NS	ug/l	240	420	1200	1100	820	940	230	1000	230	350	230	730
Selenium	1	ug/l	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	0.25	ug/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	NS	ug/l	3500	5700	6000	6100	5800	4200	3700	4600	3700	4000	5100	4200
Strontium	21000	ug/l	5.1	11	15	15	22	8.6	5.5	8.5	5.4	8.4	18	20
Thallium	0.8	ug/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Tin	NS	ug/l	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium	NS	ug/l	3.6	15	<2.0	2.1	92	21	3.8	51	3	7.4	2.1	3.4
Uranium	15	ug/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Vanadium	120	ug/l	<2.0	<2.0	<2.0	<2.0	5.4	<2.0	<2.0	2.3	<2.0	<2.0	<2.0	<2.0
Zinc	7	ug/l	5.5	7.2	6.5	5.4	14	5	<5.0	<5.0	<5.0	<5.0	5.2	<5.0

**Notes:**

<sup>0</sup> Type: N=Normal Sample; FD=Field Duplicate

<sup>1</sup> Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water; Table 3 (Freshwater)

- :Not analyzed or not applicable

NS: No Standard

**EXCEEDS CRITERIA - NS-EQS (FRESHWATER)**

Table 5: Surface Water Analytical Results  
Freshwater - Metals

		Sample Location	SW-6	SW-6	SW-7	SW-7	SW-8	SW8	SW-8	SW-10	SW10	SW-18	SW18	SW-19
		Sample Date	7/13/2022	1/16/2023	7/13/2022	1/16/2023	7/13/2022	1/18/2023	1/18/2023	7/13/2022	1/18/2023	7/14/2022	1/18/2023	7/14/2022
		Type <sup>0</sup>	N	N	N	N	N	N	FD	N	N	N	N	N
Parameter	NS-EQS <sup>1</sup> (Freshwater)	Unit												
Aluminum	<b>5</b>	ug/l	<b>99</b>	<b>120</b>	<b>290</b>	<b>330</b>	<b>56</b>	<b>120</b>	<b>490</b>	<b>360</b>	<b>300</b>	<b>330</b>	<b>300</b>	<b>250</b>
Antimony	9	ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic	<b>5</b>	ug/l	<b>110</b>	<b>61</b>	<b>130</b>	<b>39</b>	<b>1100</b>	<b>180</b>	<b>670</b>	<b>280</b>	<b>51</b>	<b>280</b>	<b>51</b>	<b>480</b>
Barium	1000	ug/l	2.5	5.5	2.1	3.1	9	14	19	2.9	3.2	2.9	3.2	2.4
Beryllium	0.15	ug/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Bismuth	NS	ug/l	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Boron	1500	ug/l	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Cadmium	<b>0.09</b>	ug/l	<0.010	0.015	0.012	0.018	0.046	0.066	<b>0.094</b>	0.014	0.017	0.013	0.018	0.011
Calcium	NS	ug/l	3500	3200	610	630	17000	18000	20000	1500	1200	1400	1100	760
Chromium	8.9	ug/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.3	<1.0	<1.0	<1.0	<1.0	<1.0
Cobalt	<b>1</b>	ug/l	<0.40	<0.40	<0.40	<0.40	<b>2.4</b>	0.92	<b>3.3</b>	0.45	<0.40	0.47	<0.40	<0.40
Copper	<b>2</b>	ug/l	<0.50	<0.50	<0.50	<0.50	0.55	1.5	<b>2.8</b>	0.76	0.59	0.81	0.63	<0.50
Iron	<b>300</b>	ug/l	<b>1500</b>	<b>310</b>	<b>490</b>	<b>520</b>	<b>3700</b>	<b>580</b>	<b>3100</b>	<b>1500</b>	<b>540</b>	<b>1500</b>	<b>520</b>	<b>1700</b>
Lead	<b>1</b>	ug/l	<0.50	<0.50	<0.50	0.7	0.55	<0.50	<b>1.1</b>	0.94	0.61	0.92	0.55	0.67
Magnesium	NS	ug/l	840	820	360	490	1700	1700	2000	510	600	520	570	380
Manganese	<b>430</b>	ug/l	53	67	18	22	<b>750</b>	150	<b>490</b>	61	45	59	44	27
Mercury	<b>0.026</b>	ug/l	<0.013	<0.013	0.013	<0.013	<0.013	<0.013	<0.013	0.02	<0.013	0.022	<0.013	0.017
Molybdenum	73	ug/l	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Nickel	25	ug/l	<2.0	<2.0	<2.0	<2.0	2.6	<2.0	2.5	<2.0	<2.0	<2.0	<2.0	<2.0
Phosphorus	NS	ug/l	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Potassium	NS	ug/l	180	740	230	330	1500	2100	2400	280	350	270	350	270
Selenium	1	ug/l	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	0.25	ug/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	NS	ug/l	4600	4100	3600	4000	6300	4300	4700	4200	4700	4200	4600	4000
Strontium	21000	ug/l	19	19	5.5	7.4	120	120	130	11	9.4	11	9.6	6.8
Thallium	0.8	ug/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Tin	NS	ug/l	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	4	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium	NS	ug/l	<2.0	<2.0	3.1	6	<2.0	5	26	5	5.1	5.9	4.2	4.2
Uranium	15	ug/l	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Vanadium	120	ug/l	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Zinc	<b>7</b>	ug/l	5.7	<b>7.3</b>	<5.0	<5.0	<b>9.1</b>	<b>10</b>	<b>16</b>	<5.0	<5.0	<5.0	<5.0	<5.0

**Notes:**

<sup>0</sup> Type: N=Normal Sample; FD=Field Duplicate

<sup>1</sup> Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water; Table 3 (Freshwater)

- :Not analyzed or not applicable

NS: No Standard

**EXCEEDS CRITERIA - NS-EQS (FRESHWATER)**

		Sample Location	SW19	SW 20	SW 20	SW 20
		Sample Date	1/18/2023	7/14/2022	7/14/2022	1/16/2023
		Type <sup>0</sup>	N	N	FD	N
Parameter	NS-EQS <sup>1</sup> (Freshwater)	Unit				
Aluminum	<b>5</b>	ug/l	<b>320</b>	<b>340</b>	<b>330</b>	<b>280</b>
Antimony	9	ug/l	<1.0	<1.0	<1.0	<1.0
Arsenic	<b>5</b>	ug/l	<b>66</b>	<b>330</b>	<b>330</b>	<b>51</b>
Barium	1000	ug/l	3	2.9	2.8	3.3
Beryllium	0.15	ug/l	<0.10	<0.10	<0.10	<0.10
Bismuth	NS	ug/l	<2.0	<2.0	<2.0	<2.0
Boron	1500	ug/l	<50	<50	<50	<50
Cadmium	<b>0.09</b>	ug/l	0.018	0.017	0.016	0.019
Calcium	NS	ug/l	860	930	920	840
Chromium	8.9	ug/l	<1.0	<1.0	<1.0	<1.0
Cobalt	<b>1</b>	ug/l	<0.40	0.41	0.41	<0.40
Copper	<b>2</b>	ug/l	0.51	0.54	0.51	<0.50
Iron	<b>300</b>	ug/l	<b>610</b>	<b>1600</b>	<b>1600</b>	<b>530</b>
Lead	<b>1</b>	ug/l	0.53	0.71	0.69	0.52
Magnesium	NS	ug/l	580	470	440	520
Manganese	<b>430</b>	ug/l	36	51	49	39
Mercury	<b>0.026</b>	ug/l	<0.013	0.017	0.015	<0.013
Molybdenum	73	ug/l	<2.0	<2.0	<2.0	<2.0
Nickel	25	ug/l	<2.0	<2.0	<2.0	<2.0
Phosphorus	NS	ug/l	<100	<100	<100	<100
Potassium	NS	ug/l	370	390	350	360
Selenium	1	ug/l	<0.50	<0.50	<0.50	<0.50
Silver	0.25	ug/l	<0.10	<0.10	<0.10	<0.10
Sodium	NS	ug/l	4600	4200	4100	4400
Strontium	21000	ug/l	7.9	7.8	7.6	7.9
Thallium	0.8	ug/l	<0.10	<0.10	<0.10	<0.10
Tin	NS	ug/l	<2.0	<2.0	<2.0	<2.0
Titanium	NS	ug/l	5.5	5.1	4.7	5.7
Uranium	15	ug/l	<0.10	<0.10	<0.10	<0.10
Vanadium	120	ug/l	<2.0	<2.0	<2.0	<2.0
Zinc	<b>7</b>	ug/l	<5.0	6.6	<5.0	<5.0

**Notes:**<sup>0</sup> Type: N=Normal Sample; FD=Field Duplicate<sup>1</sup> Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water; Table 3 (Freshwater)

- :Not analyzed or not applicable

NS: No Standard

**EXCEEDS CRITERIA - NS-EQS (FRESHWATER)**

Parameter	NS-EQS <sup>1</sup> (Freshwater)	Unit	Sample Location Sample Date Type <sup>0</sup>				
			SW-1	SW1	SW1	SW-10	SW-18
			7/13/2022	1/18/2023	1/18/2023	7/13/2022	7/14/2022
			N	N	FD	N	N
Anion Sum	-	me/L	0.21	0.35	0.34	-	-
Bicarb. Alkalinity (calc. as CaCO3)	-	mg/L	<1.0	2.8	2.3	-	-
Calculated TDS	-	mg/L	27	35	34	-	-
Carb. Alkalinity (calc. as CaCO3)	-	mg/L	<1.0	<1.0	<1.0	-	-
Cation Sum	-	me/L	0.53	0.52	0.52	-	-
Hardness (CaCO3)	-	mg/L	6.1	6.8	6.5	-	-
Ion Balance (% Difference)	-	%	43.2	19.5	20.9	-	-
Langelier Index (@ 20C)	-	N/A	NC	-4.76	-4.73	-	-
Langelier Index (@ 4C)	-	N/A	NC	-5.02	-4.98	-	-
Nitrate (N)	13	mg/L	<0.050	<0.050	<0.050	-	-
Saturation pH (@ 20C)	-	N/A	NC	10.7	10.8	-	-
Saturation pH (@ 4C)	-	N/A	NC	10.9	11.1	-	-
Total Alkalinity (Total as CaCO3)	-	mg/L	<2.0	2.8	2.3	-	-
Dissolved Chloride (Cl-)	120	mg/L	7.5	7.5	6.8	-	-
Colour	-	TCU	160	23	21	-	-
Nitrate + Nitrite (N)	-	mg/L	<0.050	<0.050	<0.050	-	-
Nitrite (N)	0.06	mg/L	<0.010	<0.010	<0.010	-	-
Nitrogen (Ammonia Nitrogen)	****	mg/L	<0.050	0.074	0.063	-	-
Total Organic Carbon (C)	-	mg/L	25	3.1	2.7	-	-
Orthophosphate (P)	-	mg/L	<2.0	<0.60 (1)	<0.50 (1)	-	-
pH	<b>6.5 - 9.0</b>	pH	<b>5.22</b>	<b>5.93</b>	<b>6.09</b>	-	-
Reactive Silica (SiO2)	-	mg/L	7.6	9.5	9.4	-	-
Dissolved Sulphate (SO4)	128	mg/L	<2.0	4.1	4.7	-	-
Total Cyanide (CN)	0.005	mg/L	-	-	-	<0.0050	<0.0050
Turbidity	**	NTU	16	7.2	30	-	-
Conductivity	-	uS/cm	64	46	47	-	-

**Notes:**

<sup>0</sup> Type: N=Normal Sample; FD=Field Duplicate

<sup>1</sup> Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water; Table 3 (Freshwater)

- :Not analyzed or not applicable

NS: No Standard

**EXCEEDS CRITERIA - NS-EQS (FRESHWATER)**

\*

No more than a 10% change in ambient sea water salinity (as NaCl).

\*\*

Clear flow

Maximum increase of 25 mg/L from background levels for any short-term exposure (e.g., 24-h period). Maximum average increase of 5 mg/L from background levels for longer term exposures (e.g., inputs lasting between 24 h and 30 d)

High flow

Maximum increase of 25 mg/L from background levels at any time when background levels are between 25 and 250 mg/L. Should not increase more than 10% of background levels when background is ≥ 250 mg/L.

\*\*\*

pH and temperature dependent; consult CCME fact sheet.

\*\*\*\*

pH, salinity and temperature dependent; consult BCMOE schedule.

Sample Location		SW-9	SW-9	SW9	SW-11	SW-12	SW12	SW-13	SW13	SW-14	SW14	SW15	
Sample Date		7/13/2022	7/13/2022	1/18/2023	7/14/2022	7/14/2022	1/18/2023	7/14/2022	1/18/2023	7/14/2022	1/18/2023	1/18/2023	
Type <sup>0</sup>		N	FD	N	N	N	N	N	N	N	N	N	
Parameter	NS-EQS <sup>1</sup> (Marine)	Unit	Background Sample										
Aluminum	NS	ug/l	330	320	290	<50	330	340	200	260	130	270	330
Antimony	250	ug/l	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<1.0	<10	<1.0	<1.0
Arsenic	<b>12.5</b>	ug/l	<b>270</b>	<b>260</b>	<b>51</b>	<10	<b>240</b>	<b>53</b>	<b>150</b>	<b>46</b>	<b>86</b>	<b>47</b>	<b>56</b>
Barium	500	ug/l	3.2	2.6	3.1	<10	4.3	2.9	<10	3.7	<10	3.6	2.7
Beryllium	100	ug/l	<0.10	<0.10	<0.10	<1.0	<0.10	<0.10	<1.0	<0.10	<1.0	<0.10	<0.10
Bismuth	NS	ug/l	<2.0	<2.0	<2.0	<20	<2.0	<2.0	<20	<2.0	<20	<2.0	<2.0
Boron	<b>1200</b>	ug/l	<50	<50	<50	<b>3600</b>	410	<50	<b>1400</b>	410	<b>2200</b>	540	78
Cadmium	0.12	ug/l	0.015	0.013	0.014	<0.10	0.019	0.023	<0.10	0.021	<0.10	0.02	0.022
Calcium	NS	ug/l	2400	2400	1100	320000	37000	1400	120000	36000	200000	46000	4700
Chromium	56	ug/l	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<10	<1.0	<10	<1.0	<1.0
Cobalt	4	ug/l	<0.40	<0.40	<0.40	<4.0	<0.40	0.45	<4.0	<0.40	<4.0	<0.40	0.41
Copper	2	ug/l	0.72	0.74	0.55	<b>&lt;5.0</b>	0.7	1.1	<b>&lt;5.0</b>	0.57	<b>&lt;5.0</b>	0.76	0.72
Iron	NS	ug/l	1400	1400	530	<500	1400	630	720	480	<500	490	660
Lead	2	ug/l	0.93	0.91	0.57	<b>&lt;5.0</b>	0.98	0.86	<b>&lt;5.0</b>	0.57	<b>&lt;5.0</b>	0.55	0.86
Magnesium	NS	ug/l	3500	3400	610	980000	110000	1600	380000	110000	600000	140000	12000
Manganese	NS	ug/l	60	57	45	<20	54	45	38	40	35	40	47
Mercury	<b>0.016</b>	ug/l	<b>0.02</b>	<b>0.02</b>	<0.013	<0.013	<b>0.018</b>	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013
Molybdenum	1000	ug/l	<2.0	<2.0	<2.0	<20	<2.0	<2.0	<20	<2.0	<20	<2.0	<2.0
Nickel	8.3	ug/l	<2.0	<2.0	<2.0	<b>&lt;20</b>	<2.0	<2.0	<b>&lt;20</b>	<2.0	<b>&lt;20</b>	<2.0	<2.0
Phosphorus	NS	ug/l	<100	<100	<100	<1000	<100	<100	<1000	<100	<1000	<100	<100
Potassium	NS	ug/l	1200	1100	330	300000	35000	710	120000	33000	190000	43000	5000
Selenium	2	ug/l	<0.50	<0.50	<0.50	<b>&lt;5.0</b>	<0.50	<0.50	<b>&lt;5.0</b>	<0.50	<b>&lt;5.0</b>	<0.50	<0.50
Silver	1.5	ug/l	<0.10	<0.10	<0.10	<1.0	<0.10	<0.10	<1.0	<0.10	<1.0	<0.10	<0.10
Sodium	NS	ug/l	28000	27000	4800	8200000	910000	14000	3100000	940000	5200000	1100000	120000
Strontium	NS	ug/l	27	26	9.8	6100	660	15	2200	680	3600	880	71
Thallium	0.3	ug/l	<0.10	<0.10	<0.10	<b>&lt;1.0</b>	<0.10	<0.10	<b>&lt;1.0</b>	<0.10	<b>&lt;1.0</b>	<0.10	<0.10
Tin	NS	ug/l	<2.0	<2.0	<2.0	<20	<2.0	<2.0	<20	<2.0	<20	<2.0	<2.0
Titanium	NS	ug/l	4.3	4.9	4.7	<20	5.7	8	<20	3.7	<20	3.9	6.3
Uranium	8.5	ug/l	<0.10	<0.10	<0.10	2.6	0.28	<0.10	<1.0	0.28	1.6	0.38	<0.10
Vanadium	5	ug/l	<2.0	<2.0	<2.0	<b>&lt;20</b>	<2.0	<2.0	<b>&lt;20</b>	<2.0	<b>&lt;20</b>	<2.0	<2.0
Zinc	10	ug/l	<5.0	<5.0	<5.0	<b>&lt;50</b>	5.2	<5.0	<b>&lt;50</b>	<5.0	<b>&lt;50</b>	5.3	<5.0

**Notes:**

<sup>0</sup> Type: N=Normal Sample; FD=Field Duplicate

<sup>1</sup> Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water; Table 3 (Marine)

- :Not analyzed or not applicable

NS: No Standard

**BOLD** Reportable Detection Limit (RDL) exceeds the regulatory standard

**EXCEEDS CRITERIA - NS-EQS (MARINE)**

Gold Brook Lake Seal Harbour Mine Site - Phase II ESA  
 Table 5: Surface Water Analytical Results  
 Marine - Metals



		Sample Location	SW16	SW17
		Sample Date	1/18/2023	1/18/2023
		Type <sup>0</sup>	N	N
Parameter	NS-EQS <sup>1</sup> (Marine)	Unit		
Aluminum	NS	ug/l	400	130
Antimony	250	ug/l	<10	<10
Arsenic	<b>12.5</b>	ug/l	<b>41</b>	<b>20</b>
Barium	500	ug/l	<10	<10
Beryllium	100	ug/l	<1.0	<1.0
Bismuth	NS	ug/l	<20	<20
Boron	<b>1200</b>	ug/l	<b>1500</b>	<b>2200</b>
Cadmium	0.12	ug/l	<0.10	<0.10
Calcium	NS	ug/l	140000	210000
Chromium	56	ug/l	<10	<10
Cobalt	4	ug/l	<4.0	<4.0
Copper	2	ug/l	<b>&lt;5.0</b>	<b>&lt;5.0</b>
Iron	NS	ug/l	820	<500
Lead	2	ug/l	<b>&lt;5.0</b>	<b>&lt;5.0</b>
Magnesium	NS	ug/l	440000	640000
Manganese	NS	ug/l	37	<20
Mercury	<b>0.016</b>	ug/l	<0.013	<0.013
Molybdenum	1000	ug/l	<20	<20
Nickel	8.3	ug/l	<b>&lt;20</b>	<b>&lt;20</b>
Phosphorus	NS	ug/l	<1000	<1000
Potassium	NS	ug/l	130000	200000
Selenium	2	ug/l	<b>&lt;5.0</b>	<5.0
Silver	1.5	ug/l	<1.0	<1.0
Sodium	NS	ug/l	3700000	5300000
Strontium	NS	ug/l	2500	3700
Thallium	0.3	ug/l	<b>&lt;1.0</b>	<b>&lt;1.0</b>
Tin	NS	ug/l	<20	<20
Titanium	NS	ug/l	<20	<20
Uranium	8.5	ug/l	1.1	1.7
Vanadium	5	ug/l	<b>&lt;20</b>	<b>&lt;20</b>
Zinc	10	ug/l	<b>&lt;50</b>	<b>&lt;50</b>

**Notes:**

<sup>0</sup> Type: N=Normal Sample; FD=Field Duplicate

<sup>1</sup> Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water; Table 3 (Marine)

- :Not analyzed or not applicable

NS: No Standard

**BOLD** Reportable Detection Limit (RDL) exceeds the regulator

**EXCEEDS CRITERIA - NS-EQS (MARINE)**

		Sample Location	SW-9	SW9	SW-11
		Sample Date	7/13/2022	1/18/2023	7/14/2022
		BV Job Number		C321377	
		Type <sup>0</sup>	N	N	N
Parameter	NS-EQS <sup>1</sup> (Marine)	Unit			
Anion Sum	-	me/L	5.9	0.18	456
Bicarb. Alkalinity (calc. as CaCO <sub>3</sub> )	-	mg/L	<1.0	<1.0	97
Calculated TDS	-	mg/L	260	17	26000
Carb. Alkalinity (calc. as CaCO <sub>3</sub> )	-	mg/L	<1.0	<1.0	<1.0
Cation Sum	-	me/L	1.79	0.34	459
Hardness (CaCO <sub>3</sub> )	-	mg/L	20	5.3	4800
Ion Balance (% Difference)	-	%	53.5	30.8	0.39
Langelier Index (@ 20C)	-	N/A	NC	NC	0.262
Langelier Index (@ 4C)	-	N/A	NC	NC	0.024
Nitrate (N)	200	mg/L	<0.050	<0.050	<0.050
Saturation pH (@ 20C)	-	N/A	NC	NC	7.37
Saturation pH (@ 4C)	-	N/A	NC	NC	7.6
Total Alkalinity (Total as CaCO <sub>3</sub> )	-	mg/L	<2.0	<2.0	98
Dissolved Chloride (Cl <sup>-</sup> )	*	mg/L	<b>180</b>	6.5	15000
Colour	-	TCU	130	140	7.6
Nitrate + Nitrite (N)	-	mg/L	<0.050	<0.050	<0.050
Nitrite (N)	-	mg/L	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	***	mg/L	0.16	<0.050	<0.050
Total Organic Carbon (C)	-	mg/L	15	13	3.1
Orthophosphate (P)	-	mg/L	0.059	0.013	<0.010
pH	<b>7.0 - 8.7</b>	pH	<b>4.24</b>	<b>5.49</b>	7.63
Reactive Silica (SiO <sub>2</sub> )	-	mg/L	1.1	3	<0.50
Dissolved Sulphate (SO <sub>4</sub> )	-	mg/L	34	<2.0	2100
Total Cyanide (CN)	0.001	mg/L	<0.0050	-	-
Turbidity	**	NTU	1.5	1.3	0.93
Conductivity	-	uS/cm	750	37	45000

**Notes:**

<sup>0</sup> Type: N=Normal Sample; FD=Field Duplicate

<sup>1</sup> Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water; Table 3 (Marine)

- :Not analyzed or not applicable

NS: No Standard

**EXCEEDS CRITERIA - NS-EQS (MARINE)**

\*

No more than a 10% change in ambient sea water salinity (as NaCl).

\*\*

Clear flow

Maximum increase of 25 mg/L from background levels for any short-term exposure (e.g., 24-h period). Maximum average increase of 5 mg/L from background levels for longer term exposures (e.g., inputs lasting between 74 h and 30 d)

High flow

Maximum increase of 25 mg/L from background levels at any time when background levels are between 25 and 250 mg/L. Should not increase more than 10% of background levels when background is ≥ 250 mg/L.

\*\*\*

pH and temperature dependent; consult CCME fact sheet.

\*\*\*\*

pH, salinity and temperature dependent; consult BCMOE schedule.

Table 6: Porewater Analytical Results  
Freshwater - Metals

Parameter	NS-EQS <sup>1</sup> (Freshwater)	Unit	Sample Location		Sample Date		Sample Type <sup>0</sup>		
			PW-1	PW1	PW1	PW-2	PW2	PW-3	PW3
			7/13/2022	1/18/2023	1/18/2023	7/13/2022	1/18/2023	7/13/2022	1/18/2023
			N	N	FD	N	N	N	N
Aluminum	<b>5</b>	ug/l	<b>64000</b>	<b>60</b>	<b>60</b>	<b>170000</b>	<b>390</b>	<b>31000</b>	<b>32</b>
Antimony	<b>9</b>	ug/l	<b>16</b>	5.4	5.4	<b>24</b>	<1.0	<b>&lt;10</b>	<1.0
Arsenic	<b>5</b>	ug/l	<b>65000</b>	<b>29000</b>	<b>29000</b>	<b>19000</b>	<b>1800</b>	<b>13000</b>	<b>590</b>
Barium	<b>1000</b>	ug/l	<b>1700</b>	39	40	<b>1100</b>	6	170	27
Beryllium	<b>0.15</b>	ug/l	<b>14</b>	<0.10	<0.10	<b>11</b>	<0.10	<b>3.1</b>	<0.10
Bismuth	NS	ug/l	<20	<2.0	<2.0	<20	<2.0	<20	<2.0
Boron	1500	ug/l	<500	<50	<50	<500	<50	<500	<50
Cadmium	<b>0.09</b>	ug/l	<b>5.7</b>	<0.010	<0.010	<b>5.7</b>	<0.010	<b>1</b>	<b>0.17</b>
Calcium	NS	ug/l	86000	2900	3000	96000	2400	37000	34000
Chromium	<b>8.9</b>	ug/l	<b>160</b>	<1.0	<1.0	<b>230</b>	1.1	<b>90</b>	<1.0
Cobalt	<b>1</b>	ug/l	<b>270</b>	<b>1.5</b>	<b>1.5</b>	<b>140</b>	<b>1.5</b>	<b>30</b>	<b>15</b>
Copper	<b>2</b>	ug/l	<b>38</b>	<0.50	<0.50	<b>360</b>	1.4	<b>78</b>	0.67
Iron	<b>300</b>	ug/l	<b>1100000</b>	<b>32000</b>	<b>32000</b>	<b>240000</b>	<b>15000</b>	<b>55000</b>	<b>1600</b>
Lead	<b>1</b>	ug/l	<b>760</b>	0.81	0.66	<b>1700</b>	0.99	<b>150</b>	<0.50
Magnesium	NS	ug/l	20000	1000	1100	69000	920	10000	4000
Manganese	<b>430</b>	ug/l	<b>14000</b>	210	210	<b>3500</b>	35	<b>2100</b>	<b>2600</b>
Mercury	<b>0.026</b>	ug/l	<b>14</b>	<b>0.035</b>	<b>0.033</b>	<b>0.16</b>	<0.013	<b>0.15</b>	<0.013
Molybdenum	73	ug/l	<20	2.5	2.6	<20	<2.0	<20	<2.0
Nickel	<b>25</b>	ug/l	<b>730</b>	3.7	4	<b>350</b>	5.5	<b>91</b>	4.1
Phosphorus	NS	ug/l	14000	<100	<100	40000	100	1900	<100
Potassium	NS	ug/l	27000	1500	1500	32000	460	5900	2700
Selenium	1	ug/l	<b>&lt;5.0</b>	<0.50	<0.50	<b>&lt;5.0</b>	<0.50	<b>&lt;5.0</b>	<0.50
Silver	<b>0.25</b>	ug/l	<b>&lt;1.0</b>	<0.10	<0.10	<b>1.9</b>	<0.10	<b>&lt;1.0</b>	<0.10
Sodium	NS	ug/l	15000	6300	6300	12000	4200	5500	5800
Strontium	21000	ug/l	560	30	30	890	26	260	230
Thallium	<b>0.8</b>	ug/l	<b>1.1</b>	<0.10	<0.10	<b>3.1</b>	<0.10	<b>&lt;1.0</b>	<0.10
Tin	NS	ug/l	40	<2.0	<2.0	<20	<2.0	<20	<2.0
Titanium	NS	ug/l	1200	2.9	2.8	4300	8.7	1600	<2.0
Uranium	15	ug/l	1.9	<0.10	<0.10	3	0.11	3.2	<0.10
Vanadium	<b>120</b>	ug/l	110	<2.0	<2.0	<b>220</b>	<2.0	54	<2.0
Zinc	<b>7</b>	ug/l	<b>10000</b>	<5.0	5.6	<b>1100</b>	5.9	<b>290</b>	<b>13</b>

**Notes:**<sup>0</sup> Type: N=Normal Sample; FD=Field Duplicate<sup>1</sup> Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water; Table 3 (Freshwater)

- :Not analyzed or not applicable

NS: No Standard

**BOLD** Reportable Detection Limit (RDL) exceeds the regulatory standard**EXCEEDS CRITERIA - NS-EQS (FRESHWATER)**

Parameter	NS-EQS <sup>1</sup> (Freshwater)	Unit	Sample Location
			PW-1
			Sample Date
			7/13/2022
			Type <sup>0</sup>
			N
Anion Sum	-	me/L	0.99
Bicarb. Alkalinity (calc. as CaCO3)	-	mg/L	33
Calculated TDS	-	mg/L	1300
Carb. Alkalinity (calc. as CaCO3)	-	mg/L	<1.0
Cation Sum	-	me/L	46
Hardness (CaCO3)	-	mg/L	300
Ion Balance (% Difference)	-	%	95.8
Langelier Index (@ 20C)	-	N/A	-1.81
Langelier Index (@ 4C)	-	N/A	-2.05
Nitrate (N)	13	mg/L	<0.050
Saturation pH (@ 20C)	-	N/A	8.13
Saturation pH (@ 4C)	-	N/A	8.37
Total Alkalinity (Total as CaCO3)	-	mg/L	33
Dissolved Chloride (Cl-)	120	mg/L	8
Colour	-	TCU	200
Nitrate + Nitrite (N)	-	mg/L	<0.050
Nitrite (N)	0.06	mg/L	<0.010
Nitrogen (Ammonia Nitrogen)	****	mg/L	<0.50
Total Organic Carbon (C)	-	mg/L	170
Orthophosphate (P)	-	mg/L	0.48
pH	<b>6.5 - 9.0</b>	pH	<b>6.32</b>
Reactive Silica (SiO2)	-	mg/L	30
Dissolved Sulphate (SO4)	128	mg/L	3
Total Cyanide (CN)	0.005	mg/L	-
Turbidity	**	NTU	>1000
Conductivity	-	uS/cm	110

**Notes:**

<sup>0</sup> Type: N=Normal Sample; FD=Field Duplicate

<sup>1</sup> Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water; Table 3 (Freshwater)

- :Not analyzed or not applicable

NS: No Standard

**EXCEEDS CRITERIA - NS-EQS (FRESHWATER)**

\*

No more than a 10% change in ambient sea water salinity (as NaCl).

\*\*

Clear flow

Maximum increase of 25 mg/L from background levels for any short-term exposure (e.g., 24-h period). Maximum average increase of 5 mg/L from background levels for longer term exposures (e.g., inputs lasting between 24 h and 30 d)

High flow

Maximum increase of 25 mg/L from background levels at any time when background levels are between 25 and 250 mg/L. Should not increase more than 10% of background levels when background is ≥ 250 mg/L.

\*\*\*

pH and temperature dependent; consult CCME fact sheet.

\*\*\*\*

pH, salinity and temperature dependent; consult BCMOE schedule.

