Report Date: August 2, 2024

File:112057

Report Number:228922

DEEP WATER RECOVERY LTD.

5084 Island Highway S
PO Box 276
Union Bay BC V0R 3B0

Dear DEEP WATER RECOVERY LTD.,

Re: An Administrative Penalty Referral

On June 26, 2024, Ministry of Environment and Climate Change Strategy (Ministry) Officer's Bryan Vroom and Jurgen Deagle (Officers) conducted an on-site inspection of Deep Water Recovery Ltd.'s (DWR) ship breaking facility (Facility) located at 5084 Island Highway S, Union Bay, BC. The inspection was conducted to verify compliance with the Environmental Management Act (EMA) during a period of rainfall. During the on- site inspection, Ministry Staff were accompanied by Mark Jurisch (Operations Manager, DWR).

The Ministry issued Pollution Abatement Order 112057 (Order), which requires the immediate caseation of the release or discharge of effluent with concentrations of Copper, Lead and Zinc above BC Water Quality Guidelines (BCWQG) levels to the environment, and the retention of qualified professionals to assess site conditions and submit monitoring reports, updates, and recommendations to the Ministry. The Order does not provide any authorization to discharge waste to the environment. The Order was first issued on March 15, 2024, and was amended on July 12, 2024.

For your information, this inspection record is being referred for an Administrative Penalty.

Inspection Details:

The inspection period for this report is from April 17, 2024 to June 26, 2024 (Inspection Period) and includes a review of the following documents:

- Certificate of Analysis VA24B5494, issued July 17, 2024 by ALS Canada Ltd. (June 26 ALS Sample Results)

Ministry of Environment and Climate Change Strategy

Compliance and Environmental Enforcement Branch

Mailing Address:
2080-A
Labieux Rd
Nanaimo BC V9T 6J9

Telephone: 250 751 3100

Facsimile: 250 751 3103

Website: www.gov.bc.ca/env

Compliance Assessment

Below are the requirements that were assessed for compliance during this inspection, as well as the associated details/findings and any actions required.

Requirement Description:

Pollution Abatement Order - Required Action 1

1.: Immediately cease the release or discharge of effluent with concentrations of Copper, Lead and Zinc above BCWQG levels to the environment.

Details/Findings:

During the June 26, 2024, onsite inspection, Ministry Officers observed work occurring on a vessel called the Miller Freeman that was located at the Facility, specifically on the gravel surface to the south of the paved working area. DWR's Operations Manager confirmed that the vessel was actively being worked on in order to pull the vessel from the foreshore to the working area. Effluent created from the breakdown and recycling of the vessel is unable to be collected on the gravel surface and discharges directly to ground and the marine environment. Additionally, Officers observed piles of painted wood, metal and other wastes on the asphalted area adjacent to the gravel area. Rainwater from these work areas was observed to be flowing into Sump 1 (Photo 1). During the onsite inspection, it was raining and the Officers observed effluent actively discharging from Sump 1 (Photo 2) and on the gravel surface around the vessel, specifically underneath the hull (Photo 3). On June 26, 2024, Environment Canada recorded 10.2 mm of rain on at the Comox A station (https://climate.weather.gc.ca/historical_data/search_historic_data_e.html).

Effluent samples were collected during the on-site inspection at two locations, and one background sample from the upgradient highway culvert of DWR (Photo 4), as identified on the Site Map. The analytical results are included in the appendix of this report (June 26 Sample Results). Table 1 below is a summary of the samples collected with exceedances of BCWQG for Marine Aquatic Life.

Table 1: Summary of exceedances of BCWQG of effluent samples collected on June 26, 2024.

Parameter	BCWQG Marine Aquatic Life		Unit	Sump 1 (Oil/Water Separator)	Miller Freeman	NC-HWY (Background Ditch)
	Acute	Chronic				
Copper (total)	3	2	ug/L	481	199	5.18
Lead (total)	140	2	ug/L	**26**	**15.1**	0.367
Zinc (total)	55	10	ug/L	742	240	**13.9**
Total Suspended Solids	25 mg/L above background*	5 mg/L above background**	mg/L	148	176	3.4

0.123	Exceeds Chronic and Acute criteria
0.123	Exceeds Chronic, but meets Acute criteria

* Change from background of 25 mg/L at any one time for a duration of 24 h in all waters during clear flows or in clear waters.

** Change from background of 5 mg/L at any one time for a duration of 30 d in all waters during clear flows or in clear waters.

On June 26, 2024, DWR discharged or released effluent with concentrations of Copper, Lead and Zinc above BCWQG levels to the environment, and is out of compliance with Required Action 1 of the Order.

This non-compliance is being referred for Administrative Penalty.

Compliance:

Out

Actions to be taken:

Cease the release or discharge of effluent with concentrations of Copper, Lead and Zinc above BCWQG levels to the environment.

Compliance History:
2024-04-22 IR 222735 Warning 120(7): Pollution Abatement Order - Required Action 2 2, Pollution Abatement Order - Required Action 3 3, Pollution Abatement Order - Required Action 6 6

The Ministry of Environment Compliance and Enforcement Policy and Procedure (C&E Policy) prescribes common requirements and procedures for all Ministry staff to ensure consistent and risk-based assessment and response to non-compliance. Using the Non-Compliance Decision Matrix, the compliance determination for this inspection has been assessed as **Level 3, Category B, AMP**.

More information about Environmental Compliance, the Non-Compliance Decision Matrix, and reporting and data submission requirements can be found at the links below:
General compliance information:
www.gov.bc.ca/environmentalcompliance
Non-Compliance Decision Matrix information:
www.gov.bc.ca/environment/how-compliance-is-assessed
Reporting and data submission requirements (to be sent to EnvAuthorizationsReporting@gov.bc.ca):
https://www2.gov.bc.ca/gov/content/environment/waste-management/waste-discharge-authorization/comply

Please be advised that this inspection report may be published on the provincial government website within 7 days.

Below are attachments related to this inspection.

If you have any questions about this letter, please contact the undersigned.

