TECHNICAL MEMORANDUM

To:	**Ashleigh Crompton, Mike Champion, Jackie Boruch, Ryan Schucroft (Woodfibre LNG)**	**Date: 1 March 2024**	
From:	**Patrick Mueller and Holly Pelletier (Lorax)**	**Project #:**	**A633-7**
Subject:	**PE-111578 Weekly Discharge and Compliance Report #2 for February 16 – 24**		

Waste Discharge Authorization (WDA) Effluent Permit PE-111578 was issued by the British Columbia Energy Regulator (BCER) to Woodfibre LNG on February 9, 2024. The permit specifies monitoring and reporting requirements that are required to be met by Woodfibre LNG during construction of the LNG Export Facility. Reporting is required on a weekly basis.

This technical memorandum (Report #2) summarizes the results of PE-111578 discharge and compliance monitoring conducted February 16 – 24, and is intended to meet the reporting requirements specified in Condition 4.2 of WDA Effluent Permit PE-111578. Laboratory results received at the time of reporting, from samples collected during previous monitoring periods are also presented. The previous weekly report was based on a Friday to Thursday monitoring period. The reporting period has been adjusted to a Sunday to Saturday cycle to align with standard practice for construction reports that are issued to Woodfibre LNG by others, for this project. This technical memorandum report has been prepared to meet the requirements specified in Condition 4.2 of PE-111578 which is reproduced below:

> "The Permittee shall summarize the results of the discharge and compliance monitoring program in a report that shall be submitted to the BCER weekly over the term of this permit. Reports must include suitable tabulated data. The table must include any applicable regulatory limits/guidelines e.g. permit limits, BC Water Quality Guidelines etc. Any exceedances of respective regulatory limits/guidelines must be clearly highlighted. Any missed sampling events/missing data must be identified with an explanation provided. Reporting frequency may be reduced upon a history of compliance and by written confirmation from the BCER. These reports shall be submitted to Waste.Management@bc-er.ca. A copy of the reports shall be provided to each First Nation consulted with regarding this subject permit, and also made publicly available on the Woodfibre LNG Environmental Reporting webpage."

1. Current Conditions

The Construction Phase of the Woodfibre LNG Export Facility commenced in October 2023. Early stage civil works have been commenced including site grading, levelling, and berm construction. In December, in-marine works were initiated in the foreshore and shoreline areas of the Project.

For the February 16 – 24 reporting period, construction of the East Catchment water management infrastructure continued. The installation of the East Sedimentation Pond liner was largely completed, with installation of the liner key ongoing at the end of the reporting period (refer to Figure 1 and Figure 2 at the end of this report). There were no surface discharges from the East Catchment during the reporting period (February 16 – 24).

The East Sedimentation Pond is tentatively scheduled for commissioning on March 4. Following pond commissioning, construction of the remaining water management infrastructure will commence (*i.e.,* conveyance ditches, outfall structures). The East Wastewater Treatment Plant (EWWTP) has been constructed, and commissioning trials will commence after the East Sedimentation Pond is completed.

Pre-grading activities for the West Sedimentation Pond are expected to begin the last week of February, and construction of the pond is scheduled to start at the end of March. Construction of the West Catchment Diversion Ditches has been initiated.

2. Monitoring Summary

As the authorized works are under construction there was no monitoring conducted as per Condition 4 of Permit PE-111578. Construction contact water monitoring stations specified in PE-111758 for the fully built-out construction site have not been established, therefore contact and non-contact water stations were not monitored. The stations will be progressively established as water management infrastructure is completed. The WDA monitoring program for receiving environment stations will be conducted by Roe Environmental beginning in March, at the frequency specified in PE-111578.

3. Water Quality Results

3.1 Overview

Receiving environment background stations were monitored by Keystone Environmental from February 13 to 15, as described in Weekly Discharge and Compliance Report #1. Analytical results for receiving environment background stations monitored by Keystone Environmental from February 13 to 15 were received at the time of reporting, except methyl mercury, dioxin and furan results which have a 4-week turnaround time. The Keystone program is for background stations of freshwater and marine water, and the samples that overlap with the PE-111578 monitoring requirements are listed below in Table 1.

Table 1: Summary of Analytical Results Included in Weekly Discharge and Compliance Report #2.

