



cnwm

Our environment, Our duty, Our solution.

Central Regional Service Board
Department of Municipal and Provincial Affairs

2024 Annual Report

Submitted By:

Pam Preston

Chief Administrative Officer, CRSB

February 28, 2025

Central Regional Service Board (CRSB) is required, under the Department of Environment and Climate Change Certificate of Approval (COA), to provide an annual monitoring of operations report.

The C.A.Os included in this report are:

- Approval to operate a Regional Waste Management Facility to serve the Central Newfoundland Region, and to accommodate incoming municipal solid waste from the Western, Northern Peninsula, Baie Verte/Green Bay and Coast of Bays Region. Approval No. WMS 17-04-001 File No. 839-CRS-001, (Jan 15,2023 – Jan 31, 2028).
- Approval to operate seven (7) Municipal Waste Transfer Stations located at Buchan's Junction, Fogo Island, Gander Bay, Indian Bay, New World Island, Point Leamington, and Terra Nova. Approval No. WMS-17-12-004, File No. 804.021.001, (Feb 17, 2024- Dec 31, 2028).
- Approval for CRSB to report on the Town of St. Brendan's Waste Recovery Facility. Approval No. WMS-16-08-009, File No. 839-CRS-001 (Jan 19, 2024 - Dec 31, 2028).
- Approval for CRSB to report on the Town of Change Islands Waste Recovery Facility. Approval No. WMS-16-008, File No. 839-CRS-001, (Jan 19, 2024 – Dec 31, 2028).

The following represents this report:

Sections 123 – 124 Reporting

123 (a) Quantity, type, source, and carriers of waste received;

The Type and Quantities are:

(Attachment #1)

1. Clear Garbage Bags (Note 1).....	52,592.39 Tonnes
2. Transparent Blue Bags.....	1,857.28 Tonnes
3. Construction/Demolition/Bulk (Sorted)	7,438.77 Tonnes
4. Construction/Demolition/Bulk (Mixed)	7,801.82 Tonnes
5. Metals	1,110.01 Tonnes
6. Cardboard.....	1,283.28 Tonnes
7. Household Hazardous Waste (HHW).....	35.46 Tonnes
8. Paint Waste (Attachment # 2)	10.78 Tonnes
9. E-Waste	65.09 Tonnes
10. Tires (+oversized)	286.64 Tonnes

Total Tonnage 72,481.52 Tonnes

Note 1: Clear Garbage Bags

* CRSB: 23,469.27 Tonne

* WRSB: 29,123.12 Tonne

Note 2: MMSB Program Tires

CRSB Collected and Transported

7339 MMSB Program Tires.

(Attachment #3)

123 (a) Waste received at the CRSB Regional Site or at one of the seven (7) Transfer Stations was delivered by:

1. Contractors
2. CRSB Curbside Collections Program
3. Town's Collection Contractors
4. Town's Employee's
5. Individuals

The Source (origin) of the waste:

1. Residential Solid Waste.
2. Residential Construction, Demolition and Bulk Waste.
3. Commercial Construction, Demolition and Bulk Waste.
4. WRSB – Clear Bag and Mixed Waste.
5. Other parts of the province – Special Waste.

Special Waste:

1. Asbestos Waste (**Attachment #4**)..... 40.5 Tonnes
2. International Waste (**Attachment #5**) 112.2 Tonnes
3. Used Oil, UOMA (**Attachment #6**) 16,436 Litres

Other special waste, such as animal carcasses, mortalities or road kill, as identified by the Department of Wildlife and/or Fisheries and Oceans, are disposed of in a similar fashion as international waste, usually under the supervision of the Federal/Provincial Departments.

123 (a) Special Waste Collectors:

1. Asbestos (**Attachment 4**)
 - PBO
 - Finishing Touches
 - GFL
2. International Waste (**Attachment 5**)
 - PBO
 - Murphy Brothers

123 (b) Quantity and type of materials recycled:

1. Metals (Newco)	1,110.01 Tonnes
2. Paint Waste (Product Care).....	10.78 Tonnes
3. E-Waste (EPRA).....	65.09 Tonnes
4. HHW	35.46 Tonnes
5. Cardboard	1,283.28 Tonnes
6. Blue Bag Recycling Material (HRI)	1,857.28 Tonnes
TOTAL	4,361.90 Tonnes

6.1 Blue Bag Materials Bailed Tonnage (Attachment #7):

• Mixed newsprint/paper	707.09 Tonnes
• OCC - Cardboard	1,479.19 Tonnes
• PET	87.35 Tonnes
• HDPE.....	53.96 Tonnes
• Mixed Tubs/Lids.....	24.58 Tonnes
• Steel.....	95.24 Tonnes
• Aluminum	23.69 Tonnes
• Tetra/Gable/Milk Cartons (Poly C).....	42.68 Tonnes
TOTAL	2,514.16 Tonnes

6.2 Used Oil, UOMA (Attachment #6):

• Used Oil, UOMA.....	16,436 Litres
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123 (c) Quantity of residual materials received at or transferred to the Regional Site:

Attachment #8 shows the materials delivered to the Regional Site from (7) Transfer Stations. The transferred column indicated the tonnage transferred to the Regional Site with the following explanations:

1. Transferring the Clear Bag to the Regional Site also includes the C & D Mixed.
2. Transferring the Blue Bag to the Regional site also include cardboard.
3. The HHW, E-Waste, Paint Waste are collected by CRSB HHW Collection cube van.
4. Metals are collected by Newco.
5. Program Tires are collected by the MMSB Tire Program.
6. Other tires & sorted material are collected by CRSB and delivered to the Regional Site.

123 (d) Quantity and type of Waste Dangerous Goods removed at the final disposal site:

HHW collected and shipped in 2024 (**Attachment #1**)35.46 Tonnes

HHW includes materials such as:

- Aerosol Cans
- Antifreeze
- Cleaning Products
- Fertilizers
- Fluorescent Light Bulbs
- Medications
- Motor Oil
- Paint
- Batteries
- Propane Tanks
- Herbicides/fungicides
- Insecticides/pesticides
- Kerosene
- Lighters with contents
- Sealants
- Solvents
- Pool chemicals

123 (e) Records of any waste diversion

Recycled Material as recorded in 123 (b)..... 4,361.90 Tonnes

123 (f) A summary of the water quality monitoring results for the sedimentation pond, surface water, and ground water monitoring program.

(Attached Englobe Report)

123 (g) Updated drawings showing the monitoring wells locations, latest contours and ground water flow directions.

(Attached Englobe Report)

123 (h) An assessment of the environmental effects monitoring program by a qualified consultant.

(Attached Englobe Report)

123 (i) A summary of upset or spills at the facility.

No upset or spills to report at any of CRSB facilities.

123 (j) Any changes to procedure or operations.

No changes to report.

123 (k) Staffing and Training

Staffing level in 2023 include 3 managers, 37 full-time, 10 part-time and (1) contract (with the Material Recovery Facility) which has 5 full-time and 25 part-time/call-ins.

117 (l) CRSB has provided and upgraded, where required, the following training programs:

- The Law and You
- W.H.M.I.S.
- Hazard Recognition Evaluation and Control
- Risk Assessment
- Safety Plan Awareness
- Standard First Aid/CPR A/AED
- WHSCC
- Transportation of Dangerous Goods Regulations
- Power Line Hazard
- A 40-hour Hazardous Waste Operations and Emergency Response Training
- Landfill Fire Fighting

Retraining in the following areas:

- W.H.M.I.S.
- First Aid/C.P.R./A.E.D.
- Power Line Hazard
- Transportation of Dangerous Goods
- Confined Space
- Fall Protection
- Landfill Fire Fighting

123 (m) Other information deemed necessary by the Dept. of Environment and Climate Change.

1. CRSB continues to work with ECC and WRSB on a template that can be used on a go forward basis in establishing Western Waste Annual Tip Fee. A simplified approach has been developed that will be implemented on a go forward, this approach can be duplicated in the event we take on other regions.
2. Composting
 - CRSB looks forward to working with the province in the development of a composting strategy. Results from this area of waste management will make great strides toward the reduction of materials going to the landfill by 50%. As well, this program will have a positive effect in the Central Environment Monitoring Programs.
3. Collection Truck for Curbside Collection
 - Two (2) additional collection truck contracts were awarded in June of 2023, and delivered January, 2025. Most recent cost of new collection trucks come in at \$480,000.00 each.
 - CNWM recently onboarded the Town of Lewisporte to the garbage collection program.
4. CRSB looks forward to having Coast of Bays and Baie Verte/Green Bay come under the Central Newfoundland Waste Management Region. Much work is required to bring them up to the present-day level of service.
5. CRSB awarded a contract to Blue Bird Construction for the construction of the new Maintenance Garage/Wash Bay. Construction began in October 2023; completion is scheduled for March 2025.

124. Section 124**124 (a) Incidents and or complaints 2024:**

No incidents or complaints to report

124 (b)

The report has attachments for all Special Waste including, origins and carriers. CRSB had no deliveries of bulk waste, biosolids, fish/animal processing waste in 2024.

124 (c) Environmental Monitoring Records:

A full environmental monitoring report for 2024 has been provided with this report. Report was prepared by ENGLOBE CORP.

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CRSB did not experience any operational difficulties with potential environmental implications.

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In 2024 CRSB has experienced some vandalism and (theft/stealing) at one of our transfer stations. Our video surveillance obtained did not provide adequate footage to press charges.

We have not experienced any illegal dumping at or near our site, but when contact is made to our office, it is passed on to Central Region – DGSNL (Gander or Grand Falls-Windsor).

Please Note:

The following plans are on file with the Department of Environment and Conservation:

1. Operations and Maintenance Manual CNWM Facility 2013. (Reviewed February 2016). Under review 2017. (Revised 2017)
2. Construction and Demolition Waste Management and Operations Plan. (Reviewed February 2016). (Under Review 2017)
3. Proposed Surface and Ground Water Monitoring Program Plan. (Reviewed February 2016).
4. Household Hazardous Waste Management and Operations Plan. (Reviewed February 2016).
5. Central Regional Service Board Emergency Response Plan. (Reviewed February 2016).
6. CRSB Asbestos Plan. (Reviewed February 2013).
7. CRSB International Waste Emergency Response Plan. (Reviewed February 2016).
8. CRSB O & M Manuals Transfer Stations (Reviewed February 2016).
9. CRSB Public Education Plan.
10. CRSB proposed Decommissioning Plan. (January 2018)

**cnwm****CENTRAL NEWFOUNDLAND WASTE MANAGEMENT**

P.O. Box 254
Norris Arm, NL
A0G 3M0
info@cnwmc.com

Summary of Products Recieved for period of 1/1/2024 to 12/31/2024

		Number Of Loads	Tonnes
C & D Mixed			
	Contractor	4,088	6,360.20
	Domestic	27	15.90
	Town	1,135	1,425.72
	Total:	5,250	7,801.82
C & D Sorted			
	Contractor	4,041	2,704.92
	Domestic	26,415	4,062.18
	Town	773	671.67
	Total:	31,229	7,438.77
Cardboard			
	Contractor	1,842	1,268.65
	Domestic	47	8.12
	Town	14	6.51
	Total:	1,903	1,283.28
Clear Garbage Bag			
	Contractor	4,796	38,938.41
	Domestic	2,114	346.09
	Town	6,144	13,307.89
	Total:	13,054	52,592.39
E-Waste			
	Contractor	37	12.77
	Domestic	246	21.27
	Town	9	3.42
	Total:	292	37.46
FREE			
	Contractor	251	3,468.88



cnwm

CENTRAL NEWFOUNDLAND WASTE MANAGEMENT

P.O. Box 254
Norris Arm, NL
A0G 3M0
info@cnwmc.com

Summary of Products Received for period of 1/1/2024 to 12/31/2024

		Number Of Loads	Tonnes
Total:		251	3,468.88
HHW			
	Contractor	29	7.34
	Domestic	307	26.18
	Town	5	1.94
Total:		341	35.46
Metals			
	Contractor	435	256.19
	Domestic	3,355	558.57
	Town	358	295.25
Total:		4,148	1,110.01
Off Road - Oversize Tires			
	Contractor	43	119.80
	Domestic	34	4.29
	Town	3	2.22
Total:		80	126.31
Tires			
	Contractor	32	21.04
	Domestic	328	100.52
	Town	69	38.77
Total:		429	160.33
Transparent Blue Bag			
	Contractor	281	172.55
	Domestic	218	17.72
	Town	5,216	1,667.01
Total:		5,715	1,857.28

CENTRAL NEWFOUNDLAND WASTE MANAGEMENT



cnwm

P.O. Box 254
Norris Arm, NL
A0G 3M0
info@cnwmc.com

Summary of Products Recieved for period of 1/1/2024 to 12/31/2024

	Number Of Loads	Tonnes
*** TOTALS DOMESTIC ***	33,091	
*** TOTALS CONTRACTOR *	15,875	
*** TOTALS TRANSFER ***	0	
*** TOTALS TOWN ***	13,726	
*** GRAND TOTALS ***	62,692	75,912.0



DEPOT SHIPMENTS

Shipper: Central Regional Waste Management Facility (Norris Arm Hub)
Pickup Date: Between Jan 1, 2024 AND Dec 31, 2024

12337-82A Avenue., Surrey, B.C. V3W 0L5

Tel: 1-888-772-9772 Fax: (604) 592-2982

Shipped Date	Bill of Lading	Depot	City	Received Date	Consignee	Consignee Address	Waste Name	Quantity
Jan 28, 2024	5747	Central Regional Waste Manage	Norris Arm	Jan 28, 2024	Hebert's Recycling - Mount Pearl	93 Glencoe Drive, Mount P	Paint (Flash Point <23)	10
Mar 19, 2024	5598	Central Regional Waste Manage	Norris Arm	Mar 19, 2024	Hebert's Recycling - Mount Pearl	93 Glencoe Drive, Mount P	Paint (Flash Point <23)	15
Aug 28, 2024	5611	Central Regional Waste Manage	Norris Arm	Aug 28, 2024	Hebert's Recycling - Mount Pearl	93 Glencoe Drive, Mount P	Paint (Flash Point <23)	21
May 28, 2024	5625	Central Regional Waste Manage	Norris Arm	May 28, 2024	Hebert's Recycling - Mount Pearl	93 Glencoe Drive, Mount P	Paint (Flash Point <23)	17
Sep 25, 2024	6022	Central Regional Waste Manage	Norris Arm	Sep 25, 2024	Hebert's Recycling - Mount Pearl	93 Glencoe Drive, Mount P	Paint (Flash Point <23)	16
Oct 25, 2024	6054	Central Regional Waste Manage	Norris Arm	Oct 25, 2024	Hebert's Recycling - Mount Pearl	93 Glencoe Drive, Mount P	Paint (Flash Point <23)	18
Total:								97

Tire Collections SUMMARY - 01-Jan-2024 to 31-Dec-2024

T#	Company	WT # / Invoice #	Collect Date	PT	LT	MT	Total Units	PTE Total
T918	Buchan's Junction Waste Transfer	2790	06-Jun-2024	108	77	18	203	275

<u>PT</u>	<u>LT</u>	<u>MT</u>	<u>Total</u>	<u>Total PTE</u>
108	77	18	203	275

	PT	LT	MT	Total	Total PTE
T918 - Buchan's Junction Waste Transfer Facility	108	77	18	203	275
Total	108	77	18	203	275

<u>PT</u>	<u>LT</u>	<u>MT</u>	<u>Total</u>	<u>Total PTE</u>
108	77	18	203	275

	2024				
	PT	LT	MT	Total	Total PTE
T918 - Buchan's Junction Waste	108	77	18	203	275
Total	108	77	18	203	275

Tire Collections SUMMARY - 01-Jan-2024 to 31-Dec-2024

T#	Company	WT # / Invoice #	Collect Date	PT	LT	MT	Total Units	PTE Total
T915	Fogo Island Waste Transfer Facilit	1693	27-Feb-2024	69	42	0	111	111
T915	Fogo Island Waste Transfer Facilit	2970	17-Jul-2024	58	25	0	83	83
T915	Fogo Island Waste Transfer Facilit	3953	10-Dec-2024	9	2	0	11	11

PT LT MT Total Total PTE
 136 69 0 205 205

	PT	LT	MT	Total	Total PTE
T915 - Fogo Island Waste Transfer Facility	136	69	0	205	205
Total	136	69	0	205	205

PT LT MT Total Total PTE
 136 69 0 205 205

	2024				
	PT	LT	MT	Total	Total PTE
T915 - Fogo Island Waste Transfer Facility	136	69	0	205	205
Total	136	69	0	205	205

Tire Collections SUMMARY - 01-Jan-2024 to 31-Dec-2024

T#	Company	WT # / Invoice #	Collect Date	PT	LT	MT	Total Units	PTE Total
T921	Gander Bay Waste Transfer Facili	1674	12-Feb-2024	117	75	0	192	192
T921	Gander Bay Waste Transfer Facili	1698	29-Feb-2024		0	3	3	15
T921	Gander Bay Waste Transfer Facili	2736	28-Mar-2024	32	20	0	52	52
T921	Gander Bay Waste Transfer Facili	54	29-Apr-2024	51	37	0	88	88
T921	Gander Bay Waste Transfer Facili	92	21-May-2024	31	26	0	57	57
T921	Gander Bay Waste Transfer Facili	2793	10-Jun-2024	32	16	0	48	48
T921	Gander Bay Waste Transfer Facili	2901	25-Jun-2024	46	13	0	59	59
T921	Gander Bay Waste Transfer Facili	2959	08-Jul-2024	30	26	0	56	56
T921	Gander Bay Waste Transfer Facili	3287	05-Aug-2024	48	37	0	85	85
T921	Gander Bay Waste Transfer Facili	231	16-Aug-2024	27	15	0	42	42
T921	Gander Bay Waste Transfer Facili	T275	13-Sep-2024	39	27	1	67	71

T#	Company	WT # / Invoice #	Collect Date	PT	LT	MT	Total Units	PTE Total
		<u>PT</u>	<u>LT</u>	<u>MT</u>	<u>Total</u>	<u>Total PTE</u>		
		453	292	4	749	765		

PT	LT	MT	Total	Total PTE
453	292	4	749	765
453	292	4	749	765

T921 - Gander Bay Waste Transfer Facility
Total

<u>PT</u>	<u>LT</u>	<u>MT</u>	<u>Total</u>	<u>Total PTE</u>
453	292	4	749	765

	2024				
	PT	LT	MT	Total	Total PTE
T921 - Gander Bay Waste Transfer Facility	453	292	4	749	765
Total	453	292	4	749	765

Tire Collections SUMMARY - 01-Jan-2024 to 31-Dec-2024

T#	Company	WT # / Invoice #	Collect Date	PT	LT	MT	Total Units	PTE Total
T917	Indian Bay Waste Transfer Facility	1672	12-Feb-2024		0	6	6	30
T917	Indian Bay Waste Transfer Facility	1690	27-Feb-2024	103	55	1	159	163
T917	Indian Bay Waste Transfer Facility	1696	28-Feb-2024		0	5	5	25
T917	Indian Bay Waste Transfer Facility	2706	06-Mar-2024		0	5	5	25
T917	Indian Bay Waste Transfer Facility	2977	23-Jul-2024	260	117	0	377	377
T917	Indian Bay Waste Transfer Facility	3387	04-Sep-2024	46	22	0	68	68

<u>PT</u>	<u>LT</u>	<u>MT</u>	<u>Total</u>	<u>Total PTE</u>
409	194	17	620	688

	PT	LT	MT	Total	Total PTE
T917 - Indian Bay Waste Transfer Facility	409	194	17	620	688
Total	409	194	17	620	688

T# Company WT # / Invoice # Collect Date PT LT MT Total Units PTE Total

PT LT MT Total Total PTE
409 194 17 620 688

						2024				
	PT	LT	MT	Total	Total PTE	PT	LT	MT	Tot	PTE
T917 - Indian Bay Waste Transfer Facility	409	194	17	620	688	409	194	17	620	688
Total	409	194	17	620	688	409	194	17	620	688

Tire Collections SUMMARY - 01-Jan-2024 to 31-Dec-2024

T#	Company	WT # / Invoice #	Collect Date	PT	LT	MT	Total Units	PTE Total
T916	Twillingate Waste Transfer Facility	1637	19-Jan-2024	11	8	0	19	19
T916	Twillingate Waste Transfer Facility	1695	28-Feb-2024	78	35	0	113	113
T916	Twillingate Waste Transfer Facility	2736	28-Mar-2024	35	28	0	63	63
T916	Twillingate Waste Transfer Facility	54	29-Apr-2024	116	68	0	184	184
T916	Twillingate Waste Transfer Facility	92	21-May-2024	178	110	0	288	288
T916	Twillingate Waste Transfer Facility	2958	08-Jul-2024	78	22	0	100	100
T916	Twillingate Waste Transfer Facility	2959	08-Jul-2024	101	81	0	182	182
T916	Twillingate Waste Transfer Facility	2977	23-Jul-2024	130	40	0	170	170
T916	Twillingate Waste Transfer Facility	231	16-Aug-2024	54	28	0	82	82
T916	Twillingate Waste Transfer Facility	3379	22-Aug-2024		42	0	42	42
T916	Twillingate Waste Transfer Facility	T275	13-Sep-2024	151	104	0	255	255
T916	Twillingate Waste Transfer Facility	3929	18-Nov-2024	88	51	0	139	139

T#	Company	WT # / Invoice #	Collect Date	PT	LT	MT	Total Units	PTE Total
		<u>PT</u>	<u>LT</u>	<u>MT</u>	<u>Total</u>	<u>Total PTE</u>		
		1,020	617	0	1,637	1,637		
				PT	LT	MT	Total	Total PTE
T916 - Twillingate Waste Transfer Facility				1,020	617	0	1,637	1,637
Total				1,020	617	0	1,637	1,637

	<u>PT</u>	<u>LT</u>	<u>MT</u>	<u>Total</u>	
	1,020	617	0	1,637	
	2024				
	PT	LT	MT	Total	Total PTE
	PT	LT	MT	Tot	PTE
T916 - Twillingate Waste Transfer	1,020	617	0	1,637	1,637
Total	1,020	617	0	1,637	1,637

Tire Collections SUMMARY - 01-Jan-2024 to 31-Dec-2024

T#	Company	WT # / Invoice #	Collect Date	PT	LT	MT	Total Units	PTE Total
T913	Central Waste Management Facili	1607	02-Jan-2024	91	45	0	136	136
T913	Central Waste Management Facili	1671	12-Feb-2024	45	24	3	72	84
T913	Central Waste Management Facili	2713	12-Mar-2024	22	10	0	32	32
T913	Central Waste Management Facili	2719	14-Mar-2024	5	5	0	10	10
T913	Central Waste Management Facili	2729	21-Mar-2024	51	25	0	76	76
T913	Central Waste Management Facili	2751	22-Apr-2024	31	41	0	72	72
T913	Central Waste Management Facili	2753	22-Apr-2024	42	33	0	75	75
T913	Central Waste Management Facili	2760	02-May-2024	7	12	0	19	19
T913	Central Waste Management Facili	2770	14-May-2024	105	42	0	147	147
T913	Central Waste Management Facili	2773	20-May-2024	37	18	0	55	55
T913	Central Waste Management Facili	2782	30-May-2024	106	75	0	181	181
T913	Central Waste Management Facili	2790	06-Jun-2024	112	68	0	180	180
T913	Central Waste Management Facili	2798	17-Jun-2024	170	91	0	261	261

T#	Company	WT # / Invoice #	Collect Date	PT	LT	MT	Total Units	PTE Total
T913	Central Waste Management Facili	2801	19-Jun-2024	34	46	0	80	80
T913	Central Waste Management Facili	2908	25-Jun-2024	40	26	0	66	66
T913	Central Waste Management Facili	2956	02-Jul-2024	76	48	0	124	124
T913	Central Waste Management Facili	181	05-Jul-2024	55	22	0	77	77
T913	Central Waste Management Facili	184	08-Jul-2024	8	14	0	22	22
T913	Central Waste Management Facili	2958	08-Jul-2024	81	48	0	129	129
T913	Central Waste Management Facili	3371	13-Aug-2024	3	0	0	3	3
T913	Central Waste Management Facili	3373	14-Aug-2024	19	7	0	26	26
T913	Central Waste Management Facili	3374	19-Aug-2024	128	45	0	173	173
T913	Central Waste Management Facili	3375	20-Aug-2024	115	63	0	178	178
T913	Central Waste Management Facili	3376	22-Aug-2024	51	23	0	74	74
T913	Central Waste Management Facili	3379	22-Aug-2024		26	0	26	26
T913	Central Waste Management Facili	3380	27-Aug-2024	19	0	0	19	19
T913	Central Waste Management Facili	3385	03-Sep-2024	48	16	0	64	64
T913	Central Waste Management Facili	3393	11-Sep-2024	47	20	0	67	67

T#	Company	WT # / Invoice #	Collect Date	PT	LT	MT	Total Units	PTE Total
T913	Central Waste Management Facili	3395	11-Sep-2024	50	37	0	87	87
T913	Central Waste Management Facili	T275	13-Sep-2024	25	12	0	37	37
T913	Central Waste Management Facili	3427	17-Oct-2024	12	0	0	12	12
T913	Central Waste Management Facili	3432	21-Oct-2024	70	39	0	109	109
T913	Central Waste Management Facili	3439	29-Oct-2024	42	14	0	56	56
T913	Central Waste Management Facili	3935	21-Nov-2024	58	38	0	96	96
T913	Central Waste Management Facili	3936	21-Nov-2024	62	49	0	111	111
T913	Central Waste Management Facili	3941	27-Nov-2024	20	7	0	27	27
T913	Central Waste Management Facili	3947	03-Dec-2024	145	69	0	214	214

<u>PT</u>	<u>LT</u>	<u>MT</u>	<u>Total</u>	<u>Total PTE</u>
2,032	1,158	3	3,193	3,205

	PT	LT	MT	Total	Total PTE
T913 - Central Waste Management Facility	2,032	1,158	3	3,193	3,205
Total	2,032	1,158	3	3,193	3,205

T# Company WT # / Invoice # Collect Date PT LT MT Total Units PTE Total

PT LT MT Total Total PTE
2,032 1,158 3 3,193 3,205

						2024				
	PT	LT	MT	Total	Total PTE	PT	LT	MT	Tot	PTE
T913 - Central Waste Management Facility	2,032	1,158	3	3,193	3,205	2,032	1,158	3	3,193	3,205
Total	2,032	1,158	3	3,193	3,205	2,032	1,158	3	3,193	3,205

Tire Collections SUMMARY - 01-Jan-2024 to 31-Dec-2024

T#	Company	WT # / Invoice #	Collect Date	PT	LT	MT	Total Units	PTE Total
T919	Point Leamington Waste Transfer	2757	30-Apr-2024	67	48	0	115	115
T919	Point Leamington Waste Transfer	2798	17-Jun-2024	92	64	0	156	156
T919	Point Leamington Waste Transfer	2800	18-Jun-2024	95	66	0	161	161
T919	Point Leamington Waste Transfer	3439	29-Oct-2024	73	59	0	132	132

PT LT MT Total Total PTE
 327 237 0 564 564

	PT	LT	MT	Total	Total PTE
T919 - Point Leamington Waste Transfer Facility	327	237	0	564	564
Total	327	237	0	564	564

PT LT MT Total Total PTE
 327 237 0 564 564

						2024				
	PT	LT	MT	Total	Total PTE	PT	LT	MT	Tot	PTE
T919 - Point Leamington Waste Transfer	327	237	0	564	564	327	237	0	564	564
Total	327	237	0	564	564	327	237	0	564	564

CNWM
International Waste

Company/Name	NET Weight	Running Total	Date	Load #	Signature
Murphy Bros	3350	3350	Feb 23/24	7210314	
PBO	2480	5830	July 9/24	750551	
Murphy Bros	5120	10,950	July 18/24	753640	
	4870	15,820	July 25/24	755239	
	4030	19,850	July 25/24	755240	
	6680	26,530	July 26/24	755491	
	3390	29,920	July 26/24	755493	
	1130	31,050	July 27/24	755811	
	2670	33,720	July 31/24	756435	
	2030	35,750	July 31/24	756437	
	5470	41,220	Aug 29/24	762632	
	3740	44,960	Aug 29/24	762633	
	7310	52,270	Aug 30/24	762920	
PBO	560	52,830	Sept 4/24	764041	
Murphy Bros	4450	57,280	Sept 9/24	764996	
	5240	62,520	Sept 10/24	765157	
	4130	66,650	Sept 19/24	767348	
	6510	73,160	Sept 19/24	767347	
	3220	76,380	Sept 20/24	767554	
	2280	78,660	Sept 20/24	767555	

Company/Name	NET Weight	Running Total	Date	Load #	Signature
Murphy Bros ↓	3320	81,980	Sept 21/24	767819	
	3800	85,780	Sept 25/24	768485	
	2720	88,500	Sept. 27/24	769103	
	5800	94,300	Sept. 27/24	769106	
	6600	94,960	Oct 3/24	770297	
	4040	99,000	Oct 9/24	771482	
	5710	104,710	Oct. 9/24	771490	
	3830	108,540	Oct. 10/24	771840	
	2600	111,200	Oct. 23/24	774207	

111,200 kgs
111.2 TONS



#6.

[illegible]

Norris Arm Totals Production Report 2024

Description Of Item	January	February	March	April	May	June	July	August	September	October	November	December	Total
Inputs (Delivered to MRF in month)													
Blue bag	160.25	131.92	132.84	169.77	161.32	150.74	177.31	163.55	152.61	157.45	144.72	154.80	1857.28
OCC	89.38	91.61	96.27	108.19	113.24	102.72	111.16	124.98	98.56	120.01	119.94	107.24	1283.30
Subtotal	249.63	223.53	229.11	277.96	274.56	253.46	288.47	288.53	251.17	277.46	264.66	262.04	3140.58
Work In Progress (end of month)													
Blue bag on floor - unprocessed (est)	126.87	7.22	63.68	87.47	84.48	10.56	96.91	79.57	70.41	59.32	61.31	74.89	822.69
OCC on floor - unprocessed (est)	-16.35	-14.11	-6.58	-16.13	-2.87	-19.45	-33.19	-18.40	-29.09	-15.64	-13.03	-11.43	-196.27
Running Total	417.20	347.62	348.48	381.14	412.34	341.73	354.13	363.71	349.07	352.09	343.91	368.91	4380.34
Inventory in Warehouse													
Baled Material in Warehouse	758.29	774.27	754.08	694.84	631.60	539.10	548.61	534.15	556.20	554.41	584.16	542.12	7471.82
Outputs (total for month)													
Waste Material	30.40	62.69	56.24	38.68	50.41	61.72	51.32	51.59	55.96	40.66	56.46	38.46	594.59
Shipped Product	106.87	214.44	192.20	265.86	261.74	354.85	215.24	241.82	187.80	235.57	186.63	240.62	2703.64
Subtotal	137.27	277.13	248.44	304.54	312.15	416.57	266.56	293.41	243.76	276.23	243.09	279.08	3298.23
Baled													
Material Baled	139.11	230.42	172.01	206.62	192.95	262.35	224.75	227.36	209.85	233.78	216.38	198.58	2514.16

***All amounts are in metric tonnes*

YEAR END TOTALS		
Material Type	Tonnage	Percent
OCC	1479.57	47.59
Mixed Paper	707.09	22.75
PET	87.35	2.81
HDPE	53.96	1.74
Tubs/Lids	24.58	0.79
Aluminum	23.69	0.76
Steel	95.24	3.06
Poly C	42.68	1.37
Waste	594.59	19.13
Unprocessed		
Total	3108.75	100%

CENTRAL NEWFOUNDLAND WASTE MANAGEMENT



cnwm

P.O. Box 254
Norris Arm, NL
A0G 3M0
info@cnwmc.com

Transferred Break-Down for Terra Nova by Product For The Period of December 01, 2024 To December 31, 2024

Print Date

February 20, 2025

	Delivered	Transferred	Net
C & D Mixed	61,230.00	0.00	61,230.00
C & D Sorted	26,230.00	0.00	26,230.00
Cardboard	1,970.00	0.00	1,970.00
Clear Garbage Bag	144,280.00	222,410.00	-78,130.00
E-Waste	590.00	0.00	590.00
HHW	240.00	0.00	240.00
Metals	3,300.00	0.00	3,300.00
Tires	1,450.00	0.00	1,450.00
Transparent Blue Bag	10,010.00	13,450.00	-3,440.00

TOTAL LOADS DELIVERED 527

*** TOTALS ***

Delivered

Transferred

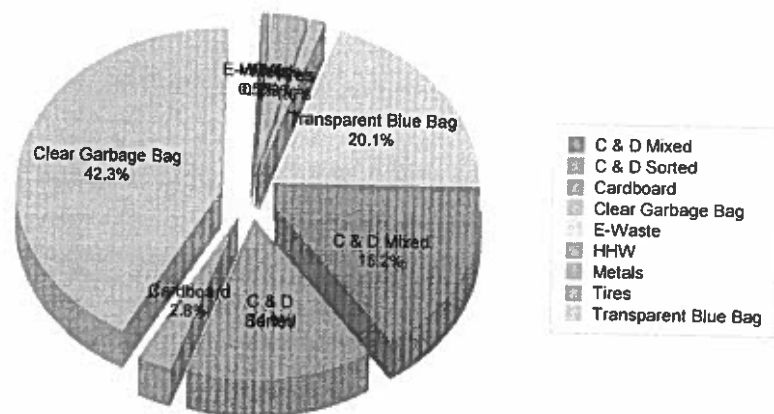
Net

249,300.00

235,860.00

13,440.00

Break-Down for Site by Product



CENTRAL NEWFOUNDLAND WASTE MANAGEMENT



cnwm

P.O. Box 254

Norris Arm, NL

A0G 3M0

info@cnwmc.com

Transferred Break-Down for Point Leam by Product

For The Period of December 01, 2024 To December 31, 2024

Print Date

February 20, 2025

	Delivered	Transferred	Net
C & D Mixed	7,600.00	0.00	7,600.00
C & D Sorted	30,500.00	53,820.00	-23,320.00
Cardboard	22,490.00	0.00	22,490.00
Clear Garbage Bag	54,960.00	80,080.00	-25,120.00
Metals	10,080.00	0.00	10,080.00
Tires	580.00	0.00	580.00
Transparent Blue Bag	7,070.00	25,960.00	-18,890.00

TOTAL LOADS DELIVERED

363

Delivered

Transferred

Net

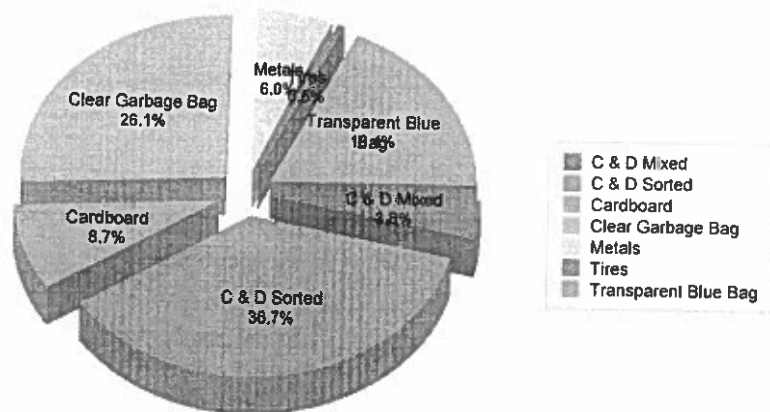
*** TOTALS ***

133,280.00

159,860.00

-26,580.00

Break-Down for Site by Product



CENTRAL NEWFOUNDLAND WASTE MANAGEMENT



cnwm

P.O. Box 254
Norris Arm, NL
A0G 3M0
info@cnwmc.com

Transferred Break-Down for NWI/Twilli by Product For The Period of December 01, 2024 To December 31, 2024

Print Date
February 20, 2025

	Delivered	Transferred	Net
C & D Mixed	10,290.00	0.00	10,290.00
C & D Sorted	38,420.00	95,630.00	-57,210.00
Cardboard	2,340.00	0.00	2,340.00
Clear Garbage Bag	109,780.00	177,740.00	-67,960.00
E-Waste	30.00	0.00	30.00
HHW	110.00	0.00	110.00
Metals	7,810.00	0.00	7,810.00
Off Road - Oversize Tires	30.00	0.00	30.00
Tires	1,810.00	0.00	1,810.00
Transparent Blue Bag	4,190.00	6,500.00	-2,310.00

TOTAL LOADS DELIVERED 442

*** TOTALS ***

Delivered

174,810.00

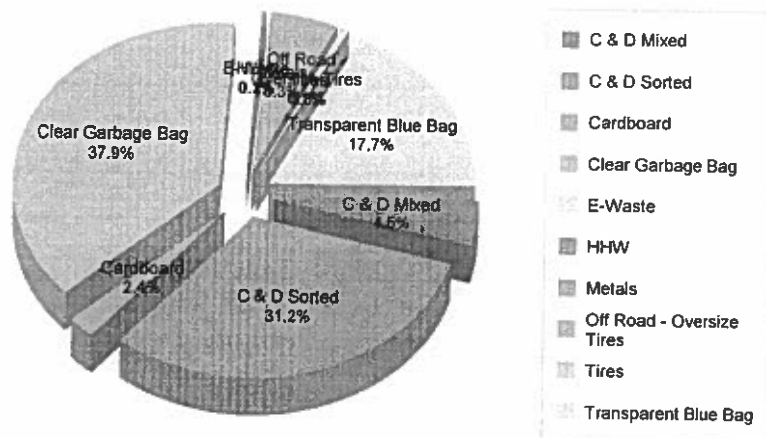
Transferred

279,870.00

Net

-105,060.00

Break-Down for Site by Product



CENTRAL NEWFOUNDLAND WASTE MANAGEMENT



cnwm

P.O. Box 254
Norris Arm, NL
A0G 3M0
info@cnwmc.com

Transferred Break-Down for Indian Bay by Product

For The Period of December 01, 2024 To December 31, 2024

Print Date

February 20, 2025

	Delivered	Transferred	Net
C & D Mixed	30,400.00	0.00	30,400.00
C & D Sorted	37,580.00	90,090.00	-52,510.00
Cardboard	8,320.00	0.00	8,320.00
Clear Garbage Bag	115,220.00	125,260.00	-10,040.00
E-Waste	2,700.00	0.00	2,700.00
Metals	6,760.00	0.00	6,760.00
Off Road - Oversize Tires	180.00	0.00	180.00
Tires	300.00	0.00	300.00
Transparent Blue Bag	18,590.00	27,260.00	-8,670.00

TOTAL LOADS DELIVERED 366

*** TOTALS ***

Delivered

Transferred

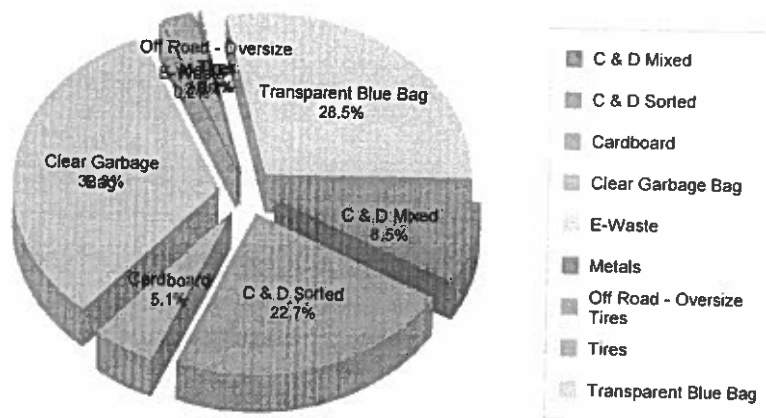
Net

220,050.00

242,610.00

-22,560.00

Break-Down for Site by Product



CENTRAL NEWFOUNDLAND WASTE MANAGEMENT



cnwm

P.O. Box 254

Norris Arm, NL

A0G 3M0

info@cnwmc.com

Transferred Break-Down for Gander Bay by Product

For The Period of December 01, 2024 To December 31, 2024

Print Date

February 20, 2025

	Delivered	Transferred	Net
C & D Mixed			
C & D Sorted	7,450.00	0.00	7,450.00
Cardboard	27,240.00	97,450.00	-70,210.00
Clear Garbage Bag	110.00	0.00	110.00
HHW	74,690.00	130,070.00	-55,380.00
Metals	70.00	0.00	70.00
Tires	10,780.00	0.00	10,780.00
Transparent Blue Bag	740.00	0.00	740.00
	8,280.00	7,760.00	520.00

TOTAL LOADS DELIVERED 346

Delivered

Transferred

Net

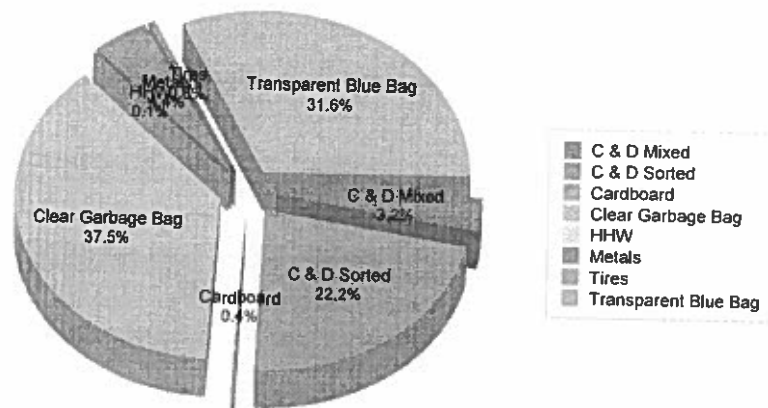
*** TOTALS ***

129,360.00

235,280.00

-105,920.00

Break-Down for Site by Product



CENTRAL NEWFOUNDLAND WASTE MANAGEMENT



cnwm

P.O. Box 254
Norris Arm, NL
A0G 3M0
info@cnwmc.com

Transferred Break-Down for Fogolsland by Product

For The Period of December 01, 2024 To December 31, 2024

Print Date

February 20, 2025

	Delivered	Transferred	Net
C & D Mixed	5,610.00	0.00	5,610.00
C & D Sorted	20,040.00	0.00	20,040.00
Cardboard	420.00	0.00	420.00
Clear Garbage Bag	38,300.00	44,100.00	-5,800.00
E-Waste	30.00	0.00	30.00
HHW	50.00	0.00	50.00
Metals	4,910.00	0.00	4,910.00
Transparent Blue Bag	3,330.00	10,200.00	-6,870.00

TOTAL LOADS DELIVERED 141

Delivered

Transferred

Net

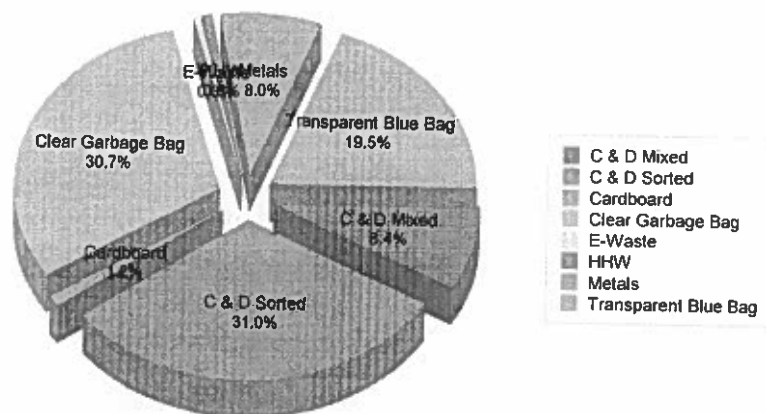
*** TOTALS ***

72,690.00

54,300.00

18,390.00

Break-Down for Site by Product



CENTRAL NEWFOUNDLAND WASTE MANAGEMENT



cnwm

P.O. Box 254

Norris Arm, NL

A0G 3M0

info@cnwmc.com

Transferred Break-Down for Buchan's by Product

For The Period of December 01, 2024 To December 31, 2024

Print Date

February 20, 2025

	Delivered	Transferred	Net
C & D Mixed			
C & D Sorted	29,230.00	0.00	29,230.00
Cardboard	13,710.00	0.00	13,710.00
Clear Garbage Bag	1,590.00	0.00	1,590.00
E-Waste	35,760.00	66,420.00	-30,660.00
Metals	40.00	0.00	40.00
Transparent Blue Bag	8,640.00	0.00	8,640.00
	1,870.00	2,610.00	-740.00

TOTAL LOADS DELIVERED

125

Delivered

Transferred

Net

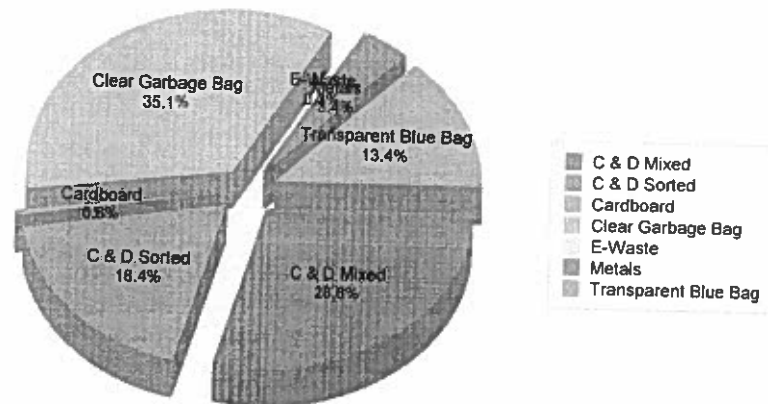
*** TOTALS ***

90,840.00

69,030.00

21,810.00

Break-Down for Site by Product





2024 Environmental Monitoring Report

Norris Arm North Regional Waste Management Facility

Central Regional Service Board

2409276.000

February 28, 2025

Central Regional Service Board

2409276.000

Prepared by:



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Geotechnical Engineer
Geotechnical, Materials, and Environmental Engineering

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Geotechnical, Materials, and Environmental Engineering

Production team

Central Regional Service Board

Chief Administrative Officer	Pam Preston
------------------------------	-------------

Englobe Corp.

Report Preparation	Steven Selst, MEM, P.Eng.
Project Manager	Michael Smith, BBA, B.Tech., ASCT., EP

Revisions and publications log

REVISION No.	DATE	DESCRIPTION
0A	February 13, 2025	DRAFT Report submitted to client
00	February 28, 2025	FINAL Report submitted to client

Distribution

1 PDF copy	Pam Preston
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Summary

Englobe Corp. (Englobe) was retained by Central Regional Service Board (CRSB) to complete reporting of the 2024 Environmental Monitoring Program at the Norris Arm Regional Waste Management Facility, NL. The annual report is required under the CRSB Central Regional Waste Management Certificate of Approval (CoA), issued January 15, 2023, expiration of January 31, 2028, by the Newfoundland and Labrador Department of Environment and Climate Change, Pollution Prevention Division. This report is compiled based on the 2024 environmental monitoring results provided by CRSB and in accordance with CoA Section 124, c. (i - iv) WMS 17-12-001. This report provides an overview of sampling results and discusses potential factors influencing the various exceedances uncovered throughout the 2024 monitoring program. Historical data was analysed along with comparisons to recently reported results; any indicator of potential reason and/or influential factors effecting exceedances are discussed herein. The environmental monitoring program was completed by CRSB personnel on May 29, August 12, October 24, and December 18, 2024, respectively and includes sampling from ten (10) surface water locations and five (5) monitor wells on a quarterly basis.

The results are summarized as follows:

- Current groundwater results identified concentrations of Nitrate and Ammonia Nitrogen exceeding the NL Environmental Control Water and Sewage Regulations for monitoring well MW-J during the 2024 sampling program. Compared to historical exceedances, there has been a slight decrease in the 2024 exceedances.
- MW-J had two (2) exceedances of Nitrate in May and August at 45 mg/L and 28 mg/L, respectively.
- One (1) exceedance of Ammonia Nitrogen occurred at MW-J during the May sampling event at a concentration of 11 mg/L.
- Current surface water results identified concentrations of Ammonia Nitrogen, total suspended solids (TSS), and nitrate exceeding the NL Environmental Control Water and Sewage Regulations for monitoring wells SW-2, SW-3, SW-5, and SW-9.
- SW-2 had concentrations of Nitrate exceeding guidelines in May at 26 mg/L.
- SW-3 had concentrations of Ammonia Nitrogen exceeding guidelines for all four sampling periods; 2.3 mg/L (May), 3.7 mg/L (August), 2.9 mg/L (October), and 4.3 mg/L (December).
- SW-5 had concentrations of Nitrogen (Ammonia Nitrogen) exceeding guidelines for all four sampling periods; 360 mg/L (May), 260 mg/L (August), 150 mg/L (October), and 270 mg/L (December). Concentrations of Total Suspended Solids (TSS) exceeded guidelines in all four sampling periods; 63 mg/L (May), 77 mg/L (August), 54 mg/L (October), and 87 mg/L (December). Concentrations of Nitrate exceeding guidelines for two of four sampling periods; 65 mg/L (August) and 320 mg/L (October).
- SW-9 had concentrations of Ammonia Nitrogen which exceeded guidelines during three of the four sampling periods; 71 mg/L (May), 47 mg/L (August), and 6.3 mg/L (October).
- There were two (2) exceedances of Nitrate at 20 mg/L (August) and 31 mg/L (October) from SW-9.
- There was one (1) exceedance of Total Suspended Solids (TSS) at 66 mg/L (August) from SW-9.
- Discharge - SW-9 recorded three exceedances of Nitrate during the 2024 sampling period; 11 mg/L (February), 10 mg/L (May), and 18 mg/L (August); and one exceedance of TSS at 60 mg/L in August.
- Data was not provided for Effluent from Lagoons, Influent from the Landfill and Lift Station in 2024, or for previous reports, 2023, 2022, 2021, and 2020. Historical data is referenced in this report.

The current concentrations of metals and chemical parameters have shown decreases when compared to the historical data, therefore no immediate action is required at this time. However, based on the 2024 and historical results of the environmental monitoring program at the Norris Arm Waste Management Site, Englobe makes the following recommendations:

- The 2024 annual monitoring report should be submitted to the Newfoundland and Labrador Department of Environment and Climate Change (ECC) for review as per the CoA requirements;
- The groundwater, leachate and surface water monitoring program at the landfill should continue as per the requirements and parameters listed in Appendix C of CoA Section 124, c. (i - iv) WMS 17-12-001;
- It is also recommended that groundwater levels be collected to show seasonal changes in groundwater elevations.
- Recording of sampling procedures and current site conditions at the time of sampling should be completed. This practice should also include photographic record of the sample location.
- Additional sampling events should be completed if there are any leachate chemistry exceedances of Schedule B guidelines that differs significantly from previous sampling events;
- A review of the groundwater and surface water sampling protocols should be undertaken for future sampling events, specifically related to the taking of duplicate samples. To ensure the reliability of the data, it is recommended an additional field duplicate sample be collected where results have historically been more variable and multiple parameters are known to exceed applicable guidelines (i.e., MW-J, SW-2, SW-3, SW-5, and SW-9);
- The background surface water and monitoring well sampling in 2025 should be continued for the sole purpose of comparing results to those required as part of the CoA. The more data available for review allows to state with confidence that peripheral surface water and groundwater are not being impacted by landfill operations; and,
- A semi-annual visual inspection (i.e., Spring and Fall) of the surface sample locations and associated drainage systems should be completed to note environmental/hydrological conditions at the time of sampling (i.e., water flow, stagnant water, water depth, discharge path, vegetation, siltation, debris, staining, sheens).

Property and Confidentiality

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If tests have been carried out, the results of these tests are valid only for the sample described in this report. Englobe’s subcontractors who have carried out on-site or laboratory work are duly assessed according to the purchase procedure of our quality system. For further information, please contact your project manager.”

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Table 2: Regulatory Sampling Requirements for Surface Water

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Figure 2: Selected Parameter Concentrations at MW-H over Time

Figure 3: Selected Parameter Concentrations at MW-I over Time

Figure 4: Selected Parameter Concentrations at MW-J over Time

Figure 5: Selected Parameter Concentrations at MW-K over Time

Figure 6: Selected Parameter Concentrations at MW-L over Time

Figure 7: Barium Concentrations over Time at Selected Surface Water Sampling Stations

Figure 8: Boron Concentrations over Time at Selected Surface Water Sampling Stations

Figure 9: Calcium Concentrations over Time at Selected Surface Water Sampling Stations

Figure 10: Iron Concentrations over Time at Selected Surface Water Sampling Stations

Figure 11: Sodium Concentrations over Time at Selected Surface Water Sampling Stations

Figure 12: Parameter Concentrations over Time at Selected Surface Water Sampling Stations

Figure 13: Barium Concentrations over Time at Surface Water Sampling Stations Upgradient of Landfill

Figure 14: Calcium Concentrations over Time at Surface Water Sampling Stations Upgradient of Landfill

Figure 15: Iron Concentrations over Time at Surface Water Sampling Stations Upgradient of Landfill

Figure 16: Sodium Concentrations over Time at Surface Water Sampling Stations Upgradient of Landfill

APPENDICES

Appendix A - Analytical Tables

Appendix B - Laboratory Certificate 2024

Appendix C - Certificate of Approval

1 Introduction

Englobe Corp. (Englobe) was retained by Central Regional Service Board (CRSB) to complete the 2024 Environmental Monitoring Program at the Norris Arm Regional Waste Management Facility, NL. The annual report is required under the CRSB Central Newfoundland Waste Management Certificate of Approval (CoA), issued January 15, 2023, expiration of January 31, 2028, by the Newfoundland and Labrador Department of Environment and Climate Change, Pollution Prevention Division.

1.1 Background

The Regional Waste Management Facility located in Norris Arm, NL, became operational in February 2012 and began accepting municipal solid waste generated from the central region of the province. This new landfill is the first municipal landfill in Newfoundland and Labrador (NL) to be lined with composite layers of impermeable material, which are designed to minimize the potential for pollutants to leak into the soil and water. These pollutants, in the form of landfill leachate, are collected and treated on-site to meet environmental regulations before the water is eventually released back into the environment.

The Norris Arm Facility is an integral component of NL's Provincial Solid Waste Management Strategy, which aims to reduce the overall quantity of waste being landfilled in the province and to reduce the number of active waste sites that need to be managed.

1.2 Scope of Work

This report is compiled based on the 2024 environmental monitoring results provided by CRSB and in accordance with CoA Section 124, c. (i - iv) WMS 17-12-001. The environmental monitoring program was completed by CRSB on May 29, August 12, October 24, and December 18, 2024, respectively. This report includes:

- The 2024 quality monitoring results for groundwater and surface water;
- Data tabulated in spreadsheet format including a comparison where applicable to the Newfoundland and Labrador Regulation (NLR) 65/2003, Environmental Control Water and Sewage Regulations, Schedules A or B, as applicable;
- An evaluation and discussion of groundwater and surface water monitoring results as they may be affected by landfill leachate and/or surface water runoff from the site;
- An evaluation of environmental monitoring results, comparing results from previous and current calendar year (2024); and
- Conclusions and recommendations for future monitoring, groundwater well installations and other work that may be required at the Regional Waste Management Site.

The scope of work and this report are based on information and sample results provided to Englobe by the CRSB. Sampling and field work associated with this report was not part of Englobe's scope of work at this time. CRSB was responsible for organizing and conducting the fieldwork for the 2024 Surface and Groundwater Monitoring Program.

Enclosed are analytical results for the 2024 sampling event compared to all applicable guidelines and regulations (Appendix A), laboratory certificates provided by CRSB (Appendix B) and the NL Department of

Environment and Climate Change, Pollution Prevention Division Certificate of Approval (Appendix C). It should be noted that the results from the 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, AND 2023 sampling carried out by CRSB are included also in Appendix A for reference purposes.

2 Current Conditions

2.1 Site Description

The Central Regional Waste Management Facility (CRWMF) property includes an area of approximately 369 ha, located approximately 2 km off the Trans- Canada Highway along Route 3-01-09 towards the community of Norris Arm, Newfoundland and Labrador. The site consists of an administration building, scale house and inbound/outbound scales, materials recovery facility (MRF), public drop-off facility, metals storage area, construction and demolition debris waste disposal area, maintenance garage, second generation engineered landfill, leachate treatment and sedimentation pond.

The Central Regional Waste Management area utilizes seven (7) local waste management facilities (LWMF), built throughout the central region. The LWMFs allow sub regional waste services prior to transfer to the Central Regional Waste Management Facility (CRWMF) landfill for disposal and/or recycling.

Received waste is placed in the engineered landfill complete with leachate collection and on-site leachate treatment.

Access to the site is provided by a permanent asphalt roadway along Route 3-01-09. Asphalt covered roads extend from Route 3-01-09 to the MRF area. Additionally, there is a network of graded gravel roads for site access. Waste accepted at this facility is sourced from residential, industrial, commercial, and institutional (IC&I) sectors. Waste is transferred to the site in both privately and publicly owned vehicles from all communities located within Central and Western Newfoundland. Nearby communities include Norris Arm North, approximately 6.1 km to the west (on the northern side of Norris Arm inlet) and Norris Arm approximately 8.3 km to the southwest. Notre Dame Junction is located approximately 5.4 km to the east.

2.2 Geographical and Geological Setting

2.2.1 Bedrock

Based on bedrock geological mapping for the province of Newfoundland and Labrador (Government of Newfoundland and Labrador, Department of Industry, Energy and Technology, Geological Survey (2000)), the local geology bedrock deposits are from the Badger Group and are Late Ordovician to Early Silurian in age. The bedrock on the north portion of the subject site reportedly consists of green, grey and minor red, very thick to medium bedded, variably cleaved, polymictic conglomerate containing abundant chert, jasper, and volcanic pebbles and locally fossiliferous limestone clasts and interbedded with coarse-grained sandstone and minor siltstone. Bedrock on the southern portion of the subject site reportedly consists of dark grey and red locally fossiliferous, medium bedded, variably cleaved pebble conglomerate and sandstone. The above noted northern and southern bedrock units are divided by a significant thrust fault structure that runs west to east. At the middle of the subject site is a lens of Silurian aged bedrock that is surrounded by a thrust fault. This bedrock unit from the Botwood Group is defined as a red thick and medium bedded, commonly parallel-laminated and/or cross- laminated, locally rippled and/or graded, quartz-rich sandstone, locally includes matrix- supported shale-flake conglomerate and beds of nodular limestone. Bedrock farther

to the north of the Badger Group formation is of the similar Botwood Group formation and these two formations are subdivided west to east by a significant thrust fault structure. Bedrock approximately 1 to 2 kilometres south of the subject site is described as grey massive, medium grained, equigranularity pyroxene gabbro of the Hodges Hill Intrusive Suite (Silurian aged).

2.2.2 Topography and Drainage

The subject site is located approximately 0.6 kilometres south of an unnamed stream, which drains to the Norris Arm inlet approximately 1.2 km to the northwest. The regional topography of the area generally slopes towards the topographic low of the Norris Arm inlet. Topographic highs and recharge areas exist to the north and south of the inlet which forms a topographic low divide. Groundwater and surface water flow patterns in the vicinity would generally be expected to migrate from the topographic highs to the topographic low of the Norris Arm inlet and the unnamed stream located north of the subject site. It should be noted that Notre Dame Junction and Norris Arm are on the same side of the topographic low divide (surface water and groundwater recharge to the south) while Norris Arm North is on the opposite site of the divide (surface water and groundwater recharge to the north).

According to the Hydrogeology of Notre Dame Bay Area Report (Hydrology Consultants Limited, 1980), the topography of the area is largely controlled by the bedrock geology, with the resistant rocks forming the highland areas and the less resistant rocks forming the lowlands.

2.2.3 Hydrogeology

The local hydrogeology consists of an unconfined overburden aquifer. During low precipitation seasons the local hydrogeology may consist of an unconfined overburden/bedrock aquifer. Groundwater movement occurs from high uplands towards low valleys. According to previous reports (SNC Lavalin, 2020) and the Hydrogeology of the Notre Dame Bay Area Report (Hydrology Consultants Limited, 1980), the water-table configuration in the subject area is generally a subdued expression of the surface topography, and that the topographic trends may be used to interpret the local groundwater movement in the shallow aquifer systems, with movement occurring in a direction perpendicular to the topographic contours. Within large river basins, deep flow systems may also be developed if the water-transmitting formations extend to considerable depth; with the result that groundwater may bypass a sub-basin in which the recharge occurred to discharge at a lower elevation in a major basin. Deep flow is considered negligible in the study area, as the well-yield interpretation indicated that the main bedrock flow systems occur at relatively shallow depths. Groundwater movement may be interpreted to be vertically downward and horizontal throughout much of the study area, with the flow essentially confined to shallow systems by the relative impermeability of the deep bedrock thereby encouraging the discharge of groundwater to local water courses rather than a regional groundwater system (Hydrology Consultants Limited, 1980).

3 Methodology

All groundwater and surface water sampling were completed by the CRSB on a quarterly basis (May, August, October, and December) following the procedures outlined in the CoA (Appendix C). The water quality analysis was completed by Bureau Veritas Laboratories (BV Labs) located in St. John's, NL, which is a certified laboratory by the Canadian Association of Laboratory Accreditation (CALA). The following sections of this report provide a summary of each program.

Englobe has reviewed and assessed the provided 2024 groundwater, surface water and lagoon analytical results for water/leachate quality characteristics and overall trend of current and historical results for any potential effects resulting from the current landfilling activities.

3.1 Groundwater Monitoring Program

The groundwater monitoring network at the waste facility site, both to the north and south, comprises five strategically placed wells: MW-H, MW-I, MW-J, MW-K, and MW-L. These wells are designed to collect water quality samples that aid in determining if landfill leachate is migrating off the site.

In 2024, these monitoring stations were assessed, and the details are documented in Table 1. As per the Certificate of Approval (CoA), sampling from these wells is required to be conducted four times per calendar year, with a minimum interval of thirty days between each sampling. In 2024, the sampling was carried out in May, August, October, and December.

The analysis of the samples must include parameters specified by the CoA. However, in 2024, temperature, dissolved oxygen (DO), sulphate, and Total Dissolved Solids (calculated) were not analysed. Table 1 provides a comprehensive list of the groundwater sampling locations and the parameters that were analysed during the 2024 groundwater monitoring program at the CRSB site.

Table 1: Regulatory Sampling Requirements for Groundwater

Location	Parameters
MW-H to MW-L	General Parameters:
	Nitrate + nitrite, nitrate, nitrite, pH, colour, sodium, potassium, calcium, sulphide, magnesium, ammonia, alkalinity, chloride, turbidity, reactive silica, orthophosphate, phosphorous, Dissolved Organic Carbon, conductance, phenolics, carbonate (CaCO3), hardness (CaCO3) and bicarbonate (CaCO3).
	Metals Scan:
	Aluminum, antimony, arsenic, barium, beryllium, bismuth, boron, cadmium, chromium, cobalt, copper, iron, lead, manganese, molybdenum, mercury, nickel, selenium, silver, strontium, thallium, tin, titanium, uranium, vanadium and zinc.
	Total suspended solids are not required for groundwater at the monitoring well locations.

3.2 Surface Water Monitoring Program

The surface water monitoring network consists of a total of ten (10) surface water monitoring locations throughout and adjacent to the waste facility site. The surface water network is divided into surface water sample locations, influent/effluent sample locations, and lift station samples, the locations are listed in Table 2.

As stated above and in the CoA, the sampling must be conducted four (4) times per calendar year and not less than thirty (30) days apart. For the 2024 surface water monitoring program the sampling was conducted in; May, August, October and December. The analysis must also include the parameters specified by the CoA. There are a total of ten (10) surface water sampling locations, one (1) location (SW-5) at the Leachate Treatment Area, four (4) locations (SW-6 - SW-9) (sedimentation ponds) and five (5) locations within the freshwater brooks (847-SW-1 & SW-1 - SW-4). Table 2 identifies the surface water sampling locations and

parameters that were analysed. Temperature, dissolved oxygen (DO), sulphate and Total Dissolved Solids (calculated) were not analysed in 2024.

Table 2: Regulatory Sampling Requirements for Surface Water

Loctation	Parameters
847-SW1- Background SW-1 to SW-9	General Parameters:
	Nitrate + nitrite, nitrate, nitrite, pH, Total Suspended Solids, colour, sodium, potassium, calcium, sulphide, magnesium, ammonia, alkalinity, chloride, turbidity, reactive silica, orthophosphate, phosphorous, Dissolved Organic Carbon, conductance, phenolics, carbonate (CaCO3), hardness (CaCO3) and bicarbonate (CaCO3).
	Metals Scan:
	Aluminum, antimony, arsenic, barium, beryllium, bismuth, boron, cadmium, chromium, cobalt, copper, iron, lead, manganese, molybdenum, mercury, nickel, selenium, silver, strontium, thallium, tin, titanium, uranium, vanadium and zinc.

3.3 Landfill Influent, Lagoon Effluent, Lift Station and Discharge

Table 3 in this section identifies the sampling locations and required parameters to be analysed for the Effluent Monitoring Program.

Table 3: Regulatory Sampling Requirements for Influent/Effluent

Location	Parameters	Frequency
SW-9 (Final Discharge Point)	pH, TSS, nitrate, phosphorous, BOD	Monthly
	Water Chemistry Analysis	Quarterly
Influent from Landfill	pH, TSS, nitrate, phosphorous, BOD	Monthly
Effluent from Lagoons	pH, TSS, nitrate, phosphorous, BOD	Monthly
Lift Station	pH, TSS, nitrate, phosphorous, BOD	Monthly

Discharge point SW-9 was not sampled as part of the January, March, June, July, November, and December sampling events due to low volumes of discharge. No data for samples from the influent from the landfill, effluent from lagoons or lift station locations was provided for 2024. The BOD was not tested for the samples retrieved in September and October 2024.

4 2024 Analytical Result Summary

As previously stated, the 2024 analytical testing for the Surface and Groundwater Monitoring Program at the Norris Arm North Regional Waste Management Facility follows the standards presented in the DECC CoA (Approval No: WMS-17-12-001) (Refer to Appendix C).

Treated water discharged from the site shall meet the criteria limits as set out in the NL Environmental Control Water and Sewage Regulations, 2003 as stated in section 74 of the CoA found in Appendix C of this report.

4.1 Groundwater Monitoring Program

4.1.1 Analytical Results

Exceedances of the applicable criteria were reported in groundwater quality samples collected during the May and August sampling events at the location of MW-J. All the exceedances are summarized below in Table 4. Detailed results are presented in Appendix A, Tables 1-A through 2-E.

Table 4: Summary of Exceedances for 2024 Groundwater Sampling Events

Parameters	Units	Location		Guideline
		MW-J		NL Environmental Control Water & Sewage Regulations
		2024-05-29	2024-08-12	
Nitrate (N)	mg/L	45	28	10
Nitrogen (Ammonia Nitrogen)	mg/L	11	---	2
"---" denotes no exceedance				

4.2 Surface Water Monitoring Program

4.2.1 Analytical Results

Exceedances of the applicable criteria were reported in water quality samples collected during each of the sampling events for at least two (2) samples collected from the ten (10) surface water sampling locations. All the exceedances are summarized below in Tables 5-8 with each representing a discrete sampling event in 2024. Detailed results are presented in Appendix A, Tables 3-A through Table 4-J.

Table 5: Summary of Exceedances for May 2024 Surface Water Sampling Event

Parameters	Units	Location				Guideline
		SW-2	SW-3	SW-5	SW-9	NL Environmental Control Water & Sewage Regulations

Nitrate (N)	mg/L	26	---	---	---	10
Nitrogen (Ammonia Nitrogen)	mg/L	---	2.3	360	71	2
Total Suspended Solids	mg/L	---	---	63	---	30
"---" denotes no exceedance						

Table 6: Summary of Exceedances of August 2024 Surface Water Sampling Event

Parameters	Units	Location			Guideline
		SW-3	SW-5	SW-9	NL Environmental Control Water & Sewage Regulations
Nitrate (N)	mg/L	---	65	20	10
Nitrogen (Ammonia Nitrogen)	mg/L	3.7	260	47	2
Total Suspended Solids	mg/L	---	77	66	30
"---" denotes no exceedance					

Table 7: Summary of Exceedances for October 2024 Surface Water Sampling Event

Parameters	Units	Location			Guideline
		SW-3	SW-5	SW-9	NL Environmental Control Water & Sewage Regulations
Nitrate (N)	mg/L	---	320	31	10
Nitrogen (Ammonia Nitrogen)	mg/L	2.9	150	6.3	2
Total Suspended Solids	mg/L	---	54	---	30
"---" denotes no exceedance					

Table 8: Summary of Exceedances for December 2024 Surface Water Sampling Event

Parameters	Units	Location		Guideline
		SW-3	SW-5	NL Environmental Control Water & Sewage Regulations
Nitrogen (Ammonia Nitrogen)	mg/L	4.3	270	2
Total Suspended Solids	mg/L	---	87	30
"---" denotes no exceedance				

4.3 Landfill Influent, Lagoon Effluent, Lift Station and Discharge

No data for samples from the influent from the landfill, effluent from lagoons or lift station locations was provided for 2024.

There were four exceedances identified for samples collected from the SW-9 location during three (3) sampling events which are summarized in Table 9 below. Note that months marked with “–” represent time periods which water levels were below sampling requirements and therefore no sample was collected for these months. Detailed analytical results are presented in Appendix A, Tables 5-A through 5-I.

Table 9: Summary of Exceedances for Discharge Sampling Events

		DISCHARGE-SW-9												Guideline
		2024-01-30	2024-02-29	2024-03-31	2024-04-24	2024-05-29	2024-06-30	2024-07-31	2024-08-12	2024-09-30	2024-10-31	2024-11-01	2024-12-31	
Calculated Parameters	Units													Provincial ¹ Environmental Sewage Control Regulations, 2003 - Schedule A
Iron (ferric)	mg/L	--	ND	--	1.2	ND	--	--	ND	ND	ND	--	--	--
Nitrate (N)	mg/L	--	11	--	7.1	10	--	--	18	6.8	13	--	--	10
Inorganics	Units													
Carbonaceous BOD	mg/L	--	--	--	--	--	--	--	--	--		--	--	--
BOD	mg/L	--	ND	--	10	33	--	--	57	NA	NA	--	--	--
Iron (ferrous)	mg/L	--	0.58	--	ND	ND	--	--	ND	0.71	ND	--	--	--
Nitrate + Nitrite	mg/L	--	12	--	7.6	12	--	--	21	8.6	14	--	--	--
Nitrite (N)	mg/L	--	0.16	--	0.52	1.7	--	--	2.9	1.8	0.63	--	--	--
pH	pH	--	8.27	--	8.27	8.05	--	--	8.65	8.93	8.01	--	--	5.5 - 9.0
Total Phosphorus (P)	mg/L	--	0.3	--	0.31	0.19	--	--	0.38	0.47	0.24	--	--	--
Total Suspended Solids	mg/L	--	3.6	--	19	11	--	--	60	24	12	--	--	30
Total Kjeldahl Nitrogen	mg/L	--	110	--	110	72	--	--	61	16	5.6	--	--	--
Total Iron (Fe)	ug/L	--	760	--	1200	360	--	--	390	ND	190	--	--	10000

Table Notes

¹ NL Environmental Control Water and Sewage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations)

ND - Not Detected

NA - Test results not available

Bold & Grey Shaded - exceeds applicable guideline

4.4 Water Quality Trend Analysis from 2014 to 2024 (Parameter Exceedances)

Both surface and groundwater locations were selected to monitor potential receptors surrounding the Norris Arm Regional Waste Management Facility. Table 10 provides a summary for the number of water quality parameter exceedances from 2014 to 2024.

Table 10: Summary Statistics for Water Quality Parameter Exceedances from 2014 to 2023

Parameter	Unit	Sample Location	Min.	Max.	Number of Historical Exceedances	Number of 2023 Exceedances	Guideline
Groundwater							
pH	-	MW-L	4	7.14	1	0	5.5 - 9.0
Phenols-4AAP	mg/L	MW-H	0.34	0.34	1	0	0.1 mg/L
	mg/L	MW-I	3.3	8.8	2	0	
	mg/L	MW-J	6.5	16	2	0	
	mg/L	MW-K	0.72	4.6	2	0	
	mg/L	MW-L	7.2	11	2	0	
Ammonia Nitrogen	mg/L	MW-J	2.3	15	9	1	2.0 mg/L
Iron	µg/L	MW-H	59,000	230,000	6	0	10,000 µg/L
	µg/L	MW-I	91,000	570,000	5	0	
	µg/L	MW-J	140,000	760,000	7	0	
	µg/L	MW-K	33,000	960,000	6	0	
	µg/L	MW-L	110,000	290,000	5	0	
Copper	µg/L	MW-I	320	670	3	0	300 µg/L
	µg/L	MW-J	700	700	1	0	
	µg/L	MW-K	670	1,100	4	0	
	µg/L	MW-L	390	390	1	0	
Lead	µg/L	MW-I	250	250	1	0	200 µg/L
	µg/L	MW-J	320	320	1	0	
	µg/L	MW-K	210	210	1	0	
Nickel	µg/L	MW-I	510	1,100	2	0	500 µg/L
	µg/L	MW-K	800	1,000	2	0	
Nitrate	mg/L	MW-J	12	60	9	2	10 mg/L
Zinc	µg/L	MW-I	660	1,700	5	0	500 µg/L
	µg/L	MW-J	1,000	1,400	3	0	
	µg/L	MW-K	1,000	1,700	4	0	
	µg/L	MW-L	680	680	1	0	
Chromium	µg/L	MW-J	1,200	1,200	1	0	1,000 µg/L
	µg/L	MW-K	1,300	1,400	2	0	

Parameter	Unit	Sample Location	Min.	Max.	Number of Historical Exceedances	Number of 2023 Exceedances	Guideline
Surface Water							
pH	pH	SW-6	9.29	9.29	1	0	5.5 - 9.0
	pH	SW-7	9.10	9.38	2	0	
Phenols - 4AAP	mg/L	SW-3	0.22	1.3	2	0	0.1 mg/L
	mg/L	SW-5	0.15	0.27	4	0	
Zinc	µg/L	847-SW-1	640	640	1	0	500 µg/L
	µg/L	SW-1	780	780	1	0	
	µg/L	SW-2	550	6,900	2	0	
	µg/L	SW-3	1,200	1,800	2	0	
	µg/L	SW-4	540	11,000	2	0	
	µg/L	SW-5	840	910	2	0	
	µg/L	SW-6	860	860	1	0	
	µg/L	SW-7	3,100	3,100	1	0	
	µg/L	SW-8	770	6,400	4	0	
	µg/L	SW-9	2,400	7,300	3	0	
Iron	µg/L	SW-5	13,000	28,000	8	0	10,000 µg/L
Ammonia Nitrogen	mg/L	SW-1	2.3	2.7	2	0	2.0 mg/L
	mg/L	SW-2	2.2	8.2	3	0	
	mg/L	SW-3	2.3	17	9	4	
	mg/L	SW-5	5.8	360	38	4	
	mg/L	SW-9	2.5	190	28	3	
TSS	mg/L	SW-2	47	49	2	0	30 mg/L
	mg/L	SW-3	46	140	2	0	
	mg/L	SW-5	30	2,000	29	4	
	mg/L	SW-9	36	54	5	1	
Nitrate	Mg/L	SW-2	19	61	2	1	10 mg/L
	mg/L	SW-5	32	260	15	2	10 mg/L
	mg/L	SW-9	10	32	7	2	
TDS	mg/L	SW-5	1,800	3,000	6	N/A	1,000 mg/L
Discharge SW-9							
Nitrate	mg/L	Discharge SW-9	10	60	18	3	10 mg/L
TSS	mg/L	Discharge SW-9	32	130	14	1	30 mg/L

Parameter	Unit	Sample Location	Min.	Max.	Number of Historical Exceedances	Number of 2023 Exceedances	Guideline
Iron	µg/L	Discharge SW-9	11,000	11,000	1	0	10,000 µg/L
Effluent From Lagoons							
Nitrate	mg/L	Effluent From Lagoons	10	73	24	N/A	10 mg/L
TSS	mg/L	Effluent From Lagoons	31	1300	44	N/A	30 mg/L
Iron	µg/L	Effluent From Lagoons	13,000	29,000	10	N/A	10,000 µg/L
Influent From Landfill							
Nitrate	mg/L	Influent From Landfill	11	290	15	N/A	10 mg/L
TSS	mg/L	Influent From Landfill	32	1,300	57	N/A	30 mg/L
Iron	µg/L	Influent From Landfill	10,000	57,000	31	N/A	10, 000 µg/L
Lift Station							
Nitrate	mg/L	Lift Station	11	52	13	N/A	10 mg/L
TSS	mg/L	Lift Station	31	340	25	N/A	30 mg/L
Iron	µg/L	Lift Station	11,000	17,000	11	N/A	10,000 µg/L

4.5 Groundwater

4.5.1 Phenols-4AAP in Groundwater

There were no exceedances reported for Phenols-4AAP in any of the monitoring wells sampled during the 2024 monitoring program. Samples from all monitoring wells in 2014 (MW-H, MW-I, MW-J, MW-K and MW-L) exceeded the criteria for two events each, except for one event for MW-H. The highest reported exceedance was 16 mg/L at MW-J and the lowest exceedance was 0.34 mg/L at MW-H. A decrease in Phenols-4AAP concentrations have occurred in all monitoring wells. In 2024, Phenols-4AAP concentrations rose above detection limits for the August 2024 samples collected from MW-H, MW-I, MW-J, and MW-K (ranging from 0.0011 mg/L to 0.0013 mg/L) but then returned below applicable guidelines for subsequent sampling event. Refer to Appendix A Tables 1-A to 1-E for analytical results compared to applicable guidelines.

4.5.2 Ammonia Nitrogen in Groundwater

There was one (1) exceedance reported for Ammonia Nitrogen for location MW-J in the 2024 monitoring program with a value of 11 mg/L. One exceedance of ammonia nitrogen was reported at monitoring well MW-J, and two exceedances were reported at monitoring well MW-J in 2017. A total of four (4) other exceedances were also identified between 2014 - 2016. The highest reported concentration was in a sample collected in 2021 at 15 mg/L and the lowest value that exceeded the criteria occurred in 2016 and was 2.3 mg/L. As previously suggested (SNC 2020), the elevated ammonia nitrogen concentrations reported in samples collected from MW-J were not attributed to background groundwater quality, with potential sources being the sludge settling pond and sediment pond which are hydraulically upgradient of MW-J. Refer to Appendix A Tables 1-A to 1-E for analytical results compared to applicable guidelines.

4.5.3 Dissolved Iron in Groundwater

There were no exceedances reported for dissolved iron in any of the monitoring wells sampled during the 2023 monitoring program and none have occurred since July 2016. The highest reported exceedance was 960,000 µg/L at MW-K (2015) and the lowest exceedance was 27,000 µg/L at well MW-J (2016). Since the July 2016 sampling event concentrations have remained stable with a significant decrease in iron concentrations occurring in all monitoring wells (including background) with many sampling results below laboratory sampling detection limits. Refer to Appendix A Tables 2-A to 2-E for analytical results compared to applicable guidelines.

4.5.4 Dissolved Copper in Groundwater

There were no exceedances reported for dissolved copper in any of the monitoring wells sampled during the 2024 monitoring program. The only reported exceedances for copper occurred during 2015 for monitoring wells MW-I, MW-J, MW-K and MW-L. The highest reported exceedance was 1,100 µg/L at MW-K and the lowest exceedance was 320 µg/L at MW-I. Since 2015 most concentrations have been near or below the laboratory detection limits and are consistent with background concentrations. Refer to Appendix A Tables 2-A to 2-E for analytical results compared to applicable guidelines.

4.5.5 Dissolved Lead in Groundwater

There were no exceedances reported for dissolved lead in any of the monitoring wells sampled during the 2024 monitoring program. The only reported exceedances for lead were for samples collected during 2015 from monitoring wells MW-I, MW-J and MW-K. The highest reported exceedance was 320 µg/L at MW-J and the lowest exceedance was 210 µg/L at MW-K. Since 2015 there has been a significant decrease in lead concentrations at MW-I, MW-J and MW-K with most sampling results being below laboratory sampling detection limits and remaining stable with background concentrations. Refer to Appendix A Tables 2-A to 2-E for analytical results compared to applicable guidelines.

4.5.6 Dissolved Nickel in Groundwater

There were no exceedances reported for dissolved nickel in any of the monitoring wells sampled during the 2024 monitoring program. The only reported exceedances for nickel occurred during 2014 and 2015 for monitoring wells MW-I and MW-K. The highest reported exceedance was 1,100 µg/L at MW-I and the lowest exceedance was 510 µg/L at MW-I. Since 2015 there has been a significant decrease in nickel concentrations at MW-I and MW-K with most sampling results for MW-H, MW-I, MW-K being below laboratory sampling detection limits, consistent with background concentrations. Nickel concentrations were above detection limits for all samples collected from MW-J and MW-L (ranging from 3.8 µg/L to 13 µg/L) but have always been below applicable guidelines. Refer to Appendix A Tables 2-A to 2-E for analytical results compared to

applicable guidelines.

4.5.7 Nitrate in Groundwater

There were two (2) exceedances for Nitrate concentrations for location MW-J in the 2024 monitoring program. The highest reported exceedance for MW-J was 45 mg/L and the lowest reported was 28 mg/L for the 2024 sampling program. There have been nine (9) samples in the past with nitrate concentrations that exceeded the 10 mg/L guideline at MW-J. The highest previously reported exceedance was 60 mg/L in 2023. The lowest exceedance was 12 mg/L in 2018. Concentrations exhibit considerable fluctuations from sample to sample and year over year ranging from trace or below detection limits to the maximum of 60 mg/L with no consistent upward or downward trend. Refer to Appendix A Tables 1-A to 1-E for analytical results compared to applicable guidelines.

4.5.8 Dissolved Zinc in Groundwater

There were no exceedances reported for dissolved zinc in any of the monitoring wells sampled during the 2024 monitoring program. Reported exceedances for zinc previously occurred during 2014, 2015 and 2016 with exceedances varying between locations. There was a reported exceedance within the last sampling event on 2018 and the first sampling event of 2019 at MW-J. The highest reported exceedance was 1,700 µg/L at MW-I and MW-K and the lowest exceedance was 660 µg/L at MW-I. Since 2016 there has been a decrease in zinc concentrations with most sampling results for MW-I, MW-J and MW-K below laboratory sampling detection limits and some trace amounts, which is consistent with background concentrations (MW-H). Zinc concentrations have been consistently detected in all sampling events for MW-L, both current and previous. These concentrations have generally remained below the applicable guidelines, apart from an anomaly in October 2014. The detected zinc concentrations have varied, ranging from 6.7 µg/L to 680 µg/L.

Notably, since 2016, the zinc concentrations at MW-L have not only decreased but also maintained stability. For a detailed comparison of the analytical results with the applicable guidelines, please refer to Tables 2-A to 2-E in Appendix A.

4.5.9 Dissolved Chromium in Groundwater

There were no exceedances reported for dissolved chromium in any of the monitoring wells sampled during the 2024 monitoring program. The only reported exceedances for chromium occurred during 2015 for monitoring wells MW-J and MW-K. The highest reported exceedance was 1,400 µg/L at MW-K and the lowest exceedance was 1,200 µg/L at MW-J. Since 2015 most concentrations have been below laboratory detection limits, consistent with background concentrations and MW-I and MW-L. Refer to Appendix A Tables 2-A to 2-E for analytical results compared to applicable guidelines.

4.6 Surface Water Locations 847-SW-1 & SW-1 to SW-4 (Freshwater Streams Adjacent to Site)

4.6.1 Ammonia Nitrogen in Surface Water

There were four (4) exceedances for ammonia nitrogen concentrations for location SW-3 in the 2024 monitoring program. The reported exceedances ranged from 2.3 to 4.3 mg/L for SW-3. Nearly all the other samples were below detection limits or had a small trace amount detected. Reported exceedances for ammonia nitrogen have occurred in samples collected at SW-1 in 2015 and 2018, SW-2 in 2014, 2015, 2016, and 2021, at SW-3 in 2021 and 2022, and SW-2 and SW-3 in 2023. The highest previously reported exceedance was 8.2 mg/L at SW-2 and the lowest exceedance was 2.2 mg/L also at SW-2. Apart from this

data, concentrations have generally remained relatively stable, ranging from 0.05 mg/L to 1.4 mg/L (or below laboratory detection limits) since 2014 and are considered comparable to the background surface water quality. Refer to Appendix A Tables 4-A to 4-J for analytical results compared to applicable guidelines.

4.6.2 Phenols-4AAP in Surface Water

There was no exceedance reported for Phenols-4AAP during the 2024 monitoring program. Previous exceedances of 1.3 mg/L in the 2022 monitoring program and 0.22 mg/L were noted in the 2021 monitoring report. All previous samples were below detection limits or had trace amounts detected well below guidelines. Apart from the large spike in value for the May of 2022 monitoring sample results, concentrations have generally remained relatively stable, ranging from 0.001 mg/L to 0.22 mg/L (or below laboratory detection limits). Refer to Appendix A Tables 4-A to 4-J for analytical results compared to applicable guidelines.

4.6.3 Nitrate in Surface Water

There was one (1) exceedances of nitrate concentrations in SW-2 during the 2024 monitoring program. Historically, the highest reported exceedance of nitrate at SW-2 was 61 mg/L and the lowest reported exceedance was 19 mg/L in 2023. Refer to Appendix A Tables 4-A to 4-J for analytical results compared to applicable guidelines.

4.6.4 Total Suspended Solids in Surface Water

There was no exceedance for Total Suspended Solids (TSS) in the 2024 monitoring program. Two (2) reported exceedances for TSS have occurred at SW-3 during 2015 which contained a value of 140 mg/L, and 46 mg/L for the 2023 monitoring program. It should be noted that 30 mg/L was reported at SW-3 for the 2022 monitoring program which is at the upper limit of the regulatory guideline value. Only two (2) other reported exceedances for TSS have occurred, with a value of 47 mg/L in the sample collected from SW-2 during 2015 and 49 mg/L in 2022, also at SW-2. Except for these four (4) reported exceedances, concentrations have remained relatively stable and are considered comparable to the background surface water quality. Refer to Appendix A Tables 4-A to 4-J for analytical results compared to applicable guidelines.

4.6.5 Total Zinc in Surface Water

There were no exceedances reported for Zinc concentrations during the 2024 monitoring program. The highest reported exceedance was 11,000 µg/L at SW-4 in 2021 and the lowest exceedance was 540µg/L at SW-4 in 2018. Apart from these results, concentrations have remained relatively stable since 2014 and are considered representative of background surface water quality. Many of the samples have had concentrations below laboratory detection limits. Refer to Appendix A Tables 3-A to 3-J for analytical results compared to applicable guidelines.

4.7 Surface Water Locations SW-6, SW-7, SW-8 & SW-9 (Sedimentation Ponds)

4.7.1 Ammonia Nitrogen in Surface Water

There were three (3) exceedances of ammonia nitrogen concentrations in SW-9 during the 2024 monitoring program, and ranged from 6.3 to 71 mg/L. Most of the samples for SW-6, SW-7 and SW-8 had ammonia nitrogen concentrations below detection limits. The highest reported exceedance was at SW-9 with 190 mg/L and the lowest exceedance was in 2022 at 2.5 mg/L. Concentrations for samples collected from most of the

sedimentation pond locations have remained relatively stable ranging from below detection limits to 0.50 mg/L. Refer to Appendix A Tables 4-G to 4-J for analytical results compared to applicable guidelines.

4.7.2 Total Zinc in Surface Water

There were no exceedances of zinc concentrations during the 2024 monitoring program. Historically, the highest reported exceedance was 7,300 µg/L at SW-9 in 2016 and the lowest exceedance was 770 µg/L at SW-8 in 2018. Apart from these exceedances, concentrations have remained relatively stable generally ranging from below laboratory detection limits to 350 µg/L since 2014. Refer to Appendix A Tables 3-G to 3-J for analytical results compared to applicable guidelines.

4.7.3 Nitrate in Surface Water

There was one (1) exceedances of nitrate concentrations in SW-9 during the 2024 monitoring program. Historically, the highest reported exceedance of nitrate at SW-9 was 32 mg/L and the lowest reported exceedance was 10 mg/L in 2019. Refer to Appendix A Table 4-J for analytical results compared to applicable guidelines.

4.7.4 Total Suspended Solids in Surface Water

There were no exceedances of Total Suspended Solids during the 2024 monitoring program. Historically, the highest reported exceedance was reported as 54 mg/L in 2016 while the lowest reported values were 36 mg/L in 2014 at SW-9. Refer to Appendix A Table 4-J for analytical results compared to applicable guidelines.

4.7.5 pH in Surface Water

There were no exceedances of pH during the 2024 monitoring program. Historically there have been only three (3) exceedances of pH with values of 9.29 at SW-6 in 2021 with exceedances at SW-7 being reported as 9.1 mg/L in 2020 and 9.38 mg/L in 2021. Apart from these exceedances, the pH has remained within the guidelines for most of the samples. Refer to Appendix A Tables 4-G to 4-J for analytical results compared to applicable guidelines.

4.8 Surface Water Location SW-5 (Leachate Treatment Area)

4.8.1 Ammonia Nitrogen in Surface Water

There were four (4) exceedances for ammonia nitrogen concentrations from SW-5 in the 2024 monitoring program. The highest reported exceedance was 360 mg/L, and the lowest previously reported exceedance was 5.8 mg/L in 2018. Refer to Appendix A Table 4-F for analytical results compared to applicable guidelines.

4.8.2 Phenols-4AAP in Surface Water

There were no exceedances for phenols-4AAP concentrations from SW-5 in the 2024 monitoring program. The highest reported exceedance was 0.27 mg/L in 2014 and the lowest exceedance was 0.15 mg/L in 2015 and 2016. Refer to Appendix A Table 4-F for analytical results compared to applicable guidelines.

4.8.3 Total Dissolved Solids in Surface Water

Total Dissolved Solids (TDS) analysis was not completed on samples collected from SW-5 since December 2015. Prior to this, all six (6) sampling events contained concentrations of TDS exceeding applicable guidelines. The highest reported exceedance was 3,000 mg/L and the lowest exceedance was 1,800 mg/L. Refer to Appendix A Table 4-F for analytical results compared to applicable guidelines.

4.8.4 Total Iron in Surface Water

There were no exceedances for iron in the 2024 monitoring program. The highest reported exceedance of iron was 28,000 µg/L in 2017 and the lowest exceedance was 13,000 µg/L in 2016 and 2023. Iron concentrations have been variable with no consistent upward or downward trends identified. Refer to Appendix A Table 3-F for analytical results compared to applicable guidelines.

4.8.5 Nitrate in Surface Water

There were two (2) exceedances for nitrate samples collected from location SW-5 in the 2024 monitoring program and there have been fifteen (15) samples in the past with concentrations that exceeded the 10 mg/L guideline. The highest reported exceedance was 320 mg/L in 2024 and the lowest exceedance was 25 mg/L in 2023. Concentrations exhibit considerable fluctuations from sample to sample and year over year ranging from trace or below detection limits to the maximum of 320 mg/L with no consistent upward or downward trend. Refer to Appendix A Table 4-F for analytical results compared to applicable guidelines.

4.8.6 Total Suspended Solids in Surface Water

There were four (4) exceedances for Total Suspended Solids (TSS) in the 2024 monitoring program for SW-5. Since the beginning of the program in 2014, many of the samples have had TSS concentrations that exceeded the 30 mg/L guideline, with only five (5) samples below the criterion and one (1) sample reported at the guideline limit of 30 mg/L. The highest reported exceedance was 2,000 mg/L in 2015 and the lowest exceedance was 32 mg/L in 2018. Refer to Appendix A Table 4-F for analytical results compared to applicable guidelines.

4.8.7 Total Zinc in Surface Water

There were no exceedances for zinc in the 2024 monitoring program. No samples had zinc concentrations that exceeded regulatory guidelines since 2017. Historically only two (2) samples have exceeded the criterion in the November samples from both 2016 and 2017. The highest reported exceedance was 910 µg/L in 2016 at SW-5 and the lowest exceedance was 840 µg/L in 2017. Apart from these exceedances, concentrations have remained relatively consistent within a range of 14 µg/L to 230 µg/L. Refer to Appendix A Table 3-F for analytical results compared to applicable guidelines.

4.9 Discharge SW-9 (Final Discharge Location)

4.9.1 Total Iron in Surface Water

There were no exceedances reported for iron at sampling location Discharge-SW-9 during the 2024 monitoring program. One (1) exceedance occurred in 2015 with a concentration of 11,000 µg/L. Apart from this exceedance, concentrations have been ranging from 54 µg/L to 9,400 µg/L or below laboratory detection limits since the first sampling event in April 2015 with no significant upward or downward trends. Refer to

4.9.2 Nitrate in Surface Water

There were three (3) exceedances reported throughout the 2024 monitoring program for nitrate at sampling location Discharge-SW-9. One (1) reported exceedance of nitrate occurred in 2022, seven (7) reported exceedances of nitrate occurred in 2020, two (2) reported exceedances occurred in 2019 three (3) in 2018, one (1) reported exceedance of nitrate occurred in 2016 and one (1) reported exceedance of nitrate occurred in 2015. The highest reported exceedance of 60 mg/L occurred in 2020, and the lowest exceedance of 10 mg/L occurred in 2020 and 2024. Apart from these exceedances, concentrations have remained relatively stable ranging from 0.059 mg/L to 7.1 mg/L or below laboratory detection limits since 2014 with no significant upward or downward trends. Refer to Appendix A Tables 5-H: 2022 for recent analytical results compared to applicable guidelines.

4.9.3 Total Suspended Solids in Surface Water

There was one (1) exceedance reported during the 2024 monitoring program for Total Suspended Solids (TSS) from Discharge-SW-9. Historically there have been TSS exceedance in years 2022, 2020, 2018, 2017, 2016, 2015, and 2014. The highest reported exceedance was 130 mg/L in 2014 and 2017, and the lowest exceedance was 32 mg/L in 2018 and 2020. Apart from these exceedances, concentrations have remained relatively stable since 2014 with no significant upward or downward trends. Refer to Appendix A Tables 5-H: 2022 for recent analytical results compared to applicable guidelines.

4.10 Effluent from Lagoons

4.10.1 Iron

There was no sampling of the effluent from lagoons in 2024. There was a single reported exceedance for iron from the effluent lagoons in 2019, during the February sampling event. Historically, there had been several exceedances of the 10,000 µg/L guideline for iron, however, none had occurred since April of 2017. The highest reported exceedance was 29,000 µg/L in 2015 and the lowest exceedance was 13,000 µg/L in 2017. Between the first sampling event in April 2015 and April 2017, iron concentrations were quite variable with no significant upward or downward trends. Following the April 2017 concentrations continued to fluctuate but within a much lower range, including some samples with iron concentrations below detection. Refer to Appendix A Tables 6-A - 6-F for analytical results compared to applicable guidelines.

4.10.2 Nitrate

In 2024, no effluent sampling was conducted from the lagoons. However, it's noteworthy that in 2019, four effluent samples from the lagoons were reported to have exceeded the nitrate criterion. Several historical exceedances have occurred in prior years as well. The highest reported exceedance was 73 mg/L in 2015 and the lowest exceedance was 11 mg/L in 2019. From January 2014 until June 2015 many of the sampling events revealed no concentrations above laboratory detection limits. Starting in November 2017, nitrate concentrations have been noted to increase significantly, with concentrations periodically dropping below the guideline value. Refer to Appendix A Tables 6-A - 6-F for analytical results compared to applicable guidelines.

4.10.3 Total Suspended Solids

There was no sampling of the effluent from lagoons in 2024. Four (4) exceedances for TSS were reported above the TSS guidelines of 30 mg/L in the effluent samples from the lagoons in 2019. This is relatively low

in comparison to the number of exceedances in historical samples, with four (4) in 2018, six (6) in 2017, ten (10) in 2016, and nine (9) in each of 2015 and 2014. The highest reported exceedance was 1,300 mg/L in 2014 and the lowest exceedance was 31 mg/L in 2019. TSS concentrations have been variable since 2014 with no significant trend since 2014. Refer to Appendix A Tables 6-A - 6-F for analytical results compared to applicable guidelines.

4.11 Influent from Landfill

4.11.1 Iron

There was no sampling of the influent from the landfill in 2024. Four (4) exceedances of iron concentrations in influent water samples were reported in the 2019 monitoring program. Historically, there have been several exceedances of the 10,000 µg/L guideline for iron, including: six (6) exceedances in 2017, nine (9) exceedances in 2016 and five (5) exceedances in 2015. The highest reported exceedance was 57,000 mg/L in 2016 while a sample in 2015, equalled the criterion of 10,000 µg/L. Since the first sampling event in April 2015, iron concentrations have been variable with no significant or notable trends observed trends. Refer to Appendix A Tables 6-G - 6-L for analytical results compared to applicable guidelines.

4.11.2 Nitrate

There was no sampling of the influent from the landfill in 2024. Four (4) samples had nitrate concentrations that exceeded the criterion for influent water during the 2019 monitoring program. This is consistent with historical results, with three (3) exceedances for nitrate reported from the influent samples in each of 2015 and 2017 and five (5) exceedances in 2018. The highest reported exceedance was 170 mg/L in 2018 and the lowest exceedance was 11 mg/L in 2017. Concentrations tend to be low in the early and middle portions of the year, with a spike in the levels during the August and September sampling events. Refer to Appendix A Tables 6-G - 6-L for analytical results compared to applicable guidelines.

4.11.3 Total Suspended Solids

There was no sampling of the influent from the landfill in 2024. Historically there have been TSS exceedance in the years 2019, 2018, 2017, 2016, 2015, and 2014. The highest reported exceedance was 1300 mg/L in 2016 and the lowest exceedance was 32 mg/L in 2018. TSS concentrations have been variable with many of the sampling events containing exceeding concentrations and no significant or notable trends observed at the influent water station. Refer to Appendix A Tables 6-G - 6-L for analytical results compared to applicable guidelines.

4.12 Lift Station

4.12.1 Iron

There was no sampling of the lift station in 2024. Historically there have been iron exceedance in the years 2017, 2016, and 2015. The highest reported exceedance was 17,000 µg/L in 2016 and the lowest exceedance was 11,000 µg/L in 2015. Iron concentrations have had significant variability over time but have been generally lower on average since May of 2017. Refer to Appendix A Tables 6-M - 6-R for analytical results compared to applicable guidelines.

4.12.2 Nitrate

There was no sampling of the lift station in 2024. Historically there have been nitrate exceedance in the years 2019, 2018, 2016, and 2015. The highest reported exceedance was 52 mg/L in 2018 and the lowest exceedance was 11 mg/L, also in 2018. Apart from these exceedances, concentrations have remained relatively stable ranging from 0.054 mg/L to 7.6 mg/L or below laboratory detection limits since 2014 with no significant upward or downward trends. Refer to Appendix A Tables 6-M - 6-R for analytical results compared to applicable guidelines.

4.12.3 Total Suspended Solids

There was no sampling of the lift station in 2024. Historically there have been TSS exceedance in the years 2019, 2018, 2017, 2016, 2015, and 2014. The highest reported exceedance was 340 mg/L in 2014 and the lowest exceedance was 31 mg/L in 2015. Since the monitoring program began, TSS concentrations have been variable with no trends observed. Refer to Appendix A; Tables 6-M - 6-R for analytical results compared to applicable guidelines.

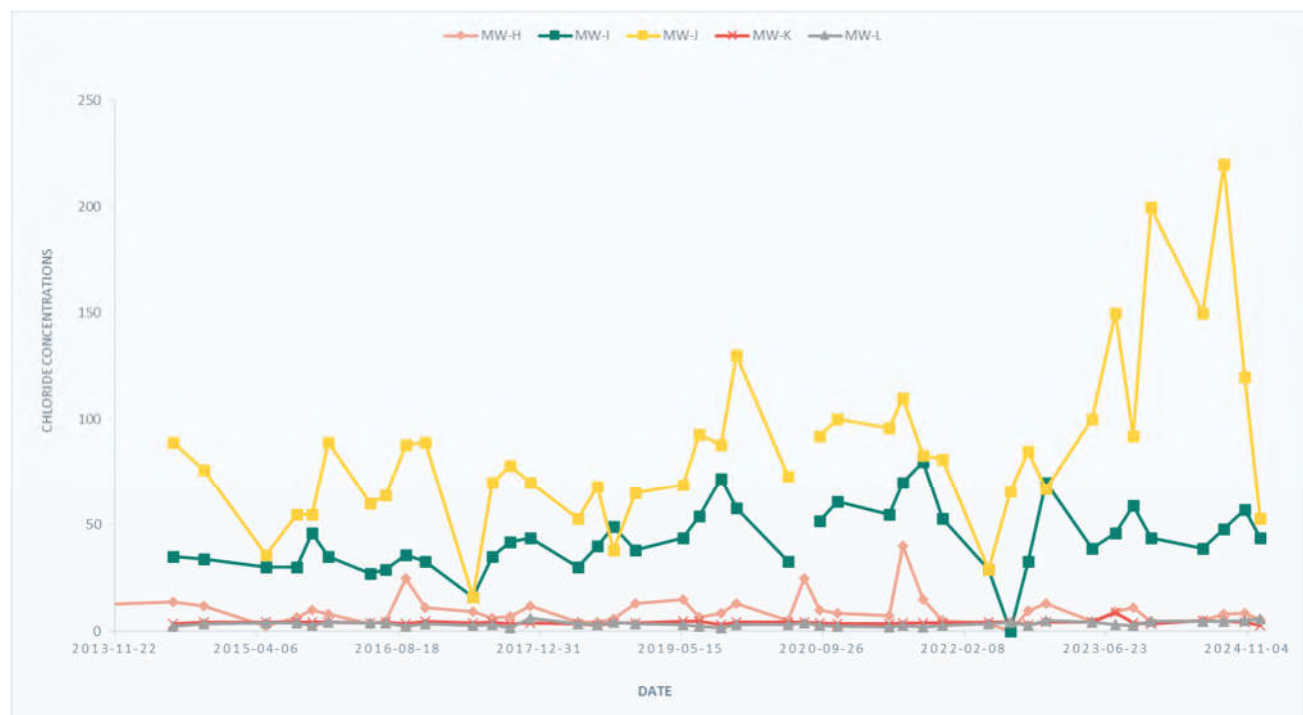
4.13 Water Quality Evaluation

4.13.1 Groundwater Quality

Water Table Groundwater Monitors

For the CRWMF, monitoring well MW-H provides background groundwater quality data. Since 2014, MW-H has had historical exceedances of the applicable criteria for phenols-4AAP and iron. No exceedances were reported for MW-H during the 2024 monitoring program.

Figure 1: Chloride Concentrations in Groundwater Samples over Time



It is evident from reviewing Figure 1 that chloride concentrations in water quality samples from background location, MW-H have remained relatively low during the 2024 monitoring program.

Concentrations of chloride in samples from MW-J have shown the increase observed in the 2023 monitoring period has decreased to near the historical average for this location. It should be noted that during the August 2024 sampling event, a new maximum exceedance was observed at 220 mg/L. Concentrations in samples from MW-L have also shown a slight increase in chloride concentrations since the 2022 sampling events, and may have stabilized.

MW-I and MW-K have remained relatively stable throughout the 2024 monitoring period.

Concentrations for chloride, iron, and hardness are frequently used to identify the presence of leachate related impacts. Figures 2 - 6, below, plot concentrations of these parameters in samples collected over time at each of the groundwater monitoring wells. Hardness (mg/L CaCO₃) is depicted as orange, iron (µg/L) as green, while chloride (mg/L) is yellow within plotted monitor well sampling results. Particularly for iron concentrations, there seems to be large gaps in sampling, however this is due to non-detect sampling results (below detection limits). Limit concentrations for the 2024 results are available in the laboratory certificates of analysis, in Appendix C.

Figure 2: Selected Parameter Concentrations at MW-H over Time

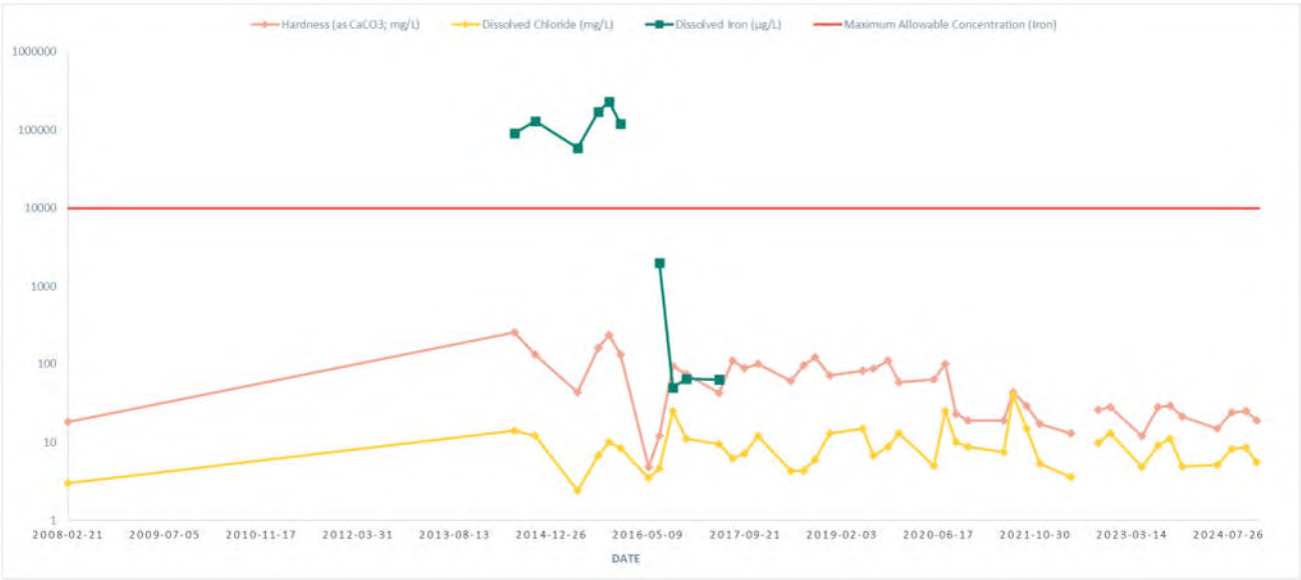


Figure 3: Selected Parameter Concentrations at MW-I over Time

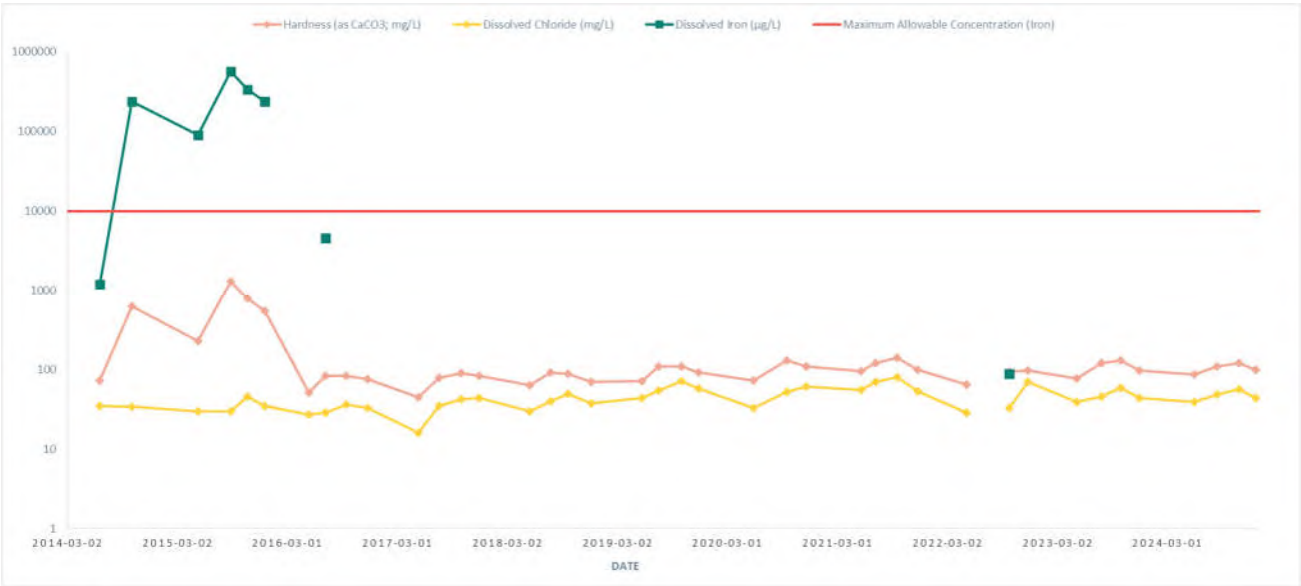


Figure 4: Selected Parameter Concentrations at MW-J over Time

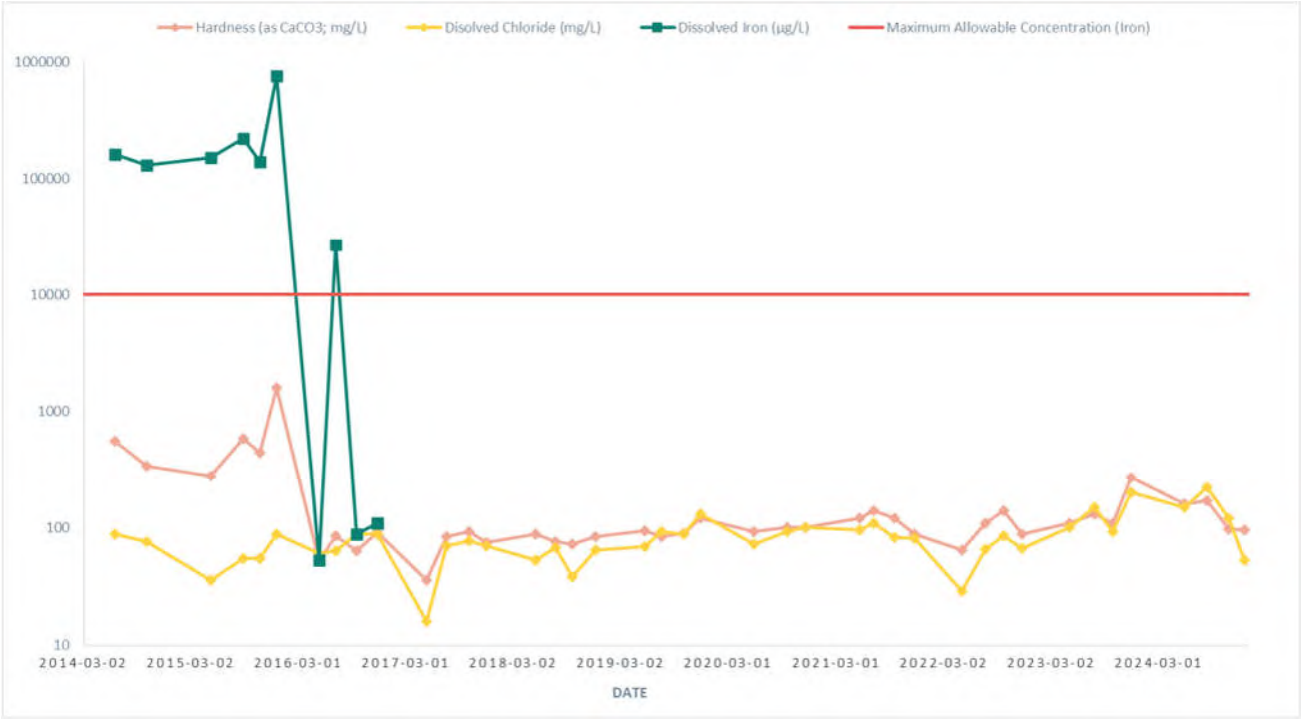
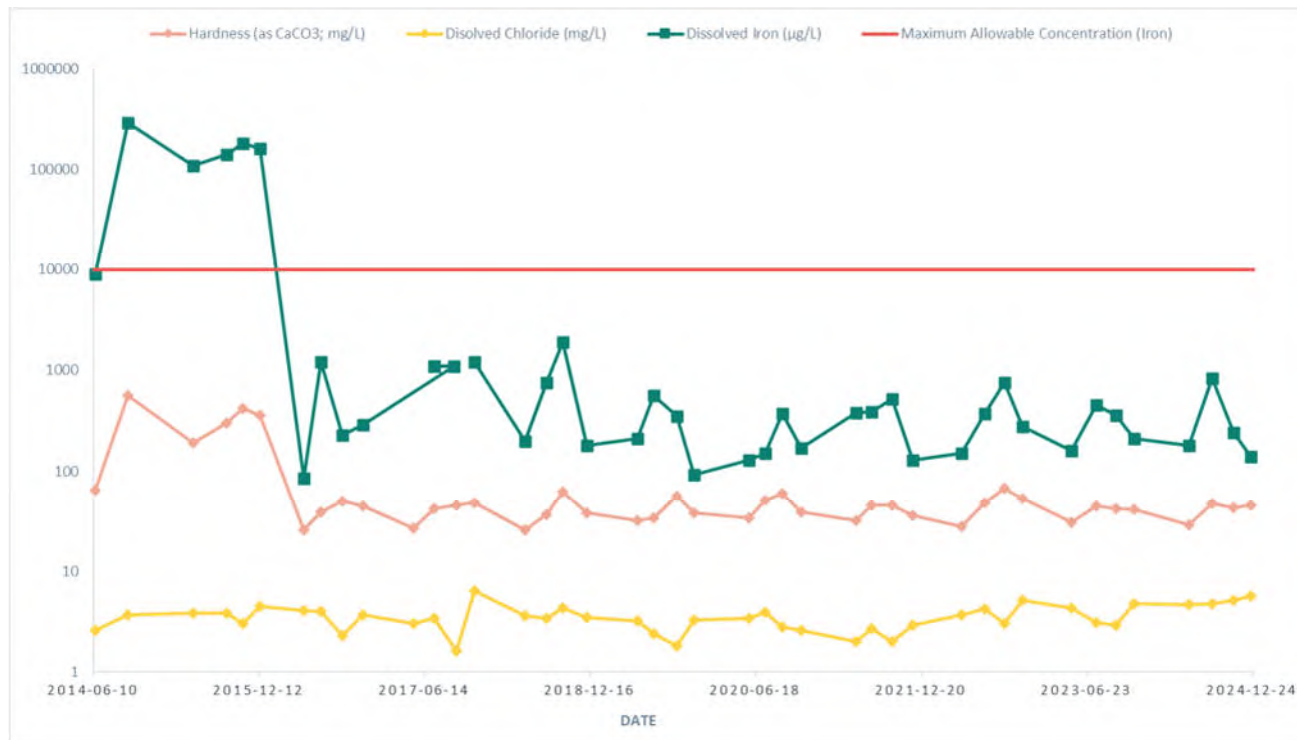


Figure 5: Selected Parameter Concentrations at MW-K over Time



Figure 6: Selected Parameter Concentrations at MW-L over Time



The data in the preceding plots show consistent variations, indicating that impacts in groundwater quality are stable over time. As per the continuation of trends following the 2024 sampling program, MW-I and MW-J concentrations of iron and hardness have continued to decrease in comparison to earlier samples (before 2017) and have seemed to have generally stabilized with most results being reported as non-detect within more recent years. Additionally, the overall chloride concentrations noted within 2024 sampling results for all monitor well locations appear to be relatively stable.

