TECHNICAL MEMORANDUM

To:	**Ashleigh Crompton, Mike Champion, Jackie Boruch, Ryan Schucroft, Jamie Maxwell (Woodfibre LNG)**	**Date:**	**12 May 2024**
From:	**Holly Pelletier and Patrick Mueller (Lorax)**	**Project #:**	**A633-7**
Subject:	**PE-111578 Weekly Discharge and Compliance Report #12 for April 28 – May 4**		

Waste Discharge Authorization 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.

Discharge and compliance monitoring is conducted by on-site Environmental Monitors (Roe Environmental) that are sub-contracted to the civil works contractor (LB LNG). Analytical samples are submitted by Roe Environmental to ALS Environmental in Burnaby, BC, for testing. Lorax Environmental provides water quality database management and WDA compliance reporting services for Woodfibre LNG.

This technical memorandum (Report #12) was prepared by Lorax Environmental and summarizes monitoring conducted the week of April 28 – May 4 for contact waters directed to a WWTP or a sedimentation pond and presents monitoring data that were available at the time of reporting including results that were pending from prior reporting periods. Figures referenced in the report discussion are included at the end of this report. Report #12 has been prepared to meet the reporting requirements specified in Condition 4.2 of WDA Effluent Permit PE-111578:

> "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 are ongoing and these include site grading, levelling, bedrock excavation and sedimentation pond and WWTP construction. Shoring works along the shoreline and foreshore areas were initiated in December 2023, and in early 2024 construction of water management infrastructure was initiated and has continued through the April 28 – May 4 monitoring period. The East WWTP, and East and West sedimentation ponds have been completed, and the West WWTP is being assembled. The PE- 111578 water management facilities that are completed or were under construction during the reporting period are shown in Figure 1.

The East and West Catchment contact water conveyance ditches described in PE-111578 will be constructed following completion of site preparation activities (*e.g.,* site grading, bedrock excavation) along the ditch lines. Until the ditches are operational, non-contaminated contact waters are managed to remain on site or are directed to the East Sedimentation Pond. Contaminated contact waters are contained and directed to the East WWTP.

The East Sedimentation Pond permanent outfall structure is planned to be completed by May 20. Until those structures are constructed, a temporary discharge system (*i.e.,* pump, hosing and diffusor) has been established to convey East Sedimentation Pond effluent to the authorized discharge location when necessary for the discharge of excess water, and if the effluent water quality meets the requirements set out in PE-111578.

Pilot testing of the East WWTP continued during the reporting period (April 28 – May 4). Contaminated and potentially contaminated contact waters from excavations within the East Catchment were directed to the East WWTP for treatment, and the treated effluent was discharged to the East Sedimentation Pond.

Non-contaminated contact waters from the East and West Catchments were directed to the East Sedimentation Pond April 28 – May 4. Figure 2 shows an areal view of the pond on May 3. A total of 2005 m^3 of East Sedimentation Pond effluent was intermittently pumped to the discharge location (SP-E-OUT) during the monitoring period.

Construction of the West Sedimentation Pond was complete during the reporting period (April 28 – May 4), except for the outfall structure (**Error! Reference source not found.**). Commissioning of the West WWTP is planned to begin in early May. There were no discharges from the West Sedimentation Pond to the receiving environment during the reporting period.

The completed non-contact water diversion ditch west of Mill Creek was commissioned for use on April 7. The diversion ditch discharges to Mill Creek at OUT-06 (Figure 1). Monitoring stations OUT-01, OUT-02, and OUT-11 at pre-existing outlets have been established. Non-contact water

diversion ditches leading to these outlets will be upgraded and extended, later in the construction schedule.

2. Monitoring Summary

The PE-111578 authorized works were under construction during the April 28 – May 4 monitoring period. Compliance monitoring stations are progressively established by as water management infrastructure is completed. Monitoring is conducted by the on-site Environmental Monitors (Roe Environmental). Analytical samples are submitted by Roe Environmental to ALS Environmental in Burnaby, BC, for testing.

The following monitoring stations have been established (Figure 1):

- Creek water (SW-01, SW-02, SW-03, SW-04, SW-07).
- Howe Sound reference and IDZ locations (WQR1, WQR2, IDZ-E1 and IDZ-E2).
- Non-contact diversion ditch outlets (OUT-01, OUT-02, OUT-06, and OUT-11).
- Contact water monitoring locations (WWTP-E-IN, WWTP-E-OUT, SP-E-IN-2, SP-E-OUT and a new in-pond station SP-E-NE).