Yours truly,

Katie Howett
Environmental Protection Officer

cc:

Attachments:
1) Photo 1: Waste piles of painted wood, metal and other wastes on the asphalted area adjacent to the gravel area with effluent flowing to Sump 1.
2) Photo 2: Sump 1 oil/water separator discharge location on June 26, 2024. Sample collected from the discharge at this location identified as Sump 1.
3) Photo 3: Effluent discharge location under the hull of the Miller Freeman on the gravel on June 26, 2024. Sample collected from the discharge at this location identified as Miller Freeman.
4) Photo 4: Sample location upgradient of DWR on June 26, 2024. Sample collected from the discharge at this location identified as NC-HWY.
5) Site Map
6) June 26, 2024 ALS Sample Results

Deliver via:
Email: [X] **Fax:** [ ] **Mail:** [ ]
Registered Mail: [ ] **Hand Delivery:** [ ]

Ministry of Environment and Climate Change Strategy
Compliance and Environmental Enforcement Branch
Mailing Address:
2080-A Labieux Rd
Nanaimo BC V9T 6J9
Telephone: 250 751 3100
Facsimile: 250 751 3103
Website: www.gov.bc.ca/env

Ministry of Environment and Climate Change Strategy

Compliance and Environmental Enforcement Branch

Mailing Address:
2080-A
Labieux Rd
Nanaimo BC V9T 6J9

Telephone: 250 751 3100
Facsimile: 250 751 3103
Website: www.gov.bc.ca/env

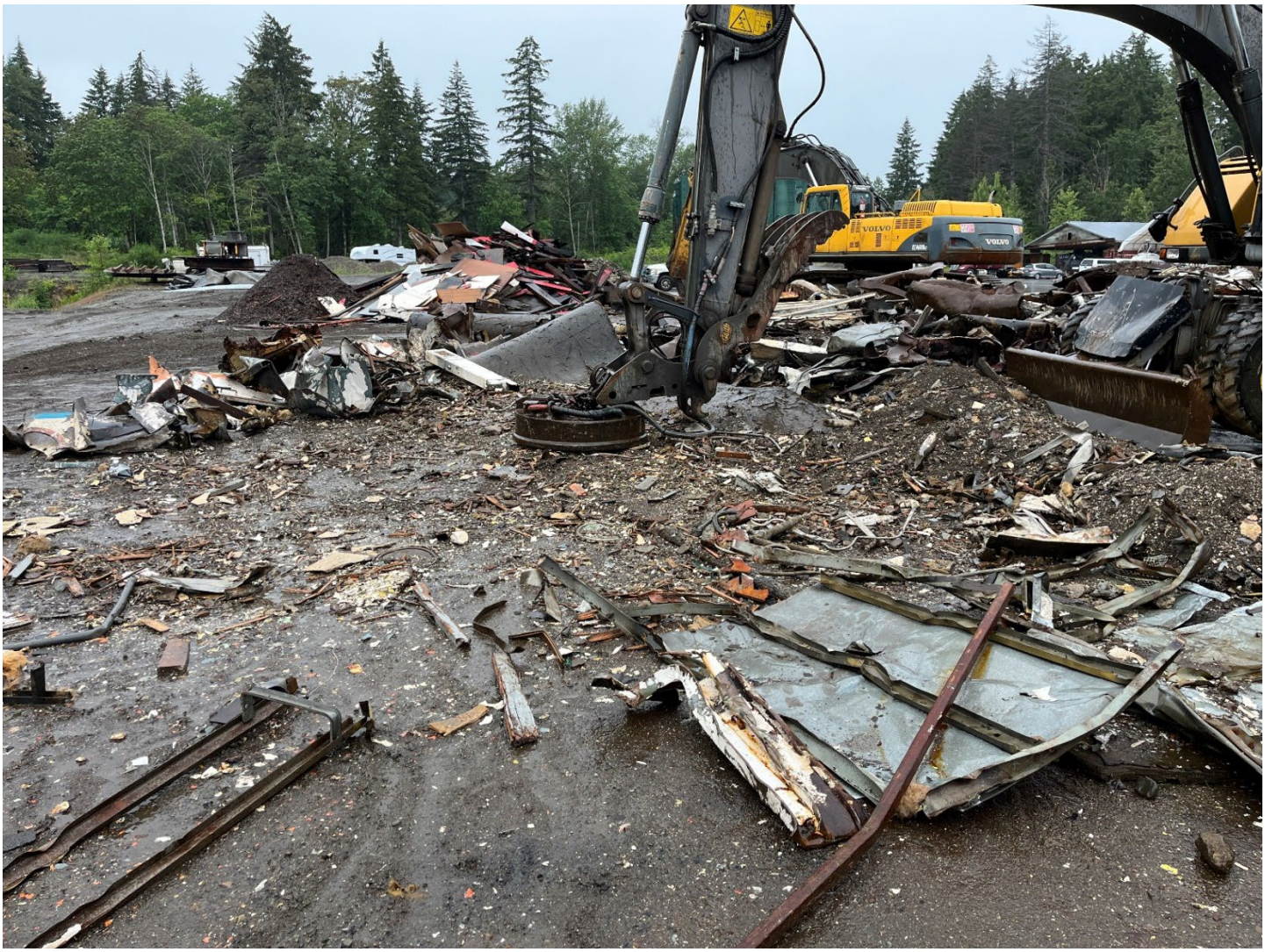


Photo 1: Waste piles of painted wood, metal and other wastes on the asphalted area adjacent to the gravel area with effluent flowing to Sump 1.