4.13.2 Surface Water Quality

Surface water samples are collected at a variety of sedimentation ponds and in each of the three (3) receiving streams that cross the site, to ensure that water quality is not being detrimentally impacted by the landfill. Water quality analysis in the surface water samples relates to total metals present. Background (upgradient) water quality in the central stream would be provided by 847-SW-1.

Moving downgradient, operations related impacts would be identified by samples from: SW-6 a stormwater management and sedimentation pond discharging to the western stream; SW-8 and SW-7, collected from stormwater management and sediment retention ponds discharging to the central stream; and, SW-3, which is downgradient of the C&D landfill, and discharges to the eastern stream and would be expected to be able to identify runoff related impacts from the C&D landfill prior to discharge into Bottom Brook.

SW-1 is collected from the central stream which is downgradient of the landfill and immediately hydrogeologically downgradient of the initial leachate treatment lagoon. SW-2 is further along the stream flow path, slightly downgradient of the MW-J monitoring well, and the discharge point from the effluent treatment system. SW-4 is the most downgradient sampling point representing water quality runoff collected by streams from the site, also mixed with other local streams (Lilly Brook and Bottom Brook).

Figures 7 - 12 have been prepared for selected parameters that may be indicative of the presence of leachate, and preferentially that were included in the long-term historical monitoring program.

Figure 7: Barium Concentrations over Time at Selected Surface Water Sampling Stations

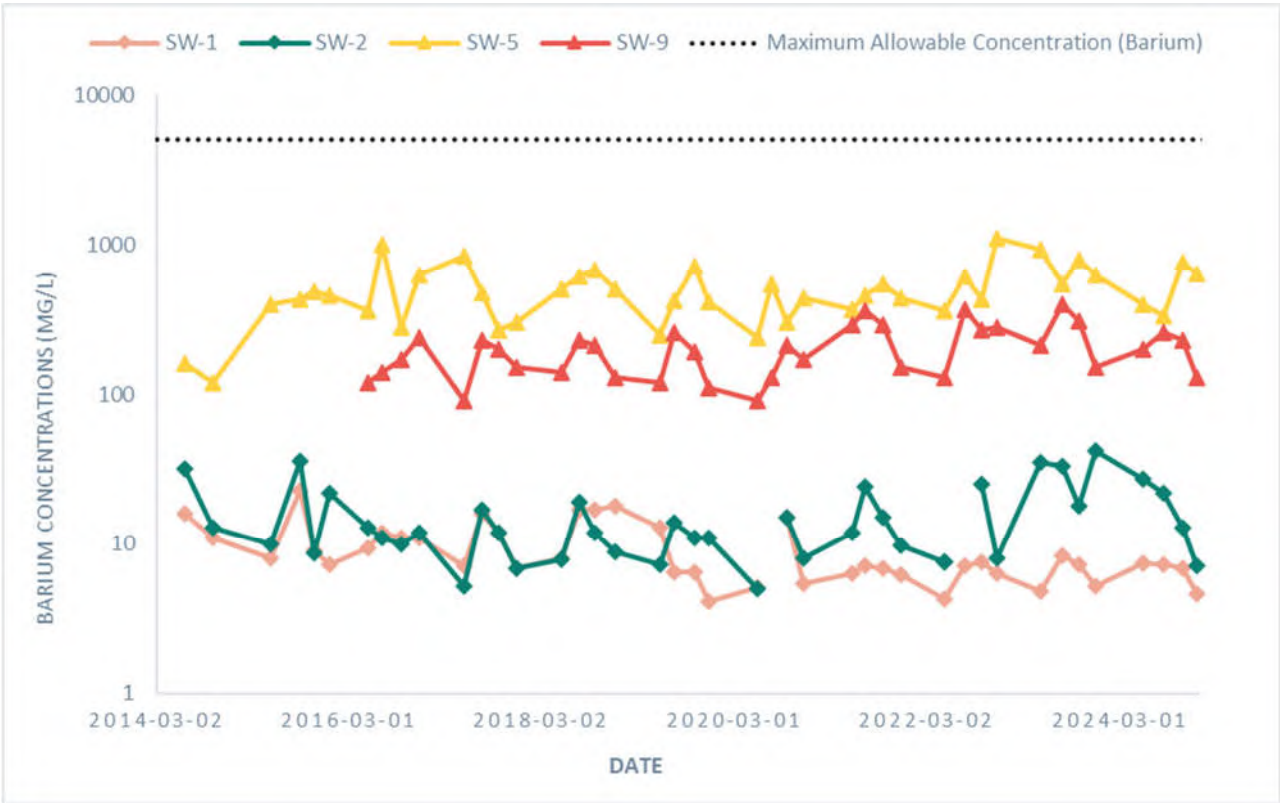


Figure 8: Boron Concentrations over Time at Selected Surface Water Sampling Stations

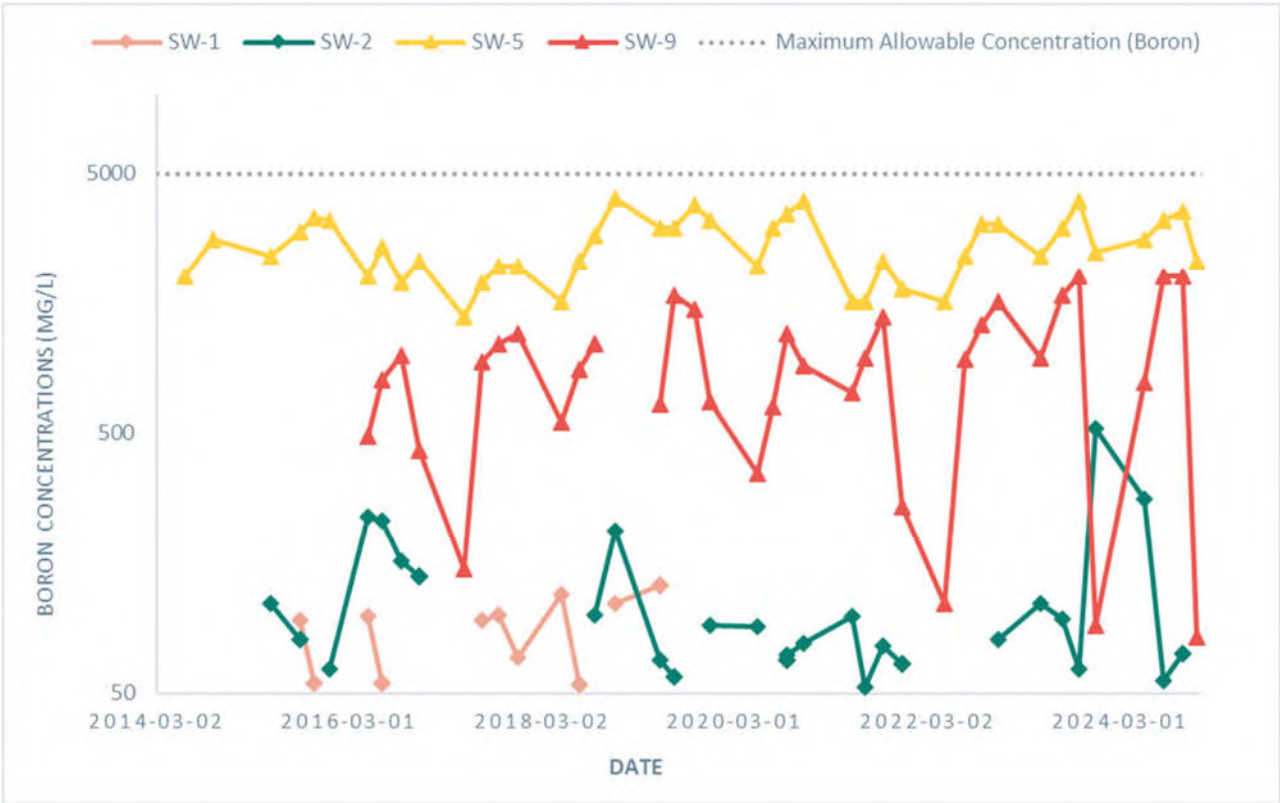


Figure 9: Calcium Concentrations over Time at Selected Surface Water Sampling Stations

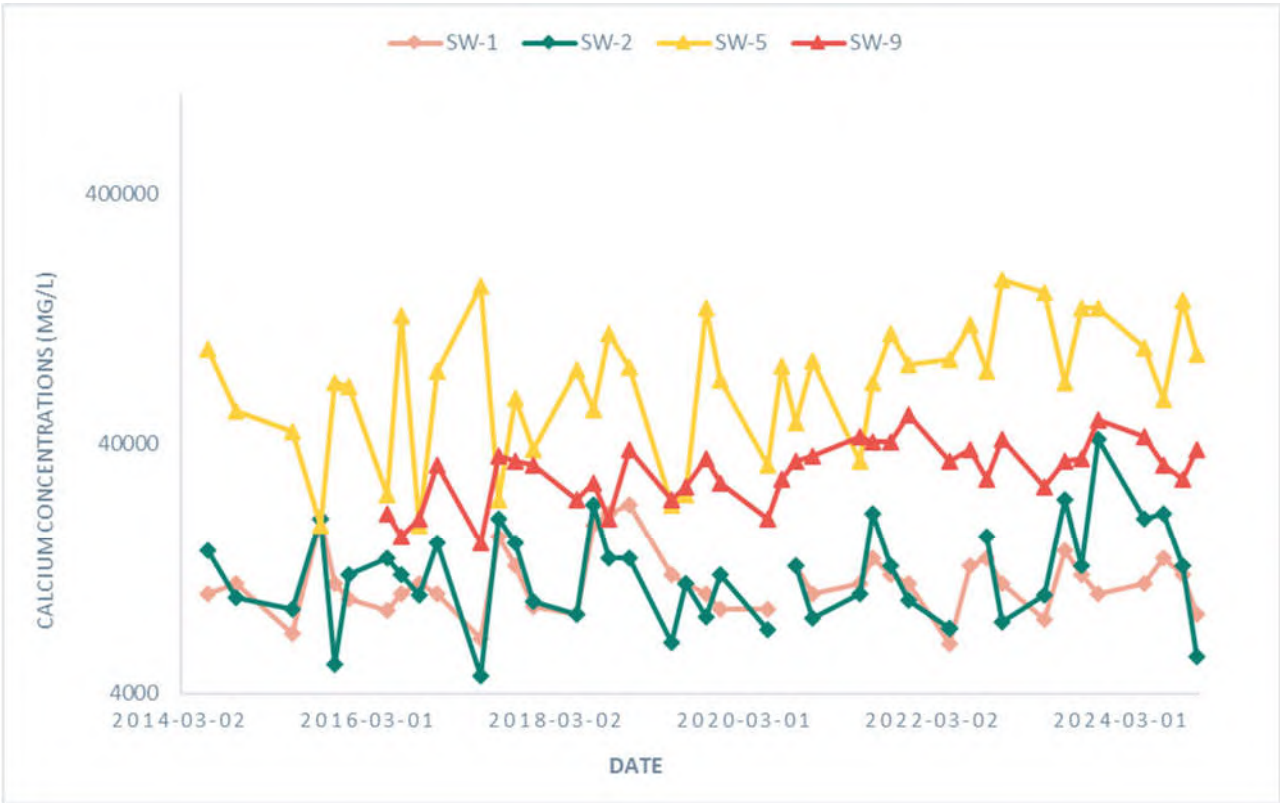


Figure 10: Iron Concentrations over Time at Selected Surface Water Sampling Stations

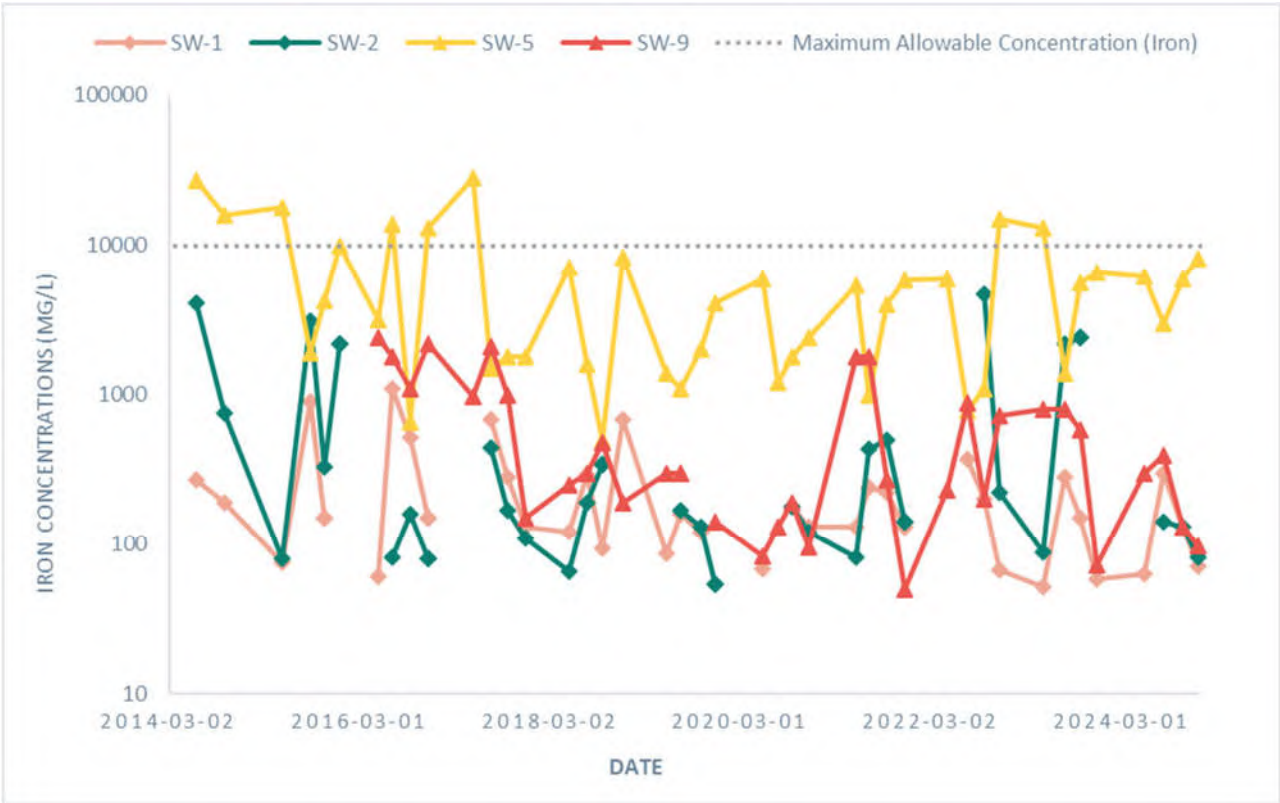
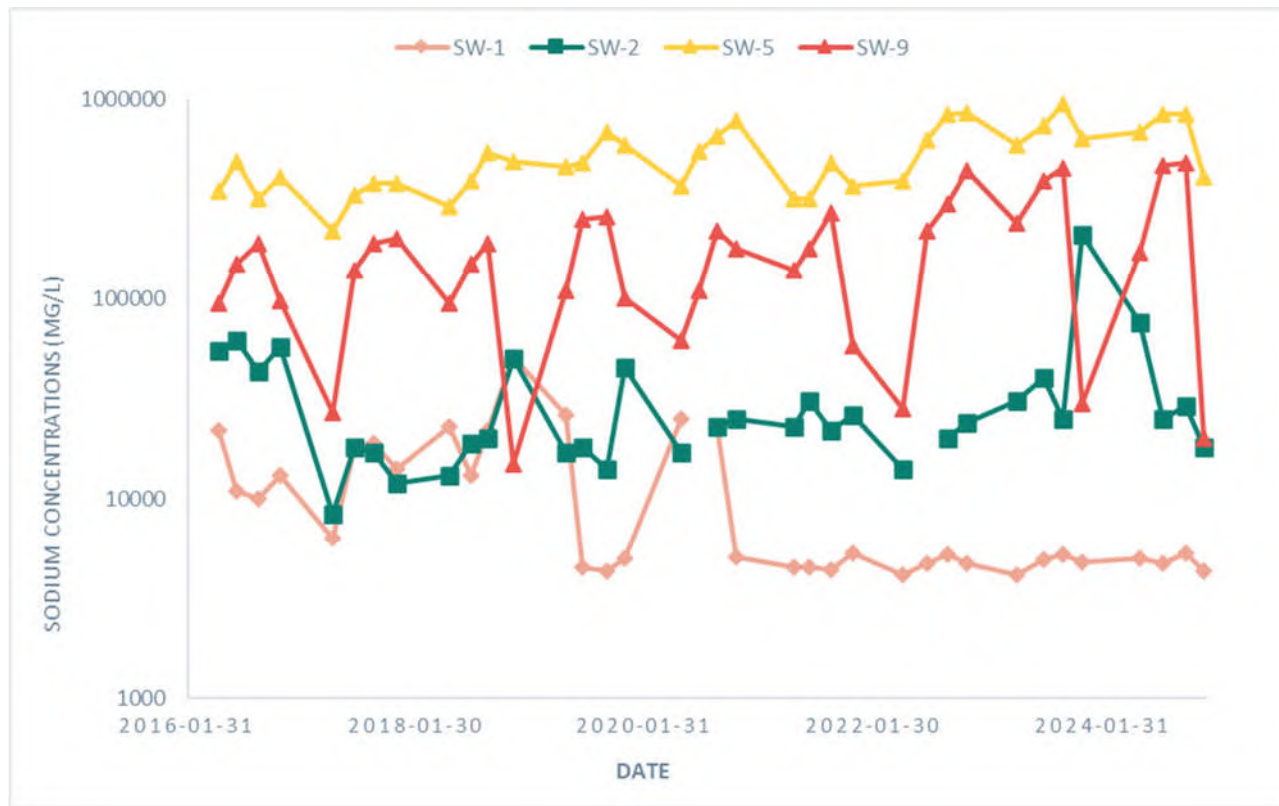


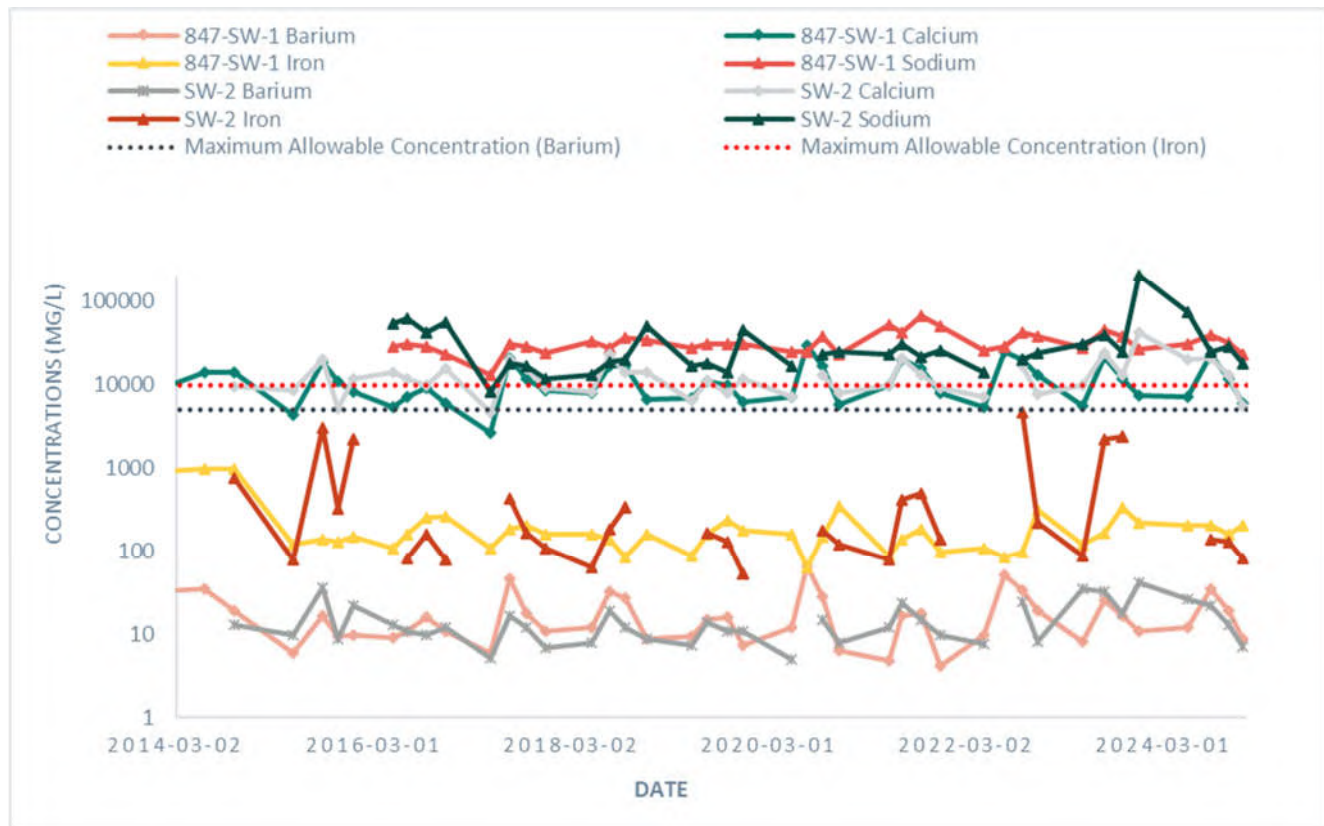
Figure 11: Sodium Concentrations over Time at Selected Surface Water Sampling Stations



It is evident that there are stable trends in concentrations of barium, boron, and sodium from the SW-5 and SW-9 sampling events. Iron concentrations over time have shown a slightly decreasing trend in concentrations. Calcium has shown a slight elevation in trend from SW-5 and SW-9 sampling events, but appears to have stabilized in recent years. SW-1 and SW-2 have consistently similar trends in parameter concentrations, however sodium concentrations in SW-1 have decreased in recent sampling events since approximately 2020 with a new stabilized level appearing to form in recent years. If significant parameter loading were occurring, SW-2 sample concentrations would be expected to be consistently higher than comparable SW-1 sample concentrations. For example, as demonstrated through Figures 7-11, the SW-1 and SW-2 maintain an irregular pattern of high and low concentrations which often alternate between these two sampling locations.

For an alternate comparison, the concentrations in samples collected at the most upgradient surface water sampling site, 847-SW-1, were plotted against those at SW-2 in Figure 12. Note that boron has been consistently non-detect at the upgradient location (847-SW-1) and therefore was excluded from the plot for both sampling locations.

Figure 12: Parameter Concentrations over Time at Selected Surface Water Sampling Stations



For the final comparison, Figures 13 - 16 have been prepared for selected parameters to assess the water quality in the surface water sampling locations located upgradient of the landfill but with the potential to be impacted by operations related runoff (SW-3, SW-6, SW-7 and SW-8), when compared to the most upgradient surface water sampling site, 847-SW-1.

Figure 13: Barium Concentrations over Time at Surface Water Sampling Stations Upgradient of Landfill

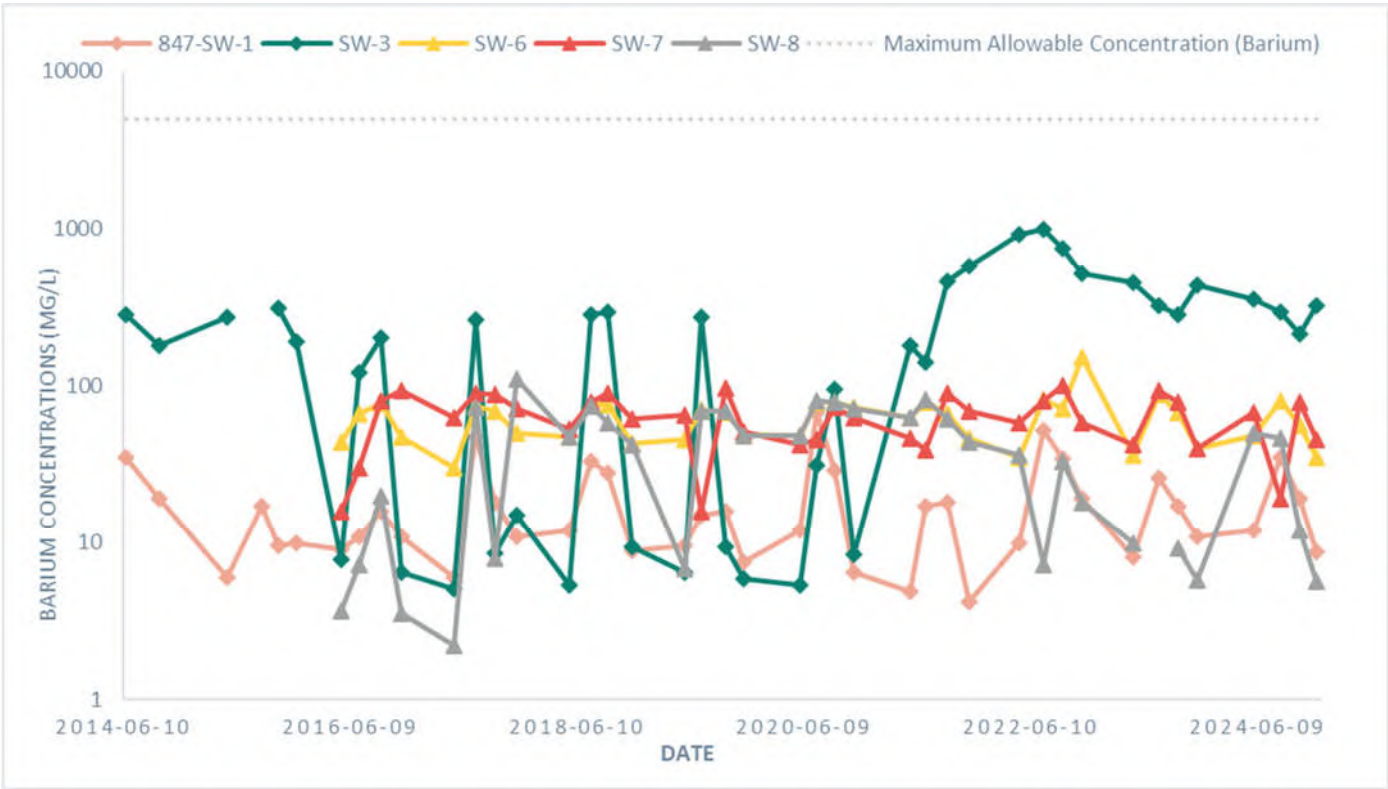


Figure 14: Calcium Concentrations over Time at Surface Water Sampling Stations Upgradient of Landfill

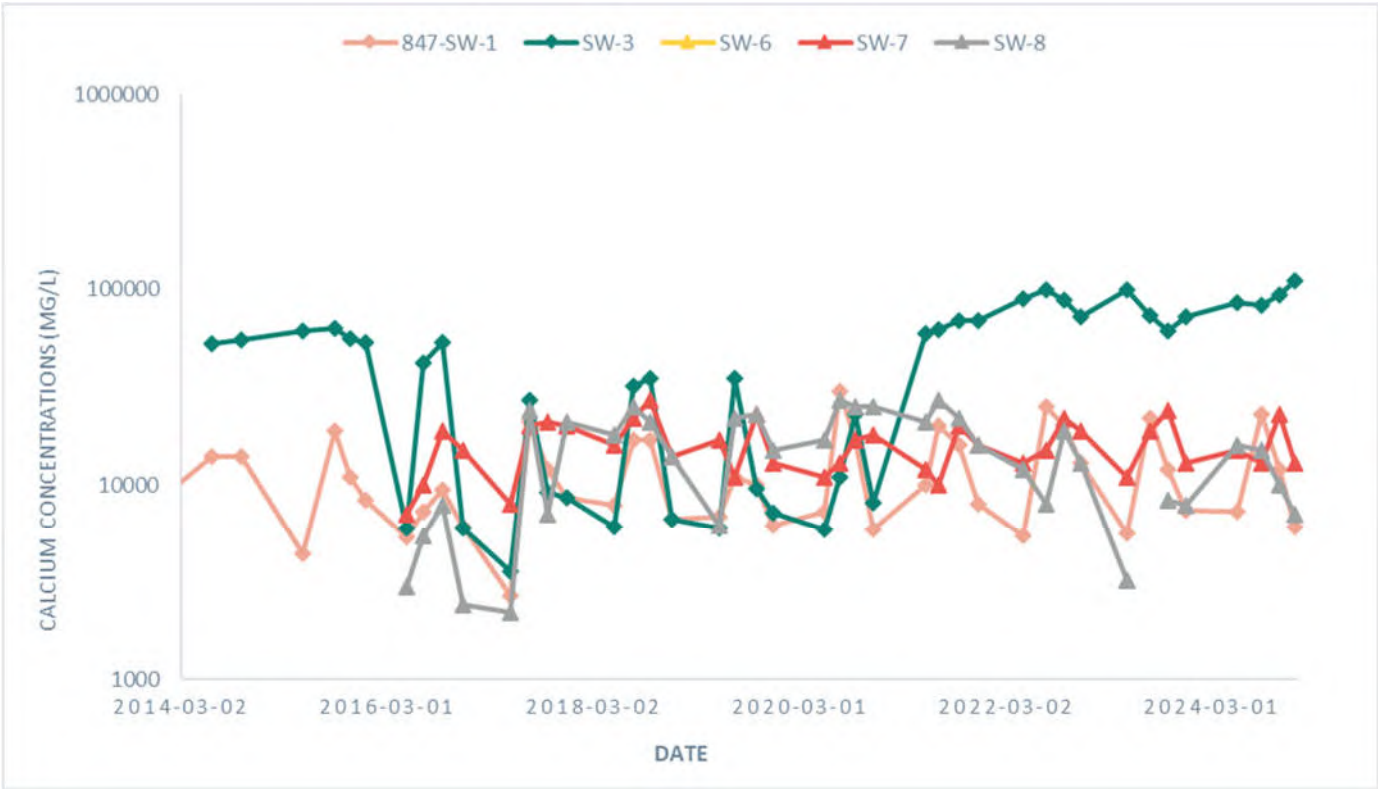


Figure 15: Iron Concentrations over Time at Surface Water Sampling Stations Upgradient of Landfill

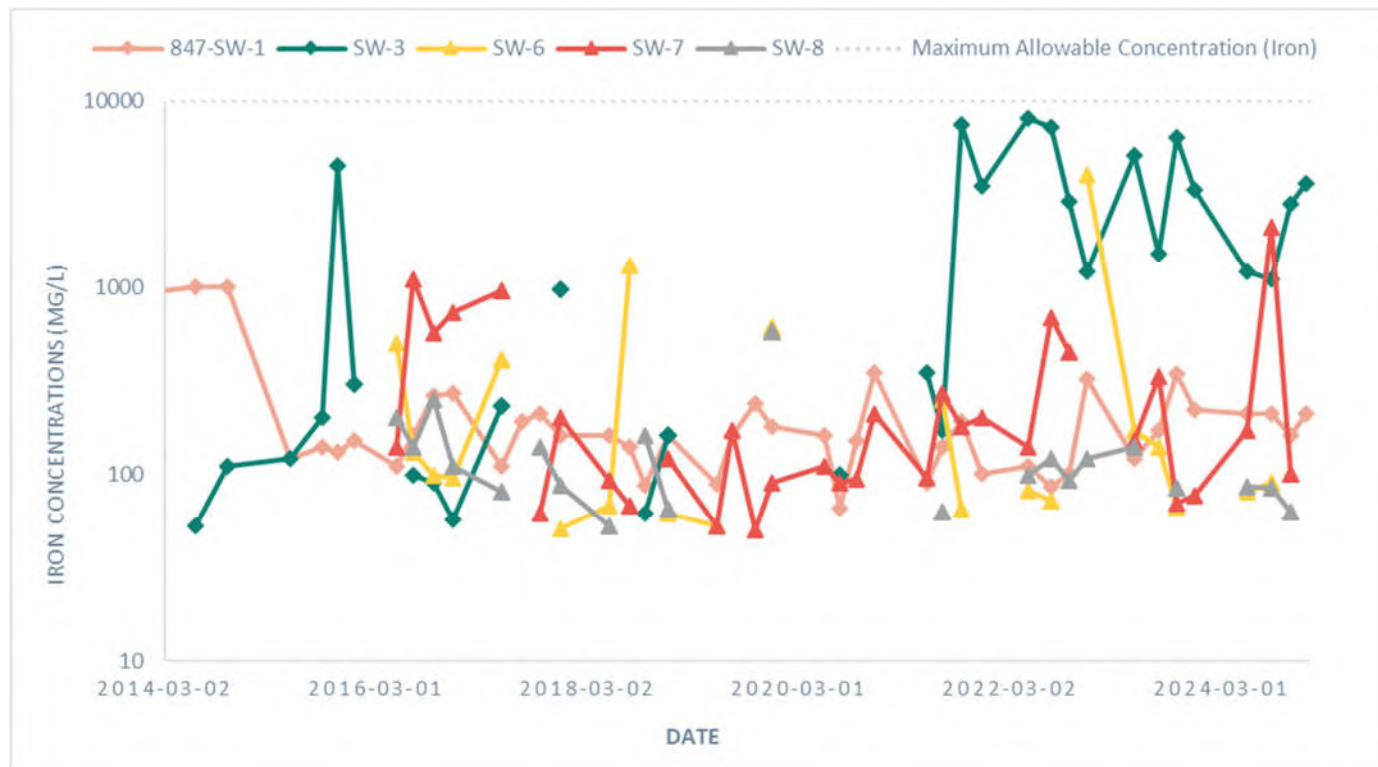
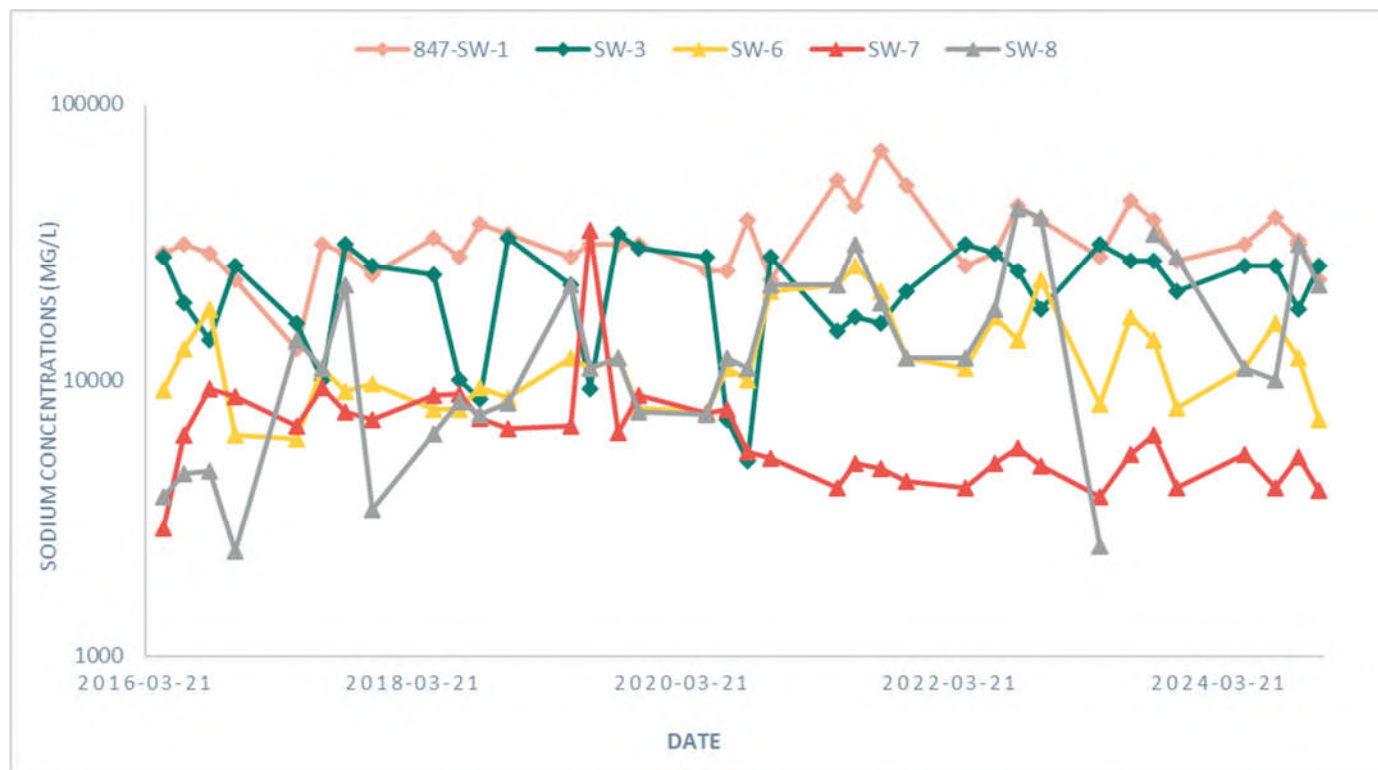


Figure 16: Sodium Concentrations over Time at Surface Water Sampling Stations Upgradient of Landfill



Upon reviewing the water quality reports, no consistent trends have been observed, from any of the sampling data, that would suggest significant impacts related to operations. This lack of trends, even

when compared with the most upgradient water quality, further supports the absence of operational impacts.

However, it's worth noting that there are some variations in background concentrations. Sodium and iron concentrations are generally lower in the downgradient ponds, while concentrations of barium and calcium are typically higher. A notable exception is SW-3, which has shown significant increases in iron, calcium, and barium concentrations since 2020.

TSS would also be a primary parameter of interest at SW-6, SW-7 and SW-8, as they are located within the sedimentation ponds. The TSS concentrations in water samples from all these locations, during each of the sampling events, were well below the applicable guideline of 30 mg/L, which further demonstrates that the water quality at these locations is not being measurably impacted by operations.

As reported in previous years, surface water samples collected from the most downgradient surface water sampling location, SW-4 did not have any parameters with concentrations which exceeded the applicable guideline in 2024. Since surface water is mixed between the Lilly Brook and Bottom Brook streams, and possibly receiving discharge from the site, it is difficult to determine how much of the water at SW-4 is being sourced directly from the site.

5 Conclusions and Recommendations

The results are summarized as follows:

- Current groundwater results identified concentrations of Nitrate and Ammonia Nitrogen exceeding the NL Environmental Control Water and Sewage Regulations for monitoring well MW-J during the 2024 sampling program. Compared to historical exceedances, there has been a slight decrease in the 2024 exceedances.
- MW-J had two (2) exceedances of Nitrate in May and August at 45 mg/L and 28 mg/L, respectively.
- One (1) exceedance of Ammonia Nitrogen occurred at MW-J during the May sampling event at a concentration of 11 mg/L.
- Current surface water results identified concentrations of Ammonia Nitrogen, total suspended solids (TSS), and nitrate exceeding the NL Environmental Control Water and Sewage Regulations for monitoring wells SW-2, SW-3, SW-5, and SW-9.
- SW-2 had concentrations of Nitrate exceeding guidelines in May at 26 mg/L.
- SW-3 had concentrations of Ammonia Nitrogen exceeding guidelines for all four sampling periods; 2.3 mg/L (May), 3.7 mg/L (August), 2.9 mg/L (October), and 4.3 mg/L (December).
- SW-5 had concentrations of Nitrogen (Ammonia Nitrogen) exceeding guidelines for all four sampling periods; 360 mg/L (May), 260 mg/L (August), 150 mg/L (October), and 270 mg/L (December). Concentrations of Total Suspended Solids (TSS) exceeded guidelines in all four sampling periods; 63 mg/L (May), 77 mg/L (August), 54 mg/L (October), and 87 mg/L (December). Concentrations of Nitrate exceeding guidelines for two of four sampling periods; 65 mg/L (August) and 320 mg/L (October).
- SW-9 had concentrations of Ammonia Nitrogen which exceeded guidelines during three of the four sampling periods; 71 mg/L (May), 47 mg/L (August), and 6.3 mg/L (October).
- There were two (2) exceedances of Nitrate at 20 mg/L (August) and 31 mg/L (October) from SW-9.
- There was one (1) exceedance of Total Suspended Solids (TSS) at 66 mg/L (August) from SW-9.
- Discharge - SW-9 recorded three exceedances of Nitrate during the 2024 sampling period; 11 mg/L (February), 10 mg/L (May), and 18 mg/L (August); and one exceedance of TSS at 60 mg/L in August.
- Data was not provided for Effluent from Lagoons, Influent from the Landfill and Lift Station in 2024, or for previous reports, 2023, 2022, 2021, and 2020. Historical data is referenced in this report.

The current concentrations of metals and chemical parameters have shown decreases when compared to the historical data, therefore no immediate action is required at this time. However, based on the 2024 and historical results of the environmental monitoring program at the Norris Arm Waste Management Site, Englobe makes the following recommendations:

- The 2024 annual monitoring report should be submitted to the Newfoundland and Labrador Department of Environment and Conservation for review as per the CoA requirements;
- It is also recommended that groundwater levels be collected to show seasonal changes in groundwater elevations.
- The groundwater, leachate and surface water monitoring program at the landfill should continue

as per the requirements and parameters listed in Appendix C of CoA Section 124, c. (i - iv) WMS 17-12-001;

- Recording of sampling procedures and current site conditions at the time of sampling should be completed. This practice should also include photographic record of the sample location.
- Additional sampling events should be completed if there are any leachate chemistry exceedances of Schedule B guidelines that differs significantly from previous sampling events;
- A review of the groundwater and surface water sampling protocols should be undertaken for future sampling events, specifically related to the taking of duplicate samples. To ensure the reliability of the data, it is recommended an additional field duplicate sample be collected where results have historically been more variable and multiple parameters are known to exceed applicable guidelines (i.e., MW-J, SW-2, SW-3, SW-5, and SW-9);
- The background surface water and monitoring well sampling in 2025 should be continued for the sole purpose of comparing results to those required as part of the CoA. The more data available for review allows to state with confidence that peripheral surface water and groundwater are not being impacted by landfill operations; and
- A semi-annual visual inspection (i.e., Spring and Fall) of the surface sample locations and associated drainage systems should be completed to note environmental/hydrological conditions at the time of sampling (i.e., water flow, stagnant water, water depth, discharge path, vegetation, siltation, debris, staining, sheens).

6 References

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Appendix A - Analytical Tables



eNGLOBE

Table 1-A: Current and Historical General Chemistry Analytical Results in Groundwater

Table Notes
 1. NI: Environmental Control Water and Sewage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations)
 -- = not available
 ND = not detected
Bold & Grey Shaded - exceeds applicable guideline
 Grey Text - Historical Data
 (1) Elevated reporting limit due to turbidity.

Table 1-B: Current and Historical General Chemistry Analytical Results in Groundwater

Table Notes
 1 NL Environmental Control Water and Sewage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations)
 -- = not available
 ND = not detected
Bold & Grey Shaded = exceeds applicable guideline
 Grey Text = Historical Data
 (1) Elevated reporting limit due to turbidity.

Table 1-C: Current and Historical General Chemistry Analytical Results in Groundwater

		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		2021		2022		2023		2024		2025		2026		2027		2028		2029		2030		2031		2032		2033		2034		2035		2036		2037		2038		2039		2040		2041		2042		2043		2044		2045		2046		2047		2048		2049		2050		2051		2052		2053		2054		2055		2056		2057		2058		2059		2060		2061		2062		2063		2064		2065		2066		2067		2068		2069		2070		2071		2072		2073		2074		2075		2076		2077		2078		2079		2080		2081		2082		2083		2084		2085		2086		2087		2088		2089		2090		2091		2092		2093		2094		2095		2096		2097		2098		2099		2100		2101		2102		2103		2104		2105		2106		2107		2108		2109		2110		2111		2112		2113		2114		2115		2116		2117		2118		2119		2120		2121		2122		2123		2124		2125		2126		2127		2128		2129		2130		2131		2132		2133		2134		2135		2136		2137		2138		2139		2140		2141		2142		2143		2144		2145		2146		2147		2148		2149		2150		2151		2152		2153		2154		2155		2156		2157		2158		2159		2160		2161		2162		2163		2164		2165		2166		2167		2168		2169		2170		2171		2172		2173		2174		2175		2176		2177		2178		2179		2180		2181		2182		2183		2184		2185		2186		2187		2188		2189		2190		2191		2192		2193		2194		2195		2196		2197		2198		2199		2200		2201		2202		2203		2204		2205		2206		2207		2208		2209		2210		2211		2212		2213		2214		2215		2216		2217		2218		2219		2220		2221		2222		2223		2224		2225		2226		2227		2228		2229		2230		2231		2232		2233		2234		2235		2236		2237		2238		2239		2240		2241		2242		2243		2244		2245		2246		2247		2248		2249		2250		2251		2252		2253		2254		2255		2256		2257		2258		2259		2260		2261		2262		2263		2264		2265		2266		2267		2268		2269		2270		2271		2272		2273		2274		2275		2276		2277		2278		2279		2280		2281		2282		2283		2284		2285		2286		2287		2288		2289		2290		2291		2292		2293		2294		2295		2296		2297		2298		2299		2300		2301		2302		2303		2304		2305		2306		2307		2308		2309		2310		2311		2312		2313		2314		23	
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Table Notes
 1. Nt. Environmental Control Water and Sewage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations).
 - = not available
 ND = not detected
Bold & Grey Shaded - exceeds applicable guideline
 Grey Text - Historical Data
 (1) Elevated reporting limit due to turbidity.
 (2) The sample was decanted due to sediment.

Table 1-D: Current and Historical General Chemistry Analytical Results in Groundwater

Table Notes

1 NL Environmental Control Water and Sewage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations)

-- not available

ND - not detected

Bold & Grey Shaded - exceeds applicable guideline

Grey Text - Historical Data

(1) Elevated reporting limit due to turbidity.

(2) The sample was decanted due to sediment.

Table 1-E: Current and Historical General Chemistry Analytical Results in Groundwater

Table N64a
1. N6 Environmental Control Water and Sewage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations)
- not available
ND - not detected
Red & Grey Shaded - exceeds applicable guideline
Only Test - Groundwater
(1) Elevated reporting limit due to turbidity.
(2) The sample was decanted due to sediment.

Table 2-A: Current and Historical Summary of Metal Analytical Results in Groundwater

[illegible]

Table Notes
 1 NL Environmental Control Water and Sewage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations)
 – = Not Available
 ND = Not Detected
Black and bold text, shaded grey - exceeds applicable guideline
 Grey Text - Historical Data

Table 2-B: Current and Historical Summary of Metal Analytical Results in Groundwater

Element		2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33	2033-34	2034-35	2035-36	2036-37	2037-38	2038-39	2039-40	2040-41	2041-42	2042-43	2043-44	2044-45	2045-46	2046-47	2047-48	2048-49	2049-50	2050-51	2051-52	2052-53	2053-54	2054-55	2055-56	2056-57	2057-58	2058-59	2059-60	2060-61	2061-62	2062-63	2063-64	2064-65	2065-66	2066-67	2067-68	2068-69	2069-70	2070-71	2071-72	2072-73	2073-74	2074-75	2075-76	2076-77	2077-78	2078-79	2079-80	2080-81	2081-82	2082-83	2083-84	2084-85	2085-86	2086-87	2087-88	2088-89	2089-90	2090-91	2091-92	2092-93	2093-94	2094-95	2095-96	2096-97	2097-98	2098-99	2099-100	2100-101	2101-102	2102-103	2103-104	2104-105	2105-106	2106-107	2107-108	2108-109	2109-110	2110-111	2111-112	2112-113	2113-114	2114-115	2115-116	2116-117	2117-118	2118-119	2119-120	2120-121	2121-122	2122-123	2123-124	2124-125	2125-126	2126-127	2127-128	2128-129	2129-130	2130-131	2131-132	2132-133	2133-134	2134-135	2135-136	2136-137	2137-138	2138-139	2139-140	2140-141	2141-142	2142-143	2143-144	2144-145	2145-146	2146-147	2147-148	2148-149	2149-150	2150-151	2151-152	2152-153	2153-154	2154-155	2155-156	2156-157	2157-158	2158-159	2159-160	2160-161	2161-162	2162-163	2163-164	2164-165	2165-166	2166-167	2167-168	2168-169	2169-170	2170-171	2171-172	2172-173	2173-174	2174-175	2175-176	2176-177	2177-178	2178-179	2179-180	2180-181	2181-182	2182-183	2183-184	2184-185	2185-186	2186-187	2187-188	2188-189	2189-190	2190-191	2191-192	2192-193	2193-194	2194-195	2195-196	2196-197	2197-198	2198-199	2199-200	2200-201	2201-202	2202-203	2203-204	2204-205	2205-206	2206-207	2207-208	2208-209	2209-210	2210-211	2211-212	2212-213	2213-214	2214-215	2215-216	2216-217	2217-218	2218-219	2219-220	2220-221	2221-222	2222-223	2223-224	2224-225	2225-226	2226-227	2227-228	2228-229	2229-230	2230-231	2231-232	2232-233	2233-234	2234-235	2235-236	2236-237	2237-238	2238-239	2239-240	2240-241	2241-242	2242-243	2243-244	2244-245	2245-246	2246-247	2247-248	2248-249	2249-250	2250-251	2251-252	2252-253	2253-254	2254-255	2255-256	2256-257	2257-258	2258-259	2259-260	2260-261	2261-262	2262-263	2263-264	2264-265	2265-266	2266-267	2267-268	2268-269	2269-270	2270-271	2271-272	2272-273	2273-274	2274-275	2275-276	2276-277	2277-278	2278-279	2279-280	2280-281	2281-282	2282-283	2283-284	2284-285	2285-286	2286-287	2287-288	2288-289	2289-290	2290-291	2291-292	2292-293	2293-294	2294-295	2295-296	2296-297	2297-298	2298-299	2299-300	2300-301	2301-302	2302-303	2303-304	2304-305	2305-306	2306-307	2307-308	2308-309	2309-310	2310-311
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1 NL Environmental Control Water and Sewage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations).

Black and bold text, shaded grey - exceed applicable guidelines

Grey Text - Historical Data

Table 2-C: Current and Historical Summary of Metal Analytical Results in Groundwater

Table 2-C: Current and Historical Summary of Mineral Analytical Results in Groundwater		WQ1																																				Present Assessment																																																																																																																																																																																																																																																												
		WQ1-1												WQ1-2												WQ1-3												WQ1-4	WQ1-5	WQ1-6	WQ1-7	WQ1-8	WQ1-9	WQ1-10	WQ1-11	WQ1-12	WQ1-13	WQ1-14	WQ1-15	WQ1-16	WQ1-17	WQ1-18	WQ1-19	WQ1-20	WQ1-21	WQ1-22	WQ1-23	WQ1-24	WQ1-25	WQ1-26	WQ1-27	WQ1-28	WQ1-29	WQ1-30	WQ1-31	WQ1-32	WQ1-33	WQ1-34	WQ1-35	WQ1-36	WQ1-37	WQ1-38	WQ1-39	WQ1-40	WQ1-41	WQ1-42	WQ1-43	WQ1-44	WQ1-45	WQ1-46	WQ1-47	WQ1-48	WQ1-49	WQ1-50	WQ1-51	WQ1-52	WQ1-53	WQ1-54	WQ1-55	WQ1-56	WQ1-57	WQ1-58	WQ1-59	WQ1-60	WQ1-61	WQ1-62	WQ1-63	WQ1-64	WQ1-65	WQ1-66	WQ1-67	WQ1-68	WQ1-69	WQ1-70	WQ1-71	WQ1-72	WQ1-73	WQ1-74	WQ1-75	WQ1-76	WQ1-77	WQ1-78	WQ1-79	WQ1-80	WQ1-81	WQ1-82	WQ1-83	WQ1-84	WQ1-85	WQ1-86	WQ1-87	WQ1-88	WQ1-89	WQ1-90	WQ1-91	WQ1-92	WQ1-93	WQ1-94	WQ1-95	WQ1-96	WQ1-97	WQ1-98	WQ1-99	WQ1-100	WQ1-101	WQ1-102	WQ1-103	WQ1-104	WQ1-105	WQ1-106	WQ1-107	WQ1-108	WQ1-109	WQ1-110	WQ1-111	WQ1-112	WQ1-113	WQ1-114	WQ1-115	WQ1-116	WQ1-117	WQ1-118	WQ1-119	WQ1-120	WQ1-121	WQ1-122	WQ1-123	WQ1-124	WQ1-125	WQ1-126	WQ1-127	WQ1-128	WQ1-129	WQ1-130	WQ1-131	WQ1-132	WQ1-133	WQ1-134	WQ1-135	WQ1-136	WQ1-137	WQ1-138	WQ1-139	WQ1-140	WQ1-141	WQ1-142	WQ1-143	WQ1-144	WQ1-145	WQ1-146	WQ1-147	WQ1-148	WQ1-149	WQ1-150	WQ1-151	WQ1-152	WQ1-153	WQ1-154	WQ1-155	WQ1-156	WQ1-157	WQ1-158	WQ1-159	WQ1-160	WQ1-161	WQ1-162	WQ1-163	WQ1-164	WQ1-165	WQ1-166	WQ1-167	WQ1-168	WQ1-169	WQ1-170	WQ1-171	WQ1-172	WQ1-173	WQ1-174	WQ1-175	WQ1-176	WQ1-177	WQ1-178	WQ1-179	WQ1-180	WQ1-181	WQ1-182	WQ1-183	WQ1-184	WQ1-185	WQ1-186	WQ1-187	WQ1-188	WQ1-189	WQ1-190	WQ1-191	WQ1-192	WQ1-193	WQ1-194	WQ1-195	WQ1-196	WQ1-197	WQ1-198	WQ1-199	WQ1-200	WQ1-201	WQ1-202	WQ1-203	WQ1-204	WQ1-205	WQ1-206	WQ1-207	WQ1-208	WQ1-209	WQ1-210	WQ1-211	WQ1-212	WQ1-213	WQ1-214	WQ1-215	WQ1-216	WQ1-217	WQ1-218	WQ1-219	WQ1-220	WQ1-221	WQ1-222	WQ1-223	WQ1-224	WQ1-225	WQ1-226	WQ1-227	WQ1-228	WQ1-229	WQ1-230	WQ1-231	WQ1-232	WQ1-233	WQ1-234	WQ1-235	WQ1-236	WQ1-237	WQ1-238	WQ1-239	WQ1-240	WQ1-241	WQ1-242	WQ1-243	WQ1-244	WQ1-245	WQ1-246	WQ1-247	WQ1-248	WQ1-249	WQ1-250	WQ1-251	WQ1-252	WQ1-253	WQ1-254	WQ1-255	WQ1-256

Table Notes:
 S NL Environmental Control Water and Sewage Regulations, Schedule A, 2002 (Maximum Allowable Concentrations)
 -- n Not Available
 ND - Not Detected
Black and bold text, shaded gray - exceeds applicable guideline
 Gray text - historical data

Table 2-D: Current and Historical Summary of Metal Analytical Results in Groundwater

Table Notes
 1 NL Environmental Control Water and Sewage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations)
 -- = Not Available
 ND - Not Detected
Black and bold text, shaded grey - exceeds applicable guidelines
 Grey Text - Historical Data

Table 3-A: Current and Historical Summary of Metal Analytical Results in Surface Water

Table Notes	
→ = Not Available	¹⁶ Environmental Control Water and Sewage Regulations, Schedule A, 2003 Maximum Allowable Concentrations
ND = Not Detected	
Black and bold text, shaded grey = exceeds applicable guideline	
Data from: Assessment Data	

Table 3-B: Current and Historical Summary of Metal Analytical Results in Surface Water

[illegible]¹NL Environmental Control Water and Sewage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations)

ND = Not Detected

Black and bold text, shaded grey - exceeds applicable guideline

Grey Text - Historical Data

Table 3-C: Current and Historical Summary of Metal Analytical Results in Surface Water.

Table Notes
¹ *NH₃ Environmental Critical Water*
 -- = Not Available
 ND = Not Detected
Black and bold text, shaded grey
 Grey Text - Historical Data

Table 3-D: Current and Historical Summary of Metal Analytical Results in Surface Water

[illegible]

Table Notes
 *NL Environmental Control Water and Sewage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations)
 -- = Not Available
 ND - Not Detected
Black and bold text, shaded grey - exceeds applicable guideline
 Grey Text - Historical

Table 3-E: Current and Historical Summary of Metal Analytical Results in Surface Water

Periods	4-6 Dec 2023		7-9 Dec 2023		10-12 Dec 2023		13-15 Dec 2023		16-18 Dec 2023		19-21 Dec 2023		22-24 Dec 2023		25-27 Dec 2023		28-30 Dec 2023		31 Dec 2023		1-3 Jan 2024		4-6 Jan 2024		7-9 Jan 2024		10-12 Jan 2024		13-15 Jan 2024		16-18 Jan 2024		19-21 Jan 2024		22-24 Jan 2024		25-27 Jan 2024		28-30 Jan 2024		31 Jan 2024		1-3 Feb 2024		4-6 Feb 2024		7-9 Feb 2024		10-12 Feb 2024		13-15 Feb 2024		16-18 Feb 2024		19-21 Feb 2024		22-24 Feb 2024		25-27 Feb 2024		28-30 Feb 2024		1-3 Mar 2024		4-6 Mar 2024		7-9 Mar 2024		10-12 Mar 2024		13-15 Mar 2024		16-18 Mar 2024		19-21 Mar 2024		22-24 Mar 2024		25-27 Mar 2024		28-30 Mar 2024		31 Mar 2024		1-3 Apr 2024		4-6 Apr 2024		7-9 Apr 2024		10-12 Apr 2024		13-15 Apr 2024		16-18 Apr 2024		19-21 Apr 2024		22-24 Apr 2024		25-27 Apr 2024		28-30 Apr 2024		1-3 May 2024		4-6 May 2024		7-9 May 2024		10-12 May 2024		13-15 May 2024		16-18 May 2024		19-21 May 2024		22-24 May 2024		25-27 May 2024		28-30 May 2024		31 May 2024		1-3 Jun 2024		4-6 Jun 2024		7-9 Jun 2024		10-12 Jun 2024		13-15 Jun 2024		16-18 Jun 2024		19-21 Jun 2024		22-24 Jun 2024		25-27 Jun 2024		28-30 Jun 2024		1-3 Jul 2024		4-6 Jul 2024		7-9 Jul 2024		10-12 Jul 2024		13-15 Jul 2024		16-18 Jul 2024		19-21 Jul 2024		22-24 Jul 2024		25-27 Jul 2024		28-30 Jul 2024		31 Jul 2024		1-3 Aug 2024		4-6 Aug 2024		7-9 Aug 2024		10-12 Aug 2024		13-15 Aug 2024		16-18 Aug 2024		19-21 Aug 2024		22-24 Aug 2024		25-27 Aug 2024		28-30 Aug 2024		31 Aug 2024		1-3 Sep 2024		4-6 Sep 2024		7-9 Sep 2024		10-12 Sep 2024		13-15 Sep 2024		16-18 Sep 2024		19-21 Sep 2024		22-24 Sep 2024		25-27 Sep 2024		28-30 Sep 2024		30 Sep 2024		1-3 Oct 2024		4-6 Oct 2024		7-9 Oct 2024		10-12 Oct 2024		13-15 Oct 2024		16-18 Oct 2024		19-21 Oct 2024		22-24 Oct 2024		25-27 Oct 2024		28-30 Oct 2024		31 Oct 2024		1-3 Nov 2024		4-6 Nov 2024		7-9 Nov 2024		10-12 Nov 2024		13-15 Nov 2024		16-18 Nov 2024		19-21 Nov 2024		22-24 Nov 2024		25-27 Nov 2024		28-30 Nov 2024		30 Nov 2024		1-3 Dec 2024		4-6 Dec 2024		7-9 Dec 2024		10-12 Dec 2024		13-15 Dec 2024		16-18 Dec 2024		19-21 Dec 2024		22-24 Dec 2024		25-27 Dec 2024		28-30 Dec 2024		31 Dec 2024		1-3 Jan 2025		4-6 Jan 2025		7-9 Jan 2025		10-12 Jan 2025		13-15 Jan 2025		16-18 Jan 2025		19-21 Jan 2025		22-24 Jan 2025		25-27 Jan 2025		28-30 Jan 2025		31 Jan 2025		1-3 Feb 2025		4-6 Feb 2025		7-9 Feb 2025		10-12 Feb 2025		13-15 Feb 2025		16-18 Feb 2025		19-21 Feb 2025		22-24 Feb 2025		25-27 Feb 2025		28-30 Feb 2025		31 Feb 2025		1-3 Mar 2025		4-6 Mar 2025		7-9 Mar 2025		10-12 Mar 2025		13-15 Mar 2025		16-18 Mar 2025		19-21 Mar 2025		22-24 Mar 2025		25-27 Mar 2025		28-30 Mar 2025		31 Mar 2025		1-3 Apr 2025		4-6 Apr 2025		7-9 Apr 2025		10-12 Apr 2025		13-15 Apr 2025		16-18 Apr 2025		19-21 Apr 2025		22-24 Apr 2025		25-27 Apr 2025		28-30 Apr 2025		30 Apr 2025		1-3 May 2025		4-6 May 2025		7-9 May 2025		10-12 May 2025		13-15 May 2025		16-18 May 2025		19-21 May 2025		22-24 May 2025		25-27 May 2025		28-30 May 2025		31 May 2025		1-3 Jun 2025		4-6 Jun 2025		7-9 Jun 2025		10-12 Jun 2025		13-15 Jun 2025		16-18 Jun 2025		19-21 Jun 2025		22-24 Jun 2025		25-27 Jun 2025		28-30 Jun 2025		30 Jun 2025		1-3 Jul 2025		4-6 Jul 2025		7-9 Jul 2025		10-12 Jul 2025		13-15 Jul 2025		16-18 Jul 2025		19-21 Jul 2025		22-24 Jul 2025		25-27 Jul 2025		28-30 Jul 2025		31 Jul 2025		1-3 Aug 2025		4-6 Aug 2025		7-9 Aug 2025		10-12 Aug 2025		13-15 Aug 2025		16-18 Aug 2025		19-21 Aug 2025		22-24 Aug 2025	
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¹NL Environmental Control Water and Sewerage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations)

ND: Not Detected

Black and bold text, shaded grey - exceeds applicable guideline

Grey Text - Historical Data

Table 3-F Current and Historical Summary of Metal Analytical Results in Surface Water

[illegible]

^bNL Environmental Control Water and Sewage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations).

--- = Not Available

Black and bold text, shaded grey - exceeds applicable guideline

Grey Text - Historical Data
(a) Elevated RDI due to...

Table 3-G: Current Summary of Metal Analytical Results in Surface Water

Table Notes
 * Environmental Control Water and Sewage Regulations, Schedule A, 2013 (Maximum Allowable Concentrations)
 - Not Available
 ND - Not Detected
 Black and bold text, shaded grey - exceeds applicable guideline
 Grey Text - Historical Data

[illegible]

-- = Not Available
ND - Not Detected
Black and bold text, shaded grey - exceeds applicable guideline
Gray Text - Historical Data

Table 3-1: Current Summary of Metal Analytical Results in Surface Water

Table Notes
 *NL Environmental Control Water and Sewerage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations)
 -- = Not Available
 ND - Not Detected
Black and bold text, shaded grey - exceeds applicable guideline
 Gray Text - Historical Data

Table 3-J: Current Summary of Metal Analytical Results in Surface Water

Table Notes
 *NL Environmental Control Water and Sewage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations)
 -- = Not Available
 ND - Not Detected
Black and bold text, shaded grey - exceeds applicable guideline

Table 4-A: Current and Historical Summary of General Chemistry Analytical Results in Surface Water

Table Notes
 * NL Environmental Control Water and Sewage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations)
 -- = Not Available
 ND = not detected
Bold & Grey Shaded - exceeds applicable guideline
 Grey Text - Historical Data
 (1) Elevated reporting limit due to sample matrix.

Table 4-C: Current and Historical Summary of General Chemistry Analytical Results in Surface Water

Table Notes
 * NI: Environmental Control Water and Sewage Regulations, Schedule A, 2003 [Maximum Allowable Concentration]
 -- = Not Available
 NI: not detected
Bold & Grey Shaded - exceeds applicable guideline
 Grow Test - Historical Data
 (3) Elevated reporting limit due to sample matrix.

Table 4-D: Current and Historical Summary of General Chemistry Analytical Results in Surface Water

		2014-05-01		2014-05-08		2014-05-15		2014-05-22		2014-05-29		2014-06-05		2014-06-12		2014-06-19		2014-06-26		2014-07-03		2014-07-10		2014-07-17		2014-07-24		2014-07-31		2014-08-07		2014-08-14		2014-08-21		2014-08-28		2014-09-04		2014-09-11		2014-09-18		2014-09-25		2014-10-02		2014-10-09		2014-10-16		2014-10-23		2014-10-30		2014-11-06		2014-11-13		2014-11-20		2014-11-27		2014-12-04		2014-12-11		2014-12-18		2014-12-25		2015-01-01		2015-01-08		2015-01-15		2015-01-22		2015-01-29		2015-02-05		2015-02-12		2015-02-19		2015-02-26		2015-03-05		2015-03-12		2015-03-19		2015-03-26		2015-04-02		2015-04-09		2015-04-16		2015-04-23		2015-04-30		2015-05-07		2015-05-14		2015-05-21		2015-05-28		2015-06-04		2015-06-11		2015-06-18		2015-06-25		2015-07-02		2015-07-09		2015-07-16		2015-07-23		2015-07-30		2015-08-06		2015-08-13		2015-08-20		2015-08-27		2015-09-03		2015-09-10		2015-09-17		2015-09-24		2015-10-01		2015-10-08		2015-10-15		2015-10-22		2015-10-29		2015-11-05		2015-11-12		2015-11-19		2015-11-26		2015-12-03		2015-12-10		2015-12-17		2015-12-24		2015-12-31		2016-01-07		2016-01-14		2016-01-21		2016-01-28		2016-02-04		2016-02-11		2016-02-18		2016-02-25		2016-03-04		2016-03-11		2016-03-18		2016-03-25		2016-04-01		2016-04-08		2016-04-15		2016-04-22		2016-04-29		2016-05-06		2016-05-13		2016-05-20		2016-05-27		2016-06-03		2016-06-10		2016-06-17		2016-06-24		2016-07-01		2016-07-08		2016-07-15		2016-07-22		2016-07-29		2016-08-05		2016-08-12		2016-08-19		2016-08-26		2016-09-02		2016-09-09		2016-09-16		2016-09-23		2016-09-30		2016-10-07		2016-10-14		2016-10-21		2016-10-28		2016-11-04		2016-11-11		2016-11-18		2016-11-25		2016-12-02		2016-12-09		2016-12-16		2016-12-23		2016-12-30		2017-01-06		2017-01-13		2017-01-20		2017-01-27		2017-02-03		2017-02-10		2017-02-17		2017-02-24		2017-03-02		2017-03-09		2017-03-16		2017-03-23		2017-03-30		2017-04-06		2017-04-13		2017-04-20		2017-04-27		2017-05-04		2017-05-11		2017-05-18		2017-05-25		2017-06-01		2017-06-08		2017-06-15		2017-06-22		2017-06-29		2017-07-06		2017-07-13		2017-07-20		2017-07-27		2017-08-03		2017-08-10		2017-08-17		2017-08-24		2017-08-31		2017-09-07		2017-09-14		2017-09-21		2017-09-28		2017-10-05		2017-10-12		2017-10-19		2017-10-26		2017-11-02		2017-11-09		2017-11-16		2017-11-23		2017-11-30		2017-12-07		2017-12-14		2017-12-21		2017-12-28		2018-01-04		2018-01-11		2018-01-18		2018-01-25		2018-02-01		2018-02-08		2018-02-15		2018-02-22		2018-02-29		2018-03-06		2018-03-13		2018-03-20		2018-03-27		2018-04-03		2018-04-10		2018-04-17		2018-04-24		2018-05-01		2018-05-08		2018-05-15		2018-05-22		2018-05-29		2018-06-05		2018-06-12		2018-06-19		2018-06-26		2018-07-03		2018-07-10		2018-07-17		2018-07-24		2018-07-31		2018-08-07		2018-08-14		2018-08-21		2018-08-28		2018-09-04		2018-09-11		2018-09-18		2018-09-25		2018-10-02		2018-10-09		2018-10-16		2018-10-23		2018-10-30		2018-11-06		2018-11-13		2018-11-20		2018-11-27		2018-12-04		2018-12-11		2018-12-18		2018-12-25		2019-01-01		2019-01-08		2019-01-15		2019-01-22		2019-01-29		2019-02-05		2019-02-12		2019-02-19		2019-02-26		2019-03-05		2019-03-12		2019-03-19		2019-03-26		2019-04-02		2019-04-09		2019-04-16		2019-04-23		2019-04-30		2019-05-07		2019-05-14		2019-05-21		2019-05-28		2019-06-04		2019-06-11		2019-06-18		2019-06-25		2019-07-02		2019-07-09		2019-07-16		2019-07-23		2019-07-30		2019-08-06		2019-08-13		2019-08-20		2019-08-27		2019-09-03		2019-09-10		2019-09-17		2019-09-24		2019-10-01		2019-10-08		2019-10-15		2019-10-22		2019-10-29		2019-11-05		2019-11-12		2019-11-19		2019-11-26		2019-12-03		2019-12-10		2019-12-17		2019-12-24		2019-12-31		2020-01-07		2020-01-14		2020-01-21		2020-01-28		2020-02-04		2020-02-11		2020-02-18		2020-02-25		2020-03-04		2020-03-11		2020-03-18		2020-03-25		2020-04-01		2020-04-08		2020-04-15		2020-04-22		2020-04-29		2020-05-06		2020-05-13		2020-05-20		2020-05-27		2020-06-03		2020-06-10		2020-06-17		2020-06-24		2020-07-01		2020-07-08		2020-07-15		2020-07-22		2020-07-29		2020-08-05		2020-08-12		2020-08-19		2020-08-26		2020-09-02		2020-09-09		2020-09-16		2020-09-23		2020-09-30		2020-10-07		2020-10-14		2020-10-21		2020-10-28		2020-11-04		2020-11-11		2020-11-18		2020-11-25		2020-12-02		2020-12-09		2020-12-16		2020-12-23		2020-12-30		2021-01-06		2021-01-13		2021-01-20		2021-01-27		2021-02-03		2021-02-10		2021-02-17		2021-02-24		2021-03-02		2021-03-09		2021-03-16		2021-03-23	
SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-3	SW-																																																																																																																																																																																																																																																																																																																																					

Table 4-E: Current and Historical Summary of General Chemistry Analytical Results in Surface Water

Notes:
 1. Environmental Control Water and Sewage Regulations, Schedule A, 2003 [Maximum Allowable Concentrations]
 2. Not Available
 3. D - not detected
 4. Bold & Grey Shaded - exceeds applicable guideline
 5. Grey Text - Historical Data
 6. () Elevated reporting limit due to sample matrix.

[illegible]

ND - not detected

Bold & Grey Shaded - exceeds applicable guideline

Grey Text - Historical Data

- (1) Elevated reporting limit due to sample matrix.
- (2) Elevated reporting limit due to turbidity.
- (3) The reportable detection limit was elevated due to turbidity.
- (4) The sample was decanted due to sediment.

(1) Elevated reporting limit due to sample matrix.
 (2) Elevated reporting limit due to turbidity.
 (3) The reportable detection limit was elevated due to turbidity.
 (4) The sample was decanted due to sediment.

	2020-01-01	2020-02-01	2020-03-01	2020-04-01	2020-05-01	2020-06-01	2020-07-01	2020-08-01	2020-09-01	2020-10-01	2020-11-01	2020-12-01	2021-01-01	2021-02-01	2021-03-01	2021-04-01	2021-05-01	2021-06-01	2021-07-01	2021-08-01	2021-09-01	2021-10-01	2021-11-01	2021-12-01	2022-01-01	2022-02-01	2022-03-01	2022-04-01	2022-05-01	2022-06-01	2022-07-01	2022-08-01	2022-09-01	2022-10-01	2022-11-01	2022-12-01	2023-01-01	2023-02-01	2023-03-01	2023-04-01	2023-05-01	2023-06-01	2023-07-01	2023-08-01	2023-09-01	2023-10-01	2023-11-01	2023-12-01	2024-01-01	2024-02-01	2024-03-01	2024-04-01	2024-05-01	2024-06-01	2024-07-01	2024-08-01	2024-09-01	2024-10-01	2024-11-01	2024-12-01	2025-01-01	2025-02-01	2025-03-01	2025-04-01	2025-05-01	2025-06-01	2025-07-01	2025-08-01	2025-09-01	2025-10-01	2025-11-01	2025-12-01	2026-01-01	2026-02-01	2026-03-01	2026-04-01	2026-05-01	2026-06-01	2026-07-01	2026-08-01	2026-09-01	2026-10-01	2026-11-01	2026-12-01	2027-01-01	2027-02-01	2027-03-01	2027-04-01	2027-05-01	2027-06-01	2027-07-01	2027-08-01	2027-09-01	2027-10-01	2027-11-01	2027-12-01	2028-01-01	2028-02-01	2028-03-01	2028-04-01	2028-05-01	2028-06-01	2028-07-01	2028-08-01	2028-09-01	2028-10-01	2028-11-01	2028-12-01	2029-01-01	2029-02-01	2029-03-01	2029-04-01	2029-05-01	2029-06-01	2029-07-01	2029-08-01	2029-09-01	2029-10-01	2029-11-01	2029-12-01	2030-01-01	2030-02-01	2030-03-01	2030-04-01	2030-05-01	2030-06-01	2030-07-01	2030-08-01	2030-09-01	2030-10-01	2030-11-01	2030-12-01	2031-01-01	2031-02-01	2031-03-01	2031-04-01	2031-05-01	2031-06-01	2031-07-01	2031-08-01	2031-09-01	2031-10-01	2031-11-01	2031-12-01	2032-01-01	2032-02-01	2032-03-01	2032-04-01	2032-05-01	2032-06-01	2032-07-01	2032-08-01	2032-09-01	2032-10-01	2032-11-01	2032-12-01	2033-01-01	2033-02-01	2033-03-01	2033-04-01	2033-05-01	2033-06-01	2033-07-01	2033-08-01	2033-09-01	2033-10-01	2033-11-01	2033-12-01	2034-01-01	2034-02-01	2034-03-01	2034-04-01	2034-05-01	2034-06-01	2034-07-01	2034-08-01	2034-09-01	2034-10-01	2034-11-01	2034-12-01	2035-01-01	2035-02-01	2035-03-01	2035-04-01	2035-05-01	2035-06-01	2035-07-01	2035-08-01	2035-09-01	2035-10-01	2035-11-01	2035-12-01	2036-01-01	2036-02-01	2036-03-01	2036-04-01	2036-05-01	2036-06-01	2036-07-01	2036-08-01	2036-09-01	2036-10-01	2036-11-01	2036-12-01	2037-01-01	2037-02-01	2037-03-01	2037-04-01	2037-05-01	2037-06-01	2037-07-01	2037-08-01	2037-09-01	2037-10-01	2037-11-01	2037-12-01	2038-01-01	2038-02-01	2038-03-01	2038-04-01	2038-05-01	2038-06-01	2038-07-01	2038-08-01	2038-09-01	2038-10-01	2038-11-01	2038-12-01	2039-01-01	2039-02-01	2039-03-01	2039-04-01	2039-05-01	2039-06-01	2039-07-01	2039-08-01	2039-09-01	2039-10-01	2039-11-01	2039-12-01	2040-01-01	2040-02-01	2040-03-01	2040-04-01	2040-05-01	2040-06-01	2040-07-01	2040-08-01	2040-09-01	2040-10-01	2040-11-01	2040-12-01	2041-01-01	2041-02-01	2041-03-01	2041-04-01	2041-05-01	2041-06-01	2041-07-01	2041-08-01	2041-09-01	2041-10-01	2041-11-01	2041-12-01	2042-01-01	2042-02-01	2042-03-01	2042-04-01	2042-05-01	2042-06-01	2042-07-01	2042-08-01
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Bold & Grey Shaded - exceeds applicable guideline
Grey Text - Historical Data

Table 4-H: Current and Historical Summary of General Chemistry Analytical Results in Surface Water

2014-06-01		2014-10-01		2015-03-01		2015-06-01		2015-09-01		2015-12-01		2016-03-01		2016-06-01		2016-09-01		2016-12-01		2017-03-01		2017-06-01		2017-09-01		2017-12-01		2018-03-01		2018-06-01		2018-09-01		2018-12-01		2019-03-01		2019-06-01		2019-09-01		2019-12-01		2020-03-01		2020-06-01		2020-09-01		2020-12-01		2021-03-01		2021-06-01		2021-09-01		2021-12-01		2022-03-01		2022-06-01		2022-09-01		2022-12-01		2023-03-01		2023-06-01		2023-09-01		2023-12-01		2024-03-01		2024-06-01		2024-09-01		2024-12-01		2025-03-01		2025-06-01		2025-09-01		2025-12-01		2026-03-01		2026-06-01		2026-09-01		2026-12-01		2027-03-01		2027-06-01		2027-09-01		2027-12-01		2028-03-01		2028-06-01		2028-09-01		2028-12-01		2029-03-01		2029-06-01		2029-09-01		2029-12-01		2030-03-01		2030-06-01		2030-09-01		2030-12-01		2031-03-01		2031-06-01		2031-09-01		2031-12-01		2032-03-01		2032-06-01		2032-09-01		2032-12-01		2033-03-01		2033-06-01		2033-09-01		2033-12-01		2034-03-01		2034-06-01		2034-09-01		2034-12-01		2035-03-01		2035-06-01		2035-09-01		2035-12-01		2036-03-01		2036-06-01		2036-09-01		2036-12-01		2037-03-01		2037-06-01		2037-09-01		2037-12-01		2038-03-01		2038-06-01		2038-09-01		2038-12-01		2039-03-01		2039-06-01		2039-09-01		2039-12-01		2040-03-01		2040-06-01		2040-09-01		2040-12-01		2041-03-01		2041-06-01		2041-09-01		2041-12-01		2042-03-01		2042-06-01		2042-09-01		2042-12-01		2043-03-01		2043-06-01		2043-09-01		2043-12-01		2044-03-01		2044-06-01		2044-09-01		2044-12-01		2045-03-01		2045-06-01		2045-09-01		2045-12-01		2046-03-01		2046-06-01		2046-09-01		2046-12-01		2047-03-01		2047-06-01		2047-09-01		2047-12-01		2048-03-01		2048-06-01		2048-09-01		2048-12-01		2049-03-01		2049-06-01		2049-09-01		2049-12-01		2050-03-01		2050-06-01		2050-09-01		2050-12-01		2051-03-01		2051-06-01		2051-09-01		2051-12-01		2052-03-01		2052-06-01		2052-09-01		2052-12-01		2053-03-01		2053-06-01		2053-09-01		2053-12-01		2054-03-01		2054-06-01		2054-09-01		2054-12-01		2055-03-01		2055-06-01		2055-09-01		2055-12-01		2056-03-01		2056-06-01		2056-09-01		2056-12-01		2057-03-01		2057-06-01		2057-09-01		2057-12-01		2058-03-01		2058-06-01		2058-09-01		2058-12-01		2059-03-01		2059-06-01		2059-09-01		2059-12-01		2060-03-01		2060-06-01		2060-09-01		2060-12-01		2061-03-01		2061-06-01		2061-09-01		2061-12-01		2062-03-01		2062-06-01		2062-09-01		2062-12-01		2063-03-01		2063-06-01		2063-09-01		2063-12-01		2064-03-01		2064-06-01		2064-09-01		2064-12-01		2065-03-01		2065-06-01		2065-09-01		2065-12-01		2066-03-01		2066-06-01		2066-09-01		2066-12-01		2067-03-01		2067-06-01		2067-09-01		2067-12-01		2068-03-01		2068-06-01		2068-09-01		2068-12-01		2069-03-01		2069-06-01		2069-09-01		2069-12-01		2070-03-01		2070-06-01		2070-09-01		2070-12-01		2071-03-01		2071-06-01		2071-09-01		2071-12-01		2072-03-01		2072-06-01		2072-09-01		2072-12-01		2073-03-01		2073-06-01		2073-09-01		2073-12-01		2074-03-01		2074-06-01		2074-09-01		2074-12-01		2075-03-01		2075-06-01		2075-09-01		2075-12-01		2076-03-01		2076-06-01		2076-09-01		2076-12-01		2077-03-01		2077-06-01		2077-09-01		2077-12-01		2078-03-01		2078-06-01		2078-09-01		2078-12-01		2079-03-01		2079-06-01		2079-09-01		2079-12-01		2080-03-01		2080-06-01		2080-09-01		2080-12-01		2081-03-01		2081-06-01		2081-09-01		2081-12-01		2082-03-01		2082-06-01		2082-09-01		2082-12-01		2083-03-01		2083-06-01		2083-09-01		2083-12-01		2084-03-01		2084-06-01		2084-09-01		2084-12-01		2085-03-01		2085-06-01		2085-09-01		2085-12-01		2086-03-01		2086-06-01		2086-09-01		2086-12-01		2087-03-01		2087-06-01		2087-09-01		2087-12-01		2088-03-01		2088-06-01		2088-09-01		2088-12-01		2089-03-01		2089-06-01		2089-09-01		2089-12-01		2090-03-01		2090-06-01		2090-09-01		2090-12-01		2091-03-01		2091-06-01		2091-09-01		2091-12-01		2092-03-01		2092-06-01		2092-09-01		2092-12-01		2093-03-01		2093-06-01		2093-09-01		2093-12-01		2094-03-01		2094-06-01		2094-09-01		2094-12-01		2095-03-01		2095-06-01		2095-09-01		2095-12-01		2096-03-01		2096-06-01		2096-09-01		2096-12-01		2097-03-01		2097-06-01		2097-09-01		2097-12-01		2098-03-01		2098-06-01		2098-09-01		2098-12-01		2099-03-01		2099-06-01		2099-09-01		2099-12-01		2100-03-01		2100-06-01		2100-09-01		2100-12-01		2101-03-01		2101-06-01		2101-09-01		2101-12-01		2102-03-01		2102-06-01		2102-09-01		2102-12-01		2103-03-01		2103-06-01		2103-09-01		2103-12-01		2104-03-01		2104-06-01		2104-09-01		2104-12-01		2105-03-01		2105-06-01		2105-09-01		2105-12-01		2106-03-01		2106-06-01		2106-09-01		2106-12-01		2107-03-01		2107-06-01		2107-09-01		2107-12-01		2108-03-01		2108-06-01		2108-09-01		2108-12-01		2109-03-01		2109-06-01		2109-09-01		2109-12-01		2110-03-01		2110-06-01		2110-09-01		2110-12-01		2111-03-01		2111-06-01		2111-09-01		2111-12-01		2112-03-01		2112-06-01		2112-09-01		2112-12-01		2113-03-01		2113-06-01		2113-09-01		2113-12-01		2114-03-01		2114-06-01		2114-09-01		2114-12-01		2115-03-01		2115-06-01		2115-09-01		2115-12-01		2116-03-01		2116-06-01		2116-09-01		2116-12-01		2117-03-01		2117-06-01		2117-09-01		2117-12-01		2118-03-01		2118-06-01		2118-09-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Table Notes

--- = Not Available

ND - not detected
Bold & Grey Shaded - yes

Table Notes
1. RL Environmental Control Water and Sewage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations)
- not available
ND, not detected
Bold & Grey Shaded - exceeds applicable guideline

Table 4-1: Current and Historical Summary of General Chemistry Analytical Results in Surface Water

Table Notes

^a Environmental Control Water and Sewage Regulations, Schedule A, 2010 (Maximum Allowable Concentrations)

^b Test Results

^c Not an identified

^d **Red & Grey Shaded – exceeds applicable guideline**

^e 100, 1000, 1000000 mg/L

(1) Elevated reporting limit due to solubility

(2) Elevated reporting limit due to sample matrix

Table 5-A: 2014-2015 Historical Summary of General Chemistry and Metal Analytical Results in Discharge

		DISCHARGE-SW-9																	Provincial* Environmental Sewage Control Regulations, 2003 - Schedule A	
		2014-01-13 Historical	2014-02-25 Historical	2014-03-21 Historical	2014-04-29 Historical	2014-05-26 Historical	2014-07-11 Historical	2014-08-14 Historical	2014-09-15 Historical	2014-11-05 Historical	2015-01-06 Historical	2015-04-08 Historical	2015-05-05 Historical	2015-06-08 Historical	2015-11-09 Historical	2015-12-01 Historical	02/03/2015 Historical	02/03/2015 Historical		
Calculated Parameters	Units																			
Iron (ferric)	mg/L	--	--	--	--	--	--	--	--	1.2	--	5.9	2.4	1.2	1.7	1.3	3.5	8.2	--	
Nitrate (N)	mg/L	ND	ND	ND	ND	ND	ND	0.17	0.059	0.75	0.88	0.25	0.12	0.26	6.4	16	ND	ND	10	
Inorganics	Units																			
Carbonaceous BOD	mg/L	1200	2100	1200	610	290	32	ND	21	6.3	ND	110	19	9.2	8.2	3.1	12	170	--	
Iron (ferrous)	mg/L	--	--	--	--	--	--	--	--	ND	--	1.8	0.90	ND	ND	ND	1.1	2.7	--	
Nitrate + Nitrite	mg/L	ND	ND	ND	ND	ND	ND	0.23	0.47	0.93	0.91	0.31	0.12	0.30	7.5	22	ND	ND	--	
Nitrite (N)	mg/L	ND	ND	ND	ND	ND	ND	0.059	0.41	0.18	0.038	0.065	ND	0.041	1.0	5.1	ND	ND	--	
pH	pH	7.23	7.42	7.13	7.41	7.44	7.63	8.16	7.66	8.28	7.86	7.98	7.86	8.09	8.37	8.27	7.96	7.88	5.5 - 9.0	
Total Phosphorus (P)	mg/L	1	2.2	2	1.4	1.1	1.2	0.56	1.2	0.28	0.041	0.34	0.36	0.30	0.29	0.15	0.27	0.54	--	
Total Suspended Solids	mg/L	58	130	100	120	93	77	15	24	25	2	23	29	19	23	8.0	14	60	30	
Total Kjeldahl Nitrogen	mg/L	140	300	150	140	110	43	56	36	27	19	90	48	38	16	19	76	180	--	
Total Iron (Fe)	ug/L	--	--	--	--	--	--	--	--	--	--	7700	3300	1200	1700	1300	4600	11000	10000	

Table 5-B: 2016 Historical Summary of General Chemistry and Metal Analytical Results in Discharge

		DISCHARGE-SW-9										Provincial ¹ Environmental Sewage Control Regulations, 2003 - Schedule A
		2016-02-08 Historical	2016-03-08 Historical	2106-04-05 Historical	2016-05-03 Historical	2016-06-07 Historical	2016-07-04 Historical	2016-08-09 Historical	2016-09-06 Historical	2016-10-04 Historical	2016-11-02 Historical	
Calculated Parameters	Units											
Iron (ferric)	mg/L	1.3	2.4	1.6	2.5	1.1	2.1	1.6	1.3	0.83	1.8	-
Nitrate (N)	mg/L	22	2.3	0.35	0.42	1.3	0.53	0.23	2.4	5.2	ND	10
Inorganics	Units											--
Carbonaceous BOD	mg/L	4.3	23	22	9.0	11	8.9	6.7	11	9.9	160	--
Iron (ferrous)	mg/L	ND	ND	0.70	0.80	ND	ND	ND	ND	ND	2.1	--
Nitrate + Nitrite	mg/L	34	7.7	0.80	0.47	1.8	0.81	0.59	3.9	8.6	ND	--
Nitrite (N)	mg/L	13	5.4	0.45	0.050	0.51	0.28	0.36	1.4	3.4	ND	--
pH	pH	8.14	8.35	8.29	8.36	8.49	8.36	8.54	8.35	8.25	8.19	5.5 - 9.0
Total Phosphorus (P)	mg/L	0.13	0.24	0.17	0.21	0.21	0.36	0.14	0.15	0.18	0.35	--
Total Suspended Solids	mg/L	8.0	24	11	5.6	22	42	14	7.0	8.0	45	30
Total Kjeldahl Nitrogen	mg/L	53	68	50	56	47	29	18	14	14	57	--
Total Iron (Fe)	ug/L	1300	2400	2300	3300	1100	2100	1600	1300	830	3900	10000

Table 5-C: 2017 Historical Summary of General Chemistry and Metal Analytical Results in Discharge

		DISCHARGE-SW-9												Provincial ¹ Environmental Sewage Control Regulations, 2003 - Schedule A
		2017-01-09	2017-02-06	2017-03-01	2017-04-18	2017-05-08	2017-06-05	2017-07-04	2017-08-08	2017-09-05	2017-10-03	2017-11-08	2017-12-07	
		Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	
Calculated Parameters	Units													
Iron (ferric)	mg/L	1.8	3.6	3.5	0.80	1.0	0.80	0.80	1.9	--	ND	ND	0.69	--
Nitrate (N)	mg/L	ND	0.067	ND	0.53	0.29	0.35	1.1	0.61	--	0.82	3.7	6.8	10
Inorganics	Units													
Carbonaceous BOD	mg/L	32	73	55	4.4	8.2	5.4	7.2	7.0	--	--	--	--	--
BOD	mg/L	--	--	--	--	--	--	--	--	--	15	17	7.1	--
Iron (ferrous)	mg/L	1.4	5.4	5.9	ND	ND	0.66	ND	ND	--	ND	ND	ND	--
Nitrate + Nitrite	mg/L	ND	0.067	0.081	0.54	0.29	0.39	1.5	1.5	--	3.7	6.9	10	--
Nitrite (N)	mg/L	ND	ND	0.045	0.012	ND	0.045	0.4	0.9	--	2.9	3.1	3.3	--
pH	pH	7.94	8.11	8.03	8.15	7.90	8.20	8.36	8.29	--	8.31	8.24	8.41	5.5 - 9.0
Total Phosphorus (P)	mg/L	0.33	0.82	0.89	0.060	0.072	0.19	0.26	0.40	--	0.33	0.20	0.21	--
Total Suspended Solids	mg/L	30	68	130	6.2	11	15	13	7.4	--	7.5	7.6	13	30
Total Kjeldahl Nitrogen	mg/L	47	160 (1)	170	9.0	19	7.0	54	36.0	--	24	15	18	--
Total Iron (Fe)	ug/L	3200	9000	9400	800	1000	1500	790	1900	1100	ND	260	690	10000

Table Notes¹ NL Environmental Control Water and Sewage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations)

ND - Not Detected

-- = Not Available

Bold & Grey Shaded - exceeds applicable guideline

Grey Text - Historical Data (Not compared to guidelines, for informational purposes only).

Table 5-D: 2018 Historical Summary of General Chemistry and Metal Analytical Results in Discharge

		DISCHARGE-SW-9												Provincial ¹ Environmental Sewage Control Regulations, 2003 - Schedule A
		2018-01-15 Historical	2018-02-12 Historical	2018-03-07 Historical	2018-04-03 Historical	2018-05-08 Historical	2018-06-05 Historical	2018-07-04 Historical	2018-08-14 Historical	2018-09-10 Historical	2018-10-15 Historical	2018-11-18 Historical	2018-12-03 Historical	
Calculated Parameters	Units													
Iron (ferric)	mg/L	ND	1.6	0.69	0.82	ND	ND	ND	-	-	-	ND	ND	--
Nitrate (N)	mg/L	11	5.3	6.4	6.2	3.5	5.2	2.7	-	-	-	19.0	30	10
Inorganics	Units													
Carbonaceous BOD	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	--
BOD	mg/L	7.00	ND (1)	ND	6.2	9.0	9.2	16	-	-	-	7.1	39	--
Iron (ferrous)	mg/L	ND	ND	ND	ND	ND	ND	ND	-	-	-	ND	0.60	--
Nitrate + Nitrite	mg/L	15.00	6.0	6.8	6.4	3.9	5.70	4.0	-	-	-	19	30.00	--
Nitrite (N)	mg/L	4.10	0.75	0.43	0.19	0.48	0.51	1.3	-	-	-	0.41	0.44	--
pH	pH	8.12	7.90	8.24	8.03	8.07	8.18	8.30	-	-	-	7.96	7.94	5.5 - 9.0
Total Phosphorus (P)	mg/L	0.17	0.10	0.12	0.17	0.13	0.13	0.24	-	-	-	0.21	0.46	--
Total Suspended Solids	mg/L	4.0	13	20	10	7.2	11	5.4	-	-	-	9.0	32	30
Total Kjeldahl Nitrogen	mg/L	29	8.5	45	68	45	43	42	-	-	-	19	44	--
Total Iron (Fe)	ug/L	320	1600	690	820	250	160	360	-	-	-	470	1100	10000

Table 5-E: 2019 Historical Summary of General Chemistry and Metal Analytical Results in Discharge

		DISCHARGE-SW-9												Provincial ¹ Environmental Sewage Control Regulations, 2003 - Schedule A	
		2019-01-15 Historical	2019-02-19 Historical	2019-03-12 Historical	2019-04-22 Historical	2019-05-14 Historical	2019-06-18 Historical	2019-07-09 Historical	2019-08-07 Historical	2019-09-17 Historical	2019-10-16 Historical	2019-11-19 Historical	2019-12-17 Historical		
Calculated Parameters															
	Units														
Iron (ferric)	mg/L	ND	ND	ND	ND	0.65	ND	ND	-	-	-	ND	ND	--	
Nitrate (N)	mg/L	17	2.4	1.8	0.68	1.7	3.8	4.3	-	-	-	6.1	32	10	
Inorganics															
Carbonaceous BOD	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	--	
BOD	mg/L	22	7.3	ND (1)	ND	14	7.5	9.1	-	-	-	ND	15	--	
Iron (ferrous)	mg/L	1.50	0.60	2.10	ND	ND	ND	ND	-	-	-	ND	ND	--	
Nitrate + Nitrite	mg/L	17	2.4	1.8	0.69	1.9	4.3	5.2	-	-	-	6.2	32	--	
Nitrite (N)	mg/L	0.027	0.018	0.025	0.012	0.17	0.56	0.87	-	-	-	0.11	0.37	--	
pH	pH	8.10	7.85	8.00	7.89	8.25	8.19	8.25	-	-	-	7.92	7.91	5.5 - 9.0	
Total Phosphorus (P)	mg/L	0.42	0.11	0.43	0.022	0.23	0.15	0.16	-	-	-	0.038	0.13	--	
Total Suspended Solids	mg/L	28	21	26	5.8	17	18	10	-	-	-	4.8	10	30	
Total Kjeldahl Nitrogen	mg/L	120	32	140	0.80	67	37	50	-	-	-	1.7	31	--	
Total Iron (Fe)	ug/L	1100	1100	2000	130	650	490	480	-	-	-	220	310	10000	

Table 5-F: 2020 Historical Summary of General Chemistry and Metal Analytical Results in Discharge

		DISCHARGE-SW-9											Provincial ¹ Environmental Sewage Control Regulations, 2003 - Schedule A
		2020-01-16	2020-02-20	2020-03-11	2020-04-20	2020-05-13	2020-06-22	2020-07-13	2020-09-15	2020-10-19	2020-11-16	2020-12-14	
		Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	
Calculated Parameters	Units												
Iron (ferric)	mg/L	1.0	0.6	0.81	ND	ND	ND	ND	ND	ND	ND	ND	--
Nitrate (N)	mg/L	60.00	57.00	59.00	1.90	4.60	10.00	3.30	16.00	27.00	40.00	0.65	10
Inorganics													
Carbonaceous BOD	mg/L	-	-	-	-	-	-	-	-	-	-	-	--
BOD	mg/L	44.00	11.00	6.7	ND	7.40	15.00	12.0	10.0	ND	ND	17.0	--
Iron (ferrous)	mg/L	ND	ND	ND	ND	ND	0.60	2.10	ND	ND	ND	ND	--
Nitrate + Nitrite	mg/L	61.00	58.00	60.00	1.90	4.80	11.00	4.10	17.00	28.00	40.00	1.30	--
Nitrite (N)	mg/L	1.00	0.69	0.55	0.019	0.20	0.67	0.79	1.30	1.00	0.67	0.65	--
pH	pH	7.84	8.33	8.06	7.71	7.91	8.21	8.28	8.35	8.39	8.21	8.03	5.5 - 9.0
Total Phosphorus (P)	mg/L	0.19	0.17	0.19	ND	0.10	0.21	0.17	0.13	0.06	0.04	0.11	--
Total Suspended Solids	mg/L	17.00	7.50	7	ND	6.80	32.00	6	12	3	ND	8	30
Total Kjeldahl Nitrogen	mg/L	70.00	92.00	89	0	45.00	44.00	30	16	11	9	27	--
Total Iron (Fe)	ug/L	1000	610	810	110	210	200	160	130	160	130	360	10000

Table Notes¹ NL Environmental Control Water and Sewage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations)

ND - Not Detected

Bold & Grey Shaded - exceeds applicable guideline

Grey Text - Historical Data

-- = Not Available

(1) BOD analysis was performed on previously frozen sample aliquot.

(2) Elevated RDL due to poor blank performance.

Table 5-G: 2021 Current Summary of General Chemistry and Metal Analytical Results in Discharge

		DISCHARGE-SW-9							Provincial ¹ Environmental Sewage Control Regulations, 2003 - Schedule A
		2021-01-18	2021-04-13	2021-05-18	2021-06-23	2021-09-27	2021-10-26	2021-11-16	
		Current	Current	Current	Current	Current	Current	Current	
Calculated Parameters	Units								
Iron (ferric)	mg/L	0.55	0.61	1.4	0.52	ND	ND	ND	--
Nitrate (N)	mg/L	7.0	0.48	0.41	0.22	2.7	3.5	5.6	10
Inorganics	Units								
Carbonaceous BOD	mg/L	-	-	-	-	-	-	-	--
BOD	mg/L	6.6	58	11	6.2	3.4	4.5	ND	--
Iron (ferrous)	mg/L	ND	0.57	ND	ND	ND	ND	ND	--
Nitrate + Nitrite	mg/L	7.3	0.55	0.52	0.62	3.4	3.7	5.7	--
Nitrite (N)	mg/L	0.34	0.075	0.11	0.40	0.71	0.20	0.13	--
pH	pH	7.98	7.91	8.49	8.56	8.33	8.35	8.06	5.5 - 9.0
Total Phosphorus (P)	mg/L	0.053	0.16	0.099	0.11	0.10	0.025	0.029	--
Total Suspended Solids	mg/L	10	28	13	10	4.3	ND	3.2	30
Total Kjeldahl Nitrogen	mg/L	12	55	42	29	6.9	3.7	2.1	--
Total Iron (Fe)	ug/L	550	1200	1400	520	99	64	54	10000

Table Notes

¹ NL Environmental Control Water and Sewage Regulations, Schedule A, 2003 (Maximum Allowable

ND - Not Detected

Bold & Grey Shaded - exceeds applicable guideline

Grey Text - Historical Data (Not compared to guidelines, for informational purposes only).

-- = Not Available

(1) BOD analysis was performed on previously frozen sample aliquot.

(2) Elevated RDL due to poor blank performance.

Table 5-H: 2022 Current Summary of General Chemistry and Metal Analytical Results in Discharge

		DISCHARGE-SW-9												Provincial ¹ Environmental Sewage Control Regulations, 2003 - Schedule A
		2022-01-31	2022-02-28	2022-03-31	2022-04-25	2022-05-24	2022-06-22	2022-07-31	2022-08-31	2022-09-30	2022-10-31	2022-11-22	2022-12-30	
		Current*	Current*	Current*	Current	Current	Current	Current*	Current*	Current*	Current*	Current	Current*	
Calculated Parameters	Units													
Iron (ferric)	mg/L	--	--	--	ND	ND	ND	--	--	--	--	0.79	--	--
Nitrate (N)	mg/L	--	--	--	1	4	0.74	--	--	--	--	36	--	10
Inorganics														
Carbonaceous BOD	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--
BOD	mg/L	--	--	--	3.9	--	17	--	--	--	--	ND	--	--
Iron (ferrous)	mg/L	--	--	--	ND	ND	ND	--	--	--	--	ND	--	--
Nitrate + Nitrite	mg/L	--	--	--	1	5.7	1.8	--	--	--	--	36	--	--
Nitrite (N)	mg/L	--	--	--	0.035	1.7	1.1	--	--	--	--	0.39	--	--
pH	pH	--	--	--	7.88	7.5	8.29	--	--	--	--	8.48	--	5.5 - 9.0
Total Phosphorus (P)	mg/L	--	--	--	0.11	0.28	0.23	--	--	--	--	0.12	--	--
Total Suspended Solids	mg/L	--	--	--	5.2	38	13	--	--	--	--	2	--	30
Total Kjeldahl Nitrogen	mg/L	--	--	--	35	60	47	--	--	--	--	6.8	--	--
Total Iron (Fe)	ug/L	--	--	--	360	320	290	--	--	--	--	790	--	10000

Table Notes¹ NL Environmental Control Water and Sewage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations)

ND - Not Detected

Bold & Grey Shaded - exceeds applicable guideline

Grey Text - Historical Data (Not compared to guidelines, for informational purposes only).

*= No discharge samples due to low volumes for that particular month.

-- = Not Available

(1) BOD analysis was performed on previously frozen sample aliquot.

(2) Elevated RDL due to poor blank performance.

Table 5-I: 2023 Current Summary of General Chemistry and Metal Analytical Results in Discharge

		DISCHARGE-SW-9												Guideline
		2023-01-30	2023-02-28	2023-03-31	2023-04-26	2023-05-31	2023-06-27	2023-07-26	2023-08-28	2023-09-27	2023-10-26	2023-11-28	2023-12-28	Provincial Environmental Sewage Control Regulations, 2003 - Schedule A
		Current	Current	Current	Current	Current	Current	Current	Current	Current	Current	Current	Current	
Calculated Parameters	Units													
Iron (ferric)	mg/L	ND	ND	--	0.58	ND	ND	0.8	0.84	ND	ND	ND	--	--
Nitrate (N)	mg/L	3.5	26	--	4.3	9	4.9	8.2	9.5	14	19	7	--	10
Inorganics	Units													
Carbonaceous BOD	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--
BOD	mg/L	ND	11	--	7.6	5.5	27	8.2	ND	13	14	ND	--	--
Iron (ferrous)	mg/L	ND	1.7	--	ND	ND	ND	ND	ND	ND	ND	ND	--	--
Nitrate + Nitrite	mg/L	3.6	26	--	4.4	9.6	8.6	13	12	16	20	7.1	--	--
Nitrite (N)	mg/L	0.024	0.28	--	0.1	0.56	3.6	4.4	2.9	2.2	0.83	0.12	--	--
pH	pH	7.88	8.04	--	8.32	8.38	8.37	8.21	8.33	8.35	8.16	8.11	--	5.5 - 9.0
Total Phosphorus (P)	mg/L	ND	0.65	--	0.3	0.16	0.16	0.41	0.16	0.16	0.075	ND	--	--
Total Suspended Solids	mg/L	ND	11	--	4	5.2	13	ND	10	18	4	ND	--	30
Total Kjeldahl Nitrogen	mg/L	0.77	300	--	80	51	74	88	40	14	6.6	4	--	--
Total Iron (Fe)	ug/L	ND	1800	--	580	140	410	800	830	490	210	100	--	10000

Table Notes¹ NL Environmental Control Water and Sewage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations)

ND - Not Detected

Bold & Grey Shaded - exceeds applicable guideline

-- = Not Available

Table 5-J: 2024 Current Summary of General Chemistry and Metal Analytical Results in Discharge

		DISCHARGE-SW-9												Guideline
		2024-01-30	2024-02-29	2024-03-31	2024-04-24	2024-05-29	2024-06-30	2024-07-31	2024-08-12	2024-09-30	2024-10-31	2024-11-01	2024-12-31	
		Current	Current	Current	Current	Current	Current	Current	Current	Current	Current	Current	Current	Provincial1 Environmental Sewage Control Regulations, 2003 - Schedule A
Calculated Parameters	Units													
Iron (ferric)	mg/L	--	ND	--	1.2	ND	--	--	ND	ND	ND	--	--	--
Nitrate (N)	mg/L	--	11	--	7.1	10	--	--	18	6.8	13	--	--	10
Inorganics	Units													
Carbonaceous BOD	mg/L	--	--	--	--	--	--	--	--	--		--	--	--
BOD	mg/L	--	ND	--	10	33	--	--	57	NA	NA	--	--	--
Iron (ferrous)	mg/L	--	0.58	--	ND	ND	--	--	ND	0.71	ND	--	--	--
Nitrate + Nitrite	mg/L	--	12	--	7.6	12	--	--	21	8.6	14	--	--	--
Nitrite (N)	mg/L	--	0.16	--	0.52	1.7	--	--	2.9	1.8	0.63	--	--	--
pH	pH	--	8.27	--	8.27	8.05	--	--	8.65	8.93	8.01	--	--	5.5 - 9.0
Total Phosphorus (P)	mg/L	--	0.3	--	0.31	0.19	--	--	0.38	0.47	0.24	--	--	--
Total Suspended Solids	mg/L	--	3.6	--	19	11	--	--	60	24	12	--	--	30
Total Kjeldahl Nitrogen	mg/L	--	110	--	110	72	--	--	61	16	5.6	--	--	--
Total Iron (Fe)	ug/L	--	760	--	1200	360	--	--	390	ND	190	--	--	10000

Table Notes

¹ NL Environmental Control Water and Sewage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations)

ND - Not Detected

Bold & Grey Shaded - exceeds applicable guideline

-- = Not Available

Table 5-K: Current Summary of Metal Analytical Results for Effluent from Lagoons

		Effluent From Lagoons	Provincial ¹ Environmental Sewage Control Regulations, 2003 - Schedule A
		2018-07-04	
		Historical	
Metals	Units		
Total Aluminum (Al)	µg/L	52	--
Total Antimony (Sb)	µg/L	2.7	--
Total Arsenic (As)	µg/L	23	500
Total Barium (Ba)	µg/L	380	5000
Total Beryllium (Be)	µg/L	ND	--
Total Bismuth (Bi)	µg/L	ND	--
Total Boron (B)	µg/L	1700	5000
Total Cadmium (Cd)	µg/L	0.024	50
Total Calcium (Ca)	µg/L	25000	--
Total Chromium (Cr)	µg/L	9.5	1000
Total Cobalt (Co)	µg/L	5.1	--
Total Copper (Cu)	µg/L	3.0	300
Total Iron (Fe)	µg/L	1300	10000
Total Lead (Pb)	µg/L	ND	200
Total Magnesium (Mg)	µg/L	71000	--
Total Manganese (Mn)	µg/L	410	--
Total Molybdenum (Mo)	µg/L	ND	--
Total Nickel (Ni)	µg/L	37	500
Total Phosphorus (P)	µg/L	530	--
Total Potassium (K)	µg/L	130000	--
Total Selenium (Se)	µg/L	ND	10
Total Silver (Ag)	µg/L	ND	50
Total Sodium (Na)	µg/L	290000	--
Total Strontium (Sr)	µg/L	520	--
Total Thallium (Tl)	µg/L	ND	--
Total Tin (Sn)	µg/L	ND	--
Total Titanium (Ti)	µg/L	2.5	--
Total Uranium (U)	µg/L	0.15	--
Total Vanadium (V)	µg/L	5.0	--
Total Zinc (Zn)	µg/L	23	500

Table Notes

¹ NL Environmental Control Water and Sewage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations)

ND - Not Detected

Bold & Grey Shaded - exceeds applicable guideline

Grey Text - Historical Data (Not compared to guidelines, for informational purposes only).

-- = Not Available

(1) Detection limit elevated due to dilution required to bring analyte within calibrated range.

(1) Elevated reporting limit due to poor blank performance.