Stations SW-01, SW-02, SW-03, SW-04, SW-07, WQR1, WQR2, IDZ-E1, IDZ-E2, OUT-01, OUT-02, OUT-06, OUT-11, WWTP-E-IN, WWTP-E-OUT, SP-E-IN-2, SP-E-NE and SP-E-OUT were monitored during the monitoring period (April 28 – May 4). Sampling dates and parameters tested are summarized in Table 1.

Table 1: Summary of PE-111578 monitoring samples collected April 28 – May 4.

Sampling Date	Sample	Description	Parameters Tested
April 28, 2024	OUT-06	Non-contact water diversion ditch outlet	Field, Physical & General Parameters, VH & BTEX, EPHs & PAHs, Total, Dissolved and Speciated Metals, VOCs, glycols, oil and grease, and methyl mercury.
	SW-02	Upper Reach of Mill Creek (upstream of the third bridge)	Field, Physical & General Parameters, VH & BTEX, EPHs & PAHs, Total, Dissolved and Speciated Metals, VOCs, dioxins and furans, glycols, oil and grease, and methyl mercury.
	SW-03	Lower Reach of Mill Creek (near the mouth, in the estuarine zone)	
	SW-07	Upstream Mill Creek (at the diversion inlet)	
	SP-E-NE	NE corner of East Sedimentation Pond proximal to the intake of the discharge pump	Field Parameters
	WWTP-E-IN	Combined influent to the East WWTP from chromium reduction pre-treatment step and additional contaminant sources within the East catchment area	
	WWTP-E-OUT	Effluent from the East WWTP discharged to the East Sedimentation Pond	
April 29, 2024	OUT-01	Non-Contact Water Diversion Ditch Outlet	Parameters, VH & BTEX, EPHs & PAHs, Total, Dissolved and Speciated Metals, VOCs, glycols, oil and grease, and methyl mercury.
	OUT-02	Non-Contact Water Diversion Ditch Outlet	
	OUT-11	Non-Contact Water Diversion Ditch Outlet	
	SW-01	Lower Reach of Woodfibre Creek (near the mouth)	Field, Physical & General Parameters, VH & BTEX, EPHs & PAHs, Total, Dissolved and Speciated Metals, VOCs, dioxins and furans, glycols, oil and grease, and methyl mercury.
	SW-04	Lower Reach of East Creek (near the outlet to the outfall culvert)	
	SP-E-IN-2	Influent pipe southwest of the East Sedimentation Pond	
	SP-E-OUT	Discharge from the East Sedimentation Pond to Howe Sound (compliance point)	
	SP-E-NE	NE corner of East Sedimentation Pond proximal to the effluent intake	Field Parameters
	WWTP-E-IN	Combined influent to the East WWTP from chromium reduction pre-treatment step and additional contaminant sources within the East catchment area	
	WWTP-E-OUT	Effluent from the East WWTP discharged to the East Sedimentation Pond	
April 30, 2024	IDZ-E1-0.5	IDZ monitoring station 20-30 m southeast of East Sedimentation Pond discharge (SP-E-Out); 0.5 m below surface	Field, Physical & General Parameters, VH & BTEX, EPHs & PAHs, Total, Dissolved and Speciated Metals, VOCs, dioxins and furans, glycols, oil and grease, and methyl mercury.
	IDZ-E1-2m	IDZ monitoring station 20-30 m southeast of East Sedimentation Pond discharge (SP-E-Out); 2 m below surface	
	IDZ-E1-SF	IDZ monitoring station 20-30 m southeast of East Sedimentation Pond discharge (SP-E-Out); 2 m above the seafloor	