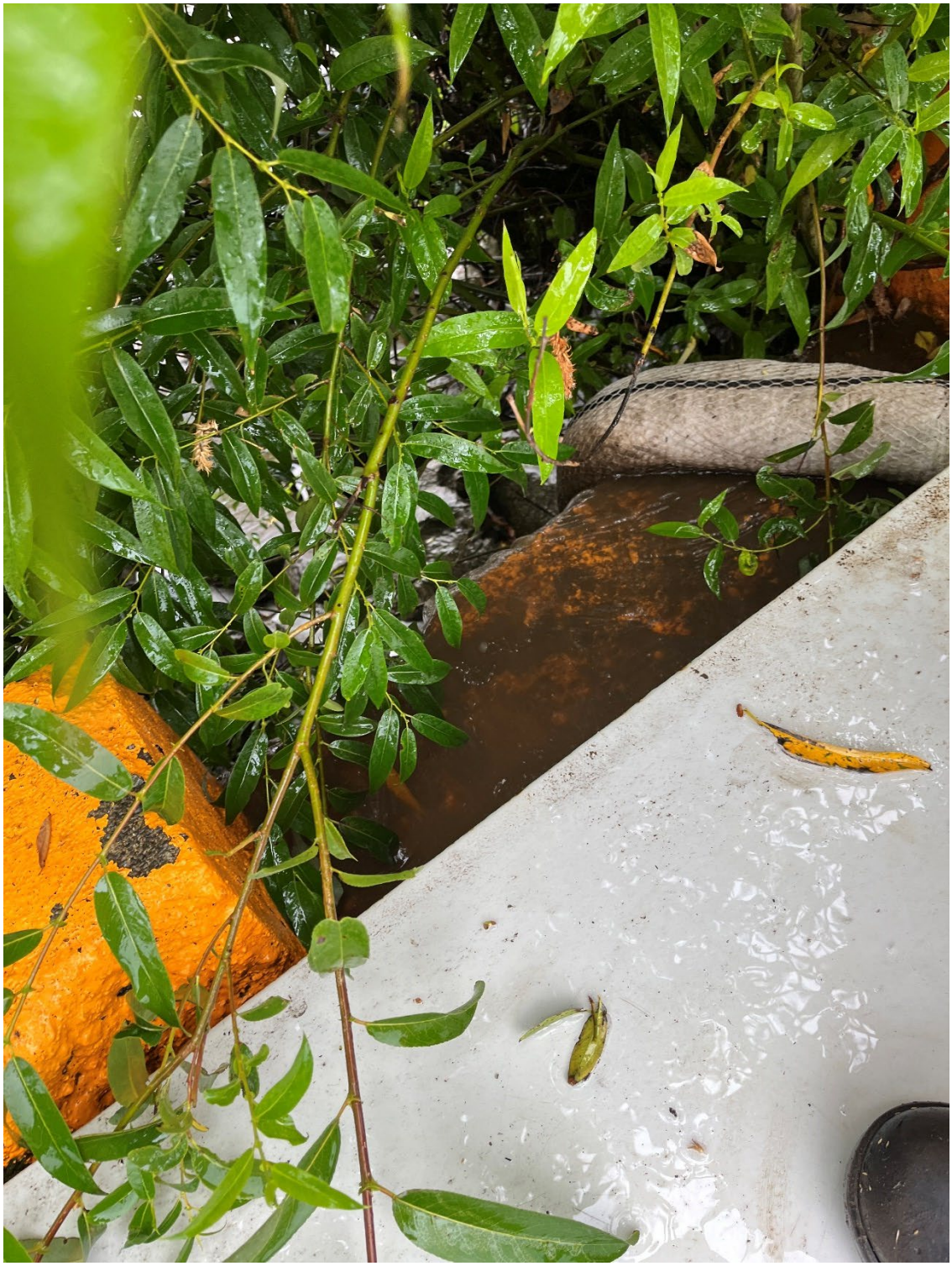


Photo 2: Sump 1 oil/water separator discharge location on June 26, 2024. Sample collected from the discharge at this location identified as Sump 1.

Photo 3: Effluent discharge location under the hull of the Miller Freeman on the gravel on June 26, 2024. Sample collected from the discharge at this location identified as Miller Freeman.