		Sample Location	PW-4	PW-4	PW4	PW-5
		Sample Date	7/13/2022	7/13/2022	1/18/2023	7/14/2022
		Type <sup>0</sup>	N	FD	N	N
Parameter	NS-EQS <sup>1</sup> (Marine)	Unit				
Aluminum	NS	ug/l	21000	22000	170	40000
Antimony	250	ug/l	<10	<10	2.6	<10
Arsenic	<b>12.5</b>	ug/l	<b>6300</b>	<b>6400</b>	<b>150</b>	<b>49</b>
Barium	500	ug/l	110	110	41	120
Beryllium	100	ug/l	1.1	1.3	<0.10	1.7
Bismuth	NS	ug/l	<20	<20	<2.0	<20
Boron	<b>1200</b>	ug/l	<b>3000</b>	<b>3100</b>	73	<500
Cadmium	<b>0.12</b>	ug/l	<b>1.1</b>	<b>1.1</b>	<0.010	<b>0.19</b>
Calcium	NS	ug/l	270000	280000	3800	27000
Chromium	<b>56</b>	ug/l	41	42	<1.0	<b>59</b>
Cobalt	<b>4</b>	ug/l	<b>63</b>	<b>64</b>	<b>5.9</b>	<b>17</b>
Copper	<b>2</b>	ug/l	<b>56</b>	<b>61</b>	<b>2.8</b>	<b>61</b>
Iron	NS	ug/l	71000	74000	1600	42000
Lead	<b>2</b>	ug/l	<b>200</b>	<b>200</b>	<b>3.4</b>	<b>53</b>
Magnesium	NS	ug/l	800000	820000	9000	79000
Manganese	NS	ug/l	5000	5000	1200	720
Mercury	<b>0.016</b>	ug/l	<b>0.63</b>	<b>0.36</b>	<0.013	<b>0.048</b>
Molybdenum	1000	ug/l	<20	<20	<2.0	21
Nickel	<b>8.3</b>	ug/l	<b>61</b>	<b>63</b>	4.5	<b>56</b>
Phosphorus	NS	ug/l	2400	2500	<100	2300
Potassium	NS	ug/l	260000	260000	5500	25000
Selenium	2	ug/l	<b>&lt;5.0</b>	<b>&lt;5.0</b>	<0.50	<b>&lt;5.0</b>
Silver	1.5	ug/l	<1.0	<1.0	<0.10	<1.0
Sodium	NS	ug/l	6700000	6800000	130000	580000
Strontium	NS	ug/l	5100	5200	48	450
Thallium	<b>0.3</b>	ug/l	<b>1.6</b>	<b>1.8</b>	<0.10	<b>&lt;1.0</b>
Tin	NS	ug/l	<20	<20	<2.0	<20
Titanium	NS	ug/l	550	540	2.6	1600
Uranium	<b>8.5</b>	ug/l	<b>11</b>	<b>11</b>	0.11	3.3
Vanadium	<b>5</b>	ug/l	<b>43</b>	<b>46</b>	<2.0	<b>46</b>
Zinc	<b>10</b>	ug/l	<b>230</b>	<b>210</b>	8.9	<b>120</b>

**Notes:**<sup>0</sup> Type: N=Normal Sample; FD=Field Duplicate<sup>1</sup> Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water; Table 3 (Marine)

- :Not analyzed or not applicable

NS: No Standard

**BOLD** Reportable Detection Limit (RDL) exceeds the regulatory standard**EXCEEDS CRITERIA - NS-EQS (MARINE)**

Parameter	NS-EQS <sup>1</sup> (Marine)	Unit	Sample Location	PW-1	PW-4	PW4	PW-5
			Sample Date	7/13/2022	7/13/2022	1/18/2023	7/14/2022
			Type <sup>0</sup>	N	N	N	N
Anion Sum	-	me/L		0.99	373	5.93	8.6
Bicarb. Alkalinity (calc. as CaCO3)	-	mg/L		33	72	17	<1.0
Calculated TDS	-	mg/L		1300	22000	370	1100
Carb. Alkalinity (calc. as CaCO3)	-	mg/L		<1.0	<1.0	<1.0	<1.0
Cation Sum	-	me/L		46	381	6.65	35.3
Hardness (CaCO3)	-	mg/L		300	4000	47	400
Ion Balance (% Difference)	-	%		95.8	1.08	5.72	60.8
Langelier Index (@ 20C)	-	N/A		-1.81	-0.116	-2.94	NC
Langelier Index (@ 4C)	-	N/A		-2.05	-0.353	-3.18	NC
Nitrate (N)	200	mg/L		<0.050	<0.050	<0.050	<0.050
Saturation pH (@ 20C)	-	N/A		8.13	7.6	9.64	NC
Saturation pH (@ 4C)	-	N/A		8.37	7.84	9.89	NC
Total Alkalinity (Total as CaCO3)	-	mg/L		33	72	17	<2.0
Dissolved Chloride (Cl-)	*	mg/L		8	12000	170	280
Colour	-	TCU		200	12	73	<5.0
Nitrate + Nitrite (N)	-	mg/L		<0.050	<0.050	<0.050	<0.050
Nitrite (N)	-	mg/L		<0.010	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	***	mg/L		<0.50	0.064	0.057	<0.050
Total Organic Carbon (C)	-	mg/L		170	18	27 (2)	16
Orthophosphate (P)	-	mg/L		0.48	0.02	0.021	<0.010
pH	<b>7.0 - 8.7</b>	pH		<b>6.32</b>	7.48	<b>6.7</b>	<b>5.1</b>
Reactive Silica (SiO2)	-	mg/L		30	2.4	4.9	3.5
Dissolved Sulphate (SO4)	-	mg/L		3	1700	39	33
Total Cyanide (CN)	0.001	mg/L		-	-	-	-
Turbidity	**	NTU		>1000	250	<b>29</b>	960
Conductivity	-	uS/cm		110	37000	780	1100

**Notes:**

<sup>0</sup> Type: N=Normal Sample; FD=Field Duplicate

<sup>1</sup> Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water; Table 3 (Marine)

- :Not analyzed or not applicable

NS: No Standard

**EXCEEDS CRITERIA - NS-EQS (MARINE)**

\*

No more than a 10% change in ambient sea water salinity (as NaCl).

\*\*

Clear flow

Maximum increase of 25 mg/L from background levels for any short-term exposure (e.g., 24-h period). Maximum average increase of 5 mg/L from background levels for longer term exposures (e.g., inputs lasting between 24 h and 30 d)

High flow

Maximum increase of 25 mg/L from background levels at any time when background levels are between 25 and 250 mg/L. Should not increase more than 10% of background levels when background is ≥ 250 mg/L.

\*\*\*

pH and temperature dependent; consult CCME fact sheet.

\*\*\*\*

pH, salinity and temperature dependent; consult BCMOE schedule.

Table 7: Sediment Analytical Results  
Freshwater - Metals

Parameter	NS-EQS (T2)/SED <sup>1</sup> (Freshwater)	Units	Sample Location	Sample Date	Sample Date	Sample Date	Sample Date	Sample Date	Sample Date	Sample Date
			SED-1	SED-1	SEDDUP1	SED-2	SED-2	SED-3	SED-3	SED-4
			7/13/2022	1/18/2023	1/18/2023	7/13/2022	1/18/2023	7/13/2022	1/18/2023	7/13/2022
Type <sup>0</sup>										
Aluminum	NS	mg/kg	14000	4400	5600	15000	12000	6900	16000	5000
Antimony	<b>25</b>	mg/kg	2.2	4.7	4	2.3	3.1	<b>34</b>	<2.0	15
Arsenic	<b>17</b>	mg/kg	<b>40000</b>	<b>160000</b>	<b>140000</b>	<b>5000</b>	<b>6700</b>	<b>57000</b>	<b>3800</b>	<b>32000</b>
Barium	NS	mg/kg	120	410	270	100	75	54	53	40
Beryllium	NS	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bismuth	NS	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.8	<2.0	<2.0
Boron	NS	mg/kg	<50	<50	<50	<50	<50	<50	<50	<50
Cadmium	3.5	mg/kg	<0.30	<0.30	<0.30	<0.30	<0.30	0.58	<0.30	<0.30
Chromium	90	mg/kg	23	7.6	9.2	23	21	12	26	12
Cobalt	NS	mg/kg	5.8	3.4	3.3	3.7	3.5	55	2.4	1.2
Copper	197	mg/kg	23	15	15	25	19	52	16	9.6
Iron	<b>43766</b>	mg/kg	<b>87000</b>	<b>230000</b>	<b>210000</b>	<b>45000</b>	43000	<b>62000</b>	36000	42000
Lead	<b>91.3</b>	mg/kg	37	14	13	73	60	86	53	<b>110</b>
Lithium	NS	mg/kg	26	8.1	11	23	21	13	23	7.9
Manganese	<b>1100</b>	mg/kg	350	280	290	280	370	170	260	110
Mercury	<b>0.486</b>	mg/kg	<b>2.8</b>	<b>0.83</b>	<b>0.8</b>	<b>6.7</b>	<b>4.3</b>	<b>68</b>	<b>7.9</b>	<b>7.4</b>
Molybdenum	NS	mg/kg	<2.0	3.6	2.9	<2.0	<2.0	2.1	<2.0	<2.0
Nickel	<b>75</b>	mg/kg	18	8.3	8.9	14	13	<b>91</b>	12	4.6
Rubidium	NS	mg/kg	45	14	20	28	23	21	19	16
Selenium	2	mg/kg	<0.50	<0.50	<0.50	0.71	0.58	0.9	0.93	<0.50
Silver	<b>0.5</b>	mg/kg	<0.50	<0.50	<0.50	<b>1.4</b>	<b>1</b>	<b>4</b>	<b>3.1</b>	<b>0.67</b>
Strontium	NS	mg/kg	20	47	76	16	20	11	14	5.1
Thallium	NS	mg/kg	0.37	0.18	0.21	0.29	0.24	0.26	0.17	0.22
Tin	NS	mg/kg	<1.0	<1.0	<1.0	1.7	1.2	<1.0	2	<1.0
Uranium	NS	mg/kg	0.26	0.15	0.15	0.47	0.49	0.26	0.61	0.2
Vanadium	NS	mg/kg	24	8.1	9.9	26	22	12	24	12
Zinc	<b>315</b>	mg/kg	65	44	51	62	58	51	51	17

**Notes:**<sup>0</sup> Type: N=Normal Sample; FD=Field Duplicate<sup>1</sup> Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Sediment (freshwater); Table 2

yyyy/mm/dd: year/month/day

mg/kg: milligrams per kilogram

&lt; :Denotes concentration less than indicated detection limit

- :Not analyzed or not applicable

NS: No Standard

**BOLD** Reportable Detection Limit (RDL) exceeds the regulatory standard**EXCEEDS CRITERIA - NS-EQS (FRESHWATER)**

Table 7: Sediment Analytical Results  
Freshwater - Metals

Parameter	NS-EQS (T2)/SED <sup>1</sup> (Freshwater)	Units	Sample Location	Sample Date	Sample Date	Sample Date	Sample Date	Sample Date	Sample Date	Sample Date
			SED-4	SED-5	SED-5	SED-5	SED-6	SED-6	SED-7	SED-7
			1/16/2023	7/13/2022	7/13/2022	1/16/2023	7/13/2022	1/16/2023	7/13/2022	1/16/2023
Type <sup>0</sup>										
Aluminum	NS	mg/kg	5800	7600	7700	5000	5500	7000	8400	8300
Antimony	<b>25</b>	mg/kg	<b>28</b>	<2.0	2	<2.0	<2.0	<2.0	3.4	<2.0
Arsenic	<b>17</b>	mg/kg	<b>43000</b>	<b>1600</b>	<b>1800</b>	<b>550</b>	<b>1200</b>	<b>74</b>	<b>40000</b>	<b>4700</b>
Barium	NS	mg/kg	52	44	48	76	41	32	98	29
Beryllium	NS	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bismuth	NS	mg/kg	2.2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Boron	NS	mg/kg	<50	<50	<50	<50	<50	<50	<50	<50
Cadmium	3.5	mg/kg	0.4	0.44	0.42	0.34	0.34	<0.30	<0.30	<0.30
Chromium	90	mg/kg	14	11	11	8.1	8	12	10	13
Cobalt	NS	mg/kg	2	7.7	8.5	19	11	4.4	6.4	2.2
Copper	197	mg/kg	12	22	21	19	16	8.3	7.1	8.7
Iron	<b>43766</b>	mg/kg	<b>54000</b>	17000	17000	16000	12000	12000	<b>100000</b>	32000
Lead	<b>91.3</b>	mg/kg	<b>270</b>	24	22	18	20	3.7	73	45
Lithium	NS	mg/kg	11	12	12	7.8	6.6	15	6.8	7.9
Manganese	<b>1100</b>	mg/kg	130	600	730	<b>2700</b>	450	220	1000	120
Mercury	<b>0.486</b>	mg/kg	<b>12</b>	<b>&lt;1.0</b>	0.26	0.13	<b>&lt;10</b>	<0.10	<b>&lt;10</b>	<b>4</b>
Molybdenum	NS	mg/kg	2.1	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Nickel	<b>75</b>	mg/kg	9.7	19	21	25	19	11	8	8.4
Rubidium	NS	mg/kg	19	12	13	8.8	5.5	15	10	9.1
Selenium	2	mg/kg	0.64	0.74	0.66	0.58	0.55	<0.50	1.5	1.6
Silver	<b>0.5</b>	mg/kg	<b>0.75</b>	<0.50	<0.50	<0.50	<0.50	<0.50	<b>0.56</b>	<0.50
Strontium	NS	mg/kg	<5.0	40	38	69	42	<5.0	12	10
Thallium	NS	mg/kg	0.26	0.2	0.18	0.19	0.14	0.1	0.19	<0.10
Tin	NS	mg/kg	11	<1.0	<1.0	<1.0	<1.0	<1.0	1.3	1.5
Uranium	NS	mg/kg	0.42	0.66	0.7	0.44	0.64	0.5	0.37	0.49
Vanadium	NS	mg/kg	15	16	17	10	13	14	21	22
Zinc	<b>315</b>	mg/kg	27	91	85	76	130	23	21	20

**Notes:**  
<sup>0</sup> Type: N=Normal Sample; FD=Field Duplicate  
<sup>1</sup> Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Sediment (freshwater); Table 2  
 yyyy/mm/dd: year/month/day  
 mg/kg: milligrams per kilogram  
 < :Denotes concentration less than indicated detection limit  
 - :Not analyzed or not applicable  
 NS: No Standard  
**BOLD** Reportable Detection Limit (RDL) exceeds the regulatory standard  
**EXCEEDS CRITERIA - NS-EQS (FRESHWATER)**

Table 7: Sediment Analytical Results  
Freshwater - Metals

Parameter	NS-EQS (T2)/SED <sup>1</sup> (Freshwater)	Units	Sample Location	SED-8	SED-8	SEDDUP2	SED-10	SED-10	SED 18	SED 18	SED 19
			Sample Date	7/13/2022	1/18/2023	1/18/2023	7/13/2022	1/18/2023	7/14/2022	1/18/2023	7/14/2022
			Type <sup>0</sup>	N			N		N		N
Aluminum	NS	mg/kg		9900	14000	19000	8000	11000	8700	9200	20000
Antimony	<b>25</b>	mg/kg		<2.0	4.9	3.1	<2.0	<2.0	<2.0	<2.0	<2.0
Arsenic	<b>17</b>	mg/kg		<b>16000</b>	<b>31000</b>	<b>10000</b>	<b>210</b>	<b>2300</b>	<b>520</b>	<b>270</b>	<b>520</b>
Barium	NS	mg/kg		85	120	100	9.5	19	9.6	8.6	83
Beryllium	NS	mg/kg		1.4	2.4	1.8	<1.0	<1.0	<1.0	<1.0	<1.0
Bismuth	NS	mg/kg		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Boron	NS	mg/kg		<50	<50	<50	<50	<50	<50	<50	<50
Cadmium	3.5	mg/kg		0.44	2.7	1.2	<0.30	<0.30	<0.30	<0.30	<0.30
Chromium	90	mg/kg		19	18	26	12	16	13	14	27
Cobalt	NS	mg/kg		15	43	49	3.4	52	5.2	4.2	2.1
Copper	197	mg/kg		31	47	45	8.6	9.5	25	8.9	14
Iron	<b>43766</b>	mg/kg		<b>110000</b>	<b>180000</b>	<b>96000</b>	16000	34000	17000	19000	31000
Lead	<b>91.3</b>	mg/kg		56	56	<b>100</b>	16	65	37	9.8	25
Lithium	NS	mg/kg		14	12	21	15	18	16	19	36
Manganese	<b>1100</b>	mg/kg		1000	<b>1700</b>	<b>1900</b>	290	<b>5200</b>	190	280	450
Mercury	<b>0.486</b>	mg/kg		<b>&lt;10</b>	0.27	0.45	0.27	<b>0.52</b>	0.23	0.18	<b>2.7</b>
Molybdenum	NS	mg/kg		<2.0	7.6	2.7	<2.0	<2.0	<2.0	<2.0	<2.0
Nickel	<b>75</b>	mg/kg		22	33	39	11	16	15	14	14
Rubidium	NS	mg/kg		17	12	18	6.1	6.2	7.8	7.5	44
Selenium	2	mg/kg		0.58	1.6	1.3	<0.50	0.51	<0.50	<0.50	<0.50
Silver	<b>0.5</b>	mg/kg		<b>2.7</b>	<b>0.99</b>	<b>1.2</b>	<0.50	<0.50	<0.50	<0.50	<0.50
Strontium	NS	mg/kg		47	67	38	8.6	14	10	8.2	16
Thallium	NS	mg/kg		0.24	0.39	0.37	<0.10	0.28	<0.10	<0.10	0.3
Tin	NS	mg/kg		<1.0	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0
Uranium	NS	mg/kg		2.5	2.5	2.6	0.38	0.54	0.91	0.48	0.63
Vanadium	NS	mg/kg		28	83	43	8.8	17	9.8	10	31
Zinc	<b>315</b>	mg/kg		140	300	<b>370</b>	40	51	70	45	71

**Notes:**<sup>0</sup> Type: N=Normal Sample; FD=Field Duplicate<sup>1</sup> Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Sediment (freshwater); Table 2

yyyy/mm/dd: year/month/day

mg/kg: milligrams per kilogram

&lt; :Denotes concentration less than indicated detection limit

- :Not analyzed or not applicable

NS: No Standard

**BOLD** Reportable Detection Limit (RDL) exceeds the regulatory standard**EXCEEDS CRITERIA - NS-EQS (FRESHWATER)**

Parameter	NS-EQS (T2)/SED <sup>1</sup> (Freshwater)	Units	Sample Location	Sample Date	Sample Type <sup>0</sup>	Sample Date
			SED 19	SED-20	SED-20	SED 20
			1/18/2023	7/14/2022	7/14/2022	1/16/2023
				N	FD	N
Aluminum	NS	mg/kg	22000	8100	8500	8200
Antimony	<b>25</b>	mg/kg	<2.0	<2.0	<2.0	<2.0
Arsenic	<b>17</b>	mg/kg	<b>1200</b>	<b>410</b>	<b>500</b>	<b>1300</b>
Barium	NS	mg/kg	97	20	22	32
Beryllium	NS	mg/kg	<1.0	<1.0	<1.0	<1.0
Bismuth	NS	mg/kg	<2.0	<2.0	<2.0	<2.0
Boron	NS	mg/kg	<50	<50	<50	<50
Cadmium	3.5	mg/kg	<0.30	<0.30	<0.30	<0.30
Chromium	90	mg/kg	30	12	13	13
Cobalt	NS	mg/kg	2.7	4.4	4.8	5
Copper	197	mg/kg	15	13	13	7.9
Iron	<b>43766</b>	mg/kg	41000	16000	18000	23000
Lead	<b>91.3</b>	mg/kg	48	11	12	16
Lithium	NS	mg/kg	42	15	15	16
Manganese	<b>1100</b>	mg/kg	500	230	280	220
Mercury	<b>0.486</b>	mg/kg	<b>2.9</b>	0.15	0.17	0.44
Molybdenum	NS	mg/kg	<2.0	<2.0	<2.0	<2.0
Nickel	<b>75</b>	mg/kg	17	12	12	12
Rubidium	NS	mg/kg	47	10	11	12
Selenium	2	mg/kg	<0.50	<0.50	<0.50	0.81
Silver	<b>0.5</b>	mg/kg	<0.50	<0.50	<0.50	<0.50
Strontium	NS	mg/kg	17	5.3	5.2	13
Thallium	NS	mg/kg	0.37	<0.10	<0.10	<0.10
Tin	NS	mg/kg	<1.0	<1.0	<1.0	<1.0
Uranium	NS	mg/kg	0.76	0.41	0.39	0.41
Vanadium	NS	mg/kg	38	14	15	16
Zinc	<b>315</b>	mg/kg	71	28	27	28

**Notes:**<sup>0</sup> Type: N=Normal Sample; FD=Field Duplicate<sup>1</sup> Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Sediment (freshwater); Table 2

yyyy/mm/dd: year/month/day

mg/kg: milligrams per kilogram

&lt; :Denotes concentration less than indicated detection limit

- :Not analyzed or not applicable

NS: No Standard

**BOLD** Reportable Detection Limit (RDL) exceeds the regulatory standard**EXCEEDS CRITERIA - NS-EQS (FRESHWATER)**

Table 7: Sediment Analytical Results

Marine - Metals

Parameter	NS-EQS (T2)/SED <sup>1</sup> (Marine)	Units	Sample Location	SED-9	SED-11	SED-12	SED-12	SED-13	SED-13	SED-14	SED14
			Sample Date	7/13/2022	7/14/2022	7/14/2022	1/18/2023	7/14/2022	1/18/2023	7/14/2022	1/18/2023
			Type <sup>0</sup>	N	N	N	N	N	N	N	N
				Background Sample							
Aluminum	NS	mg/kg		8900	7900	7800	9000	7900	9100	8700	9500
Antimony	25	mg/kg		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Arsenic	<b>41.6</b>	mg/kg		<b>440</b>	11	<b>100</b>	<b>380</b>	<b>270</b>	<b>230</b>	<b>280</b>	<b>410</b>
Barium	130	mg/kg		18	12	19	12	12	11	15	13
Beryllium	NS	mg/kg		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bismuth	NS	mg/kg		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Boron	NS	mg/kg		<50	<50	<50	<50	<50	<50	<50	<50
Cadmium	4.2	mg/kg		<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Chromium	160	mg/kg		15	12	13	14	13	15	15	15
Cobalt	NS	mg/kg		9.5	4.4	5	6.4	4.9	5	5.1	5.7
Copper	108	mg/kg		12	4.6	6.5	21	14	15	14	14
Iron	NS	mg/kg		23000	16000	13000	19000	17000	18000	18000	20000
Lead	112	mg/kg		13	6.2	8.9	20	15	12	18	16
Lithium	NS	mg/kg		19	18	20	21	19	20	20	21
Manganese	NS	mg/kg		860	200	190	200	180	210	190	230
Mercury	0.7	mg/kg		<0.10	0.1	0.12	0.2	0.19	0.11	0.18	0.14
Molybdenum	NS	mg/kg		<2.0	2.2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Nickel	50	mg/kg		15	13	12	15	14	15	15	17
Rubidium	NS	mg/kg		12	6	10	9.3	9.4	9.7	10	11
Selenium	2	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver	2.2	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Strontium	NS	mg/kg		9.5	13	6.5	21	16	15	21	21
Thallium	NS	mg/kg		0.1	<0.10	<0.10	<0.10	<0.10	<0.10	0.1	0.11
Tin	48	mg/kg		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Uranium	NS	mg/kg		0.58	0.42	0.67	0.93	0.57	0.66	0.63	0.83
Vanadium	NS	mg/kg		13	14	15	15	13	13	15	14
Zinc	271	mg/kg		48	29	28	61	55	57	59	63

**Notes:**<sup>0</sup> Type: N=Normal Sample; FD=Field Duplicate<sup>1</sup> Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Sediment (marine water); Table 2

yyyy/mm/dd: year/month/day

mg/kg: milligrams per kilogram

&lt; :Denotes concentration less than indicated detection limit

- :Not analyzed or not applicable

NS: No Standard

**EXCEEDS CRITERIA - NS-EQS (MARINE)**

		Sample Location	SED15	SED16	SED17
		Sample Date	1/18/2023	1/18/2023	1/18/2023
		Type <sup>0</sup>	N	N	N
Parameter	NS-EQS (T2)/SED <sup>1</sup> (Marine)	Units			
Aluminum	NS	mg/kg	8600	9000	8900
Antimony	25	mg/kg	<2.0	<2.0	<2.0
Arsenic	<b>41.6</b>	mg/kg	<b>480</b>	<b>310</b>	<b>240</b>
Barium	130	mg/kg	14	13	12
Beryllium	NS	mg/kg	<1.0	<1.0	<1.0
Bismuth	NS	mg/kg	<2.0	<2.0	<2.0
Boron	NS	mg/kg	<50	<50	<50
Cadmium	4.2	mg/kg	<0.30	<0.30	<0.30
Chromium	160	mg/kg	14	15	15
Cobalt	NS	mg/kg	5.5	5.2	4.6
Copper	108	mg/kg	17	14	14
Iron	NS	mg/kg	19000	18000	18000
Lead	112	mg/kg	17	14	11
Lithium	NS	mg/kg	20	20	20
Manganese	NS	mg/kg	220	200	200
Mercury	0.7	mg/kg	0.17	0.14	0.13
Molybdenum	NS	mg/kg	<2.0	<2.0	<2.0
Nickel	50	mg/kg	15	16	15
Rubidium	NS	mg/kg	10	11	10
Selenium	2	mg/kg	<0.50	<0.50	<0.50
Silver	2.2	mg/kg	<0.50	<0.50	<0.50
Strontium	NS	mg/kg	30	18	18
Thallium	NS	mg/kg	<0.10	0.1	<0.10
Tin	48	mg/kg	<1.0	<1.0	<1.0
Uranium	NS	mg/kg	0.67	0.75	0.65
Vanadium	NS	mg/kg	14	14	13
Zinc	271	mg/kg	62	61	57

**Notes:**<sup>0</sup> Type: N=Normal Sample; FD=Field Duplicate<sup>1</sup> Nova Scotia Environment (NSE) Tier 1 Environmental Quality Standards (EQS) for Sediment (marine water); Table 2

yyyy/mm/dd: year/month/day

mg/kg: milligrams per kilogram

&lt; :Denotes concentration less than indicated detection limit

- :Not analyzed or not applicable

NS: No Standard

**EXCEEDS CRITERIA - NS-EQS (MARINE)**

# Appendix C. Laboratory Certificates of Analysis

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# Methyl Mercury Results

Flett Research Ltd.

440 DeSalabery Ave. Winnipeg, MB R2L 0Y7  
 Fax/Phone: (204) 657-2505

E-mail: flett@flettresearch.ca Webpage: http://www.flettresearch.ca

**CLIENT:** Bureau Veritas - Bedford: C2J3195

200 Bluewater Road, Suite 105  
 Bedford, NS B4B 1G9

**Date Received:** July 14, 2022

**Sampling Date:** July 7, 2022

**Date Issued:** July 29, 2022

**Matrix:** Sediment (dry)

**Transaction ID:** 1004

**PO/Contract No.:**

**Date Analysed:** July 27, 2022

**Analyst(s):** Xiang W.

**Analytical Method:** M10241: Methyl Mercury in Sediment by Distillation, Aqueous Ethylation, Purge and Trap, and CVAFS - Tekran 2700 Mercury Analyser (Version 1)

**Comments:** Prior to analysis, a subsample of each wet sediment sample was freeze dried. For sample SS22-13, duplicate subsamples of the wet sediment (DupA1 and Dup A2) were freeze dried and then analysed to determine variability caused by the subsampling procedure. For sample SS22-B38, duplicate analyses were done on subsamples of the same freeze dried sample (DupB1 and DupB2).

**Detection Limit:** The method detection limit (MDL) for this method is 0.04 ng/dry g. The MDL is the minimum concentration that can be reported with 99% confidence that the measured concentration exceeds zero and is based on the distillation of 50 mg of dry sample and the analysis of 1mL of a 13mL distillate.

For reporting purpose samples are flagged when the dry concentration is below the methods minimum level (ML= 0.15 ng/g).

As concentration rises above the MDL confidence that the analyte is present approaches 100% at and above the ML.

**Estimated Uncertainty:** Overall method uncertainty is expected to decrease as analyte concentration increases. When methyl mercury concentrations exceed the 0.2 ng/g the estimated uncertainty is ±26%. Method uncertainty is expressed at a 95% confidence level of (k=2).

Results authorized by **Dr. Robert J. Flett, Chief Scientist**

QUALITY DATA												
Blanks		Pg of CH <sub>3</sub> Hg in the Ethylation Blank	Mean Gross Peak Area	CH <sub>3</sub> Hg in the Ethylation Blank (ng/L)								
Ethylation blank (H <sub>2</sub> O+Reagents)		0.28	11.40	0.009	Volume of solution in EPA vial is 30mL							
Mean Eth. Blank (last 30 runs)		0.20										
Net Pg CH <sub>3</sub> Hg in the Method Blank (Eth. Blank subtracted)		Gross Peak Area	Equivalent CH <sub>3</sub> Hg in the Method Blank (ng/g) (Eth. Blank subtracted)	Use the Mass/Weight of all the samples in the batch								
Method Blank 1		0.01	11.76	0.012								
Method Blank 2		-0.02	10.48	-0.030								
Method Blank 3		0.02	12.15	0.024								
Mean Method Blank				0.002								
Mean Calibration Factor (area units / pg)		40.65 ± 4.1 %RSD										
Spike Recovery Matrix Spike (MS) and Matrix Spike Duplicate (MSD)		Sample ID (Details)	Sample Type	Gross Peak Area	Weight of Distillate added to the Ethylation EPA Vial (g)	Total Weight of Distillate (g)	Weight of Sample added to the distiller (g)	Percent Weight Lost on Drying (%LOD)	Dry Weight of Reference Material	% CH <sub>3</sub> Hg Recovery Used for Calculations	Net CH <sub>3</sub> Hg as Hg (ng/g)	CH <sub>3</sub> Hg Recovery (%)
		TDI564-03R (SS22-13)	MS1	2120.40	0.20	13.42	0.039	-	-	100%	89.63	87.1
			MS1D	2016.19	0.20	13.34	0.041	-	-	100%	80.09	87.2
		<b>Mean of Spike Recoveries</b>										<b>87.1</b>
QC Samples Reference Material (RM)		(beginning of run)		1090.59	0.502	13.351	0.02994	1.286	0.030	100%	23.9	100.1
		(end of run)		1089.63	0.500	13.351	0.02994	1.286	0.030	100%	24.0	100.4
		<b>Mean of RM Recoveries</b>									23.9	100.2
Alternate Source Standard (A.S.S.)		A.S.S.-Afls ID1301 (1000 ng/L)		1489.54						100%	909	90.9

LAB ID	Sampling Details	Sample ID	Date Sampled	Time Sampled	Sample Type	Gross Peak Area	Weight of Distillate added to EPA Vial (g)	Total Weight of the Distillate (g)	Weight of Dry Sample added to the distiller (g)	Percent Weight Lost on Drying (%LOD)	Wet Sample Weight by Calculation (g)	% CH <sub>3</sub> Hg Recovery Used for Calculations	Net CH <sub>3</sub> Hg as Hg in the sample (ng/g dry wt.)	Net CH <sub>3</sub> Hg as Hg in the sample (ng/g wet wt.)
							=Vpd	=VTd					[Ethylation & Method Blank subtracted] [Recovery corrected]	[Ethylation & Method Blank subtracted] [Recovery corrected]
110776	TDI564-03R	SS22-13	July 7, 2022		DupA1	157.94	0.200	13.132	0.04209	75.5	0.171	87.1%	<b>6.45</b>	<b>1.58</b>
110776	TDI564-03R	SS22-13 Sub-sampling duplicate	July 7, 2022		DupA2	141.19	0.205	13.278	0.04078	75.5	0.166	87.1%	<b>5.82</b>	<b>1.43</b>
110777	TDI565-03R	SS22-D21	July 7, 2022			322.40	0.202	13.168	0.03776	28.5	0.053	87.1%	<b>15.2</b>	<b>10.8</b>
110778	TDI566-03R	SS22-B38	July 7, 2022		DupB1	150.55	0.198	13.299	0.06246	42.6	0.109	87.1%	<b>4.22</b>	<b>2.42</b>
110778	TDI566-03R	SS22-B38	July 7, 2022		DupB2	141.63	0.206	13.234	0.06464	42.6	0.113	87.1%	<b>3.65</b>	<b>2.10</b>

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\* : See 'Comments' section above for discussion.