Sample	Description	Sampling Date	Parameters
SW-01	Woodfibre Creek	February 15, 2024	Field, Physical & General Parameters, VH & BTEX, EPHs & PAHs, Total Dissolved and Speciated Metals, VOCs
SW-02	Mill Creek Estuary		
SW-03	Mill Creek Upstream		
SW-07	Mill Creek Background		
SW-04	East Creek		
WQR1-1	Reference Station 1 – deep water (2m above seafloor)	February 13, 2024	
WQR1-2	Reference Station 1 – surface water (2m below surface)		
WQR1-3	Reference Station 1 – surface water (0.5m below surface)		
WQR2-1	Reference Station 2 – deep water (2m above seafloor)	February 14, 2024	
WQR2-2	Reference Station 2 – surface water (2m below surface)		
WQR2-3	Reference Station 2 – surface water (0.5m below surface)		

Water quality results are screened against the lowest of the applicable British Columbia Water Quality Guidelines (WQG), and Canadian WQG developed by the Canadian Council of Ministers of the Environment (CCME) or Environment and Climate Change Canada (ECCC), for the protection of freshwater, estuarine and marine water aquatic life (FWAL, EWAL and MWAL, respectively).

3.2 Freshwater and Estuarine Water Exceedance Summary

The WQG screening results for Woodfibre Creek (Station SW-01), Mill Creek (Stations SW-02, SW-03 and SW-07) and East Creek (Station SW-04) are summarized in Table 2 for parameters that exceed a guideline. The analytical results for each sample are summarized in Appendix B for freshwater and Appendix C for estuarine water. Lower Mill Creek (Station SW-03) is an estuarine environment due to tidal influence from Howe Sound marine waters. In contrast, the other creek stations are located above tidal influence and are freshwater stations. Consequently, the water quality at Station SW-03 is compared to EWAL WQG while all other stations (SW-01, SW-02, SW-04 and SW-07) are screened against the FWAL WQG.

Parameter concentrations are within WQG limits for the protection of FWAL and EWAL, with the exception of field pH, total aluminum, total copper, dissolved copper and dissolved zinc in some or all freshwater and estuarine samples. Field pH was below the lower limit of the FWAL WQG (pH 6.5) in samples from Woodfibre Creek (SW-01) and Mill Creek (SW-07). The concentrations of field pH, total aluminum, total copper and dissolved copper are within the concentration ranges observed in the baseline monitoring program. Total copper was reported as not detected with a detection limit of <0.0025 mg/L in the sample collected from Mill Creek (SW- 03), which is above the long-term WQG value for the protection of EWAL. The laboratory will be requested to ensure a lower detection limit is reported for this sample in future sample submissions. Dissolved zinc exceeded the long-term WQG in the Mill Creek background sample (SW-07) and the reported results is speculated to be a sampling or testing error that is being further investigated. Additional details are provided in Table 2.

Table 2:
Summary of WQG Exceedances for Freshwater and Estuarine Analytical Samples Collected February 15, 2024.

Parameter	Units	WQG (LT)	N	N >WQG	Commentary
Field pH	s.u.	6.5 – 9.0	5	2	Field pH measured in freshwater samples from Woodfibre Creek (SW-01) and Upstream Mill Creek (SW-07), at pH 6.49 and 6.13, respectively, were below the lower limit of the FWAL guidelines. The observed pH values are within the ranges observed in pre-construction baseline samples at these stations.
Total Aluminum	mg/L	0.037-0.32 [1]	5	4	Total aluminum concentrations were above the long-term WQG in samples from Woodfibre Creek (SW-01), Mill Creek (SW-02 and SW-07) and East Creek (SW-04). The observed total aluminum values are within the ranges observed in pre-construction baseline samples at these stations.
Dissolved Copper	mg/L	0.00020-0.0011 [1]	5	4	Dissolved copper concentrations were above the long-term WQG in samples from Woodfibre Creek (SW-01), Mill Creek (SW-02 and SW-07) and East Creek (SW-04), ranging from 0.00023 to 0.00046 mg/L in freshwater. The concentration of dissolved copper at station SW-07 (0.00046 mg/L) was also above the short-term WQG (calculated to be 0.0002 mg/L). The observed dissolved copper values are within the ranges observed in pre-construction baseline samples at these stations.
Total Copper	mg/L	0.002	5	1	For the sample collected from Mill Creek (SW-03), total copper was reported as not detected with a detection limit of <0.0025 mg/L, which is above the WQG value for EWAL. The laboratory will be requested to provide a lower detection limit for sample SW-03 in future submissions.
Dissolved Zinc	mg/L	0.0067 - 0.017 [1]	4	1	Dissolved zinc concentrations were above the long-term WQG in the Mill Creek SW-07 background sample (0.012 mg/L). However, the corresponding total zinc concentration was reported as < 0.003 mg/L. These results indicate a possible copper contamination error in the dissolved metal sample collection and testing procedures. Possible contamination is being investigated with the lab.