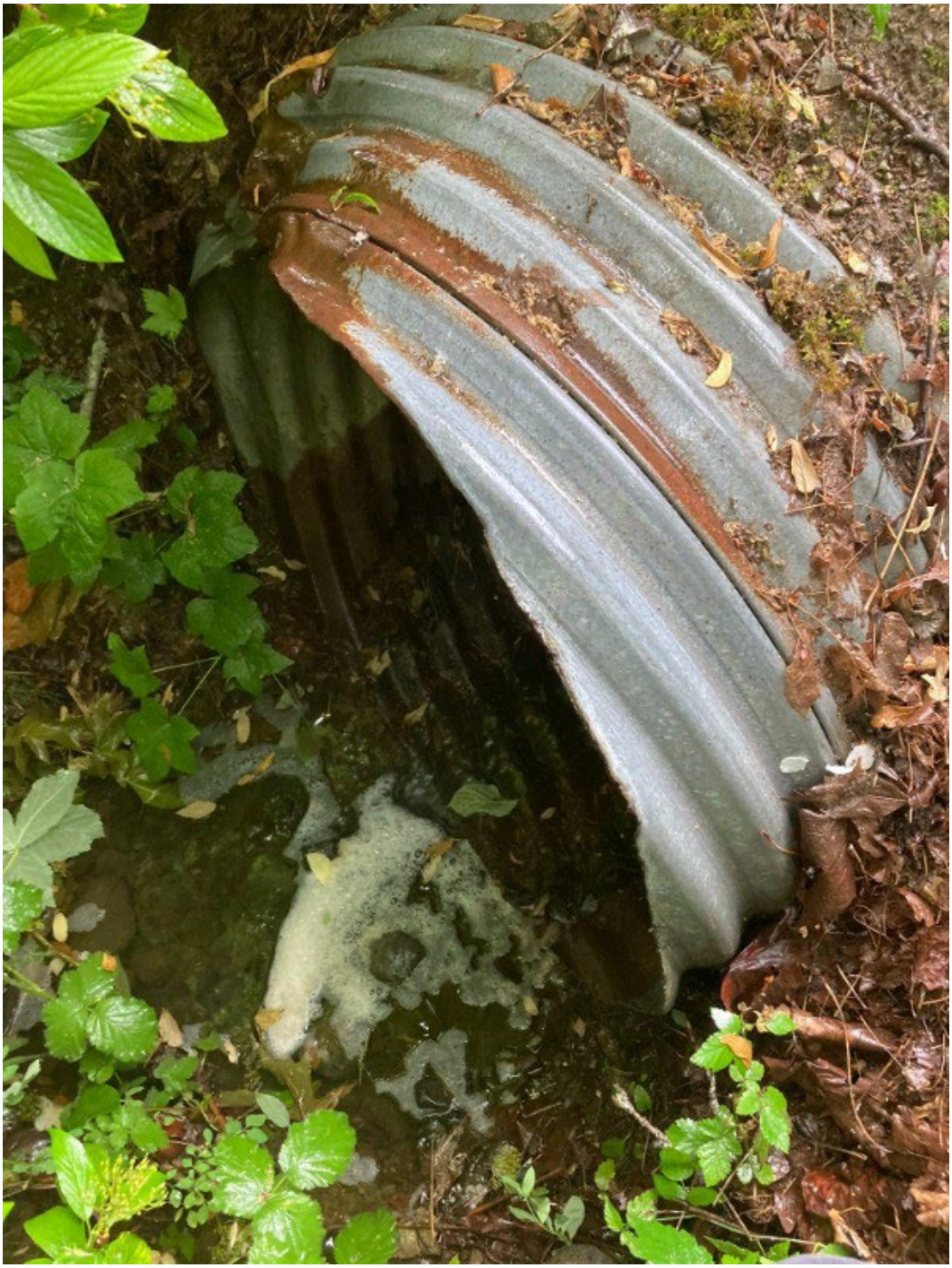
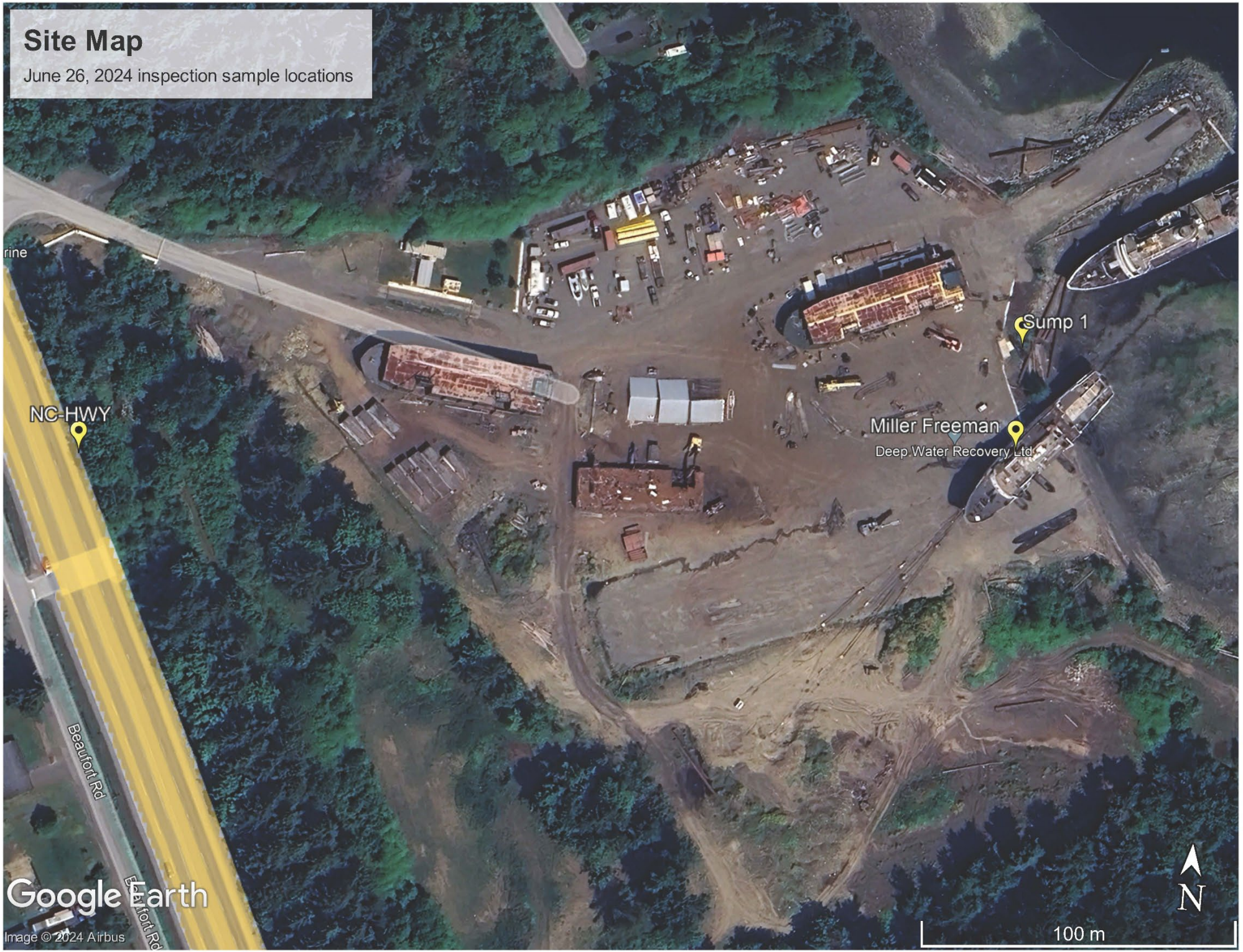


Photo 4: Sample location upgradient of DWR on June 26, 2024. Sample collected from the discharge at this location identified as NC-HWY.


Site Map
June 26, 2024 inspection sample locations
rine
NC-HWY
Sump 1
Miller Freeman
Deep Water Recovery Ltd
Beaufort Rd
Beaufort Rd
Google Earth
Image © 2024 Airbus
N
100 m

CERTIFICATE OF ANALYSIS

Work Order	: **VA24B5494**	Page	: 1 of 6
Amendment	: **3**		
Client	: **BC Ministry of Environment & Climate Change Strategy**	Laboratory	: ALS Environmental - Vancouver
Contact	: Jurgen Deagle	Account Manager	: Dean Watt
Address	: 200 - 10470 152 Street Surrey BC Canada V3R 0Y3	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 582 5216	Telephone	: +1 604 253 4188
Project	: WELDWOOD LANDFILL (PR05607)	Date Samples Received	: 28-Jun-2024 08:30
PO	: 50264696	Date Analysis Commenced	: 02-Jul-2024
C-O-C number	: ----	Issue Date	: 17-Jul-2024 10:50
Sampler	: Jurgen Deagle		
Site	: ----		
Quote number	: BC Ministry of Environment and Climate Change Strategy Standing Offer		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Kaitlyn Gardner	Account Manager Assistant	Administration, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
°C	degrees celsius
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Workorder Comments

DOC and TSS data added for all samples.