This test report shall not be reproduced, except in full, without written approval of the laboratory.  
 Note: Results relate only to the samples tested and as received.

Dup = Duplicate - two subsamples of the same sample carried through the analytical procedure in an identical manner.



ISO/IEC 17025:2017 Accredited with the Canadian Association of Laboratory Accreditation

M10241-1 Version: 03/2022



Your Project #: 60680068  
 Site Location: GOLDBROOK LAKE  
 Your C.O.C. #: N/A

**Attention: Rory McNeil**

AECOM Canada Ltd  
 1701 Hollis St  
 SH400  
 Halifax, NS  
 CANADA B3J 3M8

**Report Date: 2023/01/25**  
 Report #: R7484272  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**BUREAU VERITAS JOB #: C315417**

**Received: 2023/01/17, 09:20**

Sample Matrix: Ground Water  
 # Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Carbonate, Bicarbonate and Hydroxide	2	N/A	2023/01/24	N/A	SM 23 4500-CO2 D
Alkalinity	2	N/A	2023/01/23	ATL SOP 00142	SM 23 2320 B
Chloride	2	N/A	2023/01/23	ATL SOP 00014	SM 23 4500-Cl- E m
Colour	2	N/A	2023/01/23	ATL SOP 00020	SM 23 2120C m
Conductance - water	2	N/A	2023/01/23	ATL SOP 00004	SM 23 2510B m
Hardness (calculated as CaCO3)	2	N/A	2023/01/23	ATL SOP 00048	Auto Calc
Mercury - Dissolved (CVAA,LL)	5	2023/01/23	2023/01/24	ATL SOP 00026	EPA 245.1 R3 m
Metals Water Diss. MS (as rec'd)	5	N/A	2023/01/20	ATL SOP 00058	EPA 6020B R2 m
Ion Balance (% Difference)	2	N/A	2023/01/24	N/A	Auto Calc.
Anion and Cation Sum	2	N/A	2023/01/24	N/A	Auto Calc.
Nitrogen Ammonia - water	2	N/A	2023/01/23	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	2	N/A	2023/01/24	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite	2	N/A	2023/01/24	ATL SOP 00017	SM 23 4500-NO2- B m
Nitrogen - Nitrate (as N)	2	N/A	2023/01/24	ATL SOP 00018	ASTM D3867-16
pH (1)	2	N/A	2023/01/23	ATL SOP 00003	SM 23 4500-H+ B m
Phosphorus - ortho	2	N/A	2023/01/24	ATL SOP 00021	SM 23 4500-P E m
Sat. pH and Langelier Index (@ 20C)	2	N/A	2023/01/24	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 4C)	2	N/A	2023/01/24	ATL SOP 00049	Auto Calc.
Reactive Silica	2	N/A	2023/01/23	ATL SOP 00022	EPA 366.0 m
Sulphate	2	N/A	2023/01/23	ATL SOP 00023	ASTM D516-16 m
Total Dissolved Solids (TDS calc)	2	N/A	2023/01/24	N/A	Auto Calc.
Organic carbon - Total (TOC) (2)	2	N/A	2023/01/23	ATL SOP 00203	SM 23 5310B m
Turbidity	2	N/A	2023/01/23	ATL SOP 00011	EPA 180.1 R2 m

Sample Matrix: Sediment  
 # Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Metals Solids Acid Extr. ICPMS	1	2023/01/24	2023/01/24	ATL SOP 00058	EPA 6020B R2 m
Metals Solids Acid Extr. ICPMS	4	2023/01/24	2023/01/25	ATL SOP 00058	EPA 6020B R2 m



Your Project #: 60680068  
 Site Location: GOLDBROOK LAKE  
 Your C.O.C. #: N/A

**Attention: Rory McNeil**

AECOM Canada Ltd  
 1701 Hollis St  
 SH400  
 Halifax , NS  
 CANADA B3J 3M8

**Report Date: 2023/01/25**  
 Report #: R7484272  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**BUREAU VERITAS JOB #: C315417**

**Received: 2023/01/17, 09:20**

Sample Matrix: Surface Water  
 # Samples Received: 5

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Mercury - Total (CVAA,LL)	5	2023/01/23	2023/01/24	ATL SOP 00026	EPA 245.1 R3 m
Metals Water Total MS	2	2023/01/19	2023/01/21	ATL SOP 00058	EPA 6020B R2 m
Metals Water Total MS	3	2023/01/19	2023/01/23	ATL SOP 00058	EPA 6020B R2 m

**Remarks:**

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

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Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The APHA Standard Method requires pH to be analyzed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the APHA Standard Method holding time.

(2) TOC / DOC present in the sample should be considered as non-purgeable TOC / DOC.



Your Project #: 60680068  
Site Location: GOLDBROOK LAKE  
Your C.O.C. #: N/A

**Attention: Rory McNeil**

AECOM Canada Ltd  
1701 Hollis St  
SH400  
Halifax , NS  
CANADA B3J 3M8

**Report Date: 2023/01/25**  
Report #: R7484272  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**BUREAU VERITAS JOB #: C315417**

**Received: 2023/01/17, 09:20**

Encryption Key



Bureau Veritas  
25 Jan 2023 17:01:09

Please direct all questions regarding this Certificate of Analysis to:

Marie Muise, Key Account Specialist  
Email: Marie.MUISE@bureauveritas.com  
Phone# (902)420-0203 Ext:253

=====

This report has been generated and distributed using a secure automated process.

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BUREAU  
VERITAS

Bureau Veritas Job #: C315417  
Report Date: 2023/01/25

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBROOK LAKE  
Sampler Initials: DB

### RESULTS OF ANALYSES OF GROUND WATER

Bureau Veritas ID		UVE509			UVE511		
Sampling Date		2023/01/16			2023/01/16		
COC Number		N/A			N/A		
	UNITS	DUP 1	RDL	QC Batch	MW 23 A	RDL	QC Batch
<b>Calculated Parameters</b>							
Anion Sum	me/L	0.380	N/A	8455208	0.380	N/A	8455208
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	3.2	1.0	8455204	3.8	1.0	8455204
Calculated TDS	mg/L	30	1.0	8455213	30	1.0	8455213
Carb. Alkalinity (calc. as CaCO3)	mg/L	<1.0	1.0	8455204	<1.0	1.0	8455204
Cation Sum	me/L	0.480	N/A	8455208	0.460	N/A	8455208
Hardness (CaCO3)	mg/L	5.6	1.0	8455206	4.7	1.0	8455206
Ion Balance (% Difference)	%	11.6	N/A	8455207	9.52	N/A	8455207
Langelier Index (@ 20C)	N/A	-4.84		8455211	-4.70		8455211
Langelier Index (@ 4C)	N/A	-5.09		8455212	-4.95		8455212
Nitrate (N)	mg/L	<0.050	0.050	8455209	<0.050	0.050	8455209
Saturation pH (@ 20C)	N/A	10.7		8455211	10.7		8455211
Saturation pH (@ 4C)	N/A	10.9		8455212	11.0		8455212
<b>Inorganics</b>							
Total Alkalinity (Total as CaCO3)	mg/L	3.2	2.0	8463436	3.8	2.0	8463436
Dissolved Chloride (Cl-)	mg/L	8.1	1.0	8463461	8.0	1.0	8463461
Colour	TCU	<5.0	5.0	8463467	<5.0	5.0	8463467
Nitrate + Nitrite (N)	mg/L	<0.050	0.050	8463469	<0.050	0.050	8463469
Nitrite (N)	mg/L	<0.010	0.010	8463471	<0.010	0.010	8463471
Nitrogen (Ammonia Nitrogen)	mg/L	<0.050	0.050	8458828	<0.050	0.050	8458828
Total Organic Carbon (C)	mg/L	<5.0 (1)	5.0	8460841	5.0 (1)	5.0	8460841
Orthophosphate (P)	mg/L	<0.010	0.010	8463468	<0.010	0.010	8463468
pH	pH	5.84		8463434	6.03		8463434
Reactive Silica (SiO2)	mg/L	4.2	0.50	8463466	4.2	0.50	8463466
Dissolved Sulphate (SO4)	mg/L	4.2	2.0	8463465	3.9	2.0	8463465
Turbidity	NTU	560	1.0	8463478	50	0.10	8463484
Conductivity	uS/cm	42	1.0	8463432	43	1.0	8463432
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable (1) Elevated reporting limit due to turbidity.							



Bureau Veritas Job #: C315417  
 Report Date: 2023/01/25

AECOM Canada Ltd  
 Client Project #: 60680068  
 Site Location: GOLDBROOK LAKE  
 Sampler Initials: DB

**MERCURY BY COLD VAPOUR AA (GROUND WATER)**

Bureau Veritas ID		UVE509	UVE509	UVE510	UVE511	UVE512	UVE513		
Sampling Date		2023/01/16	2023/01/16	2023/01/16	2023/01/16	2023/01/16	2023/01/16		
COC Number		N/A	N/A	N/A	N/A	N/A	N/A		
	UNITS	DUP 1	DUP 1 Lab-Dup	MW22 A	MW 23 A	MW27 A	MW17-2	RDL	QC Batch
<b>Metals</b>									
Dissolved Mercury (Hg)	ug/L	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	0.013	8463506
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate									



BUREAU  
VERITAS

Bureau Veritas Job #: C315417  
Report Date: 2023/01/25

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBROOK LAKE  
Sampler Initials: DB

### ELEMENTS BY ICP/MS (GROUND WATER)

Bureau Veritas ID		UVE509	UVE510	UVE511	UVE512	UVE513		
Sampling Date		2023/01/16	2023/01/16	2023/01/16	2023/01/16	2023/01/16		
COC Number		N/A	N/A	N/A	N/A	N/A		
	UNITS	DUP 1	MW22 A	MW 23 A	MW27 A	MW17-2	RDL	QC Batch
<b>Metals</b>								
Dissolved Aluminum (Al)	ug/L	60	14	60	6.3	170	5.0	8460090
Dissolved Antimony (Sb)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8460090
Dissolved Arsenic (As)	ug/L	<1.0	110	<1.0	1.2	<1.0	1.0	8460090
Dissolved Barium (Ba)	ug/L	12	11	13	<1.0	14	1.0	8460090
Dissolved Beryllium (Be)	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	8460090
Dissolved Bismuth (Bi)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8460090
Dissolved Boron (B)	ug/L	<50	<50	<50	<50	<50	50	8460090
Dissolved Cadmium (Cd)	ug/L	0.023	<0.010	0.023	<0.010	0.026	0.010	8460090
Dissolved Calcium (Ca)	ug/L	1300	9000	970	<100	2400	100	8460090
Dissolved Chromium (Cr)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8460090
Dissolved Cobalt (Co)	ug/L	2.5	2.1	2.5	<0.40	0.63	0.40	8460090
Dissolved Copper (Cu)	ug/L	2.0	<0.50	4.1	<0.50	1.3	0.50	8460090
Dissolved Iron (Fe)	ug/L	4100	7200	4300	<50	<50	50	8460090
Dissolved Lead (Pb)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8460090
Dissolved Magnesium (Mg)	ug/L	580	2400	560	<100	440	100	8460090
Dissolved Manganese (Mn)	ug/L	170	250	170	<2.0	13	2.0	8460090
Dissolved Molybdenum (Mo)	ug/L	<2.0	<2.0	<2.0	2.0	<2.0	2.0	8460090
Dissolved Nickel (Ni)	ug/L	15	2.3	15	<2.0	<2.0	2.0	8460090
Dissolved Phosphorus (P)	ug/L	<100	110	<100	<100	<100	100	8460090
Dissolved Potassium (K)	ug/L	690	2000	700	430	780	100	8460090
Dissolved Selenium (Se)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8460090
Dissolved Silver (Ag)	ug/L	<0.10	<0.10	<0.10	<0.10	0.25	0.10	8460090
Dissolved Sodium (Na)	ug/L	4500	26000	4500	19000	4500	100	8460090
Dissolved Strontium (Sr)	ug/L	9.7	84	9.5	<2.0	24	2.0	8460090
Dissolved Thallium (Tl)	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	8460090
Dissolved Tin (Sn)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8460090
Dissolved Titanium (Ti)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8460090
Dissolved Uranium (U)	ug/L	<0.10	<0.10	<0.10	0.14	<0.10	0.10	8460090
Dissolved Vanadium (V)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8460090
Dissolved Zinc (Zn)	ug/L	24	<5.0	27	<5.0	5.8	5.0	8460090
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								



BUREAU  
VERITAS

Bureau Veritas Job #: C315417  
Report Date: 2023/01/25

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBROOK LAKE  
Sampler Initials: DB

### ELEMENTS BY ATOMIC SPECTROSCOPY (SEDIMENT)

Bureau Veritas ID		UVE519	UVE519		UVE520		UVE521		UVE522		
Sampling Date		2023/01/16	2023/01/16		2023/01/16		2023/01/16		2023/01/16		
COC Number		N/A	N/A		N/A		N/A		N/A		
	UNITS	SED 4	SED 4 Lab-Dup	RDL	SED 5	RDL	SED 6	RDL	SED 7	RDL	QC Batch

Metals											
Acid Extractable Aluminum (Al)	mg/kg	5800	5600	10	5000	10	7000	10	8300	10	8465451
Acid Extractable Antimony (Sb)	mg/kg	28	30	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	8465451
Acid Extractable Arsenic (As)	mg/kg	43000	47000	200	550	20	74	2.0	4700	20	8465451
Acid Extractable Barium (Ba)	mg/kg	52	43	5.0	76	5.0	32	5.0	29	5.0	8465451
Acid Extractable Beryllium (Be)	mg/kg	<1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	8465451
Acid Extractable Bismuth (Bi)	mg/kg	2.2	2.4	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	8465451
Acid Extractable Boron (B)	mg/kg	<50	<50	50	<50	50	<50	50	<50	50	8465451
Acid Extractable Cadmium (Cd)	mg/kg	0.40	0.43	0.30	0.34	0.30	<0.30	0.30	<0.30	0.30	8465451
Acid Extractable Chromium (Cr)	mg/kg	14	14	2.0	8.1	2.0	12	2.0	13	2.0	8465451
Acid Extractable Cobalt (Co)	mg/kg	2.0	1.9	1.0	19	1.0	4.4	1.0	2.2	1.0	8465451
Acid Extractable Copper (Cu)	mg/kg	12	14	2.0	19	2.0	8.3	2.0	8.7	2.0	8465451
Acid Extractable Iron (Fe)	mg/kg	54000	62000	50	16000	50	12000	50	32000	50	8465451
Acid Extractable Lead (Pb)	mg/kg	270	270	0.50	18	0.50	3.7	0.50	45	0.50	8465451
Acid Extractable Lithium (Li)	mg/kg	11	9.2	2.0	7.8	2.0	15	2.0	7.9	2.0	8465451
Acid Extractable Manganese (Mn)	mg/kg	130	140	2.0	2700	2.0	220	2.0	120	2.0	8465451
Acid Extractable Mercury (Hg)	mg/kg	12	9.1	0.10	0.13	0.10	<0.10	0.10	4.0	0.10	8465451
Acid Extractable Molybdenum (Mo)	mg/kg	2.1	3.4	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	8465451
Acid Extractable Nickel (Ni)	mg/kg	9.7	8.3	2.0	25	2.0	11	2.0	8.4	2.0	8465451
Acid Extractable Rubidium (Rb)	mg/kg	19	18	2.0	8.8	2.0	15	2.0	9.1	2.0	8465451
Acid Extractable Selenium (Se)	mg/kg	0.64	0.73	0.50	0.58	0.50	<0.50	0.50	1.6	0.50	8465451
Acid Extractable Silver (Ag)	mg/kg	0.75	0.81	0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	8465451
Acid Extractable Strontium (Sr)	mg/kg	<5.0	5.0	5.0	69	5.0	<5.0	5.0	10	5.0	8465451
Acid Extractable Thallium (Tl)	mg/kg	0.26	0.24	0.10	0.19	0.10	0.10	0.10	<0.10	0.10	8465451
Acid Extractable Tin (Sn)	mg/kg	11	10	1.0	<1.0	1.0	<1.0	1.0	1.5	1.0	8465451
Acid Extractable Uranium (U)	mg/kg	0.42	0.43	0.10	0.44	0.10	0.50	0.10	0.49	0.10	8465451
Acid Extractable Vanadium (V)	mg/kg	15	15	2.0	10	2.0	14	2.0	22	2.0	8465451
Acid Extractable Zinc (Zn)	mg/kg	27	29	5.0	76	5.0	23	5.0	20	5.0	8465451

RDL = Reportable Detection Limit  
QC Batch = Quality Control Batch  
Lab-Dup = Laboratory Initiated Duplicate



BUREAU  
VERITAS

Bureau Veritas Job #: C315417  
Report Date: 2023/01/25

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBROOK LAKE  
Sampler Initials: DB

### ELEMENTS BY ATOMIC SPECTROSCOPY (SEDIMENT)

Bureau Veritas ID		UVE524		
Sampling Date		2023/01/16		
COC Number		N/A		
	UNITS	SED 20	RDL	QC Batch
<b>Metals</b>				
Acid Extractable Aluminum (Al)	mg/kg	8200	10	8465451
Acid Extractable Antimony (Sb)	mg/kg	<2.0	2.0	8465451
Acid Extractable Arsenic (As)	mg/kg	1300	20	8465451
Acid Extractable Barium (Ba)	mg/kg	32	5.0	8465451
Acid Extractable Beryllium (Be)	mg/kg	<1.0	1.0	8465451
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	2.0	8465451
Acid Extractable Boron (B)	mg/kg	<50	50	8465451
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	0.30	8465451
Acid Extractable Chromium (Cr)	mg/kg	13	2.0	8465451
Acid Extractable Cobalt (Co)	mg/kg	5.0	1.0	8465451
Acid Extractable Copper (Cu)	mg/kg	7.9	2.0	8465451
Acid Extractable Iron (Fe)	mg/kg	23000	50	8465451
Acid Extractable Lead (Pb)	mg/kg	16	0.50	8465451
Acid Extractable Lithium (Li)	mg/kg	16	2.0	8465451
Acid Extractable Manganese (Mn)	mg/kg	220	2.0	8465451
Acid Extractable Mercury (Hg)	mg/kg	0.44	0.10	8465451
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	2.0	8465451
Acid Extractable Nickel (Ni)	mg/kg	12	2.0	8465451
Acid Extractable Rubidium (Rb)	mg/kg	12	2.0	8465451
Acid Extractable Selenium (Se)	mg/kg	0.81	0.50	8465451
Acid Extractable Silver (Ag)	mg/kg	<0.50	0.50	8465451
Acid Extractable Strontium (Sr)	mg/kg	13	5.0	8465451
Acid Extractable Thallium (Tl)	mg/kg	<0.10	0.10	8465451
Acid Extractable Tin (Sn)	mg/kg	<1.0	1.0	8465451
Acid Extractable Uranium (U)	mg/kg	0.41	0.10	8465451
Acid Extractable Vanadium (V)	mg/kg	16	2.0	8465451
Acid Extractable Zinc (Zn)	mg/kg	28	5.0	8465451
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				



Bureau Veritas Job #: C315417  
 Report Date: 2023/01/25

AECOM Canada Ltd  
 Client Project #: 60680068  
 Site Location: GOLDBROOK LAKE  
 Sampler Initials: DB

**MERCURY BY COLD VAPOUR AA (SURFACE WATER)**

Bureau Veritas ID		UVE514	UVE515	UVE516	UVE517	UVE518		
Sampling Date		2023/01/16	2023/01/16	2023/01/16	2023/01/16	2023/01/16		
COC Number		N/A	N/A	N/A	N/A	N/A		
	UNITS	SW4	SW5	SW6	SW7	SW20	RDL	QC Batch
<b>Metals</b>								
Total Mercury (Hg)	ug/L	<0.013	<0.013	<0.013	<0.013	<0.013	0.013	8463509
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								



BUREAU  
VERITAS

Bureau Veritas Job #: C315417  
Report Date: 2023/01/25

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBROOK LAKE  
Sampler Initials: DB

### ELEMENTS BY ICP/MS (SURFACE WATER)

Bureau Veritas ID		UVE514				UVE515				UVE516			
Sampling Date		2023/01/16				2023/01/16				2023/01/16			
COC Number		N/A				N/A				N/A			
	UNITS	SW4	RDL	QC Batch	SW4 Lab-Dup	RDL	QC Batch	SW5	SW6	RDL	QC Batch		

Metals											
Total Aluminum (Al)	ug/L	350	5.0	8458122	350	5.0	8458122	130	120	5.0	8458122
Total Antimony (Sb)	ug/L	<1.0	1.0	8458122	<1.0	1.0	8458122	<1.0	<1.0	1.0	8458122
Total Arsenic (As)	ug/L	30	1.0	8458122	29	1.0	8458122	75	61	1.0	8458122
Total Barium (Ba)	ug/L	3.6	1.0	8458122	3.5	1.0	8458122	5.7	5.5	1.0	8458122
Total Beryllium (Be)	ug/L	<0.10	0.10	8458122	<0.10	0.10	8458122	<0.10	<0.10	0.10	8458122
Total Bismuth (Bi)	ug/L	<2.0	2.0	8458122	<2.0	2.0	8458122	<2.0	<2.0	2.0	8458122
Total Boron (B)	ug/L	<50	50	8458122	<50	50	8458122	<50	<50	50	8458122
Total Cadmium (Cd)	ug/L	0.016	0.010	8458122	0.018	0.010	8458122	0.016	0.015	0.010	8458122
Total Calcium (Ca)	ug/L	860	100	8467846				3800	3200	100	8467846
Total Chromium (Cr)	ug/L	<1.0	1.0	8458122	<1.0	1.0	8458122	<1.0	<1.0	1.0	8458122
Total Cobalt (Co)	ug/L	<0.40	0.40	8458122	<0.40	0.40	8458122	<0.40	<0.40	0.40	8458122
Total Copper (Cu)	ug/L	<0.50	0.50	8458122	<0.50	0.50	8458122	0.61	<0.50	0.50	8458122
Total Iron (Fe)	ug/L	480	50	8458122	460	50	8458122	280	310	50	8458122
Total Lead (Pb)	ug/L	0.61	0.50	8458122	0.58	0.50	8458122	<0.50	<0.50	0.50	8458122
Total Magnesium (Mg)	ug/L	520	100	8458122	500	100	8458122	830	820	100	8458122
Total Manganese (Mn)	ug/L	22	2.0	8458122	21	2.0	8458122	39	67	2.0	8458122
Total Molybdenum (Mo)	ug/L	<2.0	2.0	8458122	<2.0	2.0	8458122	<2.0	<2.0	2.0	8458122
Total Nickel (Ni)	ug/L	<2.0	2.0	8458122	<2.0	2.0	8458122	<2.0	<2.0	2.0	8458122
Total Phosphorus (P)	ug/L	<100	100	8458122	<100	100	8458122	<100	<100	100	8458122
Total Potassium (K)	ug/L	350	100	8458122	330	100	8458122	730	740	100	8458122
Total Selenium (Se)	ug/L	<0.50	0.50	8458122	<0.50	0.50	8458122	<0.50	<0.50	0.50	8458122
Total Silver (Ag)	ug/L	<0.10	0.10	8458122	<0.10	0.10	8458122	<0.10	<0.10	0.10	8458122
Total Sodium (Na)	ug/L	4000	100	8458122	3900	100	8458122	4200	4100	100	8458122
Total Strontium (Sr)	ug/L	8.4	2.0	8458122	8.3	2.0	8458122	20	19	2.0	8458122
Total Thallium (Tl)	ug/L	<0.10	0.10	8458122	<0.10	0.10	8458122	<0.10	<0.10	0.10	8458122
Total Tin (Sn)	ug/L	<2.0	2.0	8458122	<2.0	2.0	8458122	<2.0	<2.0	2.0	8458122
Total Titanium (Ti)	ug/L	7.4	2.0	8458122	6.1	2.0	8458122	3.4	<2.0	2.0	8458122
Total Uranium (U)	ug/L	<0.10	0.10	8458122	<0.10	0.10	8458122	<0.10	<0.10	0.10	8458122
Total Vanadium (V)	ug/L	<2.0	2.0	8458122	<2.0	2.0	8458122	<2.0	<2.0	2.0	8458122
Total Zinc (Zn)	ug/L	<5.0	5.0	8458122	<5.0	5.0	8458122	<5.0	7.3	5.0	8458122

RDL = Reportable Detection Limit  
 QC Batch = Quality Control Batch  
 Lab-Dup = Laboratory Initiated Duplicate



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### ELEMENTS BY ICP/MS (SURFACE WATER)

Bureau Veritas ID		UVE517	UVE518		
Sampling Date		2023/01/16	2023/01/16		
COC Number		N/A	N/A		
	UNITS	SW7	SW20	RDL	QC Batch
<b>Metals</b>					
Total Aluminum (Al)	ug/L	330	280	5.0	8458122
Total Antimony (Sb)	ug/L	<1.0	<1.0	1.0	8458122
Total Arsenic (As)	ug/L	39	51	1.0	8458122
Total Barium (Ba)	ug/L	3.1	3.3	1.0	8458122
Total Beryllium (Be)	ug/L	<0.10	<0.10	0.10	8458122
Total Bismuth (Bi)	ug/L	<2.0	<2.0	2.0	8458122
Total Boron (B)	ug/L	<50	<50	50	8458122
Total Cadmium (Cd)	ug/L	0.018	0.019	0.010	8458122
Total Calcium (Ca)	ug/L	630	840	100	8467846
Total Chromium (Cr)	ug/L	<1.0	<1.0	1.0	8458122
Total Cobalt (Co)	ug/L	<0.40	<0.40	0.40	8458122
Total Copper (Cu)	ug/L	<0.50	<0.50	0.50	8458122
Total Iron (Fe)	ug/L	520	530	50	8458122
Total Lead (Pb)	ug/L	0.70	0.52	0.50	8458122
Total Magnesium (Mg)	ug/L	490	520	100	8458122
Total Manganese (Mn)	ug/L	22	39	2.0	8458122
Total Molybdenum (Mo)	ug/L	<2.0	<2.0	2.0	8458122
Total Nickel (Ni)	ug/L	<2.0	<2.0	2.0	8458122
Total Phosphorus (P)	ug/L	<100	<100	100	8458122
Total Potassium (K)	ug/L	330	360	100	8458122
Total Selenium (Se)	ug/L	<0.50	<0.50	0.50	8458122
Total Silver (Ag)	ug/L	<0.10	<0.10	0.10	8458122
Total Sodium (Na)	ug/L	4000	4400	100	8458122
Total Strontium (Sr)	ug/L	7.4	7.9	2.0	8458122
Total Thallium (Tl)	ug/L	<0.10	<0.10	0.10	8458122
Total Tin (Sn)	ug/L	<2.0	<2.0	2.0	8458122
Total Titanium (Ti)	ug/L	6.0	5.7	2.0	8458122
Total Uranium (U)	ug/L	<0.10	<0.10	0.10	8458122
Total Vanadium (V)	ug/L	<2.0	<2.0	2.0	8458122
Total Zinc (Zn)	ug/L	<5.0	<5.0	5.0	8458122
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					



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### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	0.0°C
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Sample UVE509 [DUP 1] : RCap Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

Sample UVE511 [MW 23 A] : RCap Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

Sample UVE514, Metals Water Total MS: Test repeated.

Sample UVE515, Metals Water Total MS: Test repeated.

Sample UVE516, Metals Water Total MS: Test repeated.

Sample UVE517, Metals Water Total MS: Test repeated.

Sample UVE518, Metals Water Total MS: Test repeated.