WQG = British Columbia or Canadian Water Quality Guideline for the Protection of Aquatic Life. LT = long-term freshwater or estuarine aquatic life guideline. Variable dependant guidelines were calculated for each sample using sample specific parameter values. The nearest boundary value was used if a variable was outside the formula range.
N = number of samples.
Non-detect results are screened using the detection limit value.
[1] A range for long-term WQGs is provided since guidelines were calculated on a sample specific basis.

3.3 Marine Water Receiving Environment

The WQG screening results for two marine water reference sites located approximately 500 m northeast (WQR1) and south (WQR2) of the Certified Project Area (CPA) are summarized in Table 3 for parameters that exceed a guideline. The analytical results for each sample are summarized in Appendix D. The water quality at all stations is screened against the MWAL WQGs. Samples were collected at each station from the water column 0.5 and 2 m below the water surface and 2 m above the seafloor.

Results for all samples are within WQG values for the protection of FWAL and EWAL, with the exception of dissolved oxygen (DO) and total boron. The concentration of DO was below the lower limit of the MWAL WQG (8.0 mg/L) in deep water samples from each station (7.79 and 7.86 mg/L at station WQR1 and WQR2, respectively). The concentration of total boron ranged from 1.76 to 5.06 mg/L in all samples. The concentrations of DO and total boron observed in the WQR1 and WQR2 samples are within the concentration ranges observed in the baseline monitoring program. Additional details are provided in Table 3.

Table 3:
Summary of WQG Exceedances for Marine Water Analytical Samples Collected February 13 and 14, 2024

Parameter	Units	WQG (LT)	Location	N	N >WQG	Commentary
Field Dissolved Oxygen (DO)	mg/L	≥ 8.0	Surface	4	0	Field DO levels are below the lower limit of the WQG in deep-water samples (7.19 and 7.86 mg/L at WQR1 and WQR2, respectively). Depletion of DO has been documented for the deep waters of Howe Sound and the observed DO values are within the ranges observed in deep water pre-construction baseline samples at these stations.
			Deep	2	2	
Total Boron	mg/L	1.2	Surface	4	4	Total boron exceeded the WQG in the surface and deep waters at station WQR1 and WQR2, ranging from 1.76 to 5.06 mg/L. This is due to the influence of oceanic marine water in the deep waters of Howe Sound. The observed total boron values are within the ranges observed in pre-construction baseline samples at these stations.
			Deep	2	2	

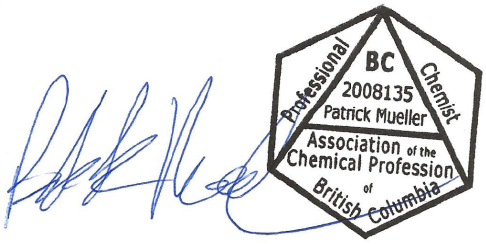
WQG = British Columbia or Canadian Water Quality Guideline for the Protection of Aquatic Life. LT = long-term marine aquatic life guideline.
N = number of samples.
Non-detect results are screened using the detection limit value.

4. Closure

This weekly report is a desktop review by Lorax of the PE-111578 discharge and compliance monitoring program records, reports and results provided by Woodfibre LNG. The records reviewed and analyzed by Lorax include ALS Environmental laboratory test reports, LB LNG site reports and Keystone Environmental field reports. Verbal or electronic communications between Lorax, and LB LNG and Keystone Environmental staff are conducted as needed to confirm the information presented in this report.

Regards,

LORAX ENVIRONMENTAL SERVICES LTD.



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Appendix A: East Catchment Photographs

Figure 1. Backfilling the East Sedimentation Pond liner key trench (23-Feb-2024)

Figure 2: Areal view of the East Sedimentation Pond on 23-Feb-2024.

Appendix B: Freshwater Receiving Environment Results

Table B-1: Summary of Freshwater Water Quality Results Received at the Time of Reporting.