Table 5-L: 2014-2015 Historical Summary of General Chemistry and Metal Analytical Results in Infuent from Landfill

		Influent From Landfill																				Provincial ¹ Environmental Sewage Control Regulations, 2003 - Schedule A	
		2014-01-13 Historical	2014-02-25 Historical	2014-03-21 Historical	2014-05-26 Historical	2014-07-11 Historical	2014-08-14 Historical	2014-09-15 Historical	2014-11-05 Historical	2015-01-06 Historical	2015-04-08 Historical	2015-05-05 Historical	2015-06-08 Historical	2015-07-07 Historical	2015-07-29 Historical	2015-07-29 Historical	2015-09-29 Historical	2015-11-09 Historical	2015-12-01 Historical	02/03/2015 Historical	02/03/2015 Historical		
Calculated Parameters	Units																						
Iron (ferric)	mg/L	--	--	--	--	--	--	--	19	--	1.0	4.4	5.0	1.4	10	--	4.0	3.0	1.5	ND	16	--	
Nitrate (N)	mg/L	ND	ND	ND	ND	ND	ND	0.05	ND	ND	ND	ND	ND	ND	ND	22	ND	40	68	ND	0.062	10	
Inorganics	Units																						
Carbonaceous BOD	mg/L	5300	5700	3100	2900	4400	1400	3300	200	1500	850	1100	76	39	270	34	18	160	30	1500	1800	--	
Iron (ferrous)	mg/L	--	--	--	--	--	--	--	3.9	--	32	50	4.7	2.4	0.50	--	ND	1.9	ND	32	26	--	
Nitrate + Nitrite	mg/L	ND	ND	ND	ND	ND	ND	0.05	ND	ND	ND	ND	ND	0.061	ND	190	230	160	90	ND	0.062	--	
Nitrite (N)	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	0.035	0.015	ND	ND	0.021	ND	170	240	120	22	ND	ND	--	
pH	pH	7.32	6.99	6.7	6.86	7.06	6.9	7.24	7.88	7.16	7.13	7.22	8.36	8.47	7.97	7.87	8.20	8.22	8.33	7.13	7.38	5.5 - 9.0	
Total Phosphorus (P)	mg/L	1.9	9.3	12	2.2	2.9	2.8	3	1.8	2.4	2.2	2.4	1.8	0.90	0.95	1.5	0.62	0.80	0.32	2.3	3.6	--	
Total Suspended Solids	mg/L	560	270	280	170	260	150	30	570	42	70	62	250	110	190	650	91	300	28	110	150	30	
Total Kjeldahl Nitrogen	mg/L	480	670	350	380	860	430	670	310	440	440	360	300	320	270	40	--	170	82	630	1100	--	
Total Iron (Fe)	ug/L	--	--	--	--	--	--	--	--	--	33000	54000	9700	3800	10000	--	4000	4900	1500	29000	42000	10000	

Table 5-M: 2016 Historical Summary of General Chemistry and Metal Analytical Results in Infuent from Landfill

		Influent from Landfill												Provincial ¹ Environmental Sewage Control Regulations, 2003 - Schedule A
		2016-01-11	2016-02-08	2016-03-08	2016-04-05	2016-05-03	2016-06-07	2016-07-04	2016-08-09	2016-09-06	2016-10-04	2016-11-02	2016-12-07	
		Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	
Calculated Parameters	Units													
Iron (ferric)	mg/L	4.7	ND 0.057	4.4	4.3	13	17	ND ND	0.98	3.1	4.2	16	8.1	-10
Nitrate (N)	mg/L	0.32		0.076	ND	0.12	ND		ND	ND	ND	0.070	ND	
Inorganics	Units													
Carbonaceous BOD	mg/L	610	700	120	230	37	170	610	ND	110	100	400	110	--
Iron (ferrous)	mg/L	25 (1)	16	15	19	4.4	22 (1)	39 (1)	ND	1.3	1.4	41 (1)	9.0	--
Nitrate + Nitrite	mg/L	1.1	0.057	0.076	ND	0.15	ND	0.055	190	120	53	0.098	ND	--
Nitrite (N)	mg/L	0.76	ND	ND	0.032	0.037	ND	0.017	190	120	50	0.028	0.023	--
pH	pH	7.47	7.51	7.4	7.12	8.38	7.49	7.32	8.24	8.2	8.37	7.8	8.2	5.5 - 9
Total Phosphorus (P)	mg/L	6	3.3	3.5	2.3	1.3	4.7	2.2	0.27	0.82	0.72	2	1.2	--
Total Suspended Solids	mg/L	88	46	30	26	120	110	86	16	260	130	1300	230	30
Total Kjeldahl Nitrogen	mg/L	840	950	310	240	250	500	400	8.8	130	240	310	240	--
Total Iron (Fe)	ug/L	30000	14000	19000	24000	17000	39000	38000	980	4400	5600	57000	17000	10000

Table Notes¹ NL Environmental Control Water and Sewage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations)

ND - Not Detected

-- = Not Available

Bold & Grey Shaded - exceeds applicable guideline

Table 5-N: 2017 Historical Summary of General Chemistry and Metal Analytical Results in Influent from Landfill

		Influent from Landfill												Provincial ¹ Environmental Sewage Control Regulations, 2003 - Schedule A
		2017-01-09	2017-02-06	2017-03-01	2017-04-18	2017-05-08	2017-06-05	2017-07-04	2017-08-08	2017-09-05	2017-10-03	2017-11-08	2017-12-07	
		Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	
Calculated Parameters	Units													
Iron (ferric)	mg/L	2.0	ND	2.2	8.6	23	6.5	1.7	7.9	--	3.8	2.2	2.6	--
Nitrate (N)	mg/L	ND	0.097	ND	ND	ND	0.057	0.075	ND	--	11	19	19	10
Inorganics														
Carbonaceous BOD	mg/L	150	100	140	420	70	23	17	67	--	--	--	--	--
BOD	mg/L	--	--	--	--	--	--	--	--	--	23	32	ND	--
Iron (ferrous)	mg/L	23 (1)	22 (1)	11	5.8	10	5.2	1.7	ND	--	ND	ND	0.75	--
Nitrate + Nitrite	mg/L	0.065	0.14	0.064	ND	ND	0.073	0.30	130	--	47	33	25	--
Nitrite (N)	mg/L	0.021	0.043	0.031	ND	0.019	0.016	0.23	130	--	36	15	5.7	--
pH	pH	7.43	7.46	7.41	7.92	8.00	8.40	8.32	7.76	--	8.38	8.36	8.41	5.5 - 9.0
Total Phosphorus (P)	mg/L	2.7	3.0	2.3	0.66	1.5	0.95	0.65	0.91	--	0.82	0.72	0.92	--
Total Suspended Solids	mg/L	38	19	51	140	280	120	77	110	--	98	56	86	30
Total Kjeldahl Nitrogen	mg/L	390	410	300	170	170	160	180	27	--	140	160	190	--
Total Iron (Fe)	ug/L	25000	19000	13000	14000	33000	12000	3400	7900	1600	3800	2200	3400	10000

Table 5-O: 2018 Historical Summary of General Chemistry and Metal Analytical Results in Infuent from Landfill

		Influent from Landfill												Provincial ¹ Environmental Sewage Control Regulations, 2003 - Schedule A
		2018-01-15	2018-02-12	2018-03-07	2018-04-03	2018-05-08	2018-06-05	2018-07-04	2018-08-14	2018-09-10	2018-10-15	2018-11-18	2018-12-03	
		Current	Current	Current	Current	Current	Current	Current	Current	Current	Current	Current	Current	
Calculated Parameters	Units													
Iron (ferric)	mg/L	5.2	ND	21	ND	3.7	6.1	8.7	2.6	0.79	1.7	6.6	0.61	--
Nitrate (N)	mg/L	ND	ND	0.16	0.057	0.14	0.054	ND	160	170	100	12	14	10
Inorganics	Units													
BOD	mg/L	64	170 (1)	67	170	23	58	55	0.7	21	15	210	150	--
Iron (ferrous)	mg/L	12	13	0.50	12	3.1	17	25 (3)	ND	ND	1.1	6.5	8.4	--
Nitrate + Nitrite	mg/L	0.070	ND	0.190	0.070	0.17	0.054	ND	160	180	110	12	14	--
Nitrite (N)	mg/L	0.040	ND	0.037	0.013	0.037	ND	ND	2.8	12	6.9	ND	0.036	--
pH	pH	7.51	7.02	7.28	7.31	8.07	7.19	7.31	8.19	8.15	8.33	7.79	7.87	5.5 - 9.0
Total Phosphorus (P)	mg/L	2.8	1.1	2.8	1.7	1.0	2.3	5.0	8.0	0.35	0.72	3.0	1.9	--
Total Suspended Solids	mg/L	67	37	62	44	62	38	130	32	5.5	86	310	30	30
Total Kjeldahl Nitrogen	mg/L	430	180	410	260 (2)	190	210	340	12	24	100	220	190	--
Total Iron (Fe)	ug/L	17000	13000	21000	12000	6800	23000	34000	2600	790	2800	13000	9000	10000

Table 5-P: 2019 Summary of General Chemistry and Metal Analytical Results in Influent from Landfill

		Influent from Landfill												Provincial ¹ Environmental Sewage Control Regulations, 2003 - Schedule A
		2019-01-15 Historical	2019-02-19 Historical	2019-03-12 Historical	2019-04-22 Historical	2019-05-14 Historical	2019-06-18 Historical	2019-07-09 Historical	2019-08-07 Historical	2019-09-17 Historical	2019-10-16 Historical	2019-11-19 Historical	2019-12-17 Historical	
Calculated Parameters	Units													
Iron (ferric)	mg/L	ND	ND	2.20	7.50	ND	1.90	1.6	2.40	0.92	1.4	4.4	-	--
Nitrate (N)	mg/L	0.091	0.090	0.12	0.058	0.11	0.40	ND	130	170	290	110	-	10
Inorganics	Units													
BOD	mg/L	340	180	92 (1)	37	15	27.0	44	84	50	75	62	-	--
Iron (ferrous)	mg/L	22 (1)	19 (1)	13.0	6.2	2.2	0.7	ND	ND	ND	0.89	1.5	-	--
Nitrate + Nitrite	mg/L	0.091	0.13	0.14	0.085	0.27	4.7	14	140	170	300	110	-	--
Nitrite (N)	mg/L	ND	0.041	0.015	0.027	0.15	4.3	14	9.5	9.0	4.3	0.63	-	--
pH	pH	7.49	7.34	7.49	8.4	8.53	8.57	8.56	8.08	8.35	8.37	8.17	-	5.5 - 9.0
Total Phosphorus (P)	mg/L	4.3	4.1	3.6	2.3	0.71	0.62	0.77	0.81	0.49	0.68	0.95	-	--
Total Suspended Solids	mg/L	56	90	62	190	52	45	64	58	7.0	34	74	-	30
Total Kjeldahl Nitrogen	mg/L	440	420	500	270	260	250	240	100	26	100	200	-	--
Total Iron (Fe)	ug/L	19,000.0	19,000.0	15,000.0	14,000.0	2,100.0	2,600.0	1600	2,400.0	920	2300	5800	-	10000

Table Notes¹ NL Environmental Control Water and Sewage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations)**Bold & Grey Shaded - exceeds applicable guideline**

ND - Not Detected

Grey Text - Historical Data (Not compared to guidelines, for informational purposes only).

-- = Not Available

(1) BOD analysis was performed on previously frozen sample aliquot.

(2) Elevated reporting limit due to blank performance.

(3) Detection limit elevated due to dilution required to bring analyte within calibrated range.

Table 5-Q: 2014-2015 Historical Summary of General Chemistry and Metal Analytical Results in Lift Station

		Lift Station																							Provincial Environmental Sewage Control Regulations, 2003 - Schedule A	
		2014-01-13 Historical	2014-02-25 Historical	2014-03-21 Historical	2014-04-29 Historical	2014-05-26 Historical	2014-07-11 Historical	2014-08-14 Historical	2014-09-15 Historical	2014-11-05 Historical	2015-01-06 Historical	2015-04-06 Historical	2015-05-05 Historical	2015-06-08 Historical	2015-07-07 Historical	2015-07-29 Historical	2015-07-29 Historical	2015-09-29 Historical	2015-11-09 Historical	2015-12-01 Historical	02/03/2015 Historical	02/03/2015 Historical				
Calculated Parameters	Units																									
Iron (ferric)	mg/L	--	--	--	--	--	--	--	--	1.2	--	11	9.2	9.9	8.5	2.4	--	1.3	3.6	2.7	10	11		--		
Nitrate (N)	mg/L	ND	ND	ND	ND	ND	ND	0.099	0.67	0.76	ND	0.082	ND	0.96	0.16	0.96	0.35	0.60	39	46	ND	ND		10		
Inorganics	Units																									
Carbonaceous BOD	mg/L	2500	2700	1500	860	240	12	ND	ND	5.2	59	200	160	17	15	20	6.8	20	3.9	11	84	170		--		
Iron (ferrous)	mg/L	--	--	--	--	--	--	--	--	ND		3.8	4.3	3.4	2.3	ND		ND	ND	ND	3.8	3.8		--		
Nitrate + Nitrite	mg/L	ND	ND	ND	ND	ND	0.056	0.15	1.1	0.94	ND	0.11	ND	1.0	0.31	3.7	0.47	0.89	46	59	ND	ND		--		
Nitrite (N)	mg/L	ND	ND	ND	ND	ND	0.027	0.053	0.38	0.18	ND	0.027	ND	0.059	0.15	2.7	0.12	0.29	6.9	13	ND	ND		--		
pH	pH	7.41	7.46	7.38	7.43	7.53	7.87	8.15	8.11	8.26	7.92	7.97	7.92	7.63	7.77	8.14	7.87	8.12	7.88	8.13	7.92	7.95		5.5 - 9.0		
Total Phosphorus (P)	mg/L	1.7	2.5	3.1	2.3	2	0.58	0.69	0.44	0.27	0.56	0.81	1.4	0.54	0.58	0.50	0.33	0.52	0.025	0.22	0.77	0.74		--		
Total Suspended Solids	mg/L	250	240	340	280	210	16	ND	9.5	25	56	63	100	43	28	31	10	19	12	9.0	63	60		30		
Total Kjeldahl Nitrogen	mg/L	370	300	330	210	200	92	110	81	25	170	210	220	110	85	89	32	34	51	200	220		--			
Total Iron (Fe)	ug/L	--	--	--	--	--	--	--	--	--	--	15000	14000	13000	11000	2400	--	1300	3600	2700	14000	14000		10000		

Table 5-R: 2016 Historical Summary of General Chemistry and Metal Analytical Results in Lift Station

		Effluent from Lagoon												Provincial ¹ Environmental Sewage Control Regulations, 2003 - Schedule A
		2016-01-11	2016-02-08	2016-03-08	2016-04-05	2016-05-03	2016-06-07	2016-07-04	2016-08-09	2016-09-06	2016-10-04	2016-11-02	2016-12-07	
		Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	
Calculated Parameters	Units													
Iron (ferric)	mg/L	4	4.6	3.1	3.2	14	11	0.64	5.1	1.4	0.94	2.0	1.2	--
Nitrate (N)	mg/L	33	19	2.4	1.6	0.7	2.1	1.10	2.2	2.9	5.2	ND	ND	10
Inorganics	Units													
Carbonaceous BOD	mg/L	18	13	83	59	17	7	12	14	13.0	13	180	130	--
Iron (ferrous)	mg/L	0.6	ND	2.1	1.5	3.4	1.1	ND	0.6	ND	ND	2.3	4.1	--
Nitrate + Nitrite	mg/L	51	42	8.4	3.8	0.78	2.4	2.80	3.0	4.40	9.1	ND	ND	--
Nitrite (N)	mg/L	18	23	5.9	2.2	0.069	0.31	1.700	0.72	1.50	3.9	ND	ND	--
pH	pH	8.24	8.36	8.29	8.28	7.99	8.03	8.67	7.75	8.25	8.26	7.98	8.05	5.5 - 9.0
Total Phosphorus (P)	mg/L	0.23	0.24	0.5	0.5	0	0.33	0.46	0.11	0.13	0.21	0.37	0.5	--
Total Suspended Solids	mg/L	16	20	15	23	19	18	29	12	8	9	46	80	30
Total Kjeldahl Nitrogen	mg/L	93(1)	110	170	150	130	100	110	38	12	15	60	97	--
Total Iron (Fe)	ug/L	4600	4600	5200	4700	17000	12000	640	5700	1400	940	4300	5300	10000

Table Notes

1 NL Environmental Control Water and Sewage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations)

ND - Not Detected

Bold & Grey Shaded - exceeds applicable guideline

Grey Text - Historical Data (Not compared to guidelines, for informational purposes only).

-- = Not Available

Table 5-S: 2017 Historical Summary of General Chemistry and Metal Analytical Results in Lift Station

		Lift Station												Provincial ¹ Environmental Sewage Control Regulations, 2003 - Schedule A	
		2017-01-09	2017-02-06	2017-03-01	2017-04-18	2017-05-08	2017-06-05	2017-07-04	2017-08-08	2017-09-05	2017-10-03	2017-11-08	2017-12-07		
		Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical		
Calculated Parameters		Units													
Iron (ferric)	mg/L	4.6	9.2	7.6	6.7	3.7	2.5	0.66	1.9	--	ND	ND	ND		--
Nitrate (N)	mg/L	0.054	ND	0.30	0.055	ND	0.59	1.3	0.84	--	1.0	2.8	7.6	10	
Inorganics															
Carbonaceous BOD	mg/L	94	82	95	200	120	ND	7.4	11	--	--	--	--	--	
BOD	mg/L	--	--	--	--	--	--	--	--	--	22	18	ND	--	
Iron (ferrous)	mg/L	4.8	4.8	5.4	5.1	4.2	1.3	ND	ND	--	ND	ND	ND	--	
Nitrate + Nitrite	mg/L	0.054	ND	0.41	0.055	ND	0.75	1.9	1.9	--	4.1	6.4	11	--	
Nitrite (N)	mg/L	ND	0.010	0.11	ND	ND	0.16	0.6	1.1	--	3.1	3.6	3.7	--	
pH	pH	8.12	8.04	8.14	7.99	7.95	8.12	8.26	8.18	--	8.29	8.14	8.29	5.5 - 9.0	
Total Phosphorus (P)	mg/L	0.78	0.97	1.2	0.57	0.84	0.37	0.26	0.39	--	0.32	0.17	0.18	--	
Total Suspended Solids	mg/L	83	54	100	60	91	23	10	7.4	--	9.0	4.0	7.2	30	
Total Kjeldahl Nitrogen	mg/L	170	180	220	190	120	100	55	35	--	24	16	20	--	
Total Iron (Fe)	ug/L	9400	14000	13000	12000	7800	3800	660	1900	1000	380	200	360	10000	

Table 5-T: 2018 Histroical Summary of General Chemistry and Metal Analytical Results in Lift Station

		Lift Station												Provincial ¹ Environmental Sewage Control Regulations, 2003 - Schedule A
		2018-01-15	2018-02-12	2018-03-07	2018-04-03	2018-05-08	2018-06-05	2018-07-04	2018-08-14	2018-09-10	2018-10-15	2018-11-18	2018-12-03	
		Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	
Calculated Parameters	Units													
Iron (ferric)	mg/L	0.91	0.51	1.9	0.82	ND	1.3	1.3	0.61	0.54	ND	1.7	ND	--
Nitrate (N)	mg/L	19	14	13	8.50	3.4	4.7	2.8	11	0.17	17	52	38	10
Inorganics														
Carbonaceous BOD	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	--
BOD	mg/L	9.2	10 (1)	8.2	11	12	15	25	16	18	10	25	66	--
Iron (ferrous)	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.92	2.80	--
Nitrate + Nitrite	mg/L	25	15	14	8.8	4.1	5.2	5.4	23	0.40	18	52	38	--
Nitrite (N)	mg/L	5.3	1.1	0.60	0.34	0.72	0.53	2.6	13	0.23	0.67	0.41	0.20	--
pH	pH	8.28	8.12	8.22	8.15	7.98	8.04	8.42	8.65	8.41	8.25	8.10	8.02	5.5 - 9.0
Total Phosphorus (P)	mg/L	0.21	0.29	0.34	0.37	0.24	0.37	0.62	0.48	0.41	0.22	0.90	1.0	--
Total Suspended Solids	mg/L	14	21	11	14	8.4	24	30	18	4.0	3.5	60	100	30
Total Kjeldahl Nitrogen	mg/L	72	110	130	130 (2)	91	81	110	11	5.3	5.0	80	120	--
Total Iron (Fe)	ug/L	910	510	1900	820	400	1300	1300	610	540	91	2600	3000	10000

Table 5-U: 2019 Summary of General Chemistry and Metal Analytical Results in Lift Station

		Lift Station												Provincial ¹ Environmental Sewage Control Regulations, 2003 - Schedule A	
		2019-01-15	2019-02-19	2019-03-12	2019-04-22	2019-05-14	2019-06-18	2019-07-09	2019-08-07	2019-09-17	2019-10-16	11/19/2019	2019-12-17		
		Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical		
Calculated Parameters	Units														
Iron (ferric)	mg/L	ND	0.71	2.2	ND	0.64	ND	ND	ND	ND	ND	ND	-	--	
Nitrate (N)	mg/L	15	6.0	1.2	3.2	0.79	6.5	19	1.7	9.6	13	5.1	-	10	
Inorganics															
Carbonaceous BOD	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	--	
BOD	mg/L	29	32	32 (1)	20	8.8	23	14	18	14	15	11	-	--	
Iron (ferrous)	mg/L	2.5	2.2	4.1	1.7	ND	0.6	ND	ND	ND	ND	ND	-	--	
Nitrate + Nitrite	mg/L	15	6.1	1.4	4.0 (1)	1.5	13	21	3.8	9.7	13	5.2	-	--	
Nitrite (N)	mg/L	0.13	0.13	0.20	0.78	0.67	6.9	2.0 (1)	2.1	0.14	0.39	0.020	-	--	
pH	pH	8.18	7.95	8.10	7.92	8.53	8.74	8.64	8.41	8.99	8.62	8.75	-	5.5 - 9.0	
Total Phosphorus (P)	mg/L	0.79	0.56	0.87	0.47	0.65	0.41	0.30	0.27	0.31	0.26	0.41	-	--	
Total Suspended Solids	mg/L	34	14	38	16	12	58	39	5.0	6.8	8.0	27	-	30	
Total Kjeldahl Nitrogen	mg/L	180	150	180	160	170	54	22	31	6.7	10	7.1	-	--	
Total Iron (Fe)	ug/L	1900	2900	6300	2200	1200	280	170	410	ND	ND	160	-	10000	

Table Notes

¹ NL Environmental Control Water and Sewage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations)

ND - Not Detected

Bold & Grey Shaded - exceeds applicable guideline

Grey Text - Historical Data (Not

-- = Not Available

(1) BOD analysis was performed on previously frozen sample aliquot.

(2) Elevated RDL due to poor blank performance.

Table 5-V: Historical Summary of General Chemistry and Metal Analytical Results for ABYDOZ

		ABYDOZ		Provincial ¹ Environmental Control Water and Sewage Regulations, Schedule A, 2003
		2014-11-05	02/03/2015	
		Historical	Historical	
Calculated Parameters	Units			
Iron (ferric)	mg/L	2.6	13	--
Nitrate (N)	mg/L	0.9	ND	10
Inorganics				
Carbonaceous BOD	mg/L	5.6	82	--
Iron (ferrous)	mg/L	0.85	4.4	--
Nitrate + Nitrite	mg/L	0.94	ND	--
Nitrite (N)	mg/L	0.044	ND	--
pH	pH	7.96	7.74	5.5 - 9.0
Total Phosphorus (P)	mg/L	0.2	0.71	--
Total Suspended Solids	mg/L	7	52	30
Total Kjeldahl Nitrogen	mg/L	60	180	--
Total Iron (Fe)	ug/L	--	18000	10000

² NL Environmental Control Water and Sewage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations)

ND - Not Detected

Bold & Grey Shaded - exceeds applicable guideline

Grey Text - Historical Data

-- = Not Available

Table 5-W: 2014-2015 Historical Summary of General Chemistry and Metal Analytical Results in Effluent from Lagoon

		Effluent from Lagoon																				Provincial ¹ Environmental Sewage Control Regulations, 2003 - Schedule A	
		2014-01-13	2014-02-25	2014-03-21	2014-04-29	2014-05-26	2014-07-11	2014-08-14	2014-09-15	2014-11-05	2015-01-06	2015-04-08	2015-05-05	2015-06-08	2015-07-07	2015-07-29	2015-07-29	2015-09-29	2015-11-09	2015-12-01	02/03/2015		
Calculated Parameters	Units	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical
Iron (ferric)	mg/L	--	--	--	--	--	--	--	--	2.2	--	16	12.0	3.2	1.9	1.9	--	1.3	0.61	0.8	12	21	--
Nitrate (N)	mg/L	ND	ND	ND	ND	ND	ND	0.066	ND	0.059	0.057	ND	ND	ND	0.29	24.00	56	62	67	73	ND	ND	10
Inorganics																							
Carbonaceous BOD	mg/L	3300	2500	2100	580	510	160	ND	ND	30.0	160	210	200	74	11	26	6.3	14	7.7	31	190	460	--
Iron (ferrous)	mg/L	--	--	--	--	--	--	--	--	ND	--	5.7	6.3	3.2	ND	ND	--	0.7	ND	ND	17.0	6.9	--
Nitrate + Nitrite	mg/L	ND	ND	ND	ND	ND	ND	0.09	3.7	0.89	0.057	ND	ND	ND	2.20	44.0	56.00	73.00	82	91	ND	ND	--
Nitrite (N)	mg/L	ND	ND	ND	ND	ND	ND	0.020	3.50	0.83	ND	ND	ND	ND	1.90	20.0	0.056	11.00	15.0	17	ND	ND	--
pH	pH	7.41	7.47	7.38	7.46	7.56	7.69	8.22	8.32	8.37	7.76	7.91	7.95	7.89	8.26	8.16	8.27	8.54	8.60	8.34	7.78	7.83	5.5 - 9.0
Total Phosphorus (P)	mg/L	2.0	2.7	6.9	1.8	2	5.10	1.60	0.76	0.65	0.88	0.87	1.1	1.10	0.84	0.60	0.17	0.22	4.6	0.33	2.40	1.4	--
Total Suspended Solids	mg/L	280	270	640	180	300	1300	52	40	79	120	130	160	74	60	98	11	25	25	32	520	180	30
Total Kjeldahl Nitrogen	mg/L	370	330	360	200	190	170	180	180	150	200	310	300	620	270	150	81	--	52	81	270	330	--
Total Iron (Fe)	ua/l	--	--	--	--	--	--	--	--	--	--	21000	19000	6400	1800	1900	--	410	610	840	29000	28000	10000

Table 5-X: 2016 Historical Summary of General Chemistry and Metal Analytical Results in Effluent from Lagoon

Sample ID: Sample Date:		Effluent from Lagoon												Provincial ¹ Environmental Sewage Control Regulations, 2003 - Schedule A	
		2016-01-11	2016-02-08	2016-03-08	2016-04-05	2016-05-03	2016-06-07	2016-07-04	2016-08-09	2016-09-06	2016-10-04	2016-11-02	2016-12-07		
		Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical		
Calculated Parameters	Units														
Iron (ferric)	mg/L	16	2.2	3.6	3.5	4.9	0.78	0.97	1.3	2.2	0.87	ND	2.1	--	
Nitrate (N)	mg/L	49	32	6.5	3.2	1.0	0.22	0.19	13	20	13	ND	ND	10	
Inorganics															
Carbonaceous BOD	mg/L	43	29	160	110	33	10	12	11	23.0	18	460	140	--	
Iron (ferrous)	mg/L	1.5	ND	1.1	1.7	1	ND	ND	ND	ND	ND	5.2	5.7	--	
Nitrate + Nitrite	mg/L	68	74	24	11	2.6	0.56	1.10	15.0	45.00	37	ND	ND	--	
Nitrite (N)	mg/L	20	43	18	7.3	1.6	0.34	0.910	1.30	25.00	24	ND	ND	--	
pH	pH	8.25	8.34	8.25	8.32	8.23	8.50	8.57	8.33	8.74	8.52	7.98	8.08	5.5 - 9.0	
Total Phosphorus (P)	mg/L	1.60	0.51	0.7	0.6	1	0.47	0.58	0.28	0.29	0.33	0.52	0.7	--	
Total Suspended Solids	mg/L	150	38	29	33	51	22	57	51	160	38	170	170	30	
Total Kjeldahl Nitrogen	mg/L	140(1)	160	230	220	200	180	130	85	46	50	160	170	--	
Total Iron (Fe)	ug/L	17000	2200	4700	5200	5900	780	970	1300	2200	870	5400	7800	10000	

Table Notes

1 NL Environmental Control Water and Sewage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations)

ND - Not Detected

Bold & Grey Shaded - exceeds applicable guideline

Grey Text - Historical Data (Not compared to guidelines, for informational purposes only).

-- = Not Available

Table 5-Y: 2017 Historical Summary of General Chemistry and Metal Analytical Results in Effluent from Lagoons

		Effluent From Lagoons												Provincial ¹ Environmental Sewage Control Regulations, 2003 - Schedule A
		2017-01-09	2017-02-06	2017-03-01	2017-04-18	2017-05-08	2017-06-05	2017-07-04	2017-08-08	2017-09-05	2017-10-03	2017-11-08	2017-12-07	
		Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	
Calculated Parameters	Units													
Iron (ferric)	mg/L	9.5	11	10	7.5	5.2	4.3	0.74	0.77	--	ND	ND	ND	--
Nitrate (N)	mg/L	ND	0.051	ND	ND	ND	0.055	2.4	3.8	--	6.1	12	15	10
Inorganics														
Carbonaceous BOD	mg/L	120	50	53	250	41	30	8.8	11	--	--	--	--	--
BOD	mg/L	--	--	--	--	--	--	--	--	--	ND	15	ND	--
Iron (ferrous)	mg/L	5.7	5.4	6.3	5.7	4.5	2.2	ND	ND	--	ND	ND	ND	--
Nitrate + Nitrite	mg/L	ND	0.051	ND	ND	ND	0.071	3.7	10	--	21	24	24	--
Nitrite (N)	mg/L	ND	ND	0.010	ND	ND	0.017	1.3	6.4	--	15	12	9.6	--
pH	pH	8.19	8.03	8.15	7.93	8.07	8.25	8.32	8.31	--	8.47	8.33	8.48	5.5 - 9.0
Total Phosphorus (P)	mg/L	0.98	1.5	1.3	0.65	0.90	0.58	0.41	0.50	--	0.31	0.22	0.21	--
Total Suspended Solids	mg/L	200	120	160	76	110	88	11	29	--	30	18	12	30
Total Kjeldahl Nitrogen	mg/L	240	250	260	190	160	140	100	58	--	37	35	50	--
Total Iron (Fe)	ug/L	15000	16000	16000	13000	9700	6500	730	770	610	ND	460	250	10000

Table 5-Z: 2018 Historical Summary of General Chemistry and Metal Analytical Results in Effluent from Lagoons

		Effluent From Lagoons												Provincial ¹ Environmental Sewage Control Regulations, 2003 - Schedule A
		2018-01-15	2018-02-12	2018-03-07	2018-04-03	2018-05-08	6/5/2018	2018-07-04	2018-08-14	2018-09-10	2018-10-15	2018-11-18	2018-12-03	
		Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	
Calculated Parameters	Units													
Iron (ferric)	mg/L	ND	1.3	ND	0.99	0.58	ND	1.3	0.60	ND	ND	1.7	ND	--
Nitrate (N)	mg/L	21	15	14	9.8	3.7	3.1	2.1	10	34	60	52	40	10.00
Inorganics														
Carbonaceous BOD	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	--
BOD	mg/L	ND	9.3 (1)	10	26	15	19	43	16	24	9.4	19.00	78	--
Iron (ferrous)	mg/L	ND	ND	20	ND	ND	ND	ND	ND	ND	ND	0.83	3.1	--
Nitrate + Nitrite	mg/L	28	18	15	10	4.6	4.4	4.1	23	35	62	52	40	--
Nitrite (N)	mg/L	6.7	2.3	0.67	0.50	0.90	1.2	2.0	13	1.5	2.9	0.41	0.18	--
pH	pH	8.48	8.26	8.35	8.34	8.20	8.38	8.53	8.63	8.42	8.38	8.04	8.03	5.5 - 9.0
Total Phosphorus (P)	mg/L	0.23	0.35	0.39	0.50	0.37	0.54	0.70	0.46	0.66	0.31	0.89	1.2	--
Total Suspended Solids	mg/L	11	25	17	16	9.0	32	37	18	9.5	8.5	64	94	30.00
Total Kjeldahl Nitrogen	mg/L	80	130	140	160 (2)	130	130	120	10	7.8	10	80	120	--
Total Iron (Fe)	ug/L	500	1300	800	990	580	ND (3)	1300	600	370	230	2500	3300	10000

Table 5-AA: 2019 Summary of General Chemistry and Metal Analytical Results in Effluent from Lagoons

		Effluent From Lagoons												Provincial ¹ Environmental Sewage Control Regulations, 2003 - Schedule A
		2019-01-15	2019-02-19	2019-03-12	2019-04-22	2019-05-14	2019-06-18	2019-07-09	2019-08-07	2019-09-17	2019-10-16	2019-11-19	2019-12-17	
		Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	Historical	
Calculated Parameters	Units													
Iron (ferric)	mg/L	ND	8.3	0.6	7.5	0.72	ND	ND	0.65	ND	ND	ND	-	--
Nitrate (N)	mg/L	14	1.2	2.0	1.2	0.53	8.7	18	11	11	6.9	10	-	10.00
Inorganics														
Carbonaceous BOD	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	--
BOD	mg/L	38	80	34 (1)	25	11	23	9.0	18	16	9.6	12	-	--
Iron (ferrous)	mg/L	2.7	7.0	4.1	6.2	0.6	0.6	ND	ND	ND	ND	0.60	-	--
Nitrate + Nitrite	mg/L	14	1.6	2.2	2.0	1.4	18	20	19	11	7.0	10	-	--
Nitrite (N)	mg/L	0.024	0.38	0.20	0.72	0.82	9.5	2.0	8.0	0.19	0.091	0.054	-	--
pH	pH	8.23	8.28	8.55	8.37	8.55	8.73	8.58	8.47	9.06	8.73	8.63	-	5.5 - 9.0
Total Phosphorus (P)	mg/L	0.96	3.6	0.97	0.95	0.79	0.55	0.30	0.76	0.36	0.31	0.42	-	--
Total Suspended Solids	mg/L	38	520	31	35	11	110	29	9.5	11	8.0	31	-	30.00
Total Kjeldahl Nitrogen	mg/L	200	240	250	160	190	74	23	11	8.1	7.5	18	-	--
Total Iron (Fe)	ug/L	2,400.0	15,000.0	4,700.0	4,600.0	1,300.0	330.0	160	410.0	ND	ND	420	-	10000

Table Notes

¹ NL Environmental Control Water and Sewage Regulations, Schedule A, 2003 (Maximum Allowable Concentrations)

ND - Not Detected

Bold & Grey Shaded - exceeds applicable guideline

Grey Text - Historical Data (Not compared to guidelines, for informational purposes only).

-- = Not Available

(1) BOD analysis was performed on previously frozen sample aliquot.

(2) Elevated reporting limit due to blank performance.

(3) Elevated reporting limit due to sample matrix.

Appendix B - Laboratory Certificate 2024



eNGLOBE



Your Project #: Monitoring Well Samples
Site#: 00012
Your C.O.C. #: C#988006-01-01

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2024/06/11
Report #: R8186548
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4G3197

Received: 2024/05/31, 09:17

Sample Matrix: Water
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Carbonate, Bicarbonate and Hydroxide	5	N/A	2024/06/11	N/A	SM 24 4500-CO2 D
Alkalinity	5	N/A	2024/06/10	ATL SOP 00142	SM 24 2320 B
Chloride	5	N/A	2024/06/10	ATL SOP 00014	SM 24 4500-Cl- E m
Colour	5	N/A	2024/06/10	ATL SOP 00020	SM 24 2120C m
Organic carbon - Diss (DOC) (2)	5	N/A	2024/06/10	ATL SOP 00203	SM 24 5310B m
Conductance - water	5	N/A	2024/06/10	ATL SOP 00004	SM 24 2510B m
Hardness (calculated as CaCO3)	2	N/A	2024/06/10	ATL SOP 00048	Auto Calc
Hardness (calculated as CaCO3)	3	N/A	2024/06/07	ATL SOP 00048	Auto Calc
Mercury - Total (CVAA,LL)	5	2024/06/06	2024/06/07	ATL SOP 00026	EPA 245.1 R3 m
Metals Water Diss. MS (3)	5	N/A	2024/06/07	ATL SOP 00058	EPA 6020B R2 m
Ion Balance (% Difference)	5	N/A	2024/06/11	N/A	Auto Calc.
Anion and Cation Sum	5	N/A	2024/06/11	N/A	Auto Calc.
Nitrogen Ammonia - water	5	N/A	2024/06/05	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	5	N/A	2024/06/10	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite	5	N/A	2024/06/10	ATL SOP 00017	SM 24 4500-NO2- B m
Nitrogen - Nitrate (as N)	5	N/A	2024/06/10	ATL SOP 00018	ASTM D3867-16
Phenols (4AAP) (1)	5	N/A	2024/06/06	CAM SOP-00444	OMOE E3179 m
pH (4)	5	N/A	2024/06/10	ATL SOP 00003	SM 24 4500-H+ B m
Phosphorus - ortho	5	N/A	2024/06/10	ATL SOP 00021	SM 24 4500-P E m
Sat. pH and Langelier Index (@ 20C)	5	N/A	2024/06/11	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 4C)	5	N/A	2024/06/11	ATL SOP 00049	Auto Calc.
Reactive Silica	5	N/A	2024/06/10	ATL SOP 00022	EPA 366.0 m
Sulphate	5	N/A	2024/06/10	ATL SOP 00023	ASTM D516-16 m
Sulphide (1)	5	N/A	2024/06/04	CAM SOP-00455	SM 24 4500-S G m
Total Dissolved Solids (TDS calc)	5	N/A	2024/06/11	N/A	Auto Calc.
Organic carbon - Total (TOC) (2)	1	N/A	2024/06/06	ATL SOP 00203	SM 24 5310B m
Organic carbon - Total (TOC) (2)	4	N/A	2024/06/07	ATL SOP 00203	SM 24 5310B m
Total Suspended Solids	5	2024/06/05	2024/06/07	ATL SOP 00007	SM 24 2540D m
Turbidity	5	N/A	2024/06/11	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



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Received: 2024/05/31, 09:17

Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, EPA, APHA or the Quebec Ministry of Environment.

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.

(1) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd, Mississauga, ON, L5N 2L8

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

(3) Sample filtered in laboratory prior to analysis for dissolved metals.

(4) 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.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:

Preeti Kapadia, Project Manager

Email: Preeti.Kapadia@bureauveritas.com

Phone# (902)420-0203 Ext:252

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

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 #: C4G3197

Report Date: 2024/06/11

Central Newfoundland Waste Management Authority

Client Project #: Monitoring Well Samples

ATL. RCAP-MS DISSOLVED (LABFILT) IN W

Bureau Veritas ID		ZHW174		ZHW175			ZHW176		
Sampling Date		2024/05/29 10:00		2024/05/29 10:15			2024/05/29 10:25		
COC Number		C#988006-01-01		C#988006-01-01			C#988006-01-01		
Sample #		00300		00301			00302		
	UNITS	MW-H	RDL	MW-I	RDL	QC Batch	MW-J	RDL	QC Batch

Calculated Parameters									
Anion Sum	me/L	0.480	N/A	2.77	N/A	9425660	10.1	N/A	9425660
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	12	1.0	78	1.0	9425655	120	1.0	9425655
Calculated TDS	mg/L	37	1.0	150	1.0	9425665	680	1.0	9425665
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ND	1.0	ND	1.0	9425655	ND	1.0	9425655
Cation Sum	me/L	0.500	N/A	2.76	N/A	9425660	10.9	N/A	9425660
Hardness (CaCO ₃)	mg/L	15	1.0	87	1.0	9425657	160	1.0	9425657
Ion Balance (% Difference)	%	2.04	N/A	0.180	N/A	9425658	3.87	N/A	9425658
Langelier Index (@ 20C)	N/A	-2.57		-0.470		9425663	-0.134		9425663
Langelier Index (@ 4C)	N/A	-2.82		-0.721		9425664	-0.381		9425664
Nitrate (N)	mg/L	1.3	0.050	0.092	0.050	9425661	45	2.5	9425661
Saturation pH (@ 20C)	N/A	9.65		8.21		9425663	8.06		9425663
Saturation pH (@ 4C)	N/A	9.90		8.46		9425664	8.31		9425664

Inorganics									
Total Alkalinity (Total as CaCO ₃)	mg/L	12	2.0	78	2.0	9444065	120	2.0	9444065
Dissolved Chloride (Cl ⁻)	mg/L	5.1	1.0	39	1.0	9444008	150	5.0	9444008
Colour	TCU	12	5.0	14	5.0	9444013	70	25	9444013
Nitrate + Nitrite (N)	mg/L	1.3	0.050	0.092	0.050	9444016	45	2.5	9444016
Nitrite (N)	mg/L	ND	0.010	ND	0.010	9444017	0.15	0.010	9444017
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.050	0.11	0.050	9431978	11	0.50	9432001
Total Organic Carbon (C)	mg/L	0.51	0.50	ND (1)	5.0	9440138	25 (1)	5.0	9437845
Orthophosphate (P)	mg/L	ND	0.010	ND	0.010	9444015	ND	0.010	9444015
pH	pH	7.08		7.74		9444059	7.93		9444059
Reactive Silica (SiO ₂)	mg/L	9.1	0.50	6.3	0.50	9444012	3.7	0.50	9444012
Dissolved Sulphate (SO ₄)	mg/L	ND	2.0	5.1	2.0	9444011	8.4	2.0	9444011
Turbidity	NTU	57	0.10	140	1.0	9446435	32	0.10	9446455
Conductivity	uS/cm	63	1.0	310	1.0	9444062	1200	1.0	9444062

Metals									
Dissolved Aluminum (Al)	ug/L	ND	5.0	9.2	5.0	9440453	49	5.0	9440453
Dissolved Antimony (Sb)	ug/L	ND	1.0	ND	1.0	9440453	ND	1.0	9440453
Dissolved Arsenic (As)	ug/L	ND	1.0	ND	1.0	9440453	ND	1.0	9440453
Dissolved Barium (Ba)	ug/L	6.4	1.0	12	1.0	9440453	31	1.0	9440453
Dissolved Beryllium (Be)	ug/L	ND	0.10	ND	0.10	9440453	ND	0.10	9440453

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

(1) Elevated reporting limit due to turbidity.



BUREAU
VERITAS

Bureau Veritas Job #: C4G3197
Report Date: 2024/06/11

Central Newfoundland Waste Management Authority
Client Project #: Monitoring Well Samples

ATL. RCAP-MS DISSOLVED (LABFILT) IN W

Bureau Veritas ID		ZHW174		ZHW175			ZHW176		
Sampling Date		2024/05/29 10:00		2024/05/29 10:15			2024/05/29 10:25		
COC Number		C#988006-01-01		C#988006-01-01			C#988006-01-01		
Sample #		00300		00301			00302		
	UNITS	MW-H	RDL	MW-I	RDL	QC Batch	MW-J	RDL	QC Batch
Dissolved Bismuth (Bi)	ug/L	ND	2.0	ND	2.0	9440453	ND	2.0	9440453
Dissolved Boron (B)	ug/L	ND	50	ND	50	9440453	570	50	9440453
Dissolved Cadmium (Cd)	ug/L	ND	0.010	ND	0.010	9440453	0.20	0.010	9440453
Dissolved Calcium (Ca)	ug/L	3700	100	18000	100	9440453	23000	100	9440453
Dissolved Chromium (Cr)	ug/L	ND	1.0	ND	1.0	9440453	2.8	1.0	9440453
Dissolved Cobalt (Co)	ug/L	ND	0.40	ND	0.40	9440453	1.8	0.40	9440453
Dissolved Copper (Cu)	ug/L	ND	0.50	1.7	0.50	9440453	6.6	0.50	9440453
Dissolved Iron (Fe)	ug/L	ND	50	ND	50	9440453	ND	50	9440453
Dissolved Lead (Pb)	ug/L	ND	0.50	ND	0.50	9440453	ND	0.50	9440453
Dissolved Magnesium (Mg)	ug/L	1500	100	9800	100	9440453	24000	100	9440453
Dissolved Manganese (Mn)	ug/L	2.8	2.0	ND	2.0	9440453	63	2.0	9440453
Dissolved Molybdenum (Mo)	ug/L	ND	2.0	ND	2.0	9440453	ND	2.0	9440453
Dissolved Nickel (Ni)	ug/L	ND	2.0	ND	2.0	9440453	13	2.0	9440453
Dissolved Phosphorus (P)	ug/L	ND	100	ND	100	9440453	ND	100	9440453
Dissolved Potassium (K)	ug/L	280	100	1500	100	9440453	49000	100	9440453
Dissolved Selenium (Se)	ug/L	ND	0.50	ND	0.50	9440453	ND	0.50	9440453
Dissolved Silver (Ag)	ug/L	ND	0.10	ND	0.10	9440453	ND	0.10	9440453
Dissolved Sodium (Na)	ug/L	4300	100	23000	100	9440453	130000	100	9440453
Dissolved Strontium (Sr)	ug/L	14	2.0	110	2.0	9440453	120	2.0	9440453
Dissolved Thallium (Tl)	ug/L	ND	0.10	ND	0.10	9440453	ND	0.10	9440453
Dissolved Tin (Sn)	ug/L	ND	2.0	ND	2.0	9440453	ND	2.0	9440453
Dissolved Titanium (Ti)	ug/L	ND	2.0	ND	2.0	9440453	ND	2.0	9440453
Dissolved Uranium (U)	ug/L	ND	0.10	0.54	0.10	9440453	0.18	0.10	9440453
Dissolved Vanadium (V)	ug/L	ND	2.0	ND	2.0	9440453	ND	2.0	9440453
Dissolved Zinc (Zn)	ug/L	ND	5.0	ND	5.0	9440453	15	5.0	9440453

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.



ATL. RCAP-MS DISSOLVED (LABFILT) IN W

Bureau Veritas ID		ZHW177		ZHW178		
Sampling Date		2024/05/29 10:35		2024/05/29 10:45		
COC Number		C#988006-01-01		C#988006-01-01		
Sample #		00304		00305		
	UNITS	MW-K	QC Batch	MW-L	RDL	QC Batch
Calculated Parameters						
Anion Sum	me/L	1.86	9425660	0.730	N/A	9425660
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	80	9425655	10	1.0	9425655
Calculated TDS	mg/L	110	9425665	56	1.0	9425665
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ND	9425655	ND	1.0	9425655
Cation Sum	me/L	1.96	9425660	0.730	N/A	9425660
Hardness (CaCO ₃)	mg/L	77	9425657	29	1.0	9425657
Ion Balance (% Difference)	%	2.62	9425658	0.00	N/A	9425658
Langelier Index (@ 20C)	N/A	-0.0710	9425663	-2.59		9425663
Langelier Index (@ 4C)	N/A	-0.322	9425664	-2.84		9425664
Nitrate (N)	mg/L	0.20	9425661	0.19	0.050	9425899
Saturation pH (@ 20C)	N/A	8.13	9425663	9.38		9425663
Saturation pH (@ 4C)	N/A	8.38	9425664	9.63		9425664
Inorganics						
Total Alkalinity (Total as CaCO ₃)	mg/L	81	9444057	10	2.0	9444057
Dissolved Chloride (Cl ⁻)	mg/L	5.1	9444008	4.7	1.0	9444018
Colour	TCU	ND	9444013	43	5.0	9444022
Nitrate + Nitrite (N)	mg/L	0.20	9444016	0.19	0.050	9444024
Nitrite (N)	mg/L	ND	9444017	ND	0.010	9444026
Nitrogen (Ammonia Nitrogen)	mg/L	ND	9432001	ND	0.050	9432001
Total Organic Carbon (C)	mg/L	1.7	9440369	6.0	0.50	9440138
Orthophosphate (P)	mg/L	ND	9444015	ND	0.010	9444023
pH	pH	8.06	9444055	6.80		9444055
Reactive Silica (SiO ₂)	mg/L	17	9444012	12	0.50	9444021
Dissolved Sulphate (SO ₄)	mg/L	3.9	9444011	18	2.0	9444020
Turbidity	NTU	25	9446435	2.3	0.10	9446435
Conductivity	uS/cm	210	9444056	94	1.0	9444056
Metals						
Dissolved Aluminum (Al)	ug/L	5.3	9440453	140	5.0	9440453
Dissolved Antimony (Sb)	ug/L	ND	9440453	ND	1.0	9440453
Dissolved Arsenic (As)	ug/L	4.1	9440453	ND	1.0	9440453
Dissolved Barium (Ba)	ug/L	41	9440453	9.6	1.0	9440453
Dissolved Beryllium (Be)	ug/L	ND	9440453	ND	0.10	9440453
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						
N/A = Not Applicable						
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.						

ATL. RCAP-MS DISSOLVED (LABFILT) IN W

Bureau Veritas ID		ZHW177		ZHW178		
Sampling Date		2024/05/29 10:35		2024/05/29 10:45		
COC Number		C#988006-01-01		C#988006-01-01		
Sample #		00304		00305		
	UNITS	MW-K	QC Batch	MW-L	RDL	QC Batch
Dissolved Bismuth (Bi)	ug/L	ND	9440453	ND	2.0	9440453
Dissolved Boron (B)	ug/L	ND	9440453	ND	50	9440453
Dissolved Cadmium (Cd)	ug/L	ND	9440453	0.056	0.010	9440453
Dissolved Calcium (Ca)	ug/L	21000	9440453	8100	100	9440453
Dissolved Chromium (Cr)	ug/L	ND	9440453	ND	1.0	9440453
Dissolved Cobalt (Co)	ug/L	ND	9440453	0.88	0.40	9440453
Dissolved Copper (Cu)	ug/L	1.2	9440453	0.75	0.50	9440453
Dissolved Iron (Fe)	ug/L	ND	9440453	180	50	9440453
Dissolved Lead (Pb)	ug/L	ND	9440453	ND	0.50	9440453
Dissolved Magnesium (Mg)	ug/L	6000	9440453	2100	100	9440453
Dissolved Manganese (Mn)	ug/L	4.6	9440453	190	2.0	9440453
Dissolved Molybdenum (Mo)	ug/L	ND	9440453	ND	2.0	9440453
Dissolved Nickel (Ni)	ug/L	ND	9440453	11	2.0	9440453
Dissolved Phosphorus (P)	ug/L	ND	9440453	ND	100	9440453
Dissolved Potassium (K)	ug/L	1600	9440453	140	100	9440453
Dissolved Selenium (Se)	ug/L	ND	9440453	ND	0.50	9440453
Dissolved Silver (Ag)	ug/L	ND	9440453	ND	0.10	9440453
Dissolved Sodium (Na)	ug/L	8700	9440453	3100	100	9440453
Dissolved Strontium (Sr)	ug/L	290	9440453	43	2.0	9440453
Dissolved Thallium (Tl)	ug/L	ND	9440453	ND	0.10	9440453
Dissolved Tin (Sn)	ug/L	ND	9440453	ND	2.0	9440453
Dissolved Titanium (Ti)	ug/L	ND	9440453	ND	2.0	9440453
Dissolved Uranium (U)	ug/L	0.34	9440453	0.15	0.10	9440453
Dissolved Vanadium (V)	ug/L	ND	9440453	ND	2.0	9440453
Dissolved Zinc (Zn)	ug/L	8.3	9440453	37	5.0	9440453
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.						



RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		ZHW174		ZHW175			ZHW176		
Sampling Date		2024/05/29 10:00		2024/05/29 10:15			2024/05/29 10:25		
COC Number		C#988006-01-01		C#988006-01-01			C#988006-01-01		
Sample #		00300		00301			00302		
	UNITS	MW-H	RDL	MW-I	RDL	QC Batch	MW-J	RDL	QC Batch

Inorganics									
Dissolved Organic Carbon (C)	mg/L	ND	0.50	4.5	0.50	9444111	23	5.0	9444096
Phenols-4AAP	mg/L	ND	0.0010	ND	0.0010	9438332	ND	0.0010	9438332
Total Suspended Solids	mg/L	8.0	2.5	17	5.0	9435038	17	2.0	9435038
Sulphide	mg/L	ND	0.020	ND	0.020	9432820	ND	0.020	9432810

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas ID		ZHW177			ZHW178		
Sampling Date		2024/05/29 10:35			2024/05/29 10:45		
COC Number		C#988006-01-01			C#988006-01-01		
Sample #		00304			00305		
	UNITS	MW-K	RDL	QC Batch	MW-L	RDL	QC Batch

Inorganics							
Dissolved Organic Carbon (C)	mg/L	1.3	0.50	9444096	5.4	0.50	9444111
Phenols-4AAP	mg/L	ND	0.0010	9438332	ND	0.0010	9438332
Total Suspended Solids	mg/L	9.6	1.0	9435038	2.4	2.0	9435038
Sulphide	mg/L	ND	0.020	9432820	ND	0.020	9432820

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.



MERCURY BY COLD VAPOUR AA (WATER)

Bureau Veritas ID		ZHW174	ZHW175	ZHW176	ZHW177	ZHW178		
Sampling Date		2024/05/29 10:00	2024/05/29 10:15	2024/05/29 10:25	2024/05/29 10:35	2024/05/29 10:45		
COC Number		C#988006-01-01	C#988006-01-01	C#988006-01-01	C#988006-01-01	C#988006-01-01		
Sample #		00300	00301	00302	00304	00305		
	UNITS	MW-H	MW-I	MW-J	MW-K	MW-L	RDL	QC Batch
Metals								
Total Mercury (Hg)	ug/L	ND	0.015	ND	ND	ND	0.013	9437538
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.								



GENERAL COMMENTS

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

Package 1	15.2°C
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Average temperature upon receipt >10°C.

Results relate only to the items tested.



BUREAU
VERITAS

Bureau Veritas Job #: C4G3197

Report Date: 2024/06/11

Central Newfoundland Waste Management Authority

Client Project #: Monitoring Well Samples

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9431978	EMT	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2024/06/05		90	%	80 - 120
9431978	EMT	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2024/06/05		83	%	80 - 120
9431978	EMT	Method Blank	Nitrogen (Ammonia Nitrogen)	2024/06/05	ND, RDL=0.050		mg/L	
9431978	EMT	RPD	Nitrogen (Ammonia Nitrogen)	2024/06/05	NC		%	20
9432001	EMT	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2024/06/05		95	%	80 - 120
9432001	EMT	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2024/06/05		97	%	80 - 120
9432001	EMT	Method Blank	Nitrogen (Ammonia Nitrogen)	2024/06/05	ND, RDL=0.050		mg/L	
9432001	EMT	RPD	Nitrogen (Ammonia Nitrogen)	2024/06/05	3.3		%	20
9432810	TAK	Matrix Spike	Sulphide	2024/06/04		88	%	80 - 120
9432810	TAK	Spiked Blank	Sulphide	2024/06/04		88	%	80 - 120
9432810	TAK	Method Blank	Sulphide	2024/06/04	ND, RDL=0.020		mg/L	
9432810	TAK	RPD	Sulphide	2024/06/04	NC		%	20
9432820	TAK	Matrix Spike [ZHW177-04]	Sulphide	2024/06/04		91	%	80 - 120
9432820	TAK	Spiked Blank	Sulphide	2024/06/04		91	%	80 - 120
9432820	TAK	Method Blank	Sulphide	2024/06/04	ND, RDL=0.020		mg/L	
9432820	TAK	RPD [ZHW177-04]	Sulphide	2024/06/04	NC		%	20
9435038	DME	QC Standard	Total Suspended Solids	2024/06/07		99	%	80 - 120
9435038	DME	Method Blank	Total Suspended Solids	2024/06/07	ND, RDL=1.0		mg/L	
9435038	DME	RPD [ZHW178-01]	Total Suspended Solids	2024/06/07	15		%	20
9437538	SPY	Matrix Spike [ZHW174-06]	Total Mercury (Hg)	2024/06/07		104	%	80 - 120
9437538	SPY	Spiked Blank	Total Mercury (Hg)	2024/06/07		88	%	80 - 120
9437538	SPY	Method Blank	Total Mercury (Hg)	2024/06/07	ND, RDL=0.013		ug/L	
9437538	SPY	RPD	Total Mercury (Hg)	2024/06/07	NC		%	20
9437845	MKY	Matrix Spike	Total Organic Carbon (C)	2024/06/06		99	%	85 - 115
9437845	MKY	Spiked Blank	Total Organic Carbon (C)	2024/06/06		100	%	80 - 120
9437845	MKY	Method Blank	Total Organic Carbon (C)	2024/06/06	ND, RDL=0.50		mg/L	
9437845	MKY	RPD	Total Organic Carbon (C)	2024/06/06	3.3		%	15
9438332	CPO	Matrix Spike [ZHW174-05]	Phenols-4AAP	2024/06/06		107	%	80 - 120
9438332	CPO	Spiked Blank	Phenols-4AAP	2024/06/06		103	%	80 - 120
9438332	CPO	Method Blank	Phenols-4AAP	2024/06/06	ND, RDL=0.0010		mg/L	
9438332	CPO	RPD [ZHW174-05]	Phenols-4AAP	2024/06/06	NC		%	20
9440138	MKY	Matrix Spike	Total Organic Carbon (C)	2024/06/07		105	%	85 - 115
9440138	MKY	Spiked Blank	Total Organic Carbon (C)	2024/06/07		99	%	80 - 120
9440138	MKY	Method Blank	Total Organic Carbon (C)	2024/06/07	ND, RDL=0.50		mg/L	
9440138	MKY	RPD	Total Organic Carbon (C)	2024/06/07	NC		%	15
9440369	MKY	Matrix Spike	Total Organic Carbon (C)	2024/06/07		99	%	85 - 115
9440369	MKY	Spiked Blank	Total Organic Carbon (C)	2024/06/07		98	%	80 - 120
9440369	MKY	Method Blank	Total Organic Carbon (C)	2024/06/07	ND, RDL=0.50		mg/L	
9440369	MKY	RPD	Total Organic Carbon (C)	2024/06/07	1.4		%	15
9440453	MTZ	Matrix Spike	Dissolved Aluminum (Al)	2024/06/07		109	%	80 - 120
			Dissolved Antimony (Sb)	2024/06/07		102	%	80 - 120
			Dissolved Arsenic (As)	2024/06/07		112	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9440453	MTZ	Spiked Blank	Dissolved Barium (Ba)	2024/06/07		NC	%	80 - 120
			Dissolved Beryllium (Be)	2024/06/07		109	%	80 - 120
			Dissolved Bismuth (Bi)	2024/06/07		93	%	80 - 120
			Dissolved Boron (B)	2024/06/07		96	%	80 - 120
			Dissolved Cadmium (Cd)	2024/06/07		108	%	80 - 120
			Dissolved Calcium (Ca)	2024/06/07		NC	%	80 - 120
			Dissolved Chromium (Cr)	2024/06/07		109	%	80 - 120
			Dissolved Cobalt (Co)	2024/06/07		107	%	80 - 120
			Dissolved Copper (Cu)	2024/06/07		106	%	80 - 120
			Dissolved Iron (Fe)	2024/06/07		108	%	80 - 120
			Dissolved Lead (Pb)	2024/06/07		109	%	80 - 120
			Dissolved Magnesium (Mg)	2024/06/07		113	%	80 - 120
			Dissolved Manganese (Mn)	2024/06/07		109	%	80 - 120
			Dissolved Molybdenum (Mo)	2024/06/07		105	%	80 - 120
			Dissolved Nickel (Ni)	2024/06/07		107	%	80 - 120
			Dissolved Phosphorus (P)	2024/06/07		111	%	80 - 120
			Dissolved Potassium (K)	2024/06/07		NC	%	80 - 120
			Dissolved Selenium (Se)	2024/06/07		110	%	80 - 120
			Dissolved Silver (Ag)	2024/06/07		105	%	80 - 120
			Dissolved Sodium (Na)	2024/06/07		NC	%	80 - 120
			Dissolved Strontium (Sr)	2024/06/07		NC	%	80 - 120
			Dissolved Thallium (Tl)	2024/06/07		96	%	80 - 120
			Dissolved Tin (Sn)	2024/06/07		102	%	80 - 120
			Dissolved Titanium (Ti)	2024/06/07		110	%	80 - 120
			Dissolved Uranium (U)	2024/06/07		118	%	80 - 120
			Dissolved Vanadium (V)	2024/06/07		114	%	80 - 120
			Dissolved Zinc (Zn)	2024/06/07		100	%	80 - 120
			Dissolved Aluminum (Al)	2024/06/07		104	%	80 - 120
			Dissolved Antimony (Sb)	2024/06/07		101	%	80 - 120
			Dissolved Arsenic (As)	2024/06/07		103	%	80 - 120
			Dissolved Barium (Ba)	2024/06/07		99	%	80 - 120
			Dissolved Beryllium (Be)	2024/06/07		101	%	80 - 120
			Dissolved Bismuth (Bi)	2024/06/07		100	%	80 - 120
			Dissolved Boron (B)	2024/06/07		96	%	80 - 120
			Dissolved Cadmium (Cd)	2024/06/07		104	%	80 - 120
			Dissolved Calcium (Ca)	2024/06/07		101	%	80 - 120
			Dissolved Chromium (Cr)	2024/06/07		102	%	80 - 120
			Dissolved Cobalt (Co)	2024/06/07		102	%	80 - 120
			Dissolved Copper (Cu)	2024/06/07		104	%	80 - 120
			Dissolved Iron (Fe)	2024/06/07		105	%	80 - 120
			Dissolved Lead (Pb)	2024/06/07		107	%	80 - 120
			Dissolved Magnesium (Mg)	2024/06/07		105	%	80 - 120
			Dissolved Manganese (Mn)	2024/06/07		104	%	80 - 120
			Dissolved Molybdenum (Mo)	2024/06/07		100	%	80 - 120
			Dissolved Nickel (Ni)	2024/06/07		105	%	80 - 120
			Dissolved Phosphorus (P)	2024/06/07		106	%	80 - 120
			Dissolved Potassium (K)	2024/06/07		99	%	80 - 120
			Dissolved Selenium (Se)	2024/06/07		104	%	80 - 120
			Dissolved Silver (Ag)	2024/06/07		100	%	80 - 120
			Dissolved Sodium (Na)	2024/06/07		104	%	80 - 120
			Dissolved Strontium (Sr)	2024/06/07		103	%	80 - 120
			Dissolved Thallium (Tl)	2024/06/07		100	%	80 - 120
			Dissolved Tin (Sn)	2024/06/07		98	%	80 - 120
			Dissolved Titanium (Ti)	2024/06/07		106	%	80 - 120
			Dissolved Uranium (U)	2024/06/07		112	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9440453	MTZ	Method Blank	Dissolved Vanadium (V)	2024/06/07		107	%	80 - 120
			Dissolved Zinc (Zn)	2024/06/07		103	%	80 - 120
			Dissolved Aluminum (Al)	2024/06/07	ND, RDL=5.0		ug/L	
			Dissolved Antimony (Sb)	2024/06/07	ND, RDL=1.0		ug/L	
			Dissolved Arsenic (As)	2024/06/07	ND, RDL=1.0		ug/L	
			Dissolved Barium (Ba)	2024/06/07	ND, RDL=1.0		ug/L	
			Dissolved Beryllium (Be)	2024/06/07	ND, RDL=0.10		ug/L	
			Dissolved Bismuth (Bi)	2024/06/07	ND, RDL=2.0		ug/L	
			Dissolved Boron (B)	2024/06/07	ND, RDL=50		ug/L	
			Dissolved Cadmium (Cd)	2024/06/07	ND, RDL=0.010		ug/L	
			Dissolved Calcium (Ca)	2024/06/07	ND, RDL=100		ug/L	
			Dissolved Chromium (Cr)	2024/06/07	ND, RDL=1.0		ug/L	
			Dissolved Cobalt (Co)	2024/06/07	ND, RDL=0.40		ug/L	
			Dissolved Copper (Cu)	2024/06/07	ND, RDL=0.50		ug/L	
			Dissolved Iron (Fe)	2024/06/07	ND, RDL=50		ug/L	
			Dissolved Lead (Pb)	2024/06/07	ND, RDL=0.50		ug/L	
			Dissolved Magnesium (Mg)	2024/06/07	ND, RDL=100		ug/L	
			Dissolved Manganese (Mn)	2024/06/07	ND, RDL=2.0		ug/L	
			Dissolved Molybdenum (Mo)	2024/06/07	ND, RDL=2.0		ug/L	
			Dissolved Nickel (Ni)	2024/06/07	ND, RDL=2.0		ug/L	
			Dissolved Phosphorus (P)	2024/06/07	ND, RDL=100		ug/L	
			Dissolved Potassium (K)	2024/06/07	ND, RDL=100		ug/L	
			Dissolved Selenium (Se)	2024/06/07	ND, RDL=0.50		ug/L	
			Dissolved Silver (Ag)	2024/06/07	ND, RDL=0.10		ug/L	
			Dissolved Sodium (Na)	2024/06/07	ND, RDL=100		ug/L	
			Dissolved Strontium (Sr)	2024/06/07	ND, RDL=2.0		ug/L	
			Dissolved Thallium (Tl)	2024/06/07	ND, RDL=0.10		ug/L	
			Dissolved Tin (Sn)	2024/06/07	ND, RDL=2.0		ug/L	
			Dissolved Titanium (Ti)	2024/06/07	ND, RDL=2.0		ug/L	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9440453	MTZ	RPD	Dissolved Uranium (U)	2024/06/07	ND, RDL=0.10		ug/L	
			Dissolved Vanadium (V)	2024/06/07	ND, RDL=2.0		ug/L	
			Dissolved Zinc (Zn)	2024/06/07	ND, RDL=5.0		ug/L	
			Dissolved Aluminum (Al)	2024/06/07	3.0		%	20
			Dissolved Antimony (Sb)	2024/06/07	2.8		%	20
			Dissolved Arsenic (As)	2024/06/07	1.3		%	20
			Dissolved Barium (Ba)	2024/06/07	1.7		%	20
			Dissolved Beryllium (Be)	2024/06/07	NC		%	20
			Dissolved Bismuth (Bi)	2024/06/07	NC		%	20
			Dissolved Boron (B)	2024/06/07	0.30		%	20
			Dissolved Cadmium (Cd)	2024/06/07	2.5		%	20
			Dissolved Calcium (Ca)	2024/06/07	1.2		%	20
			Dissolved Chromium (Cr)	2024/06/07	NC		%	20
			Dissolved Cobalt (Co)	2024/06/07	NC		%	20
			Dissolved Copper (Cu)	2024/06/07	0.49		%	20
			Dissolved Iron (Fe)	2024/06/07	NC		%	20
			Dissolved Lead (Pb)	2024/06/07	NC		%	20
			Dissolved Magnesium (Mg)	2024/06/07	0.84		%	20
			Dissolved Manganese (Mn)	2024/06/07	NC		%	20
			Dissolved Molybdenum (Mo)	2024/06/07	0.76		%	20
			Dissolved Nickel (Ni)	2024/06/07	NC		%	20
			Dissolved Phosphorus (P)	2024/06/07	NC		%	20
			Dissolved Potassium (K)	2024/06/07	0.17		%	20
			Dissolved Selenium (Se)	2024/06/07	NC		%	20
			Dissolved Silver (Ag)	2024/06/07	NC		%	20
			Dissolved Sodium (Na)	2024/06/07	1.3		%	20
			Dissolved Strontium (Sr)	2024/06/07	0.58		%	20
			Dissolved Thallium (Tl)	2024/06/07	NC		%	20
			Dissolved Tin (Sn)	2024/06/07	NC		%	20
			Dissolved Titanium (Ti)	2024/06/07	NC		%	20
			Dissolved Uranium (U)	2024/06/07	0.050		%	20
			Dissolved Vanadium (V)	2024/06/07	NC		%	20
			Dissolved Zinc (Zn)	2024/06/07	NC		%	20
9444008	EMT	Matrix Spike	Dissolved Chloride (Cl-)	2024/06/10		105	%	80 - 120
9444008	EMT	Spiked Blank	Dissolved Chloride (Cl-)	2024/06/10		105	%	80 - 120
9444008	EMT	Method Blank	Dissolved Chloride (Cl-)	2024/06/10	ND, RDL=1.0		mg/L	
9444008	EMT	RPD	Dissolved Chloride (Cl-)	2024/06/10	1.9		%	20
9444011	EMT	Matrix Spike	Dissolved Sulphate (SO4)	2024/06/10		117	%	80 - 120
9444011	EMT	Spiked Blank	Dissolved Sulphate (SO4)	2024/06/10		105	%	80 - 120
9444011	EMT	Method Blank	Dissolved Sulphate (SO4)	2024/06/10	ND, RDL=2.0		mg/L	
9444011	EMT	RPD	Dissolved Sulphate (SO4)	2024/06/10	NC		%	20
9444012	EMT	Matrix Spike	Reactive Silica (SiO2)	2024/06/10		93	%	80 - 120
9444012	EMT	Spiked Blank	Reactive Silica (SiO2)	2024/06/10		102	%	80 - 120
9444012	EMT	Method Blank	Reactive Silica (SiO2)	2024/06/10	ND, RDL=0.50		mg/L	
9444012	EMT	RPD	Reactive Silica (SiO2)	2024/06/10	3.2		%	20
9444013	MCN	Spiked Blank	Colour	2024/06/10		113	%	80 - 120
9444013	MCN	Method Blank	Colour	2024/06/10	ND, RDL=5.0		TCU	
9444013	MCN	RPD	Colour	2024/06/10	14		%	20



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9444015	MCN	Matrix Spike	Orthophosphate (P)	2024/06/10		90	%	80 - 120
9444015	MCN	Spiked Blank	Orthophosphate (P)	2024/06/10		95	%	80 - 120
9444015	MCN	Method Blank	Orthophosphate (P)	2024/06/10	ND, RDL=0.010		mg/L	
9444015	MCN	RPD	Orthophosphate (P)	2024/06/10	NC		%	20
9444016	EMT	Matrix Spike	Nitrate + Nitrite (N)	2024/06/10		104	%	80 - 120
9444016	EMT	Spiked Blank	Nitrate + Nitrite (N)	2024/06/10		106	%	80 - 120
9444016	EMT	Method Blank	Nitrate + Nitrite (N)	2024/06/10	ND, RDL=0.050		mg/L	
9444016	EMT	RPD	Nitrate + Nitrite (N)	2024/06/10	NC		%	20
9444017	EMT	Matrix Spike	Nitrite (N)	2024/06/10		97	%	80 - 120
9444017	EMT	Spiked Blank	Nitrite (N)	2024/06/10		104	%	80 - 120
9444017	EMT	Method Blank	Nitrite (N)	2024/06/10	ND, RDL=0.010		mg/L	
9444017	EMT	RPD	Nitrite (N)	2024/06/10	NC		%	20
9444018	EMT	Matrix Spike [ZHW178-02]	Dissolved Chloride (Cl-)	2024/06/10		110	%	80 - 120
9444018	EMT	Spiked Blank	Dissolved Chloride (Cl-)	2024/06/10		104	%	80 - 120
9444018	EMT	Method Blank	Dissolved Chloride (Cl-)	2024/06/10	ND, RDL=1.0		mg/L	
9444018	EMT	RPD [ZHW178-02]	Dissolved Chloride (Cl-)	2024/06/10	1.8		%	20
9444020	EMT	Matrix Spike [ZHW178-02]	Dissolved Sulphate (SO4)	2024/06/10		118	%	80 - 120
9444020	EMT	Spiked Blank	Dissolved Sulphate (SO4)	2024/06/10		103	%	80 - 120
9444020	EMT	Method Blank	Dissolved Sulphate (SO4)	2024/06/10	ND, RDL=2.0		mg/L	
9444020	EMT	RPD [ZHW178-02]	Dissolved Sulphate (SO4)	2024/06/10	1.0		%	20
9444021	EMT	Matrix Spike [ZHW178-02]	Reactive Silica (SiO2)	2024/06/10		NC	%	80 - 120
9444021	EMT	Spiked Blank	Reactive Silica (SiO2)	2024/06/10		93	%	80 - 120
9444021	EMT	Method Blank	Reactive Silica (SiO2)	2024/06/10	ND, RDL=0.50		mg/L	
9444021	EMT	RPD [ZHW178-02]	Reactive Silica (SiO2)	2024/06/10	1.2		%	20
9444022	MCN	Spiked Blank	Colour	2024/06/10		111	%	80 - 120
9444022	MCN	Method Blank	Colour	2024/06/10	ND, RDL=5.0		TCU	
9444022	MCN	RPD [ZHW178-02]	Colour	2024/06/10	0.42		%	20
9444023	EMT	Matrix Spike [ZHW178-02]	Orthophosphate (P)	2024/06/10		104	%	80 - 120
9444023	EMT	Spiked Blank	Orthophosphate (P)	2024/06/10		96	%	80 - 120
9444023	EMT	Method Blank	Orthophosphate (P)	2024/06/10	ND, RDL=0.010		mg/L	
9444023	EMT	RPD [ZHW178-02]	Orthophosphate (P)	2024/06/10	NC		%	20
9444024	EMT	Matrix Spike [ZHW178-02]	Nitrate + Nitrite (N)	2024/06/10		115	%	80 - 120
9444024	EMT	Spiked Blank	Nitrate + Nitrite (N)	2024/06/10		108	%	80 - 120
9444024	EMT	Method Blank	Nitrate + Nitrite (N)	2024/06/10	ND, RDL=0.050		mg/L	
9444024	EMT	RPD [ZHW178-02]	Nitrate + Nitrite (N)	2024/06/10	NC		%	20
9444026	EMT	Matrix Spike [ZHW178-02]	Nitrite (N)	2024/06/10		119	%	80 - 120
9444026	EMT	Spiked Blank	Nitrite (N)	2024/06/10		102	%	80 - 120
9444026	EMT	Method Blank	Nitrite (N)	2024/06/10	ND, RDL=0.010		mg/L	
9444026	EMT	RPD [ZHW178-02]	Nitrite (N)	2024/06/10	NC		%	20
9444055	LJV	Spiked Blank	pH	2024/06/10		100	%	97 - 103



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9444055	LJV	RPD	pH	2024/06/10	0.70		%	N/A
9444056	LJV	Spiked Blank	Conductivity	2024/06/10		98	%	80 - 120
9444056	LJV	Method Blank	Conductivity	2024/06/10	ND, RDL=1.0		uS/cm	
9444056	LJV	RPD	Conductivity	2024/06/10	0		%	10
9444057	LJV	Spiked Blank	Total Alkalinity (Total as CaCO ₃)	2024/06/10		96	%	80 - 120
9444057	LJV	Method Blank	Total Alkalinity (Total as CaCO ₃)	2024/06/10	ND, RDL=2.0		mg/L	
9444057	LJV	RPD	Total Alkalinity (Total as CaCO ₃)	2024/06/10	0.70		%	20
9444059	LJV	Spiked Blank	pH	2024/06/10		101	%	97 - 103
9444059	LJV	RPD	pH	2024/06/10	1.1		%	N/A
9444062	LJV	Spiked Blank	Conductivity	2024/06/10		97	%	80 - 120
9444062	LJV	Method Blank	Conductivity	2024/06/10	ND, RDL=1.0		uS/cm	
9444062	LJV	RPD	Conductivity	2024/06/10	0.32		%	10
9444065	LJV	Spiked Blank	Total Alkalinity (Total as CaCO ₃)	2024/06/10		96	%	80 - 120
9444065	LJV	Method Blank	Total Alkalinity (Total as CaCO ₃)	2024/06/10	ND, RDL=2.0		mg/L	
9444065	LJV	RPD	Total Alkalinity (Total as CaCO ₃)	2024/06/10	16		%	20
9444096	MKY	Matrix Spike	Dissolved Organic Carbon (C)	2024/06/10		96	%	85 - 115
9444096	MKY	Spiked Blank	Dissolved Organic Carbon (C)	2024/06/10		99	%	80 - 120
9444096	MKY	Method Blank	Dissolved Organic Carbon (C)	2024/06/10	ND, RDL=0.50		mg/L	
9444096	MKY	RPD	Dissolved Organic Carbon (C)	2024/06/10	5.9		%	15
9444111	MKY	Matrix Spike	Dissolved Organic Carbon (C)	2024/06/10		99	%	85 - 115
9444111	MKY	Spiked Blank	Dissolved Organic Carbon (C)	2024/06/10		96	%	80 - 120
9444111	MKY	Method Blank	Dissolved Organic Carbon (C)	2024/06/10	ND, RDL=0.50		mg/L	
9444111	MKY	RPD	Dissolved Organic Carbon (C)	2024/06/10	NC		%	15
9446435	LJV	QC Standard	Turbidity	2024/06/11		105	%	80 - 120
9446435	LJV	Spiked Blank	Turbidity	2024/06/11		108	%	80 - 120
9446435	LJV	Method Blank	Turbidity	2024/06/11	ND, RDL=0.10		NTU	
9446435	LJV	RPD [ZHW174-02]	Turbidity	2024/06/11	0.018		%	20
9446455	LJV	QC Standard	Turbidity	2024/06/11		104	%	80 - 120
9446455	LJV	Spiked Blank	Turbidity	2024/06/11		109	%	80 - 120
9446455	LJV	Method Blank	Turbidity	2024/06/11	ND, RDL=0.10		NTU	
9446455	LJV	RPD	Turbidity	2024/06/11	0.12		%	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).



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

Cristina Carriere, Senior Scientific Specialist



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Your Project #: Monitoring Well Samples
Site#: 00012
Your C.O.C. #: C#1003965-01-01

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2024/08/23
Report #: R8290088
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C409834

Received: 2024/08/14, 09:42

Sample Matrix: Water
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Carbonate, Bicarbonate and Hydroxide	5	N/A	2024/08/21	N/A	SM 24 4500-CO2 D
Alkalinity	5	N/A	2024/08/20	ATL SOP 00142	SM 24 2320 B
Chloride	5	N/A	2024/08/20	ATL SOP 00014	SM 24 4500-Cl- E m
Colour	5	N/A	2024/08/20	ATL SOP 00020	SM 24 2120C m
Organic carbon - Diss (DOC) (2)	5	N/A	2024/08/20	ATL SOP 00203	SM 24 5310B m
Conductance - water	5	N/A	2024/08/20	ATL SOP 00004	SM 24 2510B m
Hardness (calculated as CaCO3)	5	N/A	2024/08/20	ATL SOP 00048	Auto Calc
Mercury - Total (CVAA,LL)	5	2024/08/20	2024/08/20	ATL SOP 00026	EPA 245.1 R3 m
Metals Water Diss. MS (3)	5	N/A	2024/08/20	ATL SOP 00058	EPA 6020B R2 m
Ion Balance (% Difference)	5	N/A	2024/08/21	N/A	Auto Calc.
Anion and Cation Sum	5	N/A	2024/08/21	N/A	Auto Calc.
Nitrogen Ammonia - water	5	N/A	2024/08/19	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	5	N/A	2024/08/20	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite	5	N/A	2024/08/20	ATL SOP 00017	SM 24 4500-NO2- B m
Nitrogen - Nitrate (as N)	5	N/A	2024/08/21	ATL SOP 00018	ASTM D3867-16
Phenols (4AAP) (1)	4	N/A	2024/08/20	CAM SOP-00444	OMOE E3179 m
Phenols (4AAP) (1)	1	N/A	2024/08/22	CAM SOP-00444	OMOE E3179 m
pH (4)	5	N/A	2024/08/20	ATL SOP 00003	SM 24 4500-H+ B m
Phosphorus - ortho	5	N/A	2024/08/20	ATL SOP 00021	SM 24 4500-P E m
Sat. pH and Langelier Index (@ 20C)	5	N/A	2024/08/21	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 4C)	5	N/A	2024/08/21	ATL SOP 00049	Auto Calc.
Reactive Silica	5	N/A	2024/08/20	ATL SOP 00022	EPA 366.0 m
Sulphate	5	N/A	2024/08/20	ATL SOP 00023	ASTM D516-16 m
Sulphide (1)	5	N/A	2024/08/19	CAM SOP-00455	SM 24 4500-S G m
Total Dissolved Solids (TDS calc)	5	N/A	2024/08/21	N/A	Auto Calc.
Organic carbon - Total (TOC) (2)	5	N/A	2024/08/19	ATL SOP 00203	SM 24 5310B m
Total Suspended Solids	5	2024/08/19	2024/08/21	ATL SOP 00007	SM 24 2540D m
Turbidity	5	N/A	2024/08/19	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, EPA, APHA or the Quebec Ministry of Environment.



Your Project #: Monitoring Well Samples
Site#: 00012
Your C.O.C. #: C#1003965-01-01

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2024/08/23

Report #: R8290088

Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4O9834

Received: 2024/08/14, 09:42

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.

(1) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd, Mississauga, ON, L5N 2L8

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

(3) Sample filtered in laboratory prior to analysis for dissolved metals.

(4) 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.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:

Jaspreet Kaur, Project Manager 1

Email: jaspreet.kaur@bureauveritas.com

Phone# (902)420-0203

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BUREAU
VERITAS

Bureau Veritas Job #: C4O9834

Report Date: 2024/08/23

Central Newfoundland Waste Management Authority

Client Project #: Monitoring Well Samples

ATL RCAP-MS DISSOLVED (LABFILT) IN W

Bureau Veritas ID		ZZM982			ZZM983			ZZM984		
Sampling Date		2024/08/12 08:30			2024/08/12 08:35			2024/08/12 08:45		
COC Number		C#1003965-01-01			C#1003965-01-01			C#1003965-01-01		
Sample #		00300			00301			00302		
	UNITS	MW-H	RDL	QC Batch	MW-I	RDL	QC Batch	MW-J	RDL	QC Batch

Calculated Parameters

Anion Sum	me/L	0.820	N/A	9574828	3.19	N/A	9577937	11.4	N/A	9577937
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	22	1.0	9574824	82	1.0	9577930	150	1.0	9577930
Calculated TDS	mg/L	56	1.0	9574833	180	1.0	9577941	710	1.0	9577941
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ND	1.0	9574824	ND	1.0	9577930	ND	1.0	9577930
Cation Sum	me/L	0.800	N/A	9574828	3.44	N/A	9577937	11.6	N/A	9577937
Hardness (CaCO ₃)	mg/L	24	1.0	9576080	110	1.0	9576080	170	1.0	9576080
Ion Balance (% Difference)	%	1.23	N/A	9574827	3.77	N/A	9577936	0.910	N/A	9577936
Langelier Index (@ 20C)	N/A	-1.99		9574831	-0.284		9577938	-0.0950		9577938
Langelier Index (@ 4C)	N/A	-2.24		9574832	-0.535		9577939	-0.342		9577939
Nitrate (N)	mg/L	1.3	0.050	9575943	0.43	0.050	9575943	28	2.5	9575943
Saturation pH (@ 20C)	N/A	9.20		9574831	8.10		9577938	7.90		9577938
Saturation pH (@ 4C)	N/A	9.45		9574832	8.35		9577939	8.14		9577939

Inorganics

Total Alkalinity (Total as CaCO ₃)	mg/L	22	2.0	9586781	83	2.0	9586772	150	2.0	9586772
Dissolved Chloride (Cl ⁻)	mg/L	8.2	1.0	9584616	48	1.0	9584616	220	5.0	9584616
Colour	TCU	ND	5.0	9584653	19	5.0	9584653	69	25	9584653
Nitrate + Nitrite (N)	mg/L	1.3	0.050	9584658	0.43	0.050	9584658	28	2.5	9584658
Nitrite (N)	mg/L	ND	0.010	9584659	ND	0.010	9584659	0.20	0.010	9584659
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.050	9584259	0.077	0.050	9584259	1.2	0.050	9584259
Total Organic Carbon (C)	mg/L	ND (1)	5.0	9584410	ND (1)	50	9584379	31 (1)	5.0	9584410
Orthophosphate (P)	mg/L	ND	0.010	9584656	ND	0.010	9584656	ND	0.010	9584656
pH	pH	7.21		9586776	7.82		9586769	7.80		9586769
Reactive Silica (SiO ₂)	mg/L	11	0.50	9584651	8.4	0.50	9584651	4.5	0.50	9584651
Dissolved Sulphate (SO ₄)	mg/L	2.1	2.0	9584650	6.6	2.0	9584650	13	2.0	9584650
Turbidity	NTU	880	1.0	9584966	>1000	1.0	9584966	240	1.0	9584961
Conductivity	uS/cm	87	1.0	9586779	350	1.0	9586770	1300	1.0	9586770

Metals

Dissolved Aluminum (Al)	ug/L	ND	5.0	9585168	12	5.0	9585168	78	5.0	9585168
Dissolved Antimony (Sb)	ug/L	ND	1.0	9585168	ND	1.0	9585168	ND	1.0	9585168
Dissolved Arsenic (As)	ug/L	ND	1.0	9585168	ND	1.0	9585168	ND	1.0	9585168
Dissolved Barium (Ba)	ug/L	6.1	1.0	9585168	9.1	1.0	9585168	51	1.0	9585168
Dissolved Beryllium (Be)	ug/L	ND	0.10	9585168	ND	0.10	9585168	ND	0.10	9585168

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

(1) Elevated reporting limit due to turbidity.

BUREAU
VERITAS

Bureau Veritas Job #: C4O9834

Report Date: 2024/08/23

Central Newfoundland Waste Management Authority

Client Project #: Monitoring Well Samples

ATL RCAP-MS DISSOLVED (LABFILT) IN W

Bureau Veritas ID		ZZM982			ZZM983			ZZM984		
Sampling Date		2024/08/12 08:30			2024/08/12 08:35			2024/08/12 08:45		
COC Number		C#1003965-01-01			C#1003965-01-01			C#1003965-01-01		
Sample #		00300			00301			00302		
	UNITS	MW-H	RDL	QC Batch	MW-I	RDL	QC Batch	MW-J	RDL	QC Batch
Dissolved Bismuth (Bi)	ug/L	ND	2.0	9585168	ND	2.0	9585168	ND	2.0	9585168
Dissolved Boron (B)	ug/L	ND	50	9585168	ND	50	9585168	560	50	9585168
Dissolved Cadmium (Cd)	ug/L	ND	0.010	9585168	ND	0.010	9585168	0.052	0.010	9585168
Dissolved Calcium (Ca)	ug/L	5800	100	9585168	23000	100	9585168	27000	100	9585168
Dissolved Chromium (Cr)	ug/L	ND	1.0	9585168	ND	1.0	9585168	2.9	1.0	9585168
Dissolved Cobalt (Co)	ug/L	ND	0.40	9585168	ND	0.40	9585168	1.4	0.40	9585168
Dissolved Copper (Cu)	ug/L	ND	0.50	9585168	2.7	0.50	9585168	8.8	0.50	9585168
Dissolved Iron (Fe)	ug/L	ND	50	9585168	ND	50	9585168	ND	50	9585168
Dissolved Lead (Pb)	ug/L	ND	0.50	9585168	ND	0.50	9585168	ND	0.50	9585168
Dissolved Magnesium (Mg)	ug/L	2300	100	9585168	12000	100	9585168	25000	100	9585168
Dissolved Manganese (Mn)	ug/L	ND	2.0	9585168	ND	2.0	9585168	32	2.0	9585168
Dissolved Molybdenum (Mo)	ug/L	ND	2.0	9585168	ND	2.0	9585168	ND	2.0	9585168
Dissolved Nickel (Ni)	ug/L	ND	2.0	9585168	ND	2.0	9585168	13	2.0	9585168
Dissolved Phosphorus (P)	ug/L	ND	100	9585168	ND	100	9585168	ND	100	9585168
Dissolved Potassium (K)	ug/L	330	100	9585168	1800	100	9585168	49000	100	9585168
Dissolved Selenium (Se)	ug/L	ND	0.50	9585168	ND	0.50	9585168	ND	0.50	9585168
Dissolved Silver (Ag)	ug/L	ND	0.10	9585168	ND	0.10	9585168	ND	0.10	9585168
Dissolved Sodium (Na)	ug/L	7300	100	9585168	29000	100	9585168	160000	100	9585168
Dissolved Strontium (Sr)	ug/L	21	2.0	9585168	130	2.0	9585168	140	2.0	9585168
Dissolved Thallium (Tl)	ug/L	ND	0.10	9585168	ND	0.10	9585168	ND	0.10	9585168
Dissolved Tin (Sn)	ug/L	ND	2.0	9585168	ND	2.0	9585168	ND	2.0	9585168
Dissolved Titanium (Ti)	ug/L	ND	2.0	9585168	ND	2.0	9585168	ND	2.0	9585168
Dissolved Uranium (U)	ug/L	ND	0.10	9585168	1.2	0.10	9585168	0.13	0.10	9585168
Dissolved Vanadium (V)	ug/L	ND	2.0	9585168	ND	2.0	9585168	ND	2.0	9585168
Dissolved Zinc (Zn)	ug/L	ND	5.0	9585168	ND	5.0	9585168	18	5.0	9585168

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.



ATL. RCAP-MS DISSOLVED (LABFILT) IN W

Bureau Veritas ID		ZZM985			ZZM986		
Sampling Date		2024/08/12 09:00			2024/08/12 09:15		
COC Number		C#1003965-01-01			C#1003965-01-01		
Sample #		00303			00304		
	UNITS	MW-K	RDL	QC Batch	MW-L	RDL	QC Batch
Calculated Parameters							
Anion Sum	me/L	1.87	N/A	9577937	1.07	N/A	9577937
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	82	1.0	9577930	40	1.0	9577930
Calculated TDS	mg/L	120	1.0	9577941	72	1.0	9577941
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ND	1.0	9577930	ND	1.0	9577930
Cation Sum	me/L	2.04	N/A	9577937	1.17	N/A	9577937
Hardness (CaCO ₃)	mg/L	79	1.0	9576080	47	1.0	9576080
Ion Balance (% Difference)	%	4.35	N/A	9577936	4.46	N/A	9577936
Langelier Index (@ 20C)	N/A	-0.0430		9577938	-1.43		9577938
Langelier Index (@ 4C)	N/A	-0.293		9577939	-1.68		9577939
Nitrate (N)	mg/L	0.35	0.050	9575943	ND	0.050	9575943
Saturation pH (@ 20C)	N/A	8.10		9577938	8.59		9577938
Saturation pH (@ 4C)	N/A	8.35		9577939	8.85		9577939
Inorganics							
Total Alkalinity (Total as CaCO ₃)	mg/L	82	2.0	9586781	40	2.0	9586772
Dissolved Chloride (Cl ⁻)	mg/L	4.7	1.0	9584616	4.8	1.0	9584616
Colour	TCU	6.3	5.0	9584653	88	25	9584653
Nitrate + Nitrite (N)	mg/L	0.35	0.050	9584658	ND	0.050	9584658
Nitrite (N)	mg/L	ND	0.010	9584659	ND	0.010	9584659
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.050	9584259	0.17	0.050	9584259
Total Organic Carbon (C)	mg/L	1.9	0.50	9584379	13	0.50	9584379
Orthophosphate (P)	mg/L	ND	0.010	9584656	ND	0.010	9584656
pH	pH	8.06		9586776	7.17		9586769
Reactive Silica (SiO ₂)	mg/L	18	0.50	9584651	14	0.50	9584651
Dissolved Sulphate (SO ₄)	mg/L	3.1	2.0	9584650	6.1	2.0	9584650
Turbidity	NTU	38	0.10	9584966	26	0.10	9584966
Conductivity	uS/cm	200	1.0	9586779	130	1.0	9586770
Metals							
Dissolved Aluminum (Al)	ug/L	22	5.0	9585168	180	5.0	9585168
Dissolved Antimony (Sb)	ug/L	ND	1.0	9585168	ND	1.0	9585168
Dissolved Arsenic (As)	ug/L	4.5	1.0	9585168	2.2	1.0	9585168
Dissolved Barium (Ba)	ug/L	40	1.0	9585168	16	1.0	9585168
Dissolved Beryllium (Be)	ug/L	ND	0.10	9585168	ND	0.10	9585168
Dissolved Bismuth (Bi)	ug/L	ND	2.0	9585168	ND	2.0	9585168
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.							



ATL. RCAP-MS DISSOLVED (LABFILT) IN W

Bureau Veritas ID		ZZM985			ZZM986		
Sampling Date		2024/08/12 09:00			2024/08/12 09:15		
COC Number		C#1003965-01-01			C#1003965-01-01		
Sample #		00303			00304		
	UNITS	MW-K	RDL	QC Batch	MW-L	RDL	QC Batch
Dissolved Boron (B)	ug/L	ND	50	9585168	ND	50	9585168
Dissolved Cadmium (Cd)	ug/L	ND	0.010	9585168	0.035	0.010	9585168
Dissolved Calcium (Ca)	ug/L	22000	100	9585168	13000	100	9585168
Dissolved Chromium (Cr)	ug/L	ND	1.0	9585168	1.3	1.0	9585168
Dissolved Cobalt (Co)	ug/L	ND	0.40	9585168	1.2	0.40	9585168
Dissolved Copper (Cu)	ug/L	0.51	0.50	9585168	2.1	0.50	9585168
Dissolved Iron (Fe)	ug/L	ND	50	9585168	830	50	9585168
Dissolved Lead (Pb)	ug/L	ND	0.50	9585168	ND	0.50	9585168
Dissolved Magnesium (Mg)	ug/L	6100	100	9585168	3200	100	9585168
Dissolved Manganese (Mn)	ug/L	14	2.0	9585168	230	2.0	9585168
Dissolved Molybdenum (Mo)	ug/L	ND	2.0	9585168	ND	2.0	9585168
Dissolved Nickel (Ni)	ug/L	ND	2.0	9585168	8.9	2.0	9585168
Dissolved Phosphorus (P)	ug/L	ND	100	9585168	ND	100	9585168
Dissolved Potassium (K)	ug/L	2000	100	9585168	320	100	9585168
Dissolved Selenium (Se)	ug/L	ND	0.50	9585168	ND	0.50	9585168
Dissolved Silver (Ag)	ug/L	ND	0.10	9585168	ND	0.10	9585168
Dissolved Sodium (Na)	ug/L	9300	100	9585168	4300	100	9585168
Dissolved Strontium (Sr)	ug/L	300	2.0	9585168	62	2.0	9585168
Dissolved Thallium (Tl)	ug/L	ND	0.10	9585168	ND	0.10	9585168
Dissolved Tin (Sn)	ug/L	ND	2.0	9585168	ND	2.0	9585168
Dissolved Titanium (Ti)	ug/L	ND	2.0	9585168	ND	2.0	9585168
Dissolved Uranium (U)	ug/L	0.30	0.10	9585168	0.53	0.10	9585168
Dissolved Vanadium (V)	ug/L	ND	2.0	9585168	2.3	2.0	9585168
Dissolved Zinc (Zn)	ug/L	ND	5.0	9585168	32	5.0	9585168
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.							



RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		ZZM982	ZZM983		ZZM984		ZZM985		
Sampling Date		2024/08/12 08:30	2024/08/12 08:35		2024/08/12 08:45		2024/08/12 09:00		
COC Number		C#1003965-01-01	C#1003965-01-01		C#1003965-01-01		C#1003965-01-01		
Sample #		00300	00301		00302		00303		
	UNITS	MW-H	MW-I	RDL	MW-J	RDL	MW-K	RDL	QC Batch
Inorganics									
Dissolved Organic Carbon (C)	mg/L	0.62	7.3	0.50	25	0.50	0.81	0.50	9586583
Phenols-4AAP	mg/L	0.0011	0.0011	0.0010	0.0013	0.0010	0.0012	0.0010	9587670
Total Suspended Solids	mg/L	2200	4000	17	240	10	50	2.5	9584155
Sulphide	mg/L	ND	ND	0.020	ND	0.020	ND	0.020	9584588
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.									

Bureau Veritas ID		ZZM986		
Sampling Date		2024/08/12 09:15		
COC Number		C#1003965-01-01		
Sample #		00304		
	UNITS	MW-L	RDL	QC Batch
Inorganics				
Dissolved Organic Carbon (C)	mg/L	11	0.50	9586583
Phenols-4AAP	mg/L	ND	0.0010	9592588
Total Suspended Solids	mg/L	93	5.0	9584155
Sulphide	mg/L	ND	0.020	9584588
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.				



MERCURY BY COLD VAPOUR AA (WATER)

Bureau Veritas ID		ZZM982	ZZM983	ZZM984	ZZM985	ZZM986		
Sampling Date		2024/08/12 08:30	2024/08/12 08:35	2024/08/12 08:45	2024/08/12 09:00	2024/08/12 09:15		
COC Number		C#1003965-01-01	C#1003965-01-01	C#1003965-01-01	C#1003965-01-01	C#1003965-01-01		
Sample #		00300	00301	00302	00303	00304		
	UNITS	MW-H	MW-I	MW-J	MW-K	MW-L	RDL	QC Batch

Metals								
Total Mercury (Hg)	ug/L	ND	ND	ND	ND	ND	0.013	9584420
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.								



GENERAL COMMENTS

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

Package 1	22.0°C
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Average temperature upon receipt >10°C.

Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9584155	DME	QC Standard	Total Suspended Solids	2024/08/21		99	%	80 - 120
9584155	DME	Method Blank	Total Suspended Solids	2024/08/21	ND, RDL=1.0		mg/L	
9584155	DME	RPD [ZZM984-01]	Total Suspended Solids	2024/08/21	18		%	20
9584259	MCN	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2024/08/19		96	%	80 - 120
9584259	MCN	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2024/08/19		105	%	80 - 120
9584259	MCN	Method Blank	Nitrogen (Ammonia Nitrogen)	2024/08/19	ND, RDL=0.050		mg/L	
9584259	MCN	RPD	Nitrogen (Ammonia Nitrogen)	2024/08/19	NC		%	20
9584379	SSI	Matrix Spike	Total Organic Carbon (C)	2024/08/19		96	%	85 - 115
9584379	SSI	Spiked Blank	Total Organic Carbon (C)	2024/08/19		96	%	80 - 120
9584379	SSI	Method Blank	Total Organic Carbon (C)	2024/08/19	ND, RDL=0.50		mg/L	
9584379	SSI	RPD	Total Organic Carbon (C)	2024/08/19	NC		%	15
9584410	SSI	Matrix Spike	Total Organic Carbon (C)	2024/08/19		94	%	85 - 115
9584410	SSI	Spiked Blank	Total Organic Carbon (C)	2024/08/19		96	%	80 - 120
9584410	SSI	Method Blank	Total Organic Carbon (C)	2024/08/19	ND, RDL=0.50		mg/L	
9584410	SSI	RPD	Total Organic Carbon (C)	2024/08/19	9.6		%	15
9584420	SPY	Matrix Spike	Total Mercury (Hg)	2024/08/20		99	%	80 - 120
9584420	SPY	Spiked Blank	Total Mercury (Hg)	2024/08/20		98	%	80 - 120
9584420	SPY	Method Blank	Total Mercury (Hg)	2024/08/20	ND, RDL=0.013		ug/L	
9584420	SPY	RPD	Total Mercury (Hg)	2024/08/20	NC		%	20
9584588	SRT	Matrix Spike	Sulphide	2024/08/19		85	%	80 - 120
9584588	SRT	Spiked Blank	Sulphide	2024/08/19		88	%	80 - 120
9584588	SRT	Method Blank	Sulphide	2024/08/19	ND, RDL=0.020		mg/L	
9584588	SRT	RPD	Sulphide	2024/08/19	NC		%	20
9584616	EMT	Matrix Spike	Dissolved Chloride (Cl-)	2024/08/20		NC	%	80 - 120
9584616	EMT	Spiked Blank	Dissolved Chloride (Cl-)	2024/08/20		96	%	80 - 120
9584616	EMT	Method Blank	Dissolved Chloride (Cl-)	2024/08/20	ND, RDL=1.0		mg/L	
9584616	EMT	RPD	Dissolved Chloride (Cl-)	2024/08/20	0.75		%	20
9584650	EMT	Matrix Spike	Dissolved Sulphate (SO4)	2024/08/20		98	%	80 - 120
9584650	EMT	Spiked Blank	Dissolved Sulphate (SO4)	2024/08/20		98	%	80 - 120
9584650	EMT	Method Blank	Dissolved Sulphate (SO4)	2024/08/20	ND, RDL=2.0		mg/L	
9584650	EMT	RPD	Dissolved Sulphate (SO4)	2024/08/20	1.1		%	20
9584651	EMT	Matrix Spike	Reactive Silica (SiO2)	2024/08/20		NC	%	80 - 120
9584651	EMT	Spiked Blank	Reactive Silica (SiO2)	2024/08/20		90	%	80 - 120
9584651	EMT	Method Blank	Reactive Silica (SiO2)	2024/08/20	ND, RDL=0.50		mg/L	
9584651	EMT	RPD	Reactive Silica (SiO2)	2024/08/20	0.63		%	20
9584653	EMT	Spiked Blank	Colour	2024/08/20		109	%	80 - 120
9584653	EMT	Method Blank	Colour	2024/08/20	ND, RDL=5.0		TCU	
9584653	EMT	RPD	Colour	2024/08/20	NC		%	20
9584656	EMT	Matrix Spike	Orthophosphate (P)	2024/08/20		94	%	80 - 120
9584656	EMT	Spiked Blank	Orthophosphate (P)	2024/08/20		99	%	80 - 120
9584656	EMT	Method Blank	Orthophosphate (P)	2024/08/20	ND, RDL=0.010		mg/L	
9584656	EMT	RPD	Orthophosphate (P)	2024/08/20	1.3		%	20
9584658	EMT	Matrix Spike	Nitrate + Nitrite (N)	2024/08/20		99	%	80 - 120
9584658	EMT	Spiked Blank	Nitrate + Nitrite (N)	2024/08/20		104	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9584658	EMT	Method Blank	Nitrate + Nitrite (N)	2024/08/20	ND, RDL=0.050		mg/L	
9584658	EMT	RPD	Nitrate + Nitrite (N)	2024/08/20	NC		%	20
9584659	MCN	Matrix Spike	Nitrite (N)	2024/08/20		102	%	80 - 120
9584659	MCN	Spiked Blank	Nitrite (N)	2024/08/20		109	%	80 - 120
9584659	MCN	Method Blank	Nitrite (N)	2024/08/20	ND, RDL=0.010		mg/L	
9584659	MCN	RPD	Nitrite (N)	2024/08/20	NC		%	20
9584961	M2C	QC Standard	Turbidity	2024/08/19		101	%	80 - 120
9584961	M2C	Spiked Blank	Turbidity	2024/08/19		94	%	80 - 120
9584961	M2C	Method Blank	Turbidity	2024/08/19	ND, RDL=0.10		NTU	
9584961	M2C	RPD	Turbidity	2024/08/19	11		%	20
9584966	M2C	QC Standard	Turbidity	2024/08/19		102	%	80 - 120
9584966	M2C	Spiked Blank	Turbidity	2024/08/19		94	%	80 - 120
9584966	M2C	Method Blank	Turbidity	2024/08/19	ND, RDL=0.10		NTU	
9584966	M2C	RPD	Turbidity	2024/08/19	7.8		%	20
9585168	JHY	Matrix Spike	Dissolved Aluminum (Al)	2024/08/20		100	%	80 - 120
			Dissolved Antimony (Sb)	2024/08/20		101	%	80 - 120
			Dissolved Arsenic (As)	2024/08/20		NC	%	80 - 120
			Dissolved Barium (Ba)	2024/08/20		NC	%	80 - 120
			Dissolved Beryllium (Be)	2024/08/20		98	%	80 - 120
			Dissolved Bismuth (Bi)	2024/08/20		97	%	80 - 120
			Dissolved Boron (B)	2024/08/20		92	%	80 - 120
			Dissolved Cadmium (Cd)	2024/08/20		101	%	80 - 120
			Dissolved Calcium (Ca)	2024/08/20		NC	%	80 - 120
			Dissolved Chromium (Cr)	2024/08/20		99	%	80 - 120
			Dissolved Cobalt (Co)	2024/08/20		95	%	80 - 120
			Dissolved Copper (Cu)	2024/08/20		97	%	80 - 120
			Dissolved Iron (Fe)	2024/08/20		NC	%	80 - 120
			Dissolved Lead (Pb)	2024/08/20		101	%	80 - 120
			Dissolved Magnesium (Mg)	2024/08/20		100	%	80 - 120
			Dissolved Manganese (Mn)	2024/08/20		NC	%	80 - 120
			Dissolved Molybdenum (Mo)	2024/08/20		100	%	80 - 120
			Dissolved Nickel (Ni)	2024/08/20		97	%	80 - 120
			Dissolved Phosphorus (P)	2024/08/20		102	%	80 - 120
			Dissolved Potassium (K)	2024/08/20		101	%	80 - 120
			Dissolved Selenium (Se)	2024/08/20		96	%	80 - 120
			Dissolved Silver (Ag)	2024/08/20		76 (1)	%	80 - 120
			Dissolved Sodium (Na)	2024/08/20		95	%	80 - 120
			Dissolved Strontium (Sr)	2024/08/20		NC	%	80 - 120
			Dissolved Thallium (Tl)	2024/08/20		99	%	80 - 120
			Dissolved Tin (Sn)	2024/08/20		100	%	80 - 120
			Dissolved Titanium (Ti)	2024/08/20		101	%	80 - 120
			Dissolved Uranium (U)	2024/08/20		107	%	80 - 120
			Dissolved Vanadium (V)	2024/08/20		102	%	80 - 120
			Dissolved Zinc (Zn)	2024/08/20		98	%	80 - 120
9585168	JHY	Spiked Blank	Dissolved Aluminum (Al)	2024/08/20		103	%	80 - 120
			Dissolved Antimony (Sb)	2024/08/20		99	%	80 - 120
			Dissolved Arsenic (As)	2024/08/20		100	%	80 - 120
			Dissolved Barium (Ba)	2024/08/20		99	%	80 - 120
			Dissolved Beryllium (Be)	2024/08/20		96	%	80 - 120
			Dissolved Bismuth (Bi)	2024/08/20		99	%	80 - 120
			Dissolved Boron (B)	2024/08/20		93	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9585168	JHY	Method Blank	Dissolved Cadmium (Cd)	2024/08/20		103	%	80 - 120
			Dissolved Calcium (Ca)	2024/08/20		99	%	80 - 120
			Dissolved Chromium (Cr)	2024/08/20		99	%	80 - 120
			Dissolved Cobalt (Co)	2024/08/20		99	%	80 - 120
			Dissolved Copper (Cu)	2024/08/20		100	%	80 - 120
			Dissolved Iron (Fe)	2024/08/20		100	%	80 - 120
			Dissolved Lead (Pb)	2024/08/20		102	%	80 - 120
			Dissolved Magnesium (Mg)	2024/08/20		103	%	80 - 120
			Dissolved Manganese (Mn)	2024/08/20		102	%	80 - 120
			Dissolved Molybdenum (Mo)	2024/08/20		99	%	80 - 120
			Dissolved Nickel (Ni)	2024/08/20		99	%	80 - 120
			Dissolved Phosphorus (P)	2024/08/20		101	%	80 - 120
			Dissolved Potassium (K)	2024/08/20		101	%	80 - 120
			Dissolved Selenium (Se)	2024/08/20		96	%	80 - 120
			Dissolved Silver (Ag)	2024/08/20		97	%	80 - 120
			Dissolved Sodium (Na)	2024/08/20		100	%	80 - 120
			Dissolved Strontium (Sr)	2024/08/20		100	%	80 - 120
			Dissolved Thallium (Tl)	2024/08/20		99	%	80 - 120
			Dissolved Tin (Sn)	2024/08/20		100	%	80 - 120
			Dissolved Titanium (Ti)	2024/08/20		100	%	80 - 120
			Dissolved Uranium (U)	2024/08/20		108	%	80 - 120
			Dissolved Vanadium (V)	2024/08/20		102	%	80 - 120
			Dissolved Zinc (Zn)	2024/08/20		101	%	80 - 120
			Dissolved Aluminum (Al)	2024/08/20	ND, RDL=5.0		ug/L	
			Dissolved Antimony (Sb)	2024/08/20	ND, RDL=1.0		ug/L	
			Dissolved Arsenic (As)	2024/08/20	ND, RDL=1.0		ug/L	
			Dissolved Barium (Ba)	2024/08/20	ND, RDL=1.0		ug/L	
			Dissolved Beryllium (Be)	2024/08/20	ND, RDL=0.10		ug/L	
			Dissolved Bismuth (Bi)	2024/08/20	ND, RDL=2.0		ug/L	
			Dissolved Boron (B)	2024/08/20	ND, RDL=50		ug/L	
			Dissolved Cadmium (Cd)	2024/08/20	ND, RDL=0.010		ug/L	
			Dissolved Calcium (Ca)	2024/08/20	ND, RDL=100		ug/L	
			Dissolved Chromium (Cr)	2024/08/20	ND, RDL=1.0		ug/L	
			Dissolved Cobalt (Co)	2024/08/20	ND, RDL=0.40		ug/L	
			Dissolved Copper (Cu)	2024/08/20	ND, RDL=0.50		ug/L	
			Dissolved Iron (Fe)	2024/08/20	ND, RDL=50		ug/L	
			Dissolved Lead (Pb)	2024/08/20	ND, RDL=0.50		ug/L	
			Dissolved Magnesium (Mg)	2024/08/20	ND, RDL=100		ug/L	
			Dissolved Manganese (Mn)	2024/08/20	ND, RDL=2.0		ug/L	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Molybdenum (Mo)	2024/08/20	ND, RDL=2.0		ug/L	
			Dissolved Nickel (Ni)	2024/08/20	ND, RDL=2.0		ug/L	
			Dissolved Phosphorus (P)	2024/08/20	ND, RDL=100		ug/L	
			Dissolved Potassium (K)	2024/08/20	ND, RDL=100		ug/L	
			Dissolved Selenium (Se)	2024/08/20	ND, RDL=0.50		ug/L	
			Dissolved Silver (Ag)	2024/08/20	ND, RDL=0.10		ug/L	
			Dissolved Sodium (Na)	2024/08/20	ND, RDL=100		ug/L	
			Dissolved Strontium (Sr)	2024/08/20	ND, RDL=2.0		ug/L	
			Dissolved Thallium (Tl)	2024/08/20	ND, RDL=0.10		ug/L	
			Dissolved Tin (Sn)	2024/08/20	ND, RDL=2.0		ug/L	
			Dissolved Titanium (Ti)	2024/08/20	ND, RDL=2.0		ug/L	
			Dissolved Uranium (U)	2024/08/20	ND, RDL=0.10		ug/L	
			Dissolved Vanadium (V)	2024/08/20	ND, RDL=2.0		ug/L	
			Dissolved Zinc (Zn)	2024/08/20	ND, RDL=5.0		ug/L	
9585168	JHY	RPD	Dissolved Cadmium (Cd)	2024/08/20	NC		%	20
			Dissolved Calcium (Ca)	2024/08/20	0.31		%	20
			Dissolved Iron (Fe)	2024/08/20	0.96		%	20
			Dissolved Lead (Pb)	2024/08/20	NC		%	20
			Dissolved Magnesium (Mg)	2024/08/20	0.35		%	20
			Dissolved Potassium (K)	2024/08/20	1.4		%	20
9586583	SSI	Matrix Spike [ZMZ982-02]	Dissolved Organic Carbon (C)	2024/08/20		95	%	85 - 115
9586583	SSI	Spiked Blank	Dissolved Organic Carbon (C)	2024/08/20		96	%	80 - 120
9586583	SSI	Method Blank	Dissolved Organic Carbon (C)	2024/08/20	ND, RDL=0.50		mg/L	
9586583	SSI	RPD [ZMZ982-02]	Dissolved Organic Carbon (C)	2024/08/20	2.0		%	15
9586769	M2C	Spiked Blank	pH	2024/08/20		99	%	97 - 103
9586769	M2C	RPD	pH	2024/08/20	0.75		%	N/A
9586770	M2C	Spiked Blank	Conductivity	2024/08/20		97	%	80 - 120
9586770	M2C	Method Blank	Conductivity	2024/08/20	ND, RDL=1.0		uS/cm	
9586770	M2C	RPD	Conductivity	2024/08/20	0.30		%	10
9586772	M2C	Spiked Blank	Total Alkalinity (Total as CaCO3)	2024/08/20		96	%	80 - 120
9586772	M2C	Method Blank	Total Alkalinity (Total as CaCO3)	2024/08/20	ND, RDL=2.0		mg/L	
9586772	M2C	RPD	Total Alkalinity (Total as CaCO3)	2024/08/20	1.5		%	20
9586776	M2C	Spiked Blank	pH	2024/08/20		99	%	97 - 103
9586776	M2C	RPD	pH	2024/08/20	0.52		%	N/A
9586779	M2C	Spiked Blank	Conductivity	2024/08/20		96	%	80 - 120
9586779	M2C	Method Blank	Conductivity	2024/08/20	ND, RDL=1.0		uS/cm	
9586779	M2C	RPD	Conductivity	2024/08/20	0.27		%	10
9586781	M2C	Spiked Blank	Total Alkalinity (Total as CaCO3)	2024/08/20		100	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9586781	M2C	Method Blank	Total Alkalinity (Total as CaCO3)	2024/08/20	ND, RDL=2.0		mg/L	
9586781	M2C	RPD	Total Alkalinity (Total as CaCO3)	2024/08/20	0.46		%	20
9587670	SPC	Matrix Spike	Phenols-4AAP	2024/08/20		101	%	80 - 120
9587670	SPC	Spiked Blank	Phenols-4AAP	2024/08/20		100	%	80 - 120
9587670	SPC	Method Blank	Phenols-4AAP	2024/08/20	ND, RDL=0.0010		mg/L	
9587670	SPC	RPD	Phenols-4AAP	2024/08/20	NC		%	20
9592588	SPC	Matrix Spike [ZMZ986-06]	Phenols-4AAP	2024/08/22		102	%	80 - 120
9592588	SPC	Spiked Blank	Phenols-4AAP	2024/08/22		101	%	80 - 120
9592588	SPC	Method Blank	Phenols-4AAP	2024/08/22	ND, RDL=0.0010		mg/L	
9592588	SPC	RPD [ZMZ986-06]	Phenols-4AAP	2024/08/22	NC		%	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) Recovery is within QC acceptance limits. < 10 % of compounds in multi-component analysis in violation.								



VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Senior Scientific Specialist

Ernie Publicover

Ernie Publicover, Scientific Specialist



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Your Project #: Monitoring Well Samples
Site#: 00012
Your C.O.C. #: C#1018695-01-01

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2024/11/06
Report #: R8393488
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4X7333

Received: 2024/10/28, 08:45

Sample Matrix: Water
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Carbonate, Bicarbonate and Hydroxide	5	N/A	2024/11/01	N/A	SM 24 4500-CO2 D
Alkalinity	5	N/A	2024/10/31	ATL SOP 00142	SM 24 2320 B
Chloride	5	N/A	2024/10/31	ATL SOP 00014	SM 24 4500-Cl- E m
Colour	5	N/A	2024/10/31	ATL SOP 00020	SM 24 2120C m
Organic carbon - Diss (DOC)-Lab Filtered (2)	3	N/A	2024/10/30	ATL SOP 00203	SM 24 5310B m
Organic carbon - Diss (DOC)-Lab Filtered (2)	2	N/A	2024/10/31	ATL SOP 00203	SM 24 5310B m
Conductance - water	5	N/A	2024/10/31	ATL SOP 00004	SM 24 2510B m
Hardness (calculated as CaCO3)	3	N/A	2024/10/30	ATL SOP 00048	Auto Calc
Hardness (calculated as CaCO3)	2	N/A	2024/11/01	ATL SOP 00048	Auto Calc
Mercury - Total (CVAA,LL)	3	2024/10/31	2024/10/31	ATL SOP 00026	EPA 245.1 R3 m
Mercury - Total (CVAA,LL)	2	2024/11/01	2024/11/01	ATL SOP 00026	EPA 245.1 R3 m
Metals Water Diss. MS- Lab Filtered (3)	3	N/A	2024/10/30	ATL SOP 00058	EPA 6020B R2 m
Metals Water Diss. MS- Lab Filtered (3)	2	N/A	2024/10/31	ATL SOP 00058	EPA 6020B R2 m
Ion Balance (% Difference)	5	N/A	2024/11/01	N/A	Auto Calc.
Anion and Cation Sum	5	N/A	2024/11/01	N/A	Auto Calc.
Nitrogen Ammonia - water	5	N/A	2024/10/31	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	5	N/A	2024/10/31	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite	5	N/A	2024/10/31	ATL SOP 00017	SM 24 4500-NO2- B m
Nitrogen - Nitrate (as N)	5	N/A	2024/10/31	ATL SOP 00018	ASTM D3867-16
Phenols (4AAP) (1)	5	N/A	2024/11/05	CAM SOP-00444	OMOE E3179 m
pH (4)	5	N/A	2024/10/31	ATL SOP 00003	SM 24 4500-H+ B m
Phosphorus - ortho	5	N/A	2024/10/31	ATL SOP 00021	SM 24 4500-P E m
Sat. pH and Langelier Index (@ 20C)	5	N/A	2024/11/01	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 4C)	5	N/A	2024/11/01	ATL SOP 00049	Auto Calc.
Reactive Silica	5	N/A	2024/10/31	ATL SOP 00022	EPA 366.0 m
Sulphate	5	N/A	2024/10/31	ATL SOP 00023	ASTM D516-16 m
Sulphide (1)	3	N/A	2024/10/30	CAM SOP-00455	SM 24 4500-S G m
Sulphide (1)	2	N/A	2024/10/31	CAM SOP-00455	SM 24 4500-S G m
Total Dissolved Solids (TDS calc)	5	N/A	2024/11/01	N/A	Auto Calc.
Organic carbon - Total (TOC) (2)	5	N/A	2024/10/30	ATL SOP 00203	SM 24 5310B m
Total Suspended Solids	5	2024/10/31	2024/11/04	ATL SOP 00007	SM 24 2540D m
Turbidity	3	N/A	2024/10/30	ATL SOP 00011	EPA 180.1 R2 m



Your Project #: Monitoring Well Samples
Site#: 00012
Your C.O.C. #: C#1018695-01-01

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2024/11/06
Report #: R8393488
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4X7333

Received: 2024/10/28, 08:45

Sample Matrix: Water
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Turbidity	2	N/A	2024/10/31	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, EPA, APHA or the Quebec Ministry of Environment.