**Results relate only to the items tested.**



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### QUALITY ASSURANCE REPORT

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8458122	JHY	Matrix Spike [UVE515-01]	Total Aluminum (Al)	2023/01/21		100	%	80 - 120
			Total Antimony (Sb)	2023/01/21		112	%	80 - 120
			Total Arsenic (As)	2023/01/21		96	%	80 - 120
			Total Barium (Ba)	2023/01/21		109	%	80 - 120
			Total Beryllium (Be)	2023/01/21		104	%	80 - 120
			Total Bismuth (Bi)	2023/01/21		103	%	80 - 120
			Total Boron (B)	2023/01/21		107	%	80 - 120
			Total Cadmium (Cd)	2023/01/21		98	%	80 - 120
			Total Chromium (Cr)	2023/01/21		101	%	80 - 120
			Total Cobalt (Co)	2023/01/21		98	%	80 - 120
			Total Copper (Cu)	2023/01/21		96	%	80 - 120
			Total Iron (Fe)	2023/01/21		106	%	80 - 120
			Total Lead (Pb)	2023/01/21		103	%	80 - 120
			Total Magnesium (Mg)	2023/01/21		104	%	80 - 120
			Total Manganese (Mn)	2023/01/21		102	%	80 - 120
			Total Molybdenum (Mo)	2023/01/21		111	%	80 - 120
			Total Nickel (Ni)	2023/01/21		98	%	80 - 120
			Total Phosphorus (P)	2023/01/21		107	%	80 - 120
			Total Potassium (K)	2023/01/21		103	%	80 - 120
			Total Selenium (Se)	2023/01/21		100	%	80 - 120
			Total Silver (Ag)	2023/01/21		104	%	80 - 120
			Total Sodium (Na)	2023/01/21		101	%	80 - 120
			Total Strontium (Sr)	2023/01/21		108	%	80 - 120
			Total Thallium (Tl)	2023/01/21		105	%	80 - 120
			Total Tin (Sn)	2023/01/21		108	%	80 - 120
			Total Titanium (Ti)	2023/01/21		102	%	80 - 120
			Total Uranium (U)	2023/01/21		110	%	80 - 120
			Total Vanadium (V)	2023/01/21		104	%	80 - 120
			Total Zinc (Zn)	2023/01/21		100	%	80 - 120
8458122	JHY	Spiked Blank	Total Aluminum (Al)	2023/01/21		97	%	80 - 120
			Total Antimony (Sb)	2023/01/21		104	%	80 - 120
			Total Arsenic (As)	2023/01/21		92	%	80 - 120
			Total Barium (Ba)	2023/01/21		105	%	80 - 120
			Total Beryllium (Be)	2023/01/21		98	%	80 - 120
			Total Bismuth (Bi)	2023/01/21		99	%	80 - 120
			Total Boron (B)	2023/01/21		102	%	80 - 120
			Total Cadmium (Cd)	2023/01/21		93	%	80 - 120
			Total Chromium (Cr)	2023/01/21		95	%	80 - 120
			Total Cobalt (Co)	2023/01/21		92	%	80 - 120
			Total Copper (Cu)	2023/01/21		91	%	80 - 120
			Total Iron (Fe)	2023/01/21		99	%	80 - 120
			Total Lead (Pb)	2023/01/21		99	%	80 - 120
			Total Magnesium (Mg)	2023/01/21		99	%	80 - 120
			Total Manganese (Mn)	2023/01/21		98	%	80 - 120
			Total Molybdenum (Mo)	2023/01/21		104	%	80 - 120
			Total Nickel (Ni)	2023/01/21		93	%	80 - 120
			Total Phosphorus (P)	2023/01/21		102	%	80 - 120
			Total Potassium (K)	2023/01/21		97	%	80 - 120
			Total Selenium (Se)	2023/01/21		95	%	80 - 120
Total Silver (Ag)	2023/01/21		99	%	80 - 120			
Total Sodium (Na)	2023/01/21		96	%	80 - 120			
Total Strontium (Sr)	2023/01/21		102	%	80 - 120			
Total Thallium (Tl)	2023/01/21		101	%	80 - 120			



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### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Tin (Sn)	2023/01/21		103	%	80 - 120
			Total Titanium (Ti)	2023/01/21		102	%	80 - 120
			Total Uranium (U)	2023/01/21		104	%	80 - 120
			Total Vanadium (V)	2023/01/21		98	%	80 - 120
			Total Zinc (Zn)	2023/01/21		95	%	80 - 120
8458122	JHY	Method Blank	Total Aluminum (Al)	2023/01/23	<5.0		ug/L	
			Total Antimony (Sb)	2023/01/23	<1.0		ug/L	
			Total Arsenic (As)	2023/01/23	<1.0		ug/L	
			Total Barium (Ba)	2023/01/23	<1.0		ug/L	
			Total Beryllium (Be)	2023/01/23	<0.10		ug/L	
			Total Bismuth (Bi)	2023/01/23	<2.0		ug/L	
			Total Boron (B)	2023/01/23	<50		ug/L	
			Total Cadmium (Cd)	2023/01/23	<0.010		ug/L	
			Total Chromium (Cr)	2023/01/23	<1.0		ug/L	
			Total Cobalt (Co)	2023/01/23	<0.40		ug/L	
			Total Copper (Cu)	2023/01/23	<0.50		ug/L	
			Total Iron (Fe)	2023/01/23	<50		ug/L	
			Total Lead (Pb)	2023/01/23	<0.50		ug/L	
			Total Magnesium (Mg)	2023/01/23	<100		ug/L	
			Total Manganese (Mn)	2023/01/23	<2.0		ug/L	
			Total Molybdenum (Mo)	2023/01/23	<2.0		ug/L	
			Total Nickel (Ni)	2023/01/23	<2.0		ug/L	
			Total Phosphorus (P)	2023/01/23	<100		ug/L	
			Total Potassium (K)	2023/01/23	<100		ug/L	
			Total Selenium (Se)	2023/01/23	<0.50		ug/L	
			Total Silver (Ag)	2023/01/23	<0.10		ug/L	
			Total Sodium (Na)	2023/01/23	<100		ug/L	
			Total Strontium (Sr)	2023/01/23	<2.0		ug/L	
			Total Thallium (Tl)	2023/01/23	<0.10		ug/L	
			Total Tin (Sn)	2023/01/23	<2.0		ug/L	
			Total Titanium (Ti)	2023/01/23	<2.0		ug/L	
			Total Uranium (U)	2023/01/23	<0.10		ug/L	
			Total Vanadium (V)	2023/01/23	<2.0		ug/L	
			Total Zinc (Zn)	2023/01/23	<5.0		ug/L	
8458122	JHY	RPD [UVE514-01]	Total Aluminum (Al)	2023/01/23	1.3		%	20
			Total Antimony (Sb)	2023/01/23	NC		%	20
			Total Arsenic (As)	2023/01/23	3.5		%	20
			Total Barium (Ba)	2023/01/23	4.0		%	20
			Total Beryllium (Be)	2023/01/23	NC		%	20
			Total Bismuth (Bi)	2023/01/23	NC		%	20
			Total Boron (B)	2023/01/23	NC		%	20
			Total Cadmium (Cd)	2023/01/23	12		%	20
			Total Chromium (Cr)	2023/01/23	NC		%	20
			Total Cobalt (Co)	2023/01/23	NC		%	20
			Total Copper (Cu)	2023/01/23	NC		%	20
			Total Iron (Fe)	2023/01/23	2.9		%	20
			Total Lead (Pb)	2023/01/23	5.7		%	20
			Total Magnesium (Mg)	2023/01/23	4.2		%	20
			Total Manganese (Mn)	2023/01/23	5.9		%	20
			Total Molybdenum (Mo)	2023/01/23	NC		%	20
			Total Nickel (Ni)	2023/01/23	NC		%	20
			Total Phosphorus (P)	2023/01/23	NC		%	20
			Total Potassium (K)	2023/01/23	5.1		%	20



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### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Selenium (Se)	2023/01/23	NC		%	20
			Total Silver (Ag)	2023/01/23	NC		%	20
			Total Sodium (Na)	2023/01/23	2.5		%	20
			Total Strontium (Sr)	2023/01/23	1.7		%	20
			Total Thallium (Tl)	2023/01/23	NC		%	20
			Total Tin (Sn)	2023/01/23	NC		%	20
			Total Titanium (Ti)	2023/01/23	20		%	20
			Total Uranium (U)	2023/01/23	NC		%	20
			Total Vanadium (V)	2023/01/23	NC		%	20
			Total Zinc (Zn)	2023/01/23	NC		%	20
8458828	TGO	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2023/01/23		91	%	80 - 120
8458828	TGO	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2023/01/23		100	%	80 - 120
8458828	TGO	Method Blank	Nitrogen (Ammonia Nitrogen)	2023/01/23	<0.050		mg/L	
8458828	TGO	RPD	Nitrogen (Ammonia Nitrogen)	2023/01/23	9.5		%	20
8458848	TGO	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2023/01/23		87	%	80 - 120
8458848	TGO	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2023/01/23		93	%	80 - 120
8458848	TGO	Method Blank	Nitrogen (Ammonia Nitrogen)	2023/01/23	<0.050		mg/L	
8458848	TGO	RPD	Nitrogen (Ammonia Nitrogen)	2023/01/23	NC		%	20
8460090	JHY	Matrix Spike	Dissolved Aluminum (Al)	2023/01/23		NC	%	80 - 120
			Dissolved Antimony (Sb)	2023/01/23		97	%	80 - 120
			Dissolved Arsenic (As)	2023/01/23		NC	%	80 - 120
			Dissolved Barium (Ba)	2023/01/23		103	%	80 - 120
			Dissolved Beryllium (Be)	2023/01/23		102	%	80 - 120
			Dissolved Bismuth (Bi)	2023/01/23		96	%	80 - 120
			Dissolved Boron (B)	2023/01/23		99	%	80 - 120
			Dissolved Cadmium (Cd)	2023/01/23		93	%	80 - 120
			Dissolved Calcium (Ca)	2023/01/23		105	%	80 - 120
			Dissolved Chromium (Cr)	2023/01/23		97	%	80 - 120
			Dissolved Cobalt (Co)	2023/01/23		94	%	80 - 120
			Dissolved Copper (Cu)	2023/01/23		93	%	80 - 120
			Dissolved Iron (Fe)	2023/01/23		NC	%	80 - 120
			Dissolved Lead (Pb)	2023/01/23		100	%	80 - 120
			Dissolved Magnesium (Mg)	2023/01/23		107	%	80 - 120
			Dissolved Manganese (Mn)	2023/01/23		NC	%	80 - 120
			Dissolved Molybdenum (Mo)	2023/01/23		99	%	80 - 120
			Dissolved Nickel (Ni)	2023/01/23		96	%	80 - 120
			Dissolved Phosphorus (P)	2023/01/23		113	%	80 - 120
			Dissolved Potassium (K)	2023/01/23		104	%	80 - 120
			Dissolved Selenium (Se)	2023/01/23		97	%	80 - 120
			Dissolved Silver (Ag)	2023/01/23		96	%	80 - 120
			Dissolved Sodium (Na)	2023/01/23		103	%	80 - 120
			Dissolved Strontium (Sr)	2023/01/23		103	%	80 - 120
			Dissolved Thallium (Tl)	2023/01/23		99	%	80 - 120
			Dissolved Tin (Sn)	2023/01/23		103	%	80 - 120
			Dissolved Titanium (Ti)	2023/01/23		62 (1)	%	80 - 120
			Dissolved Uranium (U)	2023/01/23		105	%	80 - 120
			Dissolved Vanadium (V)	2023/01/23		101	%	80 - 120
			Dissolved Zinc (Zn)	2023/01/23		98	%	80 - 120
8460090	JHY	Spiked Blank	Dissolved Aluminum (Al)	2023/01/20		102	%	80 - 120
			Dissolved Antimony (Sb)	2023/01/20		101	%	80 - 120
			Dissolved Arsenic (As)	2023/01/20		95	%	80 - 120
			Dissolved Barium (Ba)	2023/01/20		105	%	80 - 120
			Dissolved Beryllium (Be)	2023/01/20		100	%	80 - 120



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### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Bismuth (Bi)	2023/01/20		99	%	80 - 120
			Dissolved Boron (B)	2023/01/20		102	%	80 - 120
			Dissolved Cadmium (Cd)	2023/01/20		92	%	80 - 120
			Dissolved Calcium (Ca)	2023/01/20		101	%	80 - 120
			Dissolved Chromium (Cr)	2023/01/20		99	%	80 - 120
			Dissolved Cobalt (Co)	2023/01/20		95	%	80 - 120
			Dissolved Copper (Cu)	2023/01/20		96	%	80 - 120
			Dissolved Iron (Fe)	2023/01/20		101	%	80 - 120
			Dissolved Lead (Pb)	2023/01/20		101	%	80 - 120
			Dissolved Magnesium (Mg)	2023/01/20		102	%	80 - 120
			Dissolved Manganese (Mn)	2023/01/20		103	%	80 - 120
			Dissolved Molybdenum (Mo)	2023/01/20		105	%	80 - 120
			Dissolved Nickel (Ni)	2023/01/20		96	%	80 - 120
			Dissolved Phosphorus (P)	2023/01/20		107	%	80 - 120
			Dissolved Potassium (K)	2023/01/20		98	%	80 - 120
			Dissolved Selenium (Se)	2023/01/20		96	%	80 - 120
			Dissolved Silver (Ag)	2023/01/20		97	%	80 - 120
			Dissolved Sodium (Na)	2023/01/20		99	%	80 - 120
			Dissolved Strontium (Sr)	2023/01/20		102	%	80 - 120
			Dissolved Thallium (Tl)	2023/01/20		101	%	80 - 120
			Dissolved Tin (Sn)	2023/01/20		102	%	80 - 120
			Dissolved Titanium (Ti)	2023/01/20		107	%	80 - 120
			Dissolved Uranium (U)	2023/01/20		105	%	80 - 120
			Dissolved Vanadium (V)	2023/01/20		101	%	80 - 120
			Dissolved Zinc (Zn)	2023/01/20		99	%	80 - 120
8460090	JHY	Method Blank	Dissolved Aluminum (Al)	2023/01/23	<5.0		ug/L	
			Dissolved Antimony (Sb)	2023/01/23	<1.0		ug/L	
			Dissolved Arsenic (As)	2023/01/23	<1.0		ug/L	
			Dissolved Barium (Ba)	2023/01/23	<1.0		ug/L	
			Dissolved Beryllium (Be)	2023/01/23	<0.10		ug/L	
			Dissolved Bismuth (Bi)	2023/01/23	<2.0		ug/L	
			Dissolved Boron (B)	2023/01/23	<50		ug/L	
			Dissolved Cadmium (Cd)	2023/01/23	<0.010		ug/L	
			Dissolved Calcium (Ca)	2023/01/23	<100		ug/L	
			Dissolved Chromium (Cr)	2023/01/23	<1.0		ug/L	
			Dissolved Cobalt (Co)	2023/01/23	<0.40		ug/L	
			Dissolved Copper (Cu)	2023/01/23	<0.50		ug/L	
			Dissolved Iron (Fe)	2023/01/23	<50		ug/L	
			Dissolved Lead (Pb)	2023/01/23	<0.50		ug/L	
			Dissolved Magnesium (Mg)	2023/01/23	<100		ug/L	
			Dissolved Manganese (Mn)	2023/01/23	<2.0		ug/L	
			Dissolved Molybdenum (Mo)	2023/01/23	<2.0		ug/L	
			Dissolved Nickel (Ni)	2023/01/23	<2.0		ug/L	
			Dissolved Phosphorus (P)	2023/01/23	<100		ug/L	
			Dissolved Potassium (K)	2023/01/23	<100		ug/L	
			Dissolved Selenium (Se)	2023/01/23	<0.50		ug/L	
			Dissolved Silver (Ag)	2023/01/23	<0.10		ug/L	
			Dissolved Sodium (Na)	2023/01/23	<100		ug/L	
			Dissolved Strontium (Sr)	2023/01/23	<2.0		ug/L	
			Dissolved Thallium (Tl)	2023/01/23	<0.10		ug/L	
			Dissolved Tin (Sn)	2023/01/23	<2.0		ug/L	
			Dissolved Titanium (Ti)	2023/01/23	<2.0		ug/L	
			Dissolved Uranium (U)	2023/01/23	<0.10		ug/L	



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### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8460090	JHY	RPD	Dissolved Vanadium (V)	2023/01/23	<2.0		ug/L	
			Dissolved Zinc (Zn)	2023/01/23	<5.0		ug/L	
			Dissolved Aluminum (Al)	2023/01/23	2.7		%	20
			Dissolved Antimony (Sb)	2023/01/23	NC		%	20
			Dissolved Arsenic (As)	2023/01/23	2.8		%	20
			Dissolved Barium (Ba)	2023/01/23	6.8		%	20
			Dissolved Beryllium (Be)	2023/01/23	NC		%	20
			Dissolved Bismuth (Bi)	2023/01/23	NC		%	20
			Dissolved Boron (B)	2023/01/23	NC		%	20
			Dissolved Cadmium (Cd)	2023/01/23	4.0		%	20
			Dissolved Calcium (Ca)	2023/01/23	1.0		%	20
			Dissolved Chromium (Cr)	2023/01/23	NC		%	20
			Dissolved Cobalt (Co)	2023/01/23	6.4		%	20
			Dissolved Copper (Cu)	2023/01/23	0.23		%	20
			Dissolved Iron (Fe)	2023/01/23	2.2		%	20
			Dissolved Lead (Pb)	2023/01/23	1.6		%	20
			Dissolved Magnesium (Mg)	2023/01/23	3.5		%	20
			Dissolved Manganese (Mn)	2023/01/23	1.1		%	20
			Dissolved Molybdenum (Mo)	2023/01/23	NC		%	20
			Dissolved Nickel (Ni)	2023/01/23	1.6		%	20
			Dissolved Phosphorus (P)	2023/01/23	NC		%	20
			Dissolved Potassium (K)	2023/01/23	2.2		%	20
			Dissolved Selenium (Se)	2023/01/23	NC		%	20
Dissolved Silver (Ag)	2023/01/23	NC		%	20			
Dissolved Sodium (Na)	2023/01/23	0.034		%	20			
Dissolved Strontium (Sr)	2023/01/23	0.49		%	20			
Dissolved Thallium (Tl)	2023/01/23	NC		%	20			
Dissolved Tin (Sn)	2023/01/23	NC		%	20			
Dissolved Titanium (Ti)	2023/01/23	1.8		%	20			
Dissolved Uranium (U)	2023/01/23	6.3		%	20			
Dissolved Vanadium (V)	2023/01/23	NC		%	20			
Dissolved Zinc (Zn)	2023/01/23	1.8		%	20			
8460841	CPP	Matrix Spike	Total Organic Carbon (C)	2023/01/23		101 (2)	%	85 - 115
8460841	CPP	Spiked Blank	Total Organic Carbon (C)	2023/01/23		97	%	80 - 120
8460841	CPP	Method Blank	Total Organic Carbon (C)	2023/01/23	<0.50		mg/L	
8460841	CPP	RPD	Total Organic Carbon (C)	2023/01/23	NC		%	15
8463432	NGI	Spiked Blank	Conductivity	2023/01/23		99	%	80 - 120
8463432	NGI	Method Blank	Conductivity	2023/01/23	<1.0		uS/cm	
8463432	NGI	RPD	Conductivity	2023/01/23	0.81		%	10
8463434	NGI	Spiked Blank	pH	2023/01/23		100	%	97 - 103
8463434	NGI	RPD	pH	2023/01/23	1.0		%	N/A
8463436	NGI	Spiked Blank	Total Alkalinity (Total as CaCO3)	2023/01/23		97	%	80 - 120
8463436	NGI	Method Blank	Total Alkalinity (Total as CaCO3)	2023/01/23	<2.0		mg/L	
8463436	NGI	RPD	Total Alkalinity (Total as CaCO3)	2023/01/23	2.0		%	20
8463461	TGO	Matrix Spike	Dissolved Chloride (Cl-)	2023/01/23		NC	%	80 - 120
8463461	TGO	Spiked Blank	Dissolved Chloride (Cl-)	2023/01/23		101	%	80 - 120
8463461	TGO	Method Blank	Dissolved Chloride (Cl-)	2023/01/23	<1.0		mg/L	
8463461	TGO	RPD	Dissolved Chloride (Cl-)	2023/01/23	1.9		%	20
8463465	TGO	Matrix Spike	Dissolved Sulphate (SO4)	2023/01/23		100	%	80 - 120
8463465	TGO	Spiked Blank	Dissolved Sulphate (SO4)	2023/01/23		106	%	80 - 120
8463465	TGO	Method Blank	Dissolved Sulphate (SO4)	2023/01/23	<2.0		mg/L	
8463465	TGO	RPD	Dissolved Sulphate (SO4)	2023/01/23	0.12		%	20
8463466	TGO	Matrix Spike	Reactive Silica (SiO2)	2023/01/23		88	%	80 - 120



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8463466	TGO	Spiked Blank	Reactive Silica (SiO2)	2023/01/23		90	%	80 - 120
8463466	TGO	Method Blank	Reactive Silica (SiO2)	2023/01/23	<0.50		mg/L	
8463466	TGO	RPD	Reactive Silica (SiO2)	2023/01/23	0.67		%	20
8463467	TGO	Spiked Blank	Colour	2023/01/23		100	%	80 - 120
8463467	TGO	Method Blank	Colour	2023/01/23	<5.0		TCU	
8463467	TGO	RPD	Colour	2023/01/23	NC		%	20
8463468	TGO	Matrix Spike	Orthophosphate (P)	2023/01/24		93	%	80 - 120
8463468	TGO	Spiked Blank	Orthophosphate (P)	2023/01/24		92	%	80 - 120
8463468	TGO	Method Blank	Orthophosphate (P)	2023/01/24	<0.010		mg/L	
8463468	TGO	RPD	Orthophosphate (P)	2023/01/24	NC		%	20
8463469	TGO	Matrix Spike	Nitrate + Nitrite (N)	2023/01/24		96	%	80 - 120
8463469	TGO	Spiked Blank	Nitrate + Nitrite (N)	2023/01/24		97	%	80 - 120
8463469	TGO	Method Blank	Nitrate + Nitrite (N)	2023/01/24	<0.050		mg/L	
8463469	TGO	RPD	Nitrate + Nitrite (N)	2023/01/24	0.62		%	20
8463471	TGO	Matrix Spike	Nitrite (N)	2023/01/24		101	%	80 - 120
8463471	TGO	Spiked Blank	Nitrite (N)	2023/01/24		103	%	80 - 120
8463471	TGO	Method Blank	Nitrite (N)	2023/01/24	<0.010		mg/L	
8463471	TGO	RPD	Nitrite (N)	2023/01/24	NC		%	20
8463478	AA0	QC Standard	Turbidity	2023/01/23		110	%	80 - 120
8463478	AA0	Spiked Blank	Turbidity	2023/01/23		102	%	80 - 120
8463478	AA0	Method Blank	Turbidity	2023/01/23	<0.10		NTU	
8463478	AA0	RPD	Turbidity	2023/01/23	12		%	20
8463484	AA0	QC Standard	Turbidity	2023/01/23		111	%	80 - 120
8463484	AA0	Spiked Blank	Turbidity	2023/01/23		101	%	80 - 120
8463484	AA0	Method Blank	Turbidity	2023/01/23	<0.10		NTU	
8463484	AA0	RPD	Turbidity	2023/01/23	3.5		%	20
8463506	EPU	Matrix Spike [UVE510-02]	Dissolved Mercury (Hg)	2023/01/24		104	%	80 - 120
8463506	EPU	Spiked Blank	Dissolved Mercury (Hg)	2023/01/24		101	%	80 - 120
8463506	EPU	Method Blank	Dissolved Mercury (Hg)	2023/01/24	<0.013		ug/L	
8463506	EPU	RPD [UVE509-05]	Dissolved Mercury (Hg)	2023/01/24	NC		%	20
8463509	EPU	Matrix Spike	Total Mercury (Hg)	2023/01/24		104	%	80 - 120
8463509	EPU	Spiked Blank	Total Mercury (Hg)	2023/01/24		100	%	80 - 120
8463509	EPU	Method Blank	Total Mercury (Hg)	2023/01/24	<0.013		ug/L	
8463509	EPU	RPD	Total Mercury (Hg)	2023/01/24	NC		%	20
8465451	JHY	Matrix Spike [UVE519-01]	Acid Extractable Antimony (Sb)	2023/01/25		NC	%	75 - 125
			Acid Extractable Arsenic (As)	2023/01/25		NC	%	75 - 125
			Acid Extractable Barium (Ba)	2023/01/25		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2023/01/25		93	%	75 - 125
			Acid Extractable Bismuth (Bi)	2023/01/25		106	%	75 - 125
			Acid Extractable Boron (B)	2023/01/25		89	%	75 - 125
			Acid Extractable Cadmium (Cd)	2023/01/25		95	%	75 - 125
			Acid Extractable Chromium (Cr)	2023/01/25		93	%	75 - 125
			Acid Extractable Cobalt (Co)	2023/01/25		96	%	75 - 125
			Acid Extractable Copper (Cu)	2023/01/25		100	%	75 - 125
			Acid Extractable Lead (Pb)	2023/01/25		NC	%	75 - 125
			Acid Extractable Lithium (Li)	2023/01/25		90	%	75 - 125
			Acid Extractable Manganese (Mn)	2023/01/25		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2023/01/25		NC	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2023/01/25		102	%	75 - 125
			Acid Extractable Nickel (Ni)	2023/01/25		96	%	75 - 125
			Acid Extractable Rubidium (Rb)	2023/01/25		94	%	75 - 125
			Acid Extractable Selenium (Se)	2023/01/25		96	%	75 - 125
			Acid Extractable Silver (Ag)	2023/01/25		104	%	75 - 125



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### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8465451	JHY	Spiked Blank	Acid Extractable Strontium (Sr)	2023/01/25		96	%	75 - 125
			Acid Extractable Thallium (Tl)	2023/01/25		95	%	75 - 125
			Acid Extractable Tin (Sn)	2023/01/25		NC	%	75 - 125
			Acid Extractable Uranium (U)	2023/01/25		95	%	75 - 125
			Acid Extractable Vanadium (V)	2023/01/25		94	%	75 - 125
			Acid Extractable Zinc (Zn)	2023/01/25		109	%	75 - 125
			Acid Extractable Antimony (Sb)	2023/01/24		96	%	75 - 125
			Acid Extractable Arsenic (As)	2023/01/24		94	%	75 - 125
			Acid Extractable Barium (Ba)	2023/01/24		94	%	75 - 125
			Acid Extractable Beryllium (Be)	2023/01/24		93	%	75 - 125
			Acid Extractable Bismuth (Bi)	2023/01/24		94	%	75 - 125
			Acid Extractable Boron (B)	2023/01/24		100	%	75 - 125
			Acid Extractable Cadmium (Cd)	2023/01/24		95	%	75 - 125
			Acid Extractable Chromium (Cr)	2023/01/24		94	%	75 - 125
			Acid Extractable Cobalt (Co)	2023/01/24		93	%	75 - 125
			Acid Extractable Copper (Cu)	2023/01/24		94	%	75 - 125
			Acid Extractable Lead (Pb)	2023/01/24		93	%	75 - 125
			Acid Extractable Lithium (Li)	2023/01/24		93	%	75 - 125
			Acid Extractable Manganese (Mn)	2023/01/24		95	%	75 - 125
			Acid Extractable Mercury (Hg)	2023/01/24		96	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2023/01/24		95	%	75 - 125
			Acid Extractable Nickel (Ni)	2023/01/24		94	%	75 - 125
			Acid Extractable Rubidium (Rb)	2023/01/24		94	%	75 - 125
			Acid Extractable Selenium (Se)	2023/01/24		95	%	75 - 125
			Acid Extractable Silver (Ag)	2023/01/24		95	%	75 - 125
			Acid Extractable Strontium (Sr)	2023/01/24		92	%	75 - 125
			Acid Extractable Thallium (Tl)	2023/01/24		94	%	75 - 125
			Acid Extractable Tin (Sn)	2023/01/24		90	%	75 - 125
Acid Extractable Uranium (U)	2023/01/24		93	%	75 - 125			
Acid Extractable Vanadium (V)	2023/01/24		93	%	75 - 125			
Acid Extractable Zinc (Zn)	2023/01/24		94	%	75 - 125			
8465451	JHY	Method Blank	Acid Extractable Aluminum (Al)	2023/01/24	<10		mg/kg	
			Acid Extractable Antimony (Sb)	2023/01/24	<2.0		mg/kg	
			Acid Extractable Arsenic (As)	2023/01/24	<2.0		mg/kg	
			Acid Extractable Barium (Ba)	2023/01/24	<5.0		mg/kg	
			Acid Extractable Beryllium (Be)	2023/01/24	<1.0		mg/kg	
			Acid Extractable Bismuth (Bi)	2023/01/24	<2.0		mg/kg	
			Acid Extractable Boron (B)	2023/01/24	<50		mg/kg	
			Acid Extractable Cadmium (Cd)	2023/01/24	<0.30		mg/kg	
			Acid Extractable Chromium (Cr)	2023/01/24	<2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2023/01/24	<1.0		mg/kg	
			Acid Extractable Copper (Cu)	2023/01/24	<2.0		mg/kg	
			Acid Extractable Iron (Fe)	2023/01/24	<50		mg/kg	
			Acid Extractable Lead (Pb)	2023/01/24	<0.50		mg/kg	
			Acid Extractable Lithium (Li)	2023/01/24	<2.0		mg/kg	
			Acid Extractable Manganese (Mn)	2023/01/24	<2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2023/01/24	<0.10		mg/kg	
			Acid Extractable Molybdenum (Mo)	2023/01/24	<2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2023/01/24	<2.0		mg/kg	
			Acid Extractable Rubidium (Rb)	2023/01/24	<2.0		mg/kg	
			Acid Extractable Selenium (Se)	2023/01/24	<0.50		mg/kg	
Acid Extractable Silver (Ag)	2023/01/24	<0.50		mg/kg				
Acid Extractable Strontium (Sr)	2023/01/24	<5.0		mg/kg				



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### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Thallium (Tl)	2023/01/24	<0.10		mg/kg	
			Acid Extractable Tin (Sn)	2023/01/24	<1.0		mg/kg	
			Acid Extractable Uranium (U)	2023/01/24	<0.10		mg/kg	
			Acid Extractable Vanadium (V)	2023/01/24	<2.0		mg/kg	
			Acid Extractable Zinc (Zn)	2023/01/24	<5.0		mg/kg	
8465451	JHY	RPD [UVE519-01]	Acid Extractable Aluminum (Al)	2023/01/25	3.9		%	35
			Acid Extractable Antimony (Sb)	2023/01/25	7.6		%	35
			Acid Extractable Arsenic (As)	2023/01/25	10		%	35
			Acid Extractable Barium (Ba)	2023/01/25	17		%	35
			Acid Extractable Beryllium (Be)	2023/01/25	NC		%	35
			Acid Extractable Bismuth (Bi)	2023/01/25	7.3		%	35
			Acid Extractable Boron (B)	2023/01/25	NC		%	35
			Acid Extractable Cadmium (Cd)	2023/01/25	6.9		%	35
			Acid Extractable Chromium (Cr)	2023/01/25	3.4		%	35
			Acid Extractable Cobalt (Co)	2023/01/25	0.66		%	35
			Acid Extractable Copper (Cu)	2023/01/25	20		%	35
			Acid Extractable Iron (Fe)	2023/01/25	14		%	35
			Acid Extractable Lead (Pb)	2023/01/25	1.3		%	35
			Acid Extractable Lithium (Li)	2023/01/25	15		%	35
			Acid Extractable Manganese (Mn)	2023/01/25	8.1		%	35
			Acid Extractable Mercury (Hg)	2023/01/25	30		%	35
			Acid Extractable Molybdenum (Mo)	2023/01/25	NC		%	35
			Acid Extractable Nickel (Ni)	2023/01/25	16		%	35
			Acid Extractable Rubidium (Rb)	2023/01/25	9.8		%	35
			Acid Extractable Selenium (Se)	2023/01/25	13		%	35
			Acid Extractable Silver (Ag)	2023/01/25	7.8		%	35
			Acid Extractable Strontium (Sr)	2023/01/25	0.14		%	35
			Acid Extractable Thallium (Tl)	2023/01/25	5.8		%	35
			Acid Extractable Tin (Sn)	2023/01/25	4.8		%	35
			Acid Extractable Uranium (U)	2023/01/25	2.3		%	35
			Acid Extractable Vanadium (V)	2023/01/25	3.0		%	35
			Acid Extractable Zinc (Zn)	2023/01/25	7.2		%	35
8467846	JHY	Matrix Spike [UVE514-01]	Total Calcium (Ca)	2023/01/25		101	%	80 - 120
8467846	JHY	Spiked Blank	Total Calcium (Ca)	2023/01/25		97	%	80 - 120
8467846	JHY	Method Blank	Total Calcium (Ca)	2023/01/25	<100		ug/L	
8467846	JHY	RPD	Total Calcium (Ca)	2023/01/25	1.3		%	20

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Matrix Spike exceeds acceptance limits, probable matrix interference.

(2) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.