Parameter	Unit	Lowest Applicable Guideline [1, 2]		SW-01	SW-02	SW-04	SW-07
		Long Term	Short Term	Woodfibre Creek - Lower Reach	Mill Creek - Mid Reach	East Creek - Lower Reach	Mill Creek - Upstream at Diversion Inlet
Sampling Date				**2024-02-15**	**2024-02-15**	**2024-02-15**	**2024-02-15**
General Parameters							
pH - Field	pH units	6.5 - 9.0	-	***6.49***	6.63	7.26	***6.13***
Specific Conductivity - Field	µS/cm	-	-	8.2	19.2	42.2	18
Temperature - Field	℃	-	-	2.5	2.8	4.6	2.5
Salinity - Field	ppt	-	-	0.00	0.01	0.02	0.01
Turbidity - Field	NTU	-	-	0.46	0.30	2.73	3.38
TSS	mg/L	-	-	<3	<3	<3	<3
Dissolved Oxygen - Field	mg/L	>=8	>=5	13.9	13.9	13.0	13.5
Anions and Nutrients							
Sulphate	mg/L	128 [5]	-	0.49	3.40	2.85	3.58
Chloride	mg/L	120	600	0.62	1.05	0.61	1.08
Fluoride	mg/L	-	0.4 - 0.63 [5]	<0.02	<0.02	0.022	<0.02
Ammonia ($N\text{-}NH_3$)	mg/L	1.97 - 2.02 [5]	18.8 - 27.9 [5]	<0.005	<0.005	<0.005	<0.005
Nitrite ($N\text{-}NO_2$)	mg/L	0.02 [5]	0.06 [5]	<0.001	<0.001	<0.001	<0.001
Nitrate ($N\text{-}NO_3$)	mg/L	3	32.8	0.0305	0.0654	0.0621	0.0656
Total Metals							
Aluminum, total (T-Al)	mg/L	0.011 - 0.079 [5]	-	***0.146***	***0.0577***	***0.101***	***0.0570***
Antimony, total (T-Sb)	mg/L	0.009 [3]	-	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic, total (T-As)	mg/L	0.005	-	<0.0001	<0.0001	0.00010	<0.0001
Barium, total (T-Ba)	mg/L	1	-	0.00173	0.00303	0.00423	0.00271
Beryllium, total (T-Be)	mg/L	0.00013	-	<0.0001	<0.0001	<0.0001	<0.0001
Boron, total (T-B)	mg/L	1.2	29	<0.01	0.012	<0.01	0.012
Cadmium, total (T-Cd)	mg/L	0.000036 - 0.000037 [5]	0.00011 - 0.00035 [5]	<0.000005	0.0000089	0.0000073	0.0000114
Chromium, total (T-Cr)	mg/L	0.001 [4]	-	<0.0005	<0.0005	<0.0005	<0.0005
Cobalt, total (T-Co)	mg/L	0.001	0.11	<0.0001	<0.0001	<0.0001	<0.0001
Copper, total (T-Cu)	mg/L	-	-	<0.0005	<0.0005	0.00058	<0.0005
Iron, total (T-Fe)	mg/L	0.3	1	0.033	<0.01	0.056	<0.01
Lead, total (T-Pb)	mg/L	0.0034 - 0.0036 [5]	0.0030 - 0.0087 [5]	0.000066	<0.00005	0.000084	<0.00005
Manganese, total (T-Mn)	mg/L	0.77 [5]	0.82 [5]	0.00082	0.00048	0.00344	0.00052
Mercury, total (T-Hg)	mg/L	0.00002	-	<0.000005	<0.000005	<0.000005	<0.000005
Molybdenum, total (T-Mo)	mg/L	0.073	46	0.000227	0.000506	0.000551	0.000378
Nickel, total (T-Ni)	mg/L	0.025 [5]	-	<0.0005	<0.0005	<0.0005	<0.0005
Selenium, total (T-Se)	mg/L	0.001	-	<0.00005	<0.00005	<0.00005	<0.00005