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.

(1) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd, Mississauga, ON, L5N 2L8

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

(3) Sample filtered in laboratory prior to analysis for dissolved metals.

(4) 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.



Your Project #: Monitoring Well Samples
Site#: 00012
Your C.O.C. #: C#1018695-01-01

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2024/11/06
Report #: R8393488
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4X7333

Received: 2024/10/28, 08:45

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:

Jaspreet Kaur, Project Manager 1

Email: jaspreet.kaur@bureauveritas.com

Phone# (902)420-0203

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

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.



ATL RCAP-MS DISSOLVED (LABFILT) IN W

Bureau Veritas ID		AHBK33		AHBK34			AHBK35		
Sampling Date		2024/10/24 07:50		2024/10/24 08:05			2024/10/24 08:15		
COC Number		C#1018695-01-01		C#1018695-01-01			C#1018695-01-01		
Sample #		00300		00301			00302		
	UNITS	MW-H	QC Batch	MW-I	RDL	QC Batch	MW-J	RDL	QC Batch

Calculated Parameters									
Anion Sum	me/L	0.820	9727852	3.45	N/A	9727852	6.34	N/A	9727852
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	23	9727848	88	1.0	9727848	120	1.0	9727848
Calculated TDS	mg/L	56	9727859	200	1.0	9727859	390	1.0	9727859
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ND	9727848	ND	1.0	9727848	ND	1.0	9727848
Cation Sum	me/L	0.840	9727852	3.92	N/A	9727852	7.31	N/A	9727852
Hardness (CaCO ₃)	mg/L	25	9727850	120	1.0	9727850	98	1.0	9727850
Ion Balance (% Difference)	%	1.20	9727851	6.38	N/A	9727851	7.11	N/A	9727851
Langelier Index (@ 20C)	N/A	-2.12	9727857	-0.244		9727857	-0.485		9727857
Langelier Index (@ 4C)	N/A	-2.37	9727858	-0.495		9727858	-0.734		9727858
Nitrate (N)	mg/L	0.93	9727854	ND	0.050	9727854	3.7	0.25	9727854
Saturation pH (@ 20C)	N/A	9.17	9727857	8.01		9727857	8.19		9727857
Saturation pH (@ 4C)	N/A	9.42	9727858	8.26		9727858	8.44		9727858

Inorganics									
Total Alkalinity (Total as CaCO ₃)	mg/L	23	9736170	89	2.0	9736170	120	2.0	9736170
Dissolved Chloride (Cl ⁻)	mg/L	8.6	9733392	57	1.0	9735904	120	5.0	9733392
Colour	TCU	ND	9733405	13	5.0	9735908	64	25	9733405
Nitrate + Nitrite (N)	mg/L	0.93	9733420	ND	0.050	9735910	3.7	0.25	9733420
Nitrite (N)	mg/L	ND	9733421	ND	0.010	9735912	ND	0.010	9733421
Nitrogen (Ammonia Nitrogen)	mg/L	ND	9736317	ND	0.050	9736317	0.13	0.050	9736317
Total Organic Carbon (C)	mg/L	ND (1)	9731203	5.2 (1)	5.0	9731203	19 (1)	5.0	9731203
Orthophosphate (P)	mg/L	ND	9733407	ND	0.010	9735909	ND	0.010	9733407
pH	pH	7.05	9736146	7.76		9736146	7.70		9736146
Reactive Silica (SiO ₂)	mg/L	11	9733401	7.8	0.50	9735907	4.6	0.50	9733401
Dissolved Sulphate (SO ₄)	mg/L	2.3	9733398	2.5	2.0	9735906	7.3	2.0	9733398
Turbidity	NTU	690	9733176	390	1.0	9736419	80	0.10	9733176
Conductivity	uS/cm	87	9736165	380	1.0	9736165	740	1.0	9736165

Metals									
Dissolved Aluminum (Al)	ug/L	ND	9733072	7.2	5.0	9736108	75	5.0	9733072
Dissolved Antimony (Sb)	ug/L	ND	9733072	ND	1.0	9736108	ND	1.0	9733072
Dissolved Arsenic (As)	ug/L	ND	9733072	ND	1.0	9736108	ND	1.0	9733072
Dissolved Barium (Ba)	ug/L	7.1	9733072	18	1.0	9736108	20	1.0	9733072
Dissolved Beryllium (Be)	ug/L	ND	9733072	ND	0.10	9736108	ND	0.10	9733072

RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch
 N/A = Not Applicable
 ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.
 (1) Elevated reporting limit due to turbidity.



ATL RCAP-MS DISSOLVED (LABFILT) IN W

Bureau Veritas ID		AHBK33		AHBK34			AHBK35		
Sampling Date		2024/10/24 07:50		2024/10/24 08:05			2024/10/24 08:15		
COC Number		C#1018695-01-01		C#1018695-01-01			C#1018695-01-01		
Sample #		00300		00301			00302		
	UNITS	MW-H	QC Batch	MW-I	RDL	QC Batch	MW-J	RDL	QC Batch
Dissolved Bismuth (Bi)	ug/L	ND	9733072	ND	2.0	9736108	ND	2.0	9733072
Dissolved Boron (B)	ug/L	ND	9733072	ND	50	9736108	410	50	9733072
Dissolved Cadmium (Cd)	ug/L	ND	9733072	ND	0.010	9736108	0.016	0.010	9733072
Dissolved Calcium (Ca)	ug/L	6000	9733072	27000	100	9736108	15000	100	9733072
Dissolved Chromium (Cr)	ug/L	ND	9733072	ND	1.0	9736108	1.4	1.0	9733072
Dissolved Cobalt (Co)	ug/L	ND	9733072	ND	0.40	9736108	0.64	0.40	9733072
Dissolved Copper (Cu)	ug/L	ND	9733072	1.7	0.50	9736108	4.0	0.50	9733072
Dissolved Iron (Fe)	ug/L	ND	9733072	ND	50	9736108	ND	50	9733072
Dissolved Lead (Pb)	ug/L	ND	9733072	ND	0.50	9736108	ND	0.50	9733072
Dissolved Magnesium (Mg)	ug/L	2300	9733072	13000	100	9736108	15000	100	9733072
Dissolved Manganese (Mn)	ug/L	ND	9733072	ND	2.0	9736108	ND	2.0	9733072
Dissolved Molybdenum (Mo)	ug/L	ND	9733072	ND	2.0	9736108	ND	2.0	9733072
Dissolved Nickel (Ni)	ug/L	ND	9733072	ND	2.0	9736108	7.8	2.0	9733072
Dissolved Phosphorus (P)	ug/L	ND	9733072	ND	100	9736108	ND	100	9733072
Dissolved Potassium (K)	ug/L	340	9733072	2000	100	9736108	35000	100	9733072
Dissolved Selenium (Se)	ug/L	ND	9733072	ND	0.50	9736108	ND	0.50	9733072
Dissolved Silver (Ag)	ug/L	ND	9733072	ND	0.10	9736108	ND	0.10	9733072
Dissolved Sodium (Na)	ug/L	7700	9733072	32000	100	9736108	100000	100	9733072
Dissolved Strontium (Sr)	ug/L	21	9733072	150	2.0	9736108	78	2.0	9733072
Dissolved Thallium (Tl)	ug/L	ND	9733072	ND	0.10	9736108	ND	0.10	9733072
Dissolved Tin (Sn)	ug/L	ND	9733072	ND	2.0	9736108	ND	2.0	9733072
Dissolved Titanium (Ti)	ug/L	ND	9733072	ND	2.0	9736108	ND	2.0	9733072
Dissolved Uranium (U)	ug/L	ND	9733072	1.0	0.10	9736108	0.11	0.10	9733072
Dissolved Vanadium (V)	ug/L	ND	9733072	ND	2.0	9736108	ND	2.0	9733072
Dissolved Zinc (Zn)	ug/L	ND	9733072	ND	5.0	9736108	ND	5.0	9733072

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.



ATL. RCAP-MS DISSOLVED (LABFILT) IN W

Bureau Veritas ID		AHBK36			AHBK37		
Sampling Date		2024/10/24 08:25			2024/10/24 08:40		
COC Number		C#1018695-01-01			C#1018695-01-01		
Sample #		00303			00304		
	UNITS	MW-K	RDL	QC Batch	MW-L	RDL	QC Batch
Calculated Parameters							
Anion Sum	me/L	1.91	N/A	9727852	0.990	N/A	9727852
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	85	1.0	9727848	22	1.0	9727848
Calculated TDS	mg/L	120	1.0	9727859	71	1.0	9727859
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ND	1.0	9727848	ND	1.0	9727848
Cation Sum	me/L	2.23	N/A	9727852	1.06	N/A	9727852
Hardness (CaCO ₃)	mg/L	87	1.0	9727850	43	1.0	9727850
Ion Balance (% Difference)	%	7.73	N/A	9727851	3.41	N/A	9727851
Langelier Index (@ 20C)	N/A	-0.111		9727857	-2.66		9727857
Langelier Index (@ 4C)	N/A	-0.362		9727858	-2.91		9727858
Nitrate (N)	mg/L	0.085	0.050	9727854	0.069	0.050	9727854
Saturation pH (@ 20C)	N/A	8.04		9727857	8.90		9727857
Saturation pH (@ 4C)	N/A	8.30		9727858	9.15		9727858
Inorganics							
Total Alkalinity (Total as CaCO ₃)	mg/L	86	2.0	9736170	22	2.0	9736170
Dissolved Chloride (Cl ⁻)	mg/L	4.3	1.0	9735904	5.1	1.0	9733392
Colour	TCU	5.1	5.0	9735908	42 (1)	10	9733405
Nitrate + Nitrite (N)	mg/L	0.085	0.050	9735910	0.069	0.050	9733420
Nitrite (N)	mg/L	ND	0.010	9735912	ND	0.010	9733421
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.050	9736317	0.058	0.050	9736317
Total Organic Carbon (C)	mg/L	1.1	0.50	9731203	8.8	0.50	9731203
Orthophosphate (P)	mg/L	0.010	0.010	9735909	ND	0.010	9733407
pH	pH	7.93		9736146	6.24		9736146
Reactive Silica (SiO ₂)	mg/L	18	0.50	9735907	13	0.50	9733401
Dissolved Sulphate (SO ₄)	mg/L	3.3	2.0	9735906	19	2.0	9733398
Turbidity	NTU	68	0.10	9736419	41	0.10	9733176
Conductivity	uS/cm	190	1.0	9736165	110	1.0	9736165
Metals							
Dissolved Aluminum (Al)	ug/L	8.8	5.0	9736108	150	5.0	9733072
Dissolved Antimony (Sb)	ug/L	ND	1.0	9736108	ND	1.0	9733072
Dissolved Arsenic (As)	ug/L	5.3	1.0	9736108	ND	1.0	9733072
Dissolved Barium (Ba)	ug/L	48	1.0	9736108	6.2	1.0	9733072
Dissolved Beryllium (Be)	ug/L	ND	0.10	9736108	ND	0.10	9733072
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable ND = Not Detected at a concentration equal or greater than the indicated Detection Limit. (1) Elevated reporting limit due to sample matrix.							



ATL. RCAP-MS DISSOLVED (LABFILT) IN W

Bureau Veritas ID		AHBK36			AHBK37		
Sampling Date		2024/10/24 08:25			2024/10/24 08:40		
COC Number		C#1018695-01-01			C#1018695-01-01		
Sample #		00303			00304		
	UNITS	MW-K	RDL	QC Batch	MW-L	RDL	QC Batch
Dissolved Bismuth (Bi)	ug/L	ND	2.0	9736108	ND	2.0	9733072
Dissolved Boron (B)	ug/L	ND	50	9736108	ND	50	9733072
Dissolved Cadmium (Cd)	ug/L	ND	0.010	9736108	0.057	0.010	9733072
Dissolved Calcium (Ca)	ug/L	24000	100	9736108	12000	100	9733072
Dissolved Chromium (Cr)	ug/L	ND	1.0	9736108	ND	1.0	9733072
Dissolved Cobalt (Co)	ug/L	ND	0.40	9736108	ND	0.40	9733072
Dissolved Copper (Cu)	ug/L	0.51	0.50	9736108	1.1	0.50	9733072
Dissolved Iron (Fe)	ug/L	ND	50	9736108	240	50	9733072
Dissolved Lead (Pb)	ug/L	ND	0.50	9736108	ND	0.50	9733072
Dissolved Magnesium (Mg)	ug/L	6700	100	9736108	3200	100	9733072
Dissolved Manganese (Mn)	ug/L	ND	2.0	9736108	210	2.0	9733072
Dissolved Molybdenum (Mo)	ug/L	ND	2.0	9736108	ND	2.0	9733072
Dissolved Nickel (Ni)	ug/L	ND	2.0	9736108	7.0	2.0	9733072
Dissolved Phosphorus (P)	ug/L	ND	100	9736108	ND	100	9733072
Dissolved Potassium (K)	ug/L	1900	100	9736108	200	100	9733072
Dissolved Selenium (Se)	ug/L	ND	0.50	9736108	ND	0.50	9733072
Dissolved Silver (Ag)	ug/L	ND	0.10	9736108	ND	0.10	9733072
Dissolved Sodium (Na)	ug/L	10000	100	9736108	4200	100	9733072
Dissolved Strontium (Sr)	ug/L	350	2.0	9736108	60	2.0	9733072
Dissolved Thallium (Tl)	ug/L	ND	0.10	9736108	ND	0.10	9733072
Dissolved Tin (Sn)	ug/L	ND	2.0	9736108	ND	2.0	9733072
Dissolved Titanium (Ti)	ug/L	ND	2.0	9736108	ND	2.0	9733072
Dissolved Uranium (U)	ug/L	0.39	0.10	9736108	0.22	0.10	9733072
Dissolved Vanadium (V)	ug/L	ND	2.0	9736108	ND	2.0	9733072
Dissolved Zinc (Zn)	ug/L	ND	5.0	9736108	21	5.0	9733072
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.							

**RESULTS OF ANALYSES OF WATER**

Bureau Veritas ID		AHBK33		AHBK34			AHBK35		
Sampling Date		2024/10/24 07:50		2024/10/24 08:05			2024/10/24 08:15		
COC Number		C#1018695-01-01		C#1018695-01-01			C#1018695-01-01		
Sample #		00300		00301			00302		
	UNITS	MW-H	QC Batch	MW-I	RDL	QC Batch	MW-J	RDL	QC Batch

Inorganics

Dissolved Organic Carbon (C)	mg/L	0.63	9733982	4.9	0.50	9734451	20 (1)	5.0	9733982
Phenols-4AAP	mg/L	ND	9745315	ND	0.0010	9745315	ND	0.0010	9745315
Total Suspended Solids	mg/L	200	9736314	94	5.0	9736314	54	2.5	9736314
Sulphide	mg/L	ND	9733645	ND	0.020	9736320	ND	0.020	9733645

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

(1) Elevated reporting limit due to sample matrix.

Bureau Veritas ID		AHBK36		AHBK37		
Sampling Date		2024/10/24 08:25		2024/10/24 08:40		
COC Number		C#1018695-01-01		C#1018695-01-01		
Sample #		00303		00304		
	UNITS	MW-K	QC Batch	MW-L	RDL	QC Batch

Inorganics

Dissolved Organic Carbon (C)	mg/L	0.96	9734451	7.7	0.50	9733982
Phenols-4AAP	mg/L	ND	9745315	ND	0.0010	9745315
Total Suspended Solids	mg/L	42	9736314	28	2.0	9736314
Sulphide	mg/L	ND	9733645	ND	0.020	9736320

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.



MERCURY BY COLD VAPOUR AA (WATER)

Bureau Veritas ID		AHBK33	AHBK34	AHBK35		AHBK36		
Sampling Date		2024/10/24 07:50	2024/10/24 08:05	2024/10/24 08:15		2024/10/24 08:25		
COC Number		C#1018695-01-01	C#1018695-01-01	C#1018695-01-01		C#1018695-01-01		
Sample #		00300	00301	00302		00303		
	UNITS	MW-H	MW-I	MW-J	QC Batch	MW-K	RDL	QC Batch

Metals								
Total Mercury (Hg)	ug/L	ND	ND	ND	9733811	ND	0.013	9737618
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.								

Bureau Veritas ID		AHBK37		
Sampling Date		2024/10/24 08:40		
COC Number		C#1018695-01-01		
Sample #		00304		
	UNITS	MW-L	RDL	QC Batch
Metals				
Total Mercury (Hg)	ug/L	ND	0.013	9737618
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.				



GENERAL COMMENTS

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

Package 1	16.0°C
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Average temperature upon receipt >10°C.

Sample AHBK34 [MW-I] : Poor RCap Ion Balance due to sample matrix. Possibly due to fine particulate matter.

Sample AHBK35 [MW-J] : Poor RCap Ion Balance due to sample matrix. Possibly due to fine particulate matter. Anion sum does not include contribution from Total Organic Carbon.

Sample AHBK36 [MW-K] : Poor RCap Ion Balance due to sample matrix. Possibly due to fine particulate matter.

Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9731203	ACK	Matrix Spike	Total Organic Carbon (C)	2024/10/30		101	%	85 - 115
9731203	ACK	Spiked Blank	Total Organic Carbon (C)	2024/10/30		101	%	80 - 120
9731203	ACK	Method Blank	Total Organic Carbon (C)	2024/10/30	ND, RDL=0.50		mg/L	
9731203	ACK	RPD	Total Organic Carbon (C)	2024/10/30	NC		%	15
9733072	MTZ	Matrix Spike	Dissolved Aluminum (Al)	2024/10/30		103	%	80 - 120
			Dissolved Antimony (Sb)	2024/10/30		99	%	80 - 120
			Dissolved Arsenic (As)	2024/10/30		101	%	80 - 120
			Dissolved Barium (Ba)	2024/10/30		NC	%	80 - 120
			Dissolved Beryllium (Be)	2024/10/30		102	%	80 - 120
			Dissolved Bismuth (Bi)	2024/10/30		97	%	80 - 120
			Dissolved Boron (B)	2024/10/30		96	%	80 - 120
			Dissolved Cadmium (Cd)	2024/10/30		98	%	80 - 120
			Dissolved Calcium (Ca)	2024/10/30		NC	%	80 - 120
			Dissolved Chromium (Cr)	2024/10/30		99	%	80 - 120
			Dissolved Cobalt (Co)	2024/10/30		98	%	80 - 120
			Dissolved Copper (Cu)	2024/10/30		99	%	80 - 120
			Dissolved Iron (Fe)	2024/10/30		NC	%	80 - 120
			Dissolved Lead (Pb)	2024/10/30		97	%	80 - 120
			Dissolved Magnesium (Mg)	2024/10/30		106	%	80 - 120
			Dissolved Manganese (Mn)	2024/10/30		NC	%	80 - 120
			Dissolved Molybdenum (Mo)	2024/10/30		102	%	80 - 120
			Dissolved Nickel (Ni)	2024/10/30		100	%	80 - 120
			Dissolved Phosphorus (P)	2024/10/30		107	%	80 - 120
			Dissolved Potassium (K)	2024/10/30		98	%	80 - 120
			Dissolved Selenium (Se)	2024/10/30		101	%	80 - 120
			Dissolved Silver (Ag)	2024/10/30		92	%	80 - 120
			Dissolved Sodium (Na)	2024/10/30		100	%	80 - 120
			Dissolved Strontium (Sr)	2024/10/30		NC	%	80 - 120
			Dissolved Thallium (Tl)	2024/10/30		98	%	80 - 120
			Dissolved Tin (Sn)	2024/10/30		100	%	80 - 120
			Dissolved Titanium (Ti)	2024/10/30		104	%	80 - 120
			Dissolved Uranium (U)	2024/10/30		105	%	80 - 120
			Dissolved Vanadium (V)	2024/10/30		102	%	80 - 120
			Dissolved Zinc (Zn)	2024/10/30		98	%	80 - 120
9733072	MTZ	Spiked Blank	Dissolved Aluminum (Al)	2024/10/30		103	%	80 - 120
			Dissolved Antimony (Sb)	2024/10/30		98	%	80 - 120
			Dissolved Arsenic (As)	2024/10/30		99	%	80 - 120
			Dissolved Barium (Ba)	2024/10/30		96	%	80 - 120
			Dissolved Beryllium (Be)	2024/10/30		101	%	80 - 120
			Dissolved Bismuth (Bi)	2024/10/30		100	%	80 - 120
			Dissolved Boron (B)	2024/10/30		97	%	80 - 120
			Dissolved Cadmium (Cd)	2024/10/30		98	%	80 - 120
			Dissolved Calcium (Ca)	2024/10/30		101	%	80 - 120
			Dissolved Chromium (Cr)	2024/10/30		98	%	80 - 120
			Dissolved Cobalt (Co)	2024/10/30		98	%	80 - 120
			Dissolved Copper (Cu)	2024/10/30		98	%	80 - 120
			Dissolved Iron (Fe)	2024/10/30		103	%	80 - 120
			Dissolved Lead (Pb)	2024/10/30		99	%	80 - 120
			Dissolved Magnesium (Mg)	2024/10/30		103	%	80 - 120
			Dissolved Manganese (Mn)	2024/10/30		98	%	80 - 120
			Dissolved Molybdenum (Mo)	2024/10/30		103	%	80 - 120
			Dissolved Nickel (Ni)	2024/10/30		101	%	80 - 120
			Dissolved Phosphorus (P)	2024/10/30		107	%	80 - 120
			Dissolved Potassium (K)	2024/10/30		99	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9733072	MTZ	Method Blank	Dissolved Selenium (Se)	2024/10/30		97	%	80 - 120
			Dissolved Silver (Ag)	2024/10/30		96	%	80 - 120
			Dissolved Sodium (Na)	2024/10/30		103	%	80 - 120
			Dissolved Strontium (Sr)	2024/10/30		98	%	80 - 120
			Dissolved Thallium (Tl)	2024/10/30		101	%	80 - 120
			Dissolved Tin (Sn)	2024/10/30		100	%	80 - 120
			Dissolved Titanium (Ti)	2024/10/30		100	%	80 - 120
			Dissolved Uranium (U)	2024/10/30		105	%	80 - 120
			Dissolved Vanadium (V)	2024/10/30		102	%	80 - 120
			Dissolved Zinc (Zn)	2024/10/30		100	%	80 - 120
			Dissolved Aluminum (Al)	2024/10/30	ND, RDL=5.0		ug/L	
			Dissolved Antimony (Sb)	2024/10/30	ND, RDL=1.0		ug/L	
			Dissolved Arsenic (As)	2024/10/30	ND, RDL=1.0		ug/L	
			Dissolved Barium (Ba)	2024/10/30	ND, RDL=1.0		ug/L	
			Dissolved Beryllium (Be)	2024/10/30	ND, RDL=0.10		ug/L	
			Dissolved Bismuth (Bi)	2024/10/30	ND, RDL=2.0		ug/L	
			Dissolved Boron (B)	2024/10/30	ND, RDL=50		ug/L	
			Dissolved Cadmium (Cd)	2024/10/30	ND, RDL=0.010		ug/L	
			Dissolved Calcium (Ca)	2024/10/30	ND, RDL=100		ug/L	
			Dissolved Chromium (Cr)	2024/10/30	ND, RDL=1.0		ug/L	
			Dissolved Cobalt (Co)	2024/10/30	ND, RDL=0.40		ug/L	
			Dissolved Copper (Cu)	2024/10/30	ND, RDL=0.50		ug/L	
			Dissolved Iron (Fe)	2024/10/30	ND, RDL=50		ug/L	
			Dissolved Lead (Pb)	2024/10/30	ND, RDL=0.50		ug/L	
			Dissolved Magnesium (Mg)	2024/10/30	ND, RDL=100		ug/L	
			Dissolved Manganese (Mn)	2024/10/30	ND, RDL=2.0		ug/L	
			Dissolved Molybdenum (Mo)	2024/10/30	ND, RDL=2.0		ug/L	
			Dissolved Nickel (Ni)	2024/10/30	ND, RDL=2.0		ug/L	
			Dissolved Phosphorus (P)	2024/10/30	ND, RDL=100		ug/L	
			Dissolved Potassium (K)	2024/10/30	ND, RDL=100		ug/L	
			Dissolved Selenium (Se)	2024/10/30	ND, RDL=0.50		ug/L	
			Dissolved Silver (Ag)	2024/10/30	ND, RDL=0.10		ug/L	
			Dissolved Sodium (Na)	2024/10/30	ND, RDL=100		ug/L	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9733072	MTZ	RPD	Dissolved Strontium (Sr)	2024/10/30	ND, RDL=2.0		ug/L	
			Dissolved Thallium (Tl)	2024/10/30	ND, RDL=0.10		ug/L	
			Dissolved Tin (Sn)	2024/10/30	ND, RDL=2.0		ug/L	
			Dissolved Titanium (Ti)	2024/10/30	ND, RDL=2.0		ug/L	
			Dissolved Uranium (U)	2024/10/30	ND, RDL=0.10		ug/L	
			Dissolved Vanadium (V)	2024/10/30	ND, RDL=2.0		ug/L	
			Dissolved Zinc (Zn)	2024/10/30	ND, RDL=5.0		ug/L	
			Dissolved Aluminum (Al)	2024/10/30	NC		%	20
			Dissolved Antimony (Sb)	2024/10/30	NC		%	20
			Dissolved Arsenic (As)	2024/10/30	NC		%	20
			Dissolved Barium (Ba)	2024/10/30	1.0		%	20
			Dissolved Beryllium (Be)	2024/10/30	NC		%	20
			Dissolved Bismuth (Bi)	2024/10/30	NC		%	20
			Dissolved Boron (B)	2024/10/30	NC		%	20
			Dissolved Cadmium (Cd)	2024/10/30	1.4		%	20
			Dissolved Calcium (Ca)	2024/10/30	2.7		%	20
			Dissolved Chromium (Cr)	2024/10/30	NC		%	20
			Dissolved Cobalt (Co)	2024/10/30	8.3		%	20
			Dissolved Copper (Cu)	2024/10/30	NC		%	20
			Dissolved Iron (Fe)	2024/10/30	1.2		%	20
			Dissolved Lead (Pb)	2024/10/30	NC		%	20
			Dissolved Magnesium (Mg)	2024/10/30	0.48		%	20
			Dissolved Manganese (Mn)	2024/10/30	1.0		%	20
			Dissolved Molybdenum (Mo)	2024/10/30	NC		%	20
			Dissolved Nickel (Ni)	2024/10/30	3.5		%	20
			Dissolved Phosphorus (P)	2024/10/30	NC		%	20
			Dissolved Potassium (K)	2024/10/30	1.8		%	20
			Dissolved Selenium (Se)	2024/10/30	NC		%	20
			Dissolved Silver (Ag)	2024/10/30	NC		%	20
			Dissolved Sodium (Na)	2024/10/30	1.7		%	20
			Dissolved Strontium (Sr)	2024/10/30	0.94		%	20
			Dissolved Thallium (Tl)	2024/10/30	NC		%	20
			Dissolved Tin (Sn)	2024/10/30	NC		%	20
			Dissolved Titanium (Ti)	2024/10/30	NC		%	20
			Dissolved Uranium (U)	2024/10/30	1.5		%	20
			Dissolved Vanadium (V)	2024/10/30	NC		%	20
			Dissolved Zinc (Zn)	2024/10/30	0.083		%	20
9733176	S6S	QC Standard	Turbidity	2024/10/30		101	%	80 - 120
9733176	S6S	Spiked Blank	Turbidity	2024/10/30		100	%	80 - 120
9733176	S6S	Method Blank	Turbidity	2024/10/30	ND, RDL=0.10		NTU	
9733176	S6S	RPD	Turbidity	2024/10/30	NC		%	20
9733392	EMT	Matrix Spike	Dissolved Chloride (Cl-)	2024/10/31		92	%	80 - 120
9733392	EMT	Spiked Blank	Dissolved Chloride (Cl-)	2024/10/31		93	%	80 - 120
9733392	EMT	Method Blank	Dissolved Chloride (Cl-)	2024/10/31	ND, RDL=1.0		mg/L	
9733392	EMT	RPD	Dissolved Chloride (Cl-)	2024/10/31	1.2		%	20
9733398	EMT	Matrix Spike	Dissolved Sulphate (SO4)	2024/10/31		96	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9733398	EMT	Spiked Blank	Dissolved Sulphate (SO4)	2024/10/31		93	%	80 - 120
9733398	EMT	Method Blank	Dissolved Sulphate (SO4)	2024/10/31	ND, RDL=2.0		mg/L	
9733398	EMT	RPD	Dissolved Sulphate (SO4)	2024/10/31	2.2		%	20
9733401	EMT	Matrix Spike	Reactive Silica (SiO2)	2024/10/31		84	%	80 - 120
9733401	EMT	Spiked Blank	Reactive Silica (SiO2)	2024/10/31		89	%	80 - 120
9733401	EMT	Method Blank	Reactive Silica (SiO2)	2024/10/31	ND, RDL=0.50		mg/L	
9733401	EMT	RPD	Reactive Silica (SiO2)	2024/10/31	2.1		%	20
9733405	EMT	Spiked Blank	Colour	2024/10/31		88	%	80 - 120
9733405	EMT	Method Blank	Colour	2024/10/31	ND, RDL=5.0		TCU	
9733405	EMT	RPD	Colour	2024/10/31	NC		%	20
9733407	EMT	Matrix Spike	Orthophosphate (P)	2024/10/31		85	%	80 - 120
9733407	EMT	Spiked Blank	Orthophosphate (P)	2024/10/31		88	%	80 - 120
9733407	EMT	Method Blank	Orthophosphate (P)	2024/10/31	ND, RDL=0.010		mg/L	
9733407	EMT	RPD	Orthophosphate (P)	2024/10/31	14		%	20
9733420	EMT	Matrix Spike	Nitrate + Nitrite (N)	2024/10/31		NC	%	80 - 120
9733420	EMT	Spiked Blank	Nitrate + Nitrite (N)	2024/10/31		96	%	80 - 120
9733420	EMT	Method Blank	Nitrate + Nitrite (N)	2024/10/31	ND, RDL=0.050		mg/L	
9733420	EMT	RPD	Nitrate + Nitrite (N)	2024/10/31	0.88		%	20
9733421	EMT	Matrix Spike	Nitrite (N)	2024/10/31		107	%	80 - 120
9733421	EMT	Spiked Blank	Nitrite (N)	2024/10/31		102	%	80 - 120
9733421	EMT	Method Blank	Nitrite (N)	2024/10/31	ND, RDL=0.010		mg/L	
9733421	EMT	RPD	Nitrite (N)	2024/10/31	NC		%	20
9733645	SRT	Matrix Spike	Sulphide	2024/10/30		96	%	80 - 120
9733645	SRT	Spiked Blank	Sulphide	2024/10/30		99	%	80 - 120
9733645	SRT	Method Blank	Sulphide	2024/10/30	ND, RDL=0.020		mg/L	
9733645	SRT	RPD	Sulphide	2024/10/30	NC		%	20
9733811	SPY	Matrix Spike	Total Mercury (Hg)	2024/10/31		106	%	80 - 120
9733811	SPY	Spiked Blank	Total Mercury (Hg)	2024/10/31		105	%	80 - 120
9733811	SPY	Method Blank	Total Mercury (Hg)	2024/10/31	ND, RDL=0.013		ug/L	
9733811	SPY	RPD	Total Mercury (Hg)	2024/10/31	NC		%	20
9733982	ACK	Matrix Spike	Dissolved Organic Carbon (C)	2024/10/30		101	%	85 - 115
9733982	ACK	Spiked Blank	Dissolved Organic Carbon (C)	2024/10/30		101	%	80 - 120
9733982	ACK	Method Blank	Dissolved Organic Carbon (C)	2024/10/30	ND, RDL=0.50		mg/L	
9733982	ACK	RPD	Dissolved Organic Carbon (C)	2024/10/30	1.1		%	15
9734451	ACK	Matrix Spike	Dissolved Organic Carbon (C)	2024/10/31		101	%	85 - 115
9734451	ACK	Spiked Blank	Dissolved Organic Carbon (C)	2024/10/31		99	%	80 - 120
9734451	ACK	Method Blank	Dissolved Organic Carbon (C)	2024/10/31	ND, RDL=0.50		mg/L	
9734451	ACK	RPD	Dissolved Organic Carbon (C)	2024/10/31	0.49		%	15
9735904	EMT	Matrix Spike	Dissolved Chloride (Cl-)	2024/10/31		91	%	80 - 120
9735904	EMT	Spiked Blank	Dissolved Chloride (Cl-)	2024/10/31		93	%	80 - 120
9735904	EMT	Method Blank	Dissolved Chloride (Cl-)	2024/10/31	ND, RDL=1.0		mg/L	
9735904	EMT	RPD	Dissolved Chloride (Cl-)	2024/10/31	0.62		%	20
9735906	EMT	Matrix Spike	Dissolved Sulphate (SO4)	2024/10/31		92	%	80 - 120
9735906	EMT	Spiked Blank	Dissolved Sulphate (SO4)	2024/10/31		94	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9735906	EMT	Method Blank	Dissolved Sulphate (SO4)	2024/10/31	ND, RDL=2.0		mg/L	
9735906	EMT	RPD	Dissolved Sulphate (SO4)	2024/10/31	NC		%	20
9735907	EMT	Matrix Spike	Reactive Silica (SiO2)	2024/10/31		84	%	80 - 120
9735907	EMT	Spiked Blank	Reactive Silica (SiO2)	2024/10/31		88	%	80 - 120
9735907	EMT	Method Blank	Reactive Silica (SiO2)	2024/10/31	ND, RDL=0.50		mg/L	
9735907	EMT	RPD	Reactive Silica (SiO2)	2024/10/31	NC		%	20
9735908	EMT	Spiked Blank	Colour	2024/10/31		93	%	80 - 120
9735908	EMT	Method Blank	Colour	2024/10/31	ND, RDL=5.0		TCU	
9735908	EMT	RPD	Colour	2024/10/31	NC		%	20
9735909	EMT	Matrix Spike	Orthophosphate (P)	2024/10/31		83	%	80 - 120
9735909	EMT	Spiked Blank	Orthophosphate (P)	2024/10/31		86	%	80 - 120
9735909	EMT	Method Blank	Orthophosphate (P)	2024/10/31	ND, RDL=0.010		mg/L	
9735909	EMT	RPD	Orthophosphate (P)	2024/10/31	4.7		%	20
9735910	EMT	Matrix Spike	Nitrate + Nitrite (N)	2024/10/31		92	%	80 - 120
9735910	EMT	Spiked Blank	Nitrate + Nitrite (N)	2024/10/31		95	%	80 - 120
9735910	EMT	Method Blank	Nitrate + Nitrite (N)	2024/10/31	ND, RDL=0.050		mg/L	
9735910	EMT	RPD	Nitrate + Nitrite (N)	2024/10/31	8.8		%	20
9735912	EMT	Matrix Spike	Nitrite (N)	2024/10/31		95	%	80 - 120
9735912	EMT	Spiked Blank	Nitrite (N)	2024/10/31		100	%	80 - 120
9735912	EMT	Method Blank	Nitrite (N)	2024/10/31	ND, RDL=0.010		mg/L	
9735912	EMT	RPD	Nitrite (N)	2024/10/31	NC		%	20
9736108	MTZ	Matrix Spike	Dissolved Aluminum (Al)	2024/10/31		99	%	80 - 120
			Dissolved Antimony (Sb)	2024/10/31		102	%	80 - 120
			Dissolved Arsenic (As)	2024/10/31		100	%	80 - 120
			Dissolved Barium (Ba)	2024/10/31		NC	%	80 - 120
			Dissolved Beryllium (Be)	2024/10/31		98	%	80 - 120
			Dissolved Bismuth (Bi)	2024/10/31		101	%	80 - 120
			Dissolved Boron (B)	2024/10/31		96	%	80 - 120
			Dissolved Cadmium (Cd)	2024/10/31		100	%	80 - 120
			Dissolved Calcium (Ca)	2024/10/31		101	%	80 - 120
			Dissolved Chromium (Cr)	2024/10/31		99	%	80 - 120
			Dissolved Cobalt (Co)	2024/10/31		97	%	80 - 120
			Dissolved Copper (Cu)	2024/10/31		97	%	80 - 120
			Dissolved Iron (Fe)	2024/10/31		101	%	80 - 120
			Dissolved Lead (Pb)	2024/10/31		100	%	80 - 120
			Dissolved Magnesium (Mg)	2024/10/31		105	%	80 - 120
			Dissolved Manganese (Mn)	2024/10/31		102	%	80 - 120
			Dissolved Molybdenum (Mo)	2024/10/31		103	%	80 - 120
			Dissolved Nickel (Ni)	2024/10/31		98	%	80 - 120
			Dissolved Phosphorus (P)	2024/10/31		105	%	80 - 120
			Dissolved Potassium (K)	2024/10/31		99	%	80 - 120
			Dissolved Selenium (Se)	2024/10/31		102	%	80 - 120
			Dissolved Silver (Ag)	2024/10/31		97	%	80 - 120
			Dissolved Sodium (Na)	2024/10/31		102	%	80 - 120
			Dissolved Strontium (Sr)	2024/10/31		98	%	80 - 120
			Dissolved Thallium (Tl)	2024/10/31		102	%	80 - 120
			Dissolved Tin (Sn)	2024/10/31		105	%	80 - 120
			Dissolved Titanium (Ti)	2024/10/31		101	%	80 - 120
			Dissolved Uranium (U)	2024/10/31		104	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9736108	MTZ	Spiked Blank	Dissolved Vanadium (V)	2024/10/31		102	%	80 - 120
			Dissolved Zinc (Zn)	2024/10/31		101	%	80 - 120
			Dissolved Aluminum (Al)	2024/10/31		105	%	80 - 120
			Dissolved Antimony (Sb)	2024/10/31		101	%	80 - 120
			Dissolved Arsenic (As)	2024/10/31		101	%	80 - 120
			Dissolved Barium (Ba)	2024/10/31		103	%	80 - 120
			Dissolved Beryllium (Be)	2024/10/31		103	%	80 - 120
			Dissolved Bismuth (Bi)	2024/10/31		102	%	80 - 120
			Dissolved Boron (B)	2024/10/31		103	%	80 - 120
			Dissolved Cadmium (Cd)	2024/10/31		100	%	80 - 120
			Dissolved Calcium (Ca)	2024/10/31		104	%	80 - 120
			Dissolved Chromium (Cr)	2024/10/31		101	%	80 - 120
			Dissolved Cobalt (Co)	2024/10/31		98	%	80 - 120
			Dissolved Copper (Cu)	2024/10/31		98	%	80 - 120
			Dissolved Iron (Fe)	2024/10/31		102	%	80 - 120
			Dissolved Lead (Pb)	2024/10/31		101	%	80 - 120
			Dissolved Magnesium (Mg)	2024/10/31		105	%	80 - 120
			Dissolved Manganese (Mn)	2024/10/31		103	%	80 - 120
			Dissolved Molybdenum (Mo)	2024/10/31		105	%	80 - 120
			Dissolved Nickel (Ni)	2024/10/31		99	%	80 - 120
			Dissolved Phosphorus (P)	2024/10/31		105	%	80 - 120
			Dissolved Potassium (K)	2024/10/31		100	%	80 - 120
			Dissolved Selenium (Se)	2024/10/31		101	%	80 - 120
			Dissolved Silver (Ag)	2024/10/31		98	%	80 - 120
			Dissolved Sodium (Na)	2024/10/31		104	%	80 - 120
			Dissolved Strontium (Sr)	2024/10/31		103	%	80 - 120
			Dissolved Thallium (Tl)	2024/10/31		103	%	80 - 120
			Dissolved Tin (Sn)	2024/10/31		104	%	80 - 120
			Dissolved Titanium (Ti)	2024/10/31		104	%	80 - 120
			Dissolved Uranium (U)	2024/10/31		104	%	80 - 120
9736108	MTZ	Method Blank	Dissolved Vanadium (V)	2024/10/31		103	%	80 - 120
			Dissolved Zinc (Zn)	2024/10/31		104	%	80 - 120
			Dissolved Aluminum (Al)	2024/10/31	ND, RDL=5.0		ug/L	
			Dissolved Antimony (Sb)	2024/10/31	ND, RDL=1.0		ug/L	
			Dissolved Arsenic (As)	2024/10/31	ND, RDL=1.0		ug/L	
			Dissolved Barium (Ba)	2024/10/31	ND, RDL=1.0		ug/L	
			Dissolved Beryllium (Be)	2024/10/31	ND, RDL=0.10		ug/L	
			Dissolved Bismuth (Bi)	2024/10/31	ND, RDL=2.0		ug/L	
			Dissolved Boron (B)	2024/10/31	ND, RDL=50		ug/L	
			Dissolved Cadmium (Cd)	2024/10/31	ND, RDL=0.010		ug/L	
			Dissolved Calcium (Ca)	2024/10/31	ND, RDL=100		ug/L	
			Dissolved Chromium (Cr)	2024/10/31	ND, RDL=1.0		ug/L	
			Dissolved Cobalt (Co)	2024/10/31	ND, RDL=0.40		ug/L	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9736108	MTZ	RPD	Dissolved Copper (Cu)	2024/10/31	ND, RDL=0.50		ug/L	
			Dissolved Iron (Fe)	2024/10/31	ND, RDL=50		ug/L	
			Dissolved Lead (Pb)	2024/10/31	ND, RDL=0.50		ug/L	
			Dissolved Magnesium (Mg)	2024/10/31	ND, RDL=100		ug/L	
			Dissolved Manganese (Mn)	2024/10/31	ND, RDL=2.0		ug/L	
			Dissolved Molybdenum (Mo)	2024/10/31	ND, RDL=2.0		ug/L	
			Dissolved Nickel (Ni)	2024/10/31	ND, RDL=2.0		ug/L	
			Dissolved Phosphorus (P)	2024/10/31	ND, RDL=100		ug/L	
			Dissolved Potassium (K)	2024/10/31	ND, RDL=100		ug/L	
			Dissolved Selenium (Se)	2024/10/31	ND, RDL=0.50		ug/L	
			Dissolved Silver (Ag)	2024/10/31	ND, RDL=0.10		ug/L	
			Dissolved Sodium (Na)	2024/10/31	ND, RDL=100		ug/L	
			Dissolved Strontium (Sr)	2024/10/31	ND, RDL=2.0		ug/L	
			Dissolved Thallium (Tl)	2024/10/31	ND, RDL=0.10		ug/L	
			Dissolved Tin (Sn)	2024/10/31	ND, RDL=2.0		ug/L	
			Dissolved Titanium (Ti)	2024/10/31	ND, RDL=2.0		ug/L	
			Dissolved Uranium (U)	2024/10/31	ND, RDL=0.10		ug/L	
			Dissolved Vanadium (V)	2024/10/31	ND, RDL=2.0		ug/L	
			Dissolved Zinc (Zn)	2024/10/31	ND, RDL=5.0		ug/L	
			Dissolved Aluminum (Al)	2024/10/31	3.5		%	20
			Dissolved Antimony (Sb)	2024/10/31	NC		%	20
			Dissolved Arsenic (As)	2024/10/31	0.019		%	20
			Dissolved Barium (Ba)	2024/10/31	0.59		%	20
			Dissolved Beryllium (Be)	2024/10/31	NC		%	20
			Dissolved Bismuth (Bi)	2024/10/31	NC		%	20
			Dissolved Boron (B)	2024/10/31	NC		%	20
			Dissolved Cadmium (Cd)	2024/10/31	NC		%	20
			Dissolved Calcium (Ca)	2024/10/31	0.52		%	20
			Dissolved Chromium (Cr)	2024/10/31	NC		%	20
			Dissolved Cobalt (Co)	2024/10/31	NC		%	20
			Dissolved Copper (Cu)	2024/10/31	3.4		%	20
			Dissolved Iron (Fe)	2024/10/31	NC		%	20
			Dissolved Lead (Pb)	2024/10/31	NC		%	20
			Dissolved Magnesium (Mg)	2024/10/31	0.085		%	20
			Dissolved Manganese (Mn)	2024/10/31	NC		%	20
			Dissolved Molybdenum (Mo)	2024/10/31	0.74		%	20
			Dissolved Nickel (Ni)	2024/10/31	NC		%	20



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Phosphorus (P)	2024/10/31	NC		%	20
			Dissolved Potassium (K)	2024/10/31	0.91		%	20
			Dissolved Selenium (Se)	2024/10/31	NC		%	20
			Dissolved Silver (Ag)	2024/10/31	NC		%	20
			Dissolved Sodium (Na)	2024/10/31	0.48		%	20
			Dissolved Strontium (Sr)	2024/10/31	1.5		%	20
			Dissolved Thallium (Tl)	2024/10/31	NC		%	20
			Dissolved Tin (Sn)	2024/10/31	NC		%	20
			Dissolved Titanium (Ti)	2024/10/31	NC		%	20
			Dissolved Uranium (U)	2024/10/31	1.5		%	20
			Dissolved Vanadium (V)	2024/10/31	NC		%	20
			Dissolved Zinc (Zn)	2024/10/31	NC		%	20
9736146	S6S	Spiked Blank	pH	2024/10/31		99	%	97 - 103
9736146	S6S	RPD	pH	2024/10/31	0.74		%	N/A
9736165	S6S	Spiked Blank	Conductivity	2024/10/31		93	%	80 - 120
9736165	S6S	Method Blank	Conductivity	2024/10/31	ND, RDL=1.0		uS/cm	
9736165	S6S	RPD	Conductivity	2024/10/31	1.3		%	10
9736170	S6S	Spiked Blank	Total Alkalinity (Total as CaCO3)	2024/10/31		91	%	80 - 120
9736170	S6S	Method Blank	Total Alkalinity (Total as CaCO3)	2024/10/31	ND, RDL=2.0		mg/L	
9736170	S6S	RPD	Total Alkalinity (Total as CaCO3)	2024/10/31	6.5		%	20
9736314	DME	QC Standard	Total Suspended Solids	2024/11/04		97	%	80 - 120
9736314	DME	Method Blank	Total Suspended Solids	2024/11/04	ND, RDL=1.0		mg/L	
9736314	DME	RPD	Total Suspended Solids	2024/11/04	7.6		%	20
9736317	MCN	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2024/10/31		113	%	80 - 120
9736317	MCN	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2024/10/31		105	%	80 - 120
9736317	MCN	Method Blank	Nitrogen (Ammonia Nitrogen)	2024/10/31	ND, RDL=0.050		mg/L	
9736317	MCN	RPD	Nitrogen (Ammonia Nitrogen)	2024/10/31	NC		%	20
9736320	SRT	Matrix Spike	Sulphide	2024/10/31		97	%	80 - 120
9736320	SRT	Spiked Blank	Sulphide	2024/10/31		93	%	80 - 120
9736320	SRT	Method Blank	Sulphide	2024/10/31	ND, RDL=0.020		mg/L	
9736320	SRT	RPD	Sulphide	2024/10/31	NC		%	20
9736419	S6S	QC Standard	Turbidity	2024/10/31		98	%	80 - 120
9736419	S6S	Spiked Blank	Turbidity	2024/10/31		101	%	80 - 120
9736419	S6S	Method Blank	Turbidity	2024/10/31	ND, RDL=0.10		NTU	
9736419	S6S	RPD	Turbidity	2024/10/31	1.6		%	20
9737618	SPY	Matrix Spike	Total Mercury (Hg)	2024/11/01		100	%	80 - 120
9737618	SPY	Spiked Blank	Total Mercury (Hg)	2024/11/01		104	%	80 - 120
9737618	SPY	Method Blank	Total Mercury (Hg)	2024/11/01	ND, RDL=0.013		ug/L	
9737618	SPY	RPD	Total Mercury (Hg)	2024/11/01	NC		%	20
9745315	SPC	Matrix Spike	Phenols-4AAP	2024/11/05		98	%	80 - 120
9745315	SPC	Spiked Blank	Phenols-4AAP	2024/11/05		98	%	80 - 120
9745315	SPC	Method Blank	Phenols-4AAP	2024/11/05	ND, RDL=0.0010		mg/L	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9745315	SPC	RPD	Phenols-4AAP	2024/11/05	NC		%	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).								



VALIDATION SIGNATURE PAGE

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

Ernlie Publicover, Scientific Specialist

Janah Rhyno, Scientific Specialist

Louise Harding, Scientific Specialist

Bureau Veritas Certified by Janah Rhyno, Scientific Specialist

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.



Your Project #: MONITORING WELL SAMPLES
Site#: 00012
Your C.O.C. #: N/A

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2025/01/03
Report #: R8465682
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4BP950

Received: 2024/12/23, 09:20

Sample Matrix: Water
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Carbonate, Bicarbonate and Hydroxide	5	N/A	2024/12/31	N/A	SM 24 4500-CO2 D
Alkalinity	5	N/A	2024/12/30	ATL SOP 00142	SM 24 2320 B
Chloride	5	N/A	2024/12/30	ATL SOP 00014	SM 24 4500-Cl- E m
Colour	5	N/A	2024/12/30	ATL SOP 00020	SM 24 2120C m
Organic carbon - Diss (DOC)-Lab Filtered (2)	5	N/A	2024/12/30	ATL SOP 00203	SM 24 5310B m
Conductance - water	5	N/A	2024/12/30	ATL SOP 00004	SM 24 2510B m
Hardness (calculated as CaCO3)	4	N/A	2024/12/27	ATL SOP 00048	Auto Calc
Hardness (calculated as CaCO3)	1	N/A	2024/12/30	ATL SOP 00048	Auto Calc
Mercury - Total (CVAA,LL)	5	2025/01/03	2025/01/03	ATL SOP 00026	EPA 245.1 R3 m
Metals Water Diss. MS- Lab Filtered (3)	4	N/A	2024/12/27	ATL SOP 00058	EPA 6020B R2 m
Metals Water Diss. MS- Lab Filtered (3)	1	N/A	2024/12/30	ATL SOP 00058	EPA 6020B R2 m
Ion Balance (% Difference)	5	N/A	2024/12/31	N/A	Auto Calc.
Anion and Cation Sum	5	N/A	2024/12/31	N/A	Auto Calc.
Nitrogen Ammonia - water	5	N/A	2024/12/31	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	5	N/A	2024/12/30	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite	5	N/A	2024/12/30	ATL SOP 00017	SM 24 4500-NO2- B m
Nitrogen - Nitrate (as N)	5	N/A	2024/12/30	ATL SOP 00018	ASTM D3867-16
Phenols (4AAP) (1)	5	N/A	2025/01/02	CAM SOP-00444	OMOE E3179 m
pH (4)	5	N/A	2024/12/30	ATL SOP 00003	SM 24 4500-H+ B m
Phosphorus - ortho	5	N/A	2024/12/30	ATL SOP 00021	SM 24 4500-P E m
Sat. pH and Langelier Index (@ 20C)	5	N/A	2024/12/31	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 4C)	5	N/A	2024/12/31	ATL SOP 00049	Auto Calc.
Reactive Silica	5	N/A	2024/12/30	ATL SOP 00022	EPA 366.0 m
Sulphate	5	N/A	2024/12/30	ATL SOP 00023	ASTM D516-16 m
Sulphide (1)	5	N/A	2024/12/24	CAM SOP-00455	SM 24 4500-S G m
Total Dissolved Solids (TDS calc)	5	N/A	2024/12/31	N/A	Auto Calc.
Organic carbon - Total (TOC) (2)	5	N/A	2024/12/31	ATL SOP 00203	SM 24 5310B m
Total Suspended Solids	5	2024/12/24	2024/12/30	ATL SOP 00007	SM 24 2540D m
Turbidity	5	N/A	2025/01/02	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



Your Project #: MONITORING WELL SAMPLES
Site#: 00012
Your C.O.C. #: N/A

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2025/01/03

Report #: R8465682

Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4BP950

Received: 2024/12/23, 09:20

Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, EPA, APHA or the Quebec Ministry of Environment.

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.

(1) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd, Mississauga, ON, L5N 2L8

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

(3) Sample filtered in laboratory prior to analysis for dissolved metals.

(4) 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.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:

Jaspreet Kaur, Project Manager 1

Email: jaspreet.kaur@bureauveritas.com

Phone# (902)420-0203

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

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ATL. RCAP-MS DISSOLVED (LABFILT) IN W

Bureau Veritas ID		AMMB76	AMMB77			AMMB78			AMMB79		
Sampling Date		2024/12/18 10:20	2024/12/18 10:30			2024/12/18 10:40			2024/12/18 10:50		
COC Number		N/A	N/A			N/A			N/A		
Sample #		00300	00301			00302			00303		
	UNITS	MW-H	MW-I	RDL	QC Batch	MW-J	RDL	QC Batch	MW-K	RDL	QC Batch

Calculated Parameters											
Anion Sum	me/L	0.510	2.69	N/A	9843214	4.17	N/A	9843214	1.81	N/A	9843214
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	14	63	1.0	9843209	100	1.0	9843209	81	1.0	9843209
Calculated TDS	mg/L	40	160	1.0	9843219	260	1.0	9843219	120	1.0	9843219
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ND	ND	1.0	9843209	ND	1.0	9843209	ND	1.0	9843209
Cation Sum	me/L	0.620	3.18	N/A	9843214	4.73	N/A	9843214	2.29	N/A	9843214
Hardness (CaCO ₃)	mg/L	19	100	1.0	9843212	96	1.0	9843212	91	1.0	9843212
Ion Balance (% Difference)	%	9.73	8.35	N/A	9843213	6.29	N/A	9843213	11.7	N/A	9843213
Langelier Index (@ 20C)	N/A	-2.62	-0.533		9843217	-0.444		9843217	-0.0160		9843217
Langelier Index (@ 4C)	N/A	-2.87	-0.783		9843218	-0.694		9843218	-0.267		9843218
Nitrate (N)	mg/L	1.1	0.22	0.050	9843215	5.4	0.25	9843215	0.076	0.050	9843215
Saturation pH (@ 20C)	N/A	9.50	8.24		9843217	8.26		9843217	8.05		9843217
Saturation pH (@ 4C)	N/A	9.75	8.49		9843218	8.51		9843218	8.30		9843218

Inorganics											
Total Alkalinity (Total as CaCO ₃)	mg/L	14	63	2.0	9850064	100	2.0	9850064	81	2.0	9850064
Dissolved Chloride (Cl ⁻)	mg/L	5.5	44	1.0	9849935	53	1.0	9849943	3.0	1.0	9849943
Colour	TCU	ND	8.7	5.0	9849939	46 (1)	10	9849946	21	5.0	9849946
Nitrate + Nitrite (N)	mg/L	1.1	0.22	0.050	9849941	5.4	0.25	9849948	0.076	0.050	9849948
Nitrite (N)	mg/L	ND	ND	0.010	9849942	ND	0.010	9849949	ND	0.010	9849949
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.051	0.050	9850053	0.056	0.050	9850054	ND	0.050	9850054
Total Organic Carbon (C)	mg/L	ND (2)	ND (2)	5.0	9850473	13	0.50	9850473	0.83	0.50	9850473
Orthophosphate (P)	mg/L	ND	ND	0.010	9849940	ND	0.010	9849947	ND	0.010	9849947
pH	pH	6.87	7.71		9850060	7.81		9850060	8.04		9850060
Reactive Silica (SiO ₂)	mg/L	9.9	7.0	0.50	9849938	4.2	0.50	9849945	18	0.50	9849945
Dissolved Sulphate (SO ₄)	mg/L	ND	7.3	2.0	9849937	9.8	2.0	9849944	4.2	2.0	9849944
Turbidity	NTU	360	450	1.0	9851998	62	0.10	9851998	44	0.10	9851998
Conductivity	uS/cm	61	290	1.0	9850063	460	1.0	9850063	200	1.0	9850063

Metals											
Dissolved Aluminum (Al)	ug/L	ND	9.9	5.0	9847616	56	5.0	9850039	6.2	5.0	9847616
Dissolved Antimony (Sb)	ug/L	ND	ND	1.0	9847616	ND	1.0	9850039	ND	1.0	9847616
Dissolved Arsenic (As)	ug/L	ND	ND	1.0	9847616	ND	1.0	9850039	5.3	1.0	9847616
Dissolved Barium (Ba)	ug/L	6.4	13	1.0	9847616	12	1.0	9850039	49	1.0	9847616

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.
(1) Elevated reporting limit due to sample matrix.
(2) Elevated reporting limit due to turbidity.



ATL. RCAP-MS DISSOLVED (LABFILT) IN W

Bureau Veritas ID		AMMB76	AMMB77			AMMB78			AMMB79		
Sampling Date		2024/12/18 10:20	2024/12/18 10:30			2024/12/18 10:40			2024/12/18 10:50		
COC Number		N/A	N/A			N/A			N/A		
Sample #		00300	00301			00302			00303		
	UNITS	MW-H	MW-I	RDL	QC Batch	MW-J	RDL	QC Batch	MW-K	RDL	QC Batch
Dissolved Beryllium (Be)	ug/L	ND	ND	0.10	9847616	ND	0.10	9850039	ND	0.10	9847616
Dissolved Bismuth (Bi)	ug/L	ND	ND	2.0	9847616	ND	2.0	9850039	ND	2.0	9847616
Dissolved Boron (B)	ug/L	ND	ND	50	9847616	220	50	9850039	ND	50	9847616
Dissolved Cadmium (Cd)	ug/L	ND	ND	0.010	9847616	0.015	0.010	9850039	ND	0.010	9847616
Dissolved Calcium (Ca)	ug/L	4600	21000	100	9847616	14000	100	9850039	25000	100	9847616
Dissolved Chromium (Cr)	ug/L	ND	ND	1.0	9847616	ND	1.0	9850039	ND	1.0	9847616
Dissolved Cobalt (Co)	ug/L	ND	ND	0.40	9847616	0.47	0.40	9850039	ND	0.40	9847616
Dissolved Copper (Cu)	ug/L	ND	1.7	0.50	9847616	2.2	0.50	9850039	ND	0.50	9847616
Dissolved Iron (Fe)	ug/L	ND	ND	50	9847616	ND	50	9850039	ND	50	9847616
Dissolved Lead (Pb)	ug/L	ND	ND	0.50	9847616	ND	0.50	9850039	ND	0.50	9847616
Dissolved Magnesium (Mg)	ug/L	1800	11000	100	9847616	15000	100	9850039	7000	100	9847616
Dissolved Manganese (Mn)	ug/L	ND	ND	2.0	9847616	ND	2.0	9850039	ND	2.0	9847616
Dissolved Molybdenum (Mo)	ug/L	ND	ND	2.0	9847616	ND	2.0	9850039	ND	2.0	9847616
Dissolved Nickel (Ni)	ug/L	ND	ND	2.0	9847616	3.8	2.0	9850039	ND	2.0	9847616
Dissolved Phosphorus (P)	ug/L	ND	ND	100	9847616	ND	100	9850039	ND	100	9847616
Dissolved Potassium (K)	ug/L	380	1600	100	9847616	20000	100	9850039	2000	100	9847616
Dissolved Selenium (Se)	ug/L	ND	ND	0.50	9847616	ND	0.50	9850039	ND	0.50	9847616
Dissolved Silver (Ag)	ug/L	ND	ND	0.10	9847616	ND	0.10	9850039	ND	0.10	9847616
Dissolved Sodium (Na)	ug/L	5400	26000	100	9847616	53000	100	9850039	9800	100	9847616
Dissolved Strontium (Sr)	ug/L	19	120	2.0	9847616	68	2.0	9850039	360	2.0	9847616
Dissolved Thallium (Tl)	ug/L	ND	ND	0.10	9847616	ND	0.10	9850039	ND	0.10	9847616
Dissolved Tin (Sn)	ug/L	ND	ND	2.0	9847616	ND	2.0	9850039	ND	2.0	9847616
Dissolved Titanium (Ti)	ug/L	ND	ND	2.0	9847616	ND	2.0	9850039	ND	2.0	9847616
Dissolved Uranium (U)	ug/L	ND	0.65	0.10	9847616	0.15	0.10	9850039	0.36	0.10	9847616
Dissolved Vanadium (V)	ug/L	ND	ND	2.0	9847616	ND	2.0	9850039	ND	2.0	9847616
Dissolved Zinc (Zn)	ug/L	ND	ND	5.0	9847616	ND	5.0	9850039	ND	5.0	9847616

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ATL. RCAP-MS DISSOLVED (LABFILT) IN W

Bureau Veritas ID		AMMB80		
Sampling Date		2024/12/18 11:00		
COC Number		N/A		
Sample #		00304		
	UNITS	MW-L	RDL	QC Batch
Calculated Parameters				
Anion Sum	me/L	0.930	N/A	9843214
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	3.5	1.0	9843209
Calculated TDS	mg/L	76	1.0	9843219
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ND	1.0	9843209
Cation Sum	me/L	1.09	N/A	9843214
Hardness (CaCO ₃)	mg/L	46	1.0	9843212
Ion Balance (% Difference)	%	7.92	N/A	9843213
Langelier Index (@ 20C)	N/A	-3.22		9843217
Langelier Index (@ 4C)	N/A	-3.47		9843218
Nitrate (N)	mg/L	0.084	0.050	9843215
Saturation pH (@ 20C)	N/A	9.67		9843217
Saturation pH (@ 4C)	N/A	9.92		9843218
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L	3.5	2.0	9850064
Dissolved Chloride (Cl ⁻)	mg/L	5.7	1.0	9849943
Colour	TCU	46	5.0	9849946
Nitrate + Nitrite (N)	mg/L	0.084	0.050	9849948
Nitrite (N)	mg/L	ND	0.010	9849949
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.050	9850054
Total Organic Carbon (C)	mg/L	4.6	0.50	9850473
Orthophosphate (P)	mg/L	ND	0.010	9849947
pH	pH	6.45		9850060
Reactive Silica (SiO ₂)	mg/L	14	0.50	9849945
Dissolved Sulphate (SO ₄)	mg/L	33	2.0	9849944
Turbidity	NTU	8.2	0.10	9851998
Conductivity	uS/cm	120	1.0	9850063
Metals				
Dissolved Aluminum (Al)	ug/L	140	5.0	9847616
Dissolved Antimony (Sb)	ug/L	ND	1.0	9847616
Dissolved Arsenic (As)	ug/L	ND	1.0	9847616
Dissolved Barium (Ba)	ug/L	16	1.0	9847616
Dissolved Beryllium (Be)	ug/L	ND	0.10	9847616
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.				



ATL. RCAP-MS DISSOLVED (LABFILT) IN W

Bureau Veritas ID		AMMB80		
Sampling Date		2024/12/18 11:00		
COC Number		N/A		
Sample #		00304		
	UNITS	MW-L	RDL	QC Batch
Dissolved Bismuth (Bi)	ug/L	ND	2.0	9847616
Dissolved Boron (B)	ug/L	ND	50	9847616
Dissolved Cadmium (Cd)	ug/L	0.075	0.010	9847616
Dissolved Calcium (Ca)	ug/L	13000	100	9847616
Dissolved Chromium (Cr)	ug/L	ND	1.0	9847616
Dissolved Cobalt (Co)	ug/L	0.78	0.40	9847616
Dissolved Copper (Cu)	ug/L	0.57	0.50	9847616
Dissolved Iron (Fe)	ug/L	140	50	9847616
Dissolved Lead (Pb)	ug/L	ND	0.50	9847616
Dissolved Magnesium (Mg)	ug/L	3300	100	9847616
Dissolved Manganese (Mn)	ug/L	210	2.0	9847616
Dissolved Molybdenum (Mo)	ug/L	ND	2.0	9847616
Dissolved Nickel (Ni)	ug/L	11	2.0	9847616
Dissolved Phosphorus (P)	ug/L	ND	100	9847616
Dissolved Potassium (K)	ug/L	140	100	9847616
Dissolved Selenium (Se)	ug/L	ND	0.50	9847616
Dissolved Silver (Ag)	ug/L	ND	0.10	9847616
Dissolved Sodium (Na)	ug/L	3800	100	9847616
Dissolved Strontium (Sr)	ug/L	67	2.0	9847616
Dissolved Thallium (Tl)	ug/L	ND	0.10	9847616
Dissolved Tin (Sn)	ug/L	ND	2.0	9847616
Dissolved Titanium (Ti)	ug/L	ND	2.0	9847616
Dissolved Uranium (U)	ug/L	0.11	0.10	9847616
Dissolved Vanadium (V)	ug/L	ND	2.0	9847616
Dissolved Zinc (Zn)	ug/L	34	5.0	9847616
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.				



RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		AMMB76		AMMB77		AMMB78		AMMB79	AMMB80		
Sampling Date		2024/12/18 10:20		2024/12/18 10:30		2024/12/18 10:40		2024/12/18 10:50	2024/12/18 11:00		
COC Number		N/A		N/A		N/A		N/A	N/A		
Sample #		00300		00301		00302		00303	00304		
	UNITS	MW-H	RDL	MW-I	RDL	MW-J	RDL	MW-K	MW-L	RDL	QC Batch
Inorganics											
Dissolved Organic Carbon (C)	mg/L	0.71	0.50	4.5	0.50	11	0.50	0.99	4.3	0.50	9849979
Phenols-4AAP	mg/L	ND	0.0010	ND	0.0010	ND	0.0010	ND	ND	0.0010	9853406
Total Suspended Solids	mg/L	170	2.5	290	5.0	45	2.0	31	5.4	1.0	9845441
Sulphide	mg/L	ND	0.020	ND	0.020	ND	0.020	ND	ND	0.020	9845704
RDL = Reportable Detection Limit											
QC Batch = Quality Control Batch											
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.											



MERCURY BY COLD VAPOUR AA (WATER)

Bureau Veritas ID		AMMB76	AMMB77	AMMB78	AMMB79	AMMB80		
Sampling Date		2024/12/18 10:20	2024/12/18 10:30	2024/12/18 10:40	2024/12/18 10:50	2024/12/18 11:00		
COC Number		N/A	N/A	N/A	N/A	N/A		
Sample #		00300	00301	00302	00303	00304		
	UNITS	MW-H	MW-I	MW-J	MW-K	MW-L	RDL	QC Batch
Metals								
Total Mercury (Hg)	ug/L	ND	ND	ND	ND	ND	0.013	9853635
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.								



GENERAL COMMENTS

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

Package 1	11.0°C
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Sample AMMB76 [MW-H] : RCap Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

Sample AMMB77 [MW-I] : Poor RCap Ion Balance due to sample matrix. Possibly due to fine particulate matter.

Sample AMMB78 [MW-J] : Poor RCap Ion Balance due to sample matrix. Possibly due to fine particulate matter. Anion sum does not include contribution from Total Organic Carbon.

Sample AMMB79 [MW-K] : Poor RCap Ion Balance due to sample matrix. Possibly due to fine particulate matter.

Sample AMMB80 [MW-L] : RCap Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
	9845441	ZZH	QC Standard	Total Suspended Solids	2024/12/30		99	%	80 - 120
	9845441	ZZH	Method Blank	Total Suspended Solids	2024/12/30	ND, RDL=1.0		mg/L	
	9845441	ZZH	RPD	Total Suspended Solids	2024/12/30	5.9		%	20
	9845704	SRT	Matrix Spike	Sulphide	2024/12/24		97	%	80 - 120
	9845704	SRT	Spiked Blank	Sulphide	2024/12/24		93	%	80 - 120
	9845704	SRT	Method Blank	Sulphide	2024/12/24	ND, RDL=0.020		mg/L	
	9845704	SRT	RPD	Sulphide	2024/12/24	NC		%	20
	9847616	MTZ	Matrix Spike	Dissolved Aluminum (Al)	2024/12/27		104	%	80 - 120
				Dissolved Antimony (Sb)	2024/12/27		104	%	80 - 120
				Dissolved Arsenic (As)	2024/12/27		99	%	80 - 120
				Dissolved Barium (Ba)	2024/12/27		92	%	80 - 120
				Dissolved Beryllium (Be)	2024/12/27		104	%	80 - 120
				Dissolved Bismuth (Bi)	2024/12/27		93	%	80 - 120
				Dissolved Boron (B)	2024/12/27		NC	%	80 - 120
				Dissolved Cadmium (Cd)	2024/12/27		93	%	80 - 120
				Dissolved Calcium (Ca)	2024/12/27		NC	%	80 - 120
				Dissolved Chromium (Cr)	2024/12/27		99	%	80 - 120
				Dissolved Cobalt (Co)	2024/12/27		96	%	80 - 120
				Dissolved Copper (Cu)	2024/12/27		90	%	80 - 120
				Dissolved Iron (Fe)	2024/12/27		94	%	80 - 120
				Dissolved Lead (Pb)	2024/12/27		93	%	80 - 120
				Dissolved Magnesium (Mg)	2024/12/27		NC	%	80 - 120
				Dissolved Manganese (Mn)	2024/12/27		NC	%	80 - 120
				Dissolved Molybdenum (Mo)	2024/12/27		107	%	80 - 120
				Dissolved Nickel (Ni)	2024/12/27		93	%	80 - 120
				Dissolved Phosphorus (P)	2024/12/27		105	%	80 - 120
				Dissolved Potassium (K)	2024/12/27		NC	%	80 - 120
				Dissolved Selenium (Se)	2024/12/27		95	%	80 - 120
				Dissolved Silver (Ag)	2024/12/27		93	%	80 - 120
				Dissolved Sodium (Na)	2024/12/27		NC	%	80 - 120
				Dissolved Strontium (Sr)	2024/12/27		NC	%	80 - 120
				Dissolved Thallium (Tl)	2024/12/27		95	%	80 - 120
				Dissolved Tin (Sn)	2024/12/27		100	%	80 - 120
				Dissolved Titanium (Ti)	2024/12/27		90	%	80 - 120
				Dissolved Uranium (U)	2024/12/27		98	%	80 - 120
				Dissolved Vanadium (V)	2024/12/27		102	%	80 - 120
				Dissolved Zinc (Zn)	2024/12/27		96	%	80 - 120
	9847616	MTZ	Spiked Blank	Dissolved Aluminum (Al)	2024/12/27		102	%	80 - 120
				Dissolved Antimony (Sb)	2024/12/27		101	%	80 - 120
				Dissolved Arsenic (As)	2024/12/27		100	%	80 - 120
				Dissolved Barium (Ba)	2024/12/27		99	%	80 - 120
				Dissolved Beryllium (Be)	2024/12/27		103	%	80 - 120
				Dissolved Bismuth (Bi)	2024/12/27		101	%	80 - 120
				Dissolved Boron (B)	2024/12/27		102	%	80 - 120
				Dissolved Cadmium (Cd)	2024/12/27		96	%	80 - 120
				Dissolved Calcium (Ca)	2024/12/27		97	%	80 - 120
				Dissolved Chromium (Cr)	2024/12/27		97	%	80 - 120
				Dissolved Cobalt (Co)	2024/12/27		98	%	80 - 120
				Dissolved Copper (Cu)	2024/12/27		97	%	80 - 120
				Dissolved Iron (Fe)	2024/12/27		99	%	80 - 120
				Dissolved Lead (Pb)	2024/12/27		98	%	80 - 120
				Dissolved Magnesium (Mg)	2024/12/27		101	%	80 - 120
				Dissolved Manganese (Mn)	2024/12/27		100	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9847616	MTZ	Method Blank	Dissolved Molybdenum (Mo)	2024/12/27		102	%	80 - 120
			Dissolved Nickel (Ni)	2024/12/27		99	%	80 - 120
			Dissolved Phosphorus (P)	2024/12/27		102	%	80 - 120
			Dissolved Potassium (K)	2024/12/27		98	%	80 - 120
			Dissolved Selenium (Se)	2024/12/27		95	%	80 - 120
			Dissolved Silver (Ag)	2024/12/27		97	%	80 - 120
			Dissolved Sodium (Na)	2024/12/27		96	%	80 - 120
			Dissolved Strontium (Sr)	2024/12/27		101	%	80 - 120
			Dissolved Thallium (Tl)	2024/12/27		101	%	80 - 120
			Dissolved Tin (Sn)	2024/12/27		97	%	80 - 120
			Dissolved Titanium (Ti)	2024/12/27		99	%	80 - 120
			Dissolved Uranium (U)	2024/12/27		104	%	80 - 120
			Dissolved Vanadium (V)	2024/12/27		101	%	80 - 120
			Dissolved Zinc (Zn)	2024/12/27		101	%	80 - 120
			Dissolved Aluminum (Al)	2024/12/27	ND, RDL=5.0		ug/L	
			Dissolved Antimony (Sb)	2024/12/27	ND, RDL=1.0		ug/L	
			Dissolved Arsenic (As)	2024/12/27	ND, RDL=1.0		ug/L	
			Dissolved Barium (Ba)	2024/12/27	ND, RDL=1.0		ug/L	
			Dissolved Beryllium (Be)	2024/12/27	ND, RDL=0.10		ug/L	
			Dissolved Bismuth (Bi)	2024/12/27	ND, RDL=2.0		ug/L	
			Dissolved Boron (B)	2024/12/27	ND, RDL=50		ug/L	
			Dissolved Cadmium (Cd)	2024/12/27	ND, RDL=0.010		ug/L	
			Dissolved Calcium (Ca)	2024/12/27	ND, RDL=100		ug/L	
			Dissolved Chromium (Cr)	2024/12/27	ND, RDL=1.0		ug/L	
			Dissolved Cobalt (Co)	2024/12/27	ND, RDL=0.40		ug/L	
			Dissolved Copper (Cu)	2024/12/27	ND, RDL=0.50		ug/L	
			Dissolved Iron (Fe)	2024/12/27	ND, RDL=50		ug/L	
			Dissolved Lead (Pb)	2024/12/27	ND, RDL=0.50		ug/L	
			Dissolved Magnesium (Mg)	2024/12/27	ND, RDL=100		ug/L	
			Dissolved Manganese (Mn)	2024/12/27	ND, RDL=2.0		ug/L	
			Dissolved Molybdenum (Mo)	2024/12/27	ND, RDL=2.0		ug/L	
			Dissolved Nickel (Ni)	2024/12/27	ND, RDL=2.0		ug/L	
			Dissolved Phosphorus (P)	2024/12/27	ND, RDL=100		ug/L	
			Dissolved Potassium (K)	2024/12/27	ND, RDL=100		ug/L	
			Dissolved Selenium (Se)	2024/12/27	ND, RDL=0.50		ug/L	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
				Dissolved Silver (Ag)	2024/12/27	ND, RDL=0.10		ug/L	
				Dissolved Sodium (Na)	2024/12/27	ND, RDL=100		ug/L	
				Dissolved Strontium (Sr)	2024/12/27	ND, RDL=2.0		ug/L	
				Dissolved Thallium (Tl)	2024/12/27	ND, RDL=0.10		ug/L	
				Dissolved Tin (Sn)	2024/12/27	ND, RDL=2.0		ug/L	
				Dissolved Titanium (Ti)	2024/12/27	ND, RDL=2.0		ug/L	
				Dissolved Uranium (U)	2024/12/27	ND, RDL=0.10		ug/L	
				Dissolved Vanadium (V)	2024/12/27	ND, RDL=2.0		ug/L	
				Dissolved Zinc (Zn)	2024/12/27	ND, RDL=5.0		ug/L	
9847616	MTZ	RPD		Dissolved Aluminum (Al)	2024/12/27	NC		%	20
				Dissolved Antimony (Sb)	2024/12/27	NC		%	20
				Dissolved Arsenic (As)	2024/12/27	NC		%	20
				Dissolved Barium (Ba)	2024/12/27	1.2		%	20
				Dissolved Beryllium (Be)	2024/12/27	NC		%	20
				Dissolved Bismuth (Bi)	2024/12/27	NC		%	20
				Dissolved Boron (B)	2024/12/27	0.046		%	20
				Dissolved Cadmium (Cd)	2024/12/27	NC		%	20
				Dissolved Calcium (Ca)	2024/12/27	2.5		%	20
				Dissolved Chromium (Cr)	2024/12/27	NC		%	20
				Dissolved Cobalt (Co)	2024/12/27	NC		%	20
				Dissolved Copper (Cu)	2024/12/27	NC		%	20
				Dissolved Iron (Fe)	2024/12/27	NC		%	20
				Dissolved Lead (Pb)	2024/12/27	NC		%	20
				Dissolved Magnesium (Mg)	2024/12/27	0.46		%	20
				Dissolved Manganese (Mn)	2024/12/27	0.33		%	20
				Dissolved Molybdenum (Mo)	2024/12/27	NC		%	20
				Dissolved Nickel (Ni)	2024/12/27	NC		%	20
				Dissolved Phosphorus (P)	2024/12/27	NC		%	20
				Dissolved Potassium (K)	2024/12/27	1.2		%	20
				Dissolved Selenium (Se)	2024/12/27	NC		%	20
				Dissolved Silver (Ag)	2024/12/27	NC		%	20
				Dissolved Sodium (Na)	2024/12/27	0.23		%	20
				Dissolved Strontium (Sr)	2024/12/27	1.6		%	20
				Dissolved Thallium (Tl)	2024/12/27	NC		%	20
				Dissolved Tin (Sn)	2024/12/27	NC		%	20
				Dissolved Titanium (Ti)	2024/12/27	NC		%	20
				Dissolved Uranium (U)	2024/12/27	NC		%	20
				Dissolved Vanadium (V)	2024/12/27	NC		%	20
				Dissolved Zinc (Zn)	2024/12/27	NC		%	20
9849935	EMT	Matrix Spike		Dissolved Chloride (Cl-)	2024/12/30		95	%	80 - 120
9849935	EMT	Spiked Blank		Dissolved Chloride (Cl-)	2024/12/30		100	%	80 - 120
9849935	EMT	Method Blank		Dissolved Chloride (Cl-)	2024/12/30	ND, RDL=1.0		mg/L	
9849935	EMT	RPD		Dissolved Chloride (Cl-)	2024/12/30	0.47		%	20
9849937	EMT	Matrix Spike		Dissolved Sulphate (SO4)	2024/12/30		98	%	80 - 120
9849937	EMT	Spiked Blank		Dissolved Sulphate (SO4)	2024/12/30		106	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9849937	EMT	Method Blank	Dissolved Sulphate (SO4)	2024/12/30	ND, RDL=2.0		mg/L	
9849937	EMT	RPD	Dissolved Sulphate (SO4)	2024/12/30	6.5		%	20
9849938	EMT	Matrix Spike	Reactive Silica (SiO2)	2024/12/30		87	%	80 - 120
9849938	EMT	Spiked Blank	Reactive Silica (SiO2)	2024/12/30		90	%	80 - 120
9849938	EMT	Method Blank	Reactive Silica (SiO2)	2024/12/30	ND, RDL=0.50		mg/L	
9849938	EMT	RPD	Reactive Silica (SiO2)	2024/12/30	15		%	20
9849939	EMT	Spiked Blank	Colour	2024/12/30		92	%	80 - 120
9849939	EMT	Method Blank	Colour	2024/12/30	ND, RDL=5.0		TCU	
9849939	EMT	RPD	Colour	2024/12/30	NC		%	20
9849940	EMT	Matrix Spike	Orthophosphate (P)	2024/12/30		NC	%	80 - 120
9849940	EMT	Spiked Blank	Orthophosphate (P)	2024/12/30		97	%	80 - 120
9849940	EMT	Method Blank	Orthophosphate (P)	2024/12/30	ND, RDL=0.010		mg/L	
9849940	EMT	RPD	Orthophosphate (P)	2024/12/30	0.69		%	20
9849941	EMT	Matrix Spike	Nitrate + Nitrite (N)	2024/12/30		96	%	80 - 120
9849941	EMT	Spiked Blank	Nitrate + Nitrite (N)	2024/12/30		100	%	80 - 120
9849941	EMT	Method Blank	Nitrate + Nitrite (N)	2024/12/30	ND, RDL=0.050		mg/L	
9849941	EMT	RPD	Nitrate + Nitrite (N)	2024/12/30	NC		%	20
9849942	EMT	Matrix Spike	Nitrite (N)	2024/12/30		11 (1)	%	80 - 120
9849942	EMT	Spiked Blank	Nitrite (N)	2024/12/30		95	%	80 - 120
9849942	EMT	Method Blank	Nitrite (N)	2024/12/30	ND, RDL=0.010		mg/L	
9849942	EMT	RPD	Nitrite (N)	2024/12/30	NC		%	20
9849943	EMT	Matrix Spike	Dissolved Chloride (Cl-)	2024/12/30		101	%	80 - 120
9849943	EMT	Spiked Blank	Dissolved Chloride (Cl-)	2024/12/30		99	%	80 - 120
9849943	EMT	Method Blank	Dissolved Chloride (Cl-)	2024/12/30	ND, RDL=1.0		mg/L	
9849943	EMT	RPD	Dissolved Chloride (Cl-)	2024/12/30	NC		%	20
9849944	EMT	Matrix Spike	Dissolved Sulphate (SO4)	2024/12/30		98	%	80 - 120
9849944	EMT	Spiked Blank	Dissolved Sulphate (SO4)	2024/12/30		107	%	80 - 120
9849944	EMT	Method Blank	Dissolved Sulphate (SO4)	2024/12/30	ND, RDL=2.0		mg/L	
9849944	EMT	RPD	Dissolved Sulphate (SO4)	2024/12/30	NC		%	20
9849945	EMT	Matrix Spike	Reactive Silica (SiO2)	2024/12/30		93	%	80 - 120
9849945	EMT	Spiked Blank	Reactive Silica (SiO2)	2024/12/30		97	%	80 - 120
9849945	EMT	Method Blank	Reactive Silica (SiO2)	2024/12/30	ND, RDL=0.50		mg/L	
9849945	EMT	RPD	Reactive Silica (SiO2)	2024/12/30	NC		%	20
9849946	EMT	Spiked Blank	Colour	2024/12/30		112	%	80 - 120
9849946	EMT	Method Blank	Colour	2024/12/30	ND, RDL=5.0		TCU	
9849946	EMT	RPD	Colour	2024/12/30	NC		%	20
9849947	EMT	Matrix Spike	Orthophosphate (P)	2024/12/30		90	%	80 - 120
9849947	EMT	Spiked Blank	Orthophosphate (P)	2024/12/30		99	%	80 - 120
9849947	EMT	Method Blank	Orthophosphate (P)	2024/12/30	ND, RDL=0.010		mg/L	
9849947	EMT	RPD	Orthophosphate (P)	2024/12/30	NC		%	20
9849948	EMT	Matrix Spike	Nitrate + Nitrite (N)	2024/12/30		96	%	80 - 120
9849948	EMT	Spiked Blank	Nitrate + Nitrite (N)	2024/12/30		104	%	80 - 120
9849948	EMT	Method Blank	Nitrate + Nitrite (N)	2024/12/30	ND, RDL=0.050		mg/L	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9849948	EMT	RPD		Nitrate + Nitrite (N)	2024/12/30	NC		%	20
9849949	EMT	Matrix Spike		Nitrite (N)	2024/12/30		99	%	80 - 120
9849949	EMT	Spiked Blank		Nitrite (N)	2024/12/30		93	%	80 - 120
9849949	EMT	Method Blank		Nitrite (N)	2024/12/30	ND, RDL=0.010		mg/L	
9849949	EMT	RPD		Nitrite (N)	2024/12/30	NC		%	20
9849979	KMC	Matrix Spike		Dissolved Organic Carbon (C)	2024/12/30		101	%	85 - 115
9849979	KMC	Spiked Blank		Dissolved Organic Carbon (C)	2024/12/30		104	%	80 - 120
9849979	KMC	Method Blank		Dissolved Organic Carbon (C)	2024/12/30	ND, RDL=0.50		mg/L	
9849979	KMC	RPD		Dissolved Organic Carbon (C)	2024/12/30	1.3		%	15
9850039	MOA	Matrix Spike		Dissolved Aluminum (Al)	2024/12/30		98	%	80 - 120
				Dissolved Antimony (Sb)	2024/12/30		103	%	80 - 120
				Dissolved Arsenic (As)	2024/12/30		99	%	80 - 120
				Dissolved Barium (Ba)	2024/12/30		97	%	80 - 120
				Dissolved Beryllium (Be)	2024/12/30		96	%	80 - 120
				Dissolved Bismuth (Bi)	2024/12/30		101	%	80 - 120
				Dissolved Boron (B)	2024/12/30		95	%	80 - 120
				Dissolved Cadmium (Cd)	2024/12/30		100	%	80 - 120
				Dissolved Calcium (Ca)	2024/12/30		99	%	80 - 120
				Dissolved Chromium (Cr)	2024/12/30		97	%	80 - 120
				Dissolved Cobalt (Co)	2024/12/30		97	%	80 - 120
				Dissolved Copper (Cu)	2024/12/30		97	%	80 - 120
				Dissolved Iron (Fe)	2024/12/30		99	%	80 - 120
				Dissolved Lead (Pb)	2024/12/30		98	%	80 - 120
				Dissolved Magnesium (Mg)	2024/12/30		100	%	80 - 120
				Dissolved Manganese (Mn)	2024/12/30		99	%	80 - 120
				Dissolved Molybdenum (Mo)	2024/12/30		102	%	80 - 120
				Dissolved Nickel (Ni)	2024/12/30		98	%	80 - 120
				Dissolved Phosphorus (P)	2024/12/30		102	%	80 - 120
				Dissolved Potassium (K)	2024/12/30		101	%	80 - 120
				Dissolved Selenium (Se)	2024/12/30		97	%	80 - 120
				Dissolved Silver (Ag)	2024/12/30		97	%	80 - 120
				Dissolved Sodium (Na)	2024/12/30		98	%	80 - 120
				Dissolved Strontium (Sr)	2024/12/30		102	%	80 - 120
				Dissolved Thallium (Tl)	2024/12/30		101	%	80 - 120
				Dissolved Tin (Sn)	2024/12/30		100	%	80 - 120
				Dissolved Titanium (Ti)	2024/12/30		99	%	80 - 120
				Dissolved Uranium (U)	2024/12/30		104	%	80 - 120
				Dissolved Vanadium (V)	2024/12/30		100	%	80 - 120
				Dissolved Zinc (Zn)	2024/12/30		101	%	80 - 120
9850039	MOA	Spiked Blank		Dissolved Aluminum (Al)	2024/12/30		100	%	80 - 120
				Dissolved Antimony (Sb)	2024/12/30		100	%	80 - 120
				Dissolved Arsenic (As)	2024/12/30		98	%	80 - 120
				Dissolved Barium (Ba)	2024/12/30		97	%	80 - 120
				Dissolved Beryllium (Be)	2024/12/30		95	%	80 - 120
				Dissolved Bismuth (Bi)	2024/12/30		102	%	80 - 120
				Dissolved Boron (B)	2024/12/30		94	%	80 - 120
				Dissolved Cadmium (Cd)	2024/12/30		100	%	80 - 120
				Dissolved Calcium (Ca)	2024/12/30		98	%	80 - 120
				Dissolved Chromium (Cr)	2024/12/30		97	%	80 - 120
				Dissolved Cobalt (Co)	2024/12/30		97	%	80 - 120
				Dissolved Copper (Cu)	2024/12/30		96	%	80 - 120
				Dissolved Iron (Fe)	2024/12/30		98	%	80 - 120
				Dissolved Lead (Pb)	2024/12/30		98	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9850039	MOA	Method Blank	Dissolved Magnesium (Mg)	2024/12/30		99	%	80 - 120
			Dissolved Manganese (Mn)	2024/12/30		100	%	80 - 120
			Dissolved Molybdenum (Mo)	2024/12/30		101	%	80 - 120
			Dissolved Nickel (Ni)	2024/12/30		97	%	80 - 120
			Dissolved Phosphorus (P)	2024/12/30		101	%	80 - 120
			Dissolved Potassium (K)	2024/12/30		101	%	80 - 120
			Dissolved Selenium (Se)	2024/12/30		97	%	80 - 120
			Dissolved Silver (Ag)	2024/12/30		95	%	80 - 120
			Dissolved Sodium (Na)	2024/12/30		99	%	80 - 120
			Dissolved Strontium (Sr)	2024/12/30		100	%	80 - 120
			Dissolved Thallium (Tl)	2024/12/30		102	%	80 - 120
			Dissolved Tin (Sn)	2024/12/30		99	%	80 - 120
			Dissolved Titanium (Ti)	2024/12/30		99	%	80 - 120
			Dissolved Uranium (U)	2024/12/30		104	%	80 - 120
			Dissolved Vanadium (V)	2024/12/30		99	%	80 - 120
			Dissolved Zinc (Zn)	2024/12/30		100	%	80 - 120
			Dissolved Aluminum (Al)	2024/12/30	ND, RDL=5.0		ug/L	
			Dissolved Antimony (Sb)	2024/12/30	ND, RDL=1.0		ug/L	
			Dissolved Arsenic (As)	2024/12/30	ND, RDL=1.0		ug/L	
			Dissolved Barium (Ba)	2024/12/30	ND, RDL=1.0		ug/L	
			Dissolved Beryllium (Be)	2024/12/30	ND, RDL=0.10		ug/L	
			Dissolved Bismuth (Bi)	2024/12/30	ND, RDL=2.0		ug/L	
			Dissolved Boron (B)	2024/12/30	ND, RDL=50		ug/L	
			Dissolved Cadmium (Cd)	2024/12/30	ND, RDL=0.010		ug/L	
			Dissolved Calcium (Ca)	2024/12/30	ND, RDL=100		ug/L	
			Dissolved Chromium (Cr)	2024/12/30	ND, RDL=1.0		ug/L	
			Dissolved Cobalt (Co)	2024/12/30	ND, RDL=0.40		ug/L	
			Dissolved Copper (Cu)	2024/12/30	ND, RDL=0.50		ug/L	
			Dissolved Iron (Fe)	2024/12/30	ND, RDL=50		ug/L	
			Dissolved Lead (Pb)	2024/12/30	ND, RDL=0.50		ug/L	
			Dissolved Magnesium (Mg)	2024/12/30	ND, RDL=100		ug/L	
			Dissolved Manganese (Mn)	2024/12/30	ND, RDL=2.0		ug/L	
			Dissolved Molybdenum (Mo)	2024/12/30	ND, RDL=2.0		ug/L	
			Dissolved Nickel (Ni)	2024/12/30	ND, RDL=2.0		ug/L	
			Dissolved Phosphorus (P)	2024/12/30	ND, RDL=100		ug/L	
			Dissolved Potassium (K)	2024/12/30	ND, RDL=100		ug/L	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9850039	MOA	RPD	Dissolved Selenium (Se)	2024/12/30	ND, RDL=0.50		ug/L	
			Dissolved Silver (Ag)	2024/12/30	ND, RDL=0.10		ug/L	
			Dissolved Sodium (Na)	2024/12/30	ND, RDL=100		ug/L	
			Dissolved Strontium (Sr)	2024/12/30	ND, RDL=2.0		ug/L	
			Dissolved Thallium (Tl)	2024/12/30	ND, RDL=0.10		ug/L	
			Dissolved Tin (Sn)	2024/12/30	ND, RDL=2.0		ug/L	
			Dissolved Titanium (Ti)	2024/12/30	ND, RDL=2.0		ug/L	
			Dissolved Uranium (U)	2024/12/30	ND, RDL=0.10		ug/L	
			Dissolved Vanadium (V)	2024/12/30	ND, RDL=2.0		ug/L	
			Dissolved Zinc (Zn)	2024/12/30	ND, RDL=5.0		ug/L	
			Dissolved Aluminum (Al)	2024/12/30	NC		%	20
			Dissolved Antimony (Sb)	2024/12/30	NC		%	20
			Dissolved Arsenic (As)	2024/12/30	NC		%	20
			Dissolved Barium (Ba)	2024/12/30	NC		%	20
			Dissolved Beryllium (Be)	2024/12/30	NC		%	20
			Dissolved Bismuth (Bi)	2024/12/30	NC		%	20
			Dissolved Boron (B)	2024/12/30	NC		%	20
			Dissolved Cadmium (Cd)	2024/12/30	NC		%	20
			Dissolved Calcium (Ca)	2024/12/30	NC		%	20
			Dissolved Chromium (Cr)	2024/12/30	NC		%	20
			Dissolved Cobalt (Co)	2024/12/30	NC		%	20
			Dissolved Copper (Cu)	2024/12/30	NC		%	20
			Dissolved Iron (Fe)	2024/12/30	NC		%	20
			Dissolved Lead (Pb)	2024/12/30	NC		%	20
			Dissolved Magnesium (Mg)	2024/12/30	NC		%	20
			Dissolved Manganese (Mn)	2024/12/30	NC		%	20
			Dissolved Molybdenum (Mo)	2024/12/30	NC		%	20
			Dissolved Nickel (Ni)	2024/12/30	NC		%	20
			Dissolved Phosphorus (P)	2024/12/30	NC		%	20
			Dissolved Potassium (K)	2024/12/30	NC		%	20
			Dissolved Selenium (Se)	2024/12/30	NC		%	20
			Dissolved Silver (Ag)	2024/12/30	NC		%	20
			Dissolved Sodium (Na)	2024/12/30	NC		%	20
			Dissolved Strontium (Sr)	2024/12/30	NC		%	20
			Dissolved Thallium (Tl)	2024/12/30	NC		%	20
			Dissolved Tin (Sn)	2024/12/30	NC		%	20
			Dissolved Titanium (Ti)	2024/12/30	NC		%	20
			Dissolved Uranium (U)	2024/12/30	NC		%	20
			Dissolved Vanadium (V)	2024/12/30	NC		%	20
			Dissolved Zinc (Zn)	2024/12/30	NC		%	20
9850053	MCN	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2024/12/31		91	%	80 - 120
9850053	MCN	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2024/12/31		99	%	80 - 120
9850053	MCN	Method Blank	Nitrogen (Ammonia Nitrogen)	2024/12/31	ND, RDL=0.050		mg/L	
9850053	MCN	RPD	Nitrogen (Ammonia Nitrogen)	2024/12/31	2.6		%	20



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9850054	MCN	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2024/12/31		NC	%	80 - 120
9850054	MCN	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2024/12/31		101	%	80 - 120
9850054	MCN	Method Blank	Nitrogen (Ammonia Nitrogen)	2024/12/31	ND, RDL=0.050		mg/L	
9850054	MCN	RPD	Nitrogen (Ammonia Nitrogen)	2024/12/31	3.2		%	20
9850060	M2C	Spiked Blank	pH	2024/12/30		100	%	97 - 103
9850060	M2C	RPD	pH	2024/12/30	0.98		%	N/A
9850063	M2C	Spiked Blank	Conductivity	2024/12/30		99	%	80 - 120
9850063	M2C	Method Blank	Conductivity	2024/12/30	ND, RDL=1.0		uS/cm	
9850063	M2C	RPD	Conductivity	2024/12/30	0.38		%	10
9850064	M2C	Spiked Blank	Total Alkalinity (Total as CaCO ₃)	2024/12/30		97	%	80 - 120
9850064	M2C	Method Blank	Total Alkalinity (Total as CaCO ₃)	2024/12/30	ND, RDL=2.0		mg/L	
9850064	M2C	RPD	Total Alkalinity (Total as CaCO ₃)	2024/12/30	0.95		%	20
9850473	KMC	Matrix Spike	Total Organic Carbon (C)	2024/12/31		98	%	85 - 115
9850473	KMC	Spiked Blank	Total Organic Carbon (C)	2024/12/31		100	%	80 - 120
9850473	KMC	Method Blank	Total Organic Carbon (C)	2024/12/31	ND, RDL=0.50		mg/L	
9850473	KMC	RPD	Total Organic Carbon (C)	2024/12/31	0.25		%	15
9851998	M2C	QC Standard	Turbidity	2025/01/02		108	%	80 - 120
9851998	M2C	Spiked Blank	Turbidity	2025/01/02		104	%	80 - 120
9851998	M2C	Method Blank	Turbidity	2025/01/02	ND, RDL=0.10		NTU	
9851998	M2C	RPD	Turbidity	2025/01/02	NC		%	20
9853406	SPC	Matrix Spike	Phenols-4AAP	2025/01/02		112	%	80 - 120
9853406	SPC	Spiked Blank	Phenols-4AAP	2025/01/02		102	%	80 - 120
9853406	SPC	Method Blank	Phenols-4AAP	2025/01/02	ND, RDL=0.0010		mg/L	
9853406	SPC	RPD	Phenols-4AAP	2025/01/02	NC		%	20
9853635	JEP	Matrix Spike [AMMB77-06]	Total Mercury (Hg)	2025/01/03		101	%	80 - 120
9853635	JEP	Spiked Blank	Total Mercury (Hg)	2025/01/03		103	%	80 - 120
9853635	JEP	Method Blank	Total Mercury (Hg)	2025/01/03	ND, RDL=0.013		ug/L	
9853635	JEP	RPD [AMMB76-06]	Total Mercury (Hg)	2025/01/03	NC		%	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) Poor spike recovery due to sample matrix, recovery confirmed with repeat analysis.



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

Cristina Carriere, Senior Scientific Specialist

Janah Rhyno, Scientific Specialist

Bureau Veritas Certified by Janah Rhyno, Scientific Specialist

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.



Your Project #: SW samples
Site#: 00012
Your C.O.C. #: C#988007-01-01

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2024/06/11
Report #: R8186651
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4G3229

Received: 2024/05/31, 09:17

Sample Matrix: Water
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Carbonate, Bicarbonate and Hydroxide	2	N/A	2024/06/10	N/A	SM 24 4500-CO2 D
Carbonate, Bicarbonate and Hydroxide	8	N/A	2024/06/11	N/A	SM 24 4500-CO2 D
Alkalinity	8	N/A	2024/06/10	ATL SOP 00142	SM 24 2320 B
Alkalinity	1	N/A	2024/06/11	ATL SOP 00142	SM 24 2320 B
Alkalinity	1	N/A	2024/06/07	ATL SOP 00142	SM 24 2320 B
Chloride	10	N/A	2024/06/10	ATL SOP 00014	SM 24 4500-Cl- E m
Colour	9	N/A	2024/06/10	ATL SOP 00020	SM 24 2120C m
Colour	1	N/A	2024/06/11	ATL SOP 00020	SM 24 2120C m
Organic carbon - Diss (DOC) (2)	9	N/A	2024/06/10	ATL SOP 00203	SM 24 5310B m
Organic carbon - Diss (DOC) (2)	1	N/A	2024/06/08	ATL SOP 00203	SM 24 5310B m
Conductance - water	9	N/A	2024/06/10	ATL SOP 00004	SM 24 2510B m
Conductance - water	1	N/A	2024/06/07	ATL SOP 00004	SM 24 2510B m
Hardness (calculated as CaCO3)	2	N/A	2024/06/10	ATL SOP 00048	Auto Calc
Hardness (calculated as CaCO3)	1	N/A	2024/06/06	ATL SOP 00048	Auto Calc
Hardness (calculated as CaCO3)	7	N/A	2024/06/07	ATL SOP 00048	Auto Calc
Mercury - Total (CVAA,LL)	10	2024/06/06	2024/06/10	ATL SOP 00026	EPA 245.1 R3 m
Metals Water Total MS	6	2024/06/06	2024/06/06	ATL SOP 00058	EPA 6020B R2 m
Metals Water Total MS	2	2024/06/06	2024/06/07	ATL SOP 00058	EPA 6020B R2 m
Metals Water Total MS	2	2024/06/07	2024/06/07	ATL SOP 00058	EPA 6020B R2 m
Ion Balance (% Difference)	10	N/A	2024/06/11	N/A	Auto Calc.
Anion and Cation Sum	2	N/A	2024/06/10	N/A	Auto Calc.
Anion and Cation Sum	8	N/A	2024/06/11	N/A	Auto Calc.
Nitrogen Ammonia - water	10	N/A	2024/06/05	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	10	N/A	2024/06/10	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite	10	N/A	2024/06/10	ATL SOP 00017	SM 24 4500-NO2- B m
Nitrogen - Nitrate (as N)	10	N/A	2024/06/10	ATL SOP 00018	ASTM D3867-16
Phenols (4AAP) (1)	9	N/A	2024/06/06	CAM SOP-00444	OMOE E3179 m
Phenols (4AAP) (1)	1	N/A	2024/06/07	CAM SOP-00444	OMOE E3179 m
pH (3)	9	N/A	2024/06/10	ATL SOP 00003	SM 24 4500-H+ B m
pH (3)	1	N/A	2024/06/07	ATL SOP 00003	SM 24 4500-H+ B m
Phosphorus - ortho	10	N/A	2024/06/10	ATL SOP 00021	SM 24 4500-P E m
Sat. pH and Langelier Index (@ 20C)	10	N/A	2024/06/11	ATL SOP 00049	Auto Calc.



Your Project #: SW samples
Site#: 00012
Your C.O.C. #: C#988007-01-01

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2024/06/11
Report #: R8186651
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4G3229

Received: 2024/05/31, 09:17

Sample Matrix: Water
Samples Received: 10

Analyses	Date		Date Analyzed	Laboratory Method	Analytical Method
	Quantity	Extracted			
Sat. pH and Langelier Index (@ 4C)	10	N/A	2024/06/11	ATL SOP 00049	Auto Calc.
Reactive Silica	10	N/A	2024/06/10	ATL SOP 00022	EPA 366.0 m
Sulphate	10	N/A	2024/06/10	ATL SOP 00023	ASTM D516-16 m
Sulphide (1)	10	N/A	2024/06/04	CAM SOP-00455	SM 24 4500-S G m
Total Dissolved Solids (TDS calc)	10	N/A	2024/06/11	N/A	Auto Calc.
Organic carbon - Total (TOC) (2)	1	N/A	2024/06/05	ATL SOP 00203	SM 24 5310B m
Organic carbon - Total (TOC) (2)	4	N/A	2024/06/06	ATL SOP 00203	SM 24 5310B m
Organic carbon - Total (TOC) (2)	4	N/A	2024/06/07	ATL SOP 00203	SM 24 5310B m
Organic carbon - Total (TOC) (2)	1	N/A	2024/06/08	ATL SOP 00203	SM 24 5310B m
Total Suspended Solids	10	2024/06/05	2024/06/06	ATL SOP 00007	SM 24 2540D m
Turbidity	1	N/A	2024/06/10	ATL SOP 00011	EPA 180.1 R2 m
Turbidity	9	N/A	2024/06/11	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, EPA, APHA or the Quebec Ministry of Environment.

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.



Your Project #: SW samples
Site#: 00012
Your C.O.C. #: C#988007-01-01

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2024/06/11
Report #: R8186651
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4G3229

Received: 2024/05/31, 09:17

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

(1) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8

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

(3) 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.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:

Preeti Kapadia, Project Manager

Email: Preeti.Kapadia@bureauveritas.com

Phone# (902)420-0203 Ext:252

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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 Suzanne Rogers, General Manager responsible for Nova Scotia Environmental laboratory operations.



BUREAU
VERITAS

Bureau Veritas Job #: C4G3229

Report Date: 2024/06/11

Central Newfoundland Waste Management Authority

Client Project #: SW samples

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		ZHW355			ZHW356			ZHW357		
Sampling Date		2024/05/29 08:00			2024/05/29 08:15			2024/05/29 08:25		
COC Number		C#988007-01-01			C#988007-01-01			C#988007-01-01		
Sample #		00291			00292			00293		
	UNITS	847-SW-1	RDL	QC Batch	SW-1	RDL	QC Batch	SW-2	RDL	QC Batch

Calculated Parameters

Anion Sum	me/L	1.87	N/A	9425954	1.09	N/A	9425954	6.22	N/A	9425954
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	21	1.0	9425950	43	1.0	9425950	81	1.0	9425950
Calculated TDS	mg/L	110	1.0	9425958	59	1.0	9425958	410	1.0	9425958
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ND	1.0	9425950	ND	1.0	9425950	ND	1.0	9425950
Cation Sum	me/L	1.99	N/A	9425954	1.24	N/A	9425954	6.38	N/A	9425954
Hardness (CaCO ₃)	mg/L	31	1.0	9426076	51	1.0	9426076	120	1.0	9426076
Ion Balance (% Difference)	%	3.11	N/A	9425952	6.44	N/A	9425952	1.27	N/A	9425952
Langelier Index (@ 20C)	N/A	-1.71		9425955	-0.928		9425955	-0.355		9425955
Langelier Index (@ 4C)	N/A	-1.97		9425957	-1.18		9425957	-0.603		9425957
Nitrate (N)	mg/L	ND	0.050	9425899	ND	0.050	9425899	26	1.5	9425899
Saturation pH (@ 20C)	N/A	9.17		9425955	8.64		9425955	8.25		9425955
Saturation pH (@ 4C)	N/A	9.42		9425957	8.89		9425957	8.49		9425957

Inorganics

Total Alkalinity (Total as CaCO ₃)	mg/L	21	2.0	9444065	43	2.0	9444057	82	2.0	9444057
Dissolved Chloride (Cl ⁻)	mg/L	52	1.0	9444008	8.2	1.0	9444008	94	1.0	9444018
Colour	TCU	130	25	9444013	40 (1)	10	9444013	72	25	9444022
Nitrate + Nitrite (N)	mg/L	ND	0.050	9444016	ND	0.050	9444016	26	1.5	9444024
Nitrite (N)	mg/L	ND	0.010	9444017	ND	0.010	9444017	0.11	0.010	9444026
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.050	9432001	ND	0.050	9432001	0.73	0.050	9432001
Total Organic Carbon (C)	mg/L	11	0.50	9434825	7.3	0.50	9440379	16	0.50	9437845
Orthophosphate (P)	mg/L	ND	0.010	9444015	ND	0.010	9444015	ND	0.010	9444023
pH	pH	7.45		9444059	7.71		9444055	7.89		9444055
Reactive Silica (SiO ₂)	mg/L	4.5	0.50	9444012	2.7	0.50	9444012	2.4	0.50	9444021
Dissolved Sulphate (SO ₄)	mg/L	ND	2.0	9444011	ND	2.0	9444011	2.6	2.0	9444020
Turbidity	NTU	0.84	0.10	9446455	0.41	0.10	9446435	0.21	0.10	9446435
Conductivity	uS/cm	240	1.0	9444062	130	1.0	9444056	750	1.0	9444056

Metals

Total Aluminum (Al)	ug/L	110	5.0	9437310	44	5.0	9437310	23	5.0	9437310
Total Antimony (Sb)	ug/L	ND	1.0	9437310	ND	1.0	9437310	ND	1.0	9437310
Total Arsenic (As)	ug/L	ND	1.0	9437310	ND	1.0	9437310	ND	1.0	9437310
Total Barium (Ba)	ug/L	12	1.0	9437310	7.5	1.0	9437310	27	1.0	9437310
Total Beryllium (Be)	ug/L	ND	0.10	9437310	ND	0.10	9437310	ND	0.10	9437310

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

(1) Elevated reporting limit due to sample matrix.



ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		ZHW355			ZHW356			ZHW357		
Sampling Date		2024/05/29 08:00			2024/05/29 08:15			2024/05/29 08:25		
COC Number		C#988007-01-01			C#988007-01-01			C#988007-01-01		
Sample #		00291			00292			00293		
	UNITS	847-SW-1	RDL	QC Batch	SW-1	RDL	QC Batch	SW-2	RDL	QC Batch
Total Bismuth (Bi)	ug/L	ND	2.0	9437310	ND	2.0	9437310	ND	2.0	9437310
Total Boron (B)	ug/L	ND	50	9437310	ND	50	9437310	280	50	9437310
Total Cadmium (Cd)	ug/L	ND	0.010	9437310	ND	0.010	9437310	0.070	0.010	9437310
Total Calcium (Ca)	ug/L	7300	100	9437310	11000	100	9437310	20000	100	9437310
Total Chromium (Cr)	ug/L	ND	1.0	9437310	ND	1.0	9437310	1.8	1.0	9437310
Total Cobalt (Co)	ug/L	ND	0.40	9437310	ND	0.40	9437310	0.80	0.40	9437310
Total Copper (Cu)	ug/L	ND	0.50	9437310	0.64	0.50	9437310	1.5	0.50	9437310
Total Iron (Fe)	ug/L	210	50	9437310	63	50	9437310	ND	50	9437310
Total Lead (Pb)	ug/L	ND	0.50	9437310	ND	0.50	9437310	ND	0.50	9437310
Total Magnesium (Mg)	ug/L	3200	100	9437310	5600	100	9437310	16000	100	9437310
Total Manganese (Mn)	ug/L	11	2.0	9437310	2.9	2.0	9437310	3.3	2.0	9437310
Total Molybdenum (Mo)	ug/L	ND	2.0	9437310	ND	2.0	9437310	ND	2.0	9437310
Total Nickel (Ni)	ug/L	ND	2.0	9437310	ND	2.0	9437310	7.0	2.0	9437310
Total Phosphorus (P)	ug/L	ND	100	9437310	ND	100	9437310	ND	100	9437310
Total Potassium (K)	ug/L	480	100	9437310	620	100	9437310	28000	100	9437310
Total Selenium (Se)	ug/L	ND	0.50	9437310	ND	0.50	9437310	ND	0.50	9437310
Total Silver (Ag)	ug/L	ND	0.10	9437310	ND	0.10	9437310	ND	0.10	9437310
Total Sodium (Na)	ug/L	31000	100	9437310	5000	100	9437310	76000	100	9437310
Total Strontium (Sr)	ug/L	26	2.0	9437310	63	2.0	9437310	110	2.0	9437310
Total Thallium (Tl)	ug/L	ND	0.10	9437310	ND	0.10	9437310	ND	0.10	9437310
Total Tin (Sn)	ug/L	ND	2.0	9437310	ND	2.0	9437310	ND	2.0	9437310
Total Titanium (Ti)	ug/L	ND	2.0	9437310	ND	2.0	9437310	ND	2.0	9437310
Total Uranium (U)	ug/L	ND	0.10	9437310	ND	0.10	9437310	ND	0.10	9437310
Total Vanadium (V)	ug/L	ND	2.0	9437310	ND	2.0	9437310	ND	2.0	9437310
Total Zinc (Zn)	ug/L	ND	5.0	9437310	ND	5.0	9437310	ND	5.0	9437310

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

**ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)**

Bureau Veritas ID		ZHW358			ZHW359			ZHW360		
Sampling Date		2024/05/29 08:35			2024/05/29 08:50			2024/05/29 09:00		
COC Number		C#988007-01-01			C#988007-01-01			C#988007-01-01		
Sample #		00294			00295			00296		
	UNITS	SW-3	RDL	QC Batch	SW-4	RDL	QC Batch	SW-5	RDL	QC Batch

Calculated Parameters

Anion Sum	me/L	7.65	N/A	9425954	0.520	N/A	9425954	71.2	N/A	9425954
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	220	1.0	9425950	12	1.0	9425950	2600	1.0	9425950
Calculated TDS	mg/L	440	1.0	9425958	33	1.0	9425958	3900	1.0	9425958
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	2.4	1.0	9425950	ND	1.0	9425950	27	1.0	9425950
Cation Sum	me/L	8.55	N/A	9425954	0.600	N/A	9425954	77.4	N/A	9425954
Hardness (CaCO ₃)	mg/L	360	1.0	9426076	16	1.0	9426076	700	1.0	9426076
Ion Balance (% Difference)	%	5.56	N/A	9425952	7.14	N/A	9425952	4.17	N/A	9425952
Langelier Index (@ 20C)	N/A	0.887		9425955	-2.50		9425955	1.69		9425955
Langelier Index (@ 4C)	N/A	0.638		9425957	-2.75		9425957	1.45		9425957
Nitrate (N)	mg/L	1.2	0.050	9425899	0.24	0.050	9425899	ND	0.050	9425899
Saturation pH (@ 20C)	N/A	7.19		9425955	9.59		9425955	6.35		9425955
Saturation pH (@ 4C)	N/A	7.43		9425957	9.84		9425957	6.59		9425957

Inorganics

Total Alkalinity (Total as CaCO ₃)	mg/L	220	2.0	9444057	12	2.0	9440048	2600	20	9446289
Dissolved Chloride (Cl ⁻)	mg/L	42	1.0	9444018	9.2	1.0	9444018	640	10	9444018
Colour	TCU	28	5.0	9444022	40	25	9444022	690	150	9444022
Nitrate + Nitrite (N)	mg/L	1.2	0.050	9444024	0.24	0.050	9444024	0.084	0.050	9444024
Nitrite (N)	mg/L	ND	0.010	9444026	ND	0.010	9444026	0.034	0.010	9444026
Nitrogen (Ammonia Nitrogen)	mg/L	2.3	0.25	9432001	ND	0.050	9432001	360	25	9432001
Total Organic Carbon (C)	mg/L	11	0.50	9437872	7.1	0.50	9440369	140 (1)	5.0	9440364
Orthophosphate (P)	mg/L	ND	0.010	9444023	ND	0.010	9444023	0.32	0.010	9444023
pH	pH	8.07		9444055	7.09		9440046	8.03		9444055
Reactive Silica (SiO ₂)	mg/L	9.0	0.50	9444021	3.0	0.50	9444021	19	0.50	9444021
Dissolved Sulphate (SO ₄)	mg/L	96	2.0	9444020	ND	2.0	9444020	4.8	2.0	9444020
Turbidity	NTU	3.3	0.10	9446455	0.83	0.10	9446429	33	0.10	9446455
Conductivity	uS/cm	770	1.0	9444056	69	1.0	9440047	6800	1.0	9444056

Metals

Total Aluminum (Al)	ug/L	22	5.0	9440067	54	5.0	9437310	110	5.0	9437310
Total Antimony (Sb)	ug/L	1.3	1.0	9440067	ND	1.0	9437310	5.1	1.0	9437310
Total Arsenic (As)	ug/L	6.3	1.0	9440067	ND	1.0	9437310	38	1.0	9437310
Total Barium (Ba)	ug/L	350	1.0	9440067	4.1	1.0	9437310	400	1.0	9437310
Total Beryllium (Be)	ug/L	ND	0.10	9440067	ND	0.10	9437310	ND	0.10	9437310

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

(1) Elevated reporting limit due to turbidity.