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### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

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Mike MacGillivray, Scientific Specialist (Inorganics)



Bureau Veritas Proprietary Software  
Logiciel Propriétaire de Bureau Veritas

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Automated Statchk

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CHAIN OF CUSTODY RECORD  
ENV COC - 00016v3

Page 2 of 2

Invoice Information		Report Information (if differs from invoice)		Project Information	
Company:	<i>Acan</i>	Company:		Quotation #:	
Contact Name:	<i>Rory McNeil</i>	Contact Name:		P.O. #/ AFER:	
Street Address:		Street Address:		Project #:	<i>60880068</i>
City:		City:		Site #:	
Prov:		Prov:		Site Location:	<i>Gold Brook Lake</i>
Postal Code:		Postal Code:		Site Location Province:	<i>NS</i>
Phone:	<i>902-242-2367</i>	Phone:		Sampled By:	<i>D.B</i>
Email:	<i>Rory McNeil</i>	Email:			
Copies:		Copies:			

Regulatory Criteria		Regular Turnaround Time (TAT)	
**Specify matrix for each regulation: surface water (SW)/groundwater (GW)/tap water/sewage/effluent/seawater/potable water/non-potable water/tissue/soil/sludge/metal	Regulation	**Matrix	<input checked="" type="checkbox"/> 5 to 7 Day <input type="checkbox"/> 10 Day
SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS			Rush Turnaround Time (TAT) - Surcharges apply
			<input type="checkbox"/> Same Day <input type="checkbox"/> 1 Day
			<input type="checkbox"/> 2 Day <input type="checkbox"/> 3 Day
			<input type="checkbox"/> 4 Day
			Date Required: YY MM DD
			Comments

Sample Identification	Date Sampled			Time (24hr)		Matrix	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
	YY	MM	DD	HH	MM																								
<i>SED6</i>	<i>23</i>	<i>01</i>	<i>16</i>	<i>PM</i>		<i>SED</i>																							
<i>SED7</i>																													
<i>SED20</i>																													

\*UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS AND CONDITIONS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/TERMS-AND-CONDITIONS OR BY CALLING THE LABORATORY LISTED ABOVE TO OBTAIN A COPY.

LAB USE ONLY			LAB USE ONLY			LAB USE ONLY			Temperature reading by:
Seal present	Yes	No	Seal present	Yes	No	Seal present	Yes	No	
Seal intact			Seal intact			Seal intact			
Cooling media present			Cooling media present			Cooling media present			
°C <i>1-10</i>			°C			°C			

Relinquished by: (Signature/Print)	Date	Time	Received by: (Signature/Print)	Date	Time	Special instructions
<i>David Bingham</i>	<i>23</i>	<i>01</i> <i>17</i>	<i>Holly J. Houghton</i>	<i>9</i>	<i>10</i>	



Bureau Veritas - Partial/Rush Results

Your Project #: 60680068  
Site Location: GOLDBORO  
Your C.O.C. #: N/A

**Attention: Rory McNeil**

AECOM Canada Ltd  
1701 Hollis St  
SH400  
Halifax, NS  
CANADA B3J 3M8

Report Date: 2023/02/01  
Report #: R7492396  
Version: 1 - Partial

**CERTIFICATE OF ANALYSIS – PARTIAL RESULTS**

**BUREAU VERITAS JOB #: C321377**

**Received: 2023/01/20, 09:21**

Sample Matrix: Water  
# Samples Received: 21

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Carbonate, Bicarbonate and Hydroxide	3	N/A	2023/01/26	N/A	SM 23 4500-CO2 D
Alkalinity	3	N/A	2023/01/25	ATL SOP 00142	SM 23 2320 B
Chloride	3	N/A	2023/01/26	ATL SOP 00014	SM 23 4500-Cl- E m
Colour	3	N/A	2023/01/26	ATL SOP 00020	SM 23 2120C m
Conductance - water	3	N/A	2023/01/25	ATL SOP 00004	SM 23 2510B m
Hardness (calculated as CaCO3)	1	N/A	2023/01/30	ATL SOP 00048	Auto Calc
Hardness (calculated as CaCO3)	2	N/A	2023/01/31	ATL SOP 00048	Auto Calc
Mercury - Dissolved (CVAA,LL)	5	2023/01/26	2023/01/26	ATL SOP 00026	EPA 245.1 R3 m
Mercury - Total (CVAA,LL)	16	2023/01/26	2023/01/26	ATL SOP 00026	EPA 245.1 R3 m
Metals Water Diss. MS (as rec'd)	5	N/A	2023/01/27	ATL SOP 00058	EPA 6020B R2 m
Metals Water Total MS	16	2023/01/26	2023/01/30	ATL SOP 00058	EPA 6020B R2 m
Ion Balance (% Difference)	1	N/A	2023/01/30	N/A	Auto Calc.
Ion Balance (% Difference)	2	N/A	2023/01/31	N/A	Auto Calc.
Anion and Cation Sum	1	N/A	2023/01/30	N/A	Auto Calc.
Anion and Cation Sum	2	N/A	2023/01/31	N/A	Auto Calc.
Nitrogen Ammonia - water	3	N/A	2023/01/26	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	3	N/A	2023/01/27	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite	3	N/A	2023/01/27	ATL SOP 00017	SM 23 4500-NO2- B m
Nitrogen - Nitrate (as N)	3	N/A	2023/01/27	ATL SOP 00018	ASTM D3867-16
pH (1)	3	N/A	2023/01/25	ATL SOP 00003	SM 23 4500-H+ B m
Phosphorus - ortho	3	N/A	2023/01/27	ATL SOP 00021	SM 23 4500-P E m
Sat. pH and Langelier Index (@ 20C)	1	N/A	2023/01/30	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 20C)	2	N/A	2023/01/31	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 4C)	1	N/A	2023/01/30	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 4C)	2	N/A	2023/01/31	ATL SOP 00049	Auto Calc.
Reactive Silica	3	N/A	2023/01/26	ATL SOP 00022	EPA 366.0 m
Sulphate	3	N/A	2023/01/26	ATL SOP 00023	ASTM D516-16 m
Total Dissolved Solids (TDS calc)	1	N/A	2023/01/30	N/A	Auto Calc.
Total Dissolved Solids (TDS calc)	2	N/A	2023/01/31	N/A	Auto Calc.
Organic carbon - Total (TOC) (2)	3	N/A	2023/01/26	ATL SOP 00203	SM 23 5310B m
Turbidity	3	N/A	2023/01/26	ATL SOP 00011	EPA 180.1 R2 m



Your Project #: 60680068  
Site Location: GOLDBORO  
Your C.O.C. #: N/A

**Attention: Rory McNeil**

AECOM Canada Ltd  
1701 Hollis St  
SH400  
Halifax , NS  
CANADA B3J 3M8

**Report Date: 2023/02/01**  
Report #: R7492396  
Version: 1 - Partial

**CERTIFICATE OF ANALYSIS – PARTIAL RESULTS**

**BUREAU VERITAS JOB #: C321377**

**Received: 2023/01/20, 09:21**

**Remarks:**

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

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Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The APHA Standard Method requires pH to be analyzed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the APHA Standard Method holding time.

(2) TOC / DOC present in the sample should be considered as non-purgeable TOC / DOC.



Your Project #: 60680068  
Site Location: GOLDBORO  
Your C.O.C. #: N/A

**Attention: Rory McNeil**

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Halifax , NS  
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Report Date: 2023/02/01  
Report #: R7492396  
Version: 1 - Partial

**CERTIFICATE OF ANALYSIS – PARTIAL RESULTS**

**BUREAU VERITAS JOB #: C321377**

**Received: 2023/01/20, 09:21**

Encryption Key



Bureau Veritas  
01 Feb 2023 09:32:19

Please direct all questions regarding this Certificate of Analysis to:

Marie Muise, Key Account Specialist  
Email: Marie.MUISE@bureauveritas.com  
Phone# (902)420-0203 Ext:253

=====

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Bureau Veritas - Partial/Rush Results



BUREAU  
VERITAS

Bureau Veritas Job #: C321377  
Report Date: 2023/02/01

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBORO  
Sampler Initials: ND

### RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		UWL726		UWL730		UWL756		
Sampling Date		2023/01/18		2023/01/18		2023/01/18		
COC Number		N/A		N/A		N/A		
	UNITS	SW1	RDL	SW9	RDL	PW4	RDL	QC Batch
<b>Calculated Parameters</b>								
Anion Sum	me/L	0.350	N/A	0.180	N/A	5.93	N/A	8465549
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	2.8	1.0	<1.0	1.0	17	1.0	8465541
Calculated TDS	mg/L	35	1.0	17	1.0	370	1.0	8465556
Carb. Alkalinity (calc. as CaCO3)	mg/L	<1.0	1.0	<1.0	1.0	<1.0	1.0	8465541
Cation Sum	me/L	0.520	N/A	0.340	N/A	6.65	N/A	8465549
Hardness (CaCO3)	mg/L	6.8	1.0	5.3	1.0	47	1.0	8465544
Ion Balance (% Difference)	%	19.5	N/A	30.8	N/A	5.72	N/A	8465547
Langelier Index (@ 20C)	N/A	-4.76		NC		-2.94		8465552
Langelier Index (@ 4C)	N/A	-5.02		NC		-3.18		8465554
Nitrate (N)	mg/L	<0.050	0.050	<0.050	0.050	<0.050	0.050	8465551
Saturation pH (@ 20C)	N/A	10.7		NC		9.64		8465552
Saturation pH (@ 4C)	N/A	10.9		NC		9.89		8465554
<b>Inorganics</b>								
Total Alkalinity (Total as CaCO3)	mg/L	2.8	2.0	<2.0	2.0	17	2.0	8468726
Dissolved Chloride (Cl-)	mg/L	7.5	1.0	6.5	1.0	170	5.0	8470087
Colour	TCU	23	5.0	140	25	73	25	8470109
Nitrate + Nitrite (N)	mg/L	<0.050	0.050	<0.050	0.050	<0.050	0.050	8470111
Nitrite (N)	mg/L	<0.010	0.010	<0.010	0.010	<0.010	0.010	8470116
Nitrogen (Ammonia Nitrogen)	mg/L	0.074	0.050	<0.050	0.050	0.057	0.050	8470038
Total Organic Carbon (C)	mg/L	3.1	0.50	13	0.50	27 (1)	5.0	8470019
Orthophosphate (P)	mg/L	<0.60 (2)	0.60	0.013	0.010	0.021	0.010	8470110
pH	pH	5.93		5.49		6.70		8468717
Reactive Silica (SiO2)	mg/L	9.5	0.50	3.0	0.50	4.9	0.50	8470108
Dissolved Sulphate (SO4)	mg/L	4.1	2.0	<2.0	2.0	39	2.0	8470107
Turbidity	NTU	7.2	0.10	1.3	0.10	29	0.10	8470118
Conductivity	uS/cm	46	1.0	37	1.0	780	1.0	8468712
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable (1) Elevated reporting limit due to turbidity. (2) Elevated reporting limit due to sample matrix.								

Bureau Veritas - Partial/Rush Results



BUREAU  
VERITAS

Bureau Veritas Job #: C321377  
Report Date: 2023/02/01

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBORO  
Sampler Initials: ND

### MERCURY BY COLD VAPOUR AA (WATER)

<b>Bureau Veritas ID</b>		UWL726	UWL727	UWL728	UWL729	UWL730	UWL731	UWL732		
<b>Sampling Date</b>		2023/01/18	2023/01/18	2023/01/18	2023/01/18	2023/01/18	2023/01/18	2023/01/18		
<b>COC Number</b>		N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	<b>UNITS</b>	<b>SW1</b>	<b>SW2</b>	<b>SW3</b>	<b>SW8</b>	<b>SW9</b>	<b>SW10</b>	<b>SW12</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Metals</b>										
Total Mercury (Hg)	ug/L	0.018	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	0.013	8468548
RDL = Reportable Detection Limit QC Batch = Quality Control Batch										

<b>Bureau Veritas ID</b>		UWL733	UWL734	UWL735	UWL736	UWL737	UWL738	UWL739		
<b>Sampling Date</b>		2023/01/18	2023/01/18	2023/01/18	2023/01/18	2023/01/18	2023/01/18	2023/01/18		
<b>COC Number</b>		N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	<b>UNITS</b>	<b>SW13</b>	<b>SW14</b>	<b>SW15</b>	<b>SW16</b>	<b>SW17</b>	<b>SW18</b>	<b>SW19</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Metals</b>										
Total Mercury (Hg)	ug/L	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	0.013	8468548
RDL = Reportable Detection Limit QC Batch = Quality Control Batch										

<b>Bureau Veritas ID</b>		UWL753	UWL754	UWL755	UWL756	UWL757			UWL758		
<b>Sampling Date</b>		2023/01/18	2023/01/18	2023/01/18	2023/01/18	2023/01/18			2023/01/18		
<b>COC Number</b>		N/A	N/A	N/A	N/A	N/A			N/A		
	<b>UNITS</b>	<b>PW1</b>	<b>PW2</b>	<b>PW3</b>	<b>PW4</b>	<b>PWDUP1</b>	<b>RDL</b>	<b>QC Batch</b>	<b>SWDUP1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Metals</b>											
Dissolved Mercury (Hg)	ug/L	0.035	<0.013	<0.013	<0.013	0.033	0.013	8468537			
Total Mercury (Hg)	ug/L								0.017	0.013	8468548
RDL = Reportable Detection Limit QC Batch = Quality Control Batch											

<b>Bureau Veritas ID</b>		UWL759		
<b>Sampling Date</b>		2023/01/18		
<b>COC Number</b>		N/A		
	<b>UNITS</b>	<b>SWDUP2</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Metals</b>				
Total Mercury (Hg)	ug/L	<0.013	0.013	8468548
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				

Bureau Veritas - Partial/Rush Results



BUREAU  
VERITAS

Bureau Veritas Job #: C321377  
Report Date: 2023/02/01

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBORO  
Sampler Initials: ND

### ELEMENTS BY ICP/MS (WATER)

Bureau Veritas ID		UWL726	UWL727	UWL728		UWL729	UWL730	UWL731		
Sampling Date		2023/01/18	2023/01/18	2023/01/18		2023/01/18	2023/01/18	2023/01/18		
COC Number		N/A	N/A	N/A		N/A	N/A	N/A		
	UNITS	SW1	SW2	SW3	RDL	SW8	SW9	SW10	RDL	QC Batch
<b>Metals</b>										
Total Aluminum (Al)	ug/L	72	630	1100	5.0	120	290	300	5.0	8470049
Total Antimony (Sb)	ug/L	1.1	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	1.0	8470049
Total Arsenic (As)	ug/L	2600	1200	1800	10	180	51	51	1.0	8470049
Total Barium (Ba)	ug/L	1.7	5.4	7.2	1.0	14	3.1	3.2	1.0	8470049
Total Beryllium (Be)	ug/L	<0.10	<0.10	<0.10	0.10	<0.10	<0.10	<0.10	0.10	8470049
Total Bismuth (Bi)	ug/L	<2.0	<2.0	<2.0	2.0	<2.0	<2.0	<2.0	2.0	8470049
Total Boron (B)	ug/L	<50	<50	<50	50	<50	<50	<50	50	8470049
Total Cadmium (Cd)	ug/L	0.027	0.029	0.039	0.010	0.066	0.014	0.017	0.010	8470049
Total Calcium (Ca)	ug/L	1400	850	820	100	18000	1100	1200	100	8470049
Total Chromium (Cr)	ug/L	<1.0	1.4	2.0	1.0	<1.0	<1.0	<1.0	1.0	8470049
Total Cobalt (Co)	ug/L	1.8	0.48	0.47	0.40	0.92	<0.40	<0.40	0.40	8470049
Total Copper (Cu)	ug/L	0.89	1.2	1.5	0.50	1.5	0.55	0.59	0.50	8470049
Total Iron (Fe)	ug/L	2300	3200	5100	50	580	530	540	50	8470049
Total Lead (Pb)	ug/L	<0.50	2.1	3.9	0.50	<0.50	0.57	0.61	0.50	8470049
Total Magnesium (Mg)	ug/L	760	640	740	100	1700	610	600	100	8470049
Total Manganese (Mn)	ug/L	78	57	29	2.0	150	45	45	2.0	8470049
Total Molybdenum (Mo)	ug/L	<2.0	<2.0	<2.0	2.0	<2.0	<2.0	<2.0	2.0	8470049
Total Nickel (Ni)	ug/L	2.4	<2.0	<2.0	2.0	<2.0	<2.0	<2.0	2.0	8470049
Total Phosphorus (P)	ug/L	<100	<100	<100	100	<100	<100	<100	100	8470049
Total Potassium (K)	ug/L	1200	940	1000	100	2100	330	350	100	8470049
Total Selenium (Se)	ug/L	<0.50	<0.50	<0.50	0.50	<0.50	<0.50	<0.50	0.50	8470049
Total Silver (Ag)	ug/L	<0.10	<0.10	<0.10	0.10	<0.10	<0.10	<0.10	0.10	8470049
Total Sodium (Na)	ug/L	6000	4200	4600	100	4300	4800	4700	100	8470049
Total Strontium (Sr)	ug/L	15	8.6	8.5	2.0	120	9.8	9.4	2.0	8470049
Total Thallium (Tl)	ug/L	<0.10	<0.10	<0.10	0.10	<0.10	<0.10	<0.10	0.10	8470049
Total Tin (Sn)	ug/L	<2.0	<2.0	<2.0	2.0	<2.0	<2.0	<2.0	2.0	8470049
Total Titanium (Ti)	ug/L	<2.0	21	51	2.0	5.0	4.7	5.1	2.0	8470049
Total Uranium (U)	ug/L	<0.10	<0.10	<0.10	0.10	<0.10	<0.10	<0.10	0.10	8470049
Total Vanadium (V)	ug/L	<2.0	<2.0	2.3	2.0	<2.0	<2.0	<2.0	2.0	8470049
Total Zinc (Zn)	ug/L	6.5	5.0	<5.0	5.0	10	<5.0	<5.0	5.0	8470049
RDL = Reportable Detection Limit										
QC Batch = Quality Control Batch										

Bureau Veritas - Partial/Rush Results



BUREAU  
VERITAS

Bureau Veritas Job #: C321377  
Report Date: 2023/02/01

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBORO  
Sampler Initials: ND

### ELEMENTS BY ICP/MS (WATER)

Bureau Veritas ID		UWL732	UWL733		UWL734		UWL735		UWL736		
Sampling Date		2023/01/18	2023/01/18		2023/01/18		2023/01/18		2023/01/18		
COC Number		N/A	N/A		N/A		N/A		N/A		
	UNITS	SW12	SW13	RDL	SW14	RDL	SW15	RDL	SW16	RDL	QC Batch
<b>Metals</b>											
Total Aluminum (Al)	ug/L	340	260	5.0	270	5.0	330	5.0	400	50	8470049
Total Antimony (Sb)	ug/L	<1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	<10	10	8470049
Total Arsenic (As)	ug/L	53	46	1.0	47	1.0	56	1.0	41	10	8470049
Total Barium (Ba)	ug/L	2.9	3.7	1.0	3.6	1.0	2.7	1.0	<10	10	8470049
Total Beryllium (Be)	ug/L	<0.10	<0.10	0.10	<0.10	0.10	<0.10	0.10	<1.0	1.0	8470049
Total Bismuth (Bi)	ug/L	<2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<20	20	8470049
Total Boron (B)	ug/L	<50	410	50	540	50	78	50	1500	500	8470049
Total Cadmium (Cd)	ug/L	0.023	0.021	0.010	0.020	0.010	0.022	0.010	<0.10	0.10	8470049
Total Calcium (Ca)	ug/L	1400	36000	100	46000	100	4700	100	140000	1000	8470049
Total Chromium (Cr)	ug/L	<1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	<10	10	8470049
Total Cobalt (Co)	ug/L	0.45	<0.40	0.40	<0.40	0.40	0.41	0.40	<4.0	4.0	8470049
Total Copper (Cu)	ug/L	1.1	0.57	0.50	0.76	0.50	0.72	0.50	<5.0	5.0	8470049
Total Iron (Fe)	ug/L	630	480	50	490	50	660	50	820	500	8470049
Total Lead (Pb)	ug/L	0.86	0.57	0.50	0.55	0.50	0.86	0.50	<5.0	5.0	8470049
Total Magnesium (Mg)	ug/L	1600	110000	100	140000	1000	12000	100	440000	1000	8470049
Total Manganese (Mn)	ug/L	45	40	2.0	40	2.0	47	2.0	37	20	8470049
Total Molybdenum (Mo)	ug/L	<2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<20	20	8470049
Total Nickel (Ni)	ug/L	<2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<20	20	8470049
Total Phosphorus (P)	ug/L	<100	<100	100	<100	100	<100	100	<1000	1000	8470049
Total Potassium (K)	ug/L	710	33000	100	43000	100	5000	100	130000	1000	8470049
Total Selenium (Se)	ug/L	<0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	<5.0	5.0	8470049
Total Silver (Ag)	ug/L	<0.10	<0.10	0.10	<0.10	0.10	<0.10	0.10	<1.0	1.0	8470049
Total Sodium (Na)	ug/L	14000	940000	100	1100000	1000	120000	100	3700000	1000	8470049
Total Strontium (Sr)	ug/L	15	680	2.0	880	2.0	71	2.0	2500	20	8470049
Total Thallium (Tl)	ug/L	<0.10	<0.10	0.10	<0.10	0.10	<0.10	0.10	<1.0	1.0	8470049
Total Tin (Sn)	ug/L	<2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<20	20	8470049
Total Titanium (Ti)	ug/L	8.0	3.7	2.0	3.9	2.0	6.3	2.0	<20	20	8470049
Total Uranium (U)	ug/L	<0.10	0.28	0.10	0.38	0.10	<0.10	0.10	1.1	1.0	8470049
Total Vanadium (V)	ug/L	<2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<20	20	8470049
Total Zinc (Zn)	ug/L	<5.0	<5.0	5.0	5.3	5.0	<5.0	5.0	<50	50	8470049

RDL = Reportable Detection Limit  
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results



BUREAU VERITAS

Bureau Veritas Job #: C321377  
Report Date: 2023/02/01

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBORO  
Sampler Initials: ND

**ELEMENTS BY ICP/MS (WATER)**

Bureau Veritas ID		UWL737		UWL738	UWL739			UWL753		
Sampling Date		2023/01/18		2023/01/18	2023/01/18			2023/01/18		
COC Number		N/A		N/A	N/A			N/A		
	UNITS	SW17	RDL	SW18	SW19	RDL	QC Batch	PW1	RDL	QC Batch
<b>Metals</b>										
Dissolved Aluminum (Al)	ug/L							60	5.0	8470061
Total Aluminum (Al)	ug/L	130	50	300	320	5.0	8470049			
Dissolved Antimony (Sb)	ug/L							5.4	1.0	8470061
Total Antimony (Sb)	ug/L	<10	10	<1.0	<1.0	1.0	8470049			
Dissolved Arsenic (As)	ug/L							29000	100	8470061
Total Arsenic (As)	ug/L	20	10	51	66	1.0	8470049			
Dissolved Barium (Ba)	ug/L							39	1.0	8470061
Total Barium (Ba)	ug/L	<10	10	3.2	3.0	1.0	8470049			
Dissolved Beryllium (Be)	ug/L							<0.10	0.10	8470061
Total Beryllium (Be)	ug/L	<1.0	1.0	<0.10	<0.10	0.10	8470049			
Dissolved Bismuth (Bi)	ug/L							<2.0	2.0	8470061
Total Bismuth (Bi)	ug/L	<20	20	<2.0	<2.0	2.0	8470049			
Dissolved Boron (B)	ug/L							<50	50	8470061
Total Boron (B)	ug/L	2200	500	<50	<50	50	8470049			
Dissolved Cadmium (Cd)	ug/L							<0.010	0.010	8470061
Total Cadmium (Cd)	ug/L	<0.10	0.10	0.018	0.018	0.010	8470049			
Dissolved Calcium (Ca)	ug/L							2900	100	8470061
Total Calcium (Ca)	ug/L	210000	1000	1100	860	100	8470049			
Dissolved Chromium (Cr)	ug/L							<1.0	1.0	8470061
Total Chromium (Cr)	ug/L	<10	10	<1.0	<1.0	1.0	8470049			
Dissolved Cobalt (Co)	ug/L							1.5	0.40	8470061
Total Cobalt (Co)	ug/L	<4.0	4.0	<0.40	<0.40	0.40	8470049			
Dissolved Copper (Cu)	ug/L							<0.50	0.50	8470061
Total Copper (Cu)	ug/L	<5.0	5.0	0.63	0.51	0.50	8470049			
Dissolved Iron (Fe)	ug/L							32000	50	8470061
Total Iron (Fe)	ug/L	<500	500	520	610	50	8470049			
Dissolved Lead (Pb)	ug/L							0.81	0.50	8470061
Total Lead (Pb)	ug/L	<5.0	5.0	0.55	0.53	0.50	8470049			
Dissolved Magnesium (Mg)	ug/L							1000	100	8470061
Total Magnesium (Mg)	ug/L	640000	1000	570	580	100	8470049			
Dissolved Manganese (Mn)	ug/L							210	2.0	8470061
Total Manganese (Mn)	ug/L	<20	20	44	36	2.0	8470049			
Dissolved Molybdenum (Mo)	ug/L							2.5	2.0	8470061
Total Molybdenum (Mo)	ug/L	<20	20	<2.0	<2.0	2.0	8470049			
RDL = Reportable Detection Limit QC Batch = Quality Control Batch										

Bureau Veritas - Partial/Rush Results



BUREAU  
VERITAS

Bureau Veritas Job #: C321377  
Report Date: 2023/02/01

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBORO  
Sampler Initials: ND

### ELEMENTS BY ICP/MS (WATER)

Bureau Veritas ID		UWL737		UWL738	UWL739			UWL753		
Sampling Date		2023/01/18		2023/01/18	2023/01/18			2023/01/18		
COC Number		N/A		N/A	N/A			N/A		
	UNITS	SW17	RDL	SW18	SW19	RDL	QC Batch	PW1	RDL	QC Batch
Dissolved Nickel (Ni)	ug/L							3.7	2.0	8470061
Total Nickel (Ni)	ug/L	<20	20	<2.0	<2.0	2.0	8470049			
Dissolved Phosphorus (P)	ug/L							<100	100	8470061
Total Phosphorus (P)	ug/L	<1000	1000	<100	<100	100	8470049			
Dissolved Potassium (K)	ug/L							1500	100	8470061
Total Potassium (K)	ug/L	200000	1000	350	370	100	8470049			
Dissolved Selenium (Se)	ug/L							<0.50	0.50	8470061
Total Selenium (Se)	ug/L	<5.0	5.0	<0.50	<0.50	0.50	8470049			
Dissolved Silver (Ag)	ug/L							<0.10	0.10	8470061
Total Silver (Ag)	ug/L	<1.0	1.0	<0.10	<0.10	0.10	8470049			
Dissolved Sodium (Na)	ug/L							6300	100	8470061
Total Sodium (Na)	ug/L	5300000	1000	4600	4600	100	8470049			
Dissolved Strontium (Sr)	ug/L							30	2.0	8470061
Total Strontium (Sr)	ug/L	3700	20	9.6	7.9	2.0	8470049			
Dissolved Thallium (Tl)	ug/L							<0.10	0.10	8470061
Total Thallium (Tl)	ug/L	<1.0	1.0	<0.10	<0.10	0.10	8470049			
Dissolved Tin (Sn)	ug/L							<2.0	2.0	8470061
Total Tin (Sn)	ug/L	<20	20	<2.0	<2.0	2.0	8470049			
Dissolved Titanium (Ti)	ug/L							2.9	2.0	8470061
Total Titanium (Ti)	ug/L	<20	20	4.2	5.5	2.0	8470049			
Dissolved Uranium (U)	ug/L							<0.10	0.10	8470061
Total Uranium (U)	ug/L	1.7	1.0	<0.10	<0.10	0.10	8470049			
Dissolved Vanadium (V)	ug/L							<2.0	2.0	8470061
Total Vanadium (V)	ug/L	<20	20	<2.0	<2.0	2.0	8470049			
Dissolved Zinc (Zn)	ug/L							<5.0	5.0	8470061
Total Zinc (Zn)	ug/L	<50	50	<5.0	<5.0	5.0	8470049			

RDL = Reportable Detection Limit  
QC Batch = Quality Control Batch

Bureau Veritas - Partial/Rush Results



BUREAU  
VERITAS

Bureau Veritas Job #: C321377  
Report Date: 2023/02/01

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBORO  
Sampler Initials: ND

### ELEMENTS BY ICP/MS (WATER)

Bureau Veritas ID		UWL754	UWL755		UWL756		UWL757		
Sampling Date		2023/01/18	2023/01/18		2023/01/18		2023/01/18		
COC Number		N/A	N/A		N/A		N/A		
	UNITS	PW2	PW3	RDL	PW4	RDL	PWDUP1	RDL	QC Batch
<b>Metals</b>									
Dissolved Aluminum (Al)	ug/L	390	32	5.0	170	5.0	60	5.0	8470061
Dissolved Antimony (Sb)	ug/L	<1.0	<1.0	1.0	2.6	1.0	5.4	1.0	8470061
Dissolved Arsenic (As)	ug/L	1800	590	10	150	1.0	29000	100	8470061
Dissolved Barium (Ba)	ug/L	6.0	27	1.0	41	1.0	40	1.0	8470061
Dissolved Beryllium (Be)	ug/L	<0.10	<0.10	0.10	<0.10	0.10	<0.10	0.10	8470061
Dissolved Bismuth (Bi)	ug/L	<2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	8470061
Dissolved Boron (B)	ug/L	<50	<50	50	73	50	<50	50	8470061
Dissolved Cadmium (Cd)	ug/L	<0.010	0.17	0.010	<0.010	0.010	<0.010	0.010	8470061
Dissolved Calcium (Ca)	ug/L	2400	34000	100	3800	100	3000	100	8470061
Dissolved Chromium (Cr)	ug/L	1.1	<1.0	1.0	<1.0	1.0	<1.0	1.0	8470061
Dissolved Cobalt (Co)	ug/L	1.5	15	0.40	5.9	0.40	1.5	0.40	8470061
Dissolved Copper (Cu)	ug/L	1.4	0.67	0.50	2.8	0.50	<0.50	0.50	8470061
Dissolved Iron (Fe)	ug/L	15000	1600	50	1600	50	32000	50	8470061
Dissolved Lead (Pb)	ug/L	0.99	<0.50	0.50	3.4	0.50	0.66	0.50	8470061
Dissolved Magnesium (Mg)	ug/L	920	4000	100	9000	100	1100	100	8470061
Dissolved Manganese (Mn)	ug/L	35	2600	2.0	1200	2.0	210	2.0	8470061
Dissolved Molybdenum (Mo)	ug/L	<2.0	<2.0	2.0	<2.0	2.0	2.6	2.0	8470061
Dissolved Nickel (Ni)	ug/L	5.5	4.1	2.0	4.5	2.0	4.0	2.0	8470061
Dissolved Phosphorus (P)	ug/L	100	<100	100	<100	100	<100	100	8470061
Dissolved Potassium (K)	ug/L	460	2700	100	5500	100	1500	100	8470061
Dissolved Selenium (Se)	ug/L	<0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	8470061
Dissolved Silver (Ag)	ug/L	<0.10	<0.10	0.10	<0.10	0.10	<0.10	0.10	8470061
Dissolved Sodium (Na)	ug/L	4200	5800	100	130000	100	6300	100	8470061
Dissolved Strontium (Sr)	ug/L	26	230	2.0	48	2.0	30	2.0	8470061
Dissolved Thallium (Tl)	ug/L	<0.10	<0.10	0.10	<0.10	0.10	<0.10	0.10	8470061
Dissolved Tin (Sn)	ug/L	<2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	8470061
Dissolved Titanium (Ti)	ug/L	8.7	<2.0	2.0	2.6	2.0	2.8	2.0	8470061
Dissolved Uranium (U)	ug/L	0.11	<0.10	0.10	0.11	0.10	<0.10	0.10	8470061
Dissolved Vanadium (V)	ug/L	<2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	8470061
Dissolved Zinc (Zn)	ug/L	5.9	13	5.0	8.9	5.0	5.6	5.0	8470061
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									

Bureau Veritas - Partial/Rush Results



BUREAU  
VERITAS

Bureau Veritas Job #: C321377  
Report Date: 2023/02/01

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBORO  
Sampler Initials: ND

### ELEMENTS BY ICP/MS (WATER)

Bureau Veritas ID		UWL758	UWL759		
Sampling Date		2023/01/18	2023/01/18		
COC Number		N/A	N/A		
	UNITS	SWDUP1	SWDUP2	RDL	QC Batch
<b>Metals</b>					
Total Aluminum (Al)	ug/L	75	490	5.0	8470049
Total Antimony (Sb)	ug/L	1.0	<1.0	1.0	8470049
Total Arsenic (As)	ug/L	2600	670	10	8470049
Total Barium (Ba)	ug/L	1.7	19	1.0	8470049
Total Beryllium (Be)	ug/L	<0.10	<0.10	0.10	8470049
Total Bismuth (Bi)	ug/L	<2.0	<2.0	2.0	8470049
Total Boron (B)	ug/L	<50	<50	50	8470049
Total Cadmium (Cd)	ug/L	0.019	0.094	0.010	8470049
Total Calcium (Ca)	ug/L	1300	20000	100	8470049
Total Chromium (Cr)	ug/L	<1.0	1.3	1.0	8470049
Total Cobalt (Co)	ug/L	1.6	3.3	0.40	8470049
Total Copper (Cu)	ug/L	0.80	2.8	0.50	8470049
Total Iron (Fe)	ug/L	2300	3100	50	8470049
Total Lead (Pb)	ug/L	<0.50	1.1	0.50	8470049
Total Magnesium (Mg)	ug/L	800	2000	100	8470049
Total Manganese (Mn)	ug/L	77	490	2.0	8470049
Total Molybdenum (Mo)	ug/L	<2.0	<2.0	2.0	8470049
Total Nickel (Ni)	ug/L	2.3	2.5	2.0	8470049
Total Phosphorus (P)	ug/L	<100	<100	100	8470049
Total Potassium (K)	ug/L	1100	2400	100	8470049
Total Selenium (Se)	ug/L	<0.50	<0.50	0.50	8470049
Total Silver (Ag)	ug/L	<0.10	<0.10	0.10	8470049
Total Sodium (Na)	ug/L	6100	4700	100	8470049
Total Strontium (Sr)	ug/L	15	130	2.0	8470049
Total Thallium (Tl)	ug/L	<0.10	<0.10	0.10	8470049
Total Tin (Sn)	ug/L	<2.0	4.0	2.0	8470049
Total Titanium (Ti)	ug/L	2.1	26	2.0	8470049
Total Uranium (U)	ug/L	<0.10	<0.10	0.10	8470049
Total Vanadium (V)	ug/L	<2.0	<2.0	2.0	8470049
Total Zinc (Zn)	ug/L	5.4	16	5.0	8470049
RDL = Reportable Detection Limit QC Batch = Quality Control Batch					

Bureau Veritas - Partial/Rush Results



BUREAU  
VERITAS

Bureau Veritas Job #: C321377  
Report Date: 2023/02/01

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBORO  
Sampler Initials: ND

### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	1.7°C
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Sample UWL726 [SW1] : RCap Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

Sample UWL730 [SW9] : RCap Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L. ortho-Phosphate > Phosphorus: Both values fall within the method uncertainty for duplicates and are likely equivalent.