	IDZ-E2-0.5	IDZ monitoring station 20-30 m southwest of East Sedimentation Pond discharge (SP-E-Out); 0.5 m below surface	
	IDZ-E2-2m	IDZ monitoring station 20-30 m southwest of East Sedimentation Pond discharge (SP-E-Out); 2 m below surface	
	IDZ-E2-SF	IDZ monitoring station 20-30 m southwest of East Sedimentation Pond discharge (SP-E-Out); 2 m above the seafloor	
	WQR1-0.5	Reference site located northeast of East Creek 500 m northeast of the Project boundary; 0.5 m below surface.	
	WQR1-2m	Reference site located northeast of East Creek 500 m northeast of the Project boundary; 2 m below surface.	
	WQR1-SF	Reference site located northeast of East Creek 500 m northeast of the Project boundary; 2 m above the seafloor.	
	WQR2-0.5	Reference site located south of Woodfibre Creek and 500 m south of the Project boundary; 0.5 m below surface.	
	WQR2-2m	Reference site located south of Woodfibre Creek and 500 m south of the Project boundary; 2 m below surface.	
	WQR2-SF	Reference site located south of Woodfibre Creek and 500 m south of the Project boundary; 2 m above the seafloor.	
	SP-E-NE	NE corner of East Sedimentation Pond proximal to the intake of the discharge pump	Field Parameters
	WWTP-E-IN	Combined influent to the East WWTP from chromium reduction pre-treatment step and additional contaminant sources within the East catchment area	
	WWTP-E-OUT	Effluent from the East WWTP discharged to the East Sedimentation Pond	
May 1, 2024	SP-E-NE	NE corner of East Sedimentation Pond proximal to the intake of the discharge pump	Field Parameters, Total and Dissolved metals, Hexavalent Cr
	WWTP-E-IN	Combined influent to the East WWTP from chromium reduction pre-treatment step and additional contaminant sources within the East catchment area	Field Parameters
	WWTP-E-OUT	Effluent from the East WWTP discharged to the East Sedimentation Pond	
May 2, 2024	SP-E-NE	NE corner of East Sedimentation Pond proximal to the intake of the discharge pump	Field Parameters
	WWTP-E-IN	Combined influent to the East WWTP from chromium reduction pre-treatment step and additional contaminant sources within the East catchment area	
	WWTP-E-OUT	Effluent from the East WWTP discharged to the East Sedimentation Pond	
May 3, 2024	SP-E-OUT	Discharge from the East Sedimentation Pond to Howe Sound (compliance point)	Field Parameters, Total and Dissolved metals, Hexavalent Cr
	SP-E-NE	NE corner of East Sedimentation Pond proximal to the intake of the discharge pump	Field Parameters
	WWTP-E-IN	Combined influent to the East WWTP from chromium reduction pre-treatment step and additional contaminant sources within the East catchment area	
May 4, 2024	SP-E-OUT	Discharge from the East Sedimentation Pond to Howe Sound (compliance point)	Field Parameters
	SP-E-NE	NE corner of East Sedimentation Pond proximal to the intake of the discharge pump	
	WWTP-E-OUT	Effluent from the East WWTP discharged to the East Sedimentation Pond	