BUREAU
VERITAS

Bureau Veritas Job #: C4G3229

Report Date: 2024/06/11

Central Newfoundland Waste Management Authority

Client Project #: SW samples

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		ZHW358			ZHW359			ZHW360		
Sampling Date		2024/05/29 08:35			2024/05/29 08:50			2024/05/29 09:00		
COC Number		C#988007-01-01			C#988007-01-01			C#988007-01-01		
Sample #		00294			00295			00296		
	UNITS	SW-3	RDL	QC Batch	SW-4	RDL	QC Batch	SW-5	RDL	QC Batch
Total Bismuth (Bi)	ug/L	ND	2.0	9440067	ND	2.0	9437310	ND	2.0	9437310
Total Boron (B)	ug/L	110	50	9440067	ND	50	9437310	2800	50	9437310
Total Cadmium (Cd)	ug/L	0.012	0.010	9440067	ND	0.010	9437310	ND (1)	0.10	9437310
Total Calcium (Ca)	ug/L	86000	100	9440067	4100	100	9437310	97000	100	9437310
Total Chromium (Cr)	ug/L	ND	1.0	9440067	ND	1.0	9437310	44	1.0	9437310
Total Cobalt (Co)	ug/L	6.4	0.40	9440067	ND	0.40	9437310	8.0	0.40	9437310
Total Copper (Cu)	ug/L	4.3	0.50	9440067	ND	0.50	9437310	2.5	0.50	9437310
Total Iron (Fe)	ug/L	1200	50	9440067	140	50	9437310	6200	50	9437310
Total Lead (Pb)	ug/L	ND	0.50	9440067	ND	0.50	9437310	ND	0.50	9437310
Total Magnesium (Mg)	ug/L	34000	100	9440067	1400	100	9437310	110000	100	9437310
Total Manganese (Mn)	ug/L	480	2.0	9440067	21	2.0	9437310	570	2.0	9437310
Total Molybdenum (Mo)	ug/L	ND	2.0	9440067	ND	2.0	9437310	ND	2.0	9437310
Total Nickel (Ni)	ug/L	9.3	2.0	9440067	ND	2.0	9437310	60	2.0	9437310
Total Phosphorus (P)	ug/L	ND	100	9440067	ND	100	9437310	1100	100	9437310
Total Potassium (K)	ug/L	4100	100	9440067	520	100	9437310	280000	100	9437310
Total Selenium (Se)	ug/L	ND	0.50	9440067	ND	0.50	9437310	0.58	0.50	9437310
Total Silver (Ag)	ug/L	ND	0.10	9440067	ND	0.10	9437310	ND	0.10	9437310
Total Sodium (Na)	ug/L	26000	100	9440067	6000	100	9437310	690000	100	9437310
Total Strontium (Sr)	ug/L	410	2.0	9440067	21	2.0	9437310	660	2.0	9437310
Total Thallium (Tl)	ug/L	ND	0.10	9440067	ND	0.10	9437310	ND	0.10	9437310
Total Tin (Sn)	ug/L	ND	2.0	9440067	ND	2.0	9437310	3.3	2.0	9437310
Total Titanium (Ti)	ug/L	ND	2.0	9440067	ND	2.0	9437310	14	2.0	9437310
Total Uranium (U)	ug/L	1.4	0.10	9440067	ND	0.10	9437310	0.23	0.10	9437310
Total Vanadium (V)	ug/L	ND	2.0	9440067	ND	2.0	9437310	18	2.0	9437310
Total Zinc (Zn)	ug/L	6.1	5.0	9440067	ND	5.0	9437310	31	5.0	9437310

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

(1) Elevated reporting limit due to sample matrix.



ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		ZHW361		ZHW362		ZHW363		
Sampling Date		2024/05/29 09:10		2024/05/29 09:20		2024/05/29 09:30		
COC Number		C#988007-01-01		C#988007-01-01		C#988007-01-01		
Sample #		00297		00298		00299		
	UNITS	SW-6	QC Batch	SW-7	QC Batch	SW-8	RDL	QC Batch

Calculated Parameters

Anion Sum	me/L	1.73	9425954	1.97	9425954	1.69	N/A	9425954
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	61	9425950	86	9425950	59	1.0	9425950
Calculated TDS	mg/L	100	9425958	99	9425958	99	1.0	9425958
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ND	9425950	ND	9425950	ND	1.0	9425950
Cation Sum	me/L	1.90	9425954	1.98	9425954	1.96	N/A	9425954
Hardness (CaCO ₃)	mg/L	70	9426076	86	9426076	71	1.0	9426076
Ion Balance (% Difference)	%	4.68	9425952	0.250	9425952	7.40	N/A	9425952
Langelier Index (@ 20C)	N/A	-0.324	9425955	-0.600	9425955	-0.547		9425955
Langelier Index (@ 4C)	N/A	-0.575	9425957	-0.851	9425957	-0.798		9425957
Nitrate (N)	mg/L	0.10	9425899	0.40	9425899	0.11	0.050	9425899
Saturation pH (@ 20C)	N/A	8.36	9425955	8.22	9425955	8.36		9425955
Saturation pH (@ 4C)	N/A	8.61	9425957	8.47	9425957	8.61		9425957

Inorganics

Total Alkalinity (Total as CaCO ₃)	mg/L	61	9444057	87	9444123	60	2.0	9444057
Dissolved Chloride (Cl ⁻)	mg/L	14	9444018	5.7	9444027	14	1.0	9444018
Colour	TCU	30	9444022	25	9444034	32	5.0	9444022
Nitrate + Nitrite (N)	mg/L	0.10	9444024	0.40	9444038	0.11	0.050	9444024
Nitrite (N)	mg/L	ND	9444026	ND	9444039	ND	0.010	9444026
Nitrogen (Ammonia Nitrogen)	mg/L	ND	9432001	0.064	9432001	ND	0.050	9432001
Total Organic Carbon (C)	mg/L	4.0	9437845	5.4	9437845	3.9	0.50	9440369
Orthophosphate (P)	mg/L	ND	9444023	ND	9444036	ND	0.010	9444023
pH	pH	8.04	9444055	7.62	9444118	7.81		9444055
Reactive Silica (SiO ₂)	mg/L	9.0	9444021	3.7	9444033	7.7	0.50	9444021
Dissolved Sulphate (SO ₄)	mg/L	4.2	9444020	2.3	9444030	4.3	2.0	9444020
Turbidity	NTU	1.9	9446455	6.7	9446455	2.6	0.10	9444914
Conductivity	uS/cm	200	9444056	190	9444120	200	1.0	9444056

Metals

Total Aluminum (Al)	ug/L	75	9437310	160	9437310	84	5.0	9440067
Total Antimony (Sb)	ug/L	ND	9437310	ND	9437310	ND	1.0	9440067
Total Arsenic (As)	ug/L	1.3	9437310	ND	9437310	1.3	1.0	9440067
Total Barium (Ba)	ug/L	48	9437310	68	9437310	50	1.0	9440067
Total Beryllium (Be)	ug/L	ND	9437310	ND	9437310	ND	0.10	9440067
Total Bismuth (Bi)	ug/L	ND	9437310	ND	9437310	ND	2.0	9440067

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.



ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		ZHW361		ZHW362		ZHW363		
Sampling Date		2024/05/29 09:10		2024/05/29 09:20		2024/05/29 09:30		
COC Number		C#988007-01-01		C#988007-01-01		C#988007-01-01		
Sample #		00297		00298		00299		
	UNITS	SW-6	QC Batch	SW-7	QC Batch	SW-8	RDL	QC Batch
Total Boron (B)	ug/L	ND	9437310	ND	9437310	ND	50	9440067
Total Cadmium (Cd)	ug/L	ND	9437310	ND	9437310	ND	0.010	9440067
Total Calcium (Ca)	ug/L	16000	9437310	15000	9437310	16000	100	9440067
Total Chromium (Cr)	ug/L	ND	9437310	ND	9437310	1.1	1.0	9440067
Total Cobalt (Co)	ug/L	ND	9437310	ND	9437310	ND	0.40	9440067
Total Copper (Cu)	ug/L	1.1	9437310	1.6	9437310	1.2	0.50	9440067
Total Iron (Fe)	ug/L	80	9437310	170	9437310	86	50	9440067
Total Lead (Pb)	ug/L	ND	9437310	ND	9437310	ND	0.50	9440067
Total Magnesium (Mg)	ug/L	7400	9437310	11000	9437310	7600	100	9440067
Total Manganese (Mn)	ug/L	9.0	9437310	21	9437310	9.3	2.0	9440067
Total Molybdenum (Mo)	ug/L	ND	9437310	ND	9437310	ND	2.0	9440067
Total Nickel (Ni)	ug/L	ND	9437310	ND	9437310	ND	2.0	9440067
Total Phosphorus (P)	ug/L	ND	9437310	ND	9437310	ND	100	9440067
Total Potassium (K)	ug/L	1300	9437310	950	9437310	1300	100	9440067
Total Selenium (Se)	ug/L	ND	9437310	ND	9437310	ND	0.50	9440067
Total Silver (Ag)	ug/L	ND	9437310	ND	9437310	ND	0.10	9440067
Total Sodium (Na)	ug/L	11000	9437310	5400	9437310	11000	100	9440067
Total Strontium (Sr)	ug/L	65	9437310	49	9437310	63	2.0	9440067
Total Thallium (Tl)	ug/L	ND	9437310	ND	9437310	ND	0.10	9440067
Total Tin (Sn)	ug/L	ND	9437310	ND	9437310	ND	2.0	9440067
Total Titanium (Ti)	ug/L	ND	9437310	ND	9437310	ND	2.0	9440067
Total Uranium (U)	ug/L	0.42	9437310	0.21	9437310	0.38	0.10	9440067
Total Vanadium (V)	ug/L	4.1	9437310	ND	9437310	4.2	2.0	9440067
Total Zinc (Zn)	ug/L	ND	9437310	ND	9437310	ND	5.0	9440067
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.								

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		ZHW364		
Sampling Date		2024/05/29 09:40		
COC Number		C#988007-01-01		
Sample #		00287		
	UNITS	SW-9	RDL	QC Batch
Calculated Parameters				
Anion Sum	me/L	17.2	N/A	9425954
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	550	1.0	9425950
Calculated TDS	mg/L	990	1.0	9425958
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	6.8	1.0	9425950
Cation Sum	me/L	20.0	N/A	9425954
Hardness (CaCO ₃)	mg/L	280	1.0	9426076
Ion Balance (% Difference)	%	7.62	N/A	9425952
Langelier Index (@ 20C)	N/A	0.946		9425955
Langelier Index (@ 4C)	N/A	0.700		9425957
Nitrate (N)	mg/L	9.5	0.50	9425899
Saturation pH (@ 20C)	N/A	7.18		9425955
Saturation pH (@ 4C)	N/A	7.42		9425957
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L	560	2.0	9444057
Dissolved Chloride (Cl ⁻)	mg/L	180	5.0	9444018
Colour	TCU	82	25	9444022
Nitrate + Nitrite (N)	mg/L	11	0.50	9444024
Nitrite (N)	mg/L	1.4	0.050	9444026
Nitrogen (Ammonia Nitrogen)	mg/L	71	5.0	9432001
Total Organic Carbon (C)	mg/L	35 (1)	5.0	9440364
Orthophosphate (P)	mg/L	0.011	0.010	9444023
pH	pH	8.12		9444055
Reactive Silica (SiO ₂)	mg/L	8.4	0.50	9444021
Dissolved Sulphate (SO ₄)	mg/L	10	2.0	9444020
Turbidity	NTU	5.2	0.10	9446455
Conductivity	uS/cm	1900	1.0	9444056
Metals				
Total Aluminum (Al)	ug/L	24	5.0	9437310
Total Antimony (Sb)	ug/L	1.4	1.0	9437310
Total Arsenic (As)	ug/L	8.0	1.0	9437310
Total Barium (Ba)	ug/L	200	1.0	9437310
Total Beryllium (Be)	ug/L	ND	0.10	9437310
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable ND = Not Detected at a concentration equal or greater than the indicated Detection Limit. (1) Elevated reporting limit due to sample matrix.				

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		ZHW364		
Sampling Date		2024/05/29 09:40		
COC Number		C#988007-01-01		
Sample #		00287		
	UNITS	SW-9	RDL	QC Batch
Total Bismuth (Bi)	ug/L	ND	2.0	9437310
Total Boron (B)	ug/L	780	50	9437310
Total Cadmium (Cd)	ug/L	ND	0.010	9437310
Total Calcium (Ca)	ug/L	43000	100	9437310
Total Chromium (Cr)	ug/L	7.3	1.0	9437310
Total Cobalt (Co)	ug/L	2.4	0.40	9437310
Total Copper (Cu)	ug/L	1.9	0.50	9437310
Total Iron (Fe)	ug/L	300	50	9437310
Total Lead (Pb)	ug/L	ND	0.50	9437310
Total Magnesium (Mg)	ug/L	41000	100	9437310
Total Manganese (Mn)	ug/L	120	2.0	9437310
Total Molybdenum (Mo)	ug/L	ND	2.0	9437310
Total Nickel (Ni)	ug/L	16	2.0	9437310
Total Phosphorus (P)	ug/L	180	100	9437310
Total Potassium (K)	ug/L	72000	100	9437310
Total Selenium (Se)	ug/L	ND	0.50	9437310
Total Silver (Ag)	ug/L	ND	0.10	9437310
Total Sodium (Na)	ug/L	170000	100	9437310
Total Strontium (Sr)	ug/L	250	2.0	9437310
Total Thallium (Tl)	ug/L	ND	0.10	9437310
Total Tin (Sn)	ug/L	ND	2.0	9437310
Total Titanium (Ti)	ug/L	ND	2.0	9437310
Total Uranium (U)	ug/L	0.39	0.10	9437310
Total Vanadium (V)	ug/L	3.0	2.0	9437310
Total Zinc (Zn)	ug/L	7.0	5.0	9437310
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.				

**RESULTS OF ANALYSES OF WATER**

Bureau Veritas ID		ZHW355	ZHW356	ZHW357		ZHW358		
Sampling Date		2024/05/29 08:00	2024/05/29 08:15	2024/05/29 08:25		2024/05/29 08:35		
COC Number		C#988007-01-01	C#988007-01-01	C#988007-01-01		C#988007-01-01		
Sample #		00291	00292	00293		00294		
	UNITS	847-SW-1	SW-1	SW-2	RDL	SW-3	RDL	QC Batch

Inorganics

Dissolved Organic Carbon (C)	mg/L	11	7.0	16	0.50	11	0.50	9444111
Phenols-4AAP	mg/L	ND	ND	ND	0.0010	ND	0.0010	9438332
Total Suspended Solids	mg/L	1.2	ND	ND	1.0	1.9	1.1	9434546
Sulphide	mg/L	ND	ND	ND	0.020	ND	0.020	9432820

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas ID		ZHW359			ZHW360		ZHW361		
Sampling Date		2024/05/29 08:50			2024/05/29 09:00		2024/05/29 09:10		
COC Number		C#988007-01-01			C#988007-01-01		C#988007-01-01		
Sample #		00295			00296		00297		
	UNITS	SW-4	RDL	QC Batch	SW-5	RDL	SW-6	RDL	QC Batch

Inorganics

Dissolved Organic Carbon (C)	mg/L	7.1	0.50	9440818	120 (1)	5.0	3.9	0.50	9444111
Phenols-4AAP	mg/L	ND	0.0010	9438332	0.0044	0.0010	ND	0.0010	9438332
Total Suspended Solids	mg/L	1.2	1.0	9434546	63	5.0	ND	1.0	9434546
Sulphide	mg/L	ND	0.020	9432820	0.091	0.020	ND	0.020	9432820

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

(1) Elevated reporting limit due to sample matrix.

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		ZHW362	ZHW363		ZHW364		
Sampling Date		2024/05/29 09:20	2024/05/29 09:30		2024/05/29 09:40		
COC Number		C#988007-01-01	C#988007-01-01		C#988007-01-01		
Sample #		00298	00299		00287		
	UNITS	SW-7	SW-8	RDL	SW-9	RDL	QC Batch
Inorganics							
Dissolved Organic Carbon (C)	mg/L	4.8	3.7	0.50	28 (1)	5.0	9444111
Phenols-4AAP	mg/L	ND	ND	0.0010	ND	0.0010	9438332
Total Suspended Solids	mg/L	1.8	1.8	1.0	7.4	1.0	9434546
Sulphide	mg/L	ND	ND	0.020	ND	0.020	9432820
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit. (1) Elevated reporting limit due to sample matrix.							



MERCURY BY COLD VAPOUR AA (WATER)

Bureau Veritas ID		ZHW355	ZHW356	ZHW357	ZHW358	ZHW359		
Sampling Date		2024/05/29 08:00	2024/05/29 08:15	2024/05/29 08:25	2024/05/29 08:35	2024/05/29 08:50		
COC Number		C#988007-01-01	C#988007-01-01	C#988007-01-01	C#988007-01-01	C#988007-01-01		
Sample #		00291	00292	00293	00294	00295		
	UNITS	847-SW-1	SW-1	SW-2	SW-3	SW-4	RDL	QC Batch

Metals

Total Mercury (Hg)	ug/L	ND	ND	0.013	ND	ND	0.013	9437565
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RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas ID		ZHW360	ZHW361	ZHW362	ZHW363	ZHW364		
Sampling Date		2024/05/29 09:00	2024/05/29 09:10	2024/05/29 09:20	2024/05/29 09:30	2024/05/29 09:40		
COC Number		C#988007-01-01	C#988007-01-01	C#988007-01-01	C#988007-01-01	C#988007-01-01		
Sample #		00296	00297	00298	00299	00287		
	UNITS	SW-5	SW-6	SW-7	SW-8	SW-9	RDL	QC Batch

Metals

Total Mercury (Hg)	ug/L	0.027	ND	ND	ND	0.020	0.013	9437565
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RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.



GENERAL COMMENTS

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

Package 1	14.4°C
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Average temperature upon receipt >10°C.

Sample ZHW356 [SW-1] : RCap Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

Sample ZHW358 [SW-3] : Poor RCap Ion Balance due to sample matrix. Anion sum does not include contribution from Total Organic Carbon.

Sample ZHW359 [SW-4] : RCap Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

Sample ZHW361 [SW-6] : Total Suspended Solids: Used all of the sample provided, DL raised.

Sample ZHW363 [SW-8] : Poor RCap Ion Balance due to sample matrix.

Sample ZHW364 [SW-9] : Poor RCap Ion Balance due to sample matrix. Anion sum does not include contribution from Total Organic Carbon.

Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9432001	EMT	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2024/06/05		95	%	80 - 120
9432001	EMT	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2024/06/05		97	%	80 - 120
9432001	EMT	Method Blank	Nitrogen (Ammonia Nitrogen)	2024/06/05	ND, RDL=0.050		mg/L	
9432001	EMT	RPD	Nitrogen (Ammonia Nitrogen)	2024/06/05	3.3		%	20
9432820	TAK	Matrix Spike	Sulphide	2024/06/04		91	%	80 - 120
9432820	TAK	Spiked Blank	Sulphide	2024/06/04		91	%	80 - 120
9432820	TAK	Method Blank	Sulphide	2024/06/04	ND, RDL=0.020		mg/L	
9432820	TAK	RPD	Sulphide	2024/06/04	NC		%	20
9434546	ACK	QC Standard	Total Suspended Solids	2024/06/06		99	%	80 - 120
9434546	ACK	Method Blank	Total Suspended Solids	2024/06/06	ND, RDL=1.0		mg/L	
9434546	ACK	RPD [ZHW360-01]	Total Suspended Solids	2024/06/06	6.2		%	20
9434825	MKY	Matrix Spike [ZHW355-04]	Total Organic Carbon (C)	2024/06/05		101	%	85 - 115
9434825	MKY	Spiked Blank	Total Organic Carbon (C)	2024/06/05		99	%	80 - 120
9434825	MKY	Method Blank	Total Organic Carbon (C)	2024/06/05	ND, RDL=0.50		mg/L	
9434825	MKY	RPD [ZHW355-04]	Total Organic Carbon (C)	2024/06/05	0.90		%	15
9437310	MTZ	Matrix Spike [ZHW355-03]	Total Aluminum (Al)	2024/06/06		101	%	80 - 120
			Total Antimony (Sb)	2024/06/06		105	%	80 - 120
			Total Arsenic (As)	2024/06/06		104	%	80 - 120
			Total Barium (Ba)	2024/06/06		99	%	80 - 120
			Total Beryllium (Be)	2024/06/06		105	%	80 - 120
			Total Bismuth (Bi)	2024/06/06		101	%	80 - 120
			Total Boron (B)	2024/06/06		102	%	80 - 120
			Total Cadmium (Cd)	2024/06/06		102	%	80 - 120
			Total Calcium (Ca)	2024/06/06		100	%	80 - 120
			Total Chromium (Cr)	2024/06/06		104	%	80 - 120
			Total Cobalt (Co)	2024/06/06		102	%	80 - 120
			Total Copper (Cu)	2024/06/06		102	%	80 - 120
			Total Iron (Fe)	2024/06/06		101	%	80 - 120
			Total Lead (Pb)	2024/06/06		102	%	80 - 120
			Total Magnesium (Mg)	2024/06/06		108	%	80 - 120
			Total Manganese (Mn)	2024/06/06		105	%	80 - 120
			Total Molybdenum (Mo)	2024/06/06		108	%	80 - 120
			Total Nickel (Ni)	2024/06/06		104	%	80 - 120
			Total Phosphorus (P)	2024/06/06		104	%	80 - 120
			Total Potassium (K)	2024/06/06		98	%	80 - 120
			Total Selenium (Se)	2024/06/06		105	%	80 - 120
			Total Silver (Ag)	2024/06/06		100	%	80 - 120
			Total Sodium (Na)	2024/06/06		NC	%	80 - 120
			Total Strontium (Sr)	2024/06/06		105	%	80 - 120
			Total Thallium (Tl)	2024/06/06		105	%	80 - 120
			Total Tin (Sn)	2024/06/06		104	%	80 - 120
			Total Titanium (Ti)	2024/06/06		105	%	80 - 120
			Total Uranium (U)	2024/06/06		107	%	80 - 120
			Total Vanadium (V)	2024/06/06		107	%	80 - 120
			Total Zinc (Zn)	2024/06/06		101	%	80 - 120
9437310	MTZ	Spiked Blank	Total Aluminum (Al)	2024/06/06		99	%	80 - 120
			Total Antimony (Sb)	2024/06/06		99	%	80 - 120
			Total Arsenic (As)	2024/06/06		99	%	80 - 120
			Total Barium (Ba)	2024/06/06		93	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9437310	MTZ	Method Blank	Total Beryllium (Be)	2024/06/06		97	%	80 - 120
			Total Bismuth (Bi)	2024/06/06		96	%	80 - 120
			Total Boron (B)	2024/06/06		95	%	80 - 120
			Total Cadmium (Cd)	2024/06/06		98	%	80 - 120
			Total Calcium (Ca)	2024/06/06		95	%	80 - 120
			Total Chromium (Cr)	2024/06/06		99	%	80 - 120
			Total Cobalt (Co)	2024/06/06		98	%	80 - 120
			Total Copper (Cu)	2024/06/06		98	%	80 - 120
			Total Iron (Fe)	2024/06/06		101	%	80 - 120
			Total Lead (Pb)	2024/06/06		97	%	80 - 120
			Total Magnesium (Mg)	2024/06/06		101	%	80 - 120
			Total Manganese (Mn)	2024/06/06		100	%	80 - 120
			Total Molybdenum (Mo)	2024/06/06		101	%	80 - 120
			Total Nickel (Ni)	2024/06/06		100	%	80 - 120
			Total Phosphorus (P)	2024/06/06		101	%	80 - 120
			Total Potassium (K)	2024/06/06		95	%	80 - 120
			Total Selenium (Se)	2024/06/06		99	%	80 - 120
			Total Silver (Ag)	2024/06/06		96	%	80 - 120
			Total Sodium (Na)	2024/06/06		97	%	80 - 120
			Total Strontium (Sr)	2024/06/06		99	%	80 - 120
			Total Thallium (Tl)	2024/06/06		100	%	80 - 120
			Total Tin (Sn)	2024/06/06		98	%	80 - 120
			Total Titanium (Ti)	2024/06/06		99	%	80 - 120
			Total Uranium (U)	2024/06/06		101	%	80 - 120
			Total Vanadium (V)	2024/06/06		102	%	80 - 120
			Total Zinc (Zn)	2024/06/06		97	%	80 - 120
			Total Aluminum (Al)	2024/06/06	ND, RDL=5.0		ug/L	
			Total Antimony (Sb)	2024/06/06	ND, RDL=1.0		ug/L	
			Total Arsenic (As)	2024/06/06	ND, RDL=1.0		ug/L	
			Total Barium (Ba)	2024/06/06	ND, RDL=1.0		ug/L	
			Total Beryllium (Be)	2024/06/06	ND, RDL=0.10		ug/L	
			Total Bismuth (Bi)	2024/06/06	ND, RDL=2.0		ug/L	
			Total Boron (B)	2024/06/06	ND, RDL=50		ug/L	
			Total Cadmium (Cd)	2024/06/06	ND, RDL=0.010		ug/L	
			Total Calcium (Ca)	2024/06/06	ND, RDL=100		ug/L	
			Total Chromium (Cr)	2024/06/06	ND, RDL=1.0		ug/L	
			Total Cobalt (Co)	2024/06/06	ND, RDL=0.40		ug/L	
			Total Copper (Cu)	2024/06/06	ND, RDL=0.50		ug/L	
			Total Iron (Fe)	2024/06/06	ND, RDL=50		ug/L	
			Total Lead (Pb)	2024/06/06	ND, RDL=0.50		ug/L	
			Total Magnesium (Mg)	2024/06/06	ND, RDL=100		ug/L	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9437310	MTZ	RPD	Total Manganese (Mn)	2024/06/06	ND, RDL=2.0		ug/L	
			Total Molybdenum (Mo)	2024/06/06	ND, RDL=2.0		ug/L	
			Total Nickel (Ni)	2024/06/06	ND, RDL=2.0		ug/L	
			Total Phosphorus (P)	2024/06/06	ND, RDL=100		ug/L	
			Total Potassium (K)	2024/06/06	ND, RDL=100		ug/L	
			Total Selenium (Se)	2024/06/06	ND, RDL=0.50		ug/L	
			Total Silver (Ag)	2024/06/06	ND, RDL=0.10		ug/L	
			Total Sodium (Na)	2024/06/06	ND, RDL=100		ug/L	
			Total Strontium (Sr)	2024/06/06	ND, RDL=2.0		ug/L	
			Total Thallium (Tl)	2024/06/06	ND, RDL=0.10		ug/L	
			Total Tin (Sn)	2024/06/06	ND, RDL=2.0		ug/L	
			Total Titanium (Ti)	2024/06/06	ND, RDL=2.0		ug/L	
			Total Uranium (U)	2024/06/06	ND, RDL=0.10		ug/L	
			Total Vanadium (V)	2024/06/06	ND, RDL=2.0		ug/L	
			Total Zinc (Zn)	2024/06/06	ND, RDL=5.0		ug/L	
			Total Aluminum (Al)	2024/06/06	2.5		%	20
			Total Antimony (Sb)	2024/06/06	NC		%	20
			Total Arsenic (As)	2024/06/06	NC		%	20
			Total Barium (Ba)	2024/06/06	2.8		%	20
			Total Boron (B)	2024/06/06	NC		%	20
			Total Cadmium (Cd)	2024/06/06	NC		%	20
			Total Calcium (Ca)	2024/06/06	4.3		%	20
			Total Chromium (Cr)	2024/06/06	NC		%	20
			Total Copper (Cu)	2024/06/06	NC		%	20
			Total Iron (Fe)	2024/06/06	NC		%	20
			Total Lead (Pb)	2024/06/06	NC		%	20
			Total Magnesium (Mg)	2024/06/06	2.5		%	20
			Total Manganese (Mn)	2024/06/06	6.6		%	20
			Total Nickel (Ni)	2024/06/06	NC		%	20
			Total Phosphorus (P)	2024/06/06	NC		%	20
			Total Potassium (K)	2024/06/06	13		%	20
			Total Selenium (Se)	2024/06/06	NC		%	20
			Total Sodium (Na)	2024/06/06	4.1		%	20
			Total Strontium (Sr)	2024/06/06	5.8		%	20
			Total Uranium (U)	2024/06/06	NC		%	20
			Total Zinc (Zn)	2024/06/06	NC		%	20
9437565	SPY	Matrix Spike	Total Mercury (Hg)	2024/06/10		101	%	80 - 120
9437565	SPY	Spiked Blank	Total Mercury (Hg)	2024/06/10		103	%	80 - 120
9437565	SPY	Method Blank	Total Mercury (Hg)	2024/06/10	ND, RDL=0.013		ug/L	
9437565	SPY	RPD	Total Mercury (Hg)	2024/06/10	NC		%	20



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9437845	MKY	Matrix Spike	Total Organic Carbon (C)	2024/06/06		99	%	85 - 115
9437845	MKY	Spiked Blank	Total Organic Carbon (C)	2024/06/06		100	%	80 - 120
9437845	MKY	Method Blank	Total Organic Carbon (C)	2024/06/06	ND, RDL=0.50		mg/L	
9437845	MKY	RPD	Total Organic Carbon (C)	2024/06/06	3.3		%	15
9437872	MKY	Matrix Spike	Total Organic Carbon (C)	2024/06/06		100	%	85 - 115
9437872	MKY	Spiked Blank	Total Organic Carbon (C)	2024/06/06		101	%	80 - 120
9437872	MKY	Method Blank	Total Organic Carbon (C)	2024/06/06	ND, RDL=0.50		mg/L	
9437872	MKY	RPD	Total Organic Carbon (C)	2024/06/06	1.1		%	15
9438332	CPO	Matrix Spike	Phenols-4AAP	2024/06/06		107	%	80 - 120
9438332	CPO	Spiked Blank	Phenols-4AAP	2024/06/06		103	%	80 - 120
9438332	CPO	Method Blank	Phenols-4AAP	2024/06/06	ND, RDL=0.0010		mg/L	
9438332	CPO	RPD	Phenols-4AAP	2024/06/06	NC		%	20
9440046	LJV	Spiked Blank	pH	2024/06/07		101	%	97 - 103
9440046	LJV	RPD	pH	2024/06/07	0.53		%	N/A
9440047	LJV	Spiked Blank	Conductivity	2024/06/07		101	%	80 - 120
9440047	LJV	Method Blank	Conductivity	2024/06/07	ND, RDL=1.0		uS/cm	
9440047	LJV	RPD	Conductivity	2024/06/07	1.2		%	10
9440048	LJV	Spiked Blank	Total Alkalinity (Total as CaCO3)	2024/06/07		92	%	80 - 120
9440048	LJV	Method Blank	Total Alkalinity (Total as CaCO3)	2024/06/07	ND, RDL=2.0		mg/L	
9440048	LJV	RPD	Total Alkalinity (Total as CaCO3)	2024/06/07	0.32		%	20
9440067	JHY	Matrix Spike	Total Aluminum (Al)	2024/06/07		97	%	80 - 120
			Total Antimony (Sb)	2024/06/07		101	%	80 - 120
			Total Arsenic (As)	2024/06/07		100	%	80 - 120
			Total Barium (Ba)	2024/06/07		NC	%	80 - 120
			Total Beryllium (Be)	2024/06/07		96	%	80 - 120
			Total Bismuth (Bi)	2024/06/07		98	%	80 - 120
			Total Boron (B)	2024/06/07		93	%	80 - 120
			Total Cadmium (Cd)	2024/06/07		96	%	80 - 120
			Total Calcium (Ca)	2024/06/07		95	%	80 - 120
			Total Chromium (Cr)	2024/06/07		99	%	80 - 120
			Total Cobalt (Co)	2024/06/07		96	%	80 - 120
			Total Copper (Cu)	2024/06/07		95	%	80 - 120
			Total Iron (Fe)	2024/06/07		NC	%	80 - 120
			Total Lead (Pb)	2024/06/07		95	%	80 - 120
			Total Magnesium (Mg)	2024/06/07		105	%	80 - 120
			Total Manganese (Mn)	2024/06/07		NC	%	80 - 120
			Total Molybdenum (Mo)	2024/06/07		102	%	80 - 120
			Total Nickel (Ni)	2024/06/07		97	%	80 - 120
			Total Phosphorus (P)	2024/06/07		103	%	80 - 120
			Total Potassium (K)	2024/06/07		98	%	80 - 120
			Total Selenium (Se)	2024/06/07		99	%	80 - 120
			Total Silver (Ag)	2024/06/07		97	%	80 - 120
			Total Sodium (Na)	2024/06/07		101	%	80 - 120
			Total Strontium (Sr)	2024/06/07		93	%	80 - 120
			Total Thallium (Tl)	2024/06/07		99	%	80 - 120
			Total Tin (Sn)	2024/06/07		101	%	80 - 120
			Total Titanium (Ti)	2024/06/07		97	%	80 - 120
			Total Uranium (U)	2024/06/07		98	%	80 - 120
			Total Vanadium (V)	2024/06/07		100	%	80 - 120
			Total Zinc (Zn)	2024/06/07		97	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9440067	JHY	Spiked Blank	Total Aluminum (Al)	2024/06/07		101	%	80 - 120
			Total Antimony (Sb)	2024/06/07		104	%	80 - 120
			Total Arsenic (As)	2024/06/07		101	%	80 - 120
			Total Barium (Ba)	2024/06/07		98	%	80 - 120
			Total Beryllium (Be)	2024/06/07		99	%	80 - 120
			Total Bismuth (Bi)	2024/06/07		101	%	80 - 120
			Total Boron (B)	2024/06/07		96	%	80 - 120
			Total Cadmium (Cd)	2024/06/07		98	%	80 - 120
			Total Calcium (Ca)	2024/06/07		99	%	80 - 120
			Total Chromium (Cr)	2024/06/07		103	%	80 - 120
			Total Cobalt (Co)	2024/06/07		99	%	80 - 120
			Total Copper (Cu)	2024/06/07		98	%	80 - 120
			Total Iron (Fe)	2024/06/07		105	%	80 - 120
			Total Lead (Pb)	2024/06/07		98	%	80 - 120
			Total Magnesium (Mg)	2024/06/07		104	%	80 - 120
			Total Manganese (Mn)	2024/06/07		101	%	80 - 120
			Total Molybdenum (Mo)	2024/06/07		106	%	80 - 120
			Total Nickel (Ni)	2024/06/07		102	%	80 - 120
			Total Phosphorus (P)	2024/06/07		104	%	80 - 120
			Total Potassium (K)	2024/06/07		101	%	80 - 120
			Total Selenium (Se)	2024/06/07		100	%	80 - 120
			Total Silver (Ag)	2024/06/07		98	%	80 - 120
			Total Sodium (Na)	2024/06/07		103	%	80 - 120
			Total Strontium (Sr)	2024/06/07		100	%	80 - 120
			Total Thallium (Tl)	2024/06/07		102	%	80 - 120
			Total Tin (Sn)	2024/06/07		103	%	80 - 120
			Total Titanium (Ti)	2024/06/07		101	%	80 - 120
			Total Uranium (U)	2024/06/07		100	%	80 - 120
			Total Vanadium (V)	2024/06/07		104	%	80 - 120
			Total Zinc (Zn)	2024/06/07		100	%	80 - 120
9440067	JHY	Method Blank	Total Aluminum (Al)	2024/06/07	ND, RDL=5.0		ug/L	
			Total Antimony (Sb)	2024/06/07	ND, RDL=1.0		ug/L	
			Total Arsenic (As)	2024/06/07	ND, RDL=1.0		ug/L	
			Total Barium (Ba)	2024/06/07	ND, RDL=1.0		ug/L	
			Total Beryllium (Be)	2024/06/07	ND, RDL=0.10		ug/L	
			Total Bismuth (Bi)	2024/06/07	ND, RDL=2.0		ug/L	
			Total Boron (B)	2024/06/07	ND, RDL=50		ug/L	
			Total Cadmium (Cd)	2024/06/07	ND, RDL=0.010		ug/L	
			Total Calcium (Ca)	2024/06/07	ND, RDL=100		ug/L	
			Total Chromium (Cr)	2024/06/07	ND, RDL=1.0		ug/L	
			Total Cobalt (Co)	2024/06/07	ND, RDL=0.40		ug/L	
			Total Copper (Cu)	2024/06/07	ND, RDL=0.50		ug/L	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Iron (Fe)	2024/06/07	ND, RDL=50		ug/L	
			Total Lead (Pb)	2024/06/07	ND, RDL=0.50		ug/L	
			Total Magnesium (Mg)	2024/06/07	ND, RDL=100		ug/L	
			Total Manganese (Mn)	2024/06/07	ND, RDL=2.0		ug/L	
			Total Molybdenum (Mo)	2024/06/07	ND, RDL=2.0		ug/L	
			Total Nickel (Ni)	2024/06/07	ND, RDL=2.0		ug/L	
			Total Phosphorus (P)	2024/06/07	ND, RDL=100		ug/L	
			Total Potassium (K)	2024/06/07	ND, RDL=100		ug/L	
			Total Selenium (Se)	2024/06/07	ND, RDL=0.50		ug/L	
			Total Silver (Ag)	2024/06/07	ND, RDL=0.10		ug/L	
			Total Sodium (Na)	2024/06/07	ND, RDL=100		ug/L	
			Total Strontium (Sr)	2024/06/07	ND, RDL=2.0		ug/L	
			Total Thallium (Tl)	2024/06/07	ND, RDL=0.10		ug/L	
			Total Tin (Sn)	2024/06/07	ND, RDL=2.0		ug/L	
			Total Titanium (Ti)	2024/06/07	ND, RDL=2.0		ug/L	
			Total Uranium (U)	2024/06/07	ND, RDL=0.10		ug/L	
			Total Vanadium (V)	2024/06/07	ND, RDL=2.0		ug/L	
			Total Zinc (Zn)	2024/06/07	ND, RDL=5.0		ug/L	
9440067	JHY	RPD	Total Aluminum (Al)	2024/06/07	2.8		%	20
9440364	MKY	Matrix Spike	Total Organic Carbon (C)	2024/06/07		98	%	85 - 115
9440364	MKY	Spiked Blank	Total Organic Carbon (C)	2024/06/07		98	%	80 - 120
9440364	MKY	Method Blank	Total Organic Carbon (C)	2024/06/07	ND, RDL=0.50		mg/L	
9440364	MKY	RPD	Total Organic Carbon (C)	2024/06/07	NC		%	15
9440369	MKY	Matrix Spike	Total Organic Carbon (C)	2024/06/07		99	%	85 - 115
9440369	MKY	Spiked Blank	Total Organic Carbon (C)	2024/06/07		98	%	80 - 120
9440369	MKY	Method Blank	Total Organic Carbon (C)	2024/06/07	ND, RDL=0.50		mg/L	
9440369	MKY	RPD	Total Organic Carbon (C)	2024/06/07	1.4		%	15
9440379	MKY	Matrix Spike	Total Organic Carbon (C)	2024/06/07		98	%	85 - 115
9440379	MKY	Spiked Blank	Total Organic Carbon (C)	2024/06/07		98	%	80 - 120
9440379	MKY	Method Blank	Total Organic Carbon (C)	2024/06/07	ND, RDL=0.50		mg/L	
9440379	MKY	RPD	Total Organic Carbon (C)	2024/06/07	1.9		%	15
9440818	MKY	Matrix Spike	Dissolved Organic Carbon (C)	2024/06/07		104	%	85 - 115
9440818	MKY	Spiked Blank	Dissolved Organic Carbon (C)	2024/06/07		96	%	80 - 120
9440818	MKY	Method Blank	Dissolved Organic Carbon (C)	2024/06/07	ND, RDL=0.50		mg/L	



BUREAU
VERITAS

Bureau Veritas Job #: C4G3229
Report Date: 2024/06/11

Central Newfoundland Waste Management Authority
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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9440818	MKY	RPD	Dissolved Organic Carbon (C)	2024/06/07	12		%	15
9444008	EMT	Matrix Spike	Dissolved Chloride (Cl-)	2024/06/10		105	%	80 - 120
9444008	EMT	Spiked Blank	Dissolved Chloride (Cl-)	2024/06/10		105	%	80 - 120
9444008	EMT	Method Blank	Dissolved Chloride (Cl-)	2024/06/10	ND, RDL=1.0		mg/L	
9444008	EMT	RPD	Dissolved Chloride (Cl-)	2024/06/10	1.9		%	20
9444011	EMT	Matrix Spike	Dissolved Sulphate (SO4)	2024/06/10		117	%	80 - 120
9444011	EMT	Spiked Blank	Dissolved Sulphate (SO4)	2024/06/10		105	%	80 - 120
9444011	EMT	Method Blank	Dissolved Sulphate (SO4)	2024/06/10	ND, RDL=2.0		mg/L	
9444011	EMT	RPD	Dissolved Sulphate (SO4)	2024/06/10	NC		%	20
9444012	EMT	Matrix Spike	Reactive Silica (SiO2)	2024/06/10		93	%	80 - 120
9444012	EMT	Spiked Blank	Reactive Silica (SiO2)	2024/06/10		102	%	80 - 120
9444012	EMT	Method Blank	Reactive Silica (SiO2)	2024/06/10	ND, RDL=0.50		mg/L	
9444012	EMT	RPD	Reactive Silica (SiO2)	2024/06/10	3.2		%	20
9444013	MCN	Spiked Blank	Colour	2024/06/10		113	%	80 - 120
9444013	MCN	Method Blank	Colour	2024/06/10	ND, RDL=5.0		TCU	
9444013	MCN	RPD	Colour	2024/06/10	14		%	20
9444015	MCN	Matrix Spike	Orthophosphate (P)	2024/06/10		90	%	80 - 120
9444015	MCN	Spiked Blank	Orthophosphate (P)	2024/06/10		95	%	80 - 120
9444015	MCN	Method Blank	Orthophosphate (P)	2024/06/10	ND, RDL=0.010		mg/L	
9444015	MCN	RPD	Orthophosphate (P)	2024/06/10	NC		%	20
9444016	EMT	Matrix Spike	Nitrate + Nitrite (N)	2024/06/10		104	%	80 - 120
9444016	EMT	Spiked Blank	Nitrate + Nitrite (N)	2024/06/10		106	%	80 - 120
9444016	EMT	Method Blank	Nitrate + Nitrite (N)	2024/06/10	ND, RDL=0.050		mg/L	
9444016	EMT	RPD	Nitrate + Nitrite (N)	2024/06/10	NC		%	20
9444017	EMT	Matrix Spike	Nitrite (N)	2024/06/10		97	%	80 - 120
9444017	EMT	Spiked Blank	Nitrite (N)	2024/06/10		104	%	80 - 120
9444017	EMT	Method Blank	Nitrite (N)	2024/06/10	ND, RDL=0.010		mg/L	
9444017	EMT	RPD	Nitrite (N)	2024/06/10	NC		%	20
9444018	EMT	Matrix Spike	Dissolved Chloride (Cl-)	2024/06/10		110	%	80 - 120
9444018	EMT	Spiked Blank	Dissolved Chloride (Cl-)	2024/06/10		104	%	80 - 120
9444018	EMT	Method Blank	Dissolved Chloride (Cl-)	2024/06/10	ND, RDL=1.0		mg/L	
9444018	EMT	RPD	Dissolved Chloride (Cl-)	2024/06/10	1.8		%	20
9444020	EMT	Matrix Spike	Dissolved Sulphate (SO4)	2024/06/10		118	%	80 - 120
9444020	EMT	Spiked Blank	Dissolved Sulphate (SO4)	2024/06/10		103	%	80 - 120
9444020	EMT	Method Blank	Dissolved Sulphate (SO4)	2024/06/10	ND, RDL=2.0		mg/L	
9444020	EMT	RPD	Dissolved Sulphate (SO4)	2024/06/10	1.0		%	20
9444021	EMT	Matrix Spike	Reactive Silica (SiO2)	2024/06/10		NC	%	80 - 120
9444021	EMT	Spiked Blank	Reactive Silica (SiO2)	2024/06/10		93	%	80 - 120
9444021	EMT	Method Blank	Reactive Silica (SiO2)	2024/06/10	ND, RDL=0.50		mg/L	
9444021	EMT	RPD	Reactive Silica (SiO2)	2024/06/10	1.2		%	20
9444022	MCN	Spiked Blank	Colour	2024/06/10		111	%	80 - 120
9444022	MCN	Method Blank	Colour	2024/06/10	ND, RDL=5.0		TCU	
9444022	MCN	RPD	Colour	2024/06/10	0.42		%	20
9444023	EMT	Matrix Spike	Orthophosphate (P)	2024/06/10		104	%	80 - 120

BUREAU
VERITAS

Bureau Veritas Job #: C4G3229

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9444023	EMT	Spiked Blank	Orthophosphate (P)	2024/06/10		96	%	80 - 120
9444023	EMT	Method Blank	Orthophosphate (P)	2024/06/10	ND, RDL=0.010		mg/L	
9444023	EMT	RPD	Orthophosphate (P)	2024/06/10	NC		%	20
9444024	EMT	Matrix Spike	Nitrate + Nitrite (N)	2024/06/10		115	%	80 - 120
9444024	EMT	Spiked Blank	Nitrate + Nitrite (N)	2024/06/10		108	%	80 - 120
9444024	EMT	Method Blank	Nitrate + Nitrite (N)	2024/06/10	ND, RDL=0.050		mg/L	
9444024	EMT	RPD	Nitrate + Nitrite (N)	2024/06/10	NC		%	20
9444026	EMT	Matrix Spike	Nitrite (N)	2024/06/10		119	%	80 - 120
9444026	EMT	Spiked Blank	Nitrite (N)	2024/06/10		102	%	80 - 120
9444026	EMT	Method Blank	Nitrite (N)	2024/06/10	ND, RDL=0.010		mg/L	
9444026	EMT	RPD	Nitrite (N)	2024/06/10	NC		%	20
9444027	EMT	Matrix Spike [ZHW362-02]	Dissolved Chloride (Cl-)	2024/06/10		107	%	80 - 120
9444027	EMT	Spiked Blank	Dissolved Chloride (Cl-)	2024/06/10		105	%	80 - 120
9444027	EMT	Method Blank	Dissolved Chloride (Cl-)	2024/06/10	ND, RDL=1.0		mg/L	
9444027	EMT	RPD [ZHW362-02]	Dissolved Chloride (Cl-)	2024/06/10	1.1		%	20
9444030	EMT	Matrix Spike [ZHW362-02]	Dissolved Sulphate (SO4)	2024/06/10		115	%	80 - 120
9444030	EMT	Spiked Blank	Dissolved Sulphate (SO4)	2024/06/10		103	%	80 - 120
9444030	EMT	Method Blank	Dissolved Sulphate (SO4)	2024/06/10	ND, RDL=2.0		mg/L	
9444030	EMT	RPD [ZHW362-02]	Dissolved Sulphate (SO4)	2024/06/10	13		%	20
9444033	EMT	Matrix Spike [ZHW362-02]	Reactive Silica (SiO2)	2024/06/10		92	%	80 - 120
9444033	EMT	Spiked Blank	Reactive Silica (SiO2)	2024/06/10		94	%	80 - 120
9444033	EMT	Method Blank	Reactive Silica (SiO2)	2024/06/10	ND, RDL=0.50		mg/L	
9444033	EMT	RPD [ZHW362-02]	Reactive Silica (SiO2)	2024/06/10	13		%	20
9444034	MCN	Spiked Blank	Colour	2024/06/10		99	%	80 - 120
9444034	MCN	Method Blank	Colour	2024/06/10	ND, RDL=5.0		TCU	
9444034	MCN	RPD [ZHW362-02]	Colour	2024/06/10	5.4		%	20
9444036	EMT	Matrix Spike [ZHW362-02]	Orthophosphate (P)	2024/06/10		94	%	80 - 120
9444036	EMT	Spiked Blank	Orthophosphate (P)	2024/06/10		96	%	80 - 120
9444036	EMT	Method Blank	Orthophosphate (P)	2024/06/10	ND, RDL=0.010		mg/L	
9444036	EMT	RPD [ZHW362-02]	Orthophosphate (P)	2024/06/10	NC		%	20
9444038	EMT	Matrix Spike [ZHW362-02]	Nitrate + Nitrite (N)	2024/06/10		112	%	80 - 120
9444038	EMT	Spiked Blank	Nitrate + Nitrite (N)	2024/06/10		103	%	80 - 120
9444038	EMT	Method Blank	Nitrate + Nitrite (N)	2024/06/10	ND, RDL=0.050		mg/L	
9444038	EMT	RPD [ZHW362-02]	Nitrate + Nitrite (N)	2024/06/10	3.0		%	20
9444039	EMT	Matrix Spike [ZHW362-02]	Nitrite (N)	2024/06/10		106	%	80 - 120
9444039	EMT	Spiked Blank	Nitrite (N)	2024/06/10		101	%	80 - 120
9444039	EMT	Method Blank	Nitrite (N)	2024/06/10	ND, RDL=0.010		mg/L	
9444039	EMT	RPD [ZHW362-02]	Nitrite (N)	2024/06/10	NC		%	20
9444055	LJV	Spiked Blank	pH	2024/06/10		100	%	97 - 103
9444055	LJV	RPD	pH	2024/06/10	0.70		%	N/A



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9444056	LJV	Spiked Blank	Conductivity	2024/06/10		98	%	80 - 120
9444056	LJV	Method Blank	Conductivity	2024/06/10	ND, RDL=1.0		uS/cm	
9444056	LJV	RPD	Conductivity	2024/06/10	0		%	10
9444057	LJV	Spiked Blank	Total Alkalinity (Total as CaCO3)	2024/06/10		96	%	80 - 120
9444057	LJV	Method Blank	Total Alkalinity (Total as CaCO3)	2024/06/10	ND, RDL=2.0		mg/L	
9444057	LJV	RPD	Total Alkalinity (Total as CaCO3)	2024/06/10	0.70		%	20
9444059	LJV	Spiked Blank	pH	2024/06/10		101	%	97 - 103
9444059	LJV	RPD	pH	2024/06/10	1.1		%	N/A
9444062	LJV	Spiked Blank	Conductivity	2024/06/10		97	%	80 - 120
9444062	LJV	Method Blank	Conductivity	2024/06/10	ND, RDL=1.0		uS/cm	
9444062	LJV	RPD	Conductivity	2024/06/10	0.32		%	10
9444065	LJV	Spiked Blank	Total Alkalinity (Total as CaCO3)	2024/06/10		96	%	80 - 120
9444065	LJV	Method Blank	Total Alkalinity (Total as CaCO3)	2024/06/10	ND, RDL=2.0		mg/L	
9444065	LJV	RPD	Total Alkalinity (Total as CaCO3)	2024/06/10	16		%	20
9444111	MKY	Matrix Spike	Dissolved Organic Carbon (C)	2024/06/10		99	%	85 - 115
9444111	MKY	Spiked Blank	Dissolved Organic Carbon (C)	2024/06/10		96	%	80 - 120
9444111	MKY	Method Blank	Dissolved Organic Carbon (C)	2024/06/10	ND, RDL=0.50		mg/L	
9444111	MKY	RPD	Dissolved Organic Carbon (C)	2024/06/10	NC		%	15
9444118	LJV	Spiked Blank	pH	2024/06/10		100	%	97 - 103
9444118	LJV	RPD [ZHW362-02]	pH	2024/06/10	0.70		%	N/A
9444120	LJV	Spiked Blank	Conductivity	2024/06/10		101	%	80 - 120
9444120	LJV	Method Blank	Conductivity	2024/06/10	ND, RDL=1.0		uS/cm	
9444120	LJV	RPD [ZHW362-02]	Conductivity	2024/06/10	0.27		%	10
9444123	LJV	Spiked Blank	Total Alkalinity (Total as CaCO3)	2024/06/10		99	%	80 - 120
9444123	LJV	Method Blank	Total Alkalinity (Total as CaCO3)	2024/06/10	ND, RDL=2.0		mg/L	
9444123	LJV	RPD [ZHW362-02]	Total Alkalinity (Total as CaCO3)	2024/06/10	0.31		%	20
9444914	KMC	QC Standard	Turbidity	2024/06/10		103	%	80 - 120
9444914	KMC	Spiked Blank	Turbidity	2024/06/10		106	%	80 - 120
9444914	KMC	Method Blank	Turbidity	2024/06/10	ND, RDL=0.10		NTU	
9444914	KMC	RPD [ZHW363-02]	Turbidity	2024/06/10	0.76		%	20
9446289	LJV	Spiked Blank	Total Alkalinity (Total as CaCO3)	2024/06/11		94	%	80 - 120
9446289	LJV	Method Blank	Total Alkalinity (Total as CaCO3)	2024/06/11	ND, RDL=2.0		mg/L	
9446289	LJV	RPD	Total Alkalinity (Total as CaCO3)	2024/06/11	0.41		%	20
9446429	LJV	QC Standard	Turbidity	2024/06/11		105	%	80 - 120
9446429	LJV	Spiked Blank	Turbidity	2024/06/11		109	%	80 - 120
9446429	LJV	Method Blank	Turbidity	2024/06/11	ND, RDL=0.10		NTU	
9446429	LJV	RPD	Turbidity	2024/06/11	5.7		%	20
9446435	LJV	QC Standard	Turbidity	2024/06/11		105	%	80 - 120
9446435	LJV	Spiked Blank	Turbidity	2024/06/11		108	%	80 - 120
9446435	LJV	Method Blank	Turbidity	2024/06/11	ND, RDL=0.10		NTU	
9446435	LJV	RPD	Turbidity	2024/06/11	0.018		%	20
9446455	LJV	QC Standard	Turbidity	2024/06/11		104	%	80 - 120
9446455	LJV	Spiked Blank	Turbidity	2024/06/11		109	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9446455	LJV	Method Blank	Turbidity	2024/06/11	ND, RDL=0.10		NTU	
9446455	LJV	RPD [ZHW360-02]	Turbidity	2024/06/11	0.12		%	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 $\leq 2 \times \text{RDL}$).



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

Cristina Carriere, Senior Scientific Specialist



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Your Project #: SW samples
Site#: 00012
Your C.O.C. #: C#1003966-01-01

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2024/08/22
Report #: R8288742
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4P0043

Received: 2024/08/14, 09:42

Sample Matrix: Water
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Carbonate, Bicarbonate and Hydroxide	10	N/A	2024/08/20	N/A	SM 24 4500-CO2 D
Alkalinity	10	N/A	2024/08/19	ATL SOP 00142	SM 24 2320 B
Chloride	1	N/A	2024/08/19	ATL SOP 00014	SM 24 4500-Cl- E m
Chloride	9	N/A	2024/08/20	ATL SOP 00014	SM 24 4500-Cl- E m
Colour	1	N/A	2024/08/19	ATL SOP 00020	SM 24 2120C m
Colour	9	N/A	2024/08/20	ATL SOP 00020	SM 24 2120C m
Organic carbon - Diss (DOC) (2)	10	N/A	2024/08/19	ATL SOP 00203	SM 24 5310B m
Conductance - water	10	N/A	2024/08/19	ATL SOP 00004	SM 24 2510B m
Hardness (calculated as CaCO3)	8	N/A	2024/08/15	ATL SOP 00048	Auto Calc
Hardness (calculated as CaCO3)	2	N/A	2024/08/16	ATL SOP 00048	Auto Calc
Mercury - Total (CVAA,LL)	10	2024/08/20	2024/08/20	ATL SOP 00026	EPA 245.1 R3 m
Metals Water Total MS	8	2024/08/14	2024/08/15	ATL SOP 00058	EPA 6020B R2 m
Metals Water Total MS	2	2024/08/14	2024/08/16	ATL SOP 00058	EPA 6020B R2 m
Ion Balance (% Difference)	1	N/A	2024/08/20	N/A	Auto Calc.
Ion Balance (% Difference)	9	N/A	2024/08/21	N/A	Auto Calc.
Anion and Cation Sum	10	N/A	2024/08/20	N/A	Auto Calc.
Nitrogen Ammonia - water	8	N/A	2024/08/15	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen Ammonia - water	2	N/A	2024/08/16	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	1	N/A	2024/08/19	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrate + Nitrite	9	N/A	2024/08/20	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite	1	N/A	2024/08/19	ATL SOP 00017	SM 24 4500-NO2- B m
Nitrogen - Nitrite	9	N/A	2024/08/20	ATL SOP 00017	SM 24 4500-NO2- B m
Nitrogen - Nitrate (as N)	1	N/A	2024/08/19	ATL SOP 00018	ASTM D3867-16
Nitrogen - Nitrate (as N)	9	N/A	2024/08/21	ATL SOP 00018	ASTM D3867-16
Phenols (4AAP) (1)	9	N/A	2024/08/20	CAM SOP-00444	OMOE E3179 m
Phenols (4AAP) (1)	1	N/A	2024/08/21	CAM SOP-00444	OMOE E3179 m
pH (3)	10	N/A	2024/08/19	ATL SOP 00003	SM 24 4500-H+ B m
Phosphorus - ortho	1	N/A	2024/08/19	ATL SOP 00021	SM 24 4500-P E m
Phosphorus - ortho	9	N/A	2024/08/20	ATL SOP 00021	SM 24 4500-P E m
Sat. pH and Langelier Index (@ 20C)	1	N/A	2024/08/20	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 20C)	9	N/A	2024/08/21	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 4C)	1	N/A	2024/08/20	ATL SOP 00049	Auto Calc.



Your Project #: SW samples
Site#: 00012
Your C.O.C. #: C#1003966-01-01

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2024/08/22
Report #: R8288742
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4P0043

Received: 2024/08/14, 09:42

Sample Matrix: Water
Samples Received: 10

Analyses	Date		Date Analyzed	Laboratory Method	Analytical Method
	Quantity	Extracted			
Sat. pH and Langelier Index (@ 4C)	9	N/A	2024/08/21	ATL SOP 00049	Auto Calc.
Reactive Silica	1	N/A	2024/08/19	ATL SOP 00022	EPA 366.0 m
Reactive Silica	9	N/A	2024/08/20	ATL SOP 00022	EPA 366.0 m
Sulphate	1	N/A	2024/08/19	ATL SOP 00023	ASTM D516-16 m
Sulphate	9	N/A	2024/08/20	ATL SOP 00023	ASTM D516-16 m
Sulphide (1)	1	N/A	2024/08/16	CAM SOP-00455	SM 24 4500-S G m
Sulphide (1)	9	N/A	2024/08/19	CAM SOP-00455	SM 24 4500-S G m
Total Dissolved Solids (TDS calc)	1	N/A	2024/08/20	N/A	Auto Calc.
Total Dissolved Solids (TDS calc)	9	N/A	2024/08/21	N/A	Auto Calc.
Organic carbon - Total (TOC) (2)	9	N/A	2024/08/19	ATL SOP 00203	SM 24 5310B m
Organic carbon - Total (TOC) (2)	1	N/A	2024/08/20	ATL SOP 00203	SM 24 5310B m
Total Suspended Solids	10	2024/08/19	2024/08/21	ATL SOP 00007	SM 24 2540D m
Turbidity	10	N/A	2024/08/19	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, EPA, APHA or the Quebec Ministry of Environment.

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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Your Project #: SW samples
Site#: 00012
Your C.O.C. #: C#1003966-01-01

Attention: Mark Attwood

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P.O. Box 254, Route 3-1-09
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BUREAU VERITAS JOB #: C4P0043

Received: 2024/08/14, 09:42

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) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8
- (2) TOC / DOC present in the sample should be considered as non-purgeable TOC / DOC.
- (3) 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.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:

Jaspreet Kaur, Project Manager 1
Email: jaspreet.kaur@bureauveritas.com
Phone# (902)420-0203

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BUREAU
VERITAS

Bureau Veritas Job #: C4P0043

Report Date: 2024/08/22

Central Newfoundland Waste Management Authority

Client Project #: SW samples

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		ZZN947			ZZN948			ZZN949		
Sampling Date		2024/08/12 09:20			2024/08/12 09:30			2024/08/12 09:40		
COC Number		C#1003966-01-01			C#1003966-01-01			C#1003966-01-01		
Sample #		00291			00292			00293		
	UNITS	847-SW-1	RDL	QC Batch	SW-1	RDL	QC Batch	SW-2	RDL	QC Batch

Calculated Parameters

Anion Sum	me/L	3.44	N/A	9574828	1.10	N/A	9574828	3.23	N/A	9574828
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	58	1.0	9574824	46	1.0	9574824	91	1.0	9574824
Calculated TDS	mg/L	200	1.0	9574833	70	1.0	9574833	180	1.0	9574833
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ND	1.0	9574824	ND	1.0	9574824	ND	1.0	9574824
Cation Sum	me/L	3.75	N/A	9574828	1.21	N/A	9574828	3.43	N/A	9574828
Hardness (CaCO ₃)	mg/L	100	1.0	9574826	49	1.0	9574826	110	1.0	9574826
Ion Balance (% Difference)	%	4.31	N/A	9574827	4.76	N/A	9574827	3.00	N/A	9574827
Langelier Index (@ 20C)	N/A	-0.536		9574831	-0.850		9574831	-0.356		9574831
Langelier Index (@ 4C)	N/A	-0.786		9574832	-1.10		9574832	-0.606		9574832
Nitrate (N)	mg/L	0.089	0.050	9574829	0.13	0.050	9574829	0.17	0.050	9574829
Saturation pH (@ 20C)	N/A	8.25		9574831	8.53		9574831	8.11		9574831
Saturation pH (@ 4C)	N/A	8.50		9574832	8.78		9574832	8.36		9574832

Inorganics

Total Alkalinity (Total as CaCO ₃)	mg/L	58	2.0	9584253	46	2.0	9584253	92	2.0	9584253
Dissolved Chloride (Cl ⁻)	mg/L	81	1.0	9584616	4.3	1.0	9584616	41	1.0	9580614
Colour	TCU	40	5.0	9584653	59	10	9584653	88	25	9580626
Nitrate + Nitrite (N)	mg/L	0.089	0.050	9584658	0.13	0.050	9584658	0.17	0.050	9584141
Nitrite (N)	mg/L	ND	0.010	9584659	ND	0.010	9584659	ND	0.010	9584142
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.050	9577639	ND	0.050	9577639	0.057	0.050	9577639
Total Organic Carbon (C)	mg/L	8.2	0.50	9584379	7.4	0.50	9584410	15	0.50	9584379
Orthophosphate (P)	mg/L	ND	0.010	9584656	ND	0.010	9584656	ND	0.010	9584140
pH	pH	7.72		9584250	7.68		9584250	7.75		9584250
Reactive Silica (SiO ₂)	mg/L	9.0	0.50	9584651	12	0.50	9584651	10	0.50	9584138
Dissolved Sulphate (SO ₄)	mg/L	ND	2.0	9584650	2.3	2.0	9584650	11	2.0	9584137
Turbidity	NTU	1.2	0.10	9584961	1.2	0.10	9584961	0.27	0.10	9584961
Conductivity	uS/cm	410	1.0	9584252	120	1.0	9584252	350	1.0	9584252

Metals

Total Aluminum (Al)	ug/L	35	5.0	9576180	42	5.0	9576180	39	5.0	9576180
Total Antimony (Sb)	ug/L	ND	1.0	9576180	ND	1.0	9576180	ND	1.0	9576180
Total Arsenic (As)	ug/L	ND	1.0	9576180	1.5	1.0	9576180	ND	1.0	9576180
Total Barium (Ba)	ug/L	35	1.0	9576180	7.3	1.0	9576180	22	1.0	9576180
Total Beryllium (Be)	ug/L	ND	0.10	9576180	ND	0.10	9576180	ND	0.10	9576180
Total Bismuth (Bi)	ug/L	ND	2.0	9576180	ND	2.0	9576180	ND	2.0	9576180

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.



BUREAU
VERITAS

Bureau Veritas Job #: C4P0043

Report Date: 2024/08/22

Central Newfoundland Waste Management Authority

Client Project #: SW samples

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		ZZN947			ZZN948			ZZN949		
Sampling Date		2024/08/12 09:20			2024/08/12 09:30			2024/08/12 09:40		
COC Number		C#1003966-01-01			C#1003966-01-01			C#1003966-01-01		
Sample #		00291			00292			00293		
	UNITS	847-SW-1	RDL	QC Batch	SW-1	RDL	QC Batch	SW-2	RDL	QC Batch
Total Boron (B)	ug/L	ND	50	9576180	ND	50	9576180	56	50	9576180
Total Cadmium (Cd)	ug/L	ND	0.010	9576180	ND	0.010	9576180	0.013	0.010	9576180
Total Calcium (Ca)	ug/L	23000	100	9576180	14000	100	9576180	21000	100	9576180
Total Chromium (Cr)	ug/L	ND	1.0	9576180	ND	1.0	9576180	ND	1.0	9576180
Total Cobalt (Co)	ug/L	ND	0.40	9576180	ND	0.40	9576180	ND	0.40	9576180
Total Copper (Cu)	ug/L	ND	0.50	9576180	0.87	0.50	9576180	1.1	0.50	9576180
Total Iron (Fe)	ug/L	210	50	9576180	300	50	9576180	140	50	9576180
Total Lead (Pb)	ug/L	ND	0.50	9576180	ND	0.50	9576180	ND	0.50	9576180
Total Magnesium (Mg)	ug/L	10000	100	9576180	3600	100	9576180	14000	100	9576180
Total Manganese (Mn)	ug/L	99	2.0	9576180	35	2.0	9576180	41	2.0	9576180
Total Molybdenum (Mo)	ug/L	ND	2.0	9576180	ND	2.0	9576180	ND	2.0	9576180
Total Nickel (Ni)	ug/L	ND	2.0	9576180	ND	2.0	9576180	ND	2.0	9576180
Total Phosphorus (P)	ug/L	ND	100	9576180	ND	100	9576180	ND	100	9576180
Total Potassium (K)	ug/L	1300	100	9576180	1000	100	9576180	4800	100	9576180
Total Selenium (Se)	ug/L	ND	0.50	9576180	ND	0.50	9576180	ND	0.50	9576180
Total Silver (Ag)	ug/L	ND	0.10	9576180	ND	0.10	9576180	ND	0.10	9576180
Total Sodium (Na)	ug/L	39000	100	9576180	4700	100	9576180	25000	100	9576180
Total Strontium (Sr)	ug/L	100	2.0	9576180	57	2.0	9576180	110	2.0	9576180
Total Thallium (Tl)	ug/L	ND	0.10	9576180	ND	0.10	9576180	ND	0.10	9576180
Total Tin (Sn)	ug/L	ND	2.0	9576180	ND	2.0	9576180	ND	2.0	9576180
Total Titanium (Ti)	ug/L	ND	2.0	9576180	ND	2.0	9576180	ND	2.0	9576180
Total Uranium (U)	ug/L	ND	0.10	9576180	ND	0.10	9576180	ND	0.10	9576180
Total Vanadium (V)	ug/L	ND	2.0	9576180	ND	2.0	9576180	ND	2.0	9576180
Total Zinc (Zn)	ug/L	ND	5.0	9576180	ND	5.0	9576180	ND	5.0	9576180

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

BUREAU
VERITAS

Bureau Veritas Job #: C4P0043

Report Date: 2024/08/22

Central Newfoundland Waste Management Authority

Client Project #: SW samples

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		ZZN950			ZZN951			ZZN952		
Sampling Date		2024/08/12 09:50			2024/08/12 10:00			2024/08/12 10:15		
COC Number		C#1003966-01-01			C#1003966-01-01			C#1003966-01-01		
Sample #		00294			00295			00296		
	UNITS	SW-3	RDL	QC Batch	SW-4	RDL	QC Batch	SW-5	RDL	QC Batch

Calculated Parameters

Anion Sum	me/L	8.13	N/A	9574828	1.08	N/A	9574828	82.6	N/A	9574828
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	250	1.0	9574824	36	1.0	9574824	2100	1.0	9574824
Calculated TDS	mg/L	450	1.0	9574833	63	1.0	9574833	4600	1.0	9574833
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	4.5	1.0	9574824	ND	1.0	9574824	42	1.0	9574824
Cation Sum	me/L	8.35	N/A	9574828	1.14	N/A	9574828	77.8	N/A	9574828
Hardness (CaCO ₃)	mg/L	340	1.0	9574826	39	1.0	9574826	650	1.0	9574826
Ion Balance (% Difference)	%	1.33	N/A	9574827	2.70	N/A	9574827	2.99	N/A	9574827
Langelier Index (@ 20C)	N/A	1.14		9574831	-1.20		9574831	1.66		9574831
Langelier Index (@ 4C)	N/A	0.894		9574832	-1.45		9574832	1.42		9574832
Nitrate (N)	mg/L	0.81	0.050	9574829	0.065	0.050	9574829	65	4.0	9574829
Saturation pH (@ 20C)	N/A	7.15		9574831	8.76		9574831	6.68		9574831
Saturation pH (@ 4C)	N/A	7.40		9574832	9.01		9574832	6.92		9574832

Inorganics

Total Alkalinity (Total as CaCO ₃)	mg/L	250	2.0	9584263	36	2.0	9584253	2100	20	9584253
Dissolved Chloride (Cl ⁻)	mg/L	42	1.0	9584616	11	1.0	9584616	1200	20	9584616
Colour	TCU	24	5.0	9584653	27	5.0	9584653	570	150	9584653
Nitrate + Nitrite (N)	mg/L	0.85	0.050	9584658	0.065	0.050	9584658	73	4.0	9584658
Nitrite (N)	mg/L	0.042	0.010	9584659	ND	0.010	9584659	8.4	0.50	9584659
Nitrogen (Ammonia Nitrogen)	mg/L	3.7	0.25	9577639	ND	0.050	9577639	260	13	9577639
Total Organic Carbon (C)	mg/L	12	0.50	9584379	5.7	0.50	9584379	170 (1)	5.0	9584410
Orthophosphate (P)	mg/L	ND	0.010	9584656	ND	0.010	9584656	0.24	0.010	9584656
pH	pH	8.29		9584258	7.56		9584250	8.33		9584250
Reactive Silica (SiO ₂)	mg/L	10	0.50	9584651	5.7	0.50	9584651	16	0.50	9584651
Dissolved Sulphate (SO ₄)	mg/L	91	2.0	9584650	2.3	2.0	9584650	ND	2.0	9584650
Turbidity	NTU	6.1	0.10	9584961	0.71	0.10	9584961	51	0.10	9584961
Conductivity	uS/cm	800	1.0	9584261	120	1.0	9584252	7500	1.0	9584252

Metals

Total Aluminum (Al)	ug/L	18	5.0	9576180	15	5.0	9576180	75	50	9576180
Total Antimony (Sb)	ug/L	ND	1.0	9576180	ND	1.0	9576180	ND	10	9576180
Total Arsenic (As)	ug/L	4.8	1.0	9576180	1.3	1.0	9576180	33	10	9576180
Total Barium (Ba)	ug/L	290	1.0	9576180	6.5	1.0	9576180	330	10	9576180
Total Beryllium (Be)	ug/L	ND	0.10	9576180	ND	0.10	9576180	ND	1.0	9576180

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

(1) Elevated reporting limit due to sample matrix.



BUREAU
VERITAS

Bureau Veritas Job #: C4P0043

Report Date: 2024/08/22

Central Newfoundland Waste Management Authority

Client Project #: SW samples

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		ZZN950			ZZN951			ZZN952		
Sampling Date		2024/08/12 09:50			2024/08/12 10:00			2024/08/12 10:15		
COC Number		C#1003966-01-01			C#1003966-01-01			C#1003966-01-01		
Sample #		00294			00295			00296		
	UNITS	SW-3	RDL	QC Batch	SW-4	RDL	QC Batch	SW-5	RDL	QC Batch
Total Bismuth (Bi)	ug/L	ND	2.0	9576180	ND	2.0	9576180	ND	20	9576180
Total Boron (B)	ug/L	140	50	9576180	ND	50	9576180	3300	500	9576180
Total Cadmium (Cd)	ug/L	0.012	0.010	9576180	ND	0.010	9576180	ND	0.10	9576180
Total Calcium (Ca)	ug/L	83000	100	9576180	10000	100	9576180	60000	1000	9576180
Total Chromium (Cr)	ug/L	ND	1.0	9576180	ND	1.0	9576180	40	10	9576180
Total Cobalt (Co)	ug/L	4.9	0.40	9576180	ND	0.40	9576180	11	4.0	9576180
Total Copper (Cu)	ug/L	2.4	0.50	9576180	ND	0.50	9576180	ND	5.0	9576180
Total Iron (Fe)	ug/L	1100	50	9576180	130	50	9576180	3000	500	9576180
Total Lead (Pb)	ug/L	ND	0.50	9576180	ND	0.50	9576180	ND	5.0	9576180
Total Magnesium (Mg)	ug/L	32000	100	9576180	3400	100	9576180	120000	1000	9576180
Total Manganese (Mn)	ug/L	520	2.0	9576180	52	2.0	9576180	320	20	9576180
Total Molybdenum (Mo)	ug/L	ND	2.0	9576180	ND	2.0	9576180	ND	20	9576180
Total Nickel (Ni)	ug/L	9.8	2.0	9576180	ND	2.0	9576180	84	20	9576180
Total Phosphorus (P)	ug/L	ND	100	9576180	ND	100	9576180	1300	1000	9576180
Total Potassium (K)	ug/L	5300	100	9576180	640	100	9576180	370000	1000	9576180
Total Selenium (Se)	ug/L	ND	0.50	9576180	ND	0.50	9576180	ND	5.0	9576180
Total Silver (Ag)	ug/L	ND	0.10	9576180	ND	0.10	9576180	ND	1.0	9576180
Total Sodium (Na)	ug/L	26000	100	9576180	7800	100	9576180	840000	1000	9576180
Total Strontium (Sr)	ug/L	420	2.0	9576180	56	2.0	9576180	560	20	9576180
Total Thallium (Tl)	ug/L	ND	0.10	9576180	ND	0.10	9576180	ND	1.0	9576180
Total Tin (Sn)	ug/L	ND	2.0	9576180	ND	2.0	9576180	ND	20	9576180
Total Titanium (Ti)	ug/L	ND	2.0	9576180	ND	2.0	9576180	ND	20	9576180
Total Uranium (U)	ug/L	1.4	0.10	9576180	ND	0.10	9576180	ND	1.0	9576180
Total Vanadium (V)	ug/L	ND	2.0	9576180	ND	2.0	9576180	26	20	9576180
Total Zinc (Zn)	ug/L	ND	5.0	9576180	ND	5.0	9576180	ND	50	9576180

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.



BUREAU
VERITAS

Bureau Veritas Job #: C4P0043

Report Date: 2024/08/22

Central Newfoundland Waste Management Authority

Client Project #: SW samples

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		ZZN953			ZZN954			ZZN955		
Sampling Date		2024/08/12 10:25			2024/08/12 10:35			2024/08/12 10:45		
COC Number		C#1003966-01-01			C#1003966-01-01			C#1003966-01-01		
Sample #		00297			00298			00299		
	UNITS	SW-6	RDL	QC Batch	SW-7	RDL	QC Batch	SW-8	RDL	QC Batch

Calculated Parameters

Anion Sum	me/L	2.83	N/A	9574828	1.04	N/A	9574828	1.71	N/A	9574828
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	99	1.0	9574824	39	1.0	9574824	60	1.0	9574824
Calculated TDS	mg/L	160	1.0	9574833	72	1.0	9574833	96	1.0	9574833
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	1.3	1.0	9574824	ND	1.0	9574824	ND	1.0	9574824
Cation Sum	me/L	2.93	N/A	9574828	1.22	N/A	9574828	1.80	N/A	9574828
Hardness (CaCO ₃)	mg/L	110	1.0	9574826	47	1.0	9574826	66	1.0	9574826
Ion Balance (% Difference)	%	1.74	N/A	9574827	7.96	N/A	9574827	2.56	N/A	9574827
Langelier Index (@ 20C)	N/A	0.210		9574831	-1.64		9574831	-0.449		9574831
Langelier Index (@ 4C)	N/A	-0.0400		9574832	-1.89		9574832	-0.700		9574832
Nitrate (N)	mg/L	ND	0.050	9574829	ND	0.050	9574829	0.14	0.050	9574829
Saturation pH (@ 20C)	N/A	7.94		9574831	8.60		9574831	8.39		9574831
Saturation pH (@ 4C)	N/A	8.19		9574832	8.85		9574832	8.64		9574832

Inorganics

Total Alkalinity (Total as CaCO ₃)	mg/L	100	2.0	9584253	39	2.0	9584253	60	2.0	9584253
Dissolved Chloride (Cl ⁻)	mg/L	26	1.0	9584616	4.7	1.0	9584616	15	1.0	9584616
Colour	TCU	14	5.0	9584653	99	25	9584653	25	5.0	9584653
Nitrate + Nitrite (N)	mg/L	ND	0.050	9584658	ND	0.050	9584658	0.14	0.050	9584658
Nitrite (N)	mg/L	ND	0.010	9584659	ND	0.010	9584659	ND	0.010	9584659
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.050	9577639	0.17	0.050	9577644	ND	0.050	9577644
Total Organic Carbon (C)	mg/L	2.0	0.50	9584379	12	0.50	9584418	3.8	0.50	9584379
Orthophosphate (P)	mg/L	ND	0.010	9584656	ND	0.010	9584656	ND	0.010	9584656
pH	pH	8.15		9584250	6.97		9584250	7.94		9584250
Reactive Silica (SiO ₂)	mg/L	13	0.50	9584651	14	0.50	9584651	7.1	0.50	9584651
Dissolved Sulphate (SO ₄)	mg/L	4.3	2.0	9584650	5.8	2.0	9584650	4.1	2.0	9584650
Turbidity	NTU	0.57	0.10	9584961	17	0.10	9584961	1.3	0.10	9584961
Conductivity	uS/cm	290	1.0	9584252	120	1.0	9584252	180	1.0	9584252

Metals

Total Aluminum (Al)	ug/L	19	5.0	9576180	870	5.0	9576180	64	50	9576180
Total Antimony (Sb)	ug/L	ND	1.0	9576180	ND	1.0	9576180	ND	1.0	9576180
Total Arsenic (As)	ug/L	2.3	1.0	9576180	3.8	1.0	9576180	1.1	1.0	9576180
Total Barium (Ba)	ug/L	80	1.0	9576180	19	1.0	9576180	46	1.0	9576180
Total Beryllium (Be)	ug/L	ND	0.10	9576180	ND	0.10	9576180	ND	0.10	9576180
Total Bismuth (Bi)	ug/L	ND	2.0	9576180	ND	2.0	9576180	ND	2.0	9576180

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.



BUREAU
VERITAS

Bureau Veritas Job #: C4P0043

Report Date: 2024/08/22

Central Newfoundland Waste Management Authority

Client Project #: SW samples

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		ZZN953			ZZN954			ZZN955		
Sampling Date		2024/08/12 10:25			2024/08/12 10:35			2024/08/12 10:45		
COC Number		C#1003966-01-01			C#1003966-01-01			C#1003966-01-01		
Sample #		00297			00298			00299		
	UNITS	SW-6	RDL	QC Batch	SW-7	RDL	QC Batch	SW-8	RDL	QC Batch
Total Boron (B)	ug/L	ND	50	9576180	ND	50	9576180	ND	50	9576180
Total Cadmium (Cd)	ug/L	ND	0.010	9576180	0.051	0.010	9576180	ND	0.010	9576180
Total Calcium (Ca)	ug/L	27000	100	9576180	13000	100	9576180	15000	100	9576180
Total Chromium (Cr)	ug/L	ND	1.0	9576180	2.6	1.0	9576180	ND	1.0	9576180
Total Cobalt (Co)	ug/L	ND	0.40	9576180	2.2	0.40	9576180	ND	0.40	9576180
Total Copper (Cu)	ug/L	0.75	0.50	9576180	3.0	0.50	9576180	1.2	0.50	9576180
Total Iron (Fe)	ug/L	89	50	9576180	2100	50	9576180	84	50	9576180
Total Lead (Pb)	ug/L	ND	0.50	9576180	ND	0.50	9576180	ND	0.50	9576180
Total Magnesium (Mg)	ug/L	10000	100	9576180	3300	100	9576180	7000	100	9576180
Total Manganese (Mn)	ug/L	22	2.0	9576180	320	2.0	9576180	6.1	2.0	9576180
Total Molybdenum (Mo)	ug/L	ND	2.0	9576180	ND	2.0	9576180	ND	2.0	9576180
Total Nickel (Ni)	ug/L	ND	2.0	9576180	11	2.0	9576180	ND	2.0	9576180
Total Phosphorus (P)	ug/L	ND	100	9576180	ND	100	9576180	ND	100	9576180
Total Potassium (K)	ug/L	2400	100	9576180	360	100	9576180	1300	100	9576180
Total Selenium (Se)	ug/L	ND	0.50	9576180	ND	0.50	9576180	ND	0.50	9576180
Total Silver (Ag)	ug/L	ND	0.10	9576180	ND	0.10	9576180	ND	0.10	9576180
Total Sodium (Na)	ug/L	16000	100	9576180	4100	100	9576180	10000	100	9576180
Total Strontium (Sr)	ug/L	150	2.0	9576180	62	2.0	9576180	60	2.0	9576180
Total Thallium (Tl)	ug/L	ND	0.10	9576180	ND	0.10	9576180	ND	0.10	9576180
Total Tin (Sn)	ug/L	ND	2.0	9576180	ND	2.0	9576180	ND	2.0	9576180
Total Titanium (Ti)	ug/L	ND	2.0	9576180	20	2.0	9576180	ND	2.0	9576180
Total Uranium (U)	ug/L	0.78	0.10	9576180	0.78	0.10	9576180	0.40	0.10	9576180
Total Vanadium (V)	ug/L	3.7	2.0	9576180	5.3	2.0	9576180	3.9	2.0	9576180
Total Zinc (Zn)	ug/L	ND	5.0	9576180	33	5.0	9576180	ND	5.0	9576180

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

**ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)**

Bureau Veritas ID		ZZN956		
Sampling Date		2024/08/12 10:55		
COC Number		C#1003966-01-01		
Sample #		00287		
	UNITS	SW-9	RDL	QC Batch

Calculated Parameters				
Anion Sum	me/L	33.5	N/A	9574828
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	800	1.0	9574824
Calculated TDS	mg/L	2000	1.0	9574833
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	30	1.0	9574824
Cation Sum	me/L	36.9	N/A	9574828
Hardness (CaCO ₃)	mg/L	390	1.0	9574826
Ion Balance (% Difference)	%	4.89	N/A	9574827
Langelier Index (@ 20C)	N/A	1.38		9574831
Langelier Index (@ 4C)	N/A	1.14		9574832
Nitrate (N)	mg/L	20	1.5	9574829
Saturation pH (@ 20C)	N/A	7.22		9574831
Saturation pH (@ 4C)	N/A	7.46		9574832

Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L	830	2.0	9584253
Dissolved Chloride (Cl ⁻)	mg/L	530	10	9584616
Colour	TCU	220	25	9584653
Nitrate + Nitrite (N)	mg/L	23	1.5	9584658
Nitrite (N)	mg/L	3.0	0.20	9584659
Nitrogen (Ammonia Nitrogen)	mg/L	47	2.5	9577639
Total Organic Carbon (C)	mg/L	83 (1)	5.0	9584418
Orthophosphate (P)	mg/L	ND	0.010	9584656
pH	pH	8.60		9584250
Reactive Silica (SiO ₂)	mg/L	12	0.50	9584651
Dissolved Sulphate (SO ₄)	mg/L	11	2.0	9584650
Turbidity	NTU	33	0.10	9584961
Conductivity	uS/cm	3500	1.0	9584252

Metals				
Total Aluminum (Al)	ug/L	58	5.0	9576180
Total Antimony (Sb)	ug/L	3.5	1.0	9576180
Total Arsenic (As)	ug/L	19	1.0	9576180
Total Barium (Ba)	ug/L	260	1.0	9576180

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

(1) Elevated reporting limit due to sample matrix.



ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		ZZN956		
Sampling Date		2024/08/12 10:55		
COC Number		C#1003966-01-01		
Sample #		00287		
	UNITS	SW-9	RDL	QC Batch
Total Beryllium (Be)	ug/L	ND	0.10	9576180
Total Bismuth (Bi)	ug/L	ND	2.0	9576180
Total Boron (B)	ug/L	2000	50	9576180
Total Cadmium (Cd)	ug/L	0.028	0.010	9576180
Total Calcium (Ca)	ug/L	33000	100	9576180
Total Chromium (Cr)	ug/L	11	1.0	9576180
Total Cobalt (Co)	ug/L	6.5	0.40	9576180
Total Copper (Cu)	ug/L	4.5	0.50	9576180
Total Iron (Fe)	ug/L	390	50	9576180
Total Lead (Pb)	ug/L	ND	0.50	9576180
Total Magnesium (Mg)	ug/L	75000	100	9576180
Total Manganese (Mn)	ug/L	240	2.0	9576180
Total Molybdenum (Mo)	ug/L	ND	2.0	9576180
Total Nickel (Ni)	ug/L	43	2.0	9576180
Total Phosphorus (P)	ug/L	360	100	9576180
Total Potassium (K)	ug/L	200000	1000	9576180
Total Selenium (Se)	ug/L	ND	0.50	9576180
Total Silver (Ag)	ug/L	ND	0.10	9576180
Total Sodium (Na)	ug/L	470000	100	9576180
Total Strontium (Sr)	ug/L	360	2.0	9576180
Total Thallium (Tl)	ug/L	ND	0.10	9576180
Total Tin (Sn)	ug/L	ND	2.0	9576180
Total Titanium (Ti)	ug/L	5.1	2.0	9576180
Total Uranium (U)	ug/L	0.31	0.10	9576180
Total Vanadium (V)	ug/L	8.9	2.0	9576180
Total Zinc (Zn)	ug/L	11	5.0	9576180
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.				



RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		ZZN947		ZZN948		ZZN949		
Sampling Date		2024/08/12 09:20		2024/08/12 09:30		2024/08/12 09:40		
COC Number		C#1003966-01-01		C#1003966-01-01		C#1003966-01-01		
Sample #		00291		00292		00293		
	UNITS	847-SW-1	QC Batch	SW-1	QC Batch	SW-2	RDL	QC Batch

Inorganics								
Dissolved Organic Carbon (C)	mg/L	7.7	9584365	7.2	9584405	15	0.50	9584365
Phenols-4AAP	mg/L	ND	9587670	ND	9587670	ND	0.0010	9587670
Total Suspended Solids	mg/L	2.0	9584155	1.4	9584155	1.7	1.0	9584155
Sulphide	mg/L	ND	9584187	ND	9584187	ND	0.020	9584187

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas ID		ZZN950			ZZN951			ZZN952		
Sampling Date		2024/08/12 09:50			2024/08/12 10:00			2024/08/12 10:15		
COC Number		C#1003966-01-01			C#1003966-01-01			C#1003966-01-01		
Sample #		00294			00295			00296		
	UNITS	SW-3	RDL	QC Batch	SW-4	RDL	QC Batch	SW-5	RDL	QC Batch

Inorganics										
Dissolved Organic Carbon (C)	mg/L	11	0.50	9584405	5.2	0.50	9584405	150 (1)	5.0	9584365
Phenols-4AAP	mg/L	ND	0.0010	9587670	ND	0.0010	9587670	0.0027	0.0010	9587670
Total Suspended Solids	mg/L	4.0	2.0	9584155	ND	1.0	9584155	77	5.0	9584155
Sulphide	mg/L	ND	0.020	9580669	ND	0.020	9584187	0.082	0.020	9584187

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

(1) Elevated reporting limit due to sample matrix.

Bureau Veritas ID		ZZN953	ZZN954			ZZN955		
Sampling Date		2024/08/12 10:25	2024/08/12 10:35			2024/08/12 10:45		
COC Number		C#1003966-01-01	C#1003966-01-01			C#1003966-01-01		
Sample #		00297	00298			00299		
	UNITS	SW-6	SW-7	RDL	QC Batch	SW-8	RDL	QC Batch

Inorganics								
Dissolved Organic Carbon (C)	mg/L	1.7	11	0.50	9584365	3.4	0.50	9584405
Phenols-4AAP	mg/L	ND	0.0010	0.0010	9587670	ND	0.0010	9587670
Total Suspended Solids	mg/L	ND	24	1.0	9584155	1.5	1.1	9584155
Sulphide	mg/L	ND	ND	0.020	9584187	ND	0.020	9584187

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.



RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		ZZN956		
Sampling Date		2024/08/12 10:55		
COC Number		C#1003966-01-01		
Sample #		00287		
	UNITS	SW-9	RDL	QC Batch
Inorganics				
Dissolved Organic Carbon (C)	mg/L	75 (1)	5.0	9584405
Phenols-4AAP	mg/L	0.0017	0.0010	9587670
Total Suspended Solids	mg/L	66	10	9584155
Sulphide	mg/L	0.021	0.020	9584187
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				
(1) Elevated reporting limit due to sample matrix.				



MERCURY BY COLD VAPOUR AA (WATER)

Bureau Veritas ID		ZZN947	ZZN948	ZZN949	ZZN950	ZZN951		
Sampling Date		2024/08/12 09:20	2024/08/12 09:30	2024/08/12 09:40	2024/08/12 09:50	2024/08/12 10:00		
COC Number		C#1003966-01-01	C#1003966-01-01	C#1003966-01-01	C#1003966-01-01	C#1003966-01-01		
Sample #		00291	00292	00293	00294	00295		
	UNITS	847-SW-1	SW-1	SW-2	SW-3	SW-4	RDL	QC Batch

Metals								
Total Mercury (Hg)	ug/L	ND	ND	ND	ND	ND	0.013	9584450
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.								

Bureau Veritas ID		ZZN952	ZZN953	ZZN954	ZZN955		
Sampling Date		2024/08/12 10:15	2024/08/12 10:25	2024/08/12 10:35	2024/08/12 10:45		
COC Number		C#1003966-01-01	C#1003966-01-01	C#1003966-01-01	C#1003966-01-01		
Sample #		00296	00297	00298	00299		
	UNITS	SW-5	SW-6	SW-7	SW-8	RDL	QC Batch

Metals							
Total Mercury (Hg)	ug/L	ND	ND	ND	ND	0.013	9584450
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.							

Bureau Veritas ID		ZZN956		
Sampling Date		2024/08/12 10:55		
COC Number		C#1003966-01-01		
Sample #		00287		
	UNITS	SW-9	RDL	QC Batch

Metals				
Total Mercury (Hg)	ug/L	ND	0.013	9584465
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.				



GENERAL COMMENTS

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

Package 1	21.0°C
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Average temperature upon receipt >10°C.

Sample ZZN951 [SW-4] : TSS: Elevated detection limit due to limited sample.

Sample ZZN952 [SW-5] : Sulphur < Sulphide: Both values fall within the method uncertainty for duplicates and are likely equivalent.

Sample ZZN954 [SW-7] : RCap Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9576180	MTZ	Matrix Spike	Total Aluminum (Al)	2024/08/15		98	%	80 - 120
			Total Antimony (Sb)	2024/08/15		102	%	80 - 120
			Total Arsenic (As)	2024/08/15		100	%	80 - 120
			Total Barium (Ba)	2024/08/15		98	%	80 - 120
			Total Beryllium (Be)	2024/08/15		99	%	80 - 120
			Total Bismuth (Bi)	2024/08/15		100	%	80 - 120
			Total Boron (B)	2024/08/15		96	%	80 - 120
			Total Cadmium (Cd)	2024/08/15		102	%	80 - 120
			Total Calcium (Ca)	2024/08/15		100	%	80 - 120
			Total Chromium (Cr)	2024/08/15		98	%	80 - 120
			Total Cobalt (Co)	2024/08/15		99	%	80 - 120
			Total Copper (Cu)	2024/08/15		99	%	80 - 120
			Total Iron (Fe)	2024/08/15		103	%	80 - 120
			Total Lead (Pb)	2024/08/15		100	%	80 - 120
			Total Magnesium (Mg)	2024/08/15		104	%	80 - 120
			Total Manganese (Mn)	2024/08/15		99	%	80 - 120
			Total Molybdenum (Mo)	2024/08/15		104	%	80 - 120
			Total Nickel (Ni)	2024/08/15		100	%	80 - 120
			Total Phosphorus (P)	2024/08/15		105	%	80 - 120
			Total Potassium (K)	2024/08/15		103	%	80 - 120
			Total Selenium (Se)	2024/08/15		98	%	80 - 120
			Total Silver (Ag)	2024/08/15		100	%	80 - 120
			Total Sodium (Na)	2024/08/15		101	%	80 - 120
			Total Strontium (Sr)	2024/08/15		101	%	80 - 120
			Total Thallium (Tl)	2024/08/15		101	%	80 - 120
			Total Tin (Sn)	2024/08/15		103	%	80 - 120
			Total Titanium (Ti)	2024/08/15		98	%	80 - 120
			Total Uranium (U)	2024/08/15		109	%	80 - 120
			Total Vanadium (V)	2024/08/15		101	%	80 - 120
			Total Zinc (Zn)	2024/08/15		99	%	80 - 120
9576180	MTZ	Spiked Blank	Total Aluminum (Al)	2024/08/15		99	%	80 - 120
			Total Antimony (Sb)	2024/08/15		100	%	80 - 120
			Total Arsenic (As)	2024/08/15		99	%	80 - 120
			Total Barium (Ba)	2024/08/15		97	%	80 - 120
			Total Beryllium (Be)	2024/08/15		96	%	80 - 120
			Total Bismuth (Bi)	2024/08/15		99	%	80 - 120
			Total Boron (B)	2024/08/15		95	%	80 - 120
			Total Cadmium (Cd)	2024/08/15		102	%	80 - 120
			Total Calcium (Ca)	2024/08/15		99	%	80 - 120
			Total Chromium (Cr)	2024/08/15		98	%	80 - 120
			Total Cobalt (Co)	2024/08/15		99	%	80 - 120
			Total Copper (Cu)	2024/08/15		99	%	80 - 120
			Total Iron (Fe)	2024/08/15		105	%	80 - 120
			Total Lead (Pb)	2024/08/15		99	%	80 - 120
			Total Magnesium (Mg)	2024/08/15		103	%	80 - 120
			Total Manganese (Mn)	2024/08/15		99	%	80 - 120
			Total Molybdenum (Mo)	2024/08/15		103	%	80 - 120
			Total Nickel (Ni)	2024/08/15		101	%	80 - 120
			Total Phosphorus (P)	2024/08/15		103	%	80 - 120
			Total Potassium (K)	2024/08/15		103	%	80 - 120
			Total Selenium (Se)	2024/08/15		97	%	80 - 120
			Total Silver (Ag)	2024/08/15		99	%	80 - 120
			Total Sodium (Na)	2024/08/15		100	%	80 - 120
			Total Strontium (Sr)	2024/08/15		102	%	80 - 120
			Total Thallium (Tl)	2024/08/15		100	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9576180	MTZ	Method Blank	Total Tin (Sn)	2024/08/15		101	%	80 - 120
			Total Titanium (Ti)	2024/08/15		99	%	80 - 120
			Total Uranium (U)	2024/08/15		107	%	80 - 120
			Total Vanadium (V)	2024/08/15		100	%	80 - 120
			Total Zinc (Zn)	2024/08/15		99	%	80 - 120
			Total Aluminum (Al)	2024/08/15	ND, RDL=5.0		ug/L	
			Total Antimony (Sb)	2024/08/15	ND, RDL=1.0		ug/L	
			Total Arsenic (As)	2024/08/15	ND, RDL=1.0		ug/L	
			Total Barium (Ba)	2024/08/15	ND, RDL=1.0		ug/L	
			Total Beryllium (Be)	2024/08/15	ND, RDL=0.10		ug/L	
			Total Bismuth (Bi)	2024/08/15	ND, RDL=2.0		ug/L	
			Total Boron (B)	2024/08/15	ND, RDL=50		ug/L	
			Total Cadmium (Cd)	2024/08/15	ND, RDL=0.010		ug/L	
			Total Calcium (Ca)	2024/08/15	ND, RDL=100		ug/L	
			Total Chromium (Cr)	2024/08/15	ND, RDL=1.0		ug/L	
			Total Cobalt (Co)	2024/08/15	ND, RDL=0.40		ug/L	
			Total Copper (Cu)	2024/08/15	ND, RDL=0.50		ug/L	
			Total Iron (Fe)	2024/08/15	ND, RDL=50		ug/L	
			Total Lead (Pb)	2024/08/15	ND, RDL=0.50		ug/L	
			Total Magnesium (Mg)	2024/08/15	ND, RDL=100		ug/L	
			Total Manganese (Mn)	2024/08/15	ND, RDL=2.0		ug/L	
			Total Molybdenum (Mo)	2024/08/15	ND, RDL=2.0		ug/L	
			Total Nickel (Ni)	2024/08/15	ND, RDL=2.0		ug/L	
			Total Phosphorus (P)	2024/08/15	ND, RDL=100		ug/L	
			Total Potassium (K)	2024/08/15	ND, RDL=100		ug/L	
			Total Selenium (Se)	2024/08/15	ND, RDL=0.50		ug/L	
			Total Silver (Ag)	2024/08/15	ND, RDL=0.10		ug/L	
			Total Sodium (Na)	2024/08/15	ND, RDL=100		ug/L	
			Total Strontium (Sr)	2024/08/15	ND, RDL=2.0		ug/L	
			Total Thallium (Tl)	2024/08/15	ND, RDL=0.10		ug/L	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9576180	MTZ	RPD	Total Tin (Sn)	2024/08/15	ND, RDL=2.0		ug/L	
			Total Titanium (Ti)	2024/08/15	ND, RDL=2.0		ug/L	
			Total Uranium (U)	2024/08/15	ND, RDL=0.10		ug/L	
			Total Vanadium (V)	2024/08/15	ND, RDL=2.0		ug/L	
			Total Zinc (Zn)	2024/08/15	ND, RDL=5.0		ug/L	
			Total Aluminum (Al)	2024/08/15	1.8		%	20
			Total Antimony (Sb)	2024/08/15	NC		%	20
			Total Arsenic (As)	2024/08/15	NC		%	20
			Total Barium (Ba)	2024/08/15	3.1		%	20
			Total Beryllium (Be)	2024/08/15	NC		%	20
			Total Bismuth (Bi)	2024/08/15	NC		%	20
			Total Boron (B)	2024/08/15	4.3		%	20
			Total Cadmium (Cd)	2024/08/15	NC		%	20
			Total Calcium (Ca)	2024/08/15	0.50		%	20
			Total Chromium (Cr)	2024/08/15	NC		%	20
			Total Cobalt (Co)	2024/08/15	NC		%	20
			Total Copper (Cu)	2024/08/15	NC		%	20
			Total Iron (Fe)	2024/08/15	NC		%	20
			Total Lead (Pb)	2024/08/15	NC		%	20
			Total Magnesium (Mg)	2024/08/15	NC		%	20
			Total Manganese (Mn)	2024/08/15	2.9		%	20
			Total Molybdenum (Mo)	2024/08/15	NC		%	20
			Total Nickel (Ni)	2024/08/15	NC		%	20
			Total Phosphorus (P)	2024/08/15	NC		%	20
			Total Potassium (K)	2024/08/15	NC		%	20
			Total Selenium (Se)	2024/08/15	NC		%	20
			Total Silver (Ag)	2024/08/15	NC		%	20
			Total Sodium (Na)	2024/08/15	2.2		%	20
			Total Strontium (Sr)	2024/08/15	5.2		%	20
			Total Thallium (Tl)	2024/08/15	NC		%	20
			Total Tin (Sn)	2024/08/15	NC		%	20
			Total Titanium (Ti)	2024/08/15	NC		%	20
			Total Uranium (U)	2024/08/15	NC		%	20
			Total Vanadium (V)	2024/08/15	NC		%	20
			Total Zinc (Zn)	2024/08/15	NC		%	20
9577639	EMT	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2024/08/15		102	%	80 - 120
9577639	EMT	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2024/08/15		94	%	80 - 120
9577639	EMT	Method Blank	Nitrogen (Ammonia Nitrogen)	2024/08/15	ND, RDL=0.050		mg/L	
9577639	EMT	RPD	Nitrogen (Ammonia Nitrogen)	2024/08/15	2.3		%	20
9577644	EMT	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2024/08/15		NC	%	80 - 120
9577644	EMT	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2024/08/15		97	%	80 - 120
9577644	EMT	Method Blank	Nitrogen (Ammonia Nitrogen)	2024/08/15	ND, RDL=0.050		mg/L	
9577644	EMT	RPD	Nitrogen (Ammonia Nitrogen)	2024/08/15	6.0		%	20
9580614	EMT	Matrix Spike	Dissolved Chloride (Cl-)	2024/08/19		88	%	80 - 120
9580614	EMT	Spiked Blank	Dissolved Chloride (Cl-)	2024/08/19		93	%	80 - 120
9580614	EMT	Method Blank	Dissolved Chloride (Cl-)	2024/08/19	ND, RDL=1.0		mg/L	
9580614	EMT	RPD	Dissolved Chloride (Cl-)	2024/08/19	0.31		%	20



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9580626	EMT	Spiked Blank	Colour	2024/08/19		102	%	80 - 120
9580626	EMT	Method Blank	Colour	2024/08/19	ND, RDL=5.0		TCU	
9580626	EMT	RPD	Colour	2024/08/19	NC		%	20
9580669	SRT	Matrix Spike	Sulphide	2024/08/16		93	%	80 - 120
9580669	SRT	Spiked Blank	Sulphide	2024/08/16		93	%	80 - 120
9580669	SRT	Method Blank	Sulphide	2024/08/16	ND, RDL=0.020		mg/L	
9580669	SRT	RPD	Sulphide	2024/08/16	NC		%	20
9584137	EMT	Matrix Spike	Dissolved Sulphate (SO4)	2024/08/19		96	%	80 - 120
9584137	EMT	Spiked Blank	Dissolved Sulphate (SO4)	2024/08/19		99	%	80 - 120
9584137	EMT	Method Blank	Dissolved Sulphate (SO4)	2024/08/19	ND, RDL=2.0		mg/L	
9584137	EMT	RPD	Dissolved Sulphate (SO4)	2024/08/19	1.0		%	20
9584138	EMT	Matrix Spike	Reactive Silica (SiO2)	2024/08/19		88	%	80 - 120
9584138	EMT	Spiked Blank	Reactive Silica (SiO2)	2024/08/19		92	%	80 - 120
9584138	EMT	Method Blank	Reactive Silica (SiO2)	2024/08/19	ND, RDL=0.50		mg/L	
9584138	EMT	RPD	Reactive Silica (SiO2)	2024/08/19	1.7		%	20
9584140	EMT	Matrix Spike	Orthophosphate (P)	2024/08/19		93	%	80 - 120
9584140	EMT	Spiked Blank	Orthophosphate (P)	2024/08/19		98	%	80 - 120
9584140	EMT	Method Blank	Orthophosphate (P)	2024/08/19	ND, RDL=0.010		mg/L	
9584140	EMT	RPD	Orthophosphate (P)	2024/08/19	NC		%	20
9584141	EMT	Matrix Spike	Nitrate + Nitrite (N)	2024/08/19		96	%	80 - 120
9584141	EMT	Spiked Blank	Nitrate + Nitrite (N)	2024/08/19		100	%	80 - 120
9584141	EMT	Method Blank	Nitrate + Nitrite (N)	2024/08/19	ND, RDL=0.050		mg/L	
9584141	EMT	RPD	Nitrate + Nitrite (N)	2024/08/19	NC		%	20
9584142	EMT	Matrix Spike	Nitrite (N)	2024/08/19		103	%	80 - 120
9584142	EMT	Spiked Blank	Nitrite (N)	2024/08/19		108	%	80 - 120
9584142	EMT	Method Blank	Nitrite (N)	2024/08/19	ND, RDL=0.010		mg/L	
9584142	EMT	RPD	Nitrite (N)	2024/08/19	NC		%	20
9584155	DME	QC Standard	Total Suspended Solids	2024/08/21		99	%	80 - 120
9584155	DME	Method Blank	Total Suspended Solids	2024/08/21	ND, RDL=1.0		mg/L	
9584155	DME	RPD	Total Suspended Solids	2024/08/21	18		%	20
9584187	SRT	Matrix Spike	Sulphide	2024/08/19		94	%	80 - 120
9584187	SRT	Spiked Blank	Sulphide	2024/08/19		95	%	80 - 120
9584187	SRT	Method Blank	Sulphide	2024/08/19	ND, RDL=0.020		mg/L	
9584187	SRT	RPD	Sulphide	2024/08/19	NC		%	20
9584250	M2C	Spiked Blank	pH	2024/08/19		99	%	97 - 103
9584250	M2C	RPD	pH	2024/08/19	1.1		%	N/A
9584252	M2C	Spiked Blank	Conductivity	2024/08/19		100	%	80 - 120
9584252	M2C	Method Blank	Conductivity	2024/08/19	ND, RDL=1.0		uS/cm	
9584252	M2C	RPD	Conductivity	2024/08/19	0		%	10
9584253	M2C	Spiked Blank	Total Alkalinity (Total as CaCO3)	2024/08/19		97	%	80 - 120
9584253	M2C	Method Blank	Total Alkalinity (Total as CaCO3)	2024/08/19	ND, RDL=2.0		mg/L	
9584253	M2C	RPD	Total Alkalinity (Total as CaCO3)	2024/08/19	0.30		%	20
9584258	M2C	Spiked Blank	pH	2024/08/19		99	%	97 - 103
9584258	M2C	RPD [ZZN950-02]	pH	2024/08/19	0.17		%	N/A



BUREAU
VERITAS

Bureau Veritas Job #: C4P0043

Report Date: 2024/08/22

Central Newfoundland Waste Management Authority

Client Project #: SW samples

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9584261	M2C	Spiked Blank	Conductivity	2024/08/19		99	%	80 - 120
9584261	M2C	Method Blank	Conductivity	2024/08/19	ND, RDL=1.0		uS/cm	
9584261	M2C	RPD [ZZN950-02]	Conductivity	2024/08/19	0.63		%	10
9584263	M2C	Spiked Blank	Total Alkalinity (Total as CaCO3)	2024/08/19		98	%	80 - 120
9584263	M2C	Method Blank	Total Alkalinity (Total as CaCO3)	2024/08/19	ND, RDL=2.0		mg/L	
9584263	M2C	RPD [ZZN950-02]	Total Alkalinity (Total as CaCO3)	2024/08/19	2.8		%	20
9584365	SSI	Matrix Spike	Dissolved Organic Carbon (C)	2024/08/19		96	%	85 - 115
9584365	SSI	Spiked Blank	Dissolved Organic Carbon (C)	2024/08/19		98	%	80 - 120
9584365	SSI	Method Blank	Dissolved Organic Carbon (C)	2024/08/19	ND, RDL=0.50		mg/L	
9584365	SSI	RPD	Dissolved Organic Carbon (C)	2024/08/19	1.3		%	15
9584379	SSI	Matrix Spike	Total Organic Carbon (C)	2024/08/19		96	%	85 - 115
9584379	SSI	Spiked Blank	Total Organic Carbon (C)	2024/08/19		96	%	80 - 120
9584379	SSI	Method Blank	Total Organic Carbon (C)	2024/08/19	ND, RDL=0.50		mg/L	
9584379	SSI	RPD	Total Organic Carbon (C)	2024/08/19	NC		%	15
9584405	SSI	Matrix Spike	Dissolved Organic Carbon (C)	2024/08/19		NC	%	85 - 115
9584405	SSI	Spiked Blank	Dissolved Organic Carbon (C)	2024/08/19		96	%	80 - 120
9584405	SSI	Method Blank	Dissolved Organic Carbon (C)	2024/08/19	ND, RDL=0.50		mg/L	
9584405	SSI	RPD	Dissolved Organic Carbon (C)	2024/08/19	2.4 (1)		%	15
9584410	SSI	Matrix Spike	Total Organic Carbon (C)	2024/08/19		94	%	85 - 115
9584410	SSI	Spiked Blank	Total Organic Carbon (C)	2024/08/19		96	%	80 - 120
9584410	SSI	Method Blank	Total Organic Carbon (C)	2024/08/19	ND, RDL=0.50		mg/L	
9584410	SSI	RPD	Total Organic Carbon (C)	2024/08/19	9.6		%	15
9584418	SSI	Matrix Spike	Total Organic Carbon (C)	2024/08/19		95	%	85 - 115
9584418	SSI	Spiked Blank	Total Organic Carbon (C)	2024/08/19		94	%	80 - 120
9584418	SSI	Method Blank	Total Organic Carbon (C)	2024/08/19	ND, RDL=0.50		mg/L	
9584418	SSI	RPD	Total Organic Carbon (C)	2024/08/19	3.7		%	15
9584450	SPY	Matrix Spike	Total Mercury (Hg)	2024/08/20		99	%	80 - 120
9584450	SPY	Spiked Blank	Total Mercury (Hg)	2024/08/20		99	%	80 - 120
9584450	SPY	Method Blank	Total Mercury (Hg)	2024/08/20	ND, RDL=0.013		ug/L	
9584450	SPY	RPD	Total Mercury (Hg)	2024/08/20	NC		%	20
9584465	SPY	Matrix Spike	Total Mercury (Hg)	2024/08/20		100	%	80 - 120
9584465	SPY	Spiked Blank	Total Mercury (Hg)	2024/08/20		100	%	80 - 120
9584465	SPY	Method Blank	Total Mercury (Hg)	2024/08/20	ND, RDL=0.013		ug/L	
9584465	SPY	RPD	Total Mercury (Hg)	2024/08/20	NC		%	20
9584616	EMT	Matrix Spike	Dissolved Chloride (Cl-)	2024/08/20		NC	%	80 - 120
9584616	EMT	Spiked Blank	Dissolved Chloride (Cl-)	2024/08/20		96	%	80 - 120
9584616	EMT	Method Blank	Dissolved Chloride (Cl-)	2024/08/20	ND, RDL=1.0		mg/L	
9584616	EMT	RPD	Dissolved Chloride (Cl-)	2024/08/20	0.75		%	20
9584650	EMT	Matrix Spike	Dissolved Sulphate (SO4)	2024/08/20		98	%	80 - 120
9584650	EMT	Spiked Blank	Dissolved Sulphate (SO4)	2024/08/20		98	%	80 - 120
9584650	EMT	Method Blank	Dissolved Sulphate (SO4)	2024/08/20	ND, RDL=2.0		mg/L	
9584650	EMT	RPD	Dissolved Sulphate (SO4)	2024/08/20	1.1		%	20
9584651	EMT	Matrix Spike	Reactive Silica (SiO2)	2024/08/20		NC	%	80 - 120
9584651	EMT	Spiked Blank	Reactive Silica (SiO2)	2024/08/20		90	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9584651	EMT	Method Blank	Reactive Silica (SiO2)	2024/08/20	ND, RDL=0.50		mg/L	
9584651	EMT	RPD	Reactive Silica (SiO2)	2024/08/20	0.63		%	20
9584653	EMT	Spiked Blank	Colour	2024/08/20		109	%	80 - 120
9584653	EMT	Method Blank	Colour	2024/08/20	ND, RDL=5.0		TCU	
9584653	EMT	RPD	Colour	2024/08/20	NC		%	20
9584656	EMT	Matrix Spike	Orthophosphate (P)	2024/08/20		94	%	80 - 120
9584656	EMT	Spiked Blank	Orthophosphate (P)	2024/08/20		99	%	80 - 120
9584656	EMT	Method Blank	Orthophosphate (P)	2024/08/20	ND, RDL=0.010		mg/L	
9584656	EMT	RPD	Orthophosphate (P)	2024/08/20	1.3		%	20
9584658	EMT	Matrix Spike	Nitrate + Nitrite (N)	2024/08/20		99	%	80 - 120
9584658	EMT	Spiked Blank	Nitrate + Nitrite (N)	2024/08/20		104	%	80 - 120
9584658	EMT	Method Blank	Nitrate + Nitrite (N)	2024/08/20	ND, RDL=0.050		mg/L	
9584658	EMT	RPD	Nitrate + Nitrite (N)	2024/08/20	NC		%	20
9584659	MCN	Matrix Spike	Nitrite (N)	2024/08/20		102	%	80 - 120
9584659	MCN	Spiked Blank	Nitrite (N)	2024/08/20		109	%	80 - 120
9584659	MCN	Method Blank	Nitrite (N)	2024/08/20	ND, RDL=0.010		mg/L	
9584659	MCN	RPD	Nitrite (N)	2024/08/20	NC		%	20
9584961	M2C	QC Standard	Turbidity	2024/08/19		101	%	80 - 120
9584961	M2C	Spiked Blank	Turbidity	2024/08/19		94	%	80 - 120
9584961	M2C	Method Blank	Turbidity	2024/08/19	ND, RDL=0.10		NTU	
9584961	M2C	RPD [ZZN955-02]	Turbidity	2024/08/19	11		%	20
9587670	SPC	Matrix Spike [ZZN947-07]	Phenols-4AAP	2024/08/20		101	%	80 - 120
9587670	SPC	Spiked Blank	Phenols-4AAP	2024/08/20		100	%	80 - 120
9587670	SPC	Method Blank	Phenols-4AAP	2024/08/20	ND, RDL=0.0010		mg/L	
9587670	SPC	RPD [ZZN947-07]	Phenols-4AAP	2024/08/20	NC		%	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) Elevated reporting limit due to sample matrix.								