Sample UWL756 [PW4] : ortho-Phosphate > Phosphorus: Both values fall within the method uncertainty for duplicates and are likely equivalent. Poor RCap Ion Balance due to sample matrix. Anion sum does not include contribution from Total Organic Carbon.

Sample UWL758 [SWDUP1] : RCap Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

**Results relate only to the items tested.**

Bureau Veritas - Partial/Rush Results



BUREAU  
VERITAS

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### QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8468537	EPU	Matrix Spike	Dissolved Mercury (Hg)	2023/01/26		98	%	80 - 120
8468537	EPU	Spiked Blank	Dissolved Mercury (Hg)	2023/01/26		97	%	80 - 120
8468537	EPU	Method Blank	Dissolved Mercury (Hg)	2023/01/26	<0.013		ug/L	
8468537	EPU	RPD	Dissolved Mercury (Hg)	2023/01/26	NC		%	20
8468548	EPU	Matrix Spike	Total Mercury (Hg)	2023/01/26		97	%	80 - 120
8468548	EPU	Spiked Blank	Total Mercury (Hg)	2023/01/26		91	%	80 - 120
8468548	EPU	Method Blank	Total Mercury (Hg)	2023/01/26	<0.013		ug/L	
8468548	EPU	RPD	Total Mercury (Hg)	2023/01/26	NC		%	20
8468712	AA0	Spiked Blank	Conductivity	2023/01/25		99	%	80 - 120
8468712	AA0	Method Blank	Conductivity	2023/01/25	<1.0		uS/cm	
8468712	AA0	RPD	Conductivity	2023/01/25	0		%	10
8468717	AA0	Spiked Blank	pH	2023/01/25		100	%	97 - 103
8468717	AA0	RPD	pH	2023/01/25	3.2		%	N/A
8468726	AA0	Spiked Blank	Total Alkalinity (Total as CaCO3)	2023/01/25		99	%	80 - 120
8468726	AA0	Method Blank	Total Alkalinity (Total as CaCO3)	2023/01/25	<2.0		mg/L	
8468726	AA0	RPD	Total Alkalinity (Total as CaCO3)	2023/01/25	13		%	20
8470019	CPP	Matrix Spike	Total Organic Carbon (C)	2023/01/26		97	%	85 - 115
8470019	CPP	Spiked Blank	Total Organic Carbon (C)	2023/01/26		97	%	80 - 120
8470019	CPP	Method Blank	Total Organic Carbon (C)	2023/01/26	<0.50		mg/L	
8470019	CPP	RPD	Total Organic Carbon (C)	2023/01/26	1.9		%	15
8470038	TGO	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2023/01/26		NC	%	80 - 120
8470038	TGO	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2023/01/26		94	%	80 - 120
8470038	TGO	Method Blank	Nitrogen (Ammonia Nitrogen)	2023/01/26	<0.050		mg/L	
8470038	TGO	RPD	Nitrogen (Ammonia Nitrogen)	2023/01/26	4.2		%	20
8470049	JHY	Matrix Spike [UWL726-01]	Total Aluminum (Al)	2023/01/30		101	%	80 - 120
			Total Antimony (Sb)	2023/01/30		97	%	80 - 120
			Total Arsenic (As)	2023/01/30		NC	%	80 - 120
			Total Barium (Ba)	2023/01/30		95	%	80 - 120
			Total Beryllium (Be)	2023/01/30		99	%	80 - 120
			Total Bismuth (Bi)	2023/01/30		99	%	80 - 120
			Total Boron (B)	2023/01/30		103	%	80 - 120
			Total Cadmium (Cd)	2023/01/30		97	%	80 - 120
			Total Calcium (Ca)	2023/01/30		99	%	80 - 120
			Total Chromium (Cr)	2023/01/30		98	%	80 - 120
			Total Cobalt (Co)	2023/01/30		98	%	80 - 120
			Total Copper (Cu)	2023/01/30		100	%	80 - 120
			Total Iron (Fe)	2023/01/30		NC	%	80 - 120
			Total Lead (Pb)	2023/01/30		98	%	80 - 120
			Total Magnesium (Mg)	2023/01/30		103	%	80 - 120
			Total Manganese (Mn)	2023/01/30		99	%	80 - 120
			Total Molybdenum (Mo)	2023/01/30		102	%	80 - 120
			Total Nickel (Ni)	2023/01/30		100	%	80 - 120
			Total Phosphorus (P)	2023/01/30		106	%	80 - 120
			Total Potassium (K)	2023/01/30		105	%	80 - 120
			Total Selenium (Se)	2023/01/30		102	%	80 - 120
			Total Silver (Ag)	2023/01/30		98	%	80 - 120
			Total Sodium (Na)	2023/01/30		104	%	80 - 120
			Total Strontium (Sr)	2023/01/30		96	%	80 - 120
			Total Thallium (Tl)	2023/01/30		100	%	80 - 120
			Total Tin (Sn)	2023/01/30		98	%	80 - 120
			Total Titanium (Ti)	2023/01/30		102	%	80 - 120
			Total Uranium (U)	2023/01/30		104	%	80 - 120

Bureau Veritas - Partial/Rush Results



BUREAU  
VERITAS

Bureau Veritas Job #: C321377  
Report Date: 2023/02/01

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBORO  
Sampler Initials: ND

### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8470049	JHY	Spiked Blank	Total Vanadium (V)	2023/01/30		100	%	80 - 120
			Total Zinc (Zn)	2023/01/30		97	%	80 - 120
			Total Aluminum (Al)	2023/01/30		100	%	80 - 120
			Total Antimony (Sb)	2023/01/30		95	%	80 - 120
			Total Arsenic (As)	2023/01/30		92	%	80 - 120
			Total Barium (Ba)	2023/01/30		94	%	80 - 120
			Total Beryllium (Be)	2023/01/30		97	%	80 - 120
			Total Bismuth (Bi)	2023/01/30		98	%	80 - 120
			Total Boron (B)	2023/01/30		99	%	80 - 120
			Total Cadmium (Cd)	2023/01/30		95	%	80 - 120
			Total Calcium (Ca)	2023/01/30		98	%	80 - 120
			Total Chromium (Cr)	2023/01/30		97	%	80 - 120
			Total Cobalt (Co)	2023/01/30		97	%	80 - 120
			Total Copper (Cu)	2023/01/30		98	%	80 - 120
			Total Iron (Fe)	2023/01/30		101	%	80 - 120
			Total Lead (Pb)	2023/01/30		97	%	80 - 120
			Total Magnesium (Mg)	2023/01/30		103	%	80 - 120
			Total Manganese (Mn)	2023/01/30		99	%	80 - 120
			Total Molybdenum (Mo)	2023/01/30		101	%	80 - 120
			Total Nickel (Ni)	2023/01/30		99	%	80 - 120
			Total Phosphorus (P)	2023/01/30		102	%	80 - 120
			Total Potassium (K)	2023/01/30		103	%	80 - 120
			Total Selenium (Se)	2023/01/30		99	%	80 - 120
			Total Silver (Ag)	2023/01/30		97	%	80 - 120
			Total Sodium (Na)	2023/01/30		103	%	80 - 120
			Total Strontium (Sr)	2023/01/30		96	%	80 - 120
			Total Thallium (Tl)	2023/01/30		98	%	80 - 120
Total Tin (Sn)	2023/01/30		96	%	80 - 120			
Total Titanium (Ti)	2023/01/30		102	%	80 - 120			
Total Uranium (U)	2023/01/30		102	%	80 - 120			
Total Vanadium (V)	2023/01/30		99	%	80 - 120			
Total Zinc (Zn)	2023/01/30		98	%	80 - 120			
8470049	JHY	Method Blank	Total Aluminum (Al)	2023/01/30	<5.0		ug/L	
			Total Antimony (Sb)	2023/01/30	<1.0		ug/L	
			Total Arsenic (As)	2023/01/30	<1.0		ug/L	
			Total Barium (Ba)	2023/01/30	<1.0		ug/L	
			Total Beryllium (Be)	2023/01/30	<0.10		ug/L	
			Total Bismuth (Bi)	2023/01/30	<2.0		ug/L	
			Total Boron (B)	2023/01/30	<50		ug/L	
			Total Cadmium (Cd)	2023/01/30	<0.010		ug/L	
			Total Calcium (Ca)	2023/01/30	<100		ug/L	
			Total Chromium (Cr)	2023/01/30	<1.0		ug/L	
			Total Cobalt (Co)	2023/01/30	<0.40		ug/L	
			Total Copper (Cu)	2023/01/30	<0.50		ug/L	
			Total Iron (Fe)	2023/01/30	<50		ug/L	
			Total Lead (Pb)	2023/01/30	<0.50		ug/L	
			Total Magnesium (Mg)	2023/01/30	<100		ug/L	
Total Manganese (Mn)	2023/01/30	<2.0		ug/L				
Total Molybdenum (Mo)	2023/01/30	<2.0		ug/L				
Total Nickel (Ni)	2023/01/30	<2.0		ug/L				
Total Phosphorus (P)	2023/01/30	<100		ug/L				
Total Potassium (K)	2023/01/30	<100		ug/L				
Total Selenium (Se)	2023/01/30	<0.50		ug/L				

Bureau Veritas - Partial/Rush Results



BUREAU  
VERITAS

Bureau Veritas Job #: C321377  
Report Date: 2023/02/01

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBORO  
Sampler Initials: ND

### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8470049	JHY	RPD	Total Silver (Ag)	2023/01/30	<0.10		ug/L	
			Total Sodium (Na)	2023/01/30	<100		ug/L	
			Total Strontium (Sr)	2023/01/30	<2.0		ug/L	
			Total Thallium (Tl)	2023/01/30	<0.10		ug/L	
			Total Tin (Sn)	2023/01/30	<2.0		ug/L	
			Total Titanium (Ti)	2023/01/30	<2.0		ug/L	
			Total Uranium (U)	2023/01/30	<0.10		ug/L	
			Total Vanadium (V)	2023/01/30	<2.0		ug/L	
			Total Zinc (Zn)	2023/01/30	<5.0		ug/L	
			Total Aluminum (Al)	2023/01/30	3.0		%	20
			Total Antimony (Sb)	2023/01/30	NC		%	20
			Total Arsenic (As)	2023/01/30	NC		%	20
			Total Barium (Ba)	2023/01/30	2.4		%	20
			Total Beryllium (Be)	2023/01/30	NC		%	20
			Total Bismuth (Bi)	2023/01/30	NC		%	20
			Total Boron (B)	2023/01/30	3.8		%	20
			Total Cadmium (Cd)	2023/01/30	12		%	20
			Total Calcium (Ca)	2023/01/30	2.5		%	20
			Total Chromium (Cr)	2023/01/30	NC		%	20
			Total Cobalt (Co)	2023/01/30	NC		%	20
			Total Copper (Cu)	2023/01/30	3.9		%	20
			Total Iron (Fe)	2023/01/30	0.39		%	20
			Total Lead (Pb)	2023/01/30	NC		%	20
			Total Magnesium (Mg)	2023/01/30	1.9		%	20
			Total Manganese (Mn)	2023/01/30	1.4		%	20
			Total Molybdenum (Mo)	2023/01/30	NC		%	20
			Total Nickel (Ni)	2023/01/30	NC		%	20
			Total Phosphorus (P)	2023/01/30	7.7		%	20
			Total Potassium (K)	2023/01/30	2.8		%	20
			Total Selenium (Se)	2023/01/30	NC		%	20
			Total Silver (Ag)	2023/01/30	NC		%	20
			Total Sodium (Na)	2023/01/30	1.1		%	20
			Total Strontium (Sr)	2023/01/30	1.6		%	20
Total Thallium (Tl)	2023/01/30	NC		%	20			
Total Tin (Sn)	2023/01/30	NC		%	20			
Total Titanium (Ti)	2023/01/30	NC		%	20			
Total Uranium (U)	2023/01/30	0.79		%	20			
Total Vanadium (V)	2023/01/30	NC		%	20			
Total Zinc (Zn)	2023/01/30	1.2		%	20			
8470061	JHY	Matrix Spike [UWL757-01]	Dissolved Aluminum (Al)	2023/01/31		101	%	80 - 120
			Dissolved Antimony (Sb)	2023/01/31		98	%	80 - 120
			Dissolved Arsenic (As)	2023/01/31		NC	%	80 - 120
			Dissolved Barium (Ba)	2023/01/31		98	%	80 - 120
			Dissolved Beryllium (Be)	2023/01/31		103	%	80 - 120
			Dissolved Bismuth (Bi)	2023/01/31		101	%	80 - 120
			Dissolved Boron (B)	2023/01/31		100	%	80 - 120
			Dissolved Cadmium (Cd)	2023/01/31		99	%	80 - 120
			Dissolved Calcium (Ca)	2023/01/31		99	%	80 - 120
			Dissolved Chromium (Cr)	2023/01/31		102	%	80 - 120
			Dissolved Cobalt (Co)	2023/01/31		101	%	80 - 120
			Dissolved Copper (Cu)	2023/01/31		102	%	80 - 120
			Dissolved Iron (Fe)	2023/01/31		NC	%	80 - 120

Bureau Veritas - Partial/Rush Results



BUREAU  
VERITAS

Bureau Veritas Job #: C321377  
Report Date: 2023/02/01

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBORO  
Sampler Initials: ND

### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Lead (Pb)	2023/01/31		102	%	80 - 120
			Dissolved Magnesium (Mg)	2023/01/31		106	%	80 - 120
			Dissolved Manganese (Mn)	2023/01/31		NC	%	80 - 120
			Dissolved Molybdenum (Mo)	2023/01/31		102	%	80 - 120
			Dissolved Nickel (Ni)	2023/01/31		102	%	80 - 120
			Dissolved Phosphorus (P)	2023/01/31		105	%	80 - 120
			Dissolved Potassium (K)	2023/01/31		103	%	80 - 120
			Dissolved Selenium (Se)	2023/01/31		103	%	80 - 120
			Dissolved Silver (Ag)	2023/01/31		85	%	80 - 120
			Dissolved Sodium (Na)	2023/01/31		105	%	80 - 120
			Dissolved Strontium (Sr)	2023/01/31		101	%	80 - 120
			Dissolved Thallium (Tl)	2023/01/31		101	%	80 - 120
			Dissolved Tin (Sn)	2023/01/31		100	%	80 - 120
			Dissolved Titanium (Ti)	2023/01/31		105	%	80 - 120
			Dissolved Uranium (U)	2023/01/31		107	%	80 - 120
			Dissolved Vanadium (V)	2023/01/31		104	%	80 - 120
			Dissolved Zinc (Zn)	2023/01/31		97	%	80 - 120
8470061	JHY	Spiked Blank	Dissolved Aluminum (Al)	2023/01/27		100	%	80 - 120
			Dissolved Antimony (Sb)	2023/01/27		96	%	80 - 120
			Dissolved Arsenic (As)	2023/01/27		91	%	80 - 120
			Dissolved Barium (Ba)	2023/01/27		95	%	80 - 120
			Dissolved Beryllium (Be)	2023/01/27		98	%	80 - 120
			Dissolved Bismuth (Bi)	2023/01/27		97	%	80 - 120
			Dissolved Boron (B)	2023/01/27		99	%	80 - 120
			Dissolved Cadmium (Cd)	2023/01/27		96	%	80 - 120
			Dissolved Calcium (Ca)	2023/01/27		98	%	80 - 120
			Dissolved Chromium (Cr)	2023/01/27		98	%	80 - 120
			Dissolved Cobalt (Co)	2023/01/27		98	%	80 - 120
			Dissolved Copper (Cu)	2023/01/27		99	%	80 - 120
			Dissolved Iron (Fe)	2023/01/27		101	%	80 - 120
			Dissolved Lead (Pb)	2023/01/27		98	%	80 - 120
			Dissolved Magnesium (Mg)	2023/01/27		104	%	80 - 120
			Dissolved Manganese (Mn)	2023/01/27		101	%	80 - 120
			Dissolved Molybdenum (Mo)	2023/01/27		102	%	80 - 120
			Dissolved Nickel (Ni)	2023/01/27		99	%	80 - 120
			Dissolved Phosphorus (P)	2023/01/27		103	%	80 - 120
			Dissolved Potassium (K)	2023/01/27		103	%	80 - 120
			Dissolved Selenium (Se)	2023/01/27		100	%	80 - 120
			Dissolved Silver (Ag)	2023/01/27		96	%	80 - 120
			Dissolved Sodium (Na)	2023/01/27		104	%	80 - 120
			Dissolved Strontium (Sr)	2023/01/27		98	%	80 - 120
			Dissolved Thallium (Tl)	2023/01/27		98	%	80 - 120
			Dissolved Tin (Sn)	2023/01/27		97	%	80 - 120
			Dissolved Titanium (Ti)	2023/01/27		103	%	80 - 120
			Dissolved Uranium (U)	2023/01/27		103	%	80 - 120
			Dissolved Vanadium (V)	2023/01/27		100	%	80 - 120
			Dissolved Zinc (Zn)	2023/01/27		99	%	80 - 120
8470061	JHY	Method Blank	Dissolved Aluminum (Al)	2023/01/27	<5.0		ug/L	
			Dissolved Antimony (Sb)	2023/01/27	<1.0		ug/L	
			Dissolved Arsenic (As)	2023/01/27	<1.0		ug/L	
			Dissolved Barium (Ba)	2023/01/27	<1.0		ug/L	
			Dissolved Beryllium (Be)	2023/01/27	<0.10		ug/L	
			Dissolved Bismuth (Bi)	2023/01/27	<2.0		ug/L	

Bureau Veritas - Partial/Rush Results



BUREAU  
VERITAS

Bureau Veritas Job #: C321377  
Report Date: 2023/02/01

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBORO  
Sampler Initials: ND

### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Boron (B)	2023/01/27	<50		ug/L	
			Dissolved Cadmium (Cd)	2023/01/27	<0.010		ug/L	
			Dissolved Calcium (Ca)	2023/01/27	<100		ug/L	
			Dissolved Chromium (Cr)	2023/01/27	<1.0		ug/L	
			Dissolved Cobalt (Co)	2023/01/27	<0.40		ug/L	
			Dissolved Copper (Cu)	2023/01/27	<0.50		ug/L	
			Dissolved Iron (Fe)	2023/01/27	<50		ug/L	
			Dissolved Lead (Pb)	2023/01/27	<0.50		ug/L	
			Dissolved Magnesium (Mg)	2023/01/27	<100		ug/L	
			Dissolved Manganese (Mn)	2023/01/27	<2.0		ug/L	
			Dissolved Molybdenum (Mo)	2023/01/27	<2.0		ug/L	
			Dissolved Nickel (Ni)	2023/01/27	<2.0		ug/L	
			Dissolved Phosphorus (P)	2023/01/27	<100		ug/L	
			Dissolved Potassium (K)	2023/01/27	<100		ug/L	
			Dissolved Selenium (Se)	2023/01/27	<0.50		ug/L	
			Dissolved Silver (Ag)	2023/01/27	<0.10		ug/L	
			Dissolved Sodium (Na)	2023/01/27	<100		ug/L	
			Dissolved Strontium (Sr)	2023/01/27	<2.0		ug/L	
			Dissolved Thallium (Tl)	2023/01/27	<0.10		ug/L	
			Dissolved Tin (Sn)	2023/01/27	<2.0		ug/L	
			Dissolved Titanium (Ti)	2023/01/27	<2.0		ug/L	
			Dissolved Uranium (U)	2023/01/27	<0.10		ug/L	
			Dissolved Vanadium (V)	2023/01/27	<2.0		ug/L	
			Dissolved Zinc (Zn)	2023/01/27	<5.0		ug/L	
8470061	JHY	RPD [UWL757-01]	Dissolved Aluminum (Al)	2023/01/27	4.6		%	20
			Dissolved Antimony (Sb)	2023/01/27	0.53		%	20
			Dissolved Arsenic (As)	2023/01/27	1.6		%	20
			Dissolved Barium (Ba)	2023/01/27	0.80		%	20
			Dissolved Beryllium (Be)	2023/01/27	NC		%	20
			Dissolved Bismuth (Bi)	2023/01/27	NC		%	20
			Dissolved Boron (B)	2023/01/27	NC		%	20
			Dissolved Cadmium (Cd)	2023/01/27	NC		%	20
			Dissolved Calcium (Ca)	2023/01/27	1.1		%	20
			Dissolved Chromium (Cr)	2023/01/27	NC		%	20
			Dissolved Cobalt (Co)	2023/01/27	3.5		%	20
			Dissolved Copper (Cu)	2023/01/27	NC		%	20
			Dissolved Iron (Fe)	2023/01/27	0.24		%	20
			Dissolved Lead (Pb)	2023/01/27	2.0		%	20
			Dissolved Magnesium (Mg)	2023/01/27	1.8		%	20
			Dissolved Manganese (Mn)	2023/01/27	0.67		%	20
			Dissolved Molybdenum (Mo)	2023/01/27	3.0		%	20
			Dissolved Nickel (Ni)	2023/01/27	2.6		%	20
			Dissolved Phosphorus (P)	2023/01/27	NC		%	20
			Dissolved Potassium (K)	2023/01/27	0.22		%	20
			Dissolved Selenium (Se)	2023/01/27	NC		%	20
			Dissolved Silver (Ag)	2023/01/27	NC		%	20
			Dissolved Sodium (Na)	2023/01/27	0.84		%	20
			Dissolved Strontium (Sr)	2023/01/27	2.8		%	20
			Dissolved Thallium (Tl)	2023/01/27	NC		%	20
			Dissolved Tin (Sn)	2023/01/27	NC		%	20
			Dissolved Titanium (Ti)	2023/01/27	2.0		%	20
			Dissolved Uranium (U)	2023/01/27	NC		%	20
			Dissolved Vanadium (V)	2023/01/27	NC		%	20

Bureau Veritas - Partial/Rush Results



BUREAU  
VERITAS

Bureau Veritas Job #: C321377  
Report Date: 2023/02/01

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBORO  
Sampler Initials: ND

### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Zinc (Zn)	2023/01/27	0.80		%	20
8470087	TGO	Matrix Spike	Dissolved Chloride (Cl-)	2023/01/26		86	%	80 - 120
8470087	TGO	Spiked Blank	Dissolved Chloride (Cl-)	2023/01/26		93	%	80 - 120
8470087	TGO	Method Blank	Dissolved Chloride (Cl-)	2023/01/26	<1.0		mg/L	
8470087	TGO	RPD	Dissolved Chloride (Cl-)	2023/01/26	4.3		%	20
8470107	TGO	Matrix Spike	Dissolved Sulphate (SO4)	2023/01/26		89	%	80 - 120
8470107	TGO	Spiked Blank	Dissolved Sulphate (SO4)	2023/01/26		95	%	80 - 120
8470107	TGO	Method Blank	Dissolved Sulphate (SO4)	2023/01/26	<2.0		mg/L	
8470107	TGO	RPD	Dissolved Sulphate (SO4)	2023/01/26	NC		%	20
8470108	TGO	Matrix Spike	Reactive Silica (SiO2)	2023/01/26		NC	%	80 - 120
8470108	TGO	Spiked Blank	Reactive Silica (SiO2)	2023/01/26		90	%	80 - 120
8470108	TGO	Method Blank	Reactive Silica (SiO2)	2023/01/26	<0.50		mg/L	
8470108	TGO	RPD	Reactive Silica (SiO2)	2023/01/26	0.15		%	20
8470109	TGO	Spiked Blank	Colour	2023/01/26		104	%	80 - 120
8470109	TGO	Method Blank	Colour	2023/01/26	<5.0		TCU	
8470109	TGO	RPD	Colour	2023/01/26	13		%	20
8470110	TGO	Matrix Spike	Orthophosphate (P)	2023/01/27		80	%	80 - 120
8470110	TGO	Spiked Blank	Orthophosphate (P)	2023/01/27		87	%	80 - 120
8470110	TGO	Method Blank	Orthophosphate (P)	2023/01/27	<0.010		mg/L	
8470110	TGO	RPD	Orthophosphate (P)	2023/01/27	NC		%	20
8470111	TGO	Matrix Spike	Nitrate + Nitrite (N)	2023/01/27		91	%	80 - 120
8470111	TGO	Spiked Blank	Nitrate + Nitrite (N)	2023/01/27		92	%	80 - 120
8470111	TGO	Method Blank	Nitrate + Nitrite (N)	2023/01/27	<0.050		mg/L	
8470111	TGO	RPD	Nitrate + Nitrite (N)	2023/01/27	NC		%	20
8470116	TGO	Matrix Spike	Nitrite (N)	2023/01/27		95	%	80 - 120
8470116	TGO	Spiked Blank	Nitrite (N)	2023/01/27		101	%	80 - 120
8470116	TGO	Method Blank	Nitrite (N)	2023/01/27	<0.010		mg/L	
8470116	TGO	RPD	Nitrite (N)	2023/01/27	NC		%	20
8470118	AA0	QC Standard	Turbidity	2023/01/26		107	%	80 - 120
8470118	AA0	Spiked Blank	Turbidity	2023/01/26		101	%	80 - 120
8470118	AA0	Method Blank	Turbidity	2023/01/26	<0.10		NTU	
8470118	AA0	RPD	Turbidity	2023/01/26	2.4		%	20

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

Bureau Veritas - Partial/Rush Results



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VERITAS

Bureau Veritas Job #: C321377  
Report Date: 2023/02/01

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBORO  
Sampler Initials: ND

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Colleen Acker, B.Sc, Scientific Service Specialist

Mike MacGillivray, Scientific Specialist (Inorganics)



Automated Statchk

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by {0}, {1} responsible for {2} {3} laboratory operations.

Bureau Veritas - Partial/Rush Results



Bureau Veritas - Partial/Rush Results

Your Project #: 60680068  
Site Location: GOLDBORO  
Your C.O.C. #: N/A

**Attention: Rory McNeil**

AECOM Canada Ltd  
1701 Hollis St  
SH400  
Halifax, NS  
CANADA B3J 3M8

Report Date: 2023/02/01  
Report #: R7493185  
Version: 2 - Partial

**CERTIFICATE OF ANALYSIS – PARTIAL RESULTS**

**BUREAU VERITAS JOB #: C321377**

**Received: 2023/01/20, 09:21**

Sample Matrix: Sediment  
# Samples Received: 15

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Metals Solids Acid Extr. ICPMS	7	2023/01/31	2023/01/31	ATL SOP 00058	EPA 6020B R2 m
Metals Solids Acid Extr. ICPMS	8	2023/01/31	2023/02/01	ATL SOP 00058	EPA 6020B R2 m

**Remarks:**

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.



Your Project #: 60680068  
Site Location: GOLDBORO  
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Halifax , NS  
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**CERTIFICATE OF ANALYSIS – PARTIAL RESULTS**

**BUREAU VERITAS JOB #: C321377**  
**Received: 2023/01/20, 09:21**

Encryption Key



**AUTHORIZED REPORT  
RAPPORT AUTORISÉ**

Bureau Veritas  
01 Feb 2023 17:01:53

Please direct all questions regarding this Certificate of Analysis to:  
Marie Muise, Key Account Specialist  
Email: Marie.MUISE@bureauveritas.com  
Phone# (902)420-0203 Ext:253  
=====

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Suzanne Rogers, General Manager responsible for Nova Scotia Environmental laboratory operations.