Silver, total (T-Ag)	mg/L	0.00005 [5]	0.0001 [5]	<0.00001	<0.00001	<0.00001	<0.00001
Thallium, total (T-Tl)	mg/L	0.0008	-	<0.00001	<0.00001	<0.00001	<0.00001
Uranium, total (T-U)	mg/L	0.0085	0.033	0.000630	0.000151	0.000124	0.000133
Vanadium, total (T-V)	mg/L	0.12	-	<0.0005	<0.0005	<0.0005	<0.0005
Zinc, total (T-Zn)	mg/L	0.0075 [5]	0.033 [5]	<0.003	0.0039	<0.003	<0.003
Dissolved Metals							
Cadmium, dissolved (D-Cd)	mg/L	0.00002 - 0.00006 [5]	0.00004 - 0.0001 [5]	<0.000005	0.0000063	0.0000054	0.0000073
Copper, dissolved (D-Cu)	mg/L	0.0002 - 0.0003 [5]	0.0002 - 0.002 [5]	***0.00023***	***0.00025***	***0.00046***	***0.00046***
Iron, dissolved (D-Fe)	mg/L	-	0.35	0.022	<0.01	0.014	<0.01
Lead, dissolved (D-Pb)	mg/L	0.002 - 0.004 [5]	-	0.000051	<0.00005	<0.00005	0.000172
Manganese, dissolved (D-Mn)	mg/L	0.29 - 0.38 [5]	1.97 [5]	0.00041	0.00035	0.00196	0.00052
Strontium, dissolved (D-Sr)	mg/L	2.5	-	0.00323	0.00846	0.0206	0.00765
Zinc, dissolved (D-Zn)	mg/L	0.0067 - 0.017 [5]	0.015 - 0.020 [5]	<0.001	<0.001	0.0017	***0.012***
Polycyclic Aromatic Hydrocarbons (PAHs)							
Acenaphthene	mg/L	0.0058	-	<0.00001	<0.00001	<0.00001	<0.00001
Acridine	mg/L	0.003	-	<0.00001	<0.00001	<0.00001	<0.00001
Anthracene	mg/L	0.000012	-	<0.00001	<0.00001	<0.00001	<0.00001
Benz(a)anthracene	mg/L	0.000018	-	<0.00001	<0.00001	<0.00001	<0.00001
Benzo(a)pyrene	mg/L	0.00001	-	<0.000005	<0.000005	<0.000005	<0.000005
Chrysene	mg/L	-	-	<0.00001	<0.00001	<0.00001	<0.00001
Fluoranthene	mg/L	0.00004	-	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	mg/L	0.003	-	<0.00001	<0.00001	<0.00001	<0.00001
1-methylnaphthalene	mg/L	-	-	<0.00001	<0.00001	<0.00001	<0.00001
2-methylnaphthalene	mg/L	-	-	<0.00001	<0.00001	<0.00001	<0.00001
Naphthalene	mg/L	0.001	0.001	<0.00005	<0.00005	<0.00005	<0.00005
Phenanthrene	mg/L	0.0003	-	<0.00002	<0.00002	<0.00002	<0.00002
Pyrene	mg/L	0.00002	-	<0.00001	<0.00001	<0.00001	<0.00001
Volatile Organic Compounds (VOCs)							
Benzene	mg/L	0.04	-	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	mg/L	0.09	-	<0.0005	<0.0005	<0.0005	<0.0005
Methyl-tert-butyl-ether	mg/L	10	3.4	<0.0005	<0.0005	<0.0005	<0.0005
Styrene	mg/L	0.072	-	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	mg/L	0.0005	-	<0.0004	<0.0004	<0.0004	<0.0004
Total Xylenes	mg/L	0.03	-	<0.0005	<0.0005	<0.0005	<0.0005
Chlorobenzene	mg/L	-	-	<0.0005	<0.0005	<0.0005	<0.0005
1,2-Dichlorobenzene	mg/L	-	-	<0.0005	<0.0005	<0.0005	<0.0005