Qualifiers

Qualifier	*Description*
DLA	*Detection Limit adjusted for required dilution.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	E210694_REG DWR Sump2	E210694_REG DWR Miller Freeman	E210694_REG DWR UPSTREAM NC-1	----	----
					Client sampling date / time	26-Jun-2024 16:48	26-Jun-2024 17:10	26-Jun-2024 17:45	----	----
						VA24B5494-001	VA24B5494-002	VA24B5494-003	--------	--------
						Result	Result	Result	----	----
Field Tests										
pH, field	----	EF001/VA	0.10	pH units		7.80	7.20	6.80	----	----
Temperature, field	----	EF001/VA	0.10	°C		14.6	14.5	14.0	----	----
Physical Tests										
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.50	mg/L		84.1	232	39.8	----	----
Solids, fixed suspended [FSS]	----	E170/VA	3.0	mg/L		122	132	<3.0	----	----
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L		148	176	3.4	----	----
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L		8.67	17.5	7.64	----	----
Total Metals										
Aluminum, total	7429-90-5	E468/VA	0.0030	mg/L		5.95	6.17	----	----	----
Antimony, total	7440-36-0	E468/VA	0.000030	mg/L		0.00258	0.00199	----	----	----
Arsenic, total	7440-38-2	E468/VA	0.000050	mg/L		0.00664	0.00410	----	----	----
Barium, total	7440-39-3	E468/VA	0.00010	mg/L		0.106	0.0687	----	----	----
Beryllium, total	7440-41-7	E468/VA	0.0000050	mg/L		0.0000972	0.0000687	----	----	----
Bismuth, total	7440-69-9	E468/VA	0.000050	mg/L		<0.000050	<0.000100 DLA	----	----	----
Boron, total	7440-42-8	E468/VA	0.010	mg/L		0.043	0.102	----	----	----
Cadmium, total	7440-43-9	E468/VA	0.0000050	mg/L		0.000806	0.000210	----	----	----
Calcium, total	7440-70-2	E468/VA	0.020	mg/L		25.7	68.8	----	----	----
Cesium, total	7440-46-2	E468/VA	0.0000050	mg/L		0.000158	0.000141	----	----	----
Chromium, total	7440-47-3	E468/VA	0.00050	mg/L		0.0310	0.0303	----	----	----
Cobalt, total	7440-48-4	E468/VA	0.000050	mg/L		0.00597	0.00502	----	----	----
Copper, total	7440-50-8	E468/VA	0.00050	mg/L		0.481	0.199	----	----	----
Gallium, total	7440-55-3	E468/VA	0.000050	mg/L		0.00185	0.00178	----	----	----
Iron, total	7439-89-6	E468/VA	0.010	mg/L		27.2	14.2	----	----	----
Lanthanum, total	7439-91-0	E468/VA	0.000050	mg/L		0.00120	0.000881	----	----	----
Lead, total	7439-92-1	E468/VA	0.000050	mg/L		0.0260	0.0151	----	----	----
Lithium, total	7439-93-2	E468/VA	0.00050	mg/L		0.00308	0.00300	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	E210694_REG DWR Sump2	E210694_REG DWR Miller Freeman	E210694_REG DWR UPSTREAM NC-1	----	----
					Client sampling date / time	26-Jun-2024 16:48	26-Jun-2024 17:10	26-Jun-2024 17:45	----	----
						VA24B5494-001	VA24B5494-002	VA24B5494-003	--------	--------
						Result	Result	Result	----	----
Total Metals										
Magnesium, total	7439-95-4	E468/VA	0.010	mg/L		4.84	14.7	----	----	----
Manganese, total	7439-96-5	E468/VA	0.00020	mg/L		0.428	0.274	----	----	----
Molybdenum, total	7439-98-7	E468/VA	0.000050	mg/L		0.00159	0.00230	----	----	----
Nickel, total	7440-02-0	E468/VA	0.00020	mg/L		0.0178	0.0114	----	----	----
Niobium, total	7440-03-1	E468/VA	0.00010	mg/L		0.00048	0.00046	----	----	----
Phosphorus, total	7723-14-0	E468/VA	0.050	mg/L		0.186	0.212	----	----	----
Potassium, total	7440-09-7	E468/VA	0.030	mg/L		1.65	4.95	----	----	----
Rhenium, total	7440-15-5	E468/VA	0.0000050	mg/L		0.0000059	0.0000268	----	----	----
Rubidium, total	7440-17-7	E468/VA	0.000020	mg/L		0.00219	0.00179	----	----	----
Selenium, total	7782-49-2	E468/VA	0.000050	mg/L		0.000132	0.000271	----	----	----
Silicon, total	7440-21-3	E468/VA	0.10	mg/L		11.2	10.3	----	----	----
Silver, total	7440-22-4	E468/VA	0.0000050	mg/L		0.000101	0.0000596	----	----	----
Sodium, total	7440-23-5	E468/VA	0.020	mg/L		11.8	82.4	----	----	----
Strontium, total	7440-24-6	E468/VA	0.00020	mg/L		0.129	0.400	----	----	----
Sulfur, total	7704-34-9	E468/VA	0.50	mg/L		7.23	25.1	----	----	----
Tantalum, total	7440-25-7	E468/VA	0.00010	mg/L		<0.00010	<0.00020 DLA	----	----	----
Tellurium, total	13494-80-9	E468/VA	0.000050	mg/L		<0.000050	<0.000100 DLA	----	----	----
Thallium, total	7440-28-0	E468/VA	0.0000050	mg/L		0.0000153	0.0000103	----	----	----
Thorium, total	7440-29-1	E468/VA	0.0000050	mg/L		0.000337	0.000127	----	----	----
Tin, total	7440-31-5	E468/VA	0.00020	mg/L		0.00284	0.00088	----	----	----
Titanium, total	7440-32-6	E468/VA	0.00020	mg/L		0.727	0.574	----	----	----
Tungsten, total	7440-33-7	E468/VA	0.000010	mg/L		0.000062	0.000064	----	----	----
Uranium, total	7440-61-1	E468/VA	0.0000020	mg/L		0.000198	0.000137	----	----	----
Vanadium, total	7440-62-2	E468/VA	0.00020	mg/L		0.0231	0.0260	----	----	----
Yttrium, total	7440-65-5	E468/VA	0.000010	mg/L		0.00194	0.00209	----	----	----
Zinc, total	7440-66-6	E468/VA	0.0030	mg/L		0.742	0.240	----	----	----
Zirconium, total	7440-67-7	E468/VA	0.000050	mg/L		0.00227	0.00212	----	----	----
Total Metals (Undigested)										