3. Water Quality Results

3.1 Overview

Field measurements and monthly monitoring of the receiving environment for the PE-111578 monitoring stations were collected during the April 28 – May 4 monitoring period. Analytical results that were available at the time of reporting are listed below in Table 2. Methyl mercury, dioxins and furans results were not available at the time of reporting and will be included in future weekly reports when they are available for:

- OUT-01, OUT-02, OUT-11 collected April 29 (methyl mercury);
- OUT-06 collected April 28 (methyl mercury);
- SW-02, SW-03, SW-07 collected April 28 (methyl mercury, dioxins and furans);
- SW-01, SW-04 collected April 29 (methyl mercury, dioxins and furans);
- SP-E-IN-2 and SP-E-OUT collected April 29 (methyl mercury (SP-E-OUT only), dioxins and furans); and
- IDZ-E1, IDZ-E2, WQR1, WQR2 collected April 30 (methyl mercury, dioxins and furans)

Table 2: Summary of Analytical Results Included in Weekly Discharge and Compliance Report #12.

Sample	Description	Sampling Date	Parameters Reported
OUT-06	Non-contact water diversion ditch outlet	April 28, 2024	Field, Physical, and General Parameters, Total and Dissolved metals, Hexavalent Cr
SW-02	Upper Reach of Mill Creek (upstream of the third bridge)	April 28, 2024	Field, Physical & General Parameters, VH & BTEX, EPHs & PAHs, Total and Dissolved Metals, Hexavalent Cr, VOCs, glycols, oil and grease.
SW-03	Lower Reach of Mill Creek (near the mouth, in the estuarine zone)		
SW-07	Upstream Mill Creek (at the diversion inlet)		
OUT-01	Non-Contact Water Diversion Ditch Outlet	April 29, 2024	Field, Physical, and General Parameters, Total and Dissolved metals, Hexavalent Cr
OUT-02	Non-Contact Water Diversion Ditch Outlet		
OUT-11	Non-Contact Water Diversion Ditch Outlet		
SW-01	Lower Reach of Woodfibre Creek (near the mouth)	April 29, 2024	Field, Physical & General Parameters, VH & BTEX, EPHs & PAHs, Total and Dissolved Metals, Hexavalent Cr, VOCs, glycols, oil and grease.
SW-04	Lower Reach of East Creek (near the outlet to the outfall culvert)		
SP-E-IN-2	Influent pipe southwest of the East Sedimentation Pond		
SP-E-OUT	Discharge from the East Sedimentation Pond to Howe Sound (compliance point)		
IDZ-E1-0.5	IDZ monitoring station 20-30 m southeast of East Sedimentation Pond discharge (SP-E-Out); 0.5 m below surface	April 30, 2024	Field, Physical & General Parameters, VH & BTEX, EPHs & PAHs, Total and Dissolved Metals, Hexavalent Cr, VOCs, glycols, oil and grease.
IDZ-E1-2m	IDZ monitoring station 20-30 m southeast of East Sedimentation Pond discharge (SP-E-Out); 2 m below surface		
IDZ-E1-SF	IDZ monitoring station 20-30 m southeast of East Sedimentation Pond discharge (SP-E-Out); 2 m above the seafloor		
IDZ-E2-0.5	IDZ monitoring station 20-30 m southwest of East Sedimentation Pond discharge (SP-E-Out); 0.5 m below surface		
IDZ-E2-2m	IDZ monitoring station 20-30 m southwest of East Sedimentation Pond discharge (SP-E-Out); 2 m below surface		
IDZ-E2-SF	IDZ monitoring station 20-30 m southwest of East Sedimentation Pond discharge (SP-E-Out); 2 m above the seafloor		
WQR1-0.5	Reference site located northeast of East Creek 500 m northeast of the Project boundary; 0.5 m below surface.		
WQR1-2m	Reference site located northeast of East Creek 500 m northeast of the Project boundary; 2 m below surface.		
WQR1-SF	Reference site located northeast of East Creek 500 m northeast of the Project boundary; 2 m above the seafloor.		
WQR2-0.5	Reference site located south of Woodfibre Creek and 500 m south of the Project boundary; 0.5 m below surface.		
WQR2-2m	Reference site located south of Woodfibre Creek and 500 m south of the Project boundary; 2 m below surface.		
WQR2-SF	Reference site located south of Woodfibre Creek and 500 m south of the Project boundary; 2 m above the seafloor.		
SP-E-NE	NE corner of East Sedimentation Pond proximal to the intake of the discharge pump	May 1, 2024	Field Parameters, Total and Dissolved metals, Hexavalent Cr
SP-E-OUT	Discharge from the East Sedimentation Pond to Howe Sound (compliance point)	May 3, 2024	Field Parameters, Total and Dissolved metals, Hexavalent Cr

3.2 East Sedimentation Pond

The East Sedimentation Pond influent and effluent results are screened against PE-111578 discharge limits. Parameters without a discharge limit are screened against BC and Federal water quality guidelines (WQGs) for the protection of marine water aquatic life. Influent water is not discharged from site, therefore only effluent water quality is assessed for exceedances. The analytical results, daily field parameters, discharge limits and WQGs are summarized in Appendix B.

The April 29 effluent sample (SP-E-OUT) met PE-111578 discharge limits. The in-pond sample (station SP-E-NE) collected May 1 proximal to the effluent intake (Figure 1) was tested for total and dissolved metals and met PE-111578 discharge limits.

The May 3 effluent sample (SP-E-OUT) total copper, lead, vanadium, and zinc concentrations were 1.1 to 1.8 times above their respective PE-111578 discharge limits (Table 3). The analytical results were received the afternoon of May 4 and site reports indicate water management corrective actions were implemented upon receipt of analytical results and included suspending further discharge from the East Sedimentation Pond on May 4. An effluent quality exceedance notification was issued to BCER on May 5. Follow-up investigation and monitoring was initiated May 4 and continued through the week of May 5. The investigation concluded that some settled sediments in the East Sedimentation Pond were likely re-suspended during discharge, resulting in the total copper, lead, vanadium and zinc concentrations observed in the May 3 sample. Discharge from the East Sedimentation Pond will remain suspended while accumulated sediment is removed from the pond and after monitoring data confirm the pond effluent meets discharge limits.