Notes:
Results ***underlined in bold italics*** exceed the applicable long-term water quality guideline for the protection of freshwater aquatic life.
Shaded results exceed the applicable short-term water quality guideline for the protection of freshwater aquatic life.
[1] Approved British Columbia Water Quality Guidelines for the protection of freshwater aquatic life (BC ENV, 2021). Where an approved guideline is not established, the working guideline is applied.
[2] Canadian Water Quality Guideline for the protection of freshwater aquatic life (CCME, 2021). Federal Water Quality Guidelines (FWQG) are used for total Al, Co, and V, and for dissolved Cu, Sr, and Pb (Environment and Climate Change Canada).
[3] The working BC WQG for trivalent antimony [SB(III)] is 0.009 mg/L and is applied to total antimony results.
[4] The approved BC WQG for hexavalent chromium [Cr(VI)] is 0.001 mg/L and 0.0089 mg/L for trivalent chromium [Cr(III)]. The more conservative criteria for Cr(VI) is applied to total chromium results.
[5] BC WQG or CWQG indicated to be variable are calculated from sample-specific measurements for temperature, field pH, total hardness and dissolved organic carbon (DOC) content.
The lowest applicable guidelines are shown in the table; however, water quality data was screened to all applicable guidelines.

Appendix C: Estuarine Receiving Environment Results

Table C-1: Summary of Mill Creek Estuary Water Quality Results Received at the Time of Reporting.

Parameter	Unit	Lowest Applicable Guideline [1, 2]		SW-03
				Mill Creek - Lower Reach
		Long Term	Short Term	
Sampling Date				**2024-02-15**
General Parameters				
pH - Field	pH units	7.0 - 8.7	-	7.71
Specific Conductivity - Field	µS/cm	-	-	13610
Temperature - Field	°C	-	-	4.3
Salinity - Field	ppt	-	-	7.77
Turbidity - Field	NTU	-	-	1.23
TSS	mg/L	-	-	<3
Dissolved Oxygen - Field	mg/L	-	-	12.4
Anions and Nutrients				
Sulphate	mg/L	-	-	291
Chloride	mg/L	-	-	2110
Fluoride	mg/L	-	-	<1
Ammonia ($N\text{-}NH_3$)	mg/L	-	-	<0.005
Nitrite ($N\text{-}NO_2$)	mg/L	-	-	<0.05
Nitrate ($N\text{-}NO_3$)	mg/L	-	-	<0.25
Total Metals				
Aluminum, total (T-Al)	mg/L	-	-	0.128
Antimony, total (T-Sb)	mg/L	-	-	<0.0005
Arsenic, total (T-As)	mg/L	-	-	<0.0005
Barium, total (T-Ba)	mg/L	-	-	0.0103
Beryllium, total (T-Be)	mg/L	-	-	<0.0001
Boron, total (T-B)	mg/L	-	-	0.692
Cadmium, total (T-Cd)	mg/L	-	-	0.0000280
Chromium, total (T-Cr)	mg/L	-	-	<0.0025
Cobalt, total (T-Co)	mg/L	-	-	<0.0005
Copper, total (T-Cu)	mg/L	0.002	0.003	***<0.0025***
Iron, total (T-Fe)	mg/L	-	-	0.096
Lead, total (T-Pb)	mg/L	0.002	0.14	0.000639
Manganese, total (T-Mn)	mg/L	-	-	0.00498
Mercury, total (T-Hg)	mg/L	-	-	<0.000005
Molybdenum, total (T-Mo)	mg/L	-	-	0.00220
Nickel, total (T-Ni)	mg/L	-	-	<0.0025
Selenium, total (T-Se)	mg/L	-	-	<0.00025
Silver, total (T-Ag)	mg/L	0.0015	0.003	<0.00005
Thallium, total (T-Tl)	mg/L	-	-	<0.00005
Uranium, total (T-U)	mg/L	-	-	0.000755
Vanadium, total (T-V)	mg/L	-	-	<0.0025
Zinc, total (T-Zn)	mg/L	-	-	<0.015
Dissolved Metals				
Cadmium, dissolved (D-Cd)	mg/L	-	-	<0.000025
Copper, dissolved (D-Cu)	mg/L	-	-	<0.001
Iron, dissolved (D-Fe)	mg/L	-	-	<0.05
Lead, dissolved (D-Pb)	mg/L	-	-	<0.00025
Manganese, dissolved (D-Mn)	mg/L	-	-	0.00205
Strontium, dissolved (D-Sr)	mg/L	-	-	0.935
Zinc, dissolved (D-Zn)	mg/L	-	-	<0.005
Polycyclic Aromatic Hydrocarbons (PAHs)				
Acenaphthene	mg/L	-	-	0.000019
Acridine	mg/L	-	-	<0.00001
Anthracene	mg/L	-	-	<0.00001
Benz(a)anthracene	mg/L	-	-	<0.00001
Benzo(a)pyrene	mg/L	-	-	<0.000005
Chrysene	mg/L	-	-	<0.00001
Fluoranthene	mg/L	-	-	0.000033
Fluorene	mg/L	-	-	0.000016
1-methylnaphthalene	mg/L	-	-	<0.00001
2-methylnaphthalene	mg/L	-	-	<0.00001
Naphthalene	mg/L	-	-	<0.00005
Phenanthrene	mg/L	-	-	0.000042
Pyrene	mg/L	-	-	0.000018
Volatile Organic Compounds (VOCs)				
Benzene	mg/L	-	-	<0.0005
Ethylbenzene	mg/L	-	-	<0.0005
Methyl-tert-butyl-ether	mg/L	-	-	<0.0005
Styrene	mg/L	-	-	<0.0005
Toluene	mg/L	-	-	<0.0004
Total Xylenes	mg/L	-	-	<0.0005
Chlorobenzene	mg/L	-	-	<0.0005
1,2-Dichlorobenzene	mg/L	-	-	<0.0005