BUREAU  
VERITAS

Bureau Veritas Job #: C321377

Report Date: 2023/02/01

AECOM Canada Ltd

Client Project #: 60680068

Site Location: GOLDBORO

Sampler Initials: ND

### ELEMENTS BY ATOMIC SPECTROSCOPY (SEDIMENT)

Bureau Veritas ID		UWL740		UWL741		UWL742		UWL743			
Sampling Date		2023/01/18		2023/01/18		2023/01/18		2023/01/18			
COC Number		N/A		N/A		N/A		N/A			
	UNITS	SED1	RDL	SED2	RDL	SED3	RDL	QC Batch	SED8	RDL	QC Batch
<b>Metals</b>											
Acid Extractable Aluminum (Al)	mg/kg	4400	10	12000	10	16000	10	8477917	14000	10	8478171
Acid Extractable Antimony (Sb)	mg/kg	4.7	2.0	3.1	2.0	<2.0	2.0	8477917	4.9	2.0	8478171
Acid Extractable Arsenic (As)	mg/kg	160000	2000	6700	200	3800	20	8477917	31000	200	8478171
Acid Extractable Barium (Ba)	mg/kg	410	5.0	75	5.0	53	5.0	8477917	120	5.0	8478171
Acid Extractable Beryllium (Be)	mg/kg	<1.0	1.0	<1.0	1.0	<1.0	1.0	8477917	2.4	1.0	8478171
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	2.0	<2.0	2.0	<2.0	2.0	8477917	<2.0	2.0	8478171
Acid Extractable Boron (B)	mg/kg	<50	50	<50	50	<50	50	8477917	<50	50	8478171
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	0.30	<0.30	0.30	<0.30	0.30	8477917	2.7	0.30	8478171
Acid Extractable Chromium (Cr)	mg/kg	7.6	2.0	21	2.0	26	2.0	8477917	18	2.0	8478171
Acid Extractable Cobalt (Co)	mg/kg	3.4	1.0	3.5	1.0	2.4	1.0	8477917	43	1.0	8478171
Acid Extractable Copper (Cu)	mg/kg	15	2.0	19	2.0	16	2.0	8477917	47	2.0	8478171
Acid Extractable Iron (Fe)	mg/kg	230000	5000	43000	50	36000	50	8477917	180000	5000	8478171
Acid Extractable Lead (Pb)	mg/kg	14	0.50	60	0.50	53	0.50	8477917	56	0.50	8478171
Acid Extractable Lithium (Li)	mg/kg	8.1	2.0	21	2.0	23	2.0	8477917	12	2.0	8478171
Acid Extractable Manganese (Mn)	mg/kg	280	2.0	370	2.0	260	2.0	8477917	1700	2.0	8478171
Acid Extractable Mercury (Hg)	mg/kg	0.83	0.10	4.3	0.10	7.9	0.10	8477917	0.27	0.10	8478171
Acid Extractable Molybdenum (Mo)	mg/kg	3.6	2.0	<2.0	2.0	<2.0	2.0	8477917	7.6	2.0	8478171
Acid Extractable Nickel (Ni)	mg/kg	8.3	2.0	13	2.0	12	2.0	8477917	33	2.0	8478171
Acid Extractable Rubidium (Rb)	mg/kg	14	2.0	23	2.0	19	2.0	8477917	12	2.0	8478171
Acid Extractable Selenium (Se)	mg/kg	<0.50	0.50	0.58	0.50	0.93	0.50	8477917	1.6	0.50	8478171
Acid Extractable Silver (Ag)	mg/kg	<0.50	0.50	1.0	0.50	3.1	0.50	8477917	0.99	0.50	8478171
Acid Extractable Strontium (Sr)	mg/kg	47	5.0	20	5.0	14	5.0	8477917	67	5.0	8478171
Acid Extractable Thallium (Tl)	mg/kg	0.18	0.10	0.24	0.10	0.17	0.10	8477917	0.39	0.10	8478171
Acid Extractable Tin (Sn)	mg/kg	<1.0	1.0	1.2	1.0	2.0	1.0	8477917	<1.0	1.0	8478171
Acid Extractable Uranium (U)	mg/kg	0.15	0.10	0.49	0.10	0.61	0.10	8477917	2.5	0.10	8478171
Acid Extractable Vanadium (V)	mg/kg	8.1	2.0	22	2.0	24	2.0	8477917	83	2.0	8478171
Acid Extractable Zinc (Zn)	mg/kg	44	5.0	58	5.0	51	5.0	8477917	300	5.0	8478171
RDL = Reportable Detection Limit											
QC Batch = Quality Control Batch											

Bureau Veritas - Partial/Rush Results



BUREAU  
VERITAS

Bureau Veritas Job #: C321377  
Report Date: 2023/02/01

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBORO  
Sampler Initials: ND

### ELEMENTS BY ATOMIC SPECTROSCOPY (SEDIMENT)

Bureau Veritas ID		UWL744		UWL745	UWL746	UWL747	UWL748	UWL749		
Sampling Date		2023/01/18		2023/01/18	2023/01/18	2023/01/18	2023/01/18	2023/01/18		
COC Number		N/A		N/A	N/A	N/A	N/A	N/A		
	UNITS	SED10	RDL	SED12	SED13	SED14	SED15	SED16	RDL	QC Batch
<b>Metals</b>										
Acid Extractable Aluminum (Al)	mg/kg	11000	10	9000	9100	9500	8600	9000	10	8477917
Acid Extractable Antimony (Sb)	mg/kg	<2.0	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8477917
Acid Extractable Arsenic (As)	mg/kg	2300	20	380	230	410	480	310	2.0	8477917
Acid Extractable Barium (Ba)	mg/kg	19	5.0	12	11	13	14	13	5.0	8477917
Acid Extractable Beryllium (Be)	mg/kg	<1.0	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8477917
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8477917
Acid Extractable Boron (B)	mg/kg	<50	50	<50	<50	<50	<50	<50	50	8477917
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	0.30	<0.30	<0.30	<0.30	<0.30	<0.30	0.30	8477917
Acid Extractable Chromium (Cr)	mg/kg	16	2.0	14	15	15	14	15	2.0	8477917
Acid Extractable Cobalt (Co)	mg/kg	52	1.0	6.4	5.0	5.7	5.5	5.2	1.0	8477917
Acid Extractable Copper (Cu)	mg/kg	9.5	2.0	21	15	14	17	14	2.0	8477917
Acid Extractable Iron (Fe)	mg/kg	34000	50	19000	18000	20000	19000	18000	50	8477917
Acid Extractable Lead (Pb)	mg/kg	65	0.50	20	12	16	17	14	0.50	8477917
Acid Extractable Lithium (Li)	mg/kg	18	2.0	21	20	21	20	20	2.0	8477917
Acid Extractable Manganese (Mn)	mg/kg	5200	2.0	200	210	230	220	200	2.0	8477917
Acid Extractable Mercury (Hg)	mg/kg	0.52	0.10	0.20	0.11	0.14	0.17	0.14	0.10	8477917
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8477917
Acid Extractable Nickel (Ni)	mg/kg	16	2.0	15	15	17	15	16	2.0	8477917
Acid Extractable Rubidium (Rb)	mg/kg	6.2	2.0	9.3	9.7	11	10	11	2.0	8477917
Acid Extractable Selenium (Se)	mg/kg	0.51	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8477917
Acid Extractable Silver (Ag)	mg/kg	<0.50	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8477917
Acid Extractable Strontium (Sr)	mg/kg	14	5.0	21	15	21	30	18	5.0	8477917
Acid Extractable Thallium (Tl)	mg/kg	0.28	0.10	<0.10	<0.10	0.11	<0.10	0.10	0.10	8477917
Acid Extractable Tin (Sn)	mg/kg	<1.0	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8477917
Acid Extractable Uranium (U)	mg/kg	0.54	0.10	0.93	0.66	0.83	0.67	0.75	0.10	8477917
Acid Extractable Vanadium (V)	mg/kg	17	2.0	15	13	14	14	14	2.0	8477917
Acid Extractable Zinc (Zn)	mg/kg	51	5.0	61	57	63	62	61	5.0	8477917
RDL = Reportable Detection Limit										
QC Batch = Quality Control Batch										

Bureau Veritas - Partial/Rush Results



BUREAU  
VERITAS

Bureau Veritas Job #: C321377  
Report Date: 2023/02/01

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBORO  
Sampler Initials: ND

### ELEMENTS BY ATOMIC SPECTROSCOPY (SEDIMENT)

Bureau Veritas ID		UWL750	UWL751		UWL752		UWL760		UWL761		
Sampling Date		2023/01/18	2023/01/18		2023/01/18		2023/01/18		2023/01/18		
COC Number		N/A	N/A		N/A		N/A		N/A		
	UNITS	SED17	SED18	RDL	SED19	RDL	SEDDUP1	RDL	SEDDUP2	RDL	QC Batch
<b>Metals</b>											
Acid Extractable Aluminum (Al)	mg/kg	8900	9200	10	22000	10	5600	10	19000	10	8477917
Acid Extractable Antimony (Sb)	mg/kg	<2.0	<2.0	2.0	<2.0	2.0	4.0	2.0	3.1	2.0	8477917
Acid Extractable Arsenic (As)	mg/kg	240	270	2.0	1200	20	140000	2000	10000	200	8477917
Acid Extractable Barium (Ba)	mg/kg	12	8.6	5.0	97	5.0	270	5.0	100	5.0	8477917
Acid Extractable Beryllium (Be)	mg/kg	<1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	1.8	1.0	8477917
Acid Extractable Bismuth (Bi)	mg/kg	<2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	<2.0	2.0	8477917
Acid Extractable Boron (B)	mg/kg	<50	<50	50	<50	50	<50	50	<50	50	8477917
Acid Extractable Cadmium (Cd)	mg/kg	<0.30	<0.30	0.30	<0.30	0.30	<0.30	0.30	1.2	0.30	8477917
Acid Extractable Chromium (Cr)	mg/kg	15	14	2.0	30	2.0	9.2	2.0	26	2.0	8477917
Acid Extractable Cobalt (Co)	mg/kg	4.6	4.2	1.0	2.7	1.0	3.3	1.0	49	1.0	8477917
Acid Extractable Copper (Cu)	mg/kg	14	8.9	2.0	15	2.0	15	2.0	45	2.0	8477917
Acid Extractable Iron (Fe)	mg/kg	18000	19000	50	41000	50	210000	5000	96000	5000	8477917
Acid Extractable Lead (Pb)	mg/kg	11	9.8	0.50	48	0.50	13	0.50	100	0.50	8477917
Acid Extractable Lithium (Li)	mg/kg	20	19	2.0	42	2.0	11	2.0	21	2.0	8477917
Acid Extractable Manganese (Mn)	mg/kg	200	280	2.0	500	2.0	290	2.0	1900	2.0	8477917
Acid Extractable Mercury (Hg)	mg/kg	0.13	0.18	0.10	2.9	0.10	0.80	0.10	0.45	0.10	8477917
Acid Extractable Molybdenum (Mo)	mg/kg	<2.0	<2.0	2.0	<2.0	2.0	2.9	2.0	2.7	2.0	8477917
Acid Extractable Nickel (Ni)	mg/kg	15	14	2.0	17	2.0	8.9	2.0	39	2.0	8477917
Acid Extractable Rubidium (Rb)	mg/kg	10	7.5	2.0	47	2.0	20	2.0	18	2.0	8477917
Acid Extractable Selenium (Se)	mg/kg	<0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	1.3	0.50	8477917
Acid Extractable Silver (Ag)	mg/kg	<0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	1.2	0.50	8477917
Acid Extractable Strontium (Sr)	mg/kg	18	8.2	5.0	17	5.0	76	5.0	38	5.0	8477917
Acid Extractable Thallium (Tl)	mg/kg	<0.10	<0.10	0.10	0.37	0.10	0.21	0.10	0.37	0.10	8477917
Acid Extractable Tin (Sn)	mg/kg	<1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	1.2	1.0	8477917
Acid Extractable Uranium (U)	mg/kg	0.65	0.48	0.10	0.76	0.10	0.15	0.10	2.6	0.10	8477917
Acid Extractable Vanadium (V)	mg/kg	13	10	2.0	38	2.0	9.9	2.0	43	2.0	8477917
Acid Extractable Zinc (Zn)	mg/kg	57	45	5.0	71	5.0	51	5.0	370	5.0	8477917
RDL = Reportable Detection Limit											
QC Batch = Quality Control Batch											

Bureau Veritas - Partial/Rush Results



BUREAU  
VERITAS

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### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	1.7°C
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Results relate only to the items tested.

Bureau Veritas - Partial/Rush Results



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VERITAS

Bureau Veritas Job #: C321377  
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### QUALITY ASSURANCE REPORT

QA/QC		QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
Batch	Init							
8477917	JHY	Matrix Spike	Acid Extractable Antimony (Sb)	2023/01/31		97	%	75 - 125
			Acid Extractable Arsenic (As)	2023/01/31		98	%	75 - 125
			Acid Extractable Barium (Ba)	2023/01/31		89	%	75 - 125
			Acid Extractable Beryllium (Be)	2023/01/31		96	%	75 - 125
			Acid Extractable Bismuth (Bi)	2023/01/31		96	%	75 - 125
			Acid Extractable Boron (B)	2023/01/31		93	%	75 - 125
			Acid Extractable Cadmium (Cd)	2023/01/31		95	%	75 - 125
			Acid Extractable Chromium (Cr)	2023/01/31		93	%	75 - 125
			Acid Extractable Cobalt (Co)	2023/01/31		97	%	75 - 125
			Acid Extractable Copper (Cu)	2023/01/31		97	%	75 - 125
			Acid Extractable Lead (Pb)	2023/01/31		NC	%	75 - 125
			Acid Extractable Lithium (Li)	2023/01/31		94	%	75 - 125
			Acid Extractable Manganese (Mn)	2023/01/31		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2023/01/31		94	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2023/01/31		101	%	75 - 125
			Acid Extractable Nickel (Ni)	2023/01/31		96	%	75 - 125
			Acid Extractable Rubidium (Rb)	2023/01/31		95	%	75 - 125
			Acid Extractable Selenium (Se)	2023/01/31		99	%	75 - 125
			Acid Extractable Silver (Ag)	2023/01/31		98	%	75 - 125
			Acid Extractable Strontium (Sr)	2023/01/31		96	%	75 - 125
			Acid Extractable Thallium (Tl)	2023/01/31		98	%	75 - 125
			Acid Extractable Tin (Sn)	2023/01/31		96	%	75 - 125
			Acid Extractable Uranium (U)	2023/01/31		96	%	75 - 125
			Acid Extractable Vanadium (V)	2023/01/31		93	%	75 - 125
Acid Extractable Zinc (Zn)	2023/01/31		93	%	75 - 125			
8477917	JHY	Spiked Blank	Acid Extractable Antimony (Sb)	2023/01/31		97	%	75 - 125
			Acid Extractable Arsenic (As)	2023/01/31		98	%	75 - 125
			Acid Extractable Barium (Ba)	2023/01/31		95	%	75 - 125
			Acid Extractable Beryllium (Be)	2023/01/31		95	%	75 - 125
			Acid Extractable Bismuth (Bi)	2023/01/31		96	%	75 - 125
			Acid Extractable Boron (B)	2023/01/31		97	%	75 - 125
			Acid Extractable Cadmium (Cd)	2023/01/31		94	%	75 - 125
			Acid Extractable Chromium (Cr)	2023/01/31		97	%	75 - 125
			Acid Extractable Cobalt (Co)	2023/01/31		97	%	75 - 125
			Acid Extractable Copper (Cu)	2023/01/31		97	%	75 - 125
			Acid Extractable Lead (Pb)	2023/01/31		96	%	75 - 125
			Acid Extractable Lithium (Li)	2023/01/31		96	%	75 - 125
			Acid Extractable Manganese (Mn)	2023/01/31		97	%	75 - 125
			Acid Extractable Mercury (Hg)	2023/01/31		99	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2023/01/31		100	%	75 - 125
			Acid Extractable Nickel (Ni)	2023/01/31		96	%	75 - 125
			Acid Extractable Rubidium (Rb)	2023/01/31		95	%	75 - 125
			Acid Extractable Selenium (Se)	2023/01/31		100	%	75 - 125
			Acid Extractable Silver (Ag)	2023/01/31		95	%	75 - 125
			Acid Extractable Strontium (Sr)	2023/01/31		93	%	75 - 125
			Acid Extractable Thallium (Tl)	2023/01/31		98	%	75 - 125
			Acid Extractable Tin (Sn)	2023/01/31		97	%	75 - 125
			Acid Extractable Uranium (U)	2023/01/31		95	%	75 - 125
			Acid Extractable Vanadium (V)	2023/01/31		96	%	75 - 125
Acid Extractable Zinc (Zn)	2023/01/31		99	%	75 - 125			
8477917	JHY	Method Blank	Acid Extractable Aluminum (Al)	2023/01/31	<10		mg/kg	
			Acid Extractable Antimony (Sb)	2023/01/31	<2.0		mg/kg	
			Acid Extractable Arsenic (As)	2023/01/31	<2.0		mg/kg	

Bureau Veritas - Partial/Rush Results



BUREAU  
VERITAS

Bureau Veritas Job #: C321377  
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AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBORO  
Sampler Initials: ND

### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Barium (Ba)	2023/01/31	<5.0		mg/kg	
			Acid Extractable Beryllium (Be)	2023/01/31	<1.0		mg/kg	
			Acid Extractable Bismuth (Bi)	2023/01/31	<2.0		mg/kg	
			Acid Extractable Boron (B)	2023/01/31	<50		mg/kg	
			Acid Extractable Cadmium (Cd)	2023/01/31	<0.30		mg/kg	
			Acid Extractable Chromium (Cr)	2023/01/31	<2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2023/01/31	<1.0		mg/kg	
			Acid Extractable Copper (Cu)	2023/01/31	<2.0		mg/kg	
			Acid Extractable Iron (Fe)	2023/01/31	<50		mg/kg	
			Acid Extractable Lead (Pb)	2023/01/31	<0.50		mg/kg	
			Acid Extractable Lithium (Li)	2023/01/31	<2.0		mg/kg	
			Acid Extractable Manganese (Mn)	2023/01/31	<2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2023/01/31	<0.10		mg/kg	
			Acid Extractable Molybdenum (Mo)	2023/01/31	<2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2023/01/31	<2.0		mg/kg	
			Acid Extractable Rubidium (Rb)	2023/01/31	<2.0		mg/kg	
			Acid Extractable Selenium (Se)	2023/01/31	<0.50		mg/kg	
			Acid Extractable Silver (Ag)	2023/01/31	<0.50		mg/kg	
			Acid Extractable Strontium (Sr)	2023/01/31	<5.0		mg/kg	
			Acid Extractable Thallium (Tl)	2023/01/31	<0.10		mg/kg	
			Acid Extractable Tin (Sn)	2023/01/31	<1.0		mg/kg	
			Acid Extractable Uranium (U)	2023/01/31	<0.10		mg/kg	
			Acid Extractable Vanadium (V)	2023/01/31	<2.0		mg/kg	
			Acid Extractable Zinc (Zn)	2023/01/31	<5.0		mg/kg	
8477917	JHY	RPD	Acid Extractable Aluminum (Al)	2023/01/31	4.2		%	35
			Acid Extractable Antimony (Sb)	2023/01/31	NC		%	35
			Acid Extractable Arsenic (As)	2023/01/31	2.1		%	35
			Acid Extractable Barium (Ba)	2023/01/31	3.7		%	35
			Acid Extractable Beryllium (Be)	2023/01/31	NC		%	35
			Acid Extractable Bismuth (Bi)	2023/01/31	NC		%	35
			Acid Extractable Boron (B)	2023/01/31	NC		%	35
			Acid Extractable Cadmium (Cd)	2023/01/31	NC		%	35
			Acid Extractable Chromium (Cr)	2023/01/31	3.0		%	35
			Acid Extractable Cobalt (Co)	2023/01/31	2.2		%	35
			Acid Extractable Copper (Cu)	2023/01/31	0.12		%	35
			Acid Extractable Iron (Fe)	2023/01/31	1.6		%	35
			Acid Extractable Lead (Pb)	2023/01/31	88 (1)		%	35
			Acid Extractable Lithium (Li)	2023/01/31	6.0		%	35
			Acid Extractable Manganese (Mn)	2023/01/31	3.8		%	35
			Acid Extractable Mercury (Hg)	2023/01/31	NC		%	35
			Acid Extractable Molybdenum (Mo)	2023/01/31	NC		%	35
			Acid Extractable Nickel (Ni)	2023/01/31	4.2		%	35
			Acid Extractable Rubidium (Rb)	2023/01/31	9.2		%	35
			Acid Extractable Selenium (Se)	2023/01/31	NC		%	35
			Acid Extractable Silver (Ag)	2023/01/31	NC		%	35
			Acid Extractable Strontium (Sr)	2023/01/31	1.4		%	35
			Acid Extractable Thallium (Tl)	2023/01/31	NC		%	35
			Acid Extractable Tin (Sn)	2023/01/31	NC		%	35
			Acid Extractable Uranium (U)	2023/01/31	5.2		%	35
			Acid Extractable Vanadium (V)	2023/01/31	2.3		%	35
			Acid Extractable Zinc (Zn)	2023/01/31	0.099		%	35
8478171	JHY	Matrix Spike [UWL743-01]	Acid Extractable Antimony (Sb)	2023/02/01		91	%	75 - 125

Bureau Veritas - Partial/Rush Results



BUREAU  
VERITAS

Bureau Veritas Job #: C321377  
Report Date: 2023/02/01

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBORO  
Sampler Initials: ND

### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Arsenic (As)	2023/02/01		NC	%	75 - 125
			Acid Extractable Barium (Ba)	2023/02/01		NC	%	75 - 125
			Acid Extractable Beryllium (Be)	2023/02/01		99	%	75 - 125
			Acid Extractable Bismuth (Bi)	2023/02/01		102	%	75 - 125
			Acid Extractable Boron (B)	2023/02/01		90	%	75 - 125
			Acid Extractable Cadmium (Cd)	2023/02/01		96	%	75 - 125
			Acid Extractable Chromium (Cr)	2023/02/01		99	%	75 - 125
			Acid Extractable Cobalt (Co)	2023/02/01		95	%	75 - 125
			Acid Extractable Copper (Cu)	2023/02/01		100	%	75 - 125
			Acid Extractable Lead (Pb)	2023/02/01		NC	%	75 - 125
			Acid Extractable Lithium (Li)	2023/02/01		99	%	75 - 125
			Acid Extractable Manganese (Mn)	2023/02/01		NC	%	75 - 125
			Acid Extractable Mercury (Hg)	2023/02/01		101	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2023/02/01		NC	%	75 - 125
			Acid Extractable Nickel (Ni)	2023/02/01		96	%	75 - 125
			Acid Extractable Rubidium (Rb)	2023/02/01		96	%	75 - 125
			Acid Extractable Selenium (Se)	2023/02/01		102	%	75 - 125
			Acid Extractable Silver (Ag)	2023/02/01		100	%	75 - 125
			Acid Extractable Strontium (Sr)	2023/02/01		NC	%	75 - 125
			Acid Extractable Thallium (Tl)	2023/02/01		102	%	75 - 125
			Acid Extractable Tin (Sn)	2023/02/01		97	%	75 - 125
			Acid Extractable Uranium (U)	2023/02/01		101	%	75 - 125
			Acid Extractable Vanadium (V)	2023/02/01		NC	%	75 - 125
			Acid Extractable Zinc (Zn)	2023/02/01		NC	%	75 - 125
8478171	JHY	Spiked Blank	Acid Extractable Antimony (Sb)	2023/01/31		101	%	75 - 125
			Acid Extractable Arsenic (As)	2023/01/31		98	%	75 - 125
			Acid Extractable Barium (Ba)	2023/01/31		98	%	75 - 125
			Acid Extractable Beryllium (Be)	2023/01/31		99	%	75 - 125
			Acid Extractable Bismuth (Bi)	2023/01/31		97	%	75 - 125
			Acid Extractable Boron (B)	2023/01/31		97	%	75 - 125
			Acid Extractable Cadmium (Cd)	2023/01/31		96	%	75 - 125
			Acid Extractable Chromium (Cr)	2023/01/31		98	%	75 - 125
			Acid Extractable Cobalt (Co)	2023/01/31		99	%	75 - 125
			Acid Extractable Copper (Cu)	2023/01/31		99	%	75 - 125
			Acid Extractable Lead (Pb)	2023/01/31		99	%	75 - 125
			Acid Extractable Lithium (Li)	2023/01/31		100	%	75 - 125
			Acid Extractable Manganese (Mn)	2023/01/31		98	%	75 - 125
			Acid Extractable Mercury (Hg)	2023/01/31		101	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2023/01/31		98	%	75 - 125
			Acid Extractable Nickel (Ni)	2023/01/31		98	%	75 - 125
			Acid Extractable Rubidium (Rb)	2023/01/31		97	%	75 - 125
			Acid Extractable Selenium (Se)	2023/01/31		100	%	75 - 125
			Acid Extractable Silver (Ag)	2023/01/31		97	%	75 - 125
			Acid Extractable Strontium (Sr)	2023/01/31		96	%	75 - 125
			Acid Extractable Thallium (Tl)	2023/01/31		101	%	75 - 125
			Acid Extractable Tin (Sn)	2023/01/31		97	%	75 - 125
			Acid Extractable Uranium (U)	2023/01/31		98	%	75 - 125
			Acid Extractable Vanadium (V)	2023/01/31		96	%	75 - 125
			Acid Extractable Zinc (Zn)	2023/01/31		100	%	75 - 125
8478171	JHY	Method Blank	Acid Extractable Aluminum (Al)	2023/01/31	<10		mg/kg	
			Acid Extractable Antimony (Sb)	2023/01/31	<2.0		mg/kg	
			Acid Extractable Arsenic (As)	2023/01/31	<2.0		mg/kg	
			Acid Extractable Barium (Ba)	2023/01/31	<5.0		mg/kg	

Bureau Veritas - Partial/Rush Results



BUREAU  
VERITAS

Bureau Veritas Job #: C321377

Report Date: 2023/02/01

AECOM Canada Ltd

Client Project #: 60680068

Site Location: GOLDBORO

Sampler Initials: ND

### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Beryllium (Be)	2023/01/31	<1.0		mg/kg	
			Acid Extractable Bismuth (Bi)	2023/01/31	<2.0		mg/kg	
			Acid Extractable Boron (B)	2023/01/31	<50		mg/kg	
			Acid Extractable Cadmium (Cd)	2023/01/31	<0.30		mg/kg	
			Acid Extractable Chromium (Cr)	2023/01/31	<2.0		mg/kg	
			Acid Extractable Cobalt (Co)	2023/01/31	<1.0		mg/kg	
			Acid Extractable Copper (Cu)	2023/01/31	<2.0		mg/kg	
			Acid Extractable Iron (Fe)	2023/01/31	<50		mg/kg	
			Acid Extractable Lead (Pb)	2023/01/31	<0.50		mg/kg	
			Acid Extractable Lithium (Li)	2023/01/31	<2.0		mg/kg	
			Acid Extractable Manganese (Mn)	2023/01/31	<2.0		mg/kg	
			Acid Extractable Mercury (Hg)	2023/01/31	<0.10		mg/kg	
			Acid Extractable Molybdenum (Mo)	2023/01/31	<2.0		mg/kg	
			Acid Extractable Nickel (Ni)	2023/01/31	<2.0		mg/kg	
			Acid Extractable Rubidium (Rb)	2023/01/31	<2.0		mg/kg	
			Acid Extractable Selenium (Se)	2023/01/31	<0.50		mg/kg	
			Acid Extractable Silver (Ag)	2023/01/31	<0.50		mg/kg	
			Acid Extractable Strontium (Sr)	2023/01/31	<5.0		mg/kg	
			Acid Extractable Thallium (Tl)	2023/01/31	<0.10		mg/kg	
			Acid Extractable Tin (Sn)	2023/01/31	<1.0		mg/kg	
			Acid Extractable Uranium (U)	2023/01/31	<0.10		mg/kg	
			Acid Extractable Vanadium (V)	2023/01/31	<2.0		mg/kg	
			Acid Extractable Zinc (Zn)	2023/01/31	<5.0		mg/kg	
8478171	JHY	RPD [UWL743-01]	Acid Extractable Aluminum (Al)	2023/02/01	2.0		%	35
			Acid Extractable Antimony (Sb)	2023/02/01	1.7		%	35
			Acid Extractable Arsenic (As)	2023/02/01	0.24		%	35
			Acid Extractable Barium (Ba)	2023/02/01	0.55		%	35
			Acid Extractable Beryllium (Be)	2023/02/01	3.9		%	35
			Acid Extractable Bismuth (Bi)	2023/02/01	NC		%	35
			Acid Extractable Boron (B)	2023/02/01	NC		%	35
			Acid Extractable Cadmium (Cd)	2023/02/01	2.3		%	35
			Acid Extractable Chromium (Cr)	2023/02/01	0.81		%	35
			Acid Extractable Cobalt (Co)	2023/02/01	0.72		%	35
			Acid Extractable Copper (Cu)	2023/02/01	4.5		%	35
			Acid Extractable Iron (Fe)	2023/02/01	1.2		%	35
			Acid Extractable Lead (Pb)	2023/02/01	3.1		%	35
			Acid Extractable Lithium (Li)	2023/02/01	2.2		%	35
			Acid Extractable Manganese (Mn)	2023/02/01	2.9		%	35
			Acid Extractable Mercury (Hg)	2023/02/01	3.2		%	35
			Acid Extractable Molybdenum (Mo)	2023/02/01	1.4		%	35
			Acid Extractable Nickel (Ni)	2023/02/01	1.9		%	35
			Acid Extractable Rubidium (Rb)	2023/02/01	0.27		%	35
			Acid Extractable Selenium (Se)	2023/02/01	2.7		%	35
			Acid Extractable Silver (Ag)	2023/02/01	2.4		%	35
			Acid Extractable Strontium (Sr)	2023/02/01	2.3		%	35
			Acid Extractable Thallium (Tl)	2023/02/01	2.3		%	35
			Acid Extractable Tin (Sn)	2023/02/01	NC		%	35
			Acid Extractable Uranium (U)	2023/02/01	5.8		%	35
			Acid Extractable Vanadium (V)	2023/02/01	6.7		%	35

Bureau Veritas - Partial/Rush Results



BUREAU  
VERITAS

Bureau Veritas Job #: C321377  
Report Date: 2023/02/01

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBORO  
Sampler Initials: ND

### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Zinc (Zn)	2023/02/01	0.61		%	35
<p>Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.</p> <p>Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.</p> <p>Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.</p> <p>Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.</p> <p>NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)</p> <p>NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference &lt;= 2x RDL).</p> <p>(1) Poor RPD due to sample inhomogeneity. Verified by repeat digestion and analysis.</p>								

Bureau Veritas - Partial/Rush Results



BUREAU  
VERITAS

Bureau Veritas Job #: C321377  
Report Date: 2023/02/01

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBORO  
Sampler Initials: ND

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Mike MacGillivray, Scientific Specialist (Inorganics)



Automated Statchk

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by {0}, {1} responsible for {2} {3} laboratory operations.