VALIDATION SIGNATURE PAGE

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

Ernie Publicover, Scientific Specialist

Louise Harding, Team Lead



Bureau Veritas Proprietary Software
Logiciel Propriétaire de Bureau Veritas

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Your Project #: SW- SAMPLES
Site#: 00012
Your C.O.C. #: C#1018696--01-01

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2024/11/06
Report #: R8393429
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4X7339

Received: 2024/10/28, 08:45

Sample Matrix: Water
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Carbonate, Bicarbonate and Hydroxide	8	N/A	2024/11/01	N/A	SM 24 4500-CO2 D
Carbonate, Bicarbonate and Hydroxide	2	N/A	2024/11/05	N/A	SM 24 4500-CO2 D
Alkalinity	7	N/A	2024/10/31	ATL SOP 00142	SM 24 2320 B
Alkalinity	1	N/A	2024/11/01	ATL SOP 00142	SM 24 2320 B
Alkalinity	2	N/A	2024/11/04	ATL SOP 00142	SM 24 2320 B
Chloride	3	N/A	2024/10/31	ATL SOP 00014	SM 24 4500-Cl- E m
Chloride	7	N/A	2024/11/04	ATL SOP 00014	SM 24 4500-Cl- E m
Colour	3	N/A	2024/10/31	ATL SOP 00020	SM 24 2120C m
Colour	7	N/A	2024/11/04	ATL SOP 00020	SM 24 2120C m
Organic carbon - Diss (DOC)-Lab Filtered (2)	5	N/A	2024/10/30	ATL SOP 00203	SM 24 5310B m
Organic carbon - Diss (DOC)-Lab Filtered (2)	5	N/A	2024/10/31	ATL SOP 00203	SM 24 5310B m
Conductance - water	8	N/A	2024/10/31	ATL SOP 00004	SM 24 2510B m
Conductance - water	2	N/A	2024/11/04	ATL SOP 00004	SM 24 2510B m
Hardness (calculated as CaCO3)	10	N/A	2024/10/30	ATL SOP 00048	Auto Calc
Mercury - Total (CVAA,LL)	3	2024/11/04	2024/11/05	ATL SOP 00026	EPA 245.1 R3 m
Mercury - Total (CVAA,LL)	7	2024/11/05	2024/11/05	ATL SOP 00026	EPA 245.1 R3 m
Metals Water Total MS	8	2024/10/28	2024/10/29	ATL SOP 00058	EPA 6020B R2 m
Metals Water Total MS	2	2024/10/28	2024/10/30	ATL SOP 00058	EPA 6020B R2 m
Ion Balance (% Difference)	2	N/A	2024/11/05	N/A	Auto Calc.
Ion Balance (% Difference)	8	N/A	2024/11/06	N/A	Auto Calc.
Anion and Cation Sum	2	N/A	2024/11/05	N/A	Auto Calc.
Anion and Cation Sum	8	N/A	2024/11/06	N/A	Auto Calc.
Nitrogen Ammonia - water	1	N/A	2024/11/04	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen Ammonia - water	5	N/A	2024/11/05	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen Ammonia - water	4	N/A	2024/11/06	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	3	N/A	2024/10/31	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrate + Nitrite	7	N/A	2024/11/04	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite	3	N/A	2024/10/31	ATL SOP 00017	SM 24 4500-NO2- B m
Nitrogen - Nitrite	7	N/A	2024/11/04	ATL SOP 00017	SM 24 4500-NO2- B m
Nitrogen - Nitrate (as N)	3	N/A	2024/10/31	ATL SOP 00018	ASTM D3867-16
Nitrogen - Nitrate (as N)	7	N/A	2024/11/04	ATL SOP 00018	ASTM D3867-16
Phenols (4AAP) (1)	9	N/A	2024/11/05	CAM SOP-00444	OMOE E3179 m



Your Project #: SW- SAMPLES
Site#: 00012
Your C.O.C. #: C#1018696--01-01

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2024/11/06
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CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4X7339

Received: 2024/10/28, 08:45

Sample Matrix: Water
Samples Received: 10

Analyses	Date		Date Analyzed	Laboratory Method	Analytical Method
	Quantity	Extracted			
Phenols (4AAP) (1)	1	N/A	2024/11/06	CAM SOP-00444	OMOE E3179 m
pH (3)	8	N/A	2024/10/31	ATL SOP 00003	SM 24 4500-H+ B m
pH (3)	2	N/A	2024/11/04	ATL SOP 00003	SM 24 4500-H+ B m
Phosphorus - ortho	3	N/A	2024/10/31	ATL SOP 00021	SM 24 4500-P E m
Phosphorus - ortho	7	N/A	2024/11/04	ATL SOP 00021	SM 24 4500-P E m
Sat. pH and Langelier Index (@ 20C)	2	N/A	2024/11/05	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 20C)	8	N/A	2024/11/06	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 4C)	2	N/A	2024/11/05	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 4C)	8	N/A	2024/11/06	ATL SOP 00049	Auto Calc.
Reactive Silica	3	N/A	2024/10/31	ATL SOP 00022	EPA 366.0 m
Reactive Silica	7	N/A	2024/11/04	ATL SOP 00022	EPA 366.0 m
Sulphate	3	N/A	2024/10/31	ATL SOP 00023	ASTM D516-16 m
Sulphate	7	N/A	2024/11/04	ATL SOP 00023	ASTM D516-16 m
Sulphide (1)	1	N/A	2024/10/30	CAM SOP-00455	SM 24 4500-S G m
Sulphide (1)	9	N/A	2024/10/31	CAM SOP-00455	SM 24 4500-S G m
Total Dissolved Solids (TDS calc)	2	N/A	2024/11/05	N/A	Auto Calc.
Total Dissolved Solids (TDS calc)	8	N/A	2024/11/06	N/A	Auto Calc.
Organic carbon - Total (TOC) (2)	2	N/A	2024/10/29	ATL SOP 00203	SM 24 5310B m
Organic carbon - Total (TOC) (2)	2	N/A	2024/10/30	ATL SOP 00203	SM 24 5310B m
Organic carbon - Total (TOC) (2)	6	N/A	2024/10/31	ATL SOP 00203	SM 24 5310B m
Total Suspended Solids	3	2024/10/31	2024/11/01	ATL SOP 00007	SM 24 2540D m
Total Suspended Solids	7	2024/10/31	2024/11/04	ATL SOP 00007	SM 24 2540D m
Turbidity	1	N/A	2024/11/04	ATL SOP 00011	EPA 180.1 R2 m
Turbidity	9	N/A	2024/11/05	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, EPA, APHA or the Quebec Ministry of Environment.

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



Your Project #: SW- SAMPLES
Site#: 00012
Your C.O.C. #: C#1018696--01-01

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2024/11/06
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Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4X7339

Received: 2024/10/28, 08:45

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.

(1) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd, Mississauga, ON, L5N 2L8

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

(3) 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.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:

Jaspreet Kaur, Project Manager 1

Email: jaspreet.kaur@bureauveritas.com

Phone# (902)420-0203

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ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		AHBK78			AHBK79		
Sampling Date		2024/10/24 09:00			2024/10/24 09:15		
COC Number		C#1018696--01-01			C#1018696--01-01		
Sample #		00291			00292		
	UNITS	847-SW-1	RDL	QC Batch	SW-1	RDL	QC Batch
Calculated Parameters							
Anion Sum	me/L	2.50	N/A	9727852	1.09	N/A	9727852
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	41	1.0	9727848	36	1.0	9727848
Calculated TDS	mg/L	150	1.0	9727859	67	1.0	9727859
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ND	1.0	9727848	ND	1.0	9727848
Cation Sum	me/L	2.51	N/A	9727852	1.24	N/A	9727852
Hardness (CaCO ₃)	mg/L	54	1.0	9727850	50	1.0	9727850
Ion Balance (% Difference)	%	0.200	N/A	9727851	6.44	N/A	9727851
Langelier Index (@ 20C)	N/A	-1.01		9727857	-1.01		9727857
Langelier Index (@ 4C)	N/A	-1.26		9727858	-1.26		9727858
Nitrate (N)	mg/L	0.052	0.050	9727854	0.057	0.050	9727854
Saturation pH (@ 20C)	N/A	8.65		9727857	8.69		9727857
Saturation pH (@ 4C)	N/A	8.90		9727858	8.94		9727858
Inorganics							
Total Alkalinity (Total as CaCO ₃)	mg/L	41	2.0	9736170	36	2.0	9742847
Dissolved Chloride (Cl ⁻)	mg/L	57	1.0	9739159	8.3	1.0	9739183
Colour	TCU	54	25	9739177	47	5.0	9739199
Nitrate + Nitrite (N)	mg/L	0.052	0.050	9739179	0.057	0.050	9739208
Nitrite (N)	mg/L	ND	0.010	9739182	ND	0.010	9739210
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.050	9745549	ND	0.050	9745549
Total Organic Carbon (C)	mg/L	10	0.50	9731190	8.5	0.50	9733983
Orthophosphate (P)	mg/L	ND	0.010	9739178	ND	0.010	9739205
pH	pH	7.65		9736146	7.68		9742842
Reactive Silica (SiO ₂)	mg/L	8.5	0.50	9739174	8.0	0.50	9739196
Dissolved Sulphate (SO ₄)	mg/L	2.4	2.0	9739167	5.9	2.0	9739194
Turbidity	NTU	0.31	0.10	9745569	0.40	0.10	9745569
Conductivity	uS/cm	280	1.0	9736165	120	1.0	9742845
Metals							
Total Aluminum (Al)	ug/L	59	5.0	9728626	55	5.0	9728626
Total Antimony (Sb)	ug/L	ND	1.0	9728626	ND	1.0	9728626
Total Arsenic (As)	ug/L	ND	1.0	9728626	ND	1.0	9728626
Total Barium (Ba)	ug/L	19	1.0	9728626	6.8	1.0	9728626
Total Beryllium (Be)	ug/L	ND	0.10	9728626	ND	0.10	9728626
Total Bismuth (Bi)	ug/L	ND	2.0	9728626	ND	2.0	9728626
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.							



ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		AHBK78			AHBK79		
Sampling Date		2024/10/24 09:00			2024/10/24 09:15		
COC Number		C#1018696--01-01			C#1018696--01-01		
Sample #		00291			00292		
	UNITS	847-SW-1	RDL	QC Batch	SW-1	RDL	QC Batch
Total Boron (B)	ug/L	ND	50	9728626	ND	50	9728626
Total Cadmium (Cd)	ug/L	ND	0.010	9728626	ND	0.010	9728626
Total Calcium (Ca)	ug/L	12000	100	9728626	12000	100	9728626
Total Chromium (Cr)	ug/L	ND	1.0	9728626	ND	1.0	9728626
Total Cobalt (Co)	ug/L	ND	0.40	9728626	ND	0.40	9728626
Total Copper (Cu)	ug/L	ND	0.50	9728626	0.51	0.50	9728626
Total Iron (Fe)	ug/L	160	50	9728626	130	50	9728626
Total Lead (Pb)	ug/L	ND	0.50	9728626	ND	0.50	9728626
Total Magnesium (Mg)	ug/L	5600	100	9728626	4800	100	9728626
Total Manganese (Mn)	ug/L	47	2.0	9728626	13	2.0	9728626
Total Molybdenum (Mo)	ug/L	ND	2.0	9728626	ND	2.0	9728626
Total Nickel (Ni)	ug/L	ND	2.0	9728626	ND	2.0	9728626
Total Phosphorus (P)	ug/L	ND	100	9728626	ND	100	9728626
Total Potassium (K)	ug/L	730	100	9728626	660	100	9728626
Total Selenium (Se)	ug/L	ND	0.50	9728626	ND	0.50	9728626
Total Silver (Ag)	ug/L	ND	0.10	9728626	ND	0.10	9728626
Total Sodium (Na)	ug/L	32000	100	9728626	5300	100	9728626
Total Strontium (Sr)	ug/L	49	2.0	9728626	55	2.0	9728626
Total Thallium (Tl)	ug/L	ND	0.10	9728626	ND	0.10	9728626
Total Tin (Sn)	ug/L	ND	2.0	9728626	ND	2.0	9728626
Total Titanium (Ti)	ug/L	ND	2.0	9728626	ND	2.0	9728626
Total Uranium (U)	ug/L	ND	0.10	9728626	ND	0.10	9728626
Total Vanadium (V)	ug/L	ND	2.0	9728626	ND	2.0	9728626
Total Zinc (Zn)	ug/L	ND	5.0	9728626	ND	5.0	9728626
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.							

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		AHBK80			AHBK81		
Sampling Date		2024/10/24 09:25			2024/10/24 09:35		
COC Number		C#1018696--01-01			C#1018696--01-01		
Sample #		00293			00294		
	UNITS	SW-2	RDL	QC Batch	SW-3	RDL	QC Batch
Calculated Parameters							
Anion Sum	me/L	2.45	N/A	9727852	7.82	N/A	9727852
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	64	1.0	9727848	270	1.0	9727848
Calculated TDS	mg/L	140	1.0	9727859	430	1.0	9727859
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ND	1.0	9727848	2.0	1.0	9727848
Cation Sum	me/L	2.77	N/A	9727852	8.55	N/A	9727852
Hardness (CaCO ₃)	mg/L	67	1.0	9727850	370	1.0	9727850
Ion Balance (% Difference)	%	6.13	N/A	9727851	4.46	N/A	9727851
Langelier Index (@ 20C)	N/A	-0.829		9727857	0.845		9727857
Langelier Index (@ 4C)	N/A	-1.08		9727858	0.597		9727858
Nitrate (N)	mg/L	0.096	0.050	9727854	0.12	0.050	9727854
Saturation pH (@ 20C)	N/A	8.45		9727857	7.05		9727857
Saturation pH (@ 4C)	N/A	8.70		9727858	7.29		9727858
Inorganics							
Total Alkalinity (Total as CaCO ₃)	mg/L	64	2.0	9736170	270	2.0	9736170
Dissolved Chloride (Cl ⁻)	mg/L	41	1.0	9739183	30	1.0	9733392
Colour	TCU	52	25	9739199	12	5.0	9733405
Nitrate + Nitrite (N)	mg/L	0.096	0.050	9739208	0.12	0.050	9733420
Nitrite (N)	mg/L	ND	0.010	9739210	ND	0.010	9733421
Nitrogen (Ammonia Nitrogen)	mg/L	0.091	0.050	9742796	2.9	0.25	9745549
Total Organic Carbon (C)	mg/L	13	0.50	9733983	9.7	0.50	9733983
Orthophosphate (P)	mg/L	ND	0.010	9739205	ND	0.010	9733407
pH	pH	7.62		9736146	7.89		9736146
Reactive Silica (SiO ₂)	mg/L	6.7	0.50	9739196	10	0.50	9733401
Dissolved Sulphate (SO ₄)	mg/L	ND	2.0	9739194	71	2.0	9733398
Turbidity	NTU	0.23	0.10	9745569	17	0.10	9745569
Conductivity	uS/cm	270	1.0	9736165	750	1.0	9736165
Metals							
Total Aluminum (Al)	ug/L	42	5.0	9728626	10	5.0	9728581
Total Antimony (Sb)	ug/L	ND	1.0	9728626	ND	1.0	9728581
Total Arsenic (As)	ug/L	ND	1.0	9728626	8.0	1.0	9728581
Total Barium (Ba)	ug/L	13	1.0	9728626	210	1.0	9728581
Total Beryllium (Be)	ug/L	ND	0.10	9728626	ND	0.10	9728581
Total Bismuth (Bi)	ug/L	ND	2.0	9728626	ND	2.0	9728581
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.							

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		AHBK80			AHBK81		
Sampling Date		2024/10/24 09:25			2024/10/24 09:35		
COC Number		C#1018696--01-01			C#1018696--01-01		
Sample #		00293			00294		
	UNITS	SW-2	RDL	QC Batch	SW-3	RDL	QC Batch
Total Boron (B)	ug/L	71	50	9728626	120	50	9728581
Total Cadmium (Cd)	ug/L	ND	0.010	9728626	ND	0.010	9728581
Total Calcium (Ca)	ug/L	13000	100	9728626	94000	100	9728581
Total Chromium (Cr)	ug/L	ND	1.0	9728626	ND	1.0	9728581
Total Cobalt (Co)	ug/L	ND	0.40	9728626	3.7	0.40	9728581
Total Copper (Cu)	ug/L	0.61	0.50	9728626	0.53	0.50	9728581
Total Iron (Fe)	ug/L	130	50	9728626	2800	50	9728581
Total Lead (Pb)	ug/L	ND	0.50	9728626	ND	0.50	9728581
Total Magnesium (Mg)	ug/L	8600	100	9728626	32000	100	9728581
Total Manganese (Mn)	ug/L	10	2.0	9728626	760	2.0	9728581
Total Molybdenum (Mo)	ug/L	ND	2.0	9728626	ND	2.0	9728581
Total Nickel (Ni)	ug/L	ND	2.0	9728626	4.4	2.0	9728581
Total Phosphorus (P)	ug/L	ND	100	9728626	ND	100	9728581
Total Potassium (K)	ug/L	6500	100	9728626	4500	100	9728581
Total Selenium (Se)	ug/L	ND	0.50	9728626	ND	0.50	9728581
Total Silver (Ag)	ug/L	ND	0.10	9728626	ND	0.10	9728581
Total Sodium (Na)	ug/L	29000	100	9728626	18000	100	9728581
Total Strontium (Sr)	ug/L	63	2.0	9728626	460	2.0	9728581
Total Thallium (Tl)	ug/L	ND	0.10	9728626	ND	0.10	9728581
Total Tin (Sn)	ug/L	ND	2.0	9728626	ND	2.0	9728581
Total Titanium (Ti)	ug/L	ND	2.0	9728626	ND	2.0	9728581
Total Uranium (U)	ug/L	ND	0.10	9728626	0.98	0.10	9728581
Total Vanadium (V)	ug/L	ND	2.0	9728626	ND	2.0	9728581
Total Zinc (Zn)	ug/L	ND	5.0	9728626	ND	5.0	9728581
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.							

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		AHBK82			AHBK83		
Sampling Date		2024/10/24 09:50			2024/10/24 10:00		
COC Number		C#1018696--01-01			C#1018696--01-01		
Sample #		00295			00296		
	UNITS	SW-4	RDL	QC Batch	SW-5	RDL	QC Batch
Calculated Parameters							
Anion Sum	me/L	0.610	N/A	9727852	72.3	N/A	9727852
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	17	1.0	9727848	1200	1.0	9727848
Calculated TDS	mg/L	40	1.0	9727859	4700	1.0	9727859
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ND	1.0	9727848	9.6	1.0	9727848
Cation Sum	me/L	0.780	N/A	9727852	74.3	N/A	9727852
Hardness (CaCO ₃)	mg/L	22	1.0	9727850	890	1.0	9727850
Ion Balance (% Difference)	%	12.2	N/A	9727851	1.37	N/A	9727851
Langelier Index (@ 20C)	N/A	-1.93		9727857	1.41		9727857
Langelier Index (@ 4C)	N/A	-2.19		9727858	1.17		9727858
Nitrate (N)	mg/L	0.11	0.050	9727854	320	25	9727854
Saturation pH (@ 20C)	N/A	9.34		9727857	6.52		9727857
Saturation pH (@ 4C)	N/A	9.59		9727858	6.76		9727858
Inorganics							
Total Alkalinity (Total as CaCO ₃)	mg/L	17	2.0	9742847	1200	20	9736170
Dissolved Chloride (Cl ⁻)	mg/L	9.7	1.0	9739183	870	10	9733392
Colour	TCU	30	5.0	9739199	650	150	9733405
Nitrate + Nitrite (N)	mg/L	0.11	0.050	9739208	320	25	9733420
Nitrite (N)	mg/L	ND	0.010	9739210	1.7	0.050	9733421
Nitrogen (Ammonia Nitrogen)	mg/L	0.052	0.050	9745549	150	13	9745549
Total Organic Carbon (C)	mg/L	7.1	0.50	9733983	160 (1)	50	9731203
Orthophosphate (P)	mg/L	ND	0.010	9739205	0.23	0.010	9733407
pH	pH	7.40		9742842	7.93		9736146
Reactive Silica (SiO ₂)	mg/L	4.3	0.50	9739196	17	0.50	9733401
Dissolved Sulphate (SO ₄)	mg/L	ND	2.0	9739194	23	2.0	9733398
Turbidity	NTU	0.43	0.10	9745569	39	0.10	9745569
Conductivity	uS/cm	78	1.0	9742845	7400	1.0	9736165
Metals							
Total Aluminum (Al)	ug/L	20	5.0	9728626	110	5.0	9728626
Total Antimony (Sb)	ug/L	ND	1.0	9728626	5.6	1.0	9728626
Total Arsenic (As)	ug/L	ND	1.0	9728626	35	1.0	9728626
Total Barium (Ba)	ug/L	4.2	1.0	9728626	760	1.0	9728626
Total Beryllium (Be)	ug/L	ND	0.10	9728626	ND	0.10	9728626
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable ND = Not Detected at a concentration equal or greater than the indicated Detection Limit. (1) Elevated reporting limit due to sample matrix.							

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		AHBK82			AHBK83		
Sampling Date		2024/10/24 09:50			2024/10/24 10:00		
COC Number		C#1018696--01-01			C#1018696--01-01		
Sample #		00295			00296		
	UNITS	SW-4	RDL	QC Batch	SW-5	RDL	QC Batch
Total Bismuth (Bi)	ug/L	ND	2.0	9728626	ND	2.0	9728626
Total Boron (B)	ug/L	ND	50	9728626	3600	50	9728626
Total Cadmium (Cd)	ug/L	ND	0.010	9728626	0.041	0.010	9728626
Total Calcium (Ca)	ug/L	5600	100	9728626	150000	100	9728626
Total Chromium (Cr)	ug/L	ND	1.0	9728626	59	1.0	9728626
Total Cobalt (Co)	ug/L	ND	0.40	9728626	12	0.40	9728626
Total Copper (Cu)	ug/L	ND	0.50	9728626	1.4	0.50	9728626
Total Iron (Fe)	ug/L	97	50	9728626	5900	50	9728626
Total Lead (Pb)	ug/L	ND	0.50	9728626	ND	0.50	9728626
Total Magnesium (Mg)	ug/L	2000	100	9728626	120000	1000	9728626
Total Manganese (Mn)	ug/L	18	2.0	9728626	1100	2.0	9728626
Total Molybdenum (Mo)	ug/L	ND	2.0	9728626	ND	2.0	9728626
Total Nickel (Ni)	ug/L	ND	2.0	9728626	87	2.0	9728626
Total Phosphorus (P)	ug/L	ND	100	9728626	1300	100	9728626
Total Potassium (K)	ug/L	490	100	9728626	360000	1000	9728626
Total Selenium (Se)	ug/L	ND	0.50	9728626	0.68	0.50	9728626
Total Silver (Ag)	ug/L	ND	0.10	9728626	ND	0.10	9728626
Total Sodium (Na)	ug/L	7200	100	9728626	840000	100	9728626
Total Strontium (Sr)	ug/L	27	2.0	9728626	870	2.0	9728626
Total Thallium (Tl)	ug/L	ND	0.10	9728626	ND	0.10	9728626
Total Tin (Sn)	ug/L	ND	2.0	9728626	3.9	2.0	9728626
Total Titanium (Ti)	ug/L	ND	2.0	9728626	21	2.0	9728626
Total Uranium (U)	ug/L	ND	0.10	9728626	0.25	0.10	9728626
Total Vanadium (V)	ug/L	ND	2.0	9728626	23	2.0	9728626
Total Zinc (Zn)	ug/L	ND	5.0	9728626	40	5.0	9728626
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.							



BUREAU
VERITAS

Bureau Veritas Job #: C4X7339

Report Date: 2024/11/06

Central Newfoundland Waste Management Authority

Client Project #: SW- SAMPLES

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		AHBK84		AHBK85		AHBK86		
Sampling Date		2024/10/24 10:15		2024/10/24 10:25		2024/10/24 10:35		
COC Number		C#1018696--01-01		C#1018696--01-01		C#1018696--01-01		
Sample #		00297		00298		00299		
	UNITS	SW-6	QC Batch	SW-7	QC Batch	SW-8	RDL	QC Batch

Calculated Parameters

Anion Sum	me/L	2.36	9727852	2.47	9727852	2.19	N/A	9727852
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	86	9727848	110	9727848	18	1.0	9727848
Calculated TDS	mg/L	130	9727859	130	9727859	130	1.0	9727859
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ND	9727848	1.6	9727848	ND	1.0	9727848
Cation Sum	me/L	2.45	9727852	2.94	9727852	2.26	N/A	9727852
Hardness (CaCO ₃)	mg/L	95	9727850	130	9727850	45	1.0	9727850
Ion Balance (% Difference)	%	1.87	9727851	8.69	9727851	1.57	N/A	9727851
Langelier Index (@ 20C)	N/A	-0.0980	9727857	0.249	9727857	-1.91		9727857
Langelier Index (@ 4C)	N/A	-0.349	9727858	-0.00200	9727858	-2.16		9727858
Nitrate (N)	mg/L	0.057	9727854	ND	9727854	0.17	0.050	9727854
Saturation pH (@ 20C)	N/A	8.07	9727857	7.96	9727857	9.10		9727857
Saturation pH (@ 4C)	N/A	8.32	9727858	8.21	9727858	9.35		9727858

Inorganics

Total Alkalinity (Total as CaCO ₃)	mg/L	87	9736170	110	9736170	18	2.0	9736170
Dissolved Chloride (Cl ⁻)	mg/L	18	9739183	5.9	9733392	55	1.0	9739183
Colour	TCU	11	9739199	14	9733405	15	5.0	9739199
Nitrate + Nitrite (N)	mg/L	0.057	9739208	ND	9733420	0.17	0.050	9739208
Nitrite (N)	mg/L	ND	9739210	ND	9733421	ND	0.010	9739210
Nitrogen (Ammonia Nitrogen)	mg/L	ND	9745549	ND	9742818	ND	0.050	9745549
Total Organic Carbon (C)	mg/L	1.8	9731190	5.8	9733983	6.0	0.50	9733983
Orthophosphate (P)	mg/L	ND	9739205	ND	9733407	ND	0.010	9739205
pH	pH	7.97	9736146	8.21	9736146	7.19		9736146
Reactive Silica (SiO ₂)	mg/L	12	9739196	5.4	9733401	5.8	0.50	9739196
Dissolved Sulphate (SO ₄)	mg/L	5.3	9739194	4.5	9733398	13	2.0	9739194
Turbidity	NTU	0.70	9745569	1.9	9743079	0.58	0.10	9745569
Conductivity	uS/cm	230	9736165	250	9736165	260	1.0	9736165

Metals

Total Aluminum (Al)	ug/L	20	9728626	48	9728626	43	5.0	9728626
Total Antimony (Sb)	ug/L	ND	9728626	ND	9728626	ND	1.0	9728626
Total Arsenic (As)	ug/L	1.6	9728626	ND	9728626	ND	1.0	9728626
Total Barium (Ba)	ug/L	56	9728626	79	9728626	12	1.0	9728626
Total Beryllium (Be)	ug/L	ND	9728626	ND	9728626	ND	0.10	9728626
Total Bismuth (Bi)	ug/L	ND	9728626	ND	9728626	ND	2.0	9728626

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.



ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		AHBK84		AHBK85		AHBK86		
Sampling Date		2024/10/24 10:15		2024/10/24 10:25		2024/10/24 10:35		
COC Number		C#1018696--01-01		C#1018696--01-01		C#1018696--01-01		
Sample #		00297		00298		00299		
	UNITS	SW-6	QC Batch	SW-7	QC Batch	SW-8	RDL	QC Batch
Total Boron (B)	ug/L	ND	9728626	ND	9728626	ND	50	9728626
Total Cadmium (Cd)	ug/L	ND	9728626	ND	9728626	ND	0.010	9728626
Total Calcium (Ca)	ug/L	22000	9728626	23000	9728626	10000	100	9728626
Total Chromium (Cr)	ug/L	ND	9728626	ND	9728626	ND	1.0	9728626
Total Cobalt (Co)	ug/L	ND	9728626	ND	9728626	ND	0.40	9728626
Total Copper (Cu)	ug/L	0.60	9728626	1.0	9728626	ND	0.50	9728626
Total Iron (Fe)	ug/L	ND	9728626	100	9728626	62	50	9728626
Total Lead (Pb)	ug/L	ND	9728626	ND	9728626	ND	0.50	9728626
Total Magnesium (Mg)	ug/L	9400	9728626	19000	9728626	4600	100	9728626
Total Manganese (Mn)	ug/L	8.4	9728626	25	9728626	7.9	2.0	9728626
Total Molybdenum (Mo)	ug/L	ND	9728626	ND	9728626	ND	2.0	9728626
Total Nickel (Ni)	ug/L	ND	9728626	ND	9728626	ND	2.0	9728626
Total Phosphorus (P)	ug/L	ND	9728626	ND	9728626	ND	100	9728626
Total Potassium (K)	ug/L	1700	9728626	1000	9728626	570	100	9728626
Total Selenium (Se)	ug/L	ND	9728626	ND	9728626	ND	0.50	9728626
Total Silver (Ag)	ug/L	ND	9728626	ND	9728626	ND	0.10	9728626
Total Sodium (Na)	ug/L	12000	9728626	5300	9728626	31000	100	9728626
Total Strontium (Sr)	ug/L	100	9728626	68	9728626	32	2.0	9728626
Total Thallium (Tl)	ug/L	ND	9728626	ND	9728626	ND	0.10	9728626
Total Tin (Sn)	ug/L	ND	9728626	ND	9728626	ND	2.0	9728626
Total Titanium (Ti)	ug/L	ND	9728626	ND	9728626	ND	2.0	9728626
Total Uranium (U)	ug/L	0.72	9728626	0.29	9728626	ND	0.10	9728626
Total Vanadium (V)	ug/L	2.8	9728626	ND	9728626	ND	2.0	9728626
Total Zinc (Zn)	ug/L	ND	9728626	ND	9728626	ND	5.0	9728626

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.



ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		AHBK87		
Sampling Date		2024/10/24 10:50		
COC Number		C#1018696--01-01		
Sample #		00287		
	UNITS	SW-9	RDL	QC Batch

Calculated Parameters				
Anion Sum	me/L	29.8	N/A	9727852
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	630	1.0	9727848
Calculated TDS	mg/L	1800	1.0	9727859
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	32	1.0	9727848
Cation Sum	me/L	33.7	N/A	9727852
Hardness (CaCO ₃)	mg/L	370	1.0	9727850
Ion Balance (% Difference)	%	6.08	N/A	9727851
Langelier Index (@ 20C)	N/A	1.36		9727857
Langelier Index (@ 4C)	N/A	1.11		9727858
Nitrate (N)	mg/L	31	2.5	9727854
Saturation pH (@ 20C)	N/A	7.37		9727857
Saturation pH (@ 4C)	N/A	7.62		9727858

Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L	660	2.0	9736170
Dissolved Chloride (Cl ⁻)	mg/L	490	5.0	9739183
Colour	TCU	200	25	9739199
Nitrate + Nitrite (N)	mg/L	32	2.5	9739208
Nitrite (N)	mg/L	1.8	0.050	9739210
Nitrogen (Ammonia Nitrogen)	mg/L	6.3	0.25	9745549
Total Organic Carbon (C)	mg/L	72 (1)	5.0	9731203
Orthophosphate (P)	mg/L	ND	0.010	9739205
pH	pH	8.73		9736146
Reactive Silica (SiO ₂)	mg/L	8.9	0.50	9739196
Dissolved Sulphate (SO ₄)	mg/L	19	2.0	9739194
Turbidity	NTU	41	0.10	9745569
Conductivity	uS/cm	3300	1.0	9736165

Metals				
Total Aluminum (Al)	ug/L	36	5.0	9728656
Total Antimony (Sb)	ug/L	3.6	1.0	9728656
Total Arsenic (As)	ug/L	21	1.0	9728656
Total Barium (Ba)	ug/L	230	1.0	9728656

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.
(1) Elevated reporting limit due to sample matrix.



ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		AHBK87		
Sampling Date		2024/10/24 10:50		
COC Number		C#1018696--01-01		
Sample #		00287		
	UNITS	SW-9	RDL	QC Batch
Total Beryllium (Be)	ug/L	ND	0.10	9728656
Total Bismuth (Bi)	ug/L	ND	2.0	9728656
Total Boron (B)	ug/L	2000	50	9728656
Total Cadmium (Cd)	ug/L	0.026	0.010	9728656
Total Calcium (Ca)	ug/L	29000	100	9728656
Total Chromium (Cr)	ug/L	9.6	1.0	9728656
Total Cobalt (Co)	ug/L	5.9	0.40	9728656
Total Copper (Cu)	ug/L	3.8	0.50	9728656
Total Iron (Fe)	ug/L	130	50	9728656
Total Lead (Pb)	ug/L	ND	0.50	9728656
Total Magnesium (Mg)	ug/L	72000	100	9728656
Total Manganese (Mn)	ug/L	160	2.0	9728656
Total Molybdenum (Mo)	ug/L	ND	2.0	9728656
Total Nickel (Ni)	ug/L	45	2.0	9728656
Total Phosphorus (P)	ug/L	280	100	9728656
Total Potassium (K)	ug/L	190000	1000	9728656
Total Selenium (Se)	ug/L	ND	0.50	9728656
Total Silver (Ag)	ug/L	ND	0.10	9728656
Total Sodium (Na)	ug/L	480000	100	9728656
Total Strontium (Sr)	ug/L	330	2.0	9728656
Total Thallium (Tl)	ug/L	ND	0.10	9728656
Total Tin (Sn)	ug/L	ND	2.0	9728656
Total Titanium (Ti)	ug/L	ND	2.0	9728656
Total Uranium (U)	ug/L	0.19	0.10	9728656
Total Vanadium (V)	ug/L	12	2.0	9728656
Total Zinc (Zn)	ug/L	8.8	5.0	9728656
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.				

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		AHBK78	AHBK79	AHBK80		
Sampling Date		2024/10/24 09:00	2024/10/24 09:15	2024/10/24 09:25		
COC Number		C#1018696--01-01	C#1018696--01-01	C#1018696--01-01		
Sample #		00291	00292	00293		
	UNITS	847-SW-1	SW-1	SW-2	RDL	QC Batch

Inorganics						
Dissolved Organic Carbon (C)	mg/L	9.9	8.4	13	0.50	9734451
Phenols-4AAP	mg/L	ND	ND	ND	0.0010	9745681
Total Suspended Solids	mg/L	ND	ND	4.2	1.0	9736314
Sulphide	mg/L	ND	ND	ND	0.020	9736320

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas ID		AHBK81			AHBK82		
Sampling Date		2024/10/24 09:35			2024/10/24 09:50		
COC Number		C#1018696--01-01			C#1018696--01-01		
Sample #		00294			00295		
	UNITS	SW-3	RDL	QC Batch	SW-4	RDL	QC Batch

Inorganics							
Dissolved Organic Carbon (C)	mg/L	10 (1)	5.0	9733982	7.0	0.50	9734451
Phenols-4AAP	mg/L	ND	0.0010	9745681	ND	0.0010	9745681
Total Suspended Solids	mg/L	6.0	2.0	9736314	ND	1.1	9736314
Sulphide	mg/L	ND	0.020	9736320	ND	0.020	9736320

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

(1) Elevated reporting limit due to sample matrix.



RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		AHBK83			AHBK84		AHBK85		
Sampling Date		2024/10/24 10:00			2024/10/24 10:15		2024/10/24 10:25		
COC Number		C#1018696--01-01			C#1018696--01-01		C#1018696--01-01		
Sample #		00296			00297		00298		
	UNITS	SW-5	RDL	QC Batch	SW-6	QC Batch	SW-7	RDL	QC Batch

Inorganics									
Dissolved Organic Carbon (C)	mg/L	170 (1)	50	9733982	1.9	9734451	5.4	0.50	9733982
Phenols-4AAP	mg/L	0.0040	0.0020	9745681	ND	9745681	ND	0.0010	9745681
Total Suspended Solids	mg/L	54	5.0	9736314	ND	9736314	2.0	1.0	9737086
Sulphide	mg/L	0.097	0.020	9736320	ND	9736320	ND	0.020	9736320

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

(1) Elevated reporting limit due to sample matrix.

Bureau Veritas ID		AHBK86			AHBK87		
Sampling Date		2024/10/24 10:35			2024/10/24 10:50		
COC Number		C#1018696--01-01			C#1018696--01-01		
Sample #		00299			00287		
	UNITS	SW-8	RDL	QC Batch	SW-9	RDL	QC Batch

Inorganics							
Dissolved Organic Carbon (C)	mg/L	5.6	0.50	9733982	67 (1)	5.0	9733982
Phenols-4AAP	mg/L	ND	0.0010	9745681	0.0010	0.0010	9745681
Total Suspended Solids	mg/L	15	1.0	9737086	19	2.0	9737086
Sulphide	mg/L	ND	0.020	9733645	ND	0.020	9736320

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

(1) Elevated reporting limit due to sample matrix.

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

Bureau Veritas ID		AHBK78	AHBK79	AHBK80	AHBK81		
Sampling Date		2024/10/24 09:00	2024/10/24 09:15	2024/10/24 09:25	2024/10/24 09:35		
COC Number		C#1018696--01-01	C#1018696--01-01	C#1018696--01-01	C#1018696--01-01		
Sample #		00291	00292	00293	00294		
	UNITS	847-SW-1	SW-1	SW-2	SW-3	RDL	QC Batch

Metals

Total Mercury (Hg)	ug/L	ND	ND	ND	ND	0.013	9743589
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RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas ID		AHBK82	AHBK83	AHBK84		AHBK85		
Sampling Date		2024/10/24 09:50	2024/10/24 10:00	2024/10/24 10:15		2024/10/24 10:25		
COC Number		C#1018696--01-01	C#1018696--01-01	C#1018696--01-01		C#1018696--01-01		
Sample #		00295	00296	00297		00298		
	UNITS	SW-4	SW-5	SW-6	QC Batch	SW-7	RDL	QC Batch

Metals

Total Mercury (Hg)	ug/L	ND	ND	ND	9743589	ND	0.013	9743608
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RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas ID		AHBK86	AHBK87		
Sampling Date		2024/10/24 10:35	2024/10/24 10:50		
COC Number		C#1018696--01-01	C#1018696--01-01		
Sample #		00299	00287		
	UNITS	SW-8	SW-9	RDL	QC Batch

Metals

Total Mercury (Hg)	ug/L	ND	ND	0.013	9743608
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RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.



GENERAL COMMENTS

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

Package 1	16.0°C
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Average temperature upon receipt >10°C.

Sample AHBK79 [SW-1] : RCap Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

Sample AHBK80 [SW-2] : Poor RCap Ion Balance due to sample matrix. Anion sum does not include contribution from Total Organic Carbon.

Sample AHBK82 [SW-4] : Total Suspended Solids: Used all of the sample provided, DL raised.
RCap Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

Sample AHBK85 [SW-7] : Poor RCap Ion Balance due to sample matrix.

Sample AHBK87 [SW-9] : Poor RCap Ion Balance due to sample matrix. Anion sum does not include contribution from Total Organic Carbon.

Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9728581	MTZ	Matrix Spike	Total Aluminum (Al)	2024/10/29		99	%	80 - 120
			Total Antimony (Sb)	2024/10/29		102	%	80 - 120
			Total Arsenic (As)	2024/10/29		99	%	80 - 120
			Total Barium (Ba)	2024/10/29		100	%	80 - 120
			Total Beryllium (Be)	2024/10/29		101	%	80 - 120
			Total Bismuth (Bi)	2024/10/29		99	%	80 - 120
			Total Boron (B)	2024/10/29		100	%	80 - 120
			Total Cadmium (Cd)	2024/10/29		99	%	80 - 120
			Total Calcium (Ca)	2024/10/29		100	%	80 - 120
			Total Chromium (Cr)	2024/10/29		98	%	80 - 120
			Total Cobalt (Co)	2024/10/29		97	%	80 - 120
			Total Copper (Cu)	2024/10/29		NC	%	80 - 120
			Total Iron (Fe)	2024/10/29		101	%	80 - 120
			Total Lead (Pb)	2024/10/29		97	%	80 - 120
			Total Magnesium (Mg)	2024/10/29		104	%	80 - 120
			Total Manganese (Mn)	2024/10/29		98	%	80 - 120
			Total Molybdenum (Mo)	2024/10/29		103	%	80 - 120
			Total Nickel (Ni)	2024/10/29		97	%	80 - 120
			Total Phosphorus (P)	2024/10/29		103	%	80 - 120
			Total Potassium (K)	2024/10/29		102	%	80 - 120
			Total Selenium (Se)	2024/10/29		100	%	80 - 120
			Total Silver (Ag)	2024/10/29		98	%	80 - 120
			Total Sodium (Na)	2024/10/29		103	%	80 - 120
			Total Strontium (Sr)	2024/10/29		96	%	80 - 120
			Total Thallium (Tl)	2024/10/29		100	%	80 - 120
			Total Tin (Sn)	2024/10/29		97	%	80 - 120
			Total Titanium (Ti)	2024/10/29		99	%	80 - 120
			Total Uranium (U)	2024/10/29		104	%	80 - 120
			Total Vanadium (V)	2024/10/29		100	%	80 - 120
			Total Zinc (Zn)	2024/10/29		99	%	80 - 120
9728581	MTZ	Spiked Blank	Total Aluminum (Al)	2024/10/29		99	%	80 - 120
			Total Antimony (Sb)	2024/10/29		100	%	80 - 120
			Total Arsenic (As)	2024/10/29		99	%	80 - 120
			Total Barium (Ba)	2024/10/29		99	%	80 - 120
			Total Beryllium (Be)	2024/10/29		99	%	80 - 120
			Total Bismuth (Bi)	2024/10/29		100	%	80 - 120
			Total Boron (B)	2024/10/29		99	%	80 - 120
			Total Cadmium (Cd)	2024/10/29		99	%	80 - 120
			Total Calcium (Ca)	2024/10/29		99	%	80 - 120
			Total Chromium (Cr)	2024/10/29		98	%	80 - 120
			Total Cobalt (Co)	2024/10/29		97	%	80 - 120
			Total Copper (Cu)	2024/10/29		98	%	80 - 120
			Total Iron (Fe)	2024/10/29		102	%	80 - 120
			Total Lead (Pb)	2024/10/29		98	%	80 - 120
			Total Magnesium (Mg)	2024/10/29		103	%	80 - 120
			Total Manganese (Mn)	2024/10/29		96	%	80 - 120
			Total Molybdenum (Mo)	2024/10/29		105	%	80 - 120
			Total Nickel (Ni)	2024/10/29		99	%	80 - 120
			Total Phosphorus (P)	2024/10/29		103	%	80 - 120
			Total Potassium (K)	2024/10/29		102	%	80 - 120
			Total Selenium (Se)	2024/10/29		99	%	80 - 120
			Total Silver (Ag)	2024/10/29		98	%	80 - 120
			Total Sodium (Na)	2024/10/29		101	%	80 - 120
			Total Strontium (Sr)	2024/10/29		96	%	80 - 120
			Total Thallium (Tl)	2024/10/29		100	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9728581	MTZ	Method Blank	Total Tin (Sn)	2024/10/29		103	%	80 - 120
			Total Titanium (Ti)	2024/10/29		99	%	80 - 120
			Total Uranium (U)	2024/10/29		105	%	80 - 120
			Total Vanadium (V)	2024/10/29		100	%	80 - 120
			Total Zinc (Zn)	2024/10/29		97	%	80 - 120
			Total Aluminum (Al)	2024/10/29	ND, RDL=5.0		ug/L	
			Total Antimony (Sb)	2024/10/29	ND, RDL=1.0		ug/L	
			Total Arsenic (As)	2024/10/29	ND, RDL=1.0		ug/L	
			Total Barium (Ba)	2024/10/29	ND, RDL=1.0		ug/L	
			Total Beryllium (Be)	2024/10/29	ND, RDL=0.10		ug/L	
			Total Bismuth (Bi)	2024/10/29	ND, RDL=2.0		ug/L	
			Total Boron (B)	2024/10/29	ND, RDL=50		ug/L	
			Total Cadmium (Cd)	2024/10/29	ND, RDL=0.010		ug/L	
			Total Calcium (Ca)	2024/10/29	ND, RDL=100		ug/L	
			Total Chromium (Cr)	2024/10/29	ND, RDL=1.0		ug/L	
			Total Cobalt (Co)	2024/10/29	ND, RDL=0.40		ug/L	
			Total Copper (Cu)	2024/10/29	ND, RDL=0.50		ug/L	
			Total Iron (Fe)	2024/10/29	ND, RDL=50		ug/L	
			Total Lead (Pb)	2024/10/29	ND, RDL=0.50		ug/L	
			Total Magnesium (Mg)	2024/10/29	ND, RDL=100		ug/L	
			Total Manganese (Mn)	2024/10/29	ND, RDL=2.0		ug/L	
			Total Molybdenum (Mo)	2024/10/29	ND, RDL=2.0		ug/L	
			Total Nickel (Ni)	2024/10/29	ND, RDL=2.0		ug/L	
			Total Phosphorus (P)	2024/10/29	ND, RDL=100		ug/L	
			Total Potassium (K)	2024/10/29	ND, RDL=100		ug/L	
			Total Selenium (Se)	2024/10/29	ND, RDL=0.50		ug/L	
			Total Silver (Ag)	2024/10/29	ND, RDL=0.10		ug/L	
			Total Sodium (Na)	2024/10/29	ND, RDL=100		ug/L	
			Total Strontium (Sr)	2024/10/29	ND, RDL=2.0		ug/L	
			Total Thallium (Tl)	2024/10/29	ND, RDL=0.10		ug/L	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9728581	MTZ	RPD	Total Tin (Sn)	2024/10/29	ND, RDL=2.0		ug/L	
			Total Titanium (Ti)	2024/10/29	ND, RDL=2.0		ug/L	
			Total Uranium (U)	2024/10/29	ND, RDL=0.10		ug/L	
			Total Vanadium (V)	2024/10/29	ND, RDL=2.0		ug/L	
			Total Zinc (Zn)	2024/10/29	ND, RDL=5.0		ug/L	
			Total Antimony (Sb)	2024/10/29	NC		%	20
			Total Barium (Ba)	2024/10/29	5.7		%	20
			Total Cadmium (Cd)	2024/10/29	9.2		%	20
			Total Calcium (Ca)	2024/10/29	6.4		%	20
			Total Chromium (Cr)	2024/10/29	NC		%	20
			Total Copper (Cu)	2024/10/29	2.8		%	20
			Total Iron (Fe)	2024/10/29	NC		%	20
			Total Lead (Pb)	2024/10/29	1.8		%	20
			Total Magnesium (Mg)	2024/10/29	4.8		%	20
			Total Manganese (Mn)	2024/10/29	4.9		%	20
			Total Potassium (K)	2024/10/29	4.4		%	20
			Total Selenium (Se)	2024/10/29	NC		%	20
			Total Sodium (Na)	2024/10/29	4.3		%	20
			Total Uranium (U)	2024/10/29	NC		%	20
			Total Zinc (Zn)	2024/10/29	4.4		%	20
9728626	MTZ	Matrix Spike	Total Aluminum (Al)	2024/10/30		97	%	80 - 120
			Total Antimony (Sb)	2024/10/30		101	%	80 - 120
			Total Arsenic (As)	2024/10/30		96	%	80 - 120
			Total Barium (Ba)	2024/10/30		93	%	80 - 120
			Total Beryllium (Be)	2024/10/30		98	%	80 - 120
			Total Bismuth (Bi)	2024/10/30		90	%	80 - 120
			Total Boron (B)	2024/10/30		97	%	80 - 120
			Total Cadmium (Cd)	2024/10/30		95	%	80 - 120
			Total Calcium (Ca)	2024/10/30		NC	%	80 - 120
			Total Chromium (Cr)	2024/10/30		93	%	80 - 120
			Total Cobalt (Co)	2024/10/30		90	%	80 - 120
			Total Copper (Cu)	2024/10/30		85	%	80 - 120
			Total Iron (Fe)	2024/10/30		NC	%	80 - 120
			Total Lead (Pb)	2024/10/30		90	%	80 - 120
			Total Magnesium (Mg)	2024/10/30		NC	%	80 - 120
			Total Manganese (Mn)	2024/10/30		NC	%	80 - 120
			Total Molybdenum (Mo)	2024/10/30		107	%	80 - 120
			Total Nickel (Ni)	2024/10/30		91	%	80 - 120
			Total Phosphorus (P)	2024/10/30		101	%	80 - 120
			Total Potassium (K)	2024/10/30		NC	%	80 - 120
			Total Selenium (Se)	2024/10/30		98	%	80 - 120
			Total Silver (Ag)	2024/10/30		93	%	80 - 120
			Total Sodium (Na)	2024/10/30		NC	%	80 - 120
			Total Strontium (Sr)	2024/10/30		NC	%	80 - 120
			Total Thallium (Tl)	2024/10/30		95	%	80 - 120
			Total Tin (Sn)	2024/10/30		104	%	80 - 120
			Total Titanium (Ti)	2024/10/30		96	%	80 - 120
			Total Uranium (U)	2024/10/30		101	%	80 - 120
			Total Vanadium (V)	2024/10/30		99	%	80 - 120
			Total Zinc (Zn)	2024/10/30		89	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9728626	MTZ	Spiked Blank		Total Aluminum (Al)	2024/10/29		104	%	80 - 120
				Total Antimony (Sb)	2024/10/29		99	%	80 - 120
				Total Arsenic (As)	2024/10/29		96	%	80 - 120
				Total Barium (Ba)	2024/10/29		93	%	80 - 120
				Total Beryllium (Be)	2024/10/29		98	%	80 - 120
				Total Bismuth (Bi)	2024/10/29		98	%	80 - 120
				Total Boron (B)	2024/10/29		96	%	80 - 120
				Total Cadmium (Cd)	2024/10/29		98	%	80 - 120
				Total Calcium (Ca)	2024/10/29		101	%	80 - 120
				Total Chromium (Cr)	2024/10/29		97	%	80 - 120
				Total Cobalt (Co)	2024/10/29		97	%	80 - 120
				Total Copper (Cu)	2024/10/29		95	%	80 - 120
				Total Iron (Fe)	2024/10/29		104	%	80 - 120
				Total Lead (Pb)	2024/10/29		95	%	80 - 120
				Total Magnesium (Mg)	2024/10/29		105	%	80 - 120
				Total Manganese (Mn)	2024/10/29		97	%	80 - 120
				Total Molybdenum (Mo)	2024/10/29		101	%	80 - 120
				Total Nickel (Ni)	2024/10/29		99	%	80 - 120
				Total Phosphorus (P)	2024/10/29		105	%	80 - 120
				Total Potassium (K)	2024/10/29		97	%	80 - 120
				Total Selenium (Se)	2024/10/29		98	%	80 - 120
				Total Silver (Ag)	2024/10/29		97	%	80 - 120
				Total Sodium (Na)	2024/10/29		103	%	80 - 120
				Total Strontium (Sr)	2024/10/29		95	%	80 - 120
				Total Thallium (Tl)	2024/10/29		99	%	80 - 120
				Total Tin (Sn)	2024/10/29		101	%	80 - 120
				Total Titanium (Ti)	2024/10/29		97	%	80 - 120
				Total Uranium (U)	2024/10/29		102	%	80 - 120
				Total Vanadium (V)	2024/10/29		100	%	80 - 120
				Total Zinc (Zn)	2024/10/29		96	%	80 - 120
9728626	MTZ	Method Blank		Total Aluminum (Al)	2024/10/29	ND, RDL=5.0		ug/L	
				Total Antimony (Sb)	2024/10/29	ND, RDL=1.0		ug/L	
				Total Arsenic (As)	2024/10/29	ND, RDL=1.0		ug/L	
				Total Barium (Ba)	2024/10/29	ND, RDL=1.0		ug/L	
				Total Beryllium (Be)	2024/10/29	ND, RDL=0.10		ug/L	
				Total Bismuth (Bi)	2024/10/29	ND, RDL=2.0		ug/L	
				Total Boron (B)	2024/10/29	ND, RDL=50		ug/L	
				Total Cadmium (Cd)	2024/10/29	ND, RDL=0.010		ug/L	
				Total Calcium (Ca)	2024/10/29	ND, RDL=100		ug/L	
				Total Chromium (Cr)	2024/10/29	ND, RDL=1.0		ug/L	
				Total Cobalt (Co)	2024/10/29	ND, RDL=0.40		ug/L	
				Total Copper (Cu)	2024/10/29	ND, RDL=0.50		ug/L	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Iron (Fe)	2024/10/29	ND, RDL=50		ug/L	
			Total Lead (Pb)	2024/10/29	ND, RDL=0.50		ug/L	
			Total Magnesium (Mg)	2024/10/29	ND, RDL=100		ug/L	
			Total Manganese (Mn)	2024/10/29	ND, RDL=2.0		ug/L	
			Total Molybdenum (Mo)	2024/10/29	ND, RDL=2.0		ug/L	
			Total Nickel (Ni)	2024/10/29	ND, RDL=2.0		ug/L	
			Total Phosphorus (P)	2024/10/29	ND, RDL=100		ug/L	
			Total Potassium (K)	2024/10/29	ND, RDL=100		ug/L	
			Total Selenium (Se)	2024/10/29	ND, RDL=0.50		ug/L	
			Total Silver (Ag)	2024/10/29	ND, RDL=0.10		ug/L	
			Total Sodium (Na)	2024/10/29	ND, RDL=100		ug/L	
			Total Strontium (Sr)	2024/10/29	ND, RDL=2.0		ug/L	
			Total Thallium (Tl)	2024/10/29	ND, RDL=0.10		ug/L	
			Total Tin (Sn)	2024/10/29	ND, RDL=2.0		ug/L	
			Total Titanium (Ti)	2024/10/29	ND, RDL=2.0		ug/L	
			Total Uranium (U)	2024/10/29	ND, RDL=0.10		ug/L	
			Total Vanadium (V)	2024/10/29	ND, RDL=2.0		ug/L	
			Total Zinc (Zn)	2024/10/29	ND, RDL=5.0		ug/L	
9728626	MTZ	RPD	Total Manganese (Mn)	2024/10/29	3.7		%	20
9728656	MOA	Matrix Spike	Total Aluminum (Al)	2024/10/29		101	%	80 - 120
			Total Antimony (Sb)	2024/10/29		98	%	80 - 120
			Total Arsenic (As)	2024/10/29		95	%	80 - 120
			Total Barium (Ba)	2024/10/29		93	%	80 - 120
			Total Beryllium (Be)	2024/10/29		95	%	80 - 120
			Total Bismuth (Bi)	2024/10/29		98	%	80 - 120
			Total Boron (B)	2024/10/29		93	%	80 - 120
			Total Cadmium (Cd)	2024/10/29		96	%	80 - 120
			Total Calcium (Ca)	2024/10/29		97	%	80 - 120
			Total Chromium (Cr)	2024/10/29		95	%	80 - 120
			Total Cobalt (Co)	2024/10/29		95	%	80 - 120
			Total Copper (Cu)	2024/10/29		92	%	80 - 120
			Total Iron (Fe)	2024/10/29		102	%	80 - 120
			Total Lead (Pb)	2024/10/29		94	%	80 - 120
			Total Magnesium (Mg)	2024/10/29		105	%	80 - 120
			Total Manganese (Mn)	2024/10/29		95	%	80 - 120
			Total Molybdenum (Mo)	2024/10/29		101	%	80 - 120
			Total Nickel (Ni)	2024/10/29		96	%	80 - 120
			Total Phosphorus (P)	2024/10/29		104	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9728656	MOA	Spiked Blank		Total Potassium (K)	2024/10/29		94	%	80 - 120
				Total Selenium (Se)	2024/10/29		97	%	80 - 120
				Total Silver (Ag)	2024/10/29		96	%	80 - 120
				Total Sodium (Na)	2024/10/29		99	%	80 - 120
				Total Strontium (Sr)	2024/10/29		91	%	80 - 120
				Total Thallium (Tl)	2024/10/29		99	%	80 - 120
				Total Tin (Sn)	2024/10/29		100	%	80 - 120
				Total Titanium (Ti)	2024/10/29		93	%	80 - 120
				Total Uranium (U)	2024/10/29		103	%	80 - 120
				Total Vanadium (V)	2024/10/29		97	%	80 - 120
				Total Aluminum (Al)	2024/10/29		104	%	80 - 120
				Total Antimony (Sb)	2024/10/29		95	%	80 - 120
				Total Arsenic (As)	2024/10/29		98	%	80 - 120
				Total Barium (Ba)	2024/10/29		93	%	80 - 120
				Total Beryllium (Be)	2024/10/29		98	%	80 - 120
				Total Bismuth (Bi)	2024/10/29		99	%	80 - 120
				Total Boron (B)	2024/10/29		96	%	80 - 120
				Total Cadmium (Cd)	2024/10/29		97	%	80 - 120
				Total Calcium (Ca)	2024/10/29		99	%	80 - 120
				Total Chromium (Cr)	2024/10/29		98	%	80 - 120
				Total Cobalt (Co)	2024/10/29		97	%	80 - 120
				Total Copper (Cu)	2024/10/29		96	%	80 - 120
				Total Iron (Fe)	2024/10/29		106	%	80 - 120
				Total Lead (Pb)	2024/10/29		96	%	80 - 120
				Total Magnesium (Mg)	2024/10/29		110	%	80 - 120
				Total Manganese (Mn)	2024/10/29		99	%	80 - 120
				Total Molybdenum (Mo)	2024/10/29		101	%	80 - 120
				Total Nickel (Ni)	2024/10/29		100	%	80 - 120
				Total Phosphorus (P)	2024/10/29		106	%	80 - 120
				Total Potassium (K)	2024/10/29		96	%	80 - 120
				Total Selenium (Se)	2024/10/29		97	%	80 - 120
				Total Silver (Ag)	2024/10/29		96	%	80 - 120
				Total Sodium (Na)	2024/10/29		106	%	80 - 120
				Total Strontium (Sr)	2024/10/29		97	%	80 - 120
				Total Thallium (Tl)	2024/10/29		100	%	80 - 120
				Total Tin (Sn)	2024/10/29		99	%	80 - 120
				Total Titanium (Ti)	2024/10/29		97	%	80 - 120
				Total Uranium (U)	2024/10/29		105	%	80 - 120
				Total Vanadium (V)	2024/10/29		100	%	80 - 120
				Total Zinc (Zn)	2024/10/29		97	%	80 - 120
9728656	MOA	Method Blank		Total Aluminum (Al)	2024/10/29	ND, RDL=5.0		ug/L	
				Total Antimony (Sb)	2024/10/29	ND, RDL=1.0		ug/L	
				Total Arsenic (As)	2024/10/29	ND, RDL=1.0		ug/L	
				Total Barium (Ba)	2024/10/29	ND, RDL=1.0		ug/L	
				Total Beryllium (Be)	2024/10/29	ND, RDL=0.10		ug/L	
				Total Bismuth (Bi)	2024/10/29	ND, RDL=2.0		ug/L	
				Total Boron (B)	2024/10/29	ND, RDL=50		ug/L	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Cadmium (Cd)	2024/10/29	ND, RDL=0.010		ug/L	
			Total Calcium (Ca)	2024/10/29	ND, RDL=100		ug/L	
			Total Chromium (Cr)	2024/10/29	ND, RDL=1.0		ug/L	
			Total Cobalt (Co)	2024/10/29	ND, RDL=0.40		ug/L	
			Total Copper (Cu)	2024/10/29	ND, RDL=0.50		ug/L	
			Total Iron (Fe)	2024/10/29	ND, RDL=50		ug/L	
			Total Lead (Pb)	2024/10/29	ND, RDL=0.50		ug/L	
			Total Magnesium (Mg)	2024/10/29	ND, RDL=100		ug/L	
			Total Manganese (Mn)	2024/10/29	ND, RDL=2.0		ug/L	
			Total Molybdenum (Mo)	2024/10/29	ND, RDL=2.0		ug/L	
			Total Nickel (Ni)	2024/10/29	ND, RDL=2.0		ug/L	
			Total Phosphorus (P)	2024/10/29	ND, RDL=100		ug/L	
			Total Potassium (K)	2024/10/29	ND, RDL=100		ug/L	
			Total Selenium (Se)	2024/10/29	ND, RDL=0.50		ug/L	
			Total Silver (Ag)	2024/10/29	ND, RDL=0.10		ug/L	
			Total Sodium (Na)	2024/10/29	ND, RDL=100		ug/L	
			Total Strontium (Sr)	2024/10/29	ND, RDL=2.0		ug/L	
			Total Thallium (Tl)	2024/10/29	ND, RDL=0.10		ug/L	
			Total Tin (Sn)	2024/10/29	ND, RDL=2.0		ug/L	
			Total Titanium (Ti)	2024/10/29	ND, RDL=2.0		ug/L	
			Total Uranium (U)	2024/10/29	ND, RDL=0.10		ug/L	
			Total Vanadium (V)	2024/10/29	ND, RDL=2.0		ug/L	
			Total Zinc (Zn)	2024/10/29	ND, RDL=5.0		ug/L	
9728656	MOA	RPD	Total Aluminum (Al)	2024/10/29	3.9		%	20
			Total Antimony (Sb)	2024/10/29	NC		%	20
			Total Arsenic (As)	2024/10/29	1.7		%	20
			Total Barium (Ba)	2024/10/29	0.46		%	20
			Total Boron (B)	2024/10/29	NC		%	20
			Total Cadmium (Cd)	2024/10/29	NC		%	20
			Total Calcium (Ca)	2024/10/29	0.44		%	20
			Total Chromium (Cr)	2024/10/29	NC		%	20
			Total Copper (Cu)	2024/10/29	5.3		%	20
			Total Iron (Fe)	2024/10/29	NC		%	20



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Lead (Pb)	2024/10/29	NC		%	20
			Total Magnesium (Mg)	2024/10/29	0.35		%	20
			Total Manganese (Mn)	2024/10/29	NC		%	20
			Total Potassium (K)	2024/10/29	0.75		%	20
			Total Selenium (Se)	2024/10/29	NC		%	20
			Total Sodium (Na)	2024/10/29	0.81		%	20
			Total Strontium (Sr)	2024/10/29	1.1		%	20
			Total Uranium (U)	2024/10/29	0.67		%	20
			Total Zinc (Zn)	2024/10/29	NC		%	20
9731190	ACK	Matrix Spike [AHBK78-03]	Total Organic Carbon (C)	2024/10/29		100	%	85 - 115
9731190	ACK	Spiked Blank	Total Organic Carbon (C)	2024/10/29		101	%	80 - 120
9731190	ACK	Method Blank	Total Organic Carbon (C)	2024/10/29	ND, RDL=0.50		mg/L	
9731190	ACK	RPD [AHBK78-03]	Total Organic Carbon (C)	2024/10/29	0.69		%	15
9731203	ACK	Matrix Spike	Total Organic Carbon (C)	2024/10/30		101	%	85 - 115
9731203	ACK	Spiked Blank	Total Organic Carbon (C)	2024/10/30		101	%	80 - 120
9731203	ACK	Method Blank	Total Organic Carbon (C)	2024/10/30	ND, RDL=0.50		mg/L	
9731203	ACK	RPD	Total Organic Carbon (C)	2024/10/30	NC		%	15
9733392	EMT	Matrix Spike	Dissolved Chloride (Cl-)	2024/10/31		92	%	80 - 120
9733392	EMT	Spiked Blank	Dissolved Chloride (Cl-)	2024/10/31		93	%	80 - 120
9733392	EMT	Method Blank	Dissolved Chloride (Cl-)	2024/10/31	ND, RDL=1.0		mg/L	
9733392	EMT	RPD	Dissolved Chloride (Cl-)	2024/10/31	1.2		%	20
9733398	EMT	Matrix Spike	Dissolved Sulphate (SO4)	2024/10/31		96	%	80 - 120
9733398	EMT	Spiked Blank	Dissolved Sulphate (SO4)	2024/10/31		93	%	80 - 120
9733398	EMT	Method Blank	Dissolved Sulphate (SO4)	2024/10/31	ND, RDL=2.0		mg/L	
9733398	EMT	RPD	Dissolved Sulphate (SO4)	2024/10/31	2.2		%	20
9733401	EMT	Matrix Spike	Reactive Silica (SiO2)	2024/10/31		84	%	80 - 120
9733401	EMT	Spiked Blank	Reactive Silica (SiO2)	2024/10/31		89	%	80 - 120
9733401	EMT	Method Blank	Reactive Silica (SiO2)	2024/10/31	ND, RDL=0.50		mg/L	
9733401	EMT	RPD	Reactive Silica (SiO2)	2024/10/31	2.1		%	20
9733405	EMT	Spiked Blank	Colour	2024/10/31		88	%	80 - 120
9733405	EMT	Method Blank	Colour	2024/10/31	ND, RDL=5.0		TCU	
9733405	EMT	RPD	Colour	2024/10/31	NC		%	20
9733407	EMT	Matrix Spike	Orthophosphate (P)	2024/10/31		85	%	80 - 120
9733407	EMT	Spiked Blank	Orthophosphate (P)	2024/10/31		88	%	80 - 120
9733407	EMT	Method Blank	Orthophosphate (P)	2024/10/31	ND, RDL=0.010		mg/L	
9733407	EMT	RPD	Orthophosphate (P)	2024/10/31	14		%	20
9733420	EMT	Matrix Spike	Nitrate + Nitrite (N)	2024/10/31		NC	%	80 - 120
9733420	EMT	Spiked Blank	Nitrate + Nitrite (N)	2024/10/31		96	%	80 - 120
9733420	EMT	Method Blank	Nitrate + Nitrite (N)	2024/10/31	ND, RDL=0.050		mg/L	
9733420	EMT	RPD	Nitrate + Nitrite (N)	2024/10/31	0.88		%	20
9733421	EMT	Matrix Spike	Nitrite (N)	2024/10/31		107	%	80 - 120
9733421	EMT	Spiked Blank	Nitrite (N)	2024/10/31		102	%	80 - 120
9733421	EMT	Method Blank	Nitrite (N)	2024/10/31	ND, RDL=0.010		mg/L	
9733421	EMT	RPD	Nitrite (N)	2024/10/31	NC		%	20
9733645	SRT	Matrix Spike	Sulphide	2024/10/30		96	%	80 - 120
9733645	SRT	Spiked Blank	Sulphide	2024/10/30		99	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9733645	SRT	Method Blank	Sulphide	2024/10/30	ND, RDL=0.020		mg/L	
9733645	SRT	RPD	Sulphide	2024/10/30	NC		%	20
9733982	ACK	Matrix Spike	Dissolved Organic Carbon (C)	2024/10/30		101	%	85 - 115
9733982	ACK	Spiked Blank	Dissolved Organic Carbon (C)	2024/10/30		101	%	80 - 120
9733982	ACK	Method Blank	Dissolved Organic Carbon (C)	2024/10/30	ND, RDL=0.50		mg/L	
9733982	ACK	RPD	Dissolved Organic Carbon (C)	2024/10/30	1.1		%	15
9733983	ACK	Matrix Spike	Total Organic Carbon (C)	2024/10/30		100	%	85 - 115
9733983	ACK	Spiked Blank	Total Organic Carbon (C)	2024/10/30		101	%	80 - 120
9733983	ACK	Method Blank	Total Organic Carbon (C)	2024/10/30	ND, RDL=0.50		mg/L	
9733983	ACK	RPD	Total Organic Carbon (C)	2024/10/30	1.2		%	15
9734451	ACK	Matrix Spike	Dissolved Organic Carbon (C)	2024/10/31		101	%	85 - 115
9734451	ACK	Spiked Blank	Dissolved Organic Carbon (C)	2024/10/31		99	%	80 - 120
9734451	ACK	Method Blank	Dissolved Organic Carbon (C)	2024/10/31	ND, RDL=0.50		mg/L	
9734451	ACK	RPD	Dissolved Organic Carbon (C)	2024/10/31	0.49		%	15
9736146	S6S	Spiked Blank	pH	2024/10/31		99	%	97 - 103
9736146	S6S	RPD [AHBK84-02]	pH	2024/10/31	0.74		%	N/A
9736165	S6S	Spiked Blank	Conductivity	2024/10/31		93	%	80 - 120
9736165	S6S	Method Blank	Conductivity	2024/10/31	ND, RDL=1.0		uS/cm	
9736165	S6S	RPD [AHBK84-02]	Conductivity	2024/10/31	1.3		%	10
9736170	S6S	Spiked Blank	Total Alkalinity (Total as CaCO3)	2024/10/31		91	%	80 - 120
9736170	S6S	Method Blank	Total Alkalinity (Total as CaCO3)	2024/10/31	ND, RDL=2.0		mg/L	
9736170	S6S	RPD [AHBK84-02]	Total Alkalinity (Total as CaCO3)	2024/10/31	6.5		%	20
9736314	DME	QC Standard	Total Suspended Solids	2024/11/04		97	%	80 - 120
9736314	DME	Method Blank	Total Suspended Solids	2024/11/04	ND, RDL=1.0		mg/L	
9736314	DME	RPD	Total Suspended Solids	2024/11/04	7.6		%	20
9736320	SRT	Matrix Spike [AHBK85-05]	Sulphide	2024/10/31		97	%	80 - 120
9736320	SRT	Spiked Blank	Sulphide	2024/10/31		93	%	80 - 120
9736320	SRT	Method Blank	Sulphide	2024/10/31	ND, RDL=0.020		mg/L	
9736320	SRT	RPD [AHBK85-05]	Sulphide	2024/10/31	NC		%	20
9737086	RD4	QC Standard	Total Suspended Solids	2024/11/01		97	%	80 - 120
9737086	RD4	Method Blank	Total Suspended Solids	2024/11/01	ND, RDL=1.0		mg/L	
9737086	RD4	RPD [AHBK87-01]	Total Suspended Solids	2024/11/01	4.3		%	20
9739159	EMT	Matrix Spike	Dissolved Chloride (Cl-)	2024/11/04		NC	%	80 - 120
9739159	EMT	Spiked Blank	Dissolved Chloride (Cl-)	2024/11/04		96	%	80 - 120
9739159	EMT	Method Blank	Dissolved Chloride (Cl-)	2024/11/04	ND, RDL=1.0		mg/L	
9739159	EMT	RPD	Dissolved Chloride (Cl-)	2024/11/04	0.17		%	20
9739167	EMT	Matrix Spike	Dissolved Sulphate (SO4)	2024/11/04		101	%	80 - 120
9739167	EMT	Spiked Blank	Dissolved Sulphate (SO4)	2024/11/04		100	%	80 - 120
9739167	EMT	Method Blank	Dissolved Sulphate (SO4)	2024/11/04	ND, RDL=2.0		mg/L	
9739167	EMT	RPD	Dissolved Sulphate (SO4)	2024/11/04	2.9		%	20
9739174	EMT	Matrix Spike	Reactive Silica (SiO2)	2024/11/04		NC	%	80 - 120
9739174	EMT	Spiked Blank	Reactive Silica (SiO2)	2024/11/04		94	%	80 - 120
9739174	EMT	Method Blank	Reactive Silica (SiO2)	2024/11/04	ND, RDL=0.50		mg/L	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9739174	EMT	RPD	Reactive Silica (SiO ₂)	2024/11/04	0.15		%	20
9739177	EMT	Spiked Blank	Colour	2024/11/04		109	%	80 - 120
9739177	EMT	Method Blank	Colour	2024/11/04	ND, RDL=5.0		TCU	
9739177	EMT	RPD	Colour	2024/11/04	NC		%	20
9739178	EMT	Matrix Spike	Orthophosphate (P)	2024/11/04		88	%	80 - 120
9739178	EMT	Spiked Blank	Orthophosphate (P)	2024/11/04		90	%	80 - 120
9739178	EMT	Method Blank	Orthophosphate (P)	2024/11/04	ND, RDL=0.010		mg/L	
9739178	EMT	RPD	Orthophosphate (P)	2024/11/04	NC		%	20
9739179	EMT	Matrix Spike	Nitrate + Nitrite (N)	2024/11/04		87	%	80 - 120
9739179	EMT	Spiked Blank	Nitrate + Nitrite (N)	2024/11/04		94	%	80 - 120
9739179	EMT	Method Blank	Nitrate + Nitrite (N)	2024/11/04	ND, RDL=0.050		mg/L	
9739179	EMT	RPD	Nitrate + Nitrite (N)	2024/11/04	NC		%	20
9739182	EMT	Matrix Spike	Nitrite (N)	2024/11/04		104	%	80 - 120
9739182	EMT	Spiked Blank	Nitrite (N)	2024/11/04		103	%	80 - 120
9739182	EMT	Method Blank	Nitrite (N)	2024/11/04	ND, RDL=0.010		mg/L	
9739182	EMT	RPD	Nitrite (N)	2024/11/04	5.4		%	20
9739183	EMT	Matrix Spike	Dissolved Chloride (Cl ⁻)	2024/11/04		92	%	80 - 120
9739183	EMT	Spiked Blank	Dissolved Chloride (Cl ⁻)	2024/11/04		95	%	80 - 120
9739183	EMT	Method Blank	Dissolved Chloride (Cl ⁻)	2024/11/04	ND, RDL=1.0		mg/L	
9739183	EMT	RPD	Dissolved Chloride (Cl ⁻)	2024/11/04	0.27		%	20
9739194	EMT	Matrix Spike	Dissolved Sulphate (SO ₄)	2024/11/04		100	%	80 - 120
9739194	EMT	Spiked Blank	Dissolved Sulphate (SO ₄)	2024/11/04		98	%	80 - 120
9739194	EMT	Method Blank	Dissolved Sulphate (SO ₄)	2024/11/04	ND, RDL=2.0		mg/L	
9739194	EMT	RPD	Dissolved Sulphate (SO ₄)	2024/11/04	2.9		%	20
9739196	EMT	Matrix Spike	Reactive Silica (SiO ₂)	2024/11/04		NC	%	80 - 120
9739196	EMT	Spiked Blank	Reactive Silica (SiO ₂)	2024/11/04		92	%	80 - 120
9739196	EMT	Method Blank	Reactive Silica (SiO ₂)	2024/11/04	ND, RDL=0.50		mg/L	
9739196	EMT	RPD	Reactive Silica (SiO ₂)	2024/11/04	0.80		%	20
9739199	EMT	Spiked Blank	Colour	2024/11/04		101	%	80 - 120
9739199	EMT	Method Blank	Colour	2024/11/04	ND, RDL=5.0		TCU	
9739199	EMT	RPD	Colour	2024/11/04	12		%	20
9739205	EMT	Matrix Spike	Orthophosphate (P)	2024/11/04		92	%	80 - 120
9739205	EMT	Spiked Blank	Orthophosphate (P)	2024/11/04		88	%	80 - 120
9739205	EMT	Method Blank	Orthophosphate (P)	2024/11/04	ND, RDL=0.010		mg/L	
9739205	EMT	RPD	Orthophosphate (P)	2024/11/04	NC		%	20
9739208	EMT	Matrix Spike	Nitrate + Nitrite (N)	2024/11/04		91	%	80 - 120
9739208	EMT	Spiked Blank	Nitrate + Nitrite (N)	2024/11/04		97	%	80 - 120
9739208	EMT	Method Blank	Nitrate + Nitrite (N)	2024/11/04	ND, RDL=0.050		mg/L	
9739208	EMT	RPD	Nitrate + Nitrite (N)	2024/11/04	NC		%	20
9739210	EMT	Matrix Spike	Nitrite (N)	2024/11/04		97	%	80 - 120
9739210	EMT	Spiked Blank	Nitrite (N)	2024/11/04		101	%	80 - 120
9739210	EMT	Method Blank	Nitrite (N)	2024/11/04	ND, RDL=0.010		mg/L	
9739210	EMT	RPD	Nitrite (N)	2024/11/04	NC		%	20
9742796	MCN	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2024/11/04		90	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9742796	MCN	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2024/11/04		89	%	80 - 120
9742796	MCN	Method Blank	Nitrogen (Ammonia Nitrogen)	2024/11/04	ND, RDL=0.050		mg/L	
9742796	MCN	RPD	Nitrogen (Ammonia Nitrogen)	2024/11/04	NC		%	20
9742818	MCN	Matrix Spike [AHBK85-08]	Nitrogen (Ammonia Nitrogen)	2024/11/04		87	%	80 - 120
9742818	MCN	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2024/11/04		93	%	80 - 120
9742818	MCN	Method Blank	Nitrogen (Ammonia Nitrogen)	2024/11/04	ND, RDL=0.050		mg/L	
9742818	MCN	RPD [AHBK85-08]	Nitrogen (Ammonia Nitrogen)	2024/11/05	NC		%	20
9742842	M2C	Spiked Blank	pH	2024/11/04		99	%	97 - 103
9742842	M2C	RPD	pH	2024/11/04	0.61		%	N/A
9742845	M2C	Spiked Blank	Conductivity	2024/11/04		96	%	80 - 120
9742845	M2C	Method Blank	Conductivity	2024/11/04	ND, RDL=1.0		uS/cm	
9742845	M2C	RPD	Conductivity	2024/11/04	0.48		%	10
9742847	M2C	Spiked Blank	Total Alkalinity (Total as CaCO3)	2024/11/04		97	%	80 - 120
9742847	M2C	Method Blank	Total Alkalinity (Total as CaCO3)	2024/11/04	ND, RDL=2.0		mg/L	
9742847	M2C	RPD	Total Alkalinity (Total as CaCO3)	2024/11/04	0.96		%	20
9743079	M2C	QC Standard	Turbidity	2024/11/04		107	%	80 - 120
9743079	M2C	Spiked Blank	Turbidity	2024/11/04		100	%	80 - 120
9743079	M2C	Method Blank	Turbidity	2024/11/04	ND, RDL=0.10		NTU	
9743079	M2C	RPD [AHBK85-02]	Turbidity	2024/11/04	6.5		%	20
9743589	JEP	Matrix Spike [AHBK79-07]	Total Mercury (Hg)	2024/11/05		100	%	80 - 120
9743589	JEP	Spiked Blank	Total Mercury (Hg)	2024/11/05		100	%	80 - 120
9743589	JEP	Method Blank	Total Mercury (Hg)	2024/11/05	ND, RDL=0.013		ug/L	
9743589	JEP	RPD [AHBK78-07]	Total Mercury (Hg)	2024/11/05	NC		%	20
9743608	JEP	Matrix Spike [AHBK86-07]	Total Mercury (Hg)	2024/11/05		101	%	80 - 120
9743608	JEP	Spiked Blank	Total Mercury (Hg)	2024/11/05		99	%	80 - 120
9743608	JEP	Method Blank	Total Mercury (Hg)	2024/11/05	ND, RDL=0.013		ug/L	
9743608	JEP	RPD [AHBK85-07]	Total Mercury (Hg)	2024/11/05	NC		%	20
9745549	MCN	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2024/11/05		87	%	80 - 120
9745549	MCN	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2024/11/05		88	%	80 - 120
9745549	MCN	Method Blank	Nitrogen (Ammonia Nitrogen)	2024/11/05	ND, RDL=0.050		mg/L	
9745549	MCN	RPD	Nitrogen (Ammonia Nitrogen)	2024/11/05	NC		%	20
9745569	S6S	QC Standard	Turbidity	2024/11/05		107	%	80 - 120
9745569	S6S	Spiked Blank	Turbidity	2024/11/05		100	%	80 - 120
9745569	S6S	Method Blank	Turbidity	2024/11/05	ND, RDL=0.10		NTU	
9745569	S6S	RPD	Turbidity	2024/11/05	1.3		%	20
9745681	SPC	Matrix Spike [AHBK78-06]	Phenols-4AAP	2024/11/05		99	%	80 - 120
9745681	SPC	Spiked Blank	Phenols-4AAP	2024/11/05		98	%	80 - 120
9745681	SPC	Method Blank	Phenols-4AAP	2024/11/05	ND, RDL=0.0010		mg/L	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9745681	SPC	RPD [AHBK78-06]	Phenols-4AAP	2024/11/05	NC		%	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).								



VALIDATION SIGNATURE PAGE

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

Ernie Publicover, Scientific Specialist

Louise Harding, Scientific Specialist

Bureau Veritas Certified by Janah Rhyno, Scientific Specialist

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Your Project #: SW SAMPLES
Site#: 00012
Your C.O.C. #: C#1022915-01-01

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2025/01/03
Report #: R8465578
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4BP941

Received: 2024/12/23, 09:20

Sample Matrix: Water
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Carbonate, Bicarbonate and Hydroxide	10	N/A	2024/12/31	N/A	SM 24 4500-CO2 D
Alkalinity	9	N/A	2024/12/30	ATL SOP 00142	SM 24 2320 B
Alkalinity	1	N/A	2024/12/31	ATL SOP 00142	SM 24 2320 B
Chloride	1	N/A	2025/01/02	ATL SOP 00014	SM 24 4500-Cl- E m
Chloride	9	N/A	2024/12/30	ATL SOP 00014	SM 24 4500-Cl- E m
Colour	1	N/A	2025/01/02	ATL SOP 00020	SM 24 2120C m
Colour	9	N/A	2024/12/30	ATL SOP 00020	SM 24 2120C m
Organic carbon - Diss (DOC)-Lab Filtered (2)	10	N/A	2024/12/30	ATL SOP 00203	SM 24 5310B m
Conductance - water	10	N/A	2024/12/30	ATL SOP 00004	SM 24 2510B m
Hardness (calculated as CaCO3)	7	N/A	2024/12/26	ATL SOP 00048	Auto Calc
Hardness (calculated as CaCO3)	3	N/A	2024/12/27	ATL SOP 00048	Auto Calc
Mercury - Total (CVAA,LL)	9	2025/01/02	2025/01/02	ATL SOP 00026	EPA 245.1 R3 m
Mercury - Total (CVAA,LL)	1	2024/12/30	2024/12/30	ATL SOP 00026	EPA 245.1 R3 m
Metals Water Total MS	7	2024/12/24	2024/12/24	ATL SOP 00058	EPA 6020B R2 m
Metals Water Total MS	3	2024/12/24	2024/12/26	ATL SOP 00058	EPA 6020B R2 m
Ion Balance (% Difference)	2	N/A	2025/01/02	N/A	Auto Calc.
Ion Balance (% Difference)	8	N/A	2024/12/31	N/A	Auto Calc.
Anion and Cation Sum	1	N/A	2025/01/02	N/A	Auto Calc.
Anion and Cation Sum	9	N/A	2024/12/31	N/A	Auto Calc.
Nitrogen Ammonia - water	1	N/A	2025/01/02	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen Ammonia - water	9	N/A	2024/12/31	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	1	N/A	2025/01/02	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrate + Nitrite	9	N/A	2024/12/30	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite	1	N/A	2025/01/02	ATL SOP 00017	SM 24 4500-NO2- B m
Nitrogen - Nitrite	9	N/A	2024/12/30	ATL SOP 00017	SM 24 4500-NO2- B m
Nitrogen - Nitrate (as N)	1	N/A	2025/01/02	ATL SOP 00018	ASTM D3867-16
Nitrogen - Nitrate (as N)	9	N/A	2024/12/30	ATL SOP 00018	ASTM D3867-16
Phenols (4AAP) (1)	5	N/A	2025/01/02	CAM SOP-00444	OMOE E3179 m
Phenols (4AAP) (1)	5	N/A	2024/12/31	CAM SOP-00444	OMOE E3179 m
pH (3)	10	N/A	2024/12/30	ATL SOP 00003	SM 24 4500-H+ B m
Phosphorus - ortho	1	N/A	2025/01/02	ATL SOP 00021	SM 24 4500-P E m
Phosphorus - ortho	9	N/A	2024/12/30	ATL SOP 00021	SM 24 4500-P E m



Your Project #: SW SAMPLES
Site#: 00012
Your C.O.C. #: C#1022915-01-01

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2025/01/03
Report #: R8465578
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4BP941

Received: 2024/12/23, 09:20

Sample Matrix: Water
Samples Received: 10

Analyses	Date		Date Analyzed	Laboratory Method	Analytical Method
	Quantity	Extracted			
Sat. pH and Langelier Index (@ 20C)	2	N/A	2025/01/02	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 20C)	8	N/A	2024/12/31	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 4C)	2	N/A	2025/01/02	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 4C)	8	N/A	2024/12/31	ATL SOP 00049	Auto Calc.
Reactive Silica	1	N/A	2025/01/02	ATL SOP 00022	EPA 366.0 m
Reactive Silica	9	N/A	2024/12/30	ATL SOP 00022	EPA 366.0 m
Sulphate	1	N/A	2025/01/02	ATL SOP 00023	ASTM D516-16 m
Sulphate	9	N/A	2024/12/30	ATL SOP 00023	ASTM D516-16 m
Sulphide (1)	10	N/A	2024/12/24	CAM SOP-00455	SM 24 4500-S G m
Total Dissolved Solids (TDS calc)	2	N/A	2025/01/02	N/A	Auto Calc.
Total Dissolved Solids (TDS calc)	8	N/A	2024/12/31	N/A	Auto Calc.
Organic carbon - Total (TOC) (2)	10	N/A	2024/12/30	ATL SOP 00203	SM 24 5310B m
Total Suspended Solids	10	2024/12/24	2024/12/30	ATL SOP 00007	SM 24 2540D m
Turbidity	10	N/A	2025/01/02	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, EPA, APHA or the Quebec Ministry of Environment.

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.



Your Project #: SW SAMPLES
Site#: 00012
Your C.O.C. #: C#1022915-01-01

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2025/01/03
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CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4BP941

Received: 2024/12/23, 09:20

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) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8

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

(3) 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.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:

Jaspreet Kaur, Project Manager 1

Email: jaspreet.kaur@bureauveritas.com

Phone# (902)420-0203

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BUREAU
VERITAS

Bureau Veritas Job #: C4BP941

Report Date: 2025/01/03

Central Newfoundland Waste Management Authority

Client Project #: SW SAMPLES

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		AMMB42			AMMB43			AMMB44		
Sampling Date		2024/12/18 08:20			2024/12/18 08:25			2024/12/18 08:35		
COC Number		C#1022915-01-01			C#1022915-01-01			C#1022915-01-01		
Sample #		00291			00292			00293		
	UNITS	847-SW-1	RDL	QC Batch	SW-1	RDL	QC Batch	SW-2	RDL	QC Batch

Calculated Parameters

Anion Sum	me/L	1.45	N/A	9843214	0.850	N/A	9843214	1.27	N/A	9843214
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	13	1.0	9843209	29	1.0	9843209	17	1.0	9843209
Calculated TDS	mg/L	90	1.0	9843219	52	1.0	9843219	77	1.0	9843219
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ND	1.0	9843209	ND	1.0	9843209	ND	1.0	9843209
Cation Sum	me/L	1.56	N/A	9843214	0.980	N/A	9843214	1.30	N/A	9843214
Hardness (CaCO ₃)	mg/L	27	1.0	9843212	39	1.0	9843212	26	1.0	9843212
Ion Balance (% Difference)	%	3.65	N/A	9843213	7.10	N/A	9843213	1.17	N/A	9843213
Langelier Index (@ 20C)	N/A	-2.24		9843217	-1.32		9843217	-1.99		9843217
Langelier Index (@ 4C)	N/A	-2.49		9843218	-1.57		9843218	-2.24		9843218
Nitrate (N)	mg/L	0.17	0.050	9843215	0.34	0.050	9843215	0.17	0.050	9843215
Saturation pH (@ 20C)	N/A	9.42		9843217	8.93		9843217	9.35		9843217
Saturation pH (@ 4C)	N/A	9.67		9843218	9.18		9843218	9.60		9843218

Inorganics

Total Alkalinity (Total as CaCO ₃)	mg/L	13	2.0	9850064	29	2.0	9850064	17	2.0	9850064
Dissolved Chloride (Cl ⁻)	mg/L	40	1.0	9849924	6.8	1.0	9853268	30	1.0	9849924
Colour	TCU	66	25	9849931	49	10	9853271	50	5.0	9849931
Nitrate + Nitrite (N)	mg/L	0.17	0.050	9849933	0.34	0.050	9853273	0.17	0.050	9849933
Nitrite (N)	mg/L	ND	0.010	9849934	ND	0.010	9853274	ND	0.010	9849934
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.050	9850053	ND	0.050	9850053	ND	0.050	9853358
Total Organic Carbon (C)	mg/L	8.9	0.50	9845373	6.9	0.50	9845373	7.4	0.50	9845373
Orthophosphate (P)	mg/L	ND	0.010	9849932	ND	0.010	9853272	ND	0.010	9849932
pH	pH	7.18		9850060	7.61		9850060	7.36		9850060
Reactive Silica (SiO ₂)	mg/L	7.0	0.50	9849928	5.6	0.50	9853270	6.1	0.50	9849928
Dissolved Sulphate (SO ₄)	mg/L	2.2	2.0	9849927	2.6	2.0	9853269	3.0	2.0	9849927
Turbidity	NTU	0.65	0.10	9851998	0.31	0.10	9851998	0.52	0.10	9851998
Conductivity	uS/cm	170	1.0	9850063	96	1.0	9850063	140	1.0	9850063

Metals

Total Aluminum (Al)	ug/L	110	5.0	9845339	57	5.0	9845339	75	5.0	9845342
Total Antimony (Sb)	ug/L	ND	1.0	9845339	ND	1.0	9845339	ND	1.0	9845342
Total Arsenic (As)	ug/L	ND	1.0	9845339	ND	1.0	9845339	ND	1.0	9845342
Total Barium (Ba)	ug/L	8.7	1.0	9845339	4.6	1.0	9845339	7.2	1.0	9845342
Total Beryllium (Be)	ug/L	ND	0.10	9845339	ND	0.10	9845339	ND	0.10	9845342
Total Bismuth (Bi)	ug/L	ND	2.0	9845339	ND	2.0	9845339	ND	2.0	9845342

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.



**BUREAU
VERITAS**

Bureau Veritas Job #: C4BP941

Report Date: 2025/01/03

Central Newfoundland Waste Management Authority

Client Project #: SW SAMPLES

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		AMMB42			AMMB43			AMMB44		
Sampling Date		2024/12/18 08:20			2024/12/18 08:25			2024/12/18 08:35		
COC Number		C#1022915-01-01			C#1022915-01-01			C#1022915-01-01		
Sample #		00291			00292			00293		
	UNITS	847-SW-1	RDL	QC Batch	SW-1	RDL	QC Batch	SW-2	RDL	QC Batch
Total Boron (B)	ug/L	ND	50	9845339	ND	50	9845339	ND	50	9845342
Total Cadmium (Cd)	ug/L	ND	0.010	9845339	ND	0.010	9845339	ND	0.010	9845342
Total Calcium (Ca)	ug/L	6100	100	9845339	8300	100	9845339	5600	100	9845342
Total Chromium (Cr)	ug/L	ND	1.0	9845339	ND	1.0	9845339	ND	1.0	9845342
Total Cobalt (Co)	ug/L	ND	0.40	9845339	ND	0.40	9845339	ND	0.40	9845342
Total Copper (Cu)	ug/L	ND	0.50	9845339	0.54	0.50	9845339	ND	0.50	9845342
Total Iron (Fe)	ug/L	210	50	9845339	71	50	9845339	82	50	9845342
Total Lead (Pb)	ug/L	ND	0.50	9845339	ND	0.50	9845339	ND	0.50	9845342
Total Magnesium (Mg)	ug/L	2800	100	9845339	4400	100	9845339	3000	100	9845342
Total Manganese (Mn)	ug/L	12	2.0	9845339	4.0	2.0	9845339	2.9	2.0	9845342
Total Molybdenum (Mo)	ug/L	ND	2.0	9845339	ND	2.0	9845339	ND	2.0	9845342
Total Nickel (Ni)	ug/L	ND	2.0	9845339	ND	2.0	9845339	ND	2.0	9845342
Total Phosphorus (P)	ug/L	ND	100	9845339	ND	100	9845339	ND	100	9845342
Total Potassium (K)	ug/L	350	100	9845339	450	100	9845339	280	100	9845342
Total Selenium (Se)	ug/L	ND	0.50	9845339	ND	0.50	9845339	ND	0.50	9845342
Total Silver (Ag)	ug/L	ND	0.10	9845339	ND	0.10	9845339	ND	0.10	9845342
Total Sodium (Na)	ug/L	23000	100	9845339	4300	100	9845339	18000	100	9845342
Total Strontium (Sr)	ug/L	21	2.0	9845339	40	2.0	9845339	19	2.0	9845342
Total Thallium (Tl)	ug/L	ND	0.10	9845339	ND	0.10	9845339	ND	0.10	9845342
Total Tin (Sn)	ug/L	ND	2.0	9845339	ND	2.0	9845339	ND	2.0	9845342
Total Titanium (Ti)	ug/L	ND	2.0	9845339	ND	2.0	9845339	ND	2.0	9845342
Total Uranium (U)	ug/L	ND	0.10	9845339	ND	0.10	9845339	ND	0.10	9845342
Total Vanadium (V)	ug/L	ND	2.0	9845339	ND	2.0	9845339	ND	2.0	9845342
Total Zinc (Zn)	ug/L	ND	5.0	9845339	11	5.0	9845339	ND	5.0	9845342

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.



BUREAU
VERITAS

Bureau Veritas Job #: C4BP941

Report Date: 2025/01/03

Central Newfoundland Waste Management Authority

Client Project #: SW SAMPLES

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		AMMB45		AMMB47			AMMB48		
Sampling Date		2024/12/18 08:45		2024/12/18 09:00			2024/12/18 09:20		
COC Number		C#1022915-01-01		C#1022915-01-01			C#1022915-01-01		
Sample #		00294		00295			00296		
	UNITS	SW-3	RDL	SW-4	RDL	QC Batch	SW-5	RDL	QC Batch

Calculated Parameters

Anion Sum	me/L	9.00	N/A	0.550	N/A	9843214	50.9	N/A	9843214
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	270	1.0	12	1.0	9843209	1800	1.0	9843209
Calculated TDS	mg/L	520	1.0	37	1.0	9843219	2700	1.0	9843219
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	1.6	1.0	ND	1.0	9843209	21	1.0	9843209
Cation Sum	me/L	10.3	N/A	0.650	N/A	9843214	51.9	N/A	9843214
Hardness (CaCO ₃)	mg/L	430	1.0	17	1.0	9843212	490	1.0	9843212
Ion Balance (% Difference)	%	6.78	N/A	8.33	N/A	9843213	0.930	N/A	9843213
Langelier Index (@ 20C)	N/A	0.791		-2.55		9843217	1.60		9843217
Langelier Index (@ 4C)	N/A	0.543		-2.80		9843218	1.36		9843218
Nitrate (N)	mg/L	0.58	0.050	0.38	0.050	9843215	5.0	0.25	9843215
Saturation pH (@ 20C)	N/A	7.01		9.62		9843217	6.48		9843217
Saturation pH (@ 4C)	N/A	7.26		9.87		9843218	6.72		9843218

Inorganics

Total Alkalinity (Total as CaCO ₃)	mg/L	270	2.0	12	2.0	9850064	1800	20	9850064
Dissolved Chloride (Cl ⁻)	mg/L	40	1.0	10	1.0	9849924	480	10	9849924
Colour	TCU	22	5.0	69	25	9849931	430	100	9849931
Nitrate + Nitrite (N)	mg/L	0.58	0.050	0.38	0.050	9849933	5.1	0.25	9849933
Nitrite (N)	mg/L	ND	0.010	ND	0.010	9849934	0.099	0.010	9849934
Nitrogen (Ammonia Nitrogen)	mg/L	4.3	0.25	0.13	0.050	9850053	270	25	9850053
Total Organic Carbon (C)	mg/L	18	0.50	8.8	0.50	9845373	130 (1)	5.0	9845373
Orthophosphate (P)	mg/L	ND	0.010	ND	0.010	9849932	0.23	0.010	9849932
pH	pH	7.80		7.07		9850060	8.09		9850060
Reactive Silica (SiO ₂)	mg/L	11	0.50	4.8	0.50	9849928	15	0.50	9849928
Dissolved Sulphate (SO ₄)	mg/L	120	10	ND	2.0	9849927	21	2.0	9849927
Turbidity	NTU	11	0.10	0.65	0.10	9851998	140	1.0	9851996
Conductivity	uS/cm	900	1.0	65	1.0	9850063	5000	1.0	9850063

Metals

Total Aluminum (Al)	ug/L	32	5.0	83	5.0	9845342	90	5.0	9845342
Total Antimony (Sb)	ug/L	ND	1.0	ND	1.0	9845342	2.8	1.0	9845342
Total Arsenic (As)	ug/L	9.1	1.0	ND	1.0	9845342	31	1.0	9845342
Total Barium (Ba)	ug/L	320	1.0	4.2	1.0	9845342	640	1.0	9845342
Total Beryllium (Be)	ug/L	ND	0.10	ND	0.10	9845342	ND	0.10	9845342

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

(1) Elevated reporting limit due to sample matrix.



ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		AMMB45		AMMB47			AMMB48		
Sampling Date		2024/12/18 08:45		2024/12/18 09:00			2024/12/18 09:20		
COC Number		C#1022915-01-01		C#1022915-01-01			C#1022915-01-01		
Sample #		00294		00295			00296		
	UNITS	SW-3	RDL	SW-4	RDL	QC Batch	SW-5	RDL	QC Batch
Total Bismuth (Bi)	ug/L	ND	2.0	ND	2.0	9845342	ND	2.0	9845342
Total Boron (B)	ug/L	170	50	ND	50	9845342	2300	50	9845342
Total Cadmium (Cd)	ug/L	ND	0.010	ND	0.010	9845342	0.035	0.010	9845342
Total Calcium (Ca)	ug/L	110000	100	4200	100	9845342	91000	100	9845342
Total Chromium (Cr)	ug/L	1.1	1.0	ND	1.0	9845342	36	1.0	9845342
Total Cobalt (Co)	ug/L	8.5	0.40	ND	0.40	9845342	5.7	0.40	9845342
Total Copper (Cu)	ug/L	2.6	0.50	ND	0.50	9845342	19	0.50	9845342
Total Iron (Fe)	ug/L	3600	50	160	50	9845342	8100	50	9845342
Total Lead (Pb)	ug/L	ND	0.50	ND	0.50	9845342	0.62	0.50	9845342
Total Magnesium (Mg)	ug/L	39000	100	1600	100	9845342	63000	100	9845342
Total Manganese (Mn)	ug/L	880	2.0	13	2.0	9845342	790	2.0	9845342
Total Molybdenum (Mo)	ug/L	ND	2.0	ND	2.0	9845342	ND	2.0	9845342
Total Nickel (Ni)	ug/L	12	2.0	ND	2.0	9845342	41	2.0	9845342
Total Phosphorus (P)	ug/L	ND	100	ND	100	9845342	1300	100	9845342
Total Potassium (K)	ug/L	5500	100	680	100	9845342	200000	1000	9845342
Total Selenium (Se)	ug/L	ND	0.50	ND	0.50	9845342	ND	0.50	9845342
Total Silver (Ag)	ug/L	ND	0.10	ND	0.10	9845342	ND	0.10	9845342
Total Sodium (Na)	ug/L	26000	100	6400	100	9845342	410000	100	9845342
Total Strontium (Sr)	ug/L	520	2.0	19	2.0	9845342	510	2.0	9845342
Total Thallium (Tl)	ug/L	ND	0.10	ND	0.10	9845342	ND	0.10	9845342
Total Tin (Sn)	ug/L	ND	2.0	ND	2.0	9845342	2.9	2.0	9845342
Total Titanium (Ti)	ug/L	ND	2.0	ND	2.0	9845342	14	2.0	9845342
Total Uranium (U)	ug/L	1.4	0.10	ND	0.10	9845342	0.15	0.10	9845342
Total Vanadium (V)	ug/L	ND	2.0	ND	2.0	9845342	15	2.0	9845342
Total Zinc (Zn)	ug/L	5.9	5.0	ND	5.0	9845342	35	5.0	9845342

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		AMMB51		AMMB52	AMMB53		
Sampling Date		2024/12/18 09:30		2024/12/18 09:40	2024/12/18 09:50		
COC Number		C#1022915-01-01		C#1022915-01-01	C#1022915-01-01		
Sample #		00297		00298	00299		
	UNITS	SW-6	QC Batch	SW-7	SW-8	RDL	QC Batch
Calculated Parameters							
Anion Sum	me/L	1.91	9843214	1.32	1.65	N/A	9843214
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	49	9843209	55	12	1.0	9843209
Calculated TDS	mg/L	110	9843219	76	100	1.0	9843219
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	ND	9843209	ND	ND	1.0	9843209
Cation Sum	me/L	1.58	9843214	1.52	1.60	N/A	9843214
Hardness (CaCO ₃)	mg/L	62	9843212	67	31	1.0	9843212
Ion Balance (% Difference)	%	9.46	9843213	7.04	1.54	N/A	9843213
Langelier Index (@ 20C)	N/A	-0.713	9843217	-0.667	-2.21		9843217
Langelier Index (@ 4C)	N/A	-0.963	9843218	-0.918	-2.46		9843218
Nitrate (N)	mg/L	0.22	9843215	0.23	0.40	0.050	9843215
Saturation pH (@ 20C)	N/A	8.52	9843217	8.47	9.42		9843217
Saturation pH (@ 4C)	N/A	8.77	9843218	8.72	9.67		9843218
Inorganics							
Total Alkalinity (Total as CaCO ₃)	mg/L	49	9850064	55	12	2.0	9850064
Dissolved Chloride (Cl ⁻)	mg/L	13	9849935	5.1	35	1.0	9849935
Colour	TCU	21	9849939	15	20	5.0	9849939
Nitrate + Nitrite (N)	mg/L	0.22	9849941	0.23	0.40	0.050	9849941
Nitrite (N)	mg/L	ND	9849942	ND	ND	0.010	9849942
Nitrogen (Ammonia Nitrogen)	mg/L	ND	9850053	ND	0.052	0.050	9850053
Total Organic Carbon (C)	mg/L	3.3	9845373	3.8	5.4	0.50	9845373
Orthophosphate (P)	mg/L	ND	9849940	ND	ND	0.010	9849940
pH	pH	7.81	9850060	7.80	7.21		9850060
Reactive Silica (SiO ₂)	mg/L	10	9849938	7.6	5.0	0.50	9849938
Dissolved Sulphate (SO ₄)	mg/L	26	9849937	2.7	19	2.0	9849937
Turbidity	NTU	0.47	9851998	0.51	0.32	0.10	9851998
Conductivity	uS/cm	160	9850063	140	190	1.0	9850063
Metals							
Total Aluminum (Al)	ug/L	46	9845339	56	41	5.0	9845342
Total Antimony (Sb)	ug/L	ND	9845339	ND	ND	1.0	9845342
Total Arsenic (As)	ug/L	ND	9845339	ND	ND	1.0	9845342
Total Barium (Ba)	ug/L	35	9845339	45	5.6	1.0	9845342
Total Beryllium (Be)	ug/L	ND	9845339	ND	ND	0.10	9845342
Total Bismuth (Bi)	ug/L	ND	9845339	ND	ND	2.0	9845342
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.							

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		AMMB51		AMMB52	AMMB53		
Sampling Date		2024/12/18 09:30		2024/12/18 09:40	2024/12/18 09:50		
COC Number		C#1022915-01-01		C#1022915-01-01	C#1022915-01-01		
Sample #		00297		00298	00299		
	UNITS	SW-6	QC Batch	SW-7	SW-8	RDL	QC Batch
Total Boron (B)	ug/L	ND	9845339	ND	ND	50	9845342
Total Cadmium (Cd)	ug/L	ND	9845339	ND	ND	0.010	9845342
Total Calcium (Ca)	ug/L	14000	9845339	13000	7100	100	9845342
Total Chromium (Cr)	ug/L	ND	9845339	ND	ND	1.0	9845342
Total Cobalt (Co)	ug/L	ND	9845339	ND	ND	0.40	9845342
Total Copper (Cu)	ug/L	0.81	9845339	0.69	ND	0.50	9845342
Total Iron (Fe)	ug/L	ND	9845339	ND	ND	50	9845342
Total Lead (Pb)	ug/L	ND	9845339	ND	ND	0.50	9845342
Total Magnesium (Mg)	ug/L	6800	9845339	8200	3200	100	9845342
Total Manganese (Mn)	ug/L	5.8	9845339	2.3	2.5	2.0	9845342
Total Molybdenum (Mo)	ug/L	ND	9845339	ND	ND	2.0	9845342
Total Nickel (Ni)	ug/L	ND	9845339	ND	ND	2.0	9845342
Total Phosphorus (P)	ug/L	ND	9845339	ND	ND	100	9845342
Total Potassium (K)	ug/L	980	9845339	430	430	100	9845342
Total Selenium (Se)	ug/L	ND	9845339	ND	ND	0.50	9845342
Total Silver (Ag)	ug/L	ND	9845339	ND	ND	0.10	9845342
Total Sodium (Na)	ug/L	7200	9845339	4000	22000	100	9845342
Total Strontium (Sr)	ug/L	50	9845339	35	20	2.0	9845342
Total Thallium (Tl)	ug/L	ND	9845339	ND	ND	0.10	9845342
Total Tin (Sn)	ug/L	ND	9845339	ND	ND	2.0	9845342
Total Titanium (Ti)	ug/L	ND	9845339	ND	ND	2.0	9845342
Total Uranium (U)	ug/L	0.36	9845339	0.10	ND	0.10	9845342
Total Vanadium (V)	ug/L	3.0	9845339	ND	ND	2.0	9845342
Total Zinc (Zn)	ug/L	ND	9845339	ND	ND	5.0	9845342
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.							

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		AMMB54		
Sampling Date		2024/12/18 10:00		
COC Number		C#1022915-01-01		
Sample #		00287		
	UNITS	SW-9	RDL	QC Batch
Calculated Parameters				
Anion Sum	me/L	4.00	N/A	9843214
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	150	1.0	9843209
Calculated TDS	mg/L	230	1.0	9843219
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	1.6	1.0	9843209
Cation Sum	me/L	4.69	N/A	9843214
Hardness (CaCO ₃)	mg/L	180	1.0	9843212
Ion Balance (% Difference)	%	7.94	N/A	9843213
Langelier Index (@ 20C)	N/A	0.406		9843217
Langelier Index (@ 4C)	N/A	0.157		9843218
Nitrate (N)	mg/L	2.4	0.25	9843215
Saturation pH (@ 20C)	N/A	7.65		9843217
Saturation pH (@ 4C)	N/A	7.90		9843218
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L	150	2.0	9850064
Dissolved Chloride (Cl ⁻)	mg/L	22	1.0	9849935
Colour	TCU	13	5.0	9849939
Nitrate + Nitrite (N)	mg/L	2.5	0.25	9849941
Nitrite (N)	mg/L	0.082	0.010	9849942
Nitrogen (Ammonia Nitrogen)	mg/L	1.1	0.050	9850053
Total Organic Carbon (C)	mg/L	5.1	0.50	9845373
Orthophosphate (P)	mg/L	0.019	0.010	9849940
pH	pH	8.06		9850060
Reactive Silica (SiO ₂)	mg/L	8.3	0.50	9849938
Dissolved Sulphate (SO ₄)	mg/L	9.7	2.0	9849937
Turbidity	NTU	1.5	0.10	9851998
Conductivity	uS/cm	440	1.0	9850063
Metals				
Total Aluminum (Al)	ug/L	43	5.0	9845339
Total Antimony (Sb)	ug/L	ND	1.0	9845339
Total Arsenic (As)	ug/L	1.2	1.0	9845339
Total Barium (Ba)	ug/L	130	1.0	9845339
Total Beryllium (Be)	ug/L	ND	0.10	9845339
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.				

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

Bureau Veritas ID		AMMB54		
Sampling Date		2024/12/18 10:00		
COC Number		C#1022915-01-01		
Sample #		00287		
	UNITS	SW-9	RDL	QC Batch
Total Bismuth (Bi)	ug/L	ND	2.0	9845339
Total Boron (B)	ug/L	82	50	9845339
Total Cadmium (Cd)	ug/L	ND	0.010	9845339
Total Calcium (Ca)	ug/L	38000	100	9845339
Total Chromium (Cr)	ug/L	1.1	1.0	9845339
Total Cobalt (Co)	ug/L	0.46	0.40	9845339
Total Copper (Cu)	ug/L	1.1	0.50	9845339
Total Iron (Fe)	ug/L	97	50	9845339
Total Lead (Pb)	ug/L	ND	0.50	9845339
Total Magnesium (Mg)	ug/L	20000	100	9845339
Total Manganese (Mn)	ug/L	41	2.0	9845339
Total Molybdenum (Mo)	ug/L	ND	2.0	9845339
Total Nickel (Ni)	ug/L	2.4	2.0	9845339
Total Phosphorus (P)	ug/L	ND	100	9845339
Total Potassium (K)	ug/L	7000	100	9845339
Total Selenium (Se)	ug/L	ND	0.50	9845339
Total Silver (Ag)	ug/L	ND	0.10	9845339
Total Sodium (Na)	ug/L	20000	100	9845339
Total Strontium (Sr)	ug/L	140	2.0	9845339
Total Thallium (Tl)	ug/L	ND	0.10	9845339
Total Tin (Sn)	ug/L	ND	2.0	9845339
Total Titanium (Ti)	ug/L	ND	2.0	9845339
Total Uranium (U)	ug/L	0.38	0.10	9845339
Total Vanadium (V)	ug/L	ND	2.0	9845339
Total Zinc (Zn)	ug/L	ND	5.0	9845339
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.				



RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		AMMB42		AMMB43		AMMB44		
Sampling Date		2024/12/18 08:20		2024/12/18 08:25		2024/12/18 08:35		
COC Number		C#1022915-01-01		C#1022915-01-01		C#1022915-01-01		
Sample #		00291		00292		00293		
	UNITS	847-SW-1	QC Batch	SW-1	QC Batch	SW-2	RDL	QC Batch

Inorganics

Dissolved Organic Carbon (C)	mg/L	8.5	9849979	6.8	9849979	7.3	0.50	9849979
Phenols-4AAP	mg/L	ND	9853406	ND	9851582	ND	0.0010	9853406
Total Suspended Solids	mg/L	ND	9845441	1.2	9845441	2.4	1.0	9845441
Sulphide	mg/L	ND	9846268	ND	9846268	ND	0.020	9846268

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

Bureau Veritas ID		AMMB45		AMMB47			AMMB48		
Sampling Date		2024/12/18 08:45		2024/12/18 09:00			2024/12/18 09:20		
COC Number		C#1022915-01-01		C#1022915-01-01			C#1022915-01-01		
Sample #		00294		00295			00296		
	UNITS	SW-3	QC Batch	SW-4	RDL	QC Batch	SW-5	RDL	QC Batch

Inorganics

Dissolved Organic Carbon (C)	mg/L	17	9849979	8.8	0.50	9849979	110 (1)	5.0	9849979
Phenols-4AAP	mg/L	ND	9853406	0.0010	0.0010	9851582	0.0050	0.0010	9853406
Total Suspended Solids	mg/L	8.6	9845441	ND	1.0	9845441	87	5.0	9845441
Sulphide	mg/L	ND	9846268	ND	0.020	9846268	0.046	0.020	9846268

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.

(1) Elevated reporting limit due to sample matrix.

Bureau Veritas ID		AMMB51	AMMB52	AMMB53		AMMB54		
Sampling Date		2024/12/18 09:30	2024/12/18 09:40	2024/12/18 09:50		2024/12/18 10:00		
COC Number		C#1022915-01-01	C#1022915-01-01	C#1022915-01-01		C#1022915-01-01		
Sample #		00297	00298	00299		00287		
	UNITS	SW-6	SW-7	SW-8	QC Batch	SW-9	RDL	QC Batch

Inorganics

Dissolved Organic Carbon (C)	mg/L	3.5	4.0	5.4	9849979	5.1	0.50	9849979
Phenols-4AAP	mg/L	ND	ND	ND	9851582	ND	0.0010	9853406
Total Suspended Solids	mg/L	ND	ND	ND	9845441	1.4	1.0	9845441
Sulphide	mg/L	ND	ND	ND	9846268	ND	0.020	9846268

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.



MERCURY BY COLD VAPOUR AA (WATER)

Bureau Veritas ID		AMMB42		AMMB43	AMMB44	AMMB45		
Sampling Date		2024/12/18 08:20		2024/12/18 08:25	2024/12/18 08:35	2024/12/18 08:45		
COC Number		C#1022915-01-01		C#1022915-01-01	C#1022915-01-01	C#1022915-01-01		
Sample #		00291		00292	00293	00294		
	UNITS	847-SW-1	QC Batch	SW-1	SW-2	SW-3	RDL	QC Batch

Metals								
Total Mercury (Hg)	ug/L	ND	9847495	ND	ND	ND	0.013	9852358
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.								

Bureau Veritas ID		AMMB47	AMMB48	AMMB51	AMMB52	AMMB53		
Sampling Date		2024/12/18 09:00	2024/12/18 09:20	2024/12/18 09:30	2024/12/18 09:40	2024/12/18 09:50		
COC Number		C#1022915-01-01	C#1022915-01-01	C#1022915-01-01	C#1022915-01-01	C#1022915-01-01		
Sample #		00295	00296	00297	00298	00299		
	UNITS	SW-4	SW-5	SW-6	SW-7	SW-8	RDL	QC Batch

Metals								
Total Mercury (Hg)	ug/L	ND	ND	ND	ND	ND	0.013	9852358
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.								