Notes:
Results in ***underlined in bold italics*** exceed the applicable long-term water quality guideline for the protection of estuarine water aquatic life.
Shaded results exceed the applicable short-term water quality guideline for the protection of estuarine water aquatic life.
[1] Approved British Columbia Water Quality Guidelines for the protection of estuarine aquatic life (BC ENV, 2021). Where an approved guideline is not established, the working guideline is applied.
[2] Canadian Water Quality Guideline for the protection of estuarine aquatic life (CCME, 2021).

Appendix D: Marine Water Receiving Environment Results

Table D-1: Summary of Marine Water Quality Results Received at the Time of Reporting

Parameter	Unit	Lowest Applicable Guideline [1, 2]		WQR1			WQR2		
		Long Term	Short Term	2.0 m above seafloor	2.0 m below water surface	0.5 m below water surface	2.0 m above seafloor	2.0 m below water surface	0.5 m below water surface
Sampling Date				**2024-02-13**	**2024-02-13**	**2024-02-13**	**2024-02-14**	**2024-02-14**	**2024-02-14**
General Parameters									
pH - Field	pH units	7.0 - 8.7	-	7.66	7.71	7.68	7.71	7.77	7.79
Conductivity - Field	µS/cm	-	-	45369	42052	25689	45263	39976	36006
Temperature - Field	°C	-	-	8.50	8.10	5.80	8.40	7.30	6.70
Salinity – Field [3]	ppt	-	-	29.10	26.75	15.51	29.03	25.25	22.47
Turbidity – Field [3]	NTU	-	-	0.27	0.31	0.94	3.19	3.11	0.46
TSS [3]	mg/L	-	-	<2	5.0	<2	<2	2.8	<2
Dissolved Oxygen - Field	mg/L	>=8	-	***7.79***	8.55	10.35	***7.86***	8.45	9.41
Anions and Nutrients									
Sulphate	mg/L	-	-	2310	1910	1230	2150	1840	1610
Chloride	mg/L	-	-	16500	13500	8760	16000	14000	12300
Fluoride	mg/L	-	1.5	<1	<1	<1	<1	<1	<1
Ammonia ($N\text{-}NH_3$)	mg/L	Variable [4]	Variable [4]	<0.005	<0.005	0.0100	<0.005	<0.005	0.0156
Nitrite ($N\text{-}NO_2$)	mg/L	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrate ($N\text{-}NO_3$)	mg/L	3.7	339	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Metals									
Aluminum, total (T-Al)	mg/L	-	-	0.0212	0.0342	0.0580	0.0154	0.0238	0.0330
Antimony, total (T-Sb)	mg/L	-	0.27 [5]	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic, total (T-As)	mg/L	0.0125	0.0125	0.00162	0.00153	0.00092	0.00167	0.00137	0.00122
Barium, total (T-Ba)	mg/L	-	-	0.0093	0.0098	0.0099	0.0091	0.0099	0.0100
Beryllium, total (T-Be)	mg/L	0.1	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron, total (T-B)	mg/L	1.2	-	***4.31***	***3.45***	***1.76***	***5.06***	***4.40***	***3.80***
Cadmium, total (T-Cd)	mg/L	0.00012	-	0.000072	0.000066	0.000040	0.000072	0.000064	0.000063
Chromium, total (T-Cr)	mg/L	0.0015 [6]	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Cobalt, total (T-Co)	mg/L	-	-	0.000084	0.000111	0.000129	0.000076	0.000095	0.000107
Copper, total (T-Cu)	mg/L	0.002	0.003	<0.0005	0.00054	0.00072	<0.0005	<0.0005	<0.0005
Iron, total (T-Fe)	mg/L	-	-	0.020	0.058	0.093	0.014	0.040	0.061
Lead, total (T-Pb)	mg/L	0.002	0.14	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Manganese, total (T-Mn)	mg/L	-	-	0.00282	0.00696	0.0107	0.00208	0.00562	0.00778
Mercury, total (T-Hg) [7]	mg/L	0.000016	-	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Molybdenum, total (T-Mo)	mg/L	-	-	0.00998	0.00828	0.00520	0.00945	0.00794	0.00742
Nickel, total (T-Ni)	mg/L	0.0083	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Selenium, total (T-Se)	mg/L	0.002	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Silver, total (T-Ag)	mg/L	0.0015	0.003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Thallium, total (T-Tl)	mg/L	-	-	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Uranium, total (T-U)	mg/L	-	-	0.00251	0.00218	0.00149	0.00250	0.00218	0.00186
Vanadium, total (T-V)	mg/L	0.005 [8]	-	0.00171	0.00145	0.00114	0.00158	0.00145	0.00143
Zinc, total (T-Zn)	mg/L	0.01	0.055	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Dissolved Metals									