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	E210694_REG DWR Sump2	E210694_REG DWR Miller Freeman	E210694_REG DWR UPSTREAM NC-1	----	----
					Client sampling date / time	26-Jun-2024 16:48	26-Jun-2024 17:10	26-Jun-2024 17:45	----	----
						VA24B5494-001	VA24B5494-002	VA24B5494-003	--------	--------
						Result	Result	Result	----	----
Total Metals (Undigested)										
Aluminum, total	7429-90-5	E470-L/VA	0.00050	mg/L		----	----	0.298	----	----
Antimony, total	7440-36-0	E470/VA	0.000020	mg/L		----	----	0.000113	----	----
Arsenic, total	7440-38-2	E470/VA	0.000020	mg/L		----	----	0.000534	----	----
Barium, total	7440-39-3	E470/VA	0.000020	mg/L		----	----	0.00790	----	----
Beryllium, total	7440-41-7	E470/VA	0.0000100	mg/L		----	----	<0.0000100	----	----
Bismuth, total	7440-69-9	E470/VA	0.0000050	mg/L		----	----	<0.0000050	----	----
Boron, total	7440-42-8	E470/VA	0.0050	mg/L		----	----	0.0199	----	----
Cadmium, total	7440-43-9	E470/VA	0.0000050	mg/L		----	----	0.0000207	----	----
Calcium, total	7440-70-2	E470/VA	0.010	mg/L		----	----	11.3	----	----
Chromium, total	7440-47-3	E470/VA	0.00010	mg/L		----	----	0.00075	----	----
Cobalt, total	7440-48-4	E470/VA	0.0000050	mg/L		----	----	0.000664	----	----
Copper, total	7440-50-8	E470/VA	0.000050	mg/L		----	----	0.00518	----	----
Iron, total	7439-89-6	E470/VA	0.0010	mg/L		----	----	0.656	----	----
Lead, total	7439-92-1	E470-L/VA	0.0000050	mg/L		----	----	0.000367	----	----
Lithium, total	7439-93-2	E470/VA	0.00050	mg/L		----	----	<0.00050	----	----
Magnesium, total	7439-95-4	E470/VA	0.0100	mg/L		----	----	2.81	----	----
Manganese, total	7439-96-5	E470/VA	0.000050	mg/L		----	----	0.295	----	----
Molybdenum, total	7439-98-7	E470/VA	0.000050	mg/L		----	----	0.000129	----	----
Nickel, total	7440-02-0	E470/VA	0.000050	mg/L		----	----	0.00102	----	----
Potassium, total	7440-09-7	E470/VA	0.020	mg/L		----	----	1.05	----	----
Selenium, total	7782-49-2	E470/VA	0.000040	mg/L		----	----	0.000060	----	----
Silicon, total	7440-21-3	E470/VA	0.050	mg/L		----	----	4.40	----	----
Silver, total	7440-22-4	E470/VA	0.0000050	mg/L		----	----	0.0000134	----	----
Sodium, total	7440-23-5	E470/VA	0.020	mg/L		----	----	12.5	----	----
Strontium, total	7440-24-6	E470/VA	0.000050	mg/L		----	----	0.0464	----	----
Thallium, total	7440-28-0	E470-L/VA	0.0000020	mg/L		----	----	0.0000023	----	----
Tin, total	7440-31-5	E470/VA	0.000050	mg/L		----	----	<0.000050	----	----
Uranium, total	7440-61-1	E470/VA	0.0000020	mg/L		----	----	0.0000125	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	E210694_REG DWR Sump2	E210694_REG DWR Miller Freeman	E210694_REG DWR UPSTREAM NC-1	----	----
					Client sampling date / time	26-Jun-2024 16:48	26-Jun-2024 17:10	26-Jun-2024 17:45	----	----
						VA24B5494-001	VA24B5494-002	VA24B5494-003	--------	--------
						Result	Result	Result	----	----
Total Metals (Undigested)										
Vanadium, total	7440-62-2	E470/VA	0.000200	mg/L		----	----	0.00171	----	----
Zinc, total	7440-66-6	E470-L/VA	0.00020	mg/L		----	----	0.0139	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

ALS Canada Ltd.

right solutions.
right partner.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA24B5494**	Page	: 1 of 8
Amendment	: **3**		
Client	: **BC Ministry of Environment & Climate Change Strategy**	Laboratory	: ALS Environmental - Vancouver
Contact	: Jurgen Deagle	Account Manager	: Dean Watt
Address	: 200 - 10470 152 Street Surrey BC Canada V3R 0Y3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: WELDWOOD LANDFILL (PR05607)	Date Samples Received	: 28-Jun-2024 08:30
PO	: 50264696	Issue Date	: 17-Jul-2024 10:50
C-O-C number	: ----		
Sampler	: Jurgen Deagle		
Site	: ----		
Quote number	: BC Ministry of Environment and Climate Change Strategy Standing Offer		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Field Tests : Field pH,EC,Salinity, TDS, Cl2,ClO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine										
HDPE total (nitric acid) E210694_REG - DWR Miller Freeman	EF001	26-Jun-2024	----	----	----		04-Jul-2024	----	8 days	
Field Tests : Field pH,EC,Salinity, TDS, Cl2,ClO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine										
HDPE total (nitric acid) E210694_REG - DWR Sump2	EF001	26-Jun-2024	----	----	----		04-Jul-2024	----	8 days	
Field Tests : Field pH,EC,Salinity, TDS, Cl2,ClO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine										
HDPE total (nitric acid) E210694_REG - DWR UPSTREAM NC-1	EF001	26-Jun-2024	----	----	----		04-Jul-2024	----	8 days	
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) E210694_REG - DWR Miller Freeman	E358-L	26-Jun-2024	04-Jul-2024	3 days	7 days	× EHT	04-Jul-2024	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) E210694_REG - DWR Sump2	E358-L	26-Jun-2024	04-Jul-2024	3 days	7 days	× EHT	04-Jul-2024	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) E210694_REG - DWR UPSTREAM NC-1	E358-L	26-Jun-2024	04-Jul-2024	3 days	7 days	× EHT	04-Jul-2024	28 days	0 days	✓
Physical Tests : FSS by Gravimetry										
HDPE E210694_REG - DWR Miller Freeman	E170	26-Jun-2024	----	----	----		03-Jul-2024	7 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : FSS by Gravimetry										
HDPE										
E210694_REG - DWR Sump2	E170	26-Jun-2024	----	----	----		03-Jul-2024	7 days	7 days	✓
Physical Tests : FSS by Gravimetry										
HDPE										
E210694_REG - DWR UPSTREAM NC-1	E170	26-Jun-2024	----	----	----		03-Jul-2024	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE										
E210694_REG - DWR Miller Freeman	E160	26-Jun-2024	----	----	----		09-Jul-2024	7 days	12 days	× EHT
Physical Tests : TSS by Gravimetry										
HDPE										
E210694_REG - DWR Sump2	E160	26-Jun-2024	----	----	----		09-Jul-2024	7 days	12 days	× EHT
Physical Tests : TSS by Gravimetry										
HDPE										
E210694_REG - DWR UPSTREAM NC-1	E160	26-Jun-2024	----	----	----		09-Jul-2024	7 days	12 days	× EHT
Total Metals (Undigested) : Total Metals (undigested) in Water by CRC ICPMS (Additional Metals for BC MOE)										
HDPE total (nitric acid)										
E210694_REG - DWR UPSTREAM NC-1	E470-L	26-Jun-2024	02-Jul-2024	180 days	6 days	✓	02-Jul-2024	180 days	6 days	✓
Total Metals (Undigested) : Total Metals (undigested) in Water by CRC ICPMS (Pristine Samples)										
HDPE total (nitric acid)										
E210694_REG - DWR UPSTREAM NC-1	E470	26-Jun-2024	02-Jul-2024	180 days	6 days	✓	03-Jul-2024	180 days	7 days	✓
Total Metals : Total Metals in Water by CRC ICPMS (Trace Level)										
HDPE total (nitric acid)										
E210694_REG - DWR Miller Freeman	E468	26-Jun-2024	04-Jul-2024	180 days	8 days	✓	08-Jul-2024	180 days	12 days	✓
Total Metals : Total Metals in Water by CRC ICPMS (Trace Level)										
HDPE total (nitric acid)										
E210694_REG - DWR Sump2	E468	26-Jun-2024	04-Jul-2024	180 days	8 days	✓	08-Jul-2024	180 days	12 days	✓