Bureau Veritas ID		AMMB54		
Sampling Date		2024/12/18 10:00		
COC Number		C#1022915-01-01		
Sample #		00287		
	UNITS	SW-9	RDL	QC Batch
Metals				
Total Mercury (Hg)	ug/L	ND	0.013	9852358
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.				



GENERAL COMMENTS

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

Package 1	11.0°C
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Sample AMMB42 [847-SW-1] : Total Suspended Solids: Used all of the sample provided, DL raised.

Sample AMMB43 [SW-1] : RCap Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

Sample AMMB45 [SW-3] : Poor RCap Ion Balance due to sample matrix. Anion sum does not include contribution from Total Organic Carbon.

Sample AMMB47 [SW-4] : Total Suspended Solids: Used all of the sample provided, DL raised. RCap Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

Sample AMMB51 [SW-6] : Poor RCap Ion Balance due to sample matrix.

Sample AMMB52 [SW-7] : RCap Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

Sample AMMB53 [SW-8] : Total Suspended Solids: Used all of the sample provided, DL raised.

Sample AMMB54 [SW-9] : ortho-Phosphate > Phosphorus: Both values fall within the method uncertainty for duplicates and are likely equivalent.
Poor RCap Ion Balance due to sample matrix.

Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9845339	MTZ	Matrix Spike	Total Aluminum (Al)	2024/12/24		108	%	80 - 120
			Total Antimony (Sb)	2024/12/24		103	%	80 - 120
			Total Arsenic (As)	2024/12/24		101	%	80 - 120
			Total Barium (Ba)	2024/12/24		97	%	80 - 120
			Total Beryllium (Be)	2024/12/24		102	%	80 - 120
			Total Bismuth (Bi)	2024/12/24		95	%	80 - 120
			Total Boron (B)	2024/12/24		104	%	80 - 120
			Total Cadmium (Cd)	2024/12/24		100	%	80 - 120
			Total Calcium (Ca)	2024/12/24		NC	%	80 - 120
			Total Chromium (Cr)	2024/12/24		99	%	80 - 120
			Total Cobalt (Co)	2024/12/24		97	%	80 - 120
			Total Copper (Cu)	2024/12/24		96	%	80 - 120
			Total Iron (Fe)	2024/12/24		102	%	80 - 120
			Total Lead (Pb)	2024/12/24		96	%	80 - 120
			Total Magnesium (Mg)	2024/12/24		NC	%	80 - 120
			Total Manganese (Mn)	2024/12/24		100	%	80 - 120
			Total Molybdenum (Mo)	2024/12/24		107	%	80 - 120
			Total Nickel (Ni)	2024/12/24		98	%	80 - 120
			Total Phosphorus (P)	2024/12/24		104	%	80 - 120
			Total Potassium (K)	2024/12/24		98	%	80 - 120
			Total Selenium (Se)	2024/12/24		102	%	80 - 120
			Total Silver (Ag)	2024/12/24		100	%	80 - 120
			Total Sodium (Na)	2024/12/24		NC	%	80 - 120
			Total Strontium (Sr)	2024/12/24		NC	%	80 - 120
			Total Thallium (Tl)	2024/12/24		98	%	80 - 120
			Total Tin (Sn)	2024/12/24		101	%	80 - 120
			Total Titanium (Ti)	2024/12/24		103	%	80 - 120
			Total Uranium (U)	2024/12/24		105	%	80 - 120
			Total Vanadium (V)	2024/12/24		103	%	80 - 120
			Total Zinc (Zn)	2024/12/24		97	%	80 - 120
9845339	MTZ	Spiked Blank	Total Aluminum (Al)	2024/12/24		108	%	80 - 120
			Total Antimony (Sb)	2024/12/24		99	%	80 - 120
			Total Arsenic (As)	2024/12/24		99	%	80 - 120
			Total Barium (Ba)	2024/12/24		97	%	80 - 120
			Total Beryllium (Be)	2024/12/24		98	%	80 - 120
			Total Bismuth (Bi)	2024/12/24		99	%	80 - 120
			Total Boron (B)	2024/12/24		100	%	80 - 120
			Total Cadmium (Cd)	2024/12/24		99	%	80 - 120
			Total Calcium (Ca)	2024/12/24		101	%	80 - 120
			Total Chromium (Cr)	2024/12/24		100	%	80 - 120
			Total Cobalt (Co)	2024/12/24		99	%	80 - 120
			Total Copper (Cu)	2024/12/24		99	%	80 - 120
			Total Iron (Fe)	2024/12/24		107	%	80 - 120
			Total Lead (Pb)	2024/12/24		97	%	80 - 120
			Total Magnesium (Mg)	2024/12/24		110	%	80 - 120
			Total Manganese (Mn)	2024/12/24		104	%	80 - 120
			Total Molybdenum (Mo)	2024/12/24		103	%	80 - 120
			Total Nickel (Ni)	2024/12/24		101	%	80 - 120
			Total Phosphorus (P)	2024/12/24		104	%	80 - 120
			Total Potassium (K)	2024/12/24		102	%	80 - 120
			Total Selenium (Se)	2024/12/24		100	%	80 - 120
			Total Silver (Ag)	2024/12/24		97	%	80 - 120
			Total Sodium (Na)	2024/12/24		111	%	80 - 120
			Total Strontium (Sr)	2024/12/24		101	%	80 - 120
			Total Thallium (Tl)	2024/12/24		100	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9845339	MTZ	Method Blank	Total Tin (Sn)	2024/12/24		97	%	80 - 120
			Total Titanium (Ti)	2024/12/24		104	%	80 - 120
			Total Uranium (U)	2024/12/24		106	%	80 - 120
			Total Vanadium (V)	2024/12/24		103	%	80 - 120
			Total Zinc (Zn)	2024/12/24		101	%	80 - 120
			Total Aluminum (Al)	2024/12/24	ND, RDL=5.0		ug/L	
			Total Antimony (Sb)	2024/12/24	ND, RDL=1.0		ug/L	
			Total Arsenic (As)	2024/12/24	ND, RDL=1.0		ug/L	
			Total Barium (Ba)	2024/12/24	ND, RDL=1.0		ug/L	
			Total Beryllium (Be)	2024/12/24	ND, RDL=0.10		ug/L	
			Total Bismuth (Bi)	2024/12/24	ND, RDL=2.0		ug/L	
			Total Boron (B)	2024/12/24	ND, RDL=50		ug/L	
			Total Cadmium (Cd)	2024/12/24	ND, RDL=0.010		ug/L	
			Total Calcium (Ca)	2024/12/24	ND, RDL=100		ug/L	
			Total Chromium (Cr)	2024/12/24	ND, RDL=1.0		ug/L	
			Total Cobalt (Co)	2024/12/24	ND, RDL=0.40		ug/L	
			Total Copper (Cu)	2024/12/24	ND, RDL=0.50		ug/L	
			Total Iron (Fe)	2024/12/24	ND, RDL=50		ug/L	
			Total Lead (Pb)	2024/12/24	ND, RDL=0.50		ug/L	
			Total Magnesium (Mg)	2024/12/24	ND, RDL=100		ug/L	
			Total Manganese (Mn)	2024/12/24	ND, RDL=2.0		ug/L	
			Total Molybdenum (Mo)	2024/12/24	ND, RDL=2.0		ug/L	
			Total Nickel (Ni)	2024/12/24	ND, RDL=2.0		ug/L	
			Total Phosphorus (P)	2024/12/24	ND, RDL=100		ug/L	
			Total Potassium (K)	2024/12/24	ND, RDL=100		ug/L	
			Total Selenium (Se)	2024/12/24	ND, RDL=0.50		ug/L	
			Total Silver (Ag)	2024/12/24	ND, RDL=0.10		ug/L	
			Total Sodium (Na)	2024/12/24	ND, RDL=100		ug/L	
			Total Strontium (Sr)	2024/12/24	ND, RDL=2.0		ug/L	
			Total Thallium (Tl)	2024/12/24	ND, RDL=0.10		ug/L	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9845339	MTZ	RPD	Total Tin (Sn)	2024/12/24	ND, RDL=2.0		ug/L	
			Total Titanium (Ti)	2024/12/24	ND, RDL=2.0		ug/L	
			Total Uranium (U)	2024/12/24	ND, RDL=0.10		ug/L	
			Total Vanadium (V)	2024/12/24	ND, RDL=2.0		ug/L	
			Total Zinc (Zn)	2024/12/24	ND, RDL=5.0		ug/L	
			Total Aluminum (Al)	2024/12/26	3.1		%	20
			Total Antimony (Sb)	2024/12/26	NC		%	20
			Total Arsenic (As)	2024/12/26	NC		%	20
			Total Barium (Ba)	2024/12/26	8.5		%	20
			Total Beryllium (Be)	2024/12/26	NC		%	20
			Total Bismuth (Bi)	2024/12/26	NC		%	20
			Total Boron (B)	2024/12/26	NC		%	20
			Total Cadmium (Cd)	2024/12/26	NC		%	20
			Total Calcium (Ca)	2024/12/26	2.7		%	20
			Total Chromium (Cr)	2024/12/26	2.0		%	20
			Total Cobalt (Co)	2024/12/26	0.80		%	20
			Total Copper (Cu)	2024/12/26	0.56		%	20
			Total Iron (Fe)	2024/12/26	2.5		%	20
			Total Lead (Pb)	2024/12/26	NC		%	20
			Total Magnesium (Mg)	2024/12/26	1.2		%	20
			Total Manganese (Mn)	2024/12/26	1.9		%	20
			Total Molybdenum (Mo)	2024/12/26	NC		%	20
			Total Nickel (Ni)	2024/12/26	1.2		%	20
			Total Phosphorus (P)	2024/12/26	NC		%	20
			Total Potassium (K)	2024/12/26	1.6		%	20
			Total Selenium (Se)	2024/12/26	NC		%	20
			Total Silver (Ag)	2024/12/26	NC		%	20
			Total Sodium (Na)	2024/12/26	1.3		%	20
			Total Strontium (Sr)	2024/12/26	3.9		%	20
			Total Thallium (Tl)	2024/12/26	NC		%	20
			Total Tin (Sn)	2024/12/26	NC		%	20
			Total Titanium (Ti)	2024/12/26	NC		%	20
			Total Uranium (U)	2024/12/26	NC		%	20
			Total Vanadium (V)	2024/12/26	1.9		%	20
			Total Zinc (Zn)	2024/12/26	5.7		%	20
9845342	JHY	Matrix Spike	Total Aluminum (Al)	2024/12/24		104	%	80 - 120
			Total Antimony (Sb)	2024/12/24		101	%	80 - 120
			Total Arsenic (As)	2024/12/24		100	%	80 - 120
			Total Barium (Ba)	2024/12/24		99	%	80 - 120
			Total Beryllium (Be)	2024/12/24		101	%	80 - 120
			Total Bismuth (Bi)	2024/12/24		99	%	80 - 120
			Total Boron (B)	2024/12/24		102	%	80 - 120
			Total Cadmium (Cd)	2024/12/24		100	%	80 - 120
			Total Calcium (Ca)	2024/12/24		102	%	80 - 120
			Total Chromium (Cr)	2024/12/24		98	%	80 - 120
			Total Cobalt (Co)	2024/12/24		97	%	80 - 120
			Total Copper (Cu)	2024/12/24		97	%	80 - 120
			Total Iron (Fe)	2024/12/24		102	%	80 - 120
			Total Lead (Pb)	2024/12/24		96	%	80 - 120
			Total Magnesium (Mg)	2024/12/24		106	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9845342	JHY	Spiked Blank	Total Manganese (Mn)	2024/12/24		99	%	80 - 120
			Total Molybdenum (Mo)	2024/12/24		106	%	80 - 120
			Total Nickel (Ni)	2024/12/24		99	%	80 - 120
			Total Phosphorus (P)	2024/12/24		103	%	80 - 120
			Total Potassium (K)	2024/12/24		100	%	80 - 120
			Total Selenium (Se)	2024/12/24		100	%	80 - 120
			Total Silver (Ag)	2024/12/24		98	%	80 - 120
			Total Sodium (Na)	2024/12/24		NC	%	80 - 120
			Total Strontium (Sr)	2024/12/24		97	%	80 - 120
			Total Thallium (Tl)	2024/12/24		99	%	80 - 120
			Total Tin (Sn)	2024/12/24		99	%	80 - 120
			Total Titanium (Ti)	2024/12/24		100	%	80 - 120
			Total Uranium (U)	2024/12/24		106	%	80 - 120
			Total Vanadium (V)	2024/12/24		103	%	80 - 120
			Total Zinc (Zn)	2024/12/24		97	%	80 - 120
			Total Aluminum (Al)	2024/12/24		100	%	80 - 120
			Total Antimony (Sb)	2024/12/24		99	%	80 - 120
			Total Arsenic (As)	2024/12/24		96	%	80 - 120
			Total Barium (Ba)	2024/12/24		96	%	80 - 120
			Total Beryllium (Be)	2024/12/24		98	%	80 - 120
			Total Bismuth (Bi)	2024/12/24		98	%	80 - 120
			Total Boron (B)	2024/12/24		101	%	80 - 120
			Total Cadmium (Cd)	2024/12/24		96	%	80 - 120
			Total Calcium (Ca)	2024/12/24		97	%	80 - 120
			Total Chromium (Cr)	2024/12/24		97	%	80 - 120
			Total Cobalt (Co)	2024/12/24		97	%	80 - 120
			Total Copper (Cu)	2024/12/24		97	%	80 - 120
			Total Iron (Fe)	2024/12/24		100	%	80 - 120
			Total Lead (Pb)	2024/12/24		96	%	80 - 120
			Total Magnesium (Mg)	2024/12/24		106	%	80 - 120
			Total Manganese (Mn)	2024/12/24		100	%	80 - 120
			Total Molybdenum (Mo)	2024/12/24		101	%	80 - 120
			Total Nickel (Ni)	2024/12/24		98	%	80 - 120
			Total Phosphorus (P)	2024/12/24		100	%	80 - 120
			Total Potassium (K)	2024/12/24		100	%	80 - 120
			Total Selenium (Se)	2024/12/24		97	%	80 - 120
			Total Silver (Ag)	2024/12/24		97	%	80 - 120
			Total Sodium (Na)	2024/12/24		104	%	80 - 120
			Total Strontium (Sr)	2024/12/24		96	%	80 - 120
			Total Thallium (Tl)	2024/12/24		98	%	80 - 120
			Total Tin (Sn)	2024/12/24		97	%	80 - 120
			Total Titanium (Ti)	2024/12/24		101	%	80 - 120
			Total Uranium (U)	2024/12/24		103	%	80 - 120
			Total Vanadium (V)	2024/12/24		100	%	80 - 120
			Total Zinc (Zn)	2024/12/24		97	%	80 - 120
9845342	JHY	Method Blank	Total Aluminum (Al)	2024/12/24	ND, RDL=5.0		ug/L	
			Total Antimony (Sb)	2024/12/24	ND, RDL=1.0		ug/L	
			Total Arsenic (As)	2024/12/24	ND, RDL=1.0		ug/L	
			Total Barium (Ba)	2024/12/24	ND, RDL=1.0		ug/L	
			Total Beryllium (Be)	2024/12/24	ND, RDL=0.10		ug/L	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9845342	JHY	RPD	Total Bismuth (Bi)	2024/12/24	ND, RDL=2.0		ug/L	
			Total Boron (B)	2024/12/24	ND, RDL=50		ug/L	
			Total Cadmium (Cd)	2024/12/24	ND, RDL=0.010		ug/L	
			Total Calcium (Ca)	2024/12/24	ND, RDL=100		ug/L	
			Total Chromium (Cr)	2024/12/24	ND, RDL=1.0		ug/L	
			Total Cobalt (Co)	2024/12/24	ND, RDL=0.40		ug/L	
			Total Copper (Cu)	2024/12/24	ND, RDL=0.50		ug/L	
			Total Iron (Fe)	2024/12/24	ND, RDL=50		ug/L	
			Total Lead (Pb)	2024/12/24	ND, RDL=0.50		ug/L	
			Total Magnesium (Mg)	2024/12/24	ND, RDL=100		ug/L	
			Total Manganese (Mn)	2024/12/24	ND, RDL=2.0		ug/L	
			Total Molybdenum (Mo)	2024/12/24	ND, RDL=2.0		ug/L	
			Total Nickel (Ni)	2024/12/24	ND, RDL=2.0		ug/L	
			Total Phosphorus (P)	2024/12/24	ND, RDL=100		ug/L	
			Total Potassium (K)	2024/12/24	ND, RDL=100		ug/L	
			Total Selenium (Se)	2024/12/24	ND, RDL=0.50		ug/L	
			Total Silver (Ag)	2024/12/24	ND, RDL=0.10		ug/L	
			Total Sodium (Na)	2024/12/24	ND, RDL=100		ug/L	
			Total Strontium (Sr)	2024/12/24	ND, RDL=2.0		ug/L	
			Total Thallium (Tl)	2024/12/24	ND, RDL=0.10		ug/L	
			Total Tin (Sn)	2024/12/24	ND, RDL=2.0		ug/L	
			Total Titanium (Ti)	2024/12/24	ND, RDL=2.0		ug/L	
			Total Uranium (U)	2024/12/24	ND, RDL=0.10		ug/L	
			Total Vanadium (V)	2024/12/24	ND, RDL=2.0		ug/L	
			Total Zinc (Zn)	2024/12/24	ND, RDL=5.0		ug/L	
			Total Aluminum (Al)	2024/12/26	5.9		%	20
			Total Antimony (Sb)	2024/12/26	NC		%	20
			Total Arsenic (As)	2024/12/26	NC		%	20
			Total Barium (Ba)	2024/12/26	0.63		%	20
			Total Beryllium (Be)	2024/12/26	NC		%	20
			Total Bismuth (Bi)	2024/12/26	NC		%	20



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Boron (B)	2024/12/26	NC		%	20
			Total Cadmium (Cd)	2024/12/26	7.7		%	20
			Total Calcium (Ca)	2024/12/26	0.63		%	20
			Total Chromium (Cr)	2024/12/26	NC		%	20
			Total Cobalt (Co)	2024/12/26	NC		%	20
			Total Copper (Cu)	2024/12/26	0.40		%	20
			Total Iron (Fe)	2024/12/26	11		%	20
			Total Lead (Pb)	2024/12/26	NC		%	20
			Total Magnesium (Mg)	2024/12/26	0.44		%	20
			Total Manganese (Mn)	2024/12/26	0.63		%	20
			Total Molybdenum (Mo)	2024/12/26	NC		%	20
			Total Nickel (Ni)	2024/12/26	3.0		%	20
			Total Phosphorus (P)	2024/12/26	NC		%	20
			Total Potassium (K)	2024/12/26	0.70		%	20
			Total Selenium (Se)	2024/12/26	NC		%	20
			Total Silver (Ag)	2024/12/26	NC		%	20
			Total Sodium (Na)	2024/12/26	0.072		%	20
			Total Strontium (Sr)	2024/12/26	4.3		%	20
			Total Thallium (Tl)	2024/12/26	NC		%	20
			Total Tin (Sn)	2024/12/26	NC		%	20
			Total Titanium (Ti)	2024/12/26	5.3		%	20
			Total Uranium (U)	2024/12/26	NC		%	20
			Total Vanadium (V)	2024/12/26	NC		%	20
			Total Zinc (Zn)	2024/12/26	3.5		%	20
9845373	KMC	Matrix Spike [AMMB44-03]	Total Organic Carbon (C)	2024/12/30		102	%	85 - 115
9845373	KMC	Spiked Blank	Total Organic Carbon (C)	2024/12/30		99	%	80 - 120
9845373	KMC	Method Blank	Total Organic Carbon (C)	2024/12/30	ND, RDL=0.50		mg/L	
9845373	KMC	RPD [AMMB44-03]	Total Organic Carbon (C)	2024/12/30	1.7		%	15
9845441	ZZH	QC Standard	Total Suspended Solids	2024/12/30		99	%	80 - 120
9845441	ZZH	Method Blank	Total Suspended Solids	2024/12/30	ND, RDL=1.0		mg/L	
9845441	ZZH	RPD [AMMB48-01]	Total Suspended Solids	2024/12/30	5.9		%	20
9846268	SRT	Matrix Spike	Sulphide	2024/12/24		97	%	80 - 120
9846268	SRT	Spiked Blank	Sulphide	2024/12/24		90	%	80 - 120
9846268	SRT	Method Blank	Sulphide	2024/12/24	ND, RDL=0.020		mg/L	
9846268	SRT	RPD	Sulphide	2024/12/24	NC		%	20
9847495	SPY	Matrix Spike	Total Mercury (Hg)	2024/12/30		99	%	80 - 120
9847495	SPY	Spiked Blank	Total Mercury (Hg)	2024/12/30		99	%	80 - 120
9847495	SPY	Method Blank	Total Mercury (Hg)	2024/12/30	ND, RDL=0.013		ug/L	
9847495	SPY	RPD	Total Mercury (Hg)	2024/12/30	NC		%	20
9849924	EMT	Matrix Spike	Dissolved Chloride (Cl-)	2024/12/30		99	%	80 - 120
9849924	EMT	Spiked Blank	Dissolved Chloride (Cl-)	2024/12/30		100	%	80 - 120
9849924	EMT	Method Blank	Dissolved Chloride (Cl-)	2024/12/30	ND, RDL=1.0		mg/L	
9849924	EMT	RPD	Dissolved Chloride (Cl-)	2024/12/30	8.0		%	20
9849927	EMT	Matrix Spike	Dissolved Sulphate (SO4)	2024/12/30		105	%	80 - 120
9849927	EMT	Spiked Blank	Dissolved Sulphate (SO4)	2024/12/30		101	%	80 - 120
9849927	EMT	Method Blank	Dissolved Sulphate (SO4)	2024/12/30	ND, RDL=2.0		mg/L	
9849927	EMT	RPD	Dissolved Sulphate (SO4)	2024/12/30	11		%	20
9849928	EMT	Matrix Spike	Reactive Silica (SiO2)	2024/12/30		94	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9849928	EMT	Spiked Blank	Reactive Silica (SiO ₂)	2024/12/30		98	%	80 - 120
9849928	EMT	Method Blank	Reactive Silica (SiO ₂)	2024/12/30	ND, RDL=0.50		mg/L	
9849928	EMT	RPD	Reactive Silica (SiO ₂)	2024/12/30	8.7		%	20
9849931	EMT	Spiked Blank	Colour	2024/12/30		90	%	80 - 120
9849931	EMT	Method Blank	Colour	2024/12/30	ND, RDL=5.0		TCU	
9849931	EMT	RPD	Colour	2024/12/30	NC		%	20
9849932	EMT	Matrix Spike	Orthophosphate (P)	2024/12/30		NC	%	80 - 120
9849932	EMT	Spiked Blank	Orthophosphate (P)	2024/12/30		96	%	80 - 120
9849932	EMT	Method Blank	Orthophosphate (P)	2024/12/30	ND, RDL=0.010		mg/L	
9849932	EMT	RPD	Orthophosphate (P)	2024/12/30	0.51		%	20
9849933	EMT	Matrix Spike	Nitrate + Nitrite (N)	2024/12/30		97	%	80 - 120
9849933	EMT	Spiked Blank	Nitrate + Nitrite (N)	2024/12/30		97	%	80 - 120
9849933	EMT	Method Blank	Nitrate + Nitrite (N)	2024/12/30	ND, RDL=0.050		mg/L	
9849933	EMT	RPD	Nitrate + Nitrite (N)	2024/12/30	NC		%	20
9849934	EMT	Matrix Spike	Nitrite (N)	2024/12/30		26 (1)	%	80 - 120
9849934	EMT	Spiked Blank	Nitrite (N)	2024/12/30		91	%	80 - 120
9849934	EMT	Method Blank	Nitrite (N)	2024/12/30	ND, RDL=0.010		mg/L	
9849934	EMT	RPD	Nitrite (N)	2024/12/30	NC		%	20
9849935	EMT	Matrix Spike	Dissolved Chloride (Cl ⁻)	2024/12/30		95	%	80 - 120
9849935	EMT	Spiked Blank	Dissolved Chloride (Cl ⁻)	2024/12/30		100	%	80 - 120
9849935	EMT	Method Blank	Dissolved Chloride (Cl ⁻)	2024/12/30	ND, RDL=1.0		mg/L	
9849935	EMT	RPD	Dissolved Chloride (Cl ⁻)	2024/12/30	0.47		%	20
9849937	EMT	Matrix Spike	Dissolved Sulphate (SO ₄)	2024/12/30		98	%	80 - 120
9849937	EMT	Spiked Blank	Dissolved Sulphate (SO ₄)	2024/12/30		106	%	80 - 120
9849937	EMT	Method Blank	Dissolved Sulphate (SO ₄)	2024/12/30	ND, RDL=2.0		mg/L	
9849937	EMT	RPD	Dissolved Sulphate (SO ₄)	2024/12/30	6.5		%	20
9849938	EMT	Matrix Spike	Reactive Silica (SiO ₂)	2024/12/30		87	%	80 - 120
9849938	EMT	Spiked Blank	Reactive Silica (SiO ₂)	2024/12/30		90	%	80 - 120
9849938	EMT	Method Blank	Reactive Silica (SiO ₂)	2024/12/30	ND, RDL=0.50		mg/L	
9849938	EMT	RPD	Reactive Silica (SiO ₂)	2024/12/30	15		%	20
9849939	EMT	Spiked Blank	Colour	2024/12/30		92	%	80 - 120
9849939	EMT	Method Blank	Colour	2024/12/30	ND, RDL=5.0		TCU	
9849939	EMT	RPD	Colour	2024/12/30	NC		%	20
9849940	EMT	Matrix Spike	Orthophosphate (P)	2024/12/30		NC	%	80 - 120
9849940	EMT	Spiked Blank	Orthophosphate (P)	2024/12/30		97	%	80 - 120
9849940	EMT	Method Blank	Orthophosphate (P)	2024/12/30	ND, RDL=0.010		mg/L	
9849940	EMT	RPD	Orthophosphate (P)	2024/12/30	0.69		%	20
9849941	EMT	Matrix Spike	Nitrate + Nitrite (N)	2024/12/30		96	%	80 - 120
9849941	EMT	Spiked Blank	Nitrate + Nitrite (N)	2024/12/30		100	%	80 - 120
9849941	EMT	Method Blank	Nitrate + Nitrite (N)	2024/12/30	ND, RDL=0.050		mg/L	
9849941	EMT	RPD	Nitrate + Nitrite (N)	2024/12/30	NC		%	20
9849942	EMT	Matrix Spike	Nitrite (N)	2024/12/30		11 (1)	%	80 - 120
9849942	EMT	Spiked Blank	Nitrite (N)	2024/12/30		95	%	80 - 120



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9849942	EMT	Method Blank	Nitrite (N)	2024/12/30	ND, RDL=0.010		mg/L	
9849942	EMT	RPD	Nitrite (N)	2024/12/30	NC		%	20
9849979	KMC	Matrix Spike [AMMB47-02]	Dissolved Organic Carbon (C)	2024/12/30		101	%	85 - 115
9849979	KMC	Spiked Blank	Dissolved Organic Carbon (C)	2024/12/30		104	%	80 - 120
9849979	KMC	Method Blank	Dissolved Organic Carbon (C)	2024/12/30	ND, RDL=0.50		mg/L	
9849979	KMC	RPD [AMMB47-02]	Dissolved Organic Carbon (C)	2024/12/30	1.3		%	15
9850053	MCN	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2024/12/31		91	%	80 - 120
9850053	MCN	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2024/12/31		99	%	80 - 120
9850053	MCN	Method Blank	Nitrogen (Ammonia Nitrogen)	2024/12/31	ND, RDL=0.050		mg/L	
9850053	MCN	RPD	Nitrogen (Ammonia Nitrogen)	2024/12/31	2.6		%	20
9850060	M2C	Spiked Blank	pH	2024/12/30		100	%	97 - 103
9850060	M2C	RPD	pH	2024/12/30	0.98		%	N/A
9850063	M2C	Spiked Blank	Conductivity	2024/12/30		99	%	80 - 120
9850063	M2C	Method Blank	Conductivity	2024/12/30	ND, RDL=1.0		uS/cm	
9850063	M2C	RPD	Conductivity	2024/12/30	0.38		%	10
9850064	M2C	Spiked Blank	Total Alkalinity (Total as CaCO3)	2024/12/30		97	%	80 - 120
9850064	M2C	Method Blank	Total Alkalinity (Total as CaCO3)	2024/12/30	ND, RDL=2.0		mg/L	
9850064	M2C	RPD	Total Alkalinity (Total as CaCO3)	2024/12/30	0.95		%	20
9851582	SPC	Matrix Spike	Phenols-4AAP	2025/01/02		111	%	80 - 120
9851582	SPC	Spiked Blank	Phenols-4AAP	2024/12/31		104	%	80 - 120
9851582	SPC	Method Blank	Phenols-4AAP	2024/12/31	ND, RDL=0.0010		mg/L	
9851582	SPC	RPD	Phenols-4AAP	2024/12/31	NC		%	20
9851996	M2C	QC Standard	Turbidity	2025/01/02		107	%	80 - 120
9851996	M2C	Spiked Blank	Turbidity	2025/01/02		105	%	80 - 120
9851996	M2C	Method Blank	Turbidity	2025/01/02	ND, RDL=0.10		NTU	
9851996	M2C	RPD [AMMB48-02]	Turbidity	2025/01/02	2.4		%	20
9851998	M2C	QC Standard	Turbidity	2025/01/02		108	%	80 - 120
9851998	M2C	Spiked Blank	Turbidity	2025/01/02		104	%	80 - 120
9851998	M2C	Method Blank	Turbidity	2025/01/02	ND, RDL=0.10		NTU	
9851998	M2C	RPD [AMMB43-02]	Turbidity	2025/01/02	NC		%	20
9852358	JEP	Matrix Spike [AMMB43-06]	Total Mercury (Hg)	2025/01/02		93	%	80 - 120
9852358	JEP	Spiked Blank	Total Mercury (Hg)	2025/01/02		96	%	80 - 120
9852358	JEP	Method Blank	Total Mercury (Hg)	2025/01/02	ND, RDL=0.013		ug/L	
9852358	JEP	RPD	Total Mercury (Hg)	2025/01/02	NC		%	20
9853268	EMT	Matrix Spike [AMMB43-02]	Dissolved Chloride (Cl-)	2025/01/02		95	%	80 - 120
9853268	EMT	Spiked Blank	Dissolved Chloride (Cl-)	2025/01/02		95	%	80 - 120
9853268	EMT	Method Blank	Dissolved Chloride (Cl-)	2025/01/02	ND, RDL=1.0		mg/L	
9853268	EMT	RPD [AMMB43-02]	Dissolved Chloride (Cl-)	2025/01/02	0.23		%	20
9853269	EMT	Matrix Spike [AMMB43-02]	Dissolved Sulphate (SO4)	2025/01/02		107	%	80 - 120
9853269	EMT	Spiked Blank	Dissolved Sulphate (SO4)	2025/01/02		98	%	80 - 120
9853269	EMT	Method Blank	Dissolved Sulphate (SO4)	2025/01/02	ND, RDL=2.0		mg/L	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9853269	EMT	RPD [AMMB43-02]	Dissolved Sulphate (SO ₄)	2025/01/02	15		%	20
9853270	EMT	Matrix Spike [AMMB43-02]	Reactive Silica (SiO ₂)	2025/01/02		83	%	80 - 120
9853270	EMT	Spiked Blank	Reactive Silica (SiO ₂)	2025/01/02		91	%	80 - 120
9853270	EMT	Method Blank	Reactive Silica (SiO ₂)	2025/01/02	ND, RDL=0.50		mg/L	
9853270	EMT	RPD [AMMB43-02]	Reactive Silica (SiO ₂)	2025/01/02	2.1		%	20
9853271	EMT	Spiked Blank	Colour	2025/01/02		118	%	80 - 120
9853271	EMT	Method Blank	Colour	2025/01/02	ND, RDL=5.0		TCU	
9853271	EMT	RPD [AMMB43-02]	Colour	2025/01/02	3.5		%	20
9853272	EMT	Matrix Spike [AMMB43-02]	Orthophosphate (P)	2025/01/02		88	%	80 - 120
9853272	EMT	Spiked Blank	Orthophosphate (P)	2025/01/02		94	%	80 - 120
9853272	EMT	Method Blank	Orthophosphate (P)	2025/01/02	ND, RDL=0.010		mg/L	
9853272	EMT	RPD [AMMB43-02]	Orthophosphate (P)	2025/01/02	NC		%	20
9853273	EMT	Matrix Spike [AMMB43-02]	Nitrate + Nitrite (N)	2025/01/02		95	%	80 - 120
9853273	EMT	Spiked Blank	Nitrate + Nitrite (N)	2025/01/02		93	%	80 - 120
9853273	EMT	Method Blank	Nitrate + Nitrite (N)	2025/01/02	ND, RDL=0.050		mg/L	
9853273	EMT	RPD [AMMB43-02]	Nitrate + Nitrite (N)	2025/01/02	0.42		%	20
9853274	EMT	Matrix Spike [AMMB43-02]	Nitrite (N)	2025/01/02		90	%	80 - 120
9853274	EMT	Spiked Blank	Nitrite (N)	2025/01/02		104	%	80 - 120
9853274	EMT	Method Blank	Nitrite (N)	2025/01/02	ND, RDL=0.010		mg/L	
9853274	EMT	RPD [AMMB43-02]	Nitrite (N)	2025/01/02	NC		%	20
9853358	MCN	Matrix Spike [AMMB44-08]	Nitrogen (Ammonia Nitrogen)	2025/01/02		91	%	80 - 120
9853358	MCN	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2025/01/02		92	%	80 - 120
9853358	MCN	Method Blank	Nitrogen (Ammonia Nitrogen)	2025/01/02	ND, RDL=0.050		mg/L	
9853358	MCN	RPD [AMMB44-08]	Nitrogen (Ammonia Nitrogen)	2025/01/02	NC		%	20
9853406	SPC	Matrix Spike [AMMB42-07]	Phenols-4AAP	2025/01/02		112	%	80 - 120
9853406	SPC	Spiked Blank	Phenols-4AAP	2025/01/02		102	%	80 - 120
9853406	SPC	Method Blank	Phenols-4AAP	2025/01/02	ND, RDL=0.0010		mg/L	
9853406	SPC	RPD [AMMB42-07]	Phenols-4AAP	2025/01/02	NC		%	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) Poor spike recovery due to sample matrix, recovery confirmed with repeat analysis.



VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Senior Scientific Specialist

Janah M. Rhyno

Janah Rhyno, Scientific Specialist

Janah M. Rhyno

Bureau Veritas Certified by Janah Rhyno, Scientific Specialist

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Your Project #: Lagoon Samples - Monthly
Site#: 00012
Your C.O.C. #: C#978294-01-01

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2024/03/14
Report #: R8065842
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C465332

Received: 2024/03/05, 09:20

Sample Matrix: Water
Samples Received: 1

Analyses	Date		Laboratory Method	Analytical Method
	Quantity	Extracted	Analyzed	
Ferrous Iron in Water by Colourimetry (1)	1	N/A	2024/03/05 SYD SOP 00178	SM 24 3500-Fe B m
Ferric Iron in Water by Calculation (1)	1	N/A	2024/03/12 SYD SOP 00178	SM 24 3500-Fe B m
* Biochemical Oxygen Demand (3)	1	2024/03/07	2024/03/12 ATL SOP 00041	SM 24 5210B m
Metals Water Total MS	1	2024/03/06	2024/03/07 ATL SOP 00058	EPA 6020B R2 m
Nitrogen - Nitrate + Nitrite	1	N/A	2024/03/07 ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite	1	N/A	2024/03/07 ATL SOP 00017	SM 24 4500-NO2- B m
Nitrogen - Nitrate (as N)	1	N/A	2024/03/08 ATL SOP 00018	ASTM D3867-16
pH (4)	1	N/A	2024/03/06 ATL SOP 00003	SM 24 4500-H+ B m
Total Kjeldahl Nitrogen in Water (2)	1	2024/03/11	2024/03/12 CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric) (2)	1	2024/03/11	2024/03/13 CAM SOP-00407	SM 24 4500-P I
Total Suspended Solids	1	2024/03/05	2024/03/08 ATL SOP 00007	SM 24 2540D 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, EPA, APHA or the Quebec Ministry of Environment.

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) This test was performed by Bureau Veritas Sydney, 465 George Street, Sydney, NS, B1P 1K5



Your Project #: Lagoon Samples - Monthly
Site#: 00012
Your C.O.C. #: C#978294-01-01

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2024/03/14
Report #: R8065842
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C465332

Received: 2024/03/05, 09:20

(2) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8

(3) * Analysis performed using frozen aliquot due to Hold Time and/or QC issues.

(4) 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.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:

Preeti Kapadia, Project Manager

Email: Preeti.Kapadia@bureauveritas.com

Phone# (902)420-0203 Ext:252

=====

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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 Suzanne Rogers, General Manager responsible for Nova Scotia Environmental laboratory operations.



FERROUS/FERRIC ANALYSIS (TOTAL) -NEW

Bureau Veritas ID		YNQ759		
Sampling Date		2024/02/29 09:00		
COC Number		C#978294-01-01		
Sample #		00287		
	UNITS	DISCHARGE-SW-9	RDL	QC Batch
Calculated Parameters				
Iron (ferric)	mg/L	ND	0.50	9256221
Inorganics				
Iron (ferrous)	mg/L	0.58	0.50	9258608
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.				



RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		YNQ759		
Sampling Date		2024/02/29 09:00		
COC Number		C#978294-01-01		
Sample #		00287		
	UNITS	DISCHARGE-SW-9	RDL	QC Batch
Calculated Parameters				
Nitrate (N)	mg/L	11	0.50	9255111
Inorganics				
Biochemical Oxygen Demand	mg/L	ND	10	9260183
Total Kjeldahl Nitrogen (TKN)	mg/L	110	5.0	9267490
Nitrate + Nitrite (N)	mg/L	12	0.50	9260266
Nitrite (N)	mg/L	0.16	0.010	9259273
pH	pH	8.27		9257690
Total Phosphorus	mg/L	0.30	0.10	9267377
Total Suspended Solids	mg/L	3.6	2.0	9255878
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.				



ELEMENTS BY ICP/MS (WATER)

Bureau Veritas ID		YNQ759		
Sampling Date		2024/02/29 09:00		
COC Number		C#978294-01-01		
Sample #		00287		
	UNITS	DISCHARGE-SW-9	RDL	QC Batch
Metals				
Total Iron (Fe)	ug/L	760	50	9257648
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				



GENERAL COMMENTS

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

Package 1	6.5°C
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Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9255878	ADD	QC Standard	Total Suspended Solids	2024/03/08		98	%	80 - 120
9255878	ADD	Method Blank	Total Suspended Solids	2024/03/08	ND, RDL=1.0		mg/L	
9255878	ADD	RPD	Total Suspended Solids	2024/03/08	NC		%	20
9257648	MTZ	Matrix Spike	Total Iron (Fe)	2024/03/07		NC	%	80 - 120
9257648	MTZ	Spiked Blank	Total Iron (Fe)	2024/03/06		110	%	80 - 120
9257648	MTZ	Method Blank	Total Iron (Fe)	2024/03/06	ND, RDL=50		ug/L	
9257648	MTZ	RPD	Total Iron (Fe)	2024/03/07	7.9		%	20
9257690	LJV	Spiked Blank	pH	2024/03/06		100	%	97 - 103
9257690	LJV	RPD	pH	2024/03/06	0.39		%	N/A
9258608	TML	Matrix Spike [YNQ759-01]	Iron (ferrous)	2024/03/05		98	%	80 - 120
9258608	TML	Spiked Blank	Iron (ferrous)	2024/03/05		99	%	80 - 120
9258608	TML	Method Blank	Iron (ferrous)	2024/03/05	ND, RDL=0.50		mg/L	
9258608	TML	RPD [YNQ759-01]	Iron (ferrous)	2024/03/05	3.6		%	20
9259273	EMT	Matrix Spike	Nitrite (N)	2024/03/07		93	%	80 - 120
9259273	EMT	Spiked Blank	Nitrite (N)	2024/03/07		101	%	80 - 120
9259273	EMT	Method Blank	Nitrite (N)	2024/03/07	ND, RDL=0.010		mg/L	
9259273	EMT	RPD	Nitrite (N)	2024/03/07	NC		%	20
9260183	DME	QC Standard	Biochemical Oxygen Demand	2024/03/12		86	%	80 - 120
9260183	DME	Spiked Blank	Biochemical Oxygen Demand	2024/03/12		97	%	80 - 120
9260183	DME	Method Blank	Biochemical Oxygen Demand	2024/03/12	ND, RDL=2.0		mg/L	
9260266	EMT	Matrix Spike	Nitrate + Nitrite (N)	2024/03/07		NC	%	80 - 120
9260266	EMT	Spiked Blank	Nitrate + Nitrite (N)	2024/03/07		100	%	80 - 120
9260266	EMT	Method Blank	Nitrate + Nitrite (N)	2024/03/07	ND, RDL=0.050		mg/L	
9260266	EMT	RPD	Nitrate + Nitrite (N)	2024/03/07	0.61		%	20
9267377	MUM	Matrix Spike [YNQ759-04]	Total Phosphorus	2024/03/13		96	%	80 - 120
9267377	MUM	QC Standard	Total Phosphorus	2024/03/13		93	%	80 - 120
9267377	MUM	Spiked Blank	Total Phosphorus	2024/03/13		99	%	80 - 120
9267377	MUM	Method Blank	Total Phosphorus	2024/03/13	ND, RDL=0.020		mg/L	
9267377	MUM	RPD [YNQ759-04]	Total Phosphorus	2024/03/13	9.9		%	20
9267490	KJP	Matrix Spike	Total Kjeldahl Nitrogen (TKN)	2024/03/12		104	%	80 - 120
9267490	KJP	QC Standard	Total Kjeldahl Nitrogen (TKN)	2024/03/12		94	%	80 - 120
9267490	KJP	Spiked Blank	Total Kjeldahl Nitrogen (TKN)	2024/03/12		94	%	80 - 120
9267490	KJP	Method Blank	Total Kjeldahl Nitrogen (TKN)	2024/03/12	ND, RDL=0.10		mg/L	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC								
Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9267490	KJP	RPD	Total Kjeldahl Nitrogen (TKN)	2024/03/12	6.3		%	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).								



VALIDATION SIGNATURE PAGE

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

Anastassia Hamanov, Scientific Specialist

Janah Rhyno, Scientific Specialist

Kathy Martin, Laboratory Manager

Mike MacGillivray, Scientific Specialist (Inorganics)

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Your Project #: Lagoon Samples - Monthly
Site#: 00012
Your C.O.C. #: C#982821-01-01

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2024/05/07
Report #: R8138404
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4C4433

Received: 2024/04/26, 09:43

Sample Matrix: Water
Samples Received: 1

Analyses	Date		Laboratory Method	Analytical Method
	Quantity	Date Extracted	Date Analyzed	
Ferrous Iron in Water by Colourimetry (1)	1	N/A	2024/04/26	SYD SOP 00178
Ferric Iron in Water by Calculation (1)	1	N/A	2024/05/01	SYD SOP 00178
* Biochemical Oxygen Demand (3)	1	2024/05/02	2024/05/07	ATL SOP 00041
Metals Water Total MS	1	2024/04/26	2024/04/30	ATL SOP 00058
Nitrogen - Nitrate + Nitrite	1	N/A	2024/04/29	ATL SOP 00016
Nitrogen - Nitrite	1	N/A	2024/04/29	ATL SOP 00017
Nitrogen - Nitrate (as N)	1	N/A	2024/04/30	ATL SOP 00018
pH (4)	1	N/A	2024/04/29	ATL SOP 00003
Total Kjeldahl Nitrogen in Water (2)	1	2024/05/01	2024/05/02	CAM SOP-00938
Phosphorus Total Colourimetry	1	2024/04/30	2024/05/01	ATL SOP 00057
Total Suspended Solids	1	2024/04/30	2024/05/01	ATL SOP 00007

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, EPA, APHA or the Quebec Ministry of Environment.

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.

(1) This test was performed by Bureau Veritas Sydney, 465 George Street, Sydney, NS, B1P 1K5



Your Project #: Lagoon Samples - Monthly
Site#: 00012
Your C.O.C. #: C#982821-01-01

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2024/05/07
Report #: R8138404
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4C4433

Received: 2024/04/26, 09:43

(2) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8

(3) * Analysis performed using frozen aliquot due to Hold Time and/or QC issues.

(4) 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.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:

Preeti Kapadia, Project Manager

Email: Preeti.Kapadia@bureauveritas.com

Phone# (902)420-0203 Ext:252

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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 Suzanne Rogers, General Manager responsible for Nova Scotia Environmental laboratory operations.



FERROUS/FERRIC ANALYSIS (TOTAL) -NEW

Bureau Veritas ID		YZU992		
Sampling Date		2024/04/24 09:00		
COC Number		C#982821-01-01		
Sample #		00287		
	UNITS	DISCHARGE -SW-9	RDL	QC Batch
Calculated Parameters				
Iron (ferric)	mg/L	1.2	0.50	9358019
Inorganics				
Iron (ferrous)	mg/L	ND	0.50	9361183
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.				



RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		YZU992		
Sampling Date		2024/04/24 09:00		
COC Number		C#982821-01-01		
Sample #		00287		
	UNITS	DISCHARGE -SW-9	RDL	QC Batch
Calculated Parameters				
Nitrate (N)	mg/L	7.1	0.25	9357558
Inorganics				
Biochemical Oxygen Demand	mg/L	10	3.0	9368482
Total Kjeldahl Nitrogen (TKN)	mg/L	110	5.0	9367426
Nitrate + Nitrite (N)	mg/L	7.6	0.25	9358862
Nitrite (N)	mg/L	0.52	0.050	9358864
pH	pH	8.27		9361145
Total Phosphorus	mg/L	0.31	0.020	9363421
Total Suspended Solids	mg/L	19	5.0	9363372
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				



ELEMENTS BY ICP/MS (WATER)

Bureau Veritas ID		YZU992		
Sampling Date		2024/04/24 09:00		
COC Number		C#982821-01-01		
Sample #		00287		
	UNITS	DISCHARGE -SW-9	RDL	QC Batch
Metals				
Total Iron (Fe)	ug/L	1200	50	9358327
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				



GENERAL COMMENTS

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

Package 1	13.3°C
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Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9358327	MOA	Matrix Spike	Total Iron (Fe)	2024/04/29		104	%	80 - 120
9358327	MOA	Spiked Blank	Total Iron (Fe)	2024/04/29		102	%	80 - 120
9358327	MOA	Method Blank	Total Iron (Fe)	2024/04/29	ND, RDL=50		ug/L	
9358327	MOA	RPD	Total Iron (Fe)	2024/04/29	1.2		%	20
9358862	EMT	Matrix Spike	Nitrate + Nitrite (N)	2024/04/29		83	%	80 - 120
9358862	EMT	Spiked Blank	Nitrate + Nitrite (N)	2024/04/29		96	%	80 - 120
9358862	EMT	Method Blank	Nitrate + Nitrite (N)	2024/04/29	ND, RDL=0.050		mg/L	
9358862	EMT	RPD	Nitrate + Nitrite (N)	2024/04/29	1.3		%	20
9358864	MCN	Matrix Spike	Nitrite (N)	2024/04/29		103	%	80 - 120
9358864	MCN	Spiked Blank	Nitrite (N)	2024/04/29		101	%	80 - 120
9358864	MCN	Method Blank	Nitrite (N)	2024/04/29	ND, RDL=0.010		mg/L	
9358864	MCN	RPD	Nitrite (N)	2024/04/29	3.0		%	20
9361145	LJV	Spiked Blank	pH	2024/04/29		100	%	97 - 103
9361145	LJV	RPD	pH	2024/04/29	0.33		%	N/A
9361183	TML	Matrix Spike [YZU992-07]	Iron (ferrous)	2024/04/26		97	%	80 - 120
9361183	TML	Spiked Blank	Iron (ferrous)	2024/04/26		99	%	80 - 120
9361183	TML	Method Blank	Iron (ferrous)	2024/04/26	ND, RDL=0.50		mg/L	
9361183	TML	RPD [YZU992-07]	Iron (ferrous)	2024/04/26	NC		%	20
9363372	DME	QC Standard	Total Suspended Solids	2024/05/01		98	%	80 - 120
9363372	DME	Method Blank	Total Suspended Solids	2024/05/01	ND, RDL=1.0		mg/L	
9363372	DME	RPD [YZU992-01]	Total Suspended Solids	2024/05/01	NC		%	20
9363421	EMT	Matrix Spike	Total Phosphorus	2024/05/01		97	%	80 - 120
9363421	EMT	Spiked Blank	Total Phosphorus	2024/05/01		104	%	80 - 120
9363421	EMT	Method Blank	Total Phosphorus	2024/05/01	ND, RDL=0.020		mg/L	
9363421	EMT	RPD	Total Phosphorus	2024/05/01	NC		%	25
9367426	KJP	Matrix Spike	Total Kjeldahl Nitrogen (TKN)	2024/05/02		NC	%	80 - 120
9367426	KJP	QC Standard	Total Kjeldahl Nitrogen (TKN)	2024/05/02		104	%	80 - 120
9367426	KJP	Spiked Blank	Total Kjeldahl Nitrogen (TKN)	2024/05/02		101	%	80 - 120
9367426	KJP	Method Blank	Total Kjeldahl Nitrogen (TKN)	2024/05/02	ND, RDL=0.10		mg/L	
9367426	KJP	RPD	Total Kjeldahl Nitrogen (TKN)	2024/05/02	5.7		%	20
9368482	DME	QC Standard	Biochemical Oxygen Demand	2024/05/07		89	%	80 - 120
9368482	DME	Spiked Blank	Biochemical Oxygen Demand	2024/05/07		90	%	80 - 120
9368482	DME	Method Blank	Biochemical Oxygen Demand	2024/05/07	ND, RDL=2.0		mg/L	

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).



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

Cristina Carriere, Senior Scientific Specialist

Kathy Martin, Laboratory Manager



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Your Project #: Lagoon Samples - Monthly
Site#: 00012
Your C.O.C. #: C#988665-01-01

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2024/06/10
Report #: R8185051
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4G3242

Received: 2024/05/31, 09:17

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Biochemical Oxygen Demand	1	2024/05/31	2024/06/05	ATL SOP 00041	SM 24 5210B m
Ferrous Iron in Water by Colourimetry (1)	1	N/A	2024/05/31	SYD SOP 00178	SM 24 3500-Fe B m
Ferric Iron in Water by Calculation (1)	1	N/A	2024/06/10	SYD SOP 00178	SM 24 3500-Fe B m
Metals Water Total MS	1	2024/06/06	2024/06/07	ATL SOP 00058	EPA 6020B R2 m
Nitrogen - Nitrate + Nitrite	1	N/A	2024/06/10	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite	1	N/A	2024/06/10	ATL SOP 00017	SM 24 4500-NO2- B m
Nitrogen - Nitrate (as N)	1	N/A	2024/06/10	ATL SOP 00018	ASTM D3867-16
pH (3)	1	N/A	2024/06/07	ATL SOP 00003	SM 24 4500-H+ B m
Total Kjeldahl Nitrogen in Water (2)	1	2024/06/05	2024/06/06	CAM SOP-00938	OMOE E3516 m
Phosphorus Total Colourimetry	1	2024/06/06	2024/06/07	ATL SOP 00057	EPA 365.1 R2 m
Total Suspended Solids	1	2024/06/05	2024/06/06	ATL SOP 00007	SM 24 2540D 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, EPA, APHA or the Quebec Ministry of Environment.

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) This test was performed by Bureau Veritas Sydney, 465 George Street, Sydney, NS, B1P 1K5



Your Project #: Lagoon Samples - Monthly
Site#: 00012
Your C.O.C. #: C#988665-01-01

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2024/06/10
Report #: R8185051
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4G3242

Received: 2024/05/31, 09:17

(2) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8

(3) 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.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:

Preeti Kapadia, Project Manager

Email: Preeti.Kapadia@bureauveritas.com

Phone# (902)420-0203 Ext:252

=====

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FERROUS/FERRIC ANALYSIS (TOTAL) -NEW

Bureau Veritas ID		ZHW401		
Sampling Date		2024/05/29 09:40		
COC Number		C#988665-01-01		
Sample #		00287		
	UNITS	DISCHARGE-SW-9	RDL	QC Batch
Calculated Parameters				
Iron (ferric)	mg/L	ND	0.50	9429586
Inorganics				
Iron (ferrous)	mg/L	ND	0.50	9429930
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.				



RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		ZHW401		
Sampling Date		2024/05/29 09:40		
COC Number		C#988665-01-01		
Sample #		00287		
	UNITS	DISCHARGE-SW-9	RDL	QC Batch
Calculated Parameters				
Nitrate (N)	mg/L	10	0.50	9425899
Inorganics				
Biochemical Oxygen Demand	mg/L	33	5.1	9425526
Total Kjeldahl Nitrogen (TKN)	mg/L	72	2.0	9436673
Nitrate + Nitrite (N)	mg/L	12	0.50	9444050
Nitrite (N)	mg/L	1.7	0.050	9444054
pH	pH	8.05		9440107
Total Phosphorus	mg/L	0.19	0.020	9437314
Total Suspended Solids	mg/L	11	1.0	9434546
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				



ELEMENTS BY ICP/MS (WATER)

Bureau Veritas ID		ZHW401		
Sampling Date		2024/05/29 09:40		
COC Number		C#988665-01-01		
Sample #		00287		
	UNITS	DISCHARGE-SW-9	RDL	QC Batch
Metals				
Total Iron (Fe)	ug/L	360	50	9437859
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				



GENERAL COMMENTS

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

Package 1	15.7°C
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Average temperature upon receipt >10°C.

Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9425526	DME	QC Standard	Biochemical Oxygen Demand	2024/06/05		83	%	80 - 120
9425526	DME	Spiked Blank	Biochemical Oxygen Demand	2024/06/05		84	%	80 - 120
9425526	DME	Method Blank	Biochemical Oxygen Demand	2024/06/05	ND, RDL=2.0		mg/L	
9425526	DME	RPD	Biochemical Oxygen Demand	2024/06/05	5.7		%	25
9429930	TML	Matrix Spike [ZHW401-08]	Iron (ferrous)	2024/05/31		95	%	80 - 120
9429930	TML	Spiked Blank	Iron (ferrous)	2024/05/31		100	%	80 - 120
9429930	TML	Method Blank	Iron (ferrous)	2024/05/31	ND, RDL=0.50		mg/L	
9429930	TML	RPD [ZHW401-08]	Iron (ferrous)	2024/05/31	NC		%	20
9434546	ACK	QC Standard	Total Suspended Solids	2024/06/06		99	%	80 - 120
9434546	ACK	Method Blank	Total Suspended Solids	2024/06/06	ND, RDL=1.0		mg/L	
9434546	ACK	RPD	Total Suspended Solids	2024/06/06	6.2		%	20
9436673	KJP	Matrix Spike	Total Kjeldahl Nitrogen (TKN)	2024/06/06		NC	%	80 - 120
9436673	KJP	QC Standard	Total Kjeldahl Nitrogen (TKN)	2024/06/06		95	%	80 - 120
9436673	KJP	Spiked Blank	Total Kjeldahl Nitrogen (TKN)	2024/06/06		98	%	80 - 120
9436673	KJP	Method Blank	Total Kjeldahl Nitrogen (TKN)	2024/06/06	ND, RDL=0.10		mg/L	
9436673	KJP	RPD	Total Kjeldahl Nitrogen (TKN)	2024/06/06	0.83		%	20
9437314	EMT	Matrix Spike	Total Phosphorus	2024/06/07		106	%	80 - 120
9437314	EMT	Spiked Blank	Total Phosphorus	2024/06/07		103	%	80 - 120
9437314	EMT	Method Blank	Total Phosphorus	2024/06/07	ND, RDL=0.020		mg/L	
9437314	EMT	RPD	Total Phosphorus	2024/06/07	NC		%	25
9437859	JHY	Matrix Spike	Total Iron (Fe)	2024/06/07		101	%	80 - 120
9437859	JHY	Spiked Blank	Total Iron (Fe)	2024/06/07		102	%	80 - 120
9437859	JHY	Method Blank	Total Iron (Fe)	2024/06/07	ND, RDL=50		ug/L	
9437859	JHY	RPD	Total Iron (Fe)	2024/06/10	5.1		%	20
9440107	LJV	Spiked Blank	pH	2024/06/07		101	%	97 - 103
9440107	LJV	RPD	pH	2024/06/07	0.68		%	N/A
9444050	EMT	Matrix Spike	Nitrate + Nitrite (N)	2024/06/10		NC	%	80 - 120
9444050	EMT	Spiked Blank	Nitrate + Nitrite (N)	2024/06/10		108	%	80 - 120
9444050	EMT	Method Blank	Nitrate + Nitrite (N)	2024/06/10	ND, RDL=0.050		mg/L	
9444050	EMT	RPD	Nitrate + Nitrite (N)	2024/06/10	1.7		%	20
9444054	EMT	Matrix Spike	Nitrite (N)	2024/06/10		101	%	80 - 120
9444054	EMT	Spiked Blank	Nitrite (N)	2024/06/10		103	%	80 - 120
9444054	EMT	Method Blank	Nitrite (N)	2024/06/10	ND, RDL=0.010		mg/L	
9444054	EMT	RPD	Nitrite (N)	2024/06/10	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).



Bureau Veritas Job #: C4G3242
Report Date: 2024/06/10

Central Newfoundland Waste Management Authority
Client Project #: Lagoon Samples - Monthly

VALIDATION SIGNATURE PAGE

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

Anastassia Hamanov, Scientific Specialist

Kathy Martin, Laboratory Manager



Bureau Veritas Proprietary Software
Logiciel Propriétaire de Bureau Veritas

Automated Statchk

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Your Project #: Lagoon Samples - Monthly
Site#: 00012
Your C.O.C. #: C#1004424-01-01

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2024/08/22
Report #: R8288052
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C409850

Received: 2024/08/14, 09:42

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Biochemical Oxygen Demand	1	2024/08/14	2024/08/19	ATL SOP 00041	SM 24 5210B m
Ferrous Iron in Water by Colourimetry (1)	1	N/A	2024/08/14	SYD SOP 00178	SM 24 3500-Fe B m
Ferric Iron in Water by Calculation (1)	1	N/A	2024/08/20	SYD SOP 00178	SM 24 3500-Fe B m
Metals Water Total MS	1	2024/08/15	2024/08/16	ATL SOP 00058	EPA 6020B R2 m
Nitrogen - Nitrate + Nitrite	1	N/A	2024/08/19	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite	1	N/A	2024/08/19	ATL SOP 00017	SM 24 4500-NO2- B m
Nitrogen - Nitrate (as N)	1	N/A	2024/08/19	ATL SOP 00018	ASTM D3867-16
pH (3)	1	N/A	2024/08/19	ATL SOP 00003	SM 24 4500-H+ B m
Total Kjeldahl Nitrogen in Water (2)	1	2024/08/19	2024/08/20	CAM SOP-00938	OMOE E3516 m
Phosphorus Total Colourimetry	1	2024/08/21	2024/08/22	ATL SOP 00057	EPA 365.1 R2 m
Total Suspended Solids	1	2024/08/19	2024/08/21	ATL SOP 00007	SM 24 2540D 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, EPA, APHA or the Quebec Ministry of Environment.

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.

(1) This test was performed by Bureau Veritas Sydney, 465 George Street, Sydney, NS, B1P 1K5



Your Project #: Lagoon Samples - Monthly
Site#: 00012
Your C.O.C. #: C#1004424-01-01

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2024/08/22
Report #: R8288052
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C409850

Received: 2024/08/14, 09:42

(2) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8

(3) 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.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:

Jaspreet Kaur, Project Manager 1

Email: jaspreet.kaur@bureauveritas.com

Phone# (902)420-0203

=====

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FERROUS/FERRIC ANALYSIS (TOTAL) -NEW

Bureau Veritas ID		ZZN031		
Sampling Date		2024/08/12 08:00		
COC Number		C#1004424-01-01		
Sample #		00287		
	UNITS	DISCHARGE SW-9	RDL	QC Batch
Calculated Parameters				
Iron (ferric)	mg/L	ND	0.50	9580839
Inorganics				
Iron (ferrous)	mg/L	ND	0.50	9575399
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.				



RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		ZZN031		
Sampling Date		2024/08/12 08:00		
COC Number		C#1004424-01-01		
Sample #		00287		
	UNITS	DISCHARGE-SW-9	RDL	QC Batch
Calculated Parameters				
Nitrate (N)	mg/L	18	1.5	9574829
Inorganics				
Biochemical Oxygen Demand	mg/L	57	16	9575702
Total Kjeldahl Nitrogen (TKN)	mg/L	61	2.0	9585477
Nitrate + Nitrite (N)	mg/L	21	1.5	9580609
Nitrite (N)	mg/L	2.9	0.20	9580613
pH	pH	8.65		9584258
Total Phosphorus	mg/L	0.38	0.020	9589455
Total Suspended Solids	mg/L	60	10	9584155
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				



ELEMENTS BY ICP/MS (WATER)

Bureau Veritas ID		ZZN031		
Sampling Date		2024/08/12 08:00		
COC Number		C#1004424-01-01		
Sample #		00287		
	UNITS	DISCHARGE-SW-9	RDL	QC Batch
Metals				
Total Iron (Fe)	ug/L	390	50	9577771
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				



GENERAL COMMENTS

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

Package 1	21.0°C
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Average temperature upon receipt >10°C.

Results relate only to the items tested.

BUREAU
VERITAS

Bureau Veritas Job #: C4O9850

Report Date: 2024/08/22

Central Newfoundland Waste Management Authority

Client Project #: Lagoon Samples - Monthly

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9575399	TML	Matrix Spike	Iron (ferrous)	2024/08/14		86	%	80 - 120
9575399	TML	Spiked Blank	Iron (ferrous)	2024/08/14		98	%	80 - 120
9575399	TML	Method Blank	Iron (ferrous)	2024/08/14	ND, RDL=0.50		mg/L	
9575399	TML	RPD	Iron (ferrous)	2024/08/14	0.53		%	20
9575702	LRK	QC Standard	Biochemical Oxygen Demand	2024/08/19		101	%	80 - 120
9575702	LRK	Spiked Blank	Biochemical Oxygen Demand	2024/08/19		104	%	80 - 120
9575702	LRK	Method Blank	Biochemical Oxygen Demand	2024/08/19	ND, RDL=3.0		mg/L	
9575702	LRK	RPD [ZZN031-02]	Biochemical Oxygen Demand	2024/08/19	NC		%	25
9577771	MTZ	Matrix Spike	Total Iron (Fe)	2024/08/15		105	%	80 - 120
9577771	MTZ	Spiked Blank	Total Iron (Fe)	2024/08/15		106	%	80 - 120
9577771	MTZ	Method Blank	Total Iron (Fe)	2024/08/15	ND, RDL=50		ug/L	
9580609	EMT	Matrix Spike	Nitrate + Nitrite (N)	2024/08/19		102	%	80 - 120
9580609	EMT	Spiked Blank	Nitrate + Nitrite (N)	2024/08/19		103	%	80 - 120
9580609	EMT	Method Blank	Nitrate + Nitrite (N)	2024/08/19	ND, RDL=0.050		mg/L	
9580609	EMT	RPD	Nitrate + Nitrite (N)	2024/08/19	NC		%	20
9580613	EMT	Matrix Spike	Nitrite (N)	2024/08/19		103	%	80 - 120
9580613	EMT	Spiked Blank	Nitrite (N)	2024/08/19		105	%	80 - 120
9580613	EMT	Method Blank	Nitrite (N)	2024/08/19	ND, RDL=0.010		mg/L	
9580613	EMT	RPD	Nitrite (N)	2024/08/19	NC		%	20
9584155	DME	QC Standard	Total Suspended Solids	2024/08/21		99	%	80 - 120
9584155	DME	Method Blank	Total Suspended Solids	2024/08/21	ND, RDL=1.0		mg/L	
9584155	DME	RPD	Total Suspended Solids	2024/08/21	18		%	20
9584258	M2C	Spiked Blank	pH	2024/08/19		99	%	97 - 103
9584258	M2C	RPD	pH	2024/08/19	0.17		%	N/A
9585477	RTY	Matrix Spike	Total Kjeldahl Nitrogen (TKN)	2024/08/20		97	%	80 - 120
9585477	RTY	QC Standard	Total Kjeldahl Nitrogen (TKN)	2024/08/20		109	%	80 - 120
9585477	RTY	Spiked Blank	Total Kjeldahl Nitrogen (TKN)	2024/08/20		102	%	80 - 120
9585477	RTY	Method Blank	Total Kjeldahl Nitrogen (TKN)	2024/08/20	ND, RDL=0.10		mg/L	
9585477	RTY	RPD	Total Kjeldahl Nitrogen (TKN)	2024/08/20	3.5		%	20
9589455	MCN	Matrix Spike	Total Phosphorus	2024/08/22		103	%	80 - 120
9589455	MCN	Spiked Blank	Total Phosphorus	2024/08/22		97	%	80 - 120
9589455	MCN	Method Blank	Total Phosphorus	2024/08/22	ND, RDL=0.020		mg/L	
9589455	MCN	RPD	Total Phosphorus	2024/08/22	11		%	25

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 (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 Job #: C4O9850
Report Date: 2024/08/22

Central Newfoundland Waste Management Authority
Client Project #: Lagoon Samples - Monthly

VALIDATION SIGNATURE PAGE

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

Ernie Publicover, Scientific Specialist

Kathy Martin, Laboratory Manager

Louise Harding, Team Lead



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Logiciel Propriétaire de Bureau Veritas

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Your Project #: Lagoon Samples - Monthly
Site#: 00012
Your C.O.C. #: C#1009381-01-01

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2024/10/15
Report #: R8362145
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4U9708

Received: 2024/10/03, 09:48

Sample Matrix: Water
Samples Received: 1

Analyses	Date		Date Analyzed	Laboratory Method	Analytical Method
	Quantity	Extracted			
Ferrous Iron in Water by Colourimetry (1)	1	N/A	2024/10/03	SYD SOP 00178	SM 24 3500-Fe B m
Ferric Iron in Water by Calculation (1)	1	N/A	2024/10/08	SYD SOP 00178	SM 24 3500-Fe B m
Metals Water Total MS	1	2024/10/04	2024/10/07	ATL SOP 00058	EPA 6020B R2 m
Nitrogen - Nitrate + Nitrite	1	N/A	2024/10/08	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite	1	N/A	2024/10/08	ATL SOP 00017	SM 24 4500-NO2- B m
Nitrogen - Nitrate (as N)	1	N/A	2024/10/09	ATL SOP 00018	ASTM D3867-16
pH (3)	1	N/A	2024/10/08	ATL SOP 00003	SM 24 4500-H+ B m
Total Kjeldahl Nitrogen in Water (2)	1	2024/10/10	2024/10/11	CAM SOP-00938	OMOE E3516 m
Phosphorus Total Colourimetry	1	2024/10/04	2024/10/07	ATL SOP 00057	EPA 365.1 R2 m
Total Suspended Solids	1	2024/10/04	2024/10/07	ATL SOP 00007	SM 24 2540D 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, EPA, APHA or the Quebec Ministry of Environment.

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) This test was performed by Bureau Veritas Sydney, 465 George Street , Sydney, NS, B1P 1K5

(2) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8



Your Project #: Lagoon Samples - Monthly
Site#: 00012
Your C.O.C. #: C#1009381-01-01

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2024/10/15
Report #: R8362145
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4U9708

Received: 2024/10/03, 09:48

(3) 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.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:

Jaspreet Kaur, Project Manager 1

Email: jaspreet.kaur@bureauveritas.com

Phone# (902)420-0203

=====

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FERROUS/FERRIC ANALYSIS (TOTAL) -NEW

Bureau Veritas ID		AERU86		
Sampling Date		2024/09/30 09:00		
COC Number		C#1009381-01-01		
Sample #		00287		
	UNITS	DISCHARGE-SW-9	RDL	QC Batch
Calculated Parameters				
Iron (ferric)	mg/L	ND	0.50	9679665
Inorganics				
Iron (ferrous)	mg/L	0.71	0.50	9679512
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.				



RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		AERU86		
Sampling Date		2024/09/30 09:00		
COC Number		C#1009381-01-01		
Sample #		00287		
	UNITS	DISCHARGE-SW-9	RDL	QC Batch
Calculated Parameters				
Nitrate (N)	mg/L	6.8	0.25	9679124
Inorganics				
Total Kjeldahl Nitrogen (TKN)	mg/L	16	2.0	9693995
Nitrate + Nitrite (N)	mg/L	8.6	0.25	9685365
Nitrite (N)	mg/L	1.8	0.050	9685366
pH	pH	8.93		9687876
Total Phosphorus	mg/L	0.47	0.020	9681303
Total Suspended Solids	mg/L	24	5.0	9681388
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				



ELEMENTS BY ICP/MS (WATER)

Bureau Veritas ID		AERU86		
Sampling Date		2024/09/30 09:00		
COC Number		C#1009381-01-01		
Sample #		00287		
	UNITS	DISCHARGE-SW-9	RDL	QC Batch
Metals				
Total Iron (Fe)	ug/L	ND	500	9681770
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.				



GENERAL COMMENTS

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

Package 1	13.3°C
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Sample AERU86 [DISCHARGE-SW-9] : Elevated reporting limits for trace metals due to sample matrix. Total Iron < Ferrous Iron: Both values fall within the method uncertainty for duplicates and are likely equivalent.

Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9679512	TML	Matrix Spike [AERU86-07]	Iron (ferrous)	2024/10/03		99	%	80 - 120
9679512	TML	Spiked Blank	Iron (ferrous)	2024/10/03		102	%	80 - 120
9679512	TML	Method Blank	Iron (ferrous)	2024/10/03	ND, RDL=0.50		mg/L	
9679512	TML	RPD [AERU86-07]	Iron (ferrous)	2024/10/03	1.4		%	20
9681303	EMT	Matrix Spike	Total Phosphorus	2024/10/07		88	%	80 - 120
9681303	EMT	Spiked Blank	Total Phosphorus	2024/10/07		103	%	80 - 120
9681303	EMT	Method Blank	Total Phosphorus	2024/10/07	ND, RDL=0.020		mg/L	
9681303	EMT	RPD	Total Phosphorus	2024/10/07	NC		%	25
9681388	ISM	QC Standard	Total Suspended Solids	2024/10/07		96	%	80 - 120
9681388	ISM	Method Blank	Total Suspended Solids	2024/10/07	ND, RDL=1.0		mg/L	
9681388	ISM	RPD	Total Suspended Solids	2024/10/07	6.9		%	20
9681770	MTZ	Matrix Spike [AERU86-06]	Total Iron (Fe)	2024/10/07		98	%	80 - 120
9681770	MTZ	Spiked Blank	Total Iron (Fe)	2024/10/07		99	%	80 - 120
9681770	MTZ	Method Blank	Total Iron (Fe)	2024/10/07	ND, RDL=50		ug/L	
9681770	MTZ	RPD	Total Iron (Fe)	2024/10/07	NC		%	20
9685365	EMT	Matrix Spike	Nitrate + Nitrite (N)	2024/10/08		98	%	80 - 120
9685365	EMT	Spiked Blank	Nitrate + Nitrite (N)	2024/10/08		102	%	80 - 120
9685365	EMT	Method Blank	Nitrate + Nitrite (N)	2024/10/08	ND, RDL=0.050		mg/L	
9685365	EMT	RPD	Nitrate + Nitrite (N)	2024/10/08	3.9		%	20
9685366	EMT	Matrix Spike	Nitrite (N)	2024/10/08		94	%	80 - 120
9685366	EMT	Spiked Blank	Nitrite (N)	2024/10/08		95	%	80 - 120
9685366	EMT	Method Blank	Nitrite (N)	2024/10/08	ND, RDL=0.010		mg/L	
9685366	EMT	RPD	Nitrite (N)	2024/10/08	NC		%	20
9687876	S6S	Spiked Blank	pH	2024/10/08		99	%	97 - 103
9687876	S6S	RPD	pH	2024/10/08	0.24		%	N/A
9693995	RTY	Matrix Spike	Total Kjeldahl Nitrogen (TKN)	2024/10/11		95	%	80 - 120
9693995	RTY	QC Standard	Total Kjeldahl Nitrogen (TKN)	2024/10/11		97	%	80 - 120
9693995	RTY	Spiked Blank	Total Kjeldahl Nitrogen (TKN)	2024/10/11		96	%	80 - 120
9693995	RTY	Method Blank	Total Kjeldahl Nitrogen (TKN)	2024/10/11	ND, RDL=0.10		mg/L	
9693995	RTY	RPD	Total Kjeldahl Nitrogen (TKN)	2024/10/11	0		%	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 (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).



VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Senior Scientific Specialist

Janah M. Rhyno

Janah Rhyno, Scientific Specialist

Kathy Martin

Kathy Martin, Laboratory Manager

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Your Project #: Lagoon Samples - Monthly
Site#: 00012
Your C.O.C. #: C#966262-01-01

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2024/11/18
Report #: R8409142
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4Y5606

Received: 2024/11/04, 09:13

Sample Matrix: Water
Samples Received: 1

Analyses	Date		Date Analyzed	Laboratory Method	Analytical Method
	Quantity	Extracted			
Ferrous Iron in Water by Colourimetry (1)	1	N/A	2024/11/04	SYD SOP 00178	SM 24 3500-Fe B m
Ferric Iron in Water by Calculation (1)	1	N/A	2024/11/13	SYD SOP 00178	SM 24 3500-Fe B m
Metals Water Total MS	1	2024/11/06	2024/11/06	ATL SOP 00058	EPA 6020B R2 m
Nitrogen - Nitrate + Nitrite	1	N/A	2024/11/07	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite	1	N/A	2024/11/07	ATL SOP 00017	SM 24 4500-NO2- B m
Nitrogen - Nitrate (as N)	1	N/A	2024/11/08	ATL SOP 00018	ASTM D3867-16
pH (3)	1	N/A	2024/11/08	ATL SOP 00003	SM 24 4500-H+ B m
Total Kjeldahl Nitrogen in Water (2)	1	2024/11/13	2024/11/14	CAM SOP-00938	SM 4500-N B m
Phosphorus Total Colourimetry	1	2024/11/06	2024/11/07	ATL SOP 00057	EPA 365.1 R2 m
Total Suspended Solids	1	2024/11/06	2024/11/12	ATL SOP 00007	SM 24 2540D 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, EPA, APHA or the Quebec Ministry of Environment.

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.

(1) This test was performed by Bureau Veritas Sydney, 465 George Street, Sydney, NS, B1P 1K5

(2) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd, Mississauga, ON, L5N 2L8



Your Project #: Lagoon Samples - Monthly
Site#: 00012
Your C.O.C. #: C#966262-01-01

Attention: Mark Attwood

Central Newfoundland Waste Management Authority
P.O. Box 254, Route 3-1-09
Norris Arm, NL
CANADA A0G 3M0

Report Date: 2024/11/18
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CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4Y5606

Received: 2024/11/04, 09:13

(3) 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.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:

Jaspreet Kaur, Project Manager 1

Email: jaspreet.kaur@bureauveritas.com

Phone# (902)420-0203

=====

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FERROUS/FERRIC ANALYSIS (TOTAL) -NEW

Bureau Veritas ID		AHTD70		
Sampling Date		2024/10/31 08:30		
COC Number		C#966262-01-01		
	UNITS	DISCHARGE-SW9	RDL	QC Batch
Calculated Parameters				
Iron (ferric)	mg/L	ND	0.50	9746018
Inorganics				
Iron (ferrous)	mg/L	ND	0.50	9748203
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.				



RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		AHTD70		
Sampling Date		2024/10/31 08:30		
COC Number		C#966262-01-01		
	UNITS	DISCHARGE-SW9	RDL	QC Batch
Calculated Parameters				
Nitrate (N)	mg/L	13	0.75	9743337
Inorganics				
Total Kjeldahl Nitrogen (TKN)	mg/L	5.6	0.50	9762774
Nitrate + Nitrite (N)	mg/L	14	0.75	9750994
Nitrite (N)	mg/L	0.63	0.050	9750995
pH	pH	8.01		9753814
Total Phosphorus	mg/L	0.24	0.020	9748191
Total Suspended Solids	mg/L	12	2.0	9749121
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				



ELEMENTS BY ICP/MS (WATER)

Bureau Veritas ID		AHTD70		
Sampling Date		2024/10/31 08:30		
COC Number		C#966262-01-01		
	UNITS	DISCHARGE-SW9	RDL	QC Batch
Metals				
Total Iron (Fe)	ug/L	190	50	9748186
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				



GENERAL COMMENTS

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

Package 1	13.0°C
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Ferrous sample received and analyzed past hold time.

Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9748186	MTZ	Matrix Spike	Total Iron (Fe)	2024/11/06		NC	%	80 - 120
9748186	MTZ	Spiked Blank	Total Iron (Fe)	2024/11/06		100	%	80 - 120
9748186	MTZ	Method Blank	Total Iron (Fe)	2024/11/07	ND, RDL=50		ug/L	
9748186	MTZ	RPD	Total Iron (Fe)	2024/11/06	2.5		%	20
9748191	EMT	Matrix Spike	Total Phosphorus	2024/11/07		105	%	80 - 120
9748191	EMT	Spiked Blank	Total Phosphorus	2024/11/07		100	%	80 - 120
9748191	EMT	Method Blank	Total Phosphorus	2024/11/07	ND, RDL=0.020		mg/L	
9748191	EMT	RPD	Total Phosphorus	2024/11/07	NC		%	25
9748203	TML	Matrix Spike [AHTD70-07]	Iron (ferrous)	2024/11/04		102	%	80 - 120
9748203	TML	Spiked Blank	Iron (ferrous)	2024/11/04		101	%	80 - 120
9748203	TML	Method Blank	Iron (ferrous)	2024/11/04	ND, RDL=0.50		mg/L	
9748203	TML	RPD [AHTD70-07]	Iron (ferrous)	2024/11/04	NC		%	20
9749121	DME	QC Standard	Total Suspended Solids	2024/11/12		100	%	80 - 120
9749121	DME	Method Blank	Total Suspended Solids	2024/11/12	ND, RDL=1.0		mg/L	
9749121	DME	RPD	Total Suspended Solids	2024/11/12	11		%	20
9750994	EMT	Matrix Spike	Nitrate + Nitrite (N)	2024/11/07		92	%	80 - 120
9750994	EMT	Spiked Blank	Nitrate + Nitrite (N)	2024/11/07		95	%	80 - 120
9750994	EMT	Method Blank	Nitrate + Nitrite (N)	2024/11/07	ND, RDL=0.050		mg/L	
9750994	EMT	RPD	Nitrate + Nitrite (N)	2024/11/07	NC		%	20
9750995	EMT	Matrix Spike	Nitrite (N)	2024/11/07		95	%	80 - 120
9750995	EMT	Spiked Blank	Nitrite (N)	2024/11/07		107	%	80 - 120
9750995	EMT	Method Blank	Nitrite (N)	2024/11/07	ND, RDL=0.010		mg/L	
9750995	EMT	RPD	Nitrite (N)	2024/11/07	NC		%	20
9753814	S6S	Spiked Blank	pH	2024/11/08		100	%	97 - 103
9753814	S6S	RPD	pH	2024/11/08	0.45		%	N/A
9762774	KJP	Matrix Spike	Total Kjeldahl Nitrogen (TKN)	2024/11/14		101	%	80 - 120
9762774	KJP	QC Standard	Total Kjeldahl Nitrogen (TKN)	2024/11/14		92	%	80 - 120
9762774	KJP	Spiked Blank	Total Kjeldahl Nitrogen (TKN)	2024/11/14		101	%	80 - 120
9762774	KJP	Method Blank	Total Kjeldahl Nitrogen (TKN)	2024/11/14	ND, RDL=0.10		mg/L	
9762774	KJP	RPD	Total Kjeldahl Nitrogen (TKN)	2024/11/14	18		%	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).



VALIDATION SIGNATURE PAGE

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

Ernie Publicover, Scientific Specialist

Kathy Martin, Laboratory Manager

Louise Harding, Scientific Specialist

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Appendix C - Certificate of Approval



eNGLOBE



**Government of Newfoundland and Labrador
Department of Environment and Climate Change
Pollution Prevention Division**

CERTIFICATE OF APPROVAL

Pursuant to the Environmental Protection Act, SNL 2002, Sections 16, 78 and 83.

Issued: January 15, 2023
Expiration: January 31, 2028

Approval No: WMS-17-12-001
File No: 839.CRS.001

Central Newfoundland Waste Management (CNWM)

P.O. Box 254
Norris Arm, NL A0G 3M0
Telephone: 709-653-2900
Facsimile: 709-653-2920

Attention: Mr. Ed Evans, C.A.O.

Re: Approval to operate a Regional Waste Management Facility to serve Central and Western Newfoundland Regions

Approval is hereby given for the continued operation of a Regional Waste Management Facility located at Norris Arm North, including an engineered lined landfill for the disposal of municipal solid waste; a permanent Household Hazardous Waste (HHW) depot; and a Construction and Demolition (C&D) landfill.

This approval does not release the holder from the obligation to obtain appropriate approvals from other concerned provincial, federal and municipal agencies. Approval from the Department of Environment and Climate Change (the Department) shall be obtained prior to any significant change in the design, construction, installation, or operation of the facility, including any future expansion of the works. This certificate shall not be sold, assigned, transferred, leased, mortgaged, sublet or otherwise alienated by the holder without obtaining written prior approval from the Minister.

This approval is subject to the terms and conditions attached hereto, as may be revised from time to time by the Department. Failure to comply with any of the terms and conditions may render this certificate of approval null and void, may require CNWM to cease all activities associated with this certificate of approval, may place the CNWM and its agent(s) in violation of the *Environmental Protection Act*, SNL, 2002, c. E-14-2, and will hold the CNWM responsible for taking such remedial measures as may be prescribed by the Department. The Department reserves the right to add, delete, modify or revoke this approval at any time.


For MINISTER

General

1. The Central Newfoundland Waste Management Facility (CNWM) is intended to serve the municipal solid waste management of the Central, Western, Northern Peninsula, Baie Verte Green Bay and Coast of Bay Regions of the Province.
2. Copies of all environmental standards/guidance documents are posted to the Department's website. www.env.gov.nl.ca/env/env_protection/waste/index.html
3. If different from the terms and conditions set out in the Department's environmental standards, those directly stated in the Certificate of Approval (Approval) shall apply.
4. A copy of this Approval shall be kept on site at all times.
5. All responsible personnel who are directly involved with operation and maintenance of the facility shall be provided copies of this Approval and shall be fully aware of the terms and conditions pertaining.
6. Separate approvals or an amendment to this Approval will be required for other waste management activities and/or facilities at this site.
7. Through a Memorandum-of-Understanding the Department has authorized the Department of Digital Government and Service NL (DGSNL) to act on its behalf in inspecting and/or auditing the operation of waste management facilities, for compliance under this approval and all applicable provincial Acts and Regulations. The Regional DGSNL Office may be used as the local point of contact in all cases. DGSNL may contact the Department as necessary for review and consultation on monitoring results, inspections, reports, and changes or amendments to the Approval.
8. The CNWM shall advise the Department or DGSNL of any new participants joining or proposing to leave the regional waste management facility.
9. The CNWM shall develop and keep up to date a Municipal Solid Waste Management and Public Education Plan. Information regarding the education plan and advances in this regard shall be included in the annual report for the facility, and updates provided as changes and advancements are made
10. The CNWM shall immediately notify the Department or DGSNL in writing of any change in the legal name, address, ownership, or facility operator's associated with the site.
11. Any proposed development within 3.0 km of the site shall be referred to the Department for review.
12. Notwithstanding the content of this Certificate of Approval, where options for waste treatment/disposal are limited, the Department shall be consulted regarding accommodation of the waste.

Financial Assurance

13. The CNWM is responsible to ensure that appropriate and adequate financial assurances and/or environmental impairment liability and/or pollution abatement assurance and automotive insurance policies are in place for all operators contracted to support the operations of this waste management facility.

Application Submissions

14. The Central Regional Service Board submitted the following in support of this approval:
- a. E-mail communication December 22, 2022.
 - b. 2021 Annual Report and Environmental Monitoring Report submitted February 28, 2022.

Legislation Standards and Guidelines

15. The activities associated with this facility may involve, but not be limited to, the following provincial Acts and Regulations as amended:
- *Environmental Protection Act RSNL, 2002*
 - *Air Pollution Control Regulations, 2022*
 - *Storage and Handling of Gasoline and Associated Products Regulations, 2003*
 - *Used Oil and Used Glycol Control Regulations, 2018*
 - *Halocarbon Regulations, 2005*
 - *Pesticides Control Regulations, 2007*
 - *Water Resources Act, 2002 as amended*
 - *Environmental Control Water and Sewage Regulations, 2003.*
 - *Occupational Health and Safety Act RSNL, 1990*
 - *Dangerous Goods Transportation Act, 2006*
 - *Municipalities Act, 1999*
 - *Regional Service Board Act, 1990*
 - *Transportation and Works Act, 1995* (and Highway specifications as amended)
16. The activities associated with this facility may involve, but not be limited to, the following Federal Acts and Regulations as enforced by the respective regulatory agencies:
- *Canadian Environmental Protection Act and Regulations*
 - *Transportation of Dangerous Goods Act and Regulations*
 - *Fisheries Act*
 - *National Fire Code*
 - *Health of Animals Act*
 - *Fertilizers Act*

Quality Control/Quality Assurance

17. Facility design, construction and operation must incorporate acceptable quality control/ quality assurance (QC/QA) protocols and provide for changes if necessary to maintain and improve performance. Appropriate protocol will include testing and inspection procedures and reports, with a deficiency summary, itemized corrections and any other information requested by the Department. Consideration shall be given to implementation of an environmental management system following the "Plan- Do- Check- Revise where necessary" scheme with a view to continual improvement.

Site and Facility Construction/Maintenance

18. Environmentally sound practices are required in all aspects of construction and ongoing maintenance activities, including facility construction and landscaping. This includes: appropriate storage, recycling and disposal of litter, debris, hazardous or special waste material, waste dangerous goods and other waste associated with construction and ongoing maintenance activities.
19. Erosion and sediment control measures are to be installed and maintained as required, such that watercourses or water resources adjacent to and downstream of the site are protected from siltation. The

Environmental Protection Act prohibits release of a material that may cause an adverse effect.

20. All areas exposed during construction, and any temporary diversion or control structures such as berms, ditches, etc., shall be stabilized as soon as practical.
21. When dewatering of construction areas is required, the water must not be discharged directly to a watercourse or water resource, nor to a conveyance (a ditch, culvert, manhole) that may lead to a watercourse or water resource without confirmation to meet discharge limits.
22. Grubbing and excavated material shall be used for ongoing site rehabilitation, or stored for future use in a manner that will not result in sedimentation of adjacent and downstream watercourses or water resources.
23. Sufficient area at the weigh scales, for incoming materials and for safe movement and queuing of vehicles and equipment shall be maintained throughout the site.
24. Site access roads shall be maintained to minimize dust generation. The use of dust suppressants other than water or calcium chloride shall require approval of the Director. CNWM shall use best management practices when applying calcium chloride or any other approved dust suppressant.
25. The Department reserves the right to require the installation of infrastructure for further treatment of releases to the environment where the discharge limit(s) is/are exceeded.
26. All necessary engineering documentation/facility plans, drawings and specifications shall be submitted to and approved in writing by the Department, prior to the construction, modification or expansion of 1) additional containment cells, 2) landfill gas management systems, 3) sludge handling facilities, 4) leachate treatment systems, 5) facilities for processing recyclables or managing organics, 6) storage of waste including household hazardous waste, 7) special waste disposal cells/locations, or any other construction activity at the facility.

Operation and Maintenance of a Regional MSW Landfill

27. Unsupervised landfill disposal is not permitted. Incoming waste shall be routinely scrutinized to ensure unacceptable waste is not received at the site.
28. Regular and uniform compaction of waste is recommended to maximize utilization of air space and minimize voids.
29. The CNWM shall ensure that all exposed waste disposed to containment cells is covered with a minimum of 150 mm of clean soil (or alternate daily cover that has been pre-approved in writing by the Department), as a minimum, at the end of each operating day.
30. Intermediate cover, which is placed when a cell is filled, shall consist of at least 450 mm depth of soil and shall be enhanced to the standard for final cover if not overfilled within one year of placement.

Operation and Maintenance of a Construction and Demolition Landfill

31. Compliance with the Environmental Standards for Construction and Demolition (C&D) Waste Disposal (GD-PPD-050.3) is required [env-protection-waste-guidancedocs-gd-ppd-050.3-environmental-standards-for-construction-and-demolition-waste-disposal-sites.pdf \(gov.nl.ca\)](https://www.gov.nl.ca/env-protection-waste-guidancedocs-gd-ppd-050.3-environmental-standards-for-construction-and-demolition-waste-disposal-sites.pdf) .
32. Only inert C&D debris may be disposed at the site. Where a waste material presents a management problem, consultation with the Department is required.
33. Incoming waste shall be routinely scrutinized to ensure unacceptable waste is not received at the site. Unacceptable waste includes C & D debris that is clearly contaminated with municipal solid waste, organic waste or potentially hazardous waste, and it shall be redirected to an appropriate part of the waste management facility, or as recommended in the facility contingency plan; or as determined in consultation with the Department and other responsible agencies as applicable.
34. CNWM shall provide supervision when any material is being disposed at the C & D facility including areas for temporary storage for materials management and recyclables.
35. Storage of material for reuse or recycling may be conducted in a safe manner as long as the material remains in usable condition. Details of on-site storage inventory and of transfer or processing shall be provided to the Department as part of the annual report.
36. Temporary stockpiling of incoming material shall be restricted to levels considered safe for pile stability, occupational health and safety considerations and to minimize fire risk.
37. C & D waste shall be compacted in cells separated by layers of cover material at least every three months for every 1000 cubic metres of material. Waste placement and covering shall take place so that exposed surface area does not exceed 200 square metres at any one time. Guidelines with respect to intermediate and final cover apply where utilization of the site may be interrupted.
38. Debris containing drywall is not to be used for landfill cover to avoid production of hydrogen sulfide under wet anaerobic conditions.
39. A "special waste" disposal area may be designated for the disposal of demolition debris that could present an occupational health and safety hazard due to airborne contaminants if containment is disrupted. Material of this nature may be contaminated with among other things, lead based paint, dust, fiberglass and asbestos containing material. The debris shall be secondarily contained by wrapping in uncompromised six mm polyethylene. Signage and precautions shall be put in place to permanently demark this area and prevent re-excavation.
40. An environmental monitoring program specific to the C & D storage area for recyclables shall be submitted for approval by the Department as part of the annual report for the facility.
41. Additional storage and management practice requirements are contained in Appendix A of this approval.

Operations and Maintenance of a Household Hazardous Waste Depot

42. CNWM has designated a management and collection site for household hazardous waste (HHW) which accepts hazardous materials from area residents for appropriate containment, storage, packaging and secure transport by a licensed transporter to an approved recycling or final disposal facility. Appropriately trained staff oversee all waste received at and shipped from the site.
43. Compliance with the Department's most recent version of the Environmental Standards for Permanent Household Hazardous Waste Depots (GD-PPD-059) is required [env-protection-waste-guidancedocs-gd-ppd-59.3-hhw-permanet-depots.pdf \(gov.nl.ca\)](https://www.gov.nl.ca/env-protection-waste-guidancedocs-gd-ppd-59.3-hhw-permanet-depots.pdf) .
44. Separate approvals or an amendment of this approval is required for additional storage, management or processing of waste at this site.
45. Staff shall be trained in the handling of hazardous waste, and the associated workplace hazards; shall be properly equipped and trained in the use of Personal Protective Equipment; shall abide by applicable occupational health and safety guidelines and legislation at all times; and , shall be familiar with environmental health, safety and emergency contingency plans, spill or accidental release response protocols, equipment and contact information.
46. Clear signage shall be in place, and information shall be made available to the public on safe containment, segregation and disposal practices for hazardous household products and waste materials.
47. Only hazardous waste from residential households, or residential in origin may be accepted for management and transfer to appropriate disposal at this site. Only HHW which can be safely stored and appropriately recycled or disposed is to be accepted.
48. Detailed records of hazardous waste materials that are redirected or rejected shall be maintained.
49. Sufficient area shall be maintained for safe movement of vehicles and operation of equipment.
50. CNMW shall provide supervision when any material is being disposed to or remove from the facility to ensure unacceptable waste is not received at the site.
51. A written policy on waste acceptance including a list of acceptable and unacceptable hazardous waste by category, volume, and means of containment must be established. This will include provision to redirect or reject excluded waste. The facility contingency plan shall address waste redirection.
52. Questions regarding the acceptability of a waste material shall be directed to the regional DGSNL office or to the Department. Due to the hazardous nature of materials stored at the depot, the "precautionary principle" shall prevail.
53. Where it is considered reasonably safe to do so, established methods and procedures shall be adhered to determine the hazardous nature of waste materials of unknown origin or mixtures. Only adequately trained personnel shall conduct these established methods and procedures.
54. The following shall NOT be accepted at the HHW depot:
 - a. Biomedical waste;

- b. Sharps;
- c. Asbestos containing material;
- d. Radioactive material (including low level radioactive material or naturally occurring radioactive material (NORM) waste); with the exception of residential household smoke detectors;
- e. Organic waste;
- f. Special waste;
- g. International waste;
- h. Unidentifiable or unclassifiable materials.

55. Storage structures must comply with national and municipal fire codes and building codes.

56. All holding tanks for used oil shall be approved by DGSNL as per regulations.

57. Spill containment areas must be designed to keep incompatible materials separated and be constructed of materials that are compatible with the stored waste. The secondary containment areas must have the capacity for the total volume of waste storage capacity plus 10%.

Operations and Maintenance Manuals/Plans

58. The CNWM shall develop and maintain Operations and Maintenance Manuals/Plans in accordance with the Department's General Environmental Standards for MSW Management Facilities/Systems specific to each facility associated with the Regional Site/System.

59. All site operations are to be conducted in accordance with up-to-date Facility Operations Plans approved by the Department. Changes to operations shall be noted in the facility annual report and updates filed with the Department as appropriate. The goal is to always maintain a high level of operational efficiency with minimal adverse environmental impact. A non-exhaustive list of operations and maintenance manual inclusions is provided in the applicable Department environmental standards documents as posted on the Departmental website. The purpose of the Facility Operations Plan is to ensure facility operators and employees are trained and are clear on how daily operations proceed, that routine maintenance is conducted, and that contingency plans are appropriately enacted.

Landfill Gas Management

60. Landfill gas collection work and equipment, if and when installed, shall be in accordance with the latest versions of the Code for Digester Gas and Landfill Gas Installations CAN/CGA-B105-M93 and CAN/CSA-B149.3.

Surface Water Management

61. The CNWM shall ensure that site run-on is minimized by appropriate drainage ditching and sloping; and that run-off from the site does not detrimentally impact off-site receptors.

62. The CNWM shall ensure that surface water at the site that has not been in contact with leachate or solid waste, bypasses the leachate collection-storage-treatment system, and is directed to the engineered wetland or the storm sewer drainage system from the site. Any water discharged from the site shall meet discharge water criteria.

63. Side slopes of disposal areas shall be properly stabilized and maintained to limit erosion; and any final cover applied shall be sloped to ensure positive drainage and prevent pooling of water on the surface.

64. No authority is granted by this Approval to enable the discharge of surface water beyond the property boundary and onto adjoining lands without the authorization of the affected landowner(s). It is the responsibility of the CNWM to ensure that the authorization of said landowner(s) is current and valid. Failure to retain said authorization may result in this Approval being null and void.
65. The Department shall be advised where it is necessary to construct a sedimentation pond to treat run-off from the site.
66. Sampling sites for discharge of surface water runoff shall be approved by the Department, and shall not be moved, relocated or otherwise altered without written permission.
67. The Department reserves the right to require changes to the sampling program where deemed necessary.
68. The CNWM shall be required to mitigate significant adverse impacts to receiving watercourses which are impacted as a result of point source and non-point source discharges attributed to the facility.

Leachate System Management

69. Any changes or alterations to the leachate collection system shall be submitted to the Department for review and prior approval.
70. The leachate collection system shall be capable of maintaining a maximum head of 300 mm above the liner excluding the leachate sumps, during routine operations and be sloped to allow the leachate to drain.
71. The leachate collection system shall:
- a. be of suitable infrastructure to handle storage, treatment, and discharge volumes anticipated for the site;
 - b. be hydraulically separate from the facility's storm water system;
 - c. function year round;
 - d. function effectively throughout the lifespan of the landfill;
 - e. be equipped to record instantaneous and total flows;
 - f. have storage capacity to accommodate a 100 year storm event for the drainage basin;
 - g. be chemically compatible with the waste and leachate characteristics;
 - h. provide access for inspection, monitoring flow and head; controlling flow and cleaning;
 - i. function effectively under dynamic and static loading events for all development phases;
 - j. use geosynthetic fabrics specified for leachate generation/ flow into post-closure phase; and
 - k. be designed to prevent the passage of fine sediment into and any blockage of piping systems.
72. Daily visual inspection of the leachate system shall be conducted as well as annual testing.
73. Provision shall be made to characterize and address leachate quality that may exceed the installed wetland treatment capacity. The Department may be consulted on this issue to ensure that discharge water quality criteria are adhered to.

Discharge Water Quality

74. Water discharged from the site shall meet criteria limits as set out in the *Environmental Control Water and Sewage Regulations, 2003*.

75. Effluent discharge criteria are defined in the following table, Table 1. Discharge water not meeting these criteria shall be treated to meet criteria limits prior to discharge.

Table 1: Effluent Discharge Criteria (all units are mg/L unless otherwise noted)			
Parameter	Maximum Allowable Range	Parameter	Maximum Allowable Range
Biological Oxygen Demand	20		
Total Dissolved Solids (TDS)	1000	Mercury	0.005
Total Suspended Solids (TSS)	30	Nickel	0.5
Total Petroleum Hydrocarbon (TPH)	15	Nitrates	10
Arsenic	0.5	Ammonia	2.0
Barium	5.0	Phenols	0.1
Boron	5.0	Phosphates (total as P ₂ O ₅)	1.0
Cadmium	0.05	Selenium	0.01
Chromium	1.0	Sulfides	0.5
Copper	0.3	Silver	0.05
Cyanide	0.025	Zinc	0.5
Iron	10	pH	5.5 – 9.0 pH units
Lead	0.2	Radium 226	0.37Bq/L

Effluent Monitoring Program

76. CNWM shall perform an Effluent Monitoring Program as per the schedule listed in Table 2 below. Analytical results shall be submitted as per the Reporting section.

Table 2: Effluent Monitoring Schedule		
Location	Parameters	Frequency
SW-9 (Final discharge point)	pH, TSS, nitrate, phosphorous, BOD	Monthly
	WCA	Quarterly
Influent from Landfill	pH, TSS, nitrate, phosphorous, BOD	Quarterly
Effluent from landfill	pH, TSS, nitrate, phosphorous, BOD	Quarterly
Lift Station	pH, TSS, nitrate, phosphorous, BOD	Quarterly

Water Chemistry Analysis (WCA)

77. Four times per calendar year and not less than thirty (30) days apart, CNWM shall perform Water Quality Analysis as per Table 3. Refer to Table 3 for the locations and required parameters. Analytical results shall be submitted as per the Reporting section. Sampling shall commence as soon as sites become accessible.

Table 3: Water Chemistry Analysis Program		
Ref No:	Location	Parameters
	847-SW1-Background	General Parameters: temperature, dissolved oxygen (DO), nitrate + nitrite, nitrate, nitrite, pH, TSS, colour, sodium, potassium, calcium, sulphide, magnesium, ammonia, alkalinity, sulphate, chloride, turbidity, reactive silica, orthophosphate, phosphorous, DOC, conductance, TDS (calculated), phenolics, carbonate (CaCO ₃), hardness (CaCO ₃), bicarbonate (CaCO ₃)
	SW1 to SW9	
	MWH to MWL	
		Metals Scan: aluminium, antimony, arsenic, barium, beryllium, bismuth, boron, cadmium,

		chromium, cobalt, copper, iron, lead, manganese, molybdenum, mercury, nickel, selenium, silver, strontium, thallium, tin, titanium, uranium, vanadium, zinc
		Note that TSS, temperature and dissolved oxygen are not required for groundwater i.e. MW locations.

Sampling, Laboratory Analysis and QA/QC

78. Unless otherwise approved by the Department, surface, groundwater and leachate sampling shall be conducted, as a minimum, according to methods described in ***Sampling of Water and Wastewater-Industrial Effluent Applications GD-PPD-066***.
79. Unless otherwise stated herein, all liquid and solids analysis performed pursuant to this Approval shall be done by a contracted commercial or in-house laboratory as per the ***Accredited Laboratory Policy (PD:PP2001- 01.02)***.
80. The exact location of each sampling point shall remain consistent over the life of the monitoring programs. Using a GPS or similar device, the northing and easting of each sampling location shall be recorded and submitted to the Department.

Monitoring Alteration

81. The Department has the authority to alter the monitoring programs or require additional testing at any time when:
- a. pollutants might be released to the surrounding environment without being detected;
 - b. an adverse environmental effect may occur; or
 - c. it is no longer necessary to maintain the current frequency of sampling and/or the monitoring of parameters.
82. The CNWM may, at any time, request that the monitoring program or requirements of this Approval be altered by:
- a. requesting the change in writing to the Director; and
 - b. providing sufficient justification, as determined by the Director.
83. The CNWM shall bear all expenses incurred in carrying out environmental monitoring required under the terms and conditions of this Approval.
84. Any new and relevant information respecting any adverse effect that results or may result, from any activity to which the Approval relates, and that comes to attention after the issuance of the Approval shall be submitted to the Department in a timely manner.
85. The requirements of this Approval shall remain in effect until altered, in writing, by the Department.

Non-Compliance

86. The Department and/or DGSNL shall be notified immediately of any incidents of non-compliance with this Approval.

Further Assessment

87. The Minister may at any time, with reasonable notice, require the CNWM to conduct or have conducted

environmental studies, site assessments, sampling, testing, or investigations where, based upon reasonable and probable grounds, the Minister is of the opinion that the waste management facility may have had, or has the potential to have, an adverse effect on the environment.

Environmental Emergency Health and Safety Contingency (EHS)

88. The CNWM shall maintain a contingency plan for environmental and health and safety emergencies on file with DGSNL and the Department and provide annual updates. An updated copy of the contingency plan shall be kept on site at all times.
89. For after-hours emergencies and spill reports call: **1-800-563-9089**.
90. All appropriate operations training and health and safety procedures shall be constantly maintained at the site in accordance with applicable legislation and the Department's environmental standards for the waste management facility in question.
91. Incidents that could occur and would require specific response planning include: contingency for unacceptable waste; equipment failure; waste or hazardous materials incidents/ spills; fire; air quality or odour problems, vector infestation. In the event of problems with wildlife encounters (e.g. black bears); the district office of the Department of Justice & Public Safety should be contacted at (709) 729-8377 for encounters east of the Bay D'Espoir Highway. For wildlife encounters west of the Bay D'Espoir Highway, contact (709) 637-4068. These numbers are operated on a 24/7 basis.

Environmental, Aesthetic, Nuisance, and Housekeeping

92. Existing tree screens, outside the firebreak, that may conceal the site from public view are to be maintained.
93. Access roads to the site shall be kept free of waste material and litter shall be controlled at all times.
94. Supervision shall be provided for all reception, placement, managing and, where applicable covering of waste at the facility.
95. There shall be signs placed strategically throughout the site indicating "No Scavenging".
96. The waste material disposal area shall be fenced to contain wind-blown debris and litter accumulations shall be cleared regularly from the fencing and the surrounding area.
97. All vehicles transporting waste and debris to, from, or on-site shall be enclosed, or covered with close fitting tarpaulins to prevent waste and debris from spilling, and that they have tailgates and boxes that are sealed against leakage.
98. A program to manage and control vectors, rodents, birds and wildlife that may scavenge or develop populations associated with the waste management facility shall be developed.

Prohibitions and Restrictions

99. Prohibitions refer to materials that shall not be accepted for disposal at this waste management facility. Materials are banned from disposal when they have characteristics that make them a risk to workers or to

the environment. Materials are banned for disposal when suitable waste diversion services are available which include re-use, recycling, and reduction of the amount of material that goes to landfill. It is the responsibility of site managers and staff to decline acceptance of material when unacceptable material is openly visible and identifiable.

It is not expected that site managers, inspectors or staff would search through MSW where banned material is suspected but not openly visible and identifiable, since this could create potential risks to worker health and safety.

Materials banned for landfill disposal may be handled or stored in designated areas of the facility where protocols for safe handling and storage are defined and approved by the Department in separate Certificate of Approvals (e.g., C&D waste, HHW).

100. Operational restrictions ensure that modern waste management practices are implemented. Similar to disposal bans, they aim to minimize adverse environmental effects, enhance worker health and safety, and implement best practices in modern waste management.

101. **Prohibitions – Disposal Bans:** The following material **shall NOT be accepted** for disposal.

- a. Beverage Containers suitable for reuse and recycling as defined by MMSB programs.
- b. Used tires covered by MMSB 'Used Tire Recycling Program'
- c. Waste Paint as covered by MMSB Programs
- d. Electronic goods covered by a stewardship program shall not be disposed to landfill. This material may be collected on behalf of the organization responsible, or redirected to an approved collection point. Contact information, a list of accepted products and service providers in NL is provided at <http://www.mmsb.nl.ca/recyclingprograms/electronic-waste/>. Electronic waste that is damaged (e.g. broken monitors and cathode ray tubes), or dismantled to potentially expose hazardous constituents, is considered to be hazardous waste.
- e. Bulk liquids of any kind. [With the exception of used oil, which may be accepted where a registered and approved used oil storage tank system is in place.]
- f. Household Hazardous Waste
- g. Biomedical Waste
- h. Specified Risk Material as defined in Waste Management Strategy guidance documents Appendix D (http://www.env.gov.nl.ca/env/env_protection/waste/appendix_d_definitions.pdf). It includes the skull, brain, trigeminal ganglia (nerves attached to the brain), eyes, tonsils, spinal cord, and dorsal root ganglia (nerves attached to the spinal cord) of cattle aged 30 months or older, and the distal ileum (portion of the small intestine) of cattle of all ages. These cattle tissues, if infected are capable of transmitting bovine spongiform encephalopathy (BSE), or mad cow disease if added to animal feed, pet food or fertilizer.
- i. Refrigeration, air conditioning and fire extinguishing equipment which contain regulated substances, as defined in the *Halocarbon Regulations* Schedules A-E. These materials may be acceptable when protocols are in place, as detailed in the following section.
- j. Fuel Storage Tanks except when protocols are in place for proper handling, storage, and disposal; as detailed in the following section.
- k. Naturally Occurring Radioactive Material (NORMs). NORMS might be found in drilling or excavating materials.
- l. Radioactive material is banned from disposal and is separately regulated by the Canadian Nuclear

- Safety Commission. Radioactive material is found in household material such as smoke detectors.
- m. Recyclable material destined or suitable for recovery at the Material Recovery Facility.
 - n. Any mixture or combination of the above restricted waste is also restricted or prohibited.

102. Non-compliant material

Details of any non-compliant material brought to any part of the facility and removed at the inspection/holding area shall be recorded including: date of delivery, material type and quantity, origin and owner, name of transporter, transport vehicle identification and contact information. A contingency plan shall be in place to ensure that non-compliant material is refuse and appropriately redirected.

103. Operational Restrictions:

- a. There shall be no incineration or open burning of any kind.
- b. Only waste from the area of service identified in the approval may be received at the facility unless specifically authorized by DGSNL and approved by the CNWM.
- c. All waste transporters and vehicles utilizing the waste management facility must cover or tie down waste in accordance with the *Cargo Securement Regulations (CSR)* under the *Highway Traffic Act*.
 - i. All vehicles entering CNWM facilities shall adhere to the *CSR*.
 - ii. The CNWM shall establish and implement a program to educate waste transporters on the requirements of the *CSR*.
 - iii. The CNWM shall work with the Department to develop a plan for compliance with the *CSR*, which may include such measures as denying access to non-compliant vehicles.
 - iv. The CNWM may be required to report non-compliance with the *CSR* to regional enforcement agencies, subject to the provisions of the plan established under iii).

104. Exceptions to disposal bans where management protocol apply:

- a. All non-program tires shall be accepted for disposal at the Construction and Demolition Landfill. Non program tires include all-terrain (ATV), or off the road (OTR) vehicle tires, tires used on rolling stock equipment used in the agricultural, forestry, industrial/construction and mining industries. These tires are not collected under the Used Tire Recycling Program by the MMSB. If not approved for specific recycling applications, disposal to landfill is acceptable.
- b. An exception may be made for the collection and storage of small quantities of smoke detectors that contain radioactive material. This material can be accepted at household hazardous waste depots only with prior approval from the Department.
- c. Special waste is defined by Appendix D <https://www.gov.nl.ca/ecc/files/env-protection-waste-appendix-d-definitions.pdf> of waste management strategy guidance documents as any waste material that requires special treatment or disposal precautions, due to its nature, quantity, volume, potential to react and/or potential to produce an adverse effect. Examples include, animal carcasses/ mortalities or road kill, asbestos containing material, fish plant waste, commercial or industrial waste streams etc. Special waste shall be accepted only upon prior approval from DGSNL. DGSNL will define the safe handling and disposal guidelines, technical recommendations, and roles of other regulatory agencies which shall be adhered to in all cases.
- d. Asbestos containing material (ACM) containing friable asbestos, accepted for disposal at the facility, shall be directed to the Construction and Demolition Landfill and handled by personnel who are trained and properly equipped with personal protective clothing and respirators. ACM shall be managed in accordance with the guidance document entitled: Asbestos Waste Disposal (GD-PPD-033.1).

http://www.env.gov.nl.ca/env/env_protection/waste/guidancedocs/asbestoswastedisposal.pdf

- e. Acceptance of tires under the Used Tire Recycling Programs for temporary storage is limited to 100 tires per site with the prior approval of the Department. The MMSB provides a collection service and shall be contacted at 1-800-901-6672. Additional information on tire storage can be found on the Departmental website. Storage by MMSB of surplus used tires is regulated under a separate certificate of approval.
- f. Vehicle wrecks and scrap metal shall be directed to recognized metal salvage and recycling operations.
- g. White metal wastes, ensuring compliance under the Halocarbon Regulations, such as freezers, refrigerators and stoves may be appropriately stockpiled in a separate area, pending at least semi-annual transport to a recycling operation. Metals shall be stockpiled in a neat and tidy fashion and not exceed 90% storage capacity. Additional information is found in the appendix of the Environmental Standards for Transfer Stations.
http://www.env.gov.nl.ca/env/env_protection/waste/transfer_stations_july2010.pdf
- h. Equipment containing regulated substances such as halocarbons, can be stored for recycling at a waste disposal site if the regulated substance (s) is (are) recovered by a person approved under the Halocarbon Regulations and shall be labelled "Halocarbon Free".
- i. Fuel storage tanks (commercial or residential) must be drained of product prior to entering the site and shall only be accepted at the metal storage area. The CNWM must submit a plan if draining of any fluids is undertaken and stored on site. If deemed unacceptable for recycling, prior to landfilling, fuel tanks and drums shall have confirmation that they have been purged of product, tank bottom sludge and vapour. The tank must also be cut in half or sufficient openings cut in the tank to prevent the accumulation of vapour and to accommodate visual inspection. If CNWM would like to develop a fuel storage tank management program, the Department shall be contacted to amend or issue an approval.
- j. The Department reserves the right to amend this approval, to ban disposal of waste streams where and when recycling and diversion programs exist as per amendments to the *Waste Management Regulations* and the *Waste Diversion Regulations*. Any recyclable or waste material that is banned from landfill disposal shall be appropriately redirected.
- k. Notwithstanding all of the above where options for waste treatment/ disposal are limited, the Department shall be consulted regarding accommodation of the waste.

Site Security and Signage

- 105. Unauthorized access to the waste management site shall be controlled. Measures may include fencing (wire mesh with a maximum opening of 20 cm), and shall include a secure gate or barrier at the site entrance (minimum opening of 8.5 m) with appropriate, highly visible signage to inform the public of acceptable waste materials, hours of operation, telephone number for contact and containing a "No Scavenging" stipulation.
- 106. An operator shall be kept on duty when and if the site is open to the public. The gate must be locked shut when the operator is not in attendance.
- 107. Areas shall be allocated and signs posted designating separate areas for the transfer, temporary storage and recycling or disposal of construction debris, white goods, municipal solid waste, and other approved waste as applicable.
- 108. A firebreak may be required around the perimeter of the site, please check with the authority having

jurisdiction.

Noise

109. The CNWM shall manage noise levels at the facility so as to comply with recommended guidelines under the *Occupational Health and Safety Act*.
110. Complaints about noise from nearby area residents (off-site) shall be responded and details recorded.
111. If complaints regarding noise from facility operations on or off the site are received, monitoring of sound levels may be required by the Department, and mitigation measures may be required.