Bureau Veritas - Partial/Rush Results



Bureau Veritas - Partial/Rush Results

Your Project #: 60680068  
Site Location: GOLDBORO  
Your C.O.C. #: N/A

**Attention: Rory McNeil**

AECOM Canada Ltd  
1701 Hollis St  
SH400  
Halifax , NS  
CANADA B3J 3M8

Report Date: 2023/03/06  
Report #: R7534718  
Version: 3 - Partial

**CERTIFICATE OF ANALYSIS – PARTIAL RESULTS**

**BUREAU VERITAS JOB #: C321377**

**Received: 2023/01/20, 09:21**

Sample Matrix: Water  
# Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Carbonate, Bicarbonate and Hydroxide	1	N/A	2023/01/26	N/A	SM 23 4500-CO2 D
Alkalinity	1	N/A	2023/01/26	ATL SOP 00142	SM 23 2320 B
Chloride	1	N/A	2023/01/26	ATL SOP 00014	SM 23 4500-Cl- E m
Colour	1	N/A	2023/01/26	ATL SOP 00020	SM 23 2120C m
Conductance - water	1	N/A	2023/01/26	ATL SOP 00004	SM 23 2510B m
Hardness (calculated as CaCO3)	1	N/A	2023/01/31	ATL SOP 00048	Auto Calc.
Ion Balance (% Difference)	1	N/A	2023/01/31	N/A	Auto Calc.
Anion and Cation Sum	1	N/A	2023/01/31	N/A	Auto Calc.
Nitrogen Ammonia - water	1	N/A	2023/01/26	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	1	N/A	2023/01/27	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite	1	N/A	2023/01/27	ATL SOP 00017	SM 23 4500-NO2- B m
Nitrogen - Nitrate (as N)	1	N/A	2023/01/27	ATL SOP 00018	ASTM D3867-16
pH (1)	1	N/A	2023/01/26	ATL SOP 00003	SM 23 4500-H+ B m
Phosphorus - ortho	1	N/A	2023/01/27	ATL SOP 00021	SM 23 4500-P E m
Sat. pH and Langelier Index (@ 20C)	1	N/A	2023/01/31	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 4C)	1	N/A	2023/01/31	ATL SOP 00049	Auto Calc.
Reactive Silica	1	N/A	2023/01/26	ATL SOP 00022	EPA 366.0 m
Sulphate	1	N/A	2023/01/26	ATL SOP 00023	ASTM D516-16 m
Total Dissolved Solids (TDS calc)	1	N/A	2023/01/31	N/A	Auto Calc.
Organic carbon - Total (TOC) (2)	1	N/A	2023/01/26	ATL SOP 00203	SM 23 5310B m
Turbidity	1	N/A	2023/01/26	ATL SOP 00011	EPA 180.1 R2 m

**Remarks:**

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.



Your Project #: 60680068  
Site Location: GOLDBORO  
Your C.O.C. #: N/A

**Attention: Rory McNeil**

AECOM Canada Ltd  
1701 Hollis St  
SH400  
Halifax , NS  
CANADA B3J 3M8

**Report Date: 2023/03/06**  
Report #: R7534718  
Version: 3 - Partial

**CERTIFICATE OF ANALYSIS – PARTIAL RESULTS**

**BUREAU VERITAS JOB #: C321377**

**Received: 2023/01/20, 09:21**

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested. This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The APHA Standard Method requires pH to be analyzed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the APHA Standard Method holding time.

(2) TOC / DOC present in the sample should be considered as non-purgeable TOC / DOC.

Encryption Key



Bureau Veritas  
06 Mar 2023 11:44:28

Please direct all questions regarding this Certificate of Analysis to:  
Marie Muise, Key Account Specialist  
Email: Marie.MUISE@bureauveritas.com  
Phone# (902)420-0203 Ext:253

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Suzanne Rogers, General Manager responsible for Nova Scotia Environmental laboratory operations.

Bureau Veritas - Partial/Rush Results



BUREAU  
VERITAS

Bureau Veritas Job #: C321377  
Report Date: 2023/03/06

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBORO  
Sampler Initials: ND

### RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		UWL758		
Sampling Date		2023/01/18		
COC Number		N/A		
	UNITS	SWDUP1	RDL	QC Batch
<b>Calculated Parameters</b>				
Anion Sum	me/L	0.340	N/A	8467823
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	2.3	1.0	8467820
Calculated TDS	mg/L	34	1.0	8467827
Carb. Alkalinity (calc. as CaCO3)	mg/L	<1.0	1.0	8467820
Cation Sum	me/L	0.520	N/A	8467823
Hardness (CaCO3)	mg/L	6.5	1.0	8467821
Ion Balance (% Difference)	%	20.9	N/A	8467822
Langelier Index (@ 20C)	N/A	-4.73		8467825
Langelier Index (@ 4C)	N/A	-4.98		8467826
Nitrate (N)	mg/L	<0.050	0.050	8467824
Saturation pH (@ 20C)	N/A	10.8		8467825
Saturation pH (@ 4C)	N/A	11.1		8467826
<b>Inorganics</b>				
Total Alkalinity (Total as CaCO3)	mg/L	2.3	2.0	8468780
Dissolved Chloride (Cl-)	mg/L	6.8	1.0	8470132
Colour	TCU	21	5.0	8470579
Nitrate + Nitrite (N)	mg/L	<0.050	0.050	8470592
Nitrite (N)	mg/L	<0.010	0.010	8470604
Nitrogen (Ammonia Nitrogen)	mg/L	0.063	0.050	8470038
Total Organic Carbon (C)	mg/L	2.7	0.50	8470900
Orthophosphate (P)	mg/L	<0.50 (1)	0.50	8470581
pH	pH	6.09		8468760
Reactive Silica (SiO2)	mg/L	9.4	0.50	8470578
Dissolved Sulphate (SO4)	mg/L	4.7	2.0	8470576
Turbidity	NTU	30	0.10	8470131
Conductivity	uS/cm	47	1.0	8468753
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable (1) Elevated reporting limit due to sample matrix.				

Bureau Veritas - Partial/Rush Results



BUREAU  
VERITAS

Bureau Veritas Job #: C321377  
Report Date: 2023/03/06

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBORO  
Sampler Initials: ND

### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	1.7°C
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Sample UWL758 [SWDUP1] : RCap Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

**Results relate only to the items tested.**

Bureau Veritas - Partial/Rush Results



BUREAU  
VERITAS

Bureau Veritas Job #: C321377  
Report Date: 2023/03/06

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBORO  
Sampler Initials: ND

### QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8468753	AA0	Spiked Blank	Conductivity	2023/01/26		97	%	80 - 120
8468753	AA0	Method Blank	Conductivity	2023/01/26	<1.0		uS/cm	
8468753	AA0	RPD	Conductivity	2023/01/26	0.18		%	10
8468760	AA0	Spiked Blank	pH	2023/01/26		100	%	97 - 103
8468760	AA0	RPD	pH	2023/01/26	0.96		%	N/A
8468780	AA0	Spiked Blank	Total Alkalinity (Total as CaCO3)	2023/01/26		101	%	80 - 120
8468780	AA0	Method Blank	Total Alkalinity (Total as CaCO3)	2023/01/26	<2.0		mg/L	
8468780	AA0	RPD	Total Alkalinity (Total as CaCO3)	2023/01/26	2.0		%	20
8470038	TGO	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2023/01/26		NC	%	80 - 120
8470038	TGO	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2023/01/26		94	%	80 - 120
8470038	TGO	Method Blank	Nitrogen (Ammonia Nitrogen)	2023/01/26	<0.050		mg/L	
8470038	TGO	RPD	Nitrogen (Ammonia Nitrogen)	2023/01/26	4.2		%	20
8470131	AA0	QC Standard	Turbidity	2023/01/26		108	%	80 - 120
8470131	AA0	Spiked Blank	Turbidity	2023/01/26		101	%	80 - 120
8470131	AA0	Method Blank	Turbidity	2023/01/26	<0.10		NTU	
8470131	AA0	RPD	Turbidity	2023/01/26	0		%	20
8470132	TGO	Matrix Spike	Dissolved Chloride (Cl-)	2023/01/26		88	%	80 - 120
8470132	TGO	Spiked Blank	Dissolved Chloride (Cl-)	2023/01/26		86	%	80 - 120
8470132	TGO	Method Blank	Dissolved Chloride (Cl-)	2023/01/26	<1.0		mg/L	
8470132	TGO	RPD	Dissolved Chloride (Cl-)	2023/01/26	5.9		%	20
8470576	TGO	Matrix Spike	Dissolved Sulphate (SO4)	2023/01/26		101	%	80 - 120
8470576	TGO	Spiked Blank	Dissolved Sulphate (SO4)	2023/01/26		89	%	80 - 120
8470576	TGO	Method Blank	Dissolved Sulphate (SO4)	2023/01/26	<2.0		mg/L	
8470576	TGO	RPD	Dissolved Sulphate (SO4)	2023/01/26	NC		%	20
8470578	TGO	Matrix Spike	Reactive Silica (SiO2)	2023/01/26		88	%	80 - 120
8470578	TGO	Spiked Blank	Reactive Silica (SiO2)	2023/01/26		89	%	80 - 120
8470578	TGO	Method Blank	Reactive Silica (SiO2)	2023/01/26	<0.50		mg/L	
8470578	TGO	RPD	Reactive Silica (SiO2)	2023/01/26	0.73		%	20
8470579	TGO	Spiked Blank	Colour	2023/01/26		98	%	80 - 120
8470579	TGO	Method Blank	Colour	2023/01/26	<5.0		TCU	
8470579	TGO	RPD	Colour	2023/01/26	1.2		%	20
8470581	TGO	Matrix Spike	Orthophosphate (P)	2023/01/27		85	%	80 - 120
8470581	TGO	Spiked Blank	Orthophosphate (P)	2023/01/27		89	%	80 - 120
8470581	TGO	Method Blank	Orthophosphate (P)	2023/01/27	<0.010		mg/L	
8470581	TGO	RPD	Orthophosphate (P)	2023/01/27	NC		%	20
8470592	TGO	Matrix Spike	Nitrate + Nitrite (N)	2023/01/27		84	%	80 - 120
8470592	TGO	Spiked Blank	Nitrate + Nitrite (N)	2023/01/27		90	%	80 - 120
8470592	TGO	Method Blank	Nitrate + Nitrite (N)	2023/01/27	<0.050		mg/L	
8470592	TGO	RPD	Nitrate + Nitrite (N)	2023/01/27	NC		%	20
8470604	TGO	Matrix Spike	Nitrite (N)	2023/01/27		83	%	80 - 120
8470604	TGO	Spiked Blank	Nitrite (N)	2023/01/27		98	%	80 - 120
8470604	TGO	Method Blank	Nitrite (N)	2023/01/27	<0.010		mg/L	
8470604	TGO	RPD	Nitrite (N)	2023/01/27	NC		%	20
8470900	CPP	Matrix Spike	Total Organic Carbon (C)	2023/01/26		100	%	85 - 115
8470900	CPP	Spiked Blank	Total Organic Carbon (C)	2023/01/26		99	%	80 - 120
8470900	CPP	Method Blank	Total Organic Carbon (C)	2023/01/26	<0.50		mg/L	

Bureau Veritas - Partial/Rush Results



BUREAU  
VERITAS

Bureau Veritas Job #: C321377  
Report Date: 2023/03/06

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBORO  
Sampler Initials: ND

### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
	8470900	CPP	RPD	Total Organic Carbon (C)	2023/01/26	NC		%	15

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

Bureau Veritas - Partial/Rush Results



BUREAU  
VERITAS

Bureau Veritas Job #: C321377  
Report Date: 2023/03/06

AECOM Canada Ltd  
Client Project #: 60680068  
Site Location: GOLDBORO  
Sampler Initials: ND

## VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



Automated Statchk

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Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by {0}, {1} responsible for {2} {3} laboratory operations.

# Appendix D. Field Memos

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To: Cory MacPhee  
 Project Manager  
 Build Nova Scotia Inc.  
 Harbourside Place  
 45 Wabana Court  
 Sydney, Nova Scotia, Canada

Date: March 15, 2023  
 Project #: 60680169  
 From: Cheibany Ould Elemine  
Rory McNeil

cc:

# Memorandum

Subject: **Seal Harbour and Gold Brook Lake Sites – Acid Rock Drainage and Metal leaching Screening of Waste Rock and Tailings**

## 1. Introduction

AECOM Canada Ltd. (AECOM) was retained by Build Nova Scotia Inc. (BNS) to complete a Phase II Environmental Site Assessment (ESA) for the former Seal Harbour and Gold Brook Lake Sites located in Goldboro, Nova Scotia. Waste rock and tailings samples were collected and sent to an accredited laboratory for geochemical testing to characterize their potential for acid rock drainage and metal leaching (ARD/ML) and help inform remedial options analysis. This technical memorandum presents the results of the static test-based ARD/ML screening.

## 2. Methodology

Five (5) waste rock and three (3) tailings samples were collected from the Site and send to Bureau Veritas in Bedford, Nova Scotia for geochemical testing. Sampling locations are shown in Figure 1, Appendix A, and in the description of the samples is provided in Table 2-1 below. Select photographs of tailings sampling sites are provided in Appendix B.

**Table 2-1: Descriptions of Waste Rock and Tailings Samples**

AECOM Sample ID	Lab Sample ID	Description	Locations
WR-1	AYF417	Waste Rock	Core Area
WR-2	AYF418	Waste Rock	Shore of Gold Brook Lake
WR-3	AYF419	Waste Rock	Near Gold Brook Road
WR-4	AYF420	Waste Rock	Center of Waste Rock area (near sea-cans)
WR-5	AYF421	Waste Rock	Furthest from Road
SS22-13	AYF422	Tailings	Core Area
SS22-B38	AYF423	Tailings	Historic Tailings Area
SS22-D21	AYF424	Tailings	Core Area

Laboratory testing included Acid-base accounting (ABA), ultra trace metal analysis, X-ray diffraction (XRD) and shake flask extraction (SFE). These tests are used for:

- ABA tests are used to determine the ratio of potentially acid generating and potentially acid consuming minerals in a sample and determine its acid potential.
- Ultra trace metal analysis is used to determine the solid phase metal content of the sample.
- XRD is used to determine the mineral composition and the sulphides and carbonates percentage contents.
- SFE test is used to determine the concentrations of readily soluble constituents that may be released in the short term via leaching by meteoric water (MEND, 2009).

The samples were classified into one of the three categories below using the neutralization potential ratio (NPR) which is the ratio of the Modified Sobek NP (NP) over acid potential (AP) (MEND, 2009):

- NPR < 1: the sample is considered potentially acid generating (PAG);
- $1 \leq \text{NPR} \leq 2$ : the samples is considered uncertain potential for acid generation; and
- NPR > 2: the samples is considered not potentially acid generating (non-PAG).

### 3. Results and Discussion

The results of the static and mineralogical tests are discussed below and laboratory reports are compiled in Appendix C.

#### 3.1 Waste Rock

The waste rock consisted of five samples labelled WR-1 through WR-5. The XRD results, which can be found in Table 3-1, indicate that the samples were primarily composed of quartz (43 – 51 wt. %) , aluminosilicates (38.5 - 55 wt.%; biotite, clinocllore, K-feldpsar, plagioclase, and illite-muscovite) and trace carbonates (0.2 - 0.5 wt.% calcite; 0.2 – 0.3 wt.% siderite). Arsenopyrite was detected in three of the samples (WR-3, WR-4, and WR-5) and ranged between 0.2 and 1.7 wt.%.

**Table 3-1: XRD Composition of Waste Rock Samples**

Mineral	WR-1	WR-2	WR-3	WR-4	WR-5
	% by wt.	% by wt.	% by wt.	% by wt.	% by wt.
<b>Quartz</b>	<b>50.9</b>	<b>47.1</b>	<b>51.8</b>	<b>60.9</b>	<b>43.1</b>
<b>Aluminosilicates</b>	<b>48.1</b>	<b>52.0</b>	<b>47.0</b>	<b>38.5</b>	<b>54.8</b>
<i>Biotite 1M</i>	7.7	8.0	6.4	7.5	9.2
<i>Clinocllore</i>	2.5	2.2	2.9	1.6	2.4
<i>K-feldspar (microcline interm.)</i>	1.7	2.3	2.4	1.9	2.0
<i>Plagioclase (albite; albite, calcian)</i>	26.2	29.6	24.4	16.7	16.3
<i>Illite/Muscovite 2M1</i>	10.1	10.0	10.9	10.8	25.0
<b>Calcite</b>	<b>0.5</b>	<b>0.2</b>	<b>0.4</b>	<b>0.2</b>	<b>0.2</b>
<b>Siderite ( ? )</b>	<b>0.2</b>	<b>0.3</b>	<b>0.2</b>	<b>0.2</b>	<b>0.3</b>
<b>Ilmenite</b>	<b>0.3</b>	<b>0.4</b>	ND	ND	ND
<b>Arsenopyrite ( ? )</b>	ND	ND	<b>0.5</b>	<b>0.2</b>	<b>1.7</b>

The ABA results (Table 3-2) showed that total sulphur ranged between 0.03 and 0.4 wt.% (median 0.13 wt.%) with the total sulphur in WR-5 being higher than the others due to higher arsenopyrite content. Measured sulphate sulphur (0.01 – 0.03 wt.%; median 0.02 wt.%) and sulphide sulphur (0.01 – 0.10 wt.%; median 0.02 wt.%) were low, and a significant portion of total sulphur reported as non extractable sulphur (<0.02 – 0.29 wt.%; median 0.10 wt.%).

Due to the elevated non extractable sulphur, AP was conservatively calculated using total sulphur and ranged between 0.9 and 12.5 kg CaCO<sub>3</sub>/t (median 4.06 kg CaCO<sub>3</sub>/t). The NP of the samples was low, comparable and ranged between 8.6 and 13 kg CaCO<sub>3</sub>/t (median 9.5 kg CaCO<sub>3</sub>/t). The carbonate content of the waste rock samples was very low ranging between the detection limit (<0.08) and 0.12 wt.%), thus the NP was mainly derived from aluminosilicates and it is likely adequate to buffer the acidity generated from most samples considering the low sulphur content. The NPR calculated as the ratio of NP to AP ranged between 0.7 and 10 and indicated that three of the waste rock samples were non-PAG and one each were Uncertain and PAG. Figure 2 in Appendix B shows the classification of waste rock samples according to their ARD potential.

**Table 3-2: Waste Rock Samples ABA Results**

Parameter	Unit	WR-1	WR-2	WR-3	WR-4	WR-5
Paste pH	pH units	9.80	9.33	9.52	9.53	9.28
CO <sub>2</sub>	wt.%	0.08	< 0.08	0.12	0.08	< 0.08
Carbonate NP	kg CaCO <sub>3</sub> / tonne	1.8	1.8	2.7	1.8	1.8
Total Sulphur	wt.%	0.05	0.03	0.13	0.14	0.40
Sulphate Sulphur	wt.%	0.03	0.02	0.02	0.02	0.01
Sulphide Sulphur	wt.%	0.02	0.01	0.01	0.02	0.10
Non-extractable Sulphur	wt.%	< 0.02	< 0.02	0.10	0.10	0.29
Acid Potential	kg CaCO <sub>3</sub> / tonne	1.6	0.9	4.1	4.4	12.5
Modified Sobek NP	kg CaCO <sub>3</sub> / tonne	13	9.4	10	8.7	8.6
Bulk NPR	-	8.3	10	2.5	2.0	0.7
ARD Potential	-	Non-PAG	Non-PAG	Non-PAG	Uncertain	PAG

To determine if the samples were depleted or enriched in metals, ultra trace metal results were compared to ten times (10x) the average crustal abundance value (Price, 1997) as per standard ARD/ML practice outlined in MEND (2009). The results showed that:

- Arsenic was significantly higher than the 10x the crustal abundance in all five the samples
- Gold was higher than the 10x the crustal abundance in only three samples,
- Bismuth and tellurium were higher in 2 samples, and
- Antimony was higher in one (Table 3-3).

The concentration of arsenic was particularly elevated (24 to 400 times higher than the 10x the crustal abundance value).

**Table 3-3: Waste Rock Samples Ultra Trace Metals Results**

Element	Unit	10x Crustal Abundance	WR-1	WR-2	WR-3	WR-4	WR-5
Arsenic (As)	ppm	18	<b>1050</b>	<b>446</b>	<b>2860</b>	<b>1430</b>	<b>7350</b>
Gold (Au)	ppm	0.04	0.006	0.006	<b>0.330</b>	<b>0.208</b>	<b>0.144</b>
Bismuth (Bi)	ppm	0.085	0.05	0.05	<b>0.13</b>	0.07	<b>0.39</b>
Antimony (Sb)	ppm	2	0.76	0.25	1.35	0.69	<b>3.47</b>
Tellurium (Te)	ppm	0.01	<0.02	<0.02	<b>0.04</b>	<0.02	<b>0.11</b>

Note: Bold indicates parameter over the 10x Crustal Abundance

The SFE test returned a circumneutral to slightly alkaline pH (7.99 – 9.41), very low concentrations of sulphate (1.3 – 2.9 mg/L), acidity (<0.5 and 1.7 mg/L CaCO<sub>3</sub>) and the alkalinity was higher than acidity (17 – 26 mg/L CaCO<sub>3</sub>). Electric conductivity (EC), total dissolved solids (TDS), nitrate and carbonates species were also low (Appendix C).

The results of the SFE were compared to the Nova Scotia Tier I Environmental Quality Standards for the protection of freshwater aquatic life (EQS FAL; Nova Scotia Environment, 2021) to identify which elements may be released at concentration levels potentially exceeding the guidelines. Aluminum and arsenic exceeded their respective guidelines in all five samples, and fluoride, copper and mercury exceeded in one sample each (Table 3-4). Mercury’s detection limit was above the Nova Scotia Guidelines making it difficult to accurately assess its exceedances.

While the exceedances of the guidelines by fluoride and copper were relatively marginal (1.47 to 1.75 times the guidelines), aluminum and arsenic significantly exceeded their respective guidelines. Arsenic concentrations were forty (40) to two hundred (200) times higher than the guideline (0.005 mg/L) and aluminum concentrations were six (6) to eight (8) times the guideline in all the samples. This data suggests high potential for aluminum and arsenic release from the waste rock. Arsenopyrite and aluminosilicates are likely the source of arsenic and aluminum, respectively.

**Table 3-4: Waste Rock Samples SFE Results**

Parameter	Unit	Nova Scotia EQS FAL Guidelines	WR-1	WR-2	WR-3	WR-4	WR-5
Fluoride (F)	mg/L	0.12	<b>0.21</b>	0.08	0.09	0.10	0.10
Diss. Aluminum (Al)	mg/L	0.1	<b>0.749</b>	<b>0.593</b>	<b>0.654</b>	<b>0.740</b>	<b>0.834</b>
Diss. Arsenic (As)	mg/L	0.005	<b>0.198</b>	<b>0.262</b>	<b>0.564</b>	<b>0.632</b>	<b>1.11</b>
Diss. Copper (Cu)	mg/L	0.002	<b>0.00293</b>	0.00146	0.00108	0.000142	<0.00010
Dis. Mercury (Hg)	mg/L	0.000026	<0.000050	<0.000050	<b>0.000056</b>	<0.000050	<0.00010

Note: Bold indicates parameter exceeds the Nova Scotia Environmental Quality Standard for Fresh Water Aquatic Life Guideline

### 3.2 Tailings

The tailing samples varied in composition. SS22-13 and SS22-B38 were predominantly composed of aluminosilicates (65.9 and 81.4 wt.%) with the remainder being largely quartz (33.9 and 18.6 wt. %). Trace amount of siderite (0.2 wt.%) was reported in SS22-13. SS22-D21 had a slightly different mineral composition and consisted of quartz (~59.6 wt.%), aluminosilicates (37.9 wt.%), with minor arsenopyrite (1.6 wt.%) and trace ilmenite/smectite and pharmacosiderite (Table 3-5).

Laboratory reports also indicated the presence of an amorphous/nanoscale material that couldn't be determined. Weathered material containing sulphides may contain amorphous iron oxyhydroxides as a result of sulphide oxidation followed hydrolysis. X-ray diffraction is a semi-quantitative method and can not determine amorphous phases because they lack a crystalline structure.

**Table 3-5: XRD Composition of Tailing Samples**

Components	SS22-13	SS22-B38	SS22-D21
<b>Quartz</b>	<b>33.9</b>	<b>18.6</b>	<b>59.6</b>
<b>Aluminosilicates</b>	<b>65.9</b>	<b>81.4</b>	<b>37.9</b>
<i>Biotite 1M</i>	12.1	6.1	5.5
<i>Clinochlore</i>	2.6	3.7	2.0
<i>K-feldspar (microcline interm.)</i>	1.6	2.6	1.6
<i>Plagioclase (albite; albite, calcian)</i>	18.8	9.5	11.2
<i>Illite/Muscovite 2M1</i>	30.8	59.5	17.6
<b>Siderite (?)</b>	<b>0.2</b>	ND	ND
<b>Ilmenite (?)</b>	ND	ND	<b>0.5</b>
<b>Pharmacosiderite (?)</b>	ND	ND	<b>0.3</b>
<b>Arsenopyrite</b>	ND	ND	<b>1.6</b>

The ABA results showed that total sulphur ranged between 0.26 to 0.43 wt.% (Table 3-6). For SS22-13 and SS22-B38, the total sulphur consisted mainly of non extractable sulphur as sulphate sulphur and sulphide sulphur contents were low (0.01 and 0.03 wt.%; 0.06 wt.%, respectively). SS22-D21 had low sulphate sulphur (0.01 wt. %), but a notably higher sulphide sulphur (0.21 wt. %). The AP was conservatively calculated using total sulphur and ranged between 8.1 and 13.4 kg CaCO3/t. The carbonate content was below the detection limit (<0.08 wt. %). The NP of the samples was low, comparable and ranged between 2.6 and 4.0 kg CaCO3/t. All three samples had an NPR less than 1 indicating high potential for acid generation from these tailings (Table 3-6). Figure 2 in Appendix A shows the classification of tailings samples according to their ARD potential.

**Table 3-6: Tailings Samples ABA Results**

Parameter	Unit	SS22-13	SS22-B38	SS22-D21
<b>Paste pH</b>	pH units	5.65	5.61	5.91
<b>CO<sub>2</sub></b>	wt.%	< 0.08	< 0.08	< 0.08
<b>Carbonate NP</b>	kg CaCO3 / tonne	1.8	1.8	1.8
<b>Total Sulphur</b>	wt.%	0.3	0.26	0.43
<b>Sulphate Sulphur</b>	wt.%	0.03	0.01	0.01
<b>Sulphide Sulphur</b>	wt.%	0.06	0.06	0.21
<b>Non-extractable Sulphur</b>	wt.%	0.21	0.19	0.21
<b>Acid Potential</b>	kg CaCO3 / tonne	9.4	8.1	13.4
<b>Modified Sobek NP</b>	kg CaCO3 / tonne	3.7	2.6	4
<b>Bulk NPR</b>	-	0.4	0.3	0.3
<b>ARD Potential</b>	-	PAG	PAG	PAG

The pH of the SFE leachate was moderately acidic (5.00 - 5.69) indicating that acidity is stored in samples as a result of ongoing sulphide oxidation (Table 3-7). SS22-13 had much higher concentrations of ammonia, chloride, sulphate, phosphorus, total dissolved solids, and hardness compared to the other two samples (Appendix C).

Comparison of the tailings SFE data against the Nova Scotia EQS FAL showed that the leachate pH was below the guideline of 6.5 and several metals including arsenic, cobalt, lead, aluminum, cadmium, copper, iron, manganese, mercury, nickel, and zinc exceeded their guidelines. Arsenic, cobalt and lead exceeded in all three samples, while aluminum, cadmium, copper, iron, manganese, mercury, nickel, and zinc exceeded in one or two samples. Leachable arsenic and cobalt concentrations were particularly elevated above the guideline Arsenic and cobalt were 585 -821 and 3.54 -70) higher than their respective guidelines. This data suggests a high potential for metal release from these samples

**Table 3-7: Tailings Samples SFE Results**

Parameter	Unit	Nova Scotia EQS FAL Guidelines	SS22-13	SS22-B38	SS22-D21
Diss. Aluminum (Al)	mg/L	0.1	<b>0.321</b>	<b>0.312</b>	0.0932
Diss. Arsenic (As)	mg/L	0.005	<b>3.93</b>	<b>2.93</b>	<b>4.11</b>
Diss. Cadmium (Cd)	mg/L	0.00009	<b>0.000138</b>	0.000042	<b>0.000147</b>
Diss. Cobalt (Co)	mg/L	0.001	<b>0.0708</b>	<b>0.00454</b>	<b>0.0124</b>
Diss. Copper (Cu)	mg/L	0.002	0.00194	<b>0.00596</b>	<b>0.00276</b>
Diss. Iron (Fe)	mg/L	0.3	<b>0.492</b>	0.227	<b>1.26</b>
Diss. Lead (Pb)	mg/L	0.001	<b>0.00406</b>	<b>0.00234</b>	<b>0.00109</b>
Diss. Manganese (Mn)	mg/L	0.43	<b>2.45</b>	0.165	0.0412
Diss. Mercury (Hg)	mg/L	0.000026	<0.00025	<0.00025	<b>0.00010</b>
Diss. Nickel (Ni)	mg/L	0.025	<b>0.0659</b>	0.00435	0.0180
Diss. Zinc (Zn)	mg/L	0.021	<b>0.770</b>	0.0162	<b>0.0442</b>

Note: Bold indicates parameter exceeds the Nova Scotia Environmental Quality Standard for Fresh Water Aquatic Life Guideline

## 4. Summary

The results of static and mineralogical tests show that waste rock and tailings consisted mainly of quartz and aluminosilicate with trace amounts of reactive carbonates (waste rock only), siderite, clay and sulphides. Arsenopyrite was the only sulphide present in the samples and is likely the main source of elevated arsenic in the samples' composition and leachates although Pharmacosiderite likely source of some arsenic in the tailings.

The waste rock consisted of a mixture of PAG, Uncertain and Non-PAG material and the tailings were all PAG. The waste rock and tailings have high potential for releasing high concentrations of metals when exposed to leaching. Arsenic and aluminum are the main constituents of potential concern, but other metals such as copper, mercury, zinc, lead and cobalt may also be elevated in leachate, as well. Therefore, the waste rock and tailings should be managed in a matter to prevent leaching by meteoric water and the subsequent release of acidity and metals into the receiving environment.

It is highly recommended to collect additional samples from the waste rock and tailings to ensure that a representative number of samples is tested and refine the understanding of the ARD/ML risk. It is also recommended to lower the detection limit for mercury during the SFE analysis to allow for an accurate assessment the risk of metal leaching.

The results of this testing will help inform the Remedial Option Analysis and indicate that the waste rock and tailings on-Site should be managed, the results are not expected to change the chosen remedial option. However, additional data should be collected to confirm that all materials on Site have been properly characterized for ARD/ML risk prior to finalizing remedial options.

## 5. Recommendations

To further refine this dataset and the knowledge of the extent of ARD/ML, and based on the volume of tailings and waste rock, AECOM recommends collecting ten (10) additional sub-surface waste rock samples and fifteen (15) additional sub-surface tailings samples from the Site. Sample locations will be chosen to provide representative samples, including samples from multiple depths to account for potential differences in weathering. The samples will be submitted to the laboratory for:

- ABA testing
- Ultra metal analysis
- XRD analysis
- SFE testing (selected samples to reduce cost)

To further understand the effects of weathering on the waste rock and tailings geochemical conditions, AECOM recommends collecting these samples from various locations and depth in the waste rock piles and tailings deposits.

## 6. References

Mine Effluent Neutral Drainage (MEND). 2009. Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials. MEND Report 1.20.1. CANMET – Mining and Mineral Science Laboratories, Smithers, BC.

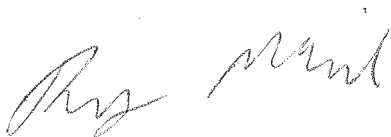
Nova Scotia Environment. 2021. Nova Scotia Tier I Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water ( $\mu\text{g/L}$ ). September 2021.

Price, W.A. 1997. Draft Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia.

## 7. Closing

We trust that this assessment meets your need at this time. Should you have any questions, please contact the undersigned.

Sincerely,  
**AECOM Canada Ltd.**



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# Appendix A:

## Figures