Legend & Qualifier Definitions

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1528676	1	3	33.3	5.0	✓
FSS by Gravimetry	E170	1525452	1	3	33.3	5.0	✓
Total Metals (undigested) in Water by CRC ICPMS (Additional Metals for BC MOE)	E470-L	1523665	1	1	100.0	5.0	✓
Total Metals (undigested) in Water by CRC ICPMS (Pristine Samples)	E470	1523664	1	6	16.6	5.0	✓
Total Metals in Water by CRC ICPMS (Trace Level)	E468	1527205	1	2	50.0	5.0	✓
TSS by Gravimetry	E160	1534584	2	38	5.2	5.0	✓
Laboratory Control Samples (LCS)							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1528676	1	3	33.3	5.0	✓
FSS by Gravimetry	E170	1525452	1	3	33.3	5.0	✓
Total Metals (undigested) in Water by CRC ICPMS (Additional Metals for BC MOE)	E470-L	1523665	1	1	100.0	5.0	✓
Total Metals (undigested) in Water by CRC ICPMS (Pristine Samples)	E470	1523664	1	6	16.6	5.0	✓
Total Metals in Water by CRC ICPMS (Trace Level)	E468	1527205	1	2	50.0	5.0	✓
TSS by Gravimetry	E160	1534584	2	38	5.2	5.0	✓
Method Blanks (MB)							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1528676	1	3	33.3	5.0	✓
FSS by Gravimetry	E170	1525452	1	3	33.3	5.0	✓
Total Metals (undigested) in Water by CRC ICPMS (Additional Metals for BC MOE)	E470-L	1523665	1	1	100.0	5.0	✓
Total Metals (undigested) in Water by CRC ICPMS (Pristine Samples)	E470	1523664	1	6	16.6	5.0	✓
Total Metals in Water by CRC ICPMS (Trace Level)	E468	1527205	1	2	50.0	5.0	✓
TSS by Gravimetry	E160	1534584	2	38	5.2	5.0	✓
Matrix Spikes (MS)							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1528676	1	3	33.3	5.0	✓
Total Metals (undigested) in Water by CRC ICPMS (Additional Metals for BC MOE)	E470-L	1523665	1	1	100.0	5.0	✓
Total Metals (undigested) in Water by CRC ICPMS (Pristine Samples)	E470	1523664	1	6	16.6	5.0	✓
Total Metals in Water by CRC ICPMS (Trace Level)	E468	1527205	1	2	50.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
TSS by Gravimetry	E160 ALS Environmental - Vancouver	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
FSS by Gravimetry	E170 ALS Environmental - Vancouver	Water	APHA 2540 E (mod)	Fixed Suspended Solids (FSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. This residue is ignited to constant weight at 550°C. The remaining solids represent the Fixed Suspended Solids (FSS), while the weight lost on ignition represents the Volatile Suspended Solids (VSS). Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Metals in Water by CRC ICPMS (Trace Level)	E468 ALS Environmental - Vancouver	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Metals (undigested) in Water by CRC ICPMS (Pristine Samples)	E470 ALS Environmental - Vancouver	Water	EPA 6020B (mod)	Total metals in water are analyzed by Collision/Reaction Cell ICPMS. The detection limits provided can only be met for undigested samples. This procedure is intended for colorless, non-turbid, acid-preserved water samples (i.e. pristine water samples), having turbidity < 1 NTU and no odor. Where turbidity exceeds 1 NTU, and/or the sample is colored and has an odor, results may be biased low compared to true Total Metals concentrations. ALS recommends that turbidity analysis be requested on samples submitted for this test to aid with interpretation of results. Where turbidity is <1NTU, undigested metals are equivalent to total metals concentrations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Metals (undigested) in Water by CRC ICPMS (Additional Metals for BC MOE)	E470-L ALS Environmental - Vancouver	Water	EPA 6020B (mod)	Total metals in water are analyzed by Collision/Reaction Cell ICPMS. The detection limits provided can only be met for undigested samples. This procedure is intended for colorless, non-turbid, acid-preserved water samples (i.e. pristine water samples), having turbidity < 1 NTU and no odor. Where turbidity exceeds 1 NTU, and/or the sample is colored and has an odor, results may be biased low compared to true Total Metals concentrations. ALS recommends that turbidity analysis be requested on samples submitted for this test to aid with interpretation of results. Where turbidity is <1NTU, undigested metals are equivalent to total metals concentrations.
Hardness (Calculated) from Total Ca/Mg	EC100A ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.
Field pH,EC,Salinity, TDS, Cl2,ClO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine	EF001 ALS Environmental - Vancouver	Water	Field Measurement (Client Supplied)	Field pH,EC,Salinity, TDS, Cl2,ClO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3 or Chloramine measurements provided by client and recorded on ALS report may affect the validity of results.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Dissolved Organic Carbon for Combustion	EP358 ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon

WATER, GENERAL CHEMISTRY AND BACTERIOLOGICAL REQUISITION

ALS Global

Province Of British Columbia
Ministry of Environment

Req # 50264696

Urgent?		**Csr No.**	**Office** 10 **Client** CL
Study		**Project**	N/A
Lab	ALS Global		
Ministry Contact	JDEAGLE Jurgen Deagle		
Sampler	Jurgen Deagle		
Signature	J Deagle		
EMS Id	E210694	**Well Plate #**	
Location	WELDWOOD LANDFILL (PR05607)		

Sampling Agency

Code 10	**Name** Vancouver Island, Nanaimo
Address	2080-A Labieux Road
City	Nanaimo
Postal Code	V9T6J9 **Phone** (250)490-6755

Number of Containers 6

Instructions To Lab Compare results against BCWQG - Marine report to: jurgen.deagle@gov.bc.ca