Cadmium, dissolved (D-Cd)	mg/L	-	-	0.000069	0.000057	0.000035	0.000076	0.000062	0.000062
Copper, dissolved (D-Cu)	mg/L	-	-	<0.0005	0.00052	<0.0005	<0.0005	<0.0005	<0.0005
Iron, dissolved (D-Fe)	mg/L	-	-	<0.01	<0.01	0.010	<0.01	<0.01	<0.01
Lead, dissolved (D-Pb)	mg/L	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Manganese, dissolved (D-Mn)	mg/L	-	-	0.00177	0.00589	0.00961	0.00110	0.00476	0.00657
Strontium, dissolved (D-Sr)	mg/L	-	-	6.43	5.07	3.32	6.55	5.49	4.81
Zinc, dissolved (D-Zn)	mg/L	-	-	<0.001	0.0011	<0.001	<0.001	<0.001	<0.001
Polycyclic Aromatic Hydrocarbons (PAHs)									
Acenaphthene	mg/L	0.006	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Acridine	mg/L	-	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Anthracene	mg/L	-	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Benz(a)anthracene	mg/L	-	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Benzo(a)pyrene	mg/L	0.00001	-	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Chrysene	mg/L	0.0001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Fluoranthene	mg/L	-	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	mg/L	0.012	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
1-methylnaphthalene	mg/L	0.001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
2-methylnaphthalene	mg/L	0.001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Naphthalene	mg/L	0.001	-	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Phenanthrene	mg/L	-	-	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Pyrene	mg/L	-	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Volatile Organic Compounds (VOCs)									
Benzene	mg/L	0.11	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	mg/L	0.25	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Methyl-tert-butyl-ether	mg/L	5	0.44	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Styrene	mg/L	-	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	mg/L	0.215	-	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Total Xylenes	mg/L	-	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Chlorobenzene	mg/L	0.025	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
1,2-Dichlorobenzene	mg/L	0.042	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Notes:
Results ***underlined in bold italics*** exceed the applicable long-term water quality guideline for the protection of marine water aquatic life.
Shaded results exceed the applicable short-term water quality guideline for the protection of marine water aquatic life.
[1] Approved British Columbia Water Quality Guidelines for the protection of marine aquatic life (BC ENV, 2021). Where an approved guideline is not established, the working guideline is applied.
[2] Canadian Water Quality Guideline for the protection of marine aquatic life (CCME, 2021).
[3] Narrative guideline for the evaluation of change from background conditions arising from discharges to the aquatic environment. The baseline water quality data presented in the table were collected when the site was inactive and represent background conditions, therefore the guideline is not evaluated.
[4] The approved total ammonia nitrogen BC WQG is salinity, pH and temperature dependent; see Tables 26E and 26F in BC WQG guidance document (BC ENV, 2021).
[5] The working BC WQG for trivalent antimony [SB(III)] is 0.27 mg/L and is applied to total antimony results.
[6] The approved BC WQG for hexavalent chromium [Cr(VI)] is 0.0015 mg/L and 0.0056 mg/L for trivalent chromium [Cr(III)]. The more conservative criteria for Cr(VI) is applied to total chromium results.
[7] When MeHg $\leqslant$ 0.5% of total Hg, BC WQG = 0.00002 mg/L.
[8] Federal Water Quality Guideline for Vanadium (Environment and Climate Change Canada).
The lowest applicable guidelines are shown in the table; however, water quality data was screened to all applicable guidelines.