Air Emissions

112. Any kind of incineration or open burning is strictly prohibited. The CNWM shall comply with the *Air Pollution Control Regulations, 2022* at all times.
113. Schedule A of these regulations provides the standard for ambient air quality, particulate matter and airborne contaminants.
114. Dust generation shall be minimized on site.
115. Odour control measures shall be incorporated into the facility.
116. Numerical or quantitative limits on odour may be established at the discretion of the Department if odour impacts beyond the property boundaries are deemed to be excessive.
117. Standard procedures to address odour complaints associated with the facility shall be established as part of the Operations Manual and would include:
 - a. Immediately investigate the cause of the complaint and undertake immediate and appropriate action, if necessary, to correct the problem.
 - b. Record all odour complaints and document the date, time, name, address and telephone number of the individual lodging the complaint. The record shall also state any cause of the odour and the action taken to correct the problem.
 - c. Record wind direction, wind speed, temperature, humidity and other atmospheric conditions at the time of the occurrence which resulted in a complaint.
 - d. Records of odour complaints shall be made available to the Department upon request.
118. A plan to reduce or cease odour generation shall be submitted at the request of the Department.

Hazardous Materials Incident/Spill Prevention

119. A separate approval, and facility-specific Environmental Health and Safety Contingency Plan, is required for the operation of a Permanent Household Hazardous Waste Depot. The Department's Environmental Standard for Permanent Household Hazardous Waste Depots shall apply.
120. All holding tanks for used oil shall be approved by DGSNL as per the *Used Oil and Used Glycol Control Regulations*.

Reporting

121. Monthly reports containing the environmental compliance monitoring and sampling information required in this Approval shall be received by the Department in digital format within 30 calendar days of

the reporting month. All related laboratory reports shall be submitted with the monthly report in Extensible Markup Language (XML) format and Adobe Portable Document Format (PDF). Digital report submissions shall be uploaded through the EDMS web portal.

122. Each monthly report shall include a summary of all environmental monitoring components and shall include an explanation for the omission of any requisite data. The monthly summary reports shall be in Microsoft Word or Adobe PDF and shall be uploaded through the EDMS web portal with the data submissions.

123. The annual report shall be submitted to the Department by February 28th, each year summarizing facility activities of the previous year. The information to be submitted is described in the Department's Environmental Standards and includes as follows and where applicable.

- a. quantity, type, source (origin) and carrier of waste received;
- b. quantity and type of materials recycled;
- c. quantity of residual material received at or transferred to the regional landfill
- d. quantity and type of waste dangerous goods removed and the final disposal site;
- e. records of any waste diversion;
- f. a summary of the water quality monitoring results for the sedimentation pond, surface water, and groundwater monitoring program, if applicable. Data must be tabulated in spreadsheet format and include a comparison to relevant guidelines;
- g. updated drawings showing the monitoring well locations, latest contours and groundwater flow direction;
- h. an assessment, where applicable, of the environmental effects monitoring program by a qualified consultant;
- i. a summary of any upsets or spills at the facility;
- j. any changes in procedure or operations;
- k. any changes or updates with respect to staffing and training;
- l. a summary of all education programs implemented or initiated; and
- m. any other information deemed necessary by the Department.

124. The annual report shall also include:

- a. A discussion and evaluation of incidents, complaints, actions, results, residual impact and path forward.
- b. Disposal Records for: special waste including the origin and description for; bulk liquids; biosolids, fish/animal processing waste, Asbestos Contaminated Waste; potentially hazardous waste and International Waste.
- c. Environmental monitoring records including:
 - i) Dates and results of all sampling conducted at the facility; and confirmation of calibration of field equipment used at the facility, before and after each sampling event, or as considered reasonable by the department, the CNWM and the equipment manufacturer.
 - ii) An evaluation and discussion of surface water and groundwater monitoring results as they may be affected by hydrogeology, landfill leachate and/or surface water runoff from the site, and potential/ resultant impacts, and mitigation of impacts.
 - iii) An evaluation of environmental monitoring results, comparing results from the previous and current calendar years and historical records, and making recommendations for future monitoring, groundwater well installation or other work at the facility.

- iv) All analyses, review and reports shall be completed by a professional engineer or geoscientist (qualified professional).

125. Any operational difficulties with potential environmental implications must be immediately reported to DGSNL. The nature of the operational difficulty as well as the mitigation measures shall be included in the yearly report.

126. All incidents of:

- Contingency Plan implementation;
- non-conformance of any condition within this approval;
- spillage or leakage of a regulated substance;
- leachate or wastewater discharge suspected to have exceeded criteria limits
- verbal/written complaints of an environmental nature from the public, any response, mitigation or corrective action e.g. due to air quality, odour or noise.
- any incidence of vandalism or illegal dumping at or near the site.

shall be immediately reported, within one working day, to a person, message manager or facsimile machine at DGSNL by phoning or faxing.

Central Region – DGSNL (Gander)

P.O. Box 2222

A1V 2N9

Telephone (709) 256-1420

Facsimile: (709) 256-1438

127. A written incident report including a detailed description of the incident, summary of contributing factors and an action plan to prevent future incidents of a similar nature, shall be submitted to the respective Regional Director of DGSNL. The action plan shall include a description of actions already taken and future actions to be implemented, and shall be submitted within thirty days of the date of the initial incident.

Certificate of Completion

128. Seven days after completion of any new facility, a signed and stamped letter from a Professional Engineers and Geoscientists of Newfoundland and Labrador (PEGNL) registered engineering company shall be submitted to the Department verifying that the facility was constructed as per the engineering as-built plans and specifications. The Department shall also be notified at least two weeks in advance of commissioning of each facility and before the Regional Facility is open to the public to allow for inspections to be arranged.

Decommissioning

129. An approved alternative disposal or transfer location must be identified prior to closure and decommissioning.

130. A detailed decommissioning plan must be submitted to the Department six months prior to the planned date of final site closure. Details must address site security, the removal of remaining material and on-site infrastructure, and financial arrangements for any future environmental monitoring requirements, and outline potential future uses for the site.

Expiration

131. This approval expires on January 31, 2028.

132. Should the CNWM wish to continue to operate beyond this expiry date, a written request shall be submitted to the Department for the renewal of this approval. Such request shall be made at least three months prior to expiration.

c.c. Robert Locke, Director
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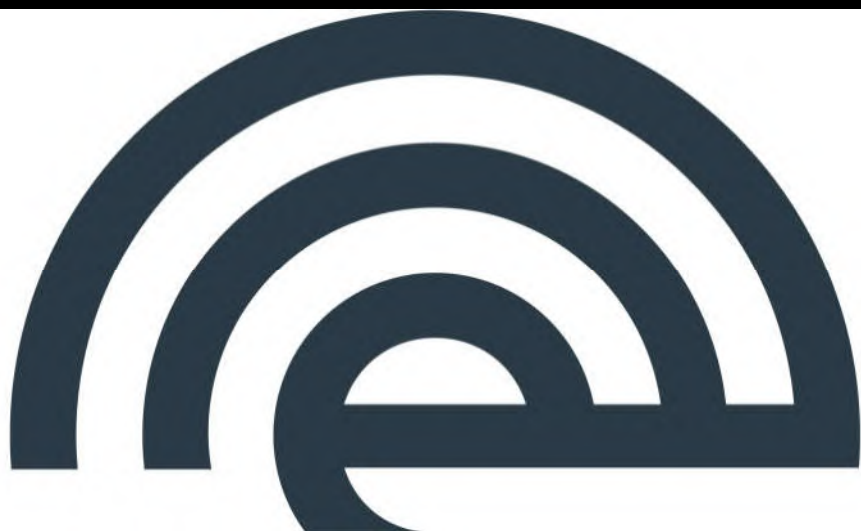
Attachment: Appendix A – C & D debris- management of specific waste streams

Appendix A
Construction and Demolition (C&D) Debris – management of specific waste streams

1. Bulky household items including mattresses and chesterfields are permitted but those that might retain a lot of water shall be separated from other C & D waste, particularly drywall/gypsum. This will reduce the possibility of hydrogen sulfide formation due to water transfer.
2. Rigid plastic pipes and buoys are permitted but should be segregated from other C & D waste to reduce risk of burning in the event of a fire.
3. Mixed waste from housing demolition may only be disposed to the C & D landfill if a hazardous waste risk assessment has been completed and any hazardous materials such as asbestos containing materials, fluorescent lighting ballasts and paint with high levels of lead, have been removed in advance.
4. With the exception of treated wood from residential sources, commercial generators of treated wood are required to conduct testing per the guidance document "Treated Wood Waste Disposal" GD-PPD-075.1 at the link below. If there are no exceedances for the specified criteria in the guideline the treated wood may be disposed of. If there are exceedances further consultation is required with the Department. Appropriate reuse of treated wood is recommended where possible. All creosote treated wood must be disposed of into the lined landfill. [env-protection-waste-guidancedocs-gd-ppd-075.1treated-wood-waste-disposal-.pdf \(gov.nl.ca\)](#)
5. Any sharp objects like nails, small pieces of metal, glass, plastics, litter and other wind-blown debris shall be collected daily and controlled at the site to maintain a safe environment.
6. Metals shall be redirected to licensed metal salvagers where facilities exist.
7. Other "contaminants of concern" may include mercury (Hg) vapours associated with fluorescent light fixtures and PCBs in older lighting ballasts. Normally these items would be identified as hazardous materials and removed prior to a demolition, but if identified in waste streams, they must be removed to a hazardous materials storage area for appropriate recycling and/or disposal.
8. Reusable and recyclable material such as: uncoated wood, wallboard, asphalt shingles, metal, cupboards, carpets, countertops and other homogenous waste streams may be stockpiled in separate locations to facilitate reuse and recycling where options exist.
9. Acceptable recycling options for wood include: mulching/chipping of organic material for landscape purposes, or bulking agents for compost, or for fuel.
10. Asphalt shingles may be chipped and used as a road amendment at the site, and/or processed into asphalt grit and asphalt flake where the recycling option exists.

11. Treated wood from residential sources shall be disposed at the MSW engineered lined landfill. Commercial generators are required to conduct testing as per the GD-PPD-075.1 Treated Wood Waste Disposal, August 2013. [env-protection-waste-guidancedocs-gd-ppd-075.1-treated-wood-waste-disposal.pdf \(gov.nl.ca\)](https://www.gov.nl.ca/ecc/files/env-protection-waste-guidancedocs-gd-ppd-075.1-treated-wood-waste-disposal.pdf)
12. Wallboard may be added in limited quantities to compost.
13. All non-program tires shall be accepted for disposal at the C & D landfill. Non-program tires include all-terrain (ATV), or off-the-road (OTR) vehicle; tires used on rolling stock equipment used in agriculture, forestry, industrial/ construction and mining industries. These tires are not collected under the Used Tire Recycling Program by the Multi-Material Stewardship Board (MMSB). If not approved for specific recycling applications, disposal to landfill is acceptable. [env-protection-waste-guidancedocs-g-doc-41.3-otr-tires.pdf \(gov.nl.ca\)](https://www.gov.nl.ca/ecc/files/env-protection-waste-guidancedocs-g-doc-41.3-otr-tires.pdf)
14. Any asbestos containing material (ACM) shall be appropriately handled by trained staff and disposed according to GD-PPD-033.1 Asbestos Waste Disposal, amended October, 6, 2016. <https://www.gov.nl.ca/ecc/files/env-protection-waste-guidancedocs-gd-ppd-033.-1-asbestos-waste-disposal-amended-2016.pdf>
15. There is an exemption to allow landfill disposal of leaded paint debris from residential sources. For commercial or industrial sources, where a hazardous materials assessment has been completed prior to the demolition of structures, the departmental policy on sampling, analysis and subsequent disposal of lead based paint and painted debris shall be followed. Any questions can be referred to the regional DGSNL or to the Department.
16. The Department reserves the right to update disposal bans for waste streams when and where recycling and diversion programs exist. Any recyclable or waste material that is banned from landfill disposal shall be appropriately redirected. <https://www.gov.nl.ca/ecc/files/GD-PPD-022.4-Landfill-Bans-Special-Wastes-and-Diversion-Programs-1.pdf>
17. Notwithstanding all of the above, where options for waste treatment/recycling/disposal are limited, the Department shall be consulted regarding management of the waste.

Appendix D



eNGLOBE



**Government of Newfoundland and Labrador
Department of Environment and Climate Change
Pollution Prevention Division**

CERTIFICATE OF APPROVAL

Pursuant to the Environmental Protection Act, SNL 2002, Sections 16, 78 and 83.

Issued: January 15, 2023
Expiration: January 31, 2028

Approval No: WMS-17-04-001
File No: 839.CRS.001

Central Newfoundland Waste Management (CNWM)

P.O. Box 254
Norris Arm, NL A0G 3M0
Telephone: 709-653-2900
Facsimile: 709-653-2920

Attention: Mr. Ed Evans, C.A.O.

Re: Approval to operate a Regional Waste Management Facility to serve Central and Western Newfoundland Regions

Approval is hereby given for the continued operation of a Regional Waste Management Facility located at Norris Arm North, including an engineered lined landfill for the disposal of municipal solid waste; a permanent Household Hazardous Waste (HHW) depot; and a Construction and Demolition (C&D) landfill.

This approval does not release the holder from the obligation to obtain appropriate approvals from other concerned provincial, federal and municipal agencies. Approval from the Department of Environment and Climate Change (the Department) shall be obtained prior to any significant change in the design, construction, installation, or operation of the facility, including any future expansion of the works. This certificate shall not be sold, assigned, transferred, leased, mortgaged, sublet or otherwise alienated by the holder without obtaining written prior approval from the Minister.

This approval is subject to the terms and conditions attached hereto, as may be revised from time to time by the Department. Failure to comply with any of the terms and conditions may render this certificate of approval null and void, may require CNWM to cease all activities associated with this certificate of approval, may place the CNWM and its agent(s) in violation of the *Environmental Protection Act*, SNL, 2002, c. E-14-2, and will hold the CNWM responsible for taking such remedial measures as may be prescribed by the Department. The Department reserves the right to add, delete, modify or revoke this approval at any time.


For **MINISTER**

General

1. The Central Newfoundland Waste Management Facility (CNWM) is intended to serve the municipal solid waste management of the Central, Western, Northern Peninsula, Bale Verte Green Bay and Coast of Bay Regions of the Province.
2. Copies of all environmental standards/guidance documents are posted to the Department's website. www.env.gov.nl.ca/env/env_protection/waste/index.html
3. If different from the terms and conditions set out in the Department's environmental standards, those directly stated in the Certificate of Approval (Approval) shall apply.
4. A copy of this Approval shall be kept on site at all times.
5. All responsible personnel who are directly involved with operation and maintenance of the facility shall be provided copies of this Approval and shall be fully aware of the terms and conditions pertaining.
6. Separate approvals or an amendment to this Approval will be required for other waste management activities and/or facilities at this site.
7. Through a Memorandum-of-Understanding the Department has authorized the Department of Digital Government and Service NL (DGSNL) to act on its behalf in inspecting and/or auditing the operation of waste management facilities, for compliance under this approval and all applicable provincial Acts and Regulations. The Regional DGSNL Office may be used as the local point of contact in all cases. DGSNL may contact the Department as necessary for review and consultation on monitoring results, inspections, reports, and changes or amendments to the Approval.
8. The CNWM shall advise the Department or DGSNL of any new participants joining or proposing to leave the regional waste management facility.
9. The CNWM shall develop and keep up to date a Municipal Solid Waste Management and Public Education Plan. Information regarding the education plan and advances in this regard shall be included in the annual report for the facility, and updates provided as changes and advancements are made
10. The CNWM shall immediately notify the Department or DGSNL in writing of any change in the legal name, address, ownership, or facility operator's associated with the site.
11. Any proposed development within 3.0 km of the site shall be referred to the Department for review.
12. Notwithstanding the content of this Certificate of Approval, where options for waste treatment/disposal are limited, the Department shall be consulted regarding accommodation of the waste.

Financial Assurance

13. The CNWM is responsible to ensure that appropriate and adequate financial assurances and/or environmental impairment liability and/or pollution abatement assurance and automotive insurance policies are in place for all operators contracted to support the operations of this waste management facility.

Operation and Maintenance of a Construction and Demolition Landfill

31. Compliance with the Environmental Standards for Construction and Demolition (C&D) Waste Disposal (GD-PPD-050.3) is required [env-protection-waste-guidancedocs-gd-ppd-050.3-environmental-standards-for-construction-and-demolition-waste-disposal-sites.pdf \(gov.nl.ca\)](#).
32. Only inert C&D debris may be disposed at the site. Where a waste material presents a management problem, consultation with the Department is required.
33. Incoming waste shall be routinely scrutinized to ensure unacceptable waste is not received at the site. Unacceptable waste includes C & D debris that is clearly contaminated with municipal solid waste, organic waste or potentially hazardous waste, and it shall be redirected to an appropriate part of the waste management facility, or as recommended in the facility contingency plan; or as determined in consultation with the Department and other responsible agencies as applicable.
34. CNWM shall provide supervision when any material is being disposed at the C & D facility including areas for temporary storage for materials management and recyclables.
35. Storage of material for reuse or recycling may be conducted in a safe manner as long as the material remains in usable condition. Details of on-site storage inventory and of transfer or processing shall be provided to the Department as part of the annual report.
36. Temporary stockpiling of incoming material shall be restricted to levels considered safe for pile stability, occupational health and safety considerations and to minimize fire risk.
37. C & D waste shall be compacted in cells separated by layers of cover material at least every three months for every 1000 cubic metres of material. Waste placement and covering shall take place so that exposed surface area does not exceed 200 square metres at any one time. Guidelines with respect to intermediate and final cover apply where utilization of the site may be interrupted.
38. Debris containing drywall is not to be used for landfill cover to avoid production of hydrogen sulfide under wet anaerobic conditions.
39. A "special waste" disposal area may be designated for the disposal of demolition debris that could present an occupational health and safety hazard due to airborne contaminants if containment is disrupted. Material of this nature may be contaminated with among other things, lead based paint, dust, fibreglass and asbestos containing material. The debris shall be secondarily contained by wrapping in uncompromised six mm polyethylene. Signage and precautions shall be put in place to permanently demark this area and prevent re-excavation.
40. An environmental monitoring program specific to the C & D storage area for recyclables shall be submitted for approval by the Department as part of the annual report for the facility.
41. Additional storage and management practice requirements are contained in Appendix A of this approval.

Operations and Maintenance of a Household Hazardous Waste Depot

42. CNWM has designated a management and collection site for household hazardous waste (HHW) which accepts hazardous materials from area residents for appropriate containment, storage, packaging and secure transport by a licensed transporter to an approved recycling or final disposal facility. Appropriately trained staff oversee all waste received at and shipped from the site.
43. Compliance with the Department's most recent version of the Environmental Standards for Permanent Household Hazardous Waste Depots (GD-PPD-059) is required [env-protection-waste-guidancedocs-gd-ppd-59.3-hhw-permanet-depots.pdf \(gov.nl.ca\)](#).
44. Separate approvals or an amendment of this approval is required for additional storage, management or processing of waste at this site.
45. Staff shall be trained in the handling of hazardous waste, and the associated workplace hazards; shall be properly equipped and trained in the use of Personal Protective Equipment; shall abide by applicable occupational health and safety guidelines and legislation at all times; and , shall be familiar with environmental health, safety and emergency contingency plans, spill or accidental release response protocols, equipment and contact information.
46. Clear signage shall be in place, and information shall be made available to the public on safe containment, segregation and disposal practices for hazardous household products and waste materials.
47. Only hazardous waste from residential households, or residential in origin may be accepted for management and transfer to appropriate disposal at this site. Only HHW which can be safely stored and appropriately recycled or disposed is to be accepted.
48. Detailed records of hazardous waste materials that are redirected or rejected shall be maintained.
49. Sufficient area shall be maintained for safe movement of vehicles and operation of equipment.
50. CNMW shall provide supervision when any material is being disposed to or remove from the facility to ensure unacceptable waste is not received at the site.
51. A written policy on waste acceptance including a list of acceptable and unacceptable hazardous waste by category, volume, and means of containment must be established. This will include provision to redirect or reject excluded waste. The facility contingency plan shall address waste redirection.
52. Questions regarding the acceptability of a waste material shall be directed to the regional DGSNL office or to the Department. Due to the hazardous nature of materials stored at the depot, the "precautionary principle" shall prevail.
53. Where it is considered reasonably safe to do so, established methods and procedures shall be adhered to determine the hazardous nature of waste materials of unknown origin or mixtures. Only adequately trained personnel shall conduct these established methods and procedures.
54. The following shall NOT be accepted at the HHW depot:
 - a. Biomedical waste;

Application Submissions

14. The Central Regional Service Board submitted the following in support of this approval:
- a. E-mail communication December 22, 2022.
 - b. 2021 Annual Report and Environmental Monitoring Report submitted February 28, 2022.

Legislation Standards and Guidelines

15. The activities associated with this facility may involve, but not be limited to, the following provincial Acts and Regulations as amended:
- *Environmental Protection Act RSNL, 2002*
 - *Air Pollution Control Regulations, 2022*
 - *Storage and Handling of Gasoline and Associated Products Regulations, 2003*
 - *Used Oil and Used Glycol Control Regulations, 2018*
 - *Halocarbon Regulations, 2005*
 - *Pesticides Control Regulations, 2007*
 - *Water Resources Act, 2002 as amended*
 - *Environmental Control Water and Sewage Regulations, 2003.*
 - *Occupational Health and Safety Act RSNL, 1990*
 - *Dangerous Goods Transportation Act, 2006*
 - *Municipalities Act, 1999*
 - *Regional Service Board Act, 1990*
 - *Transportation and Works Act, 1995 (and Highway specifications as amended)*
16. The activities associated with this facility may involve, but not be limited to, the following Federal Acts and Regulations as enforced by the respective regulatory agencies:
- *Canadian Environmental Protection Act and Regulations*
 - *Transportation of Dangerous Goods Act and Regulations*
 - *Fisheries Act*
 - *National Fire Code*
 - *Health of Animals Act*
 - *Fertilizers Act*

Quality Control/Quality Assurance

17. Facility design, construction and operation must incorporate acceptable quality control/ quality assurance (QC/QA) protocols and provide for changes if necessary to maintain and improve performance. Appropriate protocol will include testing and inspection procedures and reports, with a deficiency summary, itemized corrections and any other information requested by the Department. Consideration shall be given to implementation of an environmental management system following the "Plan- Do- Check- Revise where necessary" scheme with a view to continual improvement.

Site and Facility Construction/Maintenance

18. Environmentally sound practices are required in all aspects of construction and ongoing maintenance activities, including facility construction and landscaping. This includes: appropriate storage, recycling and disposal of litter, debris, hazardous or special waste material, waste dangerous goods and other waste associated with construction and ongoing maintenance activities.
19. Erosion and sediment control measures are to be installed and maintained as required, such that watercourses or water resources adjacent to and downstream of the site are protected from siltation. The

Environmental Protection Act prohibits release of a material that may cause an adverse effect.

20. All areas exposed during construction, and any temporary diversion or control structures such as berms, ditches, etc., shall be stabilized as soon as practical.
21. When dewatering of construction areas is required, the water must not be discharged directly to a watercourse or water resource, nor to a conveyance (a ditch, culvert, manhole) that may lead to a watercourse or water resource without confirmation to meet discharge limits.
22. Grubbing and excavated material shall be used for ongoing site rehabilitation, or stored for future use in a manner that will not result in sedimentation of adjacent and downstream watercourses or water resources.
23. Sufficient area at the weigh scales, for incoming materials and for safe movement and queuing of vehicles and equipment shall be maintained throughout the site.
24. Site access roads shall be maintained to minimize dust generation. The use of dust suppressants other than water or calcium chloride shall require approval of the Director. CNWM shall use best management practices when applying calcium chloride or any other approved dust suppressant.
25. The Department reserves the right to require the installation of infrastructure for further treatment of releases to the environment where the discharge limit(s) is/are exceeded.
26. All necessary engineering documentation/facility plans, drawings and specifications shall be submitted to and approved in writing by the Department, prior to the construction, modification or expansion of 1) additional containment cells, 2) landfill gas management systems, 3) sludge handling facilities, 4) leachate treatment systems, 5) facilities for processing recyclables or managing organics, 6) storage of waste including household hazardous waste, 7) special waste disposal cells/locations, or any other construction activity at the facility.

Operation and Maintenance of a Regional MSW Landfill

27. Unsupervised landfill disposal is not permitted. Incoming waste shall be routinely scrutinized to ensure unacceptable waste is not received at the site.
28. Regular and uniform compaction of waste is recommended to maximize utilization of air space and minimize voids.
29. The CNWM shall ensure that all exposed waste disposed to containment cells is covered with a minimum of 150 mm of clean soil (or alternate daily cover that has been pre-approved in writing by the Department), as a minimum, at the end of each operating day.
30. Intermediate cover, which is placed when a cell is filled, shall consist of at least 450 mm depth of soil and shall be enhanced to the standard for final cover if not overfilled within one year of placement.

- b. Sharps;
- c. Asbestos containing material;
- d. Radioactive material (including low level radioactive material or naturally occurring radioactive material (NORM) waste); with the exception of residential household smoke detectors;
- e. Organic waste;
- f. Special waste;
- g. International waste;
- h. Unidentifiable or unclassifiable materials.

55. Storage structures must comply with national and municipal fire codes and building codes.

56. All holding tanks for used oil shall be approved by DGSNL as per regulations.

57. Spill containment areas must be designed to keep incompatible materials separated and be constructed of materials that are compatible with the stored waste. The secondary containment areas must have the capacity for the total volume of waste storage capacity plus 10%.

Operations and Maintenance Manuals/Plans

58. The CNWM shall develop and maintain Operations and Maintenance Manuals/Plans in accordance with the Department's General Environmental Standards for MSW Management Facilities/Systems specific to each facility associated with the Regional Site/System.

59. All site operations are to be conducted in accordance with up-to-date Facility Operations Plans approved by the Department. Changes to operations shall be noted in the facility annual report and updates filed with the Department as appropriate. The goal is to always maintain a high level of operational efficiency with minimal adverse environmental impact. A non-exhaustive list of operations and maintenance manual inclusions is provided in the applicable Department environmental standards documents as posted on the Departmental website. The purpose of the Facility Operations Plan is to ensure facility operators and employees are trained and are clear on how daily operations proceed, that routine maintenance is conducted, and that contingency plans are appropriately enacted.

Landfill Gas Management

60. Landfill gas collection work and equipment, if and when installed, shall be in accordance with the latest versions of the Code for Digester Gas and Landfill Gas Installations CAN/CGA-B105-M93 and CAN/CSA-B149.3.

Surface Water Management

61. The CNWM shall ensure that site run-on is minimized by appropriate drainage ditching and sloping; and that run-off from the site does not detrimentally impact off-site receptors.

62. The CNWM shall ensure that surface water at the site that has not been in contact with leachate or solid waste, bypasses the leachate collection-storage-treatment system, and is directed to the engineered wetland or the storm sewer drainage system from the site. Any water discharged from the site shall meet discharge water criteria.

63. Side slopes of disposal areas shall be properly stabilized and maintained to limit erosion; and any final cover applied shall be sloped to ensure positive drainage and prevent pooling of water on the surface.

64. No authority is granted by this Approval to enable the discharge of surface water beyond the property boundary and onto adjoining lands without the authorization of the affected landowner(s). It is the responsibility of the CNWM to ensure that the authorization of said landowner(s) is current and valid. Failure to retain said authorization may result in this Approval being null and void.
65. The Department shall be advised where it is necessary to construct a sedimentation pond to treat run-off from the site.
66. Sampling sites for discharge of surface water runoff shall be approved by the Department, and shall not be moved, relocated or otherwise altered without written permission.
67. The Department reserves the right to require changes to the sampling program where deemed necessary.
68. The CNWM shall be required to mitigate significant adverse impacts to receiving watercourses which are impacted as a result of point source and non-point source discharges attributed to the facility.

Leachate System Management

69. Any changes or alterations to the leachate collection system shall be submitted to the Department for review and prior approval.
70. The leachate collection system shall be capable of maintaining a maximum head of 300 mm above the liner excluding the leachate sumps, during routine operations and be sloped to allow the leachate to drain.
71. The leachate collection system shall:
- a. be of suitable infrastructure to handle storage, treatment, and discharge volumes anticipated for the site;
 - b. be hydraulically separate from the facility's storm water system;
 - c. function year round;
 - d. function effectively throughout the lifespan of the landfill;
 - e. be equipped to record instantaneous and total flows;
 - f. have storage capacity to accommodate a 100 year storm event for the drainage basin;
 - g. be chemically compatible with the waste and leachate characteristics;
 - h. provide access for inspection, monitoring flow and head; controlling flow and cleaning;
 - i. function effectively under dynamic and static loading events for all development phases;
 - j. use geosynthetic fabrics specified for leachate generation/ flow into post-closure phase; and
 - k. be designed to prevent the passage of fine sediment into and any blockage of piping systems.
72. Daily visual inspection of the leachate system shall be conducted as well as annual testing.
73. Provision shall be made to characterize and address leachate quality that may exceed the installed wetland treatment capacity. The Department may be consulted on this issue to ensure that discharge water quality criteria are adhered to.

Discharge Water Quality

74. Water discharged from the site shall meet criteria limits as set out in the *Environmental Control Water and Sewage Regulations, 2003*.

75. Effluent discharge criteria are defined in the following table, Table 1. Discharge water not meeting these criteria shall be treated to meet criteria limits prior to discharge.

Table 1: Effluent Discharge Criteria (all units are mg/L unless otherwise noted)			
Parameter	Maximum Allowable Range	Parameter	Maximum Allowable Range
Biological Oxygen Demand	20		
Total Dissolved Solids (TDS)	1000	Mercury	0.005
Total Suspended Solids (TSS)	30	Nickel	0.5
Total Petroleum Hydrocarbon (TPH)	15	Nitrates	10
Arsenic	0.5	Ammonia	2.0
Barium	5.0	Phenols	0.1
Boron	5.0	Phosphates (total as P ₂ O ₅)	1.0
Cadmium	0.05	Selenium	0.01
Chromium	1.0	Sulfides	0.5
Copper	0.3	Silver	0.05
Cyanide	0.025	Zinc	0.5
Iron	10	pH	5.5 – 9.0 pH units
Lead	0.2	Radium 226	0.37Bq/L

Effluent Monitoring Program

76. CNWM shall perform an Effluent Monitoring Program as per the schedule listed in Table 2 below. Analytical results shall be submitted as per the Reporting section.

Table 2: Effluent Monitoring Schedule		
Location	Parameters	Frequency
SW-9 (Final discharge point)	pH, TSS, nitrate, phosphorous, BOD	Monthly
	WCA	Quarterly
Influent from Landfill	pH, TSS, nitrate, phosphorous, BOD	Quarterly
Effluent from landfill	pH, TSS, nitrate, phosphorous, BOD	Quarterly
Lift Station	pH, TSS, nitrate, phosphorous, BOD	Quarterly

Water Chemistry Analysis (WCA)

77. Four times per calendar year and not less than thirty (30) days apart, CNWM shall perform Water Quality Analysis as per Table 3. Refer to Table 3 for the locations and required parameters. Analytical results shall be submitted as per the Reporting section. Sampling shall commence as soon as sites become accessible.

Table 3: Water Chemistry Analysis Program		
Ref No:	Location	Parameters
	847-SW1-Background	General Parameters: temperature, dissolved oxygen (DO), nitrate + nitrite, nitrate, nitrite, pH, TSS, colour, sodium, potassium, calcium, sulphide, magnesium, ammonia, alkalinity, sulphate, chloride, turbidity, reactive silica, orthophosphate, phosphorous, DOC, conductance, TDS (calculated), phenolics, carbonate (CaCO ₃), hardness (CaCO ₃), bicarbonate (CaCO ₃)
	SW1 to SW9	
	MWH to MWL	
		Metals Scan: aluminium, antimony, arsenic, barium, beryllium, bismuth, boron, cadmium,

		chromium, cobalt, copper, iron, lead, manganese, molybdenum, mercury, nickel, selenium, silver, strontium, thallium, tin, titanium, uranium, vanadium, zinc
		Note that TSS, temperature and dissolved oxygen are not required for groundwater i.e. MW locations.

Sampling, Laboratory Analysis and QA/QC

78. Unless otherwise approved by the Department, surface, groundwater and leachate sampling shall be conducted, as a minimum, according to methods described in *Sampling of Water and Wastewater-Industrial Effluent Applications GD-PPD-066*.
79. Unless otherwise stated herein, all liquid and solids analysis performed pursuant to this Approval shall be done by a contracted commercial or in-house laboratory as per the *Accredited Laboratory Policy (PD:PP2001- 01.02)*.
80. The exact location of each sampling point shall remain consistent over the life of the monitoring programs. Using a GPS or similar device, the northing and easting of each sampling location shall be recorded and submitted to the Department.

Monitoring Alteration

81. The Department has the authority to alter the monitoring programs or require additional testing at any time when:
- a. pollutants might be released to the surrounding environment without being detected;
 - b. an adverse environmental effect may occur; or
 - c. it is no longer necessary to maintain the current frequency of sampling and/or the monitoring of parameters.
82. The CNWM may, at any time, request that the monitoring program or requirements of this Approval be altered by:
- a. requesting the change in writing to the Director; and
 - b. providing sufficient justification, as determined by the Director.
83. The CNWM shall bear all expenses incurred in carrying out environmental monitoring required under the terms and conditions of this Approval.
84. Any new and relevant information respecting any adverse effect that results or may result, from any activity to which the Approval relates, and that comes to attention after the issuance of the Approval shall be submitted to the Department in a timely manner.
85. The requirements of this Approval shall remain in effect until altered, in writing, by the Department.

Non-Compliance

86. The Department and/or DGSNL shall be notified immediately of any incidents of non-compliance with this Approval.

Further Assessment

87. The Minister may at any time, with reasonable notice, require the CNWM to conduct or have conducted

environmental studies, site assessments, sampling, testing, or investigations where, based upon reasonable and probable grounds, the Minister is of the opinion that the waste management facility may have had, or has the potential to have, an adverse effect on the environment.

Environmental Emergency Health and Safety Contingency (EHS)

88. The CNWM shall maintain a contingency plan for environmental and health and safety emergencies on file with DGSNL and the Department and provide annual updates. An updated copy of the contingency plan shall be kept on site at all times.
89. For after-hours emergencies and spill reports call: **1-800-563-9089**.
90. All appropriate operations training and health and safety procedures shall be constantly maintained at the site in accordance with applicable legislation and the Department's environmental standards for the waste management facility in question.
91. Incidents that could occur and would require specific response planning include: contingency for unacceptable waste; equipment failure; waste or hazardous materials incidents/ spills; fire; air quality or odour problems, vector infestation. In the event of problems with wildlife encounters (e.g. black bears); the district office of the Department of Justice & Public Safety should be contacted at (709) 729-8377 for encounters east of the Bay D'Espoir Highway. For wildlife encounters west of the Bay D'Espoir Highway, contact (709) 637-4068. These numbers are operated on a 24/7 basis.

Environmental, Aesthetic, Nuisance, and Housekeeping

92. Existing tree screens, outside the firebreak, that may conceal the site from public view are to be maintained.
93. Access roads to the site shall be kept free of waste material and litter shall be controlled at all times.
94. Supervision shall be provided for all reception, placement, managing and, where applicable covering of waste at the facility.
95. There shall be signs placed strategically throughout the site indicating "No Scavenging".
96. The waste material disposal area shall be fenced to contain wind-blown debris and litter accumulations shall be cleared regularly from the fencing and the surrounding area.
97. All vehicles transporting waste and debris to, from, or on-site shall be enclosed, or covered with close fitting tarpaulins to prevent waste and debris from spilling, and that they have tailgates and boxes that are sealed against leakage.
98. A program to manage and control vectors, rodents, birds and wildlife that may scavenge or develop populations associated with the waste management facility shall be developed.

Prohibitions and Restrictions

99. Prohibitions refer to materials that shall not be accepted for disposal at this waste management facility. Materials are banned from disposal when they have characteristics that make them a risk to workers or to

the environment. Materials are banned for disposal when suitable waste diversion services are available which include re-use, recycling, and reduction of the amount of material that goes to landfill. It is the responsibility of site managers and staff to decline acceptance of material when unacceptable material is openly visible and identifiable.

It is not expected that site managers, inspectors or staff would search through MSW where banned material is suspected but not openly visible and identifiable, since this could create potential risks to worker health and safety.

Materials banned for landfill disposal may be handled or stored in designated areas of the facility where protocols for safe handling and storage are defined and approved by the Department in separate Certificate of Approvals (e.g., C&D waste, HHW).

100. Operational restrictions ensure that modern waste management practices are implemented. Similar to disposal bans, they aim to minimize adverse environmental effects, enhance worker health and safety, and implement best practices in modern waste management.

101. Prohibitions – Disposal Bans: The following material shall NOT be accepted for disposal.

- a. Beverage Containers suitable for reuse and recycling as defined by MMSB programs.
- b. Used tires covered by MMSB 'Used Tire Recycling Program'
- c. Waste Paint as covered by MMSB Programs
- d. Electronic goods covered by a stewardship program shall not be disposed to landfill. This material may be collected on behalf of the organization responsible, or redirected to an approved collection point. Contact information, a list of accepted products and service providers in NL is provided at <http://www.mmsb.nl.ca/recyclingprograms/electronic-waste/>. Electronic waste that is damaged (e.g. broken monitors and cathode ray tubes), or dismantled to potentially expose hazardous constituents, is considered to be hazardous waste.
- e. Bulk liquids of any kind. [With the exception of used oil, which may be accepted where a registered and approved used oil storage tank system is in place.]
- f. Household Hazardous Waste
- g. Biomedical Waste
- h. Specified Risk Material as defined in Waste Management Strategy guidance documents Appendix D (http://www.env.gov.nl.ca/env/env_protection/waste/appendix_d_definitions.pdf). It includes the skull, brain, trigeminal ganglia (nerves attached to the brain), eyes, tonsils, spinal cord, and dorsal root ganglia (nerves attached to the spinal cord) of cattle aged 30 months or older, and the distal ileum (portion of the small intestine) of cattle of all ages. These cattle tissues, if infected are capable of transmitting bovine spongiform encephalopathy (BSE), or mad cow disease if added to animal feed, pet food or fertilizer.
- i. Refrigeration, air conditioning and fire extinguishing equipment which contain regulated substances, as defined in the *Halocarbon Regulations* Schedules A-E. These materials may be acceptable when protocols are in place, as detailed in the following section.
- j. Fuel Storage Tanks except when protocols are in place for proper handling, storage, and disposal; as detailed in the following section.
- k. Naturally Occurring Radioactive Material (NORMs). NORMS might be found in drilling or excavating materials.
- l. Radioactive material is banned from disposal and is separately regulated by the Canadian Nuclear

- Safety Commission. Radioactive material is found in household material such as smoke detectors.
- m. Recyclable material destined or suitable for recovery at the Material Recovery Facility.
 - n. Any mixture or combination of the above restricted waste is also restricted or prohibited.

102. Non-compliant material

Details of any non-compliant material brought to any part of the facility and removed at the inspection/holding area shall be recorded including: date of delivery, material type and quantity, origin and owner, name of transporter, transport vehicle identification and contact information. A contingency plan shall be in place to ensure that non-compliant material is refuse and appropriately redirected.

103. Operational Restrictions:

- a. There shall be no incineration or open burning of any kind.
- b. Only waste from the area of service identified in the approval may be received at the facility unless specifically authorized by DGSNL and approved by the CNWM.
- c. All waste transporters and vehicles utilizing the waste management facility must cover or tie down waste in accordance with the *Cargo Securement Regulations (CSR)* under the *Highway Traffic Act*.
 - i. All vehicles entering CNWM facilities shall adhere to the *CSR*.
 - ii. The CNWM shall establish and implement a program to educate waste transporters on the requirements of the *CSR*.
 - iii. The CNWM shall work with the Department to develop a plan for compliance with the *CSR*, which may include such measures as denying access to non-compliant vehicles.
 - iv. The CNWM may be required to report non-compliance with the *CSR* to regional enforcement agencies, subject to the provisions of the plan established under iii).

104. Exceptions to disposal bans where management protocol apply:

- a. All non-program tires shall be accepted for disposal at the Construction and Demolition Landfill. Non program tires include all-terrain (ATV), or off the road (OTR) vehicle tires, tires used on rolling stock equipment used in the agricultural, forestry, industrial/construction and mining industries. These tires are not collected under the Used Tire Recycling Program by the MMSB. If not approved for specific recycling applications, disposal to landfill is acceptable.
- b. An exception may be made for the collection and storage of small quantities of smoke detectors that contain radioactive material. This material can be accepted at household hazardous waste depots only with prior approval from the Department.
- c. Special waste is defined by Appendix D <https://www.gov.nl.ca/ecc/files/env-protection-waste-appendix-d-definitions.pdf> of waste management strategy guidance documents as any waste material that requires special treatment or disposal precautions, due to its nature, quantity, volume, potential to react and/or potential to produce an adverse effect. Examples include, animal carcasses/ mortalities or road kill, asbestos containing material, fish plant waste, commercial or industrial waste streams etc. Special waste shall be accepted only upon prior approval from DGSNL. DGSNL will define the safe handling and disposal guidelines, technical recommendations, and roles of other regulatory agencies which shall be adhered to in all cases.
- d. Asbestos containing material (ACM) containing friable asbestos, accepted for disposal at the facility, shall be directed to the Construction and Demolition Landfill and handled by personnel who are trained and properly equipped with personal protective clothing and respirators. ACM shall be managed in accordance with the guidance document entitled: Asbestos Waste Disposal (GD-PPD-033.1).

http://www.env.gov.nl.ca/env/env_protection/waste/guidancedocs/asbestoswastedisposal.pdf

- e. Acceptance of tires under the Used Tire Recycling Programs for temporary storage is limited to 100 tires per site with the prior approval of the Department. The MMSB provides a collection service and shall be contacted at 1-800-901-6672. Additional information on tire storage can be found on the Departmental website. Storage by MMSB of surplus used tires is regulated under a separate certificate of approval.
- f. Vehicle wrecks and scrap metal shall be directed to recognized metal salvage and recycling operations.
- g. White metal wastes, ensuring compliance under the Halocarbon Regulations, such as freezers, refrigerators and stoves may be appropriately stockpiled in a separate area, pending at least semi-annual transport to a recycling operation. Metals shall be stockpiled in a neat and tidy fashion and not exceed 90% storage capacity. Additional information is found in the appendix of the Environmental Standards for Transfer Stations.
http://www.env.gov.nl.ca/env/env_protection/waste/transfer_stations_july2010.pdf
- h. Equipment containing regulated substances such as halocarbons, can be stored for recycling at a waste disposal site if the regulated substance (s) is (are) recovered by a person approved under the Halocarbon Regulations and shall be labelled "Halocarbon Free".
- i. Fuel storage tanks (commercial or residential) must be drained of product prior to entering the site and shall only be accepted at the metal storage area. The CNWM must submit a plan if draining of any fluids is undertaken and stored on site. If deemed unacceptable for recycling, prior to landfilling, fuel tanks and drums shall have confirmation that they have been purged of product, tank bottom sludge and vapour. The tank must also be cut in half or sufficient openings cut in the tank to prevent the accumulation of vapour and to accommodate visual inspection. If CNWM would like to develop a fuel storage tank management program, the Department shall be contacted to amend or issue an approval.
- j. The Department reserves the right to amend this approval, to ban disposal of waste streams where and when recycling and diversion programs exist as per amendments to the *Waste Management Regulations* and the *Waste Diversion Regulations*. Any recyclable or waste material that is banned from landfill disposal shall be appropriately redirected.
- k. Notwithstanding all of the above where options for waste treatment/ disposal are limited, the Department shall be consulted regarding accommodation of the waste.

Site Security and Signage

- 105. Unauthorized access to the waste management site shall be controlled. Measures may include fencing (wire mesh with a maximum opening of 20 cm), and shall include a secure gate or barrier at the site entrance (minimum opening of 8.5 m) with appropriate, highly visible signage to inform the public of acceptable waste materials, hours of operation, telephone number for contact and containing a "No Scavenging" stipulation.
- 106. An operator shall be kept on duty when and if the site is open to the public. The gate must be locked shut when the operator is not in attendance.
- 107. Areas shall be allocated and signs posted designating separate areas for the transfer, temporary storage and recycling or disposal of construction debris, white goods, municipal solid waste, and other approved waste as applicable.
- 108. A firebreak may be required around the perimeter of the site, please check with the authority having

jurisdiction.

Noise

109. The CNWM shall manage noise levels at the facility so as to comply with recommended guidelines under the *Occupational Health and Safety Act*.
110. Complaints about noise from nearby area residents (off-site) shall be responded and details recorded.
111. If complaints regarding noise from facility operations on or off the site are received, monitoring of sound levels may be required by the Department, and mitigation measures may be required.

Air Emissions

112. Any kind of incineration or open burning is strictly prohibited. The CNWM shall comply with the *Air Pollution Control Regulations, 2022* at all times.
113. Schedule A of these regulations provides the standard for ambient air quality, particulate matter and airborne contaminants.
114. Dust generation shall be minimized on site.
115. Odour control measures shall be incorporated into the facility.
116. Numerical or quantitative limits on odour may be established at the discretion of the Department if odour impacts beyond the property boundaries are deemed to be excessive.
117. Standard procedures to address odour complaints associated with the facility shall be established as part of the Operations Manual and would include:
- Immediately investigate the cause of the complaint and undertake immediate and appropriate action, if necessary, to correct the problem.
 - Record all odour complaints and document the date, time, name, address and telephone number of the individual lodging the complaint. The record shall also state any cause of the odour and the action taken to correct the problem.
 - Record wind direction, wind speed, temperature, humidity and other atmospheric conditions at the time of the occurrence which resulted in a complaint.
 - Records of odour complaints shall be made available to the Department upon request.
118. A plan to reduce or cease odour generation shall be submitted at the request of the Department.

Hazardous Materials Incident/Spill Prevention

119. A separate approval, and facility-specific Environmental Health and Safety Contingency Plan, is required for the operation of a Permanent Household Hazardous Waste Depot. The Department's Environmental Standard for Permanent Household Hazardous Waste Depots shall apply.
120. All holding tanks for used oil shall be approved by DGSNL as per the *Used Oil and Used Glycol Control Regulations*.

Reporting

121. Monthly reports containing the environmental compliance monitoring and sampling information required in this Approval shall be received by the Department in digital format within 30 calendar days of

the reporting month. All related laboratory reports shall be submitted with the monthly report in Extensible Markup Language (XML) format and Adobe Portable Document Format (PDF). Digital report submissions shall be uploaded through the EDMS web portal.

122. Each monthly report shall include a summary of all environmental monitoring components and shall include an explanation for the omission of any requisite data. The monthly summary reports shall be in Microsoft Word or Adobe PDF and shall be uploaded through the EDMS web portal with the data submissions.
123. The annual report shall be submitted to the Department by February 28th, each year summarizing facility activities of the previous year. The information to be submitted is described in the Department's Environmental Standards and includes as follows and where applicable.
- a. quantity, type, source (origin) and carrier of waste received;
 - b. quantity and type of materials recycled;
 - c. quantity of residual material received at or transferred to the regional landfill
 - d. quantity and type of waste dangerous goods removed and the final disposal site;
 - e. records of any waste diversion;
 - f. a summary of the water quality monitoring results for the sedimentation pond, surface water, and groundwater monitoring program, if applicable. Data must be tabulated in spreadsheet format and include a comparison to relevant guidelines;
 - g. updated drawings showing the monitoring well locations, latest contours and groundwater flow direction;
 - h. an assessment, where applicable, of the environmental effects monitoring program by a qualified consultant;
 - i. a summary of any upsets or spills at the facility;
 - j. any changes in procedure or operations;
 - k. any changes or updates with respect to staffing and training;
 - l. a summary of all education programs implemented or initiated; and
 - m. any other information deemed necessary by the Department.
124. The annual report shall also include:
- a. A discussion and evaluation of incidents, complaints, actions, results, residual impact and path forward.
 - b. Disposal Records for: special waste including the origin and description for; bulk liquids; biosolids, fish/animal processing waste, Asbestos Contaminated Waste; potentially hazardous waste and International Waste.
 - c. Environmental monitoring records including:
 - i) Dates and results of all sampling conducted at the facility; and confirmation of calibration of field equipment used at the facility, before and after each sampling event, or as considered reasonable by the department, the CNWM and the equipment manufacturer.
 - ii) An evaluation and discussion of surface water and groundwater monitoring results as they may be affected by hydrogeology, landfill leachate and/or surface water runoff from the site, and potential/ resultant impacts, and mitigation of impacts.
 - iii) An evaluation of environmental monitoring results, comparing results from the previous and current calendar years and historical records, and making recommendations for future monitoring, groundwater well installation or other work at the facility.

- iv) All analyses, review and reports shall be completed by a professional engineer or geoscientist (qualified professional).

125. Any operational difficulties with potential environmental implications must be immediately reported to DGSNL. The nature of the operational difficulty as well as the mitigation measures shall be included in the yearly report.

126. All incidents of:

- Contingency Plan implementation;
- non-conformance of any condition within this approval;
- spillage or leakage of a regulated substance;
- leachate or wastewater discharge suspected to have exceeded criteria limits
- verbal/written complaints of an environmental nature from the public, any response, mitigation or corrective action e.g. due to air quality, odour or noise.
- any incidence of vandalism or illegal dumping at or near the site.

shall be immediately reported, within one working day, to a person, message manager or facsimile machine at DGSNL by phoning or faxing.

Central Region – DGSNL (Gander)
P.O. Box 2222
A1V 2N9
Telephone (709) 256-1420
Facsimile: (709) 256-1438

127. A written incident report including a detailed description of the incident, summary of contributing factors and an action plan to prevent future incidents of a similar nature, shall be submitted to the respective Regional Director of DGSNL. The action plan shall include a description of actions already taken and future actions to be implemented, and shall be submitted within thirty days of the date of the initial incident.

Certificate of Completion

128. Seven days after completion of any new facility, a signed and stamped letter from a Professional Engineers and Geoscientists of Newfoundland and Labrador (PEGNL) registered engineering company shall be submitted to the Department verifying that the facility was constructed as per the engineering as-built plans and specifications. The Department shall also be notified at least two weeks in advance of commissioning of each facility and before the Regional Facility is open to the public to allow for inspections to be arranged.

Decommissioning

129. An approved alternative disposal or transfer location must be identified prior to closure and decommissioning.

130. A detailed decommissioning plan must be submitted to the Department six months prior to the planned date of final site closure. Details must address site security, the removal of remaining material and on-site infrastructure, and financial arrangements for any future environmental monitoring requirements, and outline potential future uses for the site.

Expiration

131. This approval expires on January 31, 2028.

132. Should the CNWM wish to continue to operate beyond this expiry date, a written request shall be submitted to the Department for the renewal of this approval. Such request shall be made at least three months prior to expiration.

c.c. Robert Locke, Director
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Attachment: Appendix A – C & D debris- management of specific waste streams

11. Treated wood from residential sources shall be disposed at the MSW engineered lined landfill. Commercial generators are required to conduct testing as per the GD-PPD-075.1 Treated Wood Waste Disposal, August 2013. [env-protection-waste-guidancedocs-gd-ppd-075.1treated-wood-waste-disposal-.pdf \(gov.nl.ca\)](#)
12. Wallboard may be added in limited quantities to compost.
13. All non-program tires shall be accepted for disposal at the C & D landfill. Non-program tires include all-terrain (ATV), or off-the-road (OTR) vehicle; tires used on rolling stock equipment used in agriculture, forestry, industrial/ construction and mining industries. These tires are not collected under the Used Tire Recycling Program by the Multi-Material Stewardship Board (MMSB). If not approved for specific recycling applications, disposal to landfill is acceptable. [env-protection-waste-guidancedocs-g-doc-41.3-otr-tires.pdf \(gov.nl.ca\)](#)
14. Any asbestos containing material (ACM) shall be appropriately handled by trained staff and disposed according to GD-PPD-033.1 Asbestos Waste Disposal, amended October, 6, 2016. [https://www.gov.nl.ca/ecc/files/env-protection-waste-guidancedocs-gd-ppd-033.-1-asbestos-waste-disposal-amended-2016.pdf](#)
15. There is an exemption to allow landfill disposal of leaded paint debris from residential sources. For commercial or industrial sources, where a hazardous materials assessment has been completed prior to the demolition of structures, the departmental policy on sampling, analysis and subsequent disposal of lead based paint and painted debris shall be followed. Any questions can be referred to the regional DGSNL or to the Department.
16. The Department reserves the right to update disposal bans for waste streams when and where recycling and diversion programs exist. Any recyclable or waste material that is banned from landfill disposal shall be appropriately redirected. [https://www.gov.nl.ca/ecc/files/GD-PPD-022.4-Landfill-Bans-Special-Wastes-and-Diversion-Programs-1.pdf](#)
17. Notwithstanding all of the above, where options for waste treatment/recycling/disposal are limited, the Department shall be consulted regarding management of the waste.

Appendix A
Construction and Demolition (C&D) Debris – management of specific waste streams

1. Bulky household items including mattresses and chesterfields are permitted but those that might retain a lot of water shall be separated from other C & D waste, particularly drywall/gypsum. This will reduce the possibility of hydrogen sulfide formation due to water transfer.
2. Rigid plastic pipes and buoys are permitted but should be segregated from other C & D waste to reduce risk of burning in the event of a fire.
3. Mixed waste from housing demolition may only be disposed to the C & D landfill if a hazardous waste risk assessment has been completed and any hazardous materials such as asbestos containing materials, fluorescent lighting ballasts and paint with high levels of lead, have been removed in advance.
4. With the exception of treated wood from residential sources, commercial generators of treated wood are required to conduct testing per the guidance document "Treated Wood Waste Disposal" GD-PPD-075.1 at the link below. If there are no exceedances for the specified criteria in the guideline the treated wood may be disposed of. If there are exceedances further consultation is required with the Department. Appropriate reuse of treated wood is recommended where possible. All creosote treated wood must be disposed of into the lined landfill. [env-protection-waste-guidancedocs-gd-ppd-075.1treated-wood-waste-disposal-.pdf \(gov.nl.ca\)](#)
5. Any sharp objects like nails, small pieces of metal, glass, plastics, litter and other wind-blown debris shall be collected daily and controlled at the site to maintain a safe environment.
6. Metals shall be redirected to licensed metal salvagers where facilities exist.
7. Other "contaminants of concern" may include mercury (Hg) vapours associated with fluorescent light fixtures and PCBs in older lighting ballasts. Normally these items would be identified as hazardous materials and removed prior to a demolition, but if identified in waste streams, they must be removed to a hazardous materials storage area for appropriate recycling and/or disposal.
8. Reusable and recyclable material such as: uncoated wood, wallboard, asphalt shingles, metal, cupboards, carpets, countertops and other homogenous waste streams may be stockpiled in separate locations to facilitate reuse and recycling where options exist.
9. Acceptable recycling options for wood include: mulching/chipping of organic material for landscape purposes, or bulking agents for compost, or for fuel.
10. Asphalt shingles may be chipped and used as a road amendment at the site, and/or processed into asphalt grit and asphalt flake where the recycling option exists.



Department of Environment & Climate Change
Government of Newfoundland and Labrador
Pollution Prevention Division

CERTIFICATE OF APPROVAL

Pursuant to the *Environmental Protection Act, SNL 2002, Sections 16, 78 and 83.*

Issued:	February 13, 2024	Approval No.:	WMS-17-12-004
Expiration:	December 31, 2028	File No.:	804.021.001

Approval holder: Central Regional Service Board
P. O. Box 254
Norris Arm, NL
A0G 3M0
Tel: (709) 653-2900
Fax: (709) 653-2920

Attention: Mr. Ed Evans, C.A.O.

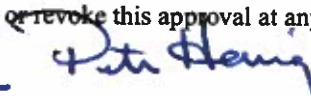
Re: Approval to operate seven (7) Municipal Solid Waste Transfer Stations

Approval is hereby given for the continued operation of Municipal Solid Waste Transfer Stations located at Buchans Junction, Fogo Island, Gander Bay, Indian Bay, New World Island, Point Leamington and Terra Nova for non-hazardous, non-special waste transfer to the Regional site.

Permission is also granted to securely transport hazardous household waste (HHW) collected at the transfer stations to the regional waste management facility at Norris Arm North. From there, the licensed hazardous waste transporter under contract to the Board will consolidate shipments of HHW to approved final recycling and disposal facilities.

This approval does not release the holder from the obligation to obtain appropriate approvals from other concerned provincial, federal and municipal agencies. Approval from the Department of Environment and Climate Change (the Department) shall be obtained prior to any significant change in the design, construction, installation, or operation of the facility, including any future expansion of the works. This certificate shall not be sold, assigned, transferred, leased, mortgaged, sublet or otherwise alienated by the holder without obtaining written prior approval from the Minister.

This approval is subject to the terms and conditions attached hereto, as may be revised from time to time by the Department. Failure to comply with any of the terms and conditions may render this certificate of approval null and void, may require the approval holder to cease all activities associated with this certificate of approval, may place the approval holder and its agent(s) in violation of the *Environmental Protection Act, SNL., 2002, c. E-14-2*, and will hold the approval holder responsible for taking such remedial measures as may be prescribed by the Department. The Department reserves the right to add, delete, modify or revoke this approval at any time.


For MINISTER

Administrative and General

1. The municipal solid waste (MSW) transfer stations shall comply with the most current versions of the following Environmental Standards:
GD-PPD – 046 Environmental Standards for Municipal Solid Waste Transfer Stations
GD-PPD– 063 General Environmental Standards for Municipal Solid Waste Facilities/Systems
Copies of all environmental standards/guidance documents and applicable appendices are posted to the Department of Environment and Climate Change website.
www.env.gov.nl.ca/env/env_protection/waste/index.html
2. If different from the terms and conditions set out in the Department's Environmental Standards, those directly stated in the Certificate of Approval shall apply.
3. Separate approvals or an amendment to this approval will be required for other waste management activities and/or facilities at this site.
4. The approval holder shall immediately notify the Department in writing of any change in the legal name, address, ownership, or facility operators associated with the site.

Financial Assurance

5. The approval holder is responsible to ensure that appropriate and adequate financial assurances and/ or environmental impairment liability and/ or pollution abatement assurance and automotive insurance policies are in place for all operators contracted to support the operations of this waste management facility.

Legislation Standards and Guidelines

6. The activities associated with this operation may involve, but not be limited to, the following provincial Acts and Regulations as amended:
 - *Environmental Protection Act RSNL, 2002*
 - *Air Pollution Control Regulations, 2022*
 - *Storage and Handling of Gasoline and Associated Products Regulations, 2003*
 - *Used Oil and Used Glycol Control Regulations, 2018*
 - *Halocarbon Regulations, 2005*
 - *Pesticides Control Regulations, 2012*
 - *Water Resources Act, 2002*
 - *Environmental Control Water and Sewage Regulations, 2003.*
 - *Occupational Health and Safety Act RSNL, 1990*
 - *Dangerous Goods Transportation Act, 2006*
 - *Municipalities Act, 1999*
 - *Regional Service Board Act, 1990*
 - *Transportation and Works Act, 1995 (and Highway specifications as amended)*
7. The activities associated with this operation may involve, but not be limited to, the following federal Acts and Regulations as enforced by the respective Federal Regulatory Agencies

- *Canadian Environmental Protection Act and Regulations*
- *Transportation of Dangerous Goods Act and Regulations*
- *Fisheries Act*
- *National Fire Code*

Quality Control/Quality Assurance

8. Facility design, construction and operation must incorporate acceptable quality control/quality assurance (QC/QA) protocols and results and provide for changes if necessary to maintain and improve performance. QC/QA protocols shall be submitted to the Department for review confirming adherence to Departmental and/or industry standards. The report shall include copies of testing and inspection procedures and reports, with a deficiency summary, itemized corrections and any other information requested by the Department. Consideration shall be given to implementation of an environmental management system.

Operation of the MSW Transfer Station

9. Site access roads shall be maintained to minimize dust generation. The use of dust suppressants other than water or calcium chloride shall require approval of the Director. Operators are encouraged to use best management practices when applying calcium chloride or any other approved dust suppressant.
10. A copy of this Approval shall be kept on site at all times at each location.
11. All responsible personnel who are directly involved with operation and maintenance of the processing system shall be provided copies of this Approval and shall be fully aware of the terms and conditions pertaining.
12. All necessary engineering documentation / project plans, drawings and specifications for any other activities at these sites shall be submitted to the Department prior to construction.
13. The Department reserves the right to require installation of infrastructure for further treatment of transfer station wastewater where the criteria for wastewater quality at the point of discharge to the environment, as set out in the *Environmental Control of Water and Sewage Regulations, 2003 (ECWSR)* are exceeded, and/or groundwater or surface water quality may be adversely impacted.
14. Weigh scales shall be maintained for incoming materials and for queuing vehicles
15. The approval holder shall provide supervision when any material is being disposed at the facility. Unsupervised disposal is not permitted.
16. Incoming waste shall be routinely scrutinized to ensure unacceptable waste is not received at the site.
17. Maximum storage time for municipal solid waste shall not exceed 2 consecutive days in the summer (April -October) and 1 week in the winter (October – April).

18. Municipal solid waste shall be stored inside the MSW transfer station or in sealed containers.
19. All floors of receiving and storage areas shall be impermeable and inspected regularly to ensure there is no compromise in the storage area that could potentially release substances or waste materials into the environment.
20. All waste shall be received and transported in sealed, leak-proof vehicles and contained at all times on the site.
21. The approval holder shall not bury any material at the transfer stations. This condition may be amended for inert concrete rubble and soil materials where a written proposal is sent to the Department for review.

Household Hazardous Waste Facility

22. The siting requirements shall comply with municipal and national fire codes and building codes for separation between property lines and buildings.
23. The HHW storage container shall be on a stable and impermeable surface that meets the requirements of the Department and shall provide adequate space for ingress and egress.
24. Only personnel trained in the handling of hazardous waste shall be utilized for the handling/processing of the hazardous waste.
25. Manifesting documentation (import and export of hazardous waste), volumes, sources, types and disposal locations of wastes received from each pickup and delivered on each trip are to be kept for at least two years, and are to be made available to Department staff upon request.
26. The approval holder shall ensure that all staff is alerted to hazards associated with all materials received. In addition, sufficient equipment, absorbents, and related clean-up materials must be kept on hand in the event of a leak or a spill during storage, handling, or transportation.
27. All employees/personnel must receive training applicable to workplace hazards and other applicable hazardous waste management training.
28. The storage structure shall remain locked when the facility is not in use or operation.
29. The approval holder shall only accept hazardous waste generated from residential sources. Waste dangerous goods from institutional, commercial and industrial (ICI) sources are not to be accepted at the Facility.
 - a) The following material shall NOT be accepted at the HHW Depot:
 - i) biomedical waste, including sharps
 - ii) asbestos
 - iii) explosives, including ammunition and fireworks

- iv) polychlorinated biphenyls (PCB) and wastes containing PCB above regulated limits, with the exception of fluorescent lighting ballasts destined for recycling
 - v) radioactive material (including low-level radioactive material or NORMS); with the exception of residential household smoke detectors
 - vi) animal carcasses
 - vii) international wastes
 - viii) unidentifiable or unclassifiable materials
30. Methods and procedures shall be established for:
- identifying unknown wastes, including any chemical analyses;
 - handling unknown wastes as needed;
 - handling wastes, which pose special hazards, such as explosives, pressure or heat sensitive wastes, home chemistry lab wastes, etc..
31. Only HHW which can be safely stored and appropriately recycled or disposed shall be accepted.
32. Hazardous wastes which do not meet the acceptance criteria shall be rejected by the approval holder and immediately returned to the generator of the waste dangerous goods.
33. All containers of waste shall be properly labelled, marked and inventoried. Upon completion of a lab pack, the outer container shall also be properly labelled and marked and an inventory of the contents attached to the container. The date of completion of the lab pack shall also be indicated on the inventory.
34. The facility shall be equipped with intrusion alarms and fire and gas detection systems in all storage, handling, and laboratory areas. Alarms shall be monitored and kept in good operating order at all times.
35. Contaminated fluids and wastewater generated by the cleaning of containers or equipment shall be recovered and disposed of in an approved manner.
36. Dyked areas within the HHW structure shall be kept clear of material that may compromise the capacity of the dyke system. Once a year, the dykes shall be visually inspected for their liquid containing integrity, and repairs shall be made when required. Once every ten years, the dykes shall be inspected, by a means other than visual inspection, for their liquid containing integrity, and repairs shall be made when required.

Storage

37. Household hazardous waste may be stored in an approved on-site trailer designed and installed for this purpose for up to 90 days, as long as approved storage capacity is not exceeded.
38. Containment shall be maintained in a condition capable of retaining any spillage which may occur. Any liquid or solid material resulting from a spill or release is to be collected, and

treated as waste dangerous goods; placed in the appropriate drum and disposed of as appropriate. Contaminated material from the processing of the waste dangerous goods, such as pads, contaminated disposable coveralls, gloves, boots, etc, shall be collected and treated as waste dangerous goods; placed in the appropriate drum and disposed of as appropriate.

39. The on-site handling/processing of household hazardous waste must take place within the storage structure. Procedures must be adhered to determine the hazardous nature of materials. Reactive and chemically incompatible wastes shall be stored separately and securely.
40. Wastes must be kept in original containers that are labeled. No mixing or bulking of waste is permitted. The approval holder shall not mix or dilute the hazardous waste.
41. All hazardous waste must be stored in labelled containers or drums. Use containers that are made of, or lined with, materials which will not react with the waste to be stored. (please reference the *Transportation of Dangerous Goods Act*) The date of receipt of the waste dangerous goods at the facility shall be clearly labeled on the storage drums.
42. Approved containers holding hazardous waste must be kept closed during storage except when it is necessary to add or remove waste.
43. Wastes that are delivered in leaking or corroded containers shall be repacked or over-packed in leak-proof containers.
44. Waste dangerous goods awaiting pick-up by a licensed hazardous waste transporter shall be stored in the storage structure.
45. Waste containers at the site shall not be stacked more than two (2) drums in height.
46. A minimum distance of 50 centimeters shall be maintained between rows of containerized wastes. A row of waste shall not exceed 240 centimeters in width.
47. The transportation of hazardous waste/waste dangerous goods shall be carried out by a licensed transporter.
48. The waste manifesting provisions of the *Canadian Environmental Protection Act*, are the responsibility of the Waste Management Section, of the Department. Waste manifest forms may be obtained from the Department (Tel: 709-729-1771). Completed hazardous waste transport shall be forwarded to the Department.

Operations and Maintenance Manuals/Plans

49. The approval holder shall develop and maintain Operations and Maintenance Manuals/Plans in accordance with the Department's Environmental Standards for Municipal Solid Waste Transfer Stations specific to each facility associated with the Regional System.
50. All site operations are to be conducted in accordance with an approved up-to-date Facility

Operations Plan. The purpose of the Facility Operations Plan is for facility operators and employees is to ensure they are trained and are clear on how daily operations proceed, that routine maintenance is conducted, and that contingency plans are appropriately enacted.

51. The approval holder shall maintain a Municipal Solid Waste Management and Public Education Plan.
52. The approval holder shall maintain an up to date contingency plan for environmental and health and safety emergencies, on site at all times, and on file with DGSNL and the Department.

Surface Water Management

53. The approval holder shall ensure that site run-on is minimized by appropriate drainage ditching and sloping; and that run-off from the site does not have an adverse effect on the off-site environment.
54. The approval holder shall ensure that surface water at the facility is not in contact with leachate or solid waste. Any water discharged from the site shall meet discharge water criteria.
55. No authority is granted by this approval to enable the discharge of surface water beyond the property boundary and onto adjoining lands without the authorization of the affected landowner(s). It is the responsibility of the approval holder to ensure that the authorization of said landowner(s) is current and valid. Failure to retain said authorization may result in this Approval being null and void.
56. The approval holder shall be required to mitigate significant adverse impacts to receiving watercourses which are impacted as a result of point source and non-point source discharges attributed to the facility.

Discharge Water Quality

57. A maximum allowable limit for TPH is 15 ppm prior to discharge. Wastewater not meeting this criterion shall be treated to meet criteria limits prior to discharge.
58. Any discharge from the site to a watercourse shall have a total suspended solids (TSS) value of 30 mg/l or less.
59. For any wastewater/ discharges to a sewer which does not lead to a sewage treatment facility, the limits established under Schedule A of the *Environmental Control Water and Sewage Regulations* apply.
60. For discharges to a sewer which leads to a sewage treatment facility, the limits established under Schedule B of the *Environmental Control Water and Sewage Regulations* apply.

Monitoring

61. The Department has the authority to require monitoring programs or testing at any time when:

- pollutants might be released to the surrounding environment without being detected;
 - an adverse environmental effect may occur.
62. The approval holder may, at any time, request that any monitoring requirements imposed be altered by:
- requesting the change in writing to the Director; and
 - providing sufficient justification, as determined by the Director.
63. The approval holder shall bear all expenses incurred in carrying out environmental monitoring required under this Approval.
64. Any new and relevant information respecting any adverse effect that results, or may potentially result, from any activity to which the Approval relates, and that comes to attention of the Approval holder shall be submitted to the Department in a timely manner.

Non-Compliance

65. The Department and DGSNL shall be notified immediately of any incidents of non-compliance with this Approval.

Further Assessment

66. The Minister may at any time, with reasonable notice, require the approval holder to conduct or have conducted environmental studies, site assessments, sampling, testing, or investigations where, based upon reasonable and probable grounds, the Minister is of the opinion that the waste management system may have had, or has the potential to have, an adverse effect on the environment.

Environmental Emergency Health and Safety Contingency (EHS)

67. All responsible personnel who are directly involved with operation and maintenance of the processing system shall be provided copies of this Approval.
68. For after hours emergencies and spill reports call: **1-800-563-9089**.
69. All appropriate operations training and health and safety procedures shall be constantly maintained at the site in accordance with applicable legislation and Department environmental standards for the waste management facility in question.
70. Incidents that could occur and require specific response planning include: contingency for unacceptable waste; equipment failure; waste or hazardous materials incidents/ spills; fire; air quality or odour problems, vector infestation. In the event of problems with wildlife encounters (e.g. black bears); the Department of Fisheries, Forestry and Agriculture, Wildlife Division can be contacted.

Environmental, Aesthetic, Nuisance, and Housekeeping

71. Existing tree screens, outside the firebreak, that may conceal the sites from public view shall be maintained.

72. Access roads to each site shall be kept free of waste material and litter shall be controlled at all times.
73. Supervision shall be provided for all reception, placement and managing of waste at the facility.
74. There shall be signs placed strategically throughout the site indicating “No Scavenging”.
75. All vehicles transporting waste and debris to, from, or on-site shall be enclosed, or covered with close fitting tarpaulins to prevent waste and debris from spilling, and that they have tailgates and boxes that are sealed against leakage. Users of the site shall be notified by the approval holder to adhere to this condition.
76. A program to manage and control vectors, rodents, birds and wildlife that may scavenge or develop populations associated with the waste management facility shall be developed.

Prohibitions and Restrictions

77. Prohibitions refer to materials that shall not be accepted for disposal at this waste management facility. Materials are banned from disposal when they have characteristics that make them a risk to worker safety or to the environment. Materials are banned for disposal when suitable waste diversion services are available which include re-use, recycling, and reduction of the amount of material that goes to landfill. It is the responsibility of site managers and staff to decline acceptance of material when unacceptable material is openly visible and identifiable.

Materials banned for landfill disposal may be handled or stored in designated areas of the facility where protocols for safe handling and storage are defined and approved by the Department in separate Certificates of Approval (e.g., C&D waste, HHW).

Operational restrictions ensure that modern waste management practices are implemented. Similar to disposal bans, they aim to minimize adverse environmental effects, enhance worker health and safety, and implement best practices in modern waste management.

78. Prohibitions – Disposal Bans

The following material **shall NOT be accepted** for disposal:

- a. Beverage containers suitable for reuse and recycling as defined by MMSB programs;
- b. Used tires covered by MMSB ‘Used Tire Recycling Program’;
- c. waste paint as covered by MMSB Programs; and
- d. Electronic goods covered by a stewardship program. This material may be collected on behalf of the organization responsible, or redirected to an approved collection point. Contact information, a list of accepted products and service providers in NL is provided at <http://www.mmsb.nl.ca/recyclingprograms/electronic-waste/> .
Electronic waste that is damaged (e.g. broken monitors and cathode ray tubes), or

dismantled to potentially expose hazardous constituents, is considered to be hazardous waste.

- e. Bulk liquids of any kind [with the exception of used oil, which may be accepted where a registered and approved used oil storage tank system is in place];
- f. Household Hazardous Waste;
- g. Biomedical Waste;
- h. Specified Risk Material as defined in Waste Management Strategy guidance documents Appendix D - includes the skull, brain, trigeminal ganglia (nerves attached to the brain), eyes, tonsils, spinal cord, and dorsal root ganglia (nerves attached to the spinal cord) of cattle aged 30 months or older, and the distal ileum (portion of the small intestine) of cattle of all ages. These cattle tissues, if infected are capable of transmitting bovine spongiform encephalopathy (BSE), or mad cow disease if added to animal feed, pet food or fertilizer.
- i. Refrigeration, air conditioning and fire extinguishing equipment which contain regulated substances, as defined in the *Halocarbon Regulations* Schedules A-E. These materials may be acceptable when protocols are in place, as detailed in the following section.
- j. Fuel Storage Tanks except when protocols are in place for proper handling storage, and disposal; as detailed in the following section.
- k. Naturally Occurring Radioactive Material (NORMs). NORMS might be found in drilling or excavating materials.
- l. Radioactive material is banned from disposal and is separately regulated by the Canadian Nuclear Safety Commission. Radioactive material is found in household material such as smoke detectors.
- m. Any mixture or combination of the above restricted waste is also restricted or prohibited.

79. Operational Restrictions:

- (1) There shall be no incineration or open burning of any kind.
- (2) Only waste from the area of service identified in the approval may be received at the facility unless specifically authorized by DGSNL and approved by the CRSB.
- (3) All waste transporters and vehicles utilizing waste management facility must cover or tie down waste in accordance with *Section 31. (1) of the Cargo Securement Regulations of the Highway Traffic Act*.
- (4) All vehicles entering CRSB facilities shall adhere to the *Cargo Securement Regulations*. It is the responsibility of the regional service board and site managers to report non-compliance to regional enforcement agencies, and to work with the Department and proponents toward a plan for compliance, which may include measures such as denying access to non-compliant vehicles.

80. Exceptions to disposal bans where management protocol apply:

- a) All non-program tires shall be accepted for disposal at the Construction and Demolition Landfill. Non program tires include all-terrain (ATV), or off the road (OTR) vehicle tires, tires used on rolling stock equipment used in the agricultural, forestry, industrial/construction and mining industries. These tires are not collected under the Used Tire Recycling Program by the MMSB. If not approved

for specific recycling applications, disposal to landfill is acceptable.

- b) An exception may be made for the collection and storage of small quantities of smoke detectors that contain radioactive material. This material can be accepted at household hazardous waste depots only with prior approval from the Department.
- c) Special waste is defined by Appendix D of waste management strategy guidance documents as any waste material that requires special treatment or disposal precautions, due to its nature, quantity, volume, potential to react and/or potential to produce an adverse effect. Examples include, animal carcasses/ mortalities or road kill, asbestos containing material, fish plant waste, commercial or industrial waste streams etc. Special waste shall be accepted only upon prior approval from DGSNL. DGSNL will define the safe handling and disposal guidelines, technical recommendations, and roles of other regulatory agencies which shall be adhered to in all cases.
- d) Asbestos containing material (ACM) containing friable asbestos, accepted for disposal at the facility, shall be directed to the Construction and Demolition Landfill and handled by personnel who are trained and properly equipped with personal protective clothing and respirators. ACM shall be managed in accordance with the guidance document entitled: Asbestos Waste Disposal (GD-PPD-033.1).
- e) Acceptance of tires under the Used Tire Recycling Programs for temporary storage is limited to 100 tires per site with the prior approval of the Department. The MMSB provides a collection service and shall be contacted at 1-800-901-6672. Additional information on tire storage can be found on the Departmental website.
- f) Vehicle wrecks and scrap metal shall be directed to recognized metal salvage and recycling operations.
- g) White metal wastes, ensuring compliance under the Halocarbon Regulations, such as freezers, refrigerators and stoves may be appropriately stockpiled in a separate area, pending at least semi-annual transport to a recycling operation. Metals shall be stockpiled in a neat and tidy fashion and not exceed 90% storage capacity. Additional information is found in the appendix of the Environmental Standards for Transfer Stations.
- h) Equipment containing regulated substances such as halocarbons, can be disposed of at a waste disposal site if the regulated substance (s) is (are) recovered by a person approved under the Halocarbon Regulations and shall be labelled "Halocarbon Free".
- i) Fuel storage tanks (commercial or residential) must be drained of product prior to entering the site and shall only be accepted at the metal storage area. The CRSB must submit a plan if draining of any fluids is undertaken and stored on site. If deemed unacceptable for recycling, prior to landfilling, fuel tanks and drums shall have confirmation that they have been purged of product, tank bottom sludge and vapour. The tank must also be cut in half or sufficient openings cut in the tank to prevent the accumulation of vapour and to accommodate visual inspection. If CRSB would like to develop a fuel storage tank management program, the

Department shall be contacted to amend or issue an approval.

The Department reserves the right to amend this approval, to ban disposal of waste streams where and when recycling and diversion programs exist. Any recyclable or waste material that is banned from landfill disposal shall be appropriately redirected.

Notwithstanding all of the above, where options for waste treatment/disposal are limited, the Department shall be consulted regarding accommodation of the waste.

Waste Recovery

81. Any material that is recovered, recycled and/or removed from these sites shall be done by a company holding a valid and current Certificate of Approval. Any waste management processes carried out by the approval holder or its contractors shall be done with prior approval from the Department.

Site Security and Signage

82. Unauthorized access to the waste management site shall be controlled. Measures may include fencing (wire mesh with a maximum opening of 20 cm), and shall include a secure gate or barrier at the site entrance (minimum opening of 8.5 m) with appropriate, highly visible signage to inform the public of acceptable waste materials, hours of operation, telephone number for contact and containing a "No Scavenging" stipulation.
83. An operator shall be kept on duty when and if the site is open to the public. The gate must be locked shut when the operator is not in attendance.
84. Areas shall be allocated and signs posted designating separate areas for the transfer, temporary storage of construction materials, white goods, household hazardous waste, municipal solid waste, and other approved waste as applicable.
85. A firebreak may be required around the perimeter of the site, please check with the authority having jurisdiction.

Noise

86. Noise levels at waste management facilities shall not exceed tolerable long term exposure limits for workers as per guidelines under the *Occupational Health and Safety Act*.
87. Complaints about noise from nearby area residents (off-site) shall be responded and details recorded.
88. If complaints regarding noise from facility operations on or off the site are received, monitoring of sound levels may be required by the Department, and mitigation measures may be required.

Air Emissions

89. Any kind of incineration or open burning is strictly prohibited. The approval holder shall comply with the *Air Pollution Control Regulations* at all times.

90. Schedule A of these regulations provides the standard for ambient air quality, particulate matter and airborne contaminants.
91. Dust generation on site shall be minimized.
92. Odour control measures shall be incorporated into facility design e.g. using negative air pressure to contain odour within infrastructure.
93. Numerical or quantitative limits on odour may be established at the discretion of the Department if odour impacts beyond the property boundaries are deemed to be excessive.
94. Standard procedures to address odour complaints associated with the facility shall be established as part of the Operations Manual and would include:
- i) Immediately investigate the cause of the complaint and undertake immediate and appropriate action, if necessary, to correct the problem.
 - ii) Record all odour complaints and document the date, time, name, address and telephone number of the individual lodging the complaint. The record shall also state any cause of the odour and the action taken to correct the problem.
 - iii) Record wind direction, wind speed, temperature, humidity and other atmospheric conditions at the time of the occurrence which resulted in a complaint.
 - iv) Records of odour complaints shall be made available to the Department upon request.
95. A plan to reduce or cease odour generation shall be submitted at the request of the Department.

Hazardous Materials Incident/Spill Prevention

96. For all waste management facilities the areas in which hazardous materials or chemicals may be used or stored shall have impermeable floors and dykes or curbs and shall not have a floor drain system, nor shall it discharge to the environment. Areas inside the dykes or curbs shall have an effective secondary containment capacity of at least **110%** of the chemical storage tank capacity, in the case of a single storage container. If there is more than one storage container, the dyked area shall be able to retain no less than **110% of the capacity of the largest container or 100 % of the capacity of the largest container plus 10% of the aggregate capacity of all additional containers, whichever is greater**. These dyked areas shall be kept clear of material that may compromise the capacity of the dyke system. Once a year, the dykes shall be visually inspected for their liquid containing integrity, and repairs shall be made when required. Once every ten years, the dykes shall be inspected, by a means other than visual inspection, for their liquid containing integrity, and repairs shall be made when required. This requirement stands for facilities where quantities of hazardous materials may be kept on a regular basis, or intermittently from time to time.
97. All holding tanks for used oil shall be approved by DGSNL as per the ***Used Oil Control Regulations***.

Digital Government and Service NL (DGSNL)

98. Through a Memorandum-of-Understanding the Department of Environment and Climate Change has authorized DGSNL to act on its behalf in inspecting and/or auditing the operation of waste management facilities, for compliance under this approval and all applicable provincial Acts and Regulations. The Regional DGSNL Office may be used as the local point of contact in all cases. DGSNL may contact the Department of Environment and Climate Change as necessary for review and consultation on monitoring results, inspections, reports, and changes or amendments to this Approval.

Reporting

99. The annual monitoring of operations report shall be submitted to the Department by February 28th each year summarizing facility activities of the previous year. The information to be submitted is described in the Department's environmental standards and includes as follows and where applicable.
- i) quantity, type, source (origin) and carrier of waste received;
 - ii) quantity and type of materials recycled, if applicable;
 - iii) quantity of recyclable material received at or transferred to the regional landfill
 - iv) quantity and type of waste dangerous goods removed and the final disposal site;
 - vi) records of any waste diversion;
 - xi) a summary of any upsets or spills at the facility;
 - xii) a summary of any registered complaints and measures taken to resolve the complaints;
 - xiii) any changes in procedure or operations;
 - xiv) any changes or updates with respect to staffing and training
 - xv) any other information deemed necessary by the Department.

It is noted that volume and weight estimates will be substituted where scales have not been installed.

100. Any operational difficulties with potential environmental implications must be immediately reported to DGSNL. The nature of the operational difficulty as well as the mitigation measures shall be included in the yearly report.
101. All incidents of:
- Contingency Plan implementation;
 - non-conformance of any condition within this approval;
 - spillage or leakage of a regulated substance;
 - leachate or wastewater discharge suspected to have exceeded criteria limits
 - verbal/written complaints of an environmental nature from the public, any response, mitigation or corrective action e.g. due to air quality, odour or noise.
 - any incidence of vandalism or illegal dumping at or near the site.

shall be immediately reported, within one working day, to a person or message manager or facsimile machine to DGSNL by phoning or faxing.

Central Region – DGSNL (Gander)
P.O. Box 2222
A1V 2N9
Telephone (709) 256-1420
Facsimile: (709) 256-1438

102. A written incident report including a detailed description of the incident, summary of contributing factors and an action plan to prevent future incidents of a similar nature, shall be submitted to the respective Regional Director of DGSNL. The action plan shall include a description of actions already taken and future actions to be implemented, and shall be submitted within thirty days of the date of the initial incident.

Decommissioning

103. An approved alternative disposal or transfer location must be identified prior to closure and decommissioning.
104. A detailed decommissioning plan must be submitted to the Department 6 months prior to the planned date of final site closure. Decommissioning details must address site security, the removal of remaining material and on-site infrastructure, and financial arrangements for any future environmental monitoring requirements, and outline potential future uses for the site.

Expiration

105. This approval expires on December 31st, 2028.
106. Should the approval holder wish to continue to operate beyond this expiry date, a written request shall be submitted to the Department for the renewal of this approval. Such request shall be made at least 3 months prior to expiration.

c.c. Robert Locke, Director
Pollution Prevention Division
Department of Environment
and Climate Change
rlocke@gov.nl.ca

Heather Jesso
Environment and Climate Change Canada
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Government of Newfoundland and Labrador
Department of Environment and Climate Change
Pollution Prevention Division

CERTIFICATE OF APPROVAL

Pursuant to the Environmental Protection Act, SNL 2002, Sections 16, 78 and 83.

Issued: January 19, 2024
Expires: December 31, 2028

Approval No: WMS-16-08-008
File No: 839-CRS-001

Approval Holder: Town of Change Islands
P.O. Box 67
Change Islands, NL
A0G 1R0
Phone: 709-621-4181

Attn: Town Clerk

RE: Approval to operate a waste recovery facility

Approval is hereby given for the operation of a Waste Recovery Facility located at the existing site on the main highway approximately 10 km outside the town, for the collection of bulk and waste dry materials for sorting and transfer to the landfill site at Central Regional Waste Management Facility in Norris Arm North for final disposal.

This approval does not release the holder from the obligation to obtain appropriate approvals from other concerned provincial, federal and municipal agencies. Approval from the Department of Environment and Climate Change (the Department) shall be obtained prior to any significant change in the design, construction, installation, or operation of the facility, including any future expansion of the works. This certificate shall not be sold, assigned, transferred, leased, mortgaged, sublet or otherwise alienated by the holder without obtaining written prior approval from the Minister.

This approval is subject to the terms and conditions attached hereto, as may be revised from time to time by the Department. Failure to comply with any of the terms and conditions may render this certificate of approval null and void, may require the approval holder to cease all activities associated with this certificate of approval, may place the approval holder and its agent(s) in violation of the *Environmental Protection Act*, SNL, 2002, c. E-14-2, and will hold the approval holder responsible for taking such remedial measures as may be prescribed by the Department. The Department reserves the right to add, delete, modify or revoke this approval at any time.

MINISTER

OK
8/2

Administrative and General

1. The waste recovery facility shall comply with applicable tenets of the most current versions of the following Environmental Standards:
 - GD-PPD – 046 Environmental Standards for Municipal Solid Waste Transfer Stations
 - GD-PPD– 063 General Environmental Standards for Municipal Solid Waste Facilities/Systems

Copies of all environmental standards/guidance documents and applicable appendices are posted to the Department of Environment and Climate Change website.

www.env.gov.nl.ca/env/env_protection/waste/index.html

2. If different from the terms and conditions set out in the Department's Environmental Standards, those directly stated in the Certificate of Approval shall apply.
3. Separate approvals or an amendment to this approval will be required for other waste management activities and/or facilities at this site.

Financial Assurance

4. The approval holder is responsible to ensure that appropriate and adequate financial assurances and/ or environmental impairment liability and/ or pollution abatement assurance and automotive insurance policies are in place for all operators contracted to support the operations of this waste management facility.

Legislation Standards and Guidelines

5. The activities associated with this operation may involve, but not be limited to, the following provincial Acts and Regulations as amended:
 - *Environmental Protection Act RSNL, 2002*
 - *Air Pollution Control Regulations, 2004*
 - *Storage and Handling of Gasoline and Associated Products Regulations, 2003*
 - *Used Oil and Used Glycol Control Regulations, 2018*
 - *Halocarbon Regulations, 2005*
 - *Pesticides Control Regulations, 2012*
 - *Water Resources Act, 2002*
 - *Environmental Control Water and Sewage Regulations, 2003.*
 - *Occupational Health and Safety Act RSNL, 1990*
 - *Dangerous Goods Transportation Act, 2006*
 - *Municipalities Act, 1999*
 - *Regional Service Board Act, 1990*
 - *Transportation and Works Act, 1995 (and Highway specifications as amended)*
6. The activities associated with this operation may involve, but not be limited to, the following federal Acts and Regulations as enforced by respective Federal Regulatory Agencies:
 - *Canadian Environmental Protection Act and Regulations*
 - *Transportation of Dangerous Goods Act and Regulations*

- *Fisheries Act*
- *National Fire Code*

Quality Control/Quality Assurance

7. Facility design, construction and operation must incorporate acceptable quality control/ quality assurance (QC/QA) protocols and results and provide for changes if necessary to maintain and improve performance.

Operation of Waste Recovery Facilities

8. A copy of this Approval shall be kept at each site at all times.
9. There shall be sufficient area for storage of materials and for queuing vehicles.
10. The approval holder shall provide supervision when any material is being delivered to each facility.
11. Incoming waste shall be routinely scrutinized to ensure unacceptable waste is not received at the site. Suspected hazardous waste shall be redirected to an appropriate Central Regional Service Board (CRSB) facility.
12. The following types of bulk waste can be stored at the facilities on an interim basis:
 - white goods
 - end of life vehicles
 - electronics
 - tires
 - wood waste such as Christmas trees and brush
 - construction and demolition debris from residential sources
 - furniture and other bulk household items
13. Maximum storage time for bulk waste shall not exceed 90% of the container or capacity for that specific waste. Arrangements with CRSB shall be made at least every six months to have waste removed from the site. Waste shall be accepted for temporary storage for removal to reuse or recycling in such a manner that the risk of a fire is minimized. If the stockpile is considered excessive, unsightly or may pose an adverse impact to health, safety or the environment then the waste shall be removed immediately.
14. Removal of material from the site for recycling or disposal at the CNWMF at Norris Arm North shall be done by a licensed company holding a current Certificate of Approval or employed by or under contract to CRSB.
15. Waste must be transported to and from the site in an enclosed vehicle or a vehicle to which a tarpaulin or netting is attached to prevent the loss of waste while the vehicle is moving any distance in excess of 0.5 km.

Operations and Maintenance Manuals/Plans

16. All site operations shall be in accordance with CRSB standard procedures and CRSB facility operations plans as approved by the Department. Changes to operations shall be noted in the CRSB annual report and updates filed with the Department as appropriate. The goal is to always maintain a high level of operational efficiency with minimal adverse environmental impact.
17. CRSB shall maintain a contingency plan for environmental and health and safety emergencies on file with Digital Government and Service NL (DGSNL) and the Department prior to commencing operation and, thereafter, provide any annual updates. An updated copy of the contingency plan shall be kept on site at all times.

Surface Water Management

18. The approval holder shall ensure that site run-on is minimized by appropriate drainage ditching and sloping; and that run-off from the site does not have an adverse effect on the off-site environment.
19. The approval holder shall be required to mitigate significant adverse impacts to receiving watercourses which are impacted as a result of point source and non-point source discharges attributed to the facility.

Monitoring

20. The Department has the authority to require testing at any time when:
 - pollutants might be released to the surrounding environment without being detected; or
 - an adverse environmental effect may occur.
21. Any new and relevant information respecting any adverse effect that actually results, or may potentially result, from any activity to which the Approval relates, and that comes to attention after the issuance of the Approval shall be submitted to the Department in a timely manner.
22. The requirements of this Approval shall remain in effect unless altered, in writing, by the Department.

Non-Compliance

23. The Department and DGSNL shall be notified immediately of any incidents of non-compliance with this Approval.

Further Assessment

24. The Minister may at any time, with reasonable notice, require the approval holder to conduct or have conducted environmental studies, site assessments, sampling, testing, or investigations where, based upon reasonable and probable grounds, the Minister is of the opinion that the waste management system may have had, or has the potential to have, an adverse effect on the environment.

Environmental Emergency Health and Safety Contingency

25. For afterhours emergencies and spill reports call: **1-800-563-9089**.
26. All appropriate operations training and health and safety procedures shall be constantly maintained by CRSB in accordance with applicable legislation and Department of Environment and Climate Change Environmental General Standards for Municipal Solid Waste Management Facilities/Systems.
27. Incidents that could occur and require specific response planning include: contingency for unacceptable waste; equipment failure; waste or hazardous materials incidents/ spills; fire; air quality or odour problems, vector infestation. In the event of problems with wildlife encounters (e.g. black bears); the Department of Fisheries Forestry and Agriculture, Wildlife Division can be contacted.

Environmental, Aesthetic, Nuisance, and Housekeeping

28. Existing tree screens, outside the firebreak, that may conceal the sites from public view shall be maintained.
29. Access roads to each site shall be kept free of waste material and litter shall be controlled at all times.
30. Supervision shall be provided for all reception, placement, managing of waste at the facility.
31. Scavenging of waste is strictly prohibited and there shall be signs placed strategically throughout the site indicating "No Scavenging".

Restrictions and Prohibitions

32. Certified waste management systems are subject to the following restrictions and prohibitions:
- a. There shall be NO incineration or open burning of any kind at waste management facilities / sites.
 - b. There shall be NO bulk liquids of any kind received or accepted at the facility with the exception of used oil, where a registered and approved used oil storage tank system is in place.
 - c. Special waste (please refer to definitions in Appendix D on the Departmental website) shall NOT be accepted.
 - d. Biomedical waste (please refer to definitions in Appendix D on the Departmental website) shall NOT be accepted.
 - e. International waste (please refer to definitions in Appendix D on the Departmental website), for the purposes of this approval, is to be considered as "special waste".
 - f. Specified risk material (please refer to definitions in Appendix D on the Department website), for the purposes of this approval, is to be considered as "special waste", shall NOT be accepted.
 - g. Asbestos waste shall NOT be accepted.
 - h. The approval holder may accept, for transfer, all non-program tires. Non program tires include all-terrain (ATV), or off the road (OTR) vehicle tires, tires used on rolling

stock equipment used in the agricultural, forestry, industrial/construction and mining industries. These tires are not collected under the Used Tire Recycling Program by the MMSB and may be disposed to landfill.

- i. Acceptance of tires under the Used Tire Recycling Programs for temporary storage is limited to 100 tires per site. The MMSB provides a collection service and shall be contacted at 1-800-901-6672. Additional information on tire storage can be found on the Departmental website.
- j. Electronic goods covered by a stewardship program shall not be disposed to landfill. This material may be collected on behalf of the organization responsible, or redirected to an approved collection point. Contact information, a list of accepted products and service providers in NL is provided at <http://www.mmsb.nl.ca/recyclingprograms/electronic-waste/>. Electronic waste that is damaged (e.g. broken monitors and cathode ray tubes), or dismantled to potentially expose hazardous constituents, is considered to be hazardous waste.
- k. Where appropriate facilities exist, vehicle wrecks and scrap metal shall be directed to recognized metal salvage and recycling operations. White metals such as freezers, refrigerators and stoves may be appropriately stockpiled in a separate area, pending at least semi-annual transport to a recycling operation. Metals shall be stock piled in a neat and tidy fashion and not exceed 90% storage capacity.
- l. Equipment containing regulated substances (refrigeration, air conditioning and fire extinguishing equipment) shall not be accepted at the waste recovery facility without first having the regulated substance recovered by a person approved under the Halocarbon Regulations and shall be labelled "Halocarbon free". If the substance is to be recovered by personnel contracted by the approval holder, they must have appropriate training and a plan must be outlined in the Facility Operations Plan.
- m. Petroleum storage tanks (commercial or residential) must be drained of product prior to entering the site and shall only be accepted at the metal storage area.
- n. Low level radioactive material (NORMS <70 becquerels/g total specific activity) shall not be accepted at waste management facilities.
- o. Radioactive material (>70 becquerels/g) is separately regulated by the Canadian Nuclear Safety Commission, and shall not be accepted.
- p. Any mixture or combination of the above restricted waste is also restricted or prohibited.
- q. Any recyclable or waste material that is banned from landfill disposal shall be appropriately redirected. Refer to the *Waste Management Regulations, 2003 (amendment)*.

Waste Recovery

33. Any waste management processes carried out by the approval holder, CRSB or its contractors shall be done with prior approval from the Department.

Site Security and Signage

34. Unauthorized access to the waste management site shall be controlled. Measures may include fencing (wire mesh with a maximum opening of 20 cm), and shall include a secure gate or barrier at the site entrance (minimum opening of 8.5 m) with appropriate, highly visible signage to inform the public of acceptable waste materials, hours of operation, telephone number for contact and containing a "No Scavenging" stipulation.

35. An operator shall be kept on duty when and if the site is open to the public. The gate must be locked shut when the operator is not in attendance.
36. Areas shall be allocated and signs posted designating separate areas for the transfer, temporary storage and recycling or disposal of construction debris, white goods, household hazardous waste, municipal solid waste, and other approved waste as applicable.
37. A firebreak may be required around the perimeter of the site, please check with the authority having jurisdiction.

Noise

38. Noise levels at waste management facilities shall not exceed tolerable long term exposure limits for workers as recommended in guidelines under the *Occupational Health and Safety Act*.
39. Complaints about noise from nearby area residents (off-site) shall be responded and details recorded.
40. If complaints regarding noise from facility operations on or off the site are received, monitoring of sound levels may be required by the Department, and mitigation measures may be required.

Air Emissions

41. Any kind of incineration or open burning is strictly prohibited. The approval holder shall comply with the *Air Pollution Control Regulations* at all times.
42. Schedule A of these regulations provides the standard for ambient air quality, particulate matter and airborne contaminants.
43. Dust generation on site shall be minimized.
44. Standard procedures to address odour complaints associated with the facility shall be in accordance with CRSB Operations Manuals for Transfer Facilities.
45. A plan to reduce or cease odour generation shall be submitted at the request of the Department.

Digital Government and Service NL (DGSNL)

46. Through a Memorandum-of-Understanding, the Department of Environment and Climate Change has authorized DGSNL to act on its behalf in inspecting and/or auditing the operation of waste management facilities, for compliance under this approval and all applicable provincial Acts and Regulations. The regional DGSNL office may be used as the local point of contact in all cases. DGSNL may contact the Department of Environment and Climate Change as necessary for review and consultation on monitoring results, inspections, reports, and changes or amendments to this Approval.

Reporting

47. The following information will be provided as part of the CRSB annual report that is submitted to the Department at the end of each calendar year:

- a. quantity, type, source (origin) and carrier of waste received;
- b. quantity and type of materials recycled, if applicable;
- c. quantity of residual material received at or transferred to the regional landfill
- d. quantity and type of waste dangerous goods removed and the final disposal site;
- e. records of any waste diversion;
- f. a summary of any upsets or spills at the facility;
- g. a summary of any registered complaints and measures taken to resolve the complaints;
- h. any changes in procedure or operations;
- i. any changes or updates with respect to staffing and training
- j. any other information deemed necessary by the Department.

It is noted that volume and weight estimates will be substituted where scales have not been installed.

48. Any operational difficulties with potential environmental implications must be immediately reported to DGSNL. The nature of the operational difficulty as well as the mitigation measures shall be included in the yearly report.

49. All incidents of:

- Contingency Plan implementation;
- Non-conformance of any condition within this approval;
- Spillage or leakage of a regulated substance;
- Leachate or wastewater discharge suspected to have exceeded criteria limits;
- Complaints - verbal/written of an environmental nature from the public, any response, mitigation or corrective action e.g. due to air quality, odour or noise; and
- Any incidence of vandalism or illegal dumping at or near the site.

Shall be immediately reported, within one working day, to a person or message manager or facsimile machine to DGSNL by phoning or faxing.

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50. A written incident report including a detailed description of the incident, summary of contributing factors and an action plan to prevent future incidents of a similar nature, shall be submitted to the respective Regional Director of DGSNL. The action plan shall include a description of actions already taken and future actions to be implemented, and shall be submitted within thirty days of the date of the initial incident.

Decommissioning

51. A preliminary facility decommissioning plan must be submitted to the Department at least six months prior to planned closure.
52. An approved alternative disposal or transfer location must be identified prior to closure and decommissioning.
53. A detailed decommissioning plan must be submitted to the Department 6 months prior to the planned date of final site closure. Decommissioning details must address site security, the removal of remaining material and on-site infrastructure, and financial arrangements for any future environmental monitoring requirements, and outline potential future uses for the site.

Expiration

54. This approval expires on the date indicated on the first page of this Certificate.
55. A written request to extend this approval shall be submitted to the Department at least 60 days prior to expiration; concurrent to submission of the annual report.

c.c. c.c. Robert Locke, Director
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**Government of Newfoundland and Labrador
Department of Environment and Climate Change
Pollution Prevention Division**

CERTIFICATE OF APPROVAL

Pursuant to the Environmental Protection Act, SNL 2002, Sections 16, 78 and 83.

Issued: January 19, 2024
Expires: December 31, 2028

Approval No: WMS-16-08-009
File No: 839-CRS-001

Approval Holder: **Town of St. Brendan's**
P.O. Box 54
St. Brendan's, NL
A0G 3V0
Phone: 709-621-4181

Attn: Ms. Rita White, Town Clerk

RE: **Approval to operate a waste recovery facility**

Approval is hereby given for the operation of a seasonal Waste Recovery Facility (May 15 – October 31) at the existing site, for the collection of bulk and waste dry materials for sorting and transfer to the landfill site at Central Regional Waste Management Facility (CNWMF) in Norris Arm North for final disposal.

This approval does not release the holder from the obligation to obtain appropriate approvals from other concerned provincial, federal and municipal agencies. Approval from the Department of Environment and Climate Change (the Department) shall be obtained prior to any significant change in the design, construction, installation, or operation of the facility, including any future expansion of the works. This certificate shall not be sold, assigned, transferred, leased, mortgaged, sublet or otherwise alienated by the holder without obtaining written prior approval from the Minister.

This approval is subject to the terms and conditions attached hereto, as may be revised from time to time by the Department. Failure to comply with any of the terms and conditions may render this certificate of approval null and void, may require the approval holder to cease all activities associated with this certificate of approval, may place the approval holder and its agent(s) in violation of the *Environmental Protection Act*, SNL., 2002, c. E-14-2, and will hold the approval holder responsible for taking such remedial measures as may be prescribed by the Department. The Department reserves the right to add, delete, modify or revoke this approval at any time.

MINISTER

ok
AE

Administrative and General

1. The waste recovery facility shall comply with applicable tenets of the most current versions of the following Environmental Standards:
 - GD-PPD – 046 Environmental Standards for Municipal Solid Waste Transfer Stations
 - GD-PPD– 063 General Environmental Standards for Municipal Solid Waste Facilities/Systems

Copies of all environmental standards/guidance documents and applicable appendices are posted to the Department of Environment and Climate Change website.

www.env.gov.nl.ca/env/env_protection/waste/index.html

2. If different from the terms and conditions set out in the Department's Environmental Standards, those directly stated in the Certificate of Approval shall apply.
3. Separate approvals or an amendment to this approval will be required for other waste management activities and/or facilities at this site.

Financial Assurance

4. The approval holder is responsible to ensure that appropriate and adequate financial assurances and/ or environmental impairment liability and/ or pollution abatement assurance and automotive insurance policies are in place for all operators contracted to support the operations of this waste management facility.

Legislation Standards and Guidelines

5. The activities associated with this operation may involve, but not be limited to, the following provincial Acts and Regulations as amended:
 - *Environmental Protection Act RSNL, 2002*
 - *Air Pollution Control Regulations, 2004*
 - *Storage and Handling of Gasoline and Associated Products Regulations, 2003*
 - *Used Oil and Used Glycol Control Regulations, 2018*
 - *Halocarbon Regulations, 2005*
 - *Pesticides Control Regulations, 2012*
 - *Water Resources Act, 2002*
 - *Environmental Control Water and Sewage Regulations, 2003.*
 - *Occupational Health and Safety Act RSNL, 1990*
 - *Dangerous Goods Transportation Act, 2006*
 - *Municipalities Act, 1999*
 - *Regional Service Board Act, 1990*
 - *Transportation and Works Act, 1995 (and Highway specifications as amended)*
6. The activities associated with this operation may involve, but not be limited to, the following federal Acts and Regulations as enforced by respective Federal Regulatory Agencies:
 - *Canadian Environmental Protection Act and Regulations*
 - *Transportation of Dangerous Goods Act and Regulations*

- *Fisheries Act*
- *National Fire Code*

Quality Control/Quality Assurance

7. Facility design, construction and operation must incorporate acceptable quality control/ quality assurance (QC/QA) protocols and results and provide for changes if necessary to maintain and improve performance.

Operation of Waste Recovery Facilities

8. A copy of this Approval shall be kept at each site at all times.
9. There shall be sufficient area for storage of materials and for queuing vehicles.
10. The approval holder shall provide supervision when any material is being delivered to each facility.
11. Incoming waste shall be routinely scrutinized to ensure unacceptable waste is not received at the site. Suspected hazardous waste shall be redirected to an appropriate Central Regional Service Board (CRSB) facility.
12. The following types of bulk waste can be stored at the facilities on an interim basis:
 - white goods
 - end of life vehicles
 - electronics
 - tires
 - wood waste such as Christmas trees and brush
 - construction and demolition debris from residential sources
 - furniture and other bulk household items
13. Maximum storage time for bulk waste shall not exceed 90% of the container or capacity for that specific waste. Arrangements with CRSB shall be made at least every six months to have waste removed from the site. Waste shall be accepted for temporary storage for removal to reuse or recycling in such a manner that the risk of a fire is minimized. If the stockpile is considered excessive, unsightly or may pose an adverse impact to health, safety or the environment then the waste shall be removed immediately.
14. Removal of material from the site for recycling or disposal at the CNWMF at Norris Arm North shall be done by a licensed company holding a current Certificate of Approval or employed by or under contract to CRSB.
15. Waste must be transported to and from the site in an enclosed vehicle or a vehicle to which a tarpaulin or netting is attached to prevent the loss of waste while the vehicle is moving any distance in excess of 0.5 km.

Operations and Maintenance Manuals/Plans

16. All site operations shall be in accordance with CRSB standard procedures and CRSB facility operations plans as approved by the Department. Changes to operations shall be noted in the CRSB annual report and updates filed with the Department as appropriate. The goal is to always maintain a high level of operational efficiency with minimal adverse environmental impact.
17. CRSB shall maintain a contingency plan for environmental and health and safety emergencies on file with Digital Government and Service NL (DGSNL) and the Department prior to commencing operation and, thereafter, provide any annual updates. An updated copy of the contingency plan shall be kept on site at all times.

Surface Water Management

18. The approval holder shall ensure that site run-on is minimized by appropriate drainage ditching and sloping; and that run-off from the site does not have an adverse effect on the off-site environment.
19. The approval holder shall be required to mitigate significant adverse impacts to receiving watercourses which are impacted as a result of point source and non-point source discharges attributed to the facility.

Monitoring

20. The Department has the authority to require testing at any time when:
 - pollutants might be released to the surrounding environment without being detected; or
 - an adverse environmental effect may occur.
21. Any new and relevant information respecting any adverse effect that actually results, or may potentially result, from any activity to which the Approval relates, and that comes to attention after the issuance of the Approval shall be submitted to the Department in a timely manner.
22. The requirements of this Approval shall remain in effect unless altered, in writing, by the Department.

Non-Compliance

23. The Department and DGSNL shall be notified immediately of any incidents of non-compliance with this Approval.

Further Assessment

24. The Minister may at any time, with reasonable notice, require the approval holder to conduct or have conducted environmental studies, site assessments, sampling, testing, or investigations where, based upon reasonable and probable grounds, the Minister is of the opinion that the waste management system may have had, or has the potential to have, an adverse effect on the environment.

Environmental Emergency Health and Safety Contingency

25. For afterhours emergencies and spill reports call: **1-800-563-9089**.
26. All appropriate operations training and health and safety procedures shall be constantly maintained by CRSB in accordance with applicable legislation and Department of Environment and Climate Change Environmental General Standards for Municipal Solid Waste Management Facilities/Systems.
27. Incidents that could occur and require specific response planning include: contingency for unacceptable waste; equipment failure; waste or hazardous materials incidents/ spills; fire; air quality or odour problems, vector infestation. In the event of problems with wildlife encounters (e.g. black bears); the Department of Fisheries Forestry and Agriculture, Wildlife Division can be contacted.

Environmental, Aesthetic, Nuisance, and Housekeeping

28. Existing tree screens, outside the firebreak, that may conceal the sites from public view shall be maintained.
29. Access roads to each site shall be kept free of waste material and litter shall be controlled at all times.
30. Supervision shall be provided for all reception, placement, managing of waste at the facility.
31. Scavenging of waste is strictly prohibited and there shall be signs placed strategically throughout the site indicating "No Scavenging".

Restrictions and Prohibitions

32. Certified waste management systems are subject to the following restrictions and prohibitions:
- a. There shall be NO incineration or open burning of any kind at waste management facilities / sites.
 - b. There shall be NO bulk liquids of any kind received or accepted at the facility with the exception of used oil, where a registered and approved used oil storage tank system is in place.
 - c. Special waste (please refer to definitions in Appendix D on the Departmental website) shall NOT be accepted.
 - d. Biomedical waste (please refer to definitions in Appendix D on the Departmental website) shall NOT be accepted.
 - e. International waste (please refer to definitions in Appendix D on the Departmental website), for the purposes of this approval, is to be considered as "special waste".
 - f. Specified risk material (please refer to definitions in Appendix D on the Department website), for the purposes of this approval, is to be considered as "special waste", shall NOT be accepted.
 - g. Asbestos waste shall NOT be accepted.
 - h. The approval holder may accept, for transfer, all non-program tires. Non program tires include all-terrain (ATV), or off the road (OTR) vehicle tires, tires used on rolling

stock equipment used in the agricultural, forestry, industrial/construction and mining industries. These tires are not collected under the Used Tire Recycling Program by the MMSB and may be disposed to landfill.

- i. Acceptance of tires under the Used Tire Recycling Programs for temporary storage is limited to 100 tires per site. The MMSB provides a collection service and shall be contacted at 1-800-901-6672. Additional information on tire storage can be found on the Departmental website.
- j. Electronic goods covered by a stewardship program shall not be disposed to landfill. This material may be collected on behalf of the organization responsible, or redirected to an approved collection point. Contact information, a list of accepted products and service providers in NL is provided at <http://www.mmsb.nl.ca/recyclingprograms/electronic-waste/>. Electronic waste that is damaged (e.g. broken monitors and cathode ray tubes), or dismantled to potentially expose hazardous constituents, is considered to be hazardous waste.
- k. Where appropriate facilities exist, vehicle wrecks and scrap metal shall be directed to recognized metal salvage and recycling operations. White metals such as freezers, refrigerators and stoves may be appropriately stockpiled in a separate area, pending at least semi-annual transport to a recycling operation. Metals shall be stock piled in a neat and tidy fashion and not exceed 90% storage capacity.
- l. Equipment containing regulated substances (refrigeration, air conditioning and fire extinguishing equipment) shall not be accepted at the waste recovery facility without first having the regulated substance recovered by a person approved under the Halocarbon Regulations and shall be labelled "Halocarbon free". If the substance is to be recovered by personnel contracted by the approval holder, they must have appropriate training and a plan must be outlined in the Facility Operations Plan.
- m. Petroleum storage tanks (commercial or residential) must be drained of product prior to entering the site and shall only be accepted at the metal storage area.
- n. Low level radioactive material (NORMS <70 becquerels/g total specific activity) shall not be accepted at waste management facilities.
- o. Radioactive material (>70 becquerels/g) is separately regulated by the Canadian Nuclear Safety Commission, and shall not be accepted.
- p. Any mixture or combination of the above restricted waste is also restricted or prohibited.
- q. Any recyclable or waste material that is banned from landfill disposal shall be appropriately redirected. Refer to the *Waste Management Regulations, 2003 (amendment)*.

Waste Recovery

33. Any waste management processes carried out by the approval holder, CRSB or its contractors shall be done with prior approval from the Department.

Site Security and Signage

34. Unauthorized access to the waste management site shall be controlled. Measures may include fencing (wire mesh with a maximum opening of 20 cm), and shall include a secure gate or barrier at the site entrance (minimum opening of 8.5 m) with appropriate, highly visible signage to inform the public of acceptable waste materials, hours of operation, telephone number for contact and containing a "No Scavenging" stipulation.

35. An operator shall be kept on duty when and if the site is open to the public. The gate must be locked shut when the operator is not in attendance.
36. Areas shall be allocated and signs posted designating separate areas for the transfer, temporary storage and recycling or disposal of construction debris, white goods, household hazardous waste, municipal solid waste, and other approved waste as applicable.
37. A firebreak may be required around the perimeter of the site, please check with the authority having jurisdiction.

Noise

38. Noise levels at waste management facilities shall not exceed tolerable long term exposure limits for workers as recommended in guidelines under the *Occupational Health and Safety Act*.
39. Complaints about noise from nearby area residents (off-site) shall be responded and details recorded.
40. If complaints regarding noise from facility operations on or off the site are received, monitoring of sound levels may be required by the Department, and mitigation measures may be required.

Air Emissions

41. Any kind of incineration or open burning is strictly prohibited. The approval holder shall comply with the *Air Pollution Control Regulations* at all times.
42. Schedule A of these regulations provides the standard for ambient air quality, particulate matter and airborne contaminants.
43. Dust generation on site shall be minimized.
44. Standard procedures to address odour complaints associated with the facility shall be in accordance with CRSB Operations Manuals for Transfer Facilities.
45. A plan to reduce or cease odour generation shall be submitted at the request of the Department.

Digital Government and Service NL (DGSNL)

46. Through a Memorandum-of-Understanding, the Department of Environment and Climate Change has authorized DGSNL to act on its behalf in inspecting and/or auditing the operation of waste management facilities, for compliance under this approval and all applicable provincial Acts and Regulations. The regional DGSNL office may be used as the local point of contact in all cases. DGSNL may contact the Department of Environment and Climate Change as necessary for review and consultation on monitoring results, inspections, reports, and changes or amendments to this Approval.

Reporting

47. The following information will be provided as part of the CRSB annual report that is submitted to the Department at the end of each calendar year:

- a. quantity, type, source (origin) and carrier of waste received;
- b. quantity and type of materials recycled, if applicable;
- c. quantity of residual material received at or transferred to the regional landfill
- d. quantity and type of waste dangerous goods removed and the final disposal site;
- e. records of any waste diversion;
- f. a summary of any upsets or spills at the facility;
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