State WW Descriptor LE Collection Method GRB

No.	Class	Collection Start YYYY-MM-DD HH:MI	Collection End YYYY-MM-DD HH:MI	Depth Upper	Depth Lower	Tide	Comment
1	REG	2024-06-26 16:43	2024-06-26 16:48				DWR Sump 2
2	REG	2024-06-26 17:00	2024-06-26 17:10				DWR Miller Freeman
3	REF	2024-06-26 17:38	2024-06-26 17:45				DWR UPSTREAM NC-1
4							
5							
6							

GENERAL (250 mL PLASTIC)

	Acidity pH 8.3
	Alkalinity Titration Curve
	Alkalinity: Total: pH 4.5
	Alkalinity: Phenolphthalein
	(500 mL Plastic) Biochemical Oxygen Demand (BOD)
	Bromide
	(500 mL Plastic) Carb. Biochem. Oxygen Demand (CBOD)
	Carbon: TIC
	Chloride
	Colour: True
	Fluoride
	Nitrogen: Nitrate and Nitrite
	Nitrogen: Nitrate
	Nitrogen: Nitrite
	pH
	Phosphorus: Diss. ortho-phosphate
	(500 mL Plastic) Residue: Filterable (TDS)
	(500 mL Plastic) Residue: Nonfilterable (TSS) Subsample 3 mg/L LOR
X	(500 mL Plastic) Residue: Nonfilterable, Fixed
	(500 mL Plastic) Residue: Total (TS)
	Specific Conductance
	Turbidity
	Sulphate

GENERAL NUTRIENTS (125 mL AMBER GLASS) - H2SO4

	Carbon: TOC
	Chemical Oxygen Demand (COD)
	Nitrogen: Ammonia
	Nitrogen: Total
	Nitrogen: Total Kjeldahl
	Nitrogen: Total Organic
	Phosphorus: Total

GENERAL (125 mL AMBER GLASS) - FIELD FILTER, H2SO4

	Carbon: DIC (Field Filter)
	Carbon: DOC (FF, H2SO4)
	Nitrogen: Dissolved Kjeldahl (FF, H2SO4)
	Nitrogen: Total Dissolved (FF, H2SO4)
	Phosphorus : Total Dissolved (FF, H2SO4)

METALS: TOTAL

High	Low	
		Metal Pkg. (ICPMS) - HIGH (60 mL Plastic) - HNO3
	X	Metal Pkg. (ICPMS) - LOW (60 mL Plastic) - HNO3
		Mercury - 40mL Glass, HCl
	X	Hardness (60 mL Plastic) - HNO3

METALS: DISSOLVED

High	Low	
		Metal Pkg (ICPMS) - HIGH (60 mL Plastic)-Field Filter, HNO3
		Metal Pkg. (ICPMS) - LOW (60 mL Plastic)-Field Filter, HNO3
		Mercury - 40mL Glass, Field Filter, HCl
		Hardness (60 mL Plastic) - Field Filter, HNO3

SPECIFIC Tests

	Obs Well Package
	Cyanide: SAD (60 mL Plastic + NaOH)
	Cyanide: WAD (60 mL Plastic + NaOH)
	Sulphide: Total (125 mL Plastic, ZnAc & NaOH)
	Residue: Nonfilterable (TSS) -Whole Bottle - 1 mg/L LOR (150 mL Plastic)
	Chlorophyll a (250 mL Brown Plastic Bottle or Filter) Vol:
	Phaeophytin (250 mL Brown Plastic Bottle or Filter) Vol:

ORGANICS

	BTEX (2 X 40 mL glass vials, NaHSO4 or Na2S2O3, No headspace)
	VOC Full List (2 X 40 mL glass vials, NaHSO4 or Na2S2O3, No headspace)
	Volatile Hydrocarbons (VH) (2X40 mL glass vials, NaHSO4 or Na2S2O3, No headspace)
	Trihalomethanes (THM) (2 X 40 mL glass vials, NaHSO4 or Na2S2O3, No headspace)
	VPH (2 X 40 mL glass vials, NaHSO4 or Na2S2O3, No headspace)
	EPH (2 X 100 mL Amber Glass, NaHSO4)
	PAH (2 X100 mL Amber Glass, NaHSO4)
	LEPH/HEPH (Calc) (2 X 100 mL Amber Glass, NaHSO4)
	Oil & Grease (2 X 250 mL Amber Glass, 2 mL 1:1 HCl or 1:1 H2SO4)
	Mineral Oil & Grease (2 x 250 mL Amber Glass, 2 mL 1:1 HCl or 1:1 H2SO4)
	Organochlorine Pesticides (OCP) (2 X 500 mL Amber Glass)
	Organophosphorus Pesticides (OPP) (2 X 500 mL Amber Glass)
	Polychlorinated Biphenyls (PCBs) (2 X 500 mL Amber Glass)
	Chlorophenols (Tri, Tetra & Penta) (2 X 500 mL Amber Glass, C6H8O6 & NaHSO4)
	Phenolics, Chlorinated (2 X 500 mL Amber Glass, C6H8O6 & NaHSO4)
	Phenolics, Non-Chlorinated (2 X 500 mL Amber Glass, C6H8O6 & NaHSO4)
	Phenols, Colorimetric (125 mL Amber Glass, H2SO4)
	Acid Extractable Herbicides (2 X 1 L Amber Glass, NaHSO4)
	Resin Acids (2 X 500 mL Amber Glass, C6H8O6 & NaHSO4)
	Fatty Acids (2 X 500 mL Amber Glass, C6H8O6 & NaHSO4)

BACTERIOLOGY

	E. coli - MF
	Enterococci - MF
	Fecal coliform - MF
	Fecal coliform - MPN
	Fecal streptoc - MF
	Total coliform - MF
	Total coliform - MPN

OTHER Tests

X	Dissolved Oxygen Content

Environmental Division
Vancouver
Work Order Reference
VA24B5494

Telephone : +1 604 253 4188

Smpl No.		FIELD TEST Details	Method	Results	Units
1	PH-F	pH-Field	FLD	7.8	pH units
1	TEMF	Temperature-Field	FLD	14.6	C
2	PH-F	pH-Field	FLD	7.2	pH units
2	TEMF	Temperature-Field	FLD	14.5	C
3	PH-F	pH-Field	FLD	6.8	pH units
3	TEMF	Temperature-Field	FLD	14	C

Report ID: EMSR0900

Rcvd jc 28Jun24 8:30 am

Date: 2024-06-27 10:13

4 °C ice pk