The effluent sample collected on May 3 met WQG for parameters without discharge limits except, total mercury which was detected at a concentration of 0.0000197 mg/L, 1.2 times above the WQG value of 0.000016 mg/L (Table 4). This concentration is in the range of baseline values observed in marine water samples and the mixing zone model indicates the concentration would be diluted to below the WQG within the initial dilution zone defined in PE-111578.

Table 3:
Summary of Discharge Limit Exceedances for Effluent Discharged from the East Sedimentation Pond Station SP-E-OUT.

Parameter	Units	Discharge Limit	N	N > Discharge Limit	Commentary
Total Copper	mg/L	0.0043	2	1	Analytical results collected on May 3 from SP-E-OUT showed parameters concentrations above the discharge limits: • Total copper = 0.00555 mg/L • Total lead = 0.00618 mg/L • Total vanadium = 0.00970 mg/L • Total zinc = 0.0146 mg/L Discharge from the East Sedimentation Pond was suspended following receipt of May 3 analytical results on May 4. Follow-up investigation and monitoring concluded that some settled sediments in the East Sedimentation Pond were likely re-suspended during discharge, resulting in the discharge limit exceedances observed in the May 3 sample. Accumulated sediment will be removed from the pond and follow-up monitoring will be conducted to confirm effluent compliance prior to resuming discharge.
Total Lead	mg/L	0.0035	2	1	
Total Vanadium	mg/L	0.0081	2	1	
Total Zinc	mg/L	0.0133	2	1	

PE-111578 discharge limits for the East Sedimentation Pond.
N = number of samples.
Non-detect results are screened using the detection limit value.

Table 4:
Summary of WQG Exceedances for the East Sedimentation Pond at Effluent Station SP-E-OUT and Pond Water Station SP-E-POND.

Parameter	Units	WQG (LT)	N	N >WQG	Commentary
Total Mercury	mg/L	0.000016 (Federal)	3	1	The total mercury concentration was 1.2 times greater than the long-term Federal WQG in the sample from SP-E-OUT collected on May 3 (0.0000197 mg/L). Discharge from the East Sedimentation Pond was halted on May 4. This concentration is in the range of baseline values observed in marine water samples and the mixing zone model indicates the concentration would be diluted to below the WQG within the initial dilution zone defined in PE-111578.

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.

3.3 East Wastewater Treatment Plant

The East WWTP influent and effluent results are screened against the minimum discharge objectives (MDOs) which the WWTP was designed to meet. Contaminated contact water is directed to the WWTP influent, and it is expected that influent water is unlikely to meet MDOs, therefore only effluent water quality is assessed for exceedances.

The East WWTP discharged treated effluent to the East Sedimentation Pond on April 28 – 29 and May 3 – 4. On May 1, 2, and 4, effluent was recirculated to WWTP influent. Field measurements were collected each day at the influent and effluent stations, WWTP-E-IN and WWTP-E-OUT, respectively, except on May 3 from the effluent station and May 4 from the influent station. The East WWTP was not actively discharged to the East Sedimentation Pond at the time of measurement collection on May 3 and no water was entering the East WWTP at the time of measurement collection on May 4. Daily field measurements are summarized in Appendix C.

During the monitoring period, East WWTP effluent (WWTP-E-OUT) water quality ranged from pH 7.20 to 7.90, turbidity ranged 0.13 to 3.13 NTU and dissolved oxygen ranged from 10.14 to 12.2 mg/L. The effluent field measurement met the MDOs. Pilot testing of the East WWTP is ongoing and monitoring results for the current reporting period (April 28 – May 4) indicate the East WWTP produced effluent that met the MDOs for field measurements.

3.4 Non-Contact Water Diversion Outlets

Water quality results for non-contact water are screened against BC and Federal WQGs for the protection of freshwater aquatic life. The analytical results, field parameters and WQGs are summarized in Appendix D.

The WQG screening results for the April 28 and 29 non-contact water diversion ditch outlet samples (OUT-01, OUT-02, OUT-06, and OUT-11) are summarized in Table 5 for parameters that exceed a guideline. Parameter concentrations met WQGs in all samples, except total aluminum (T-Al), dissolved copper (D-Cu), and dissolved zinc in one or more samples. The concentrations of T-Al, and D-Cu are within the concentration ranges observed in the pre-construction baseline freshwater monitoring program.

Table 5:
Summary of WQG Exceedances for Non-Contact Water Diversion Outlets Analytical Samples Collected April 28 and 29, 2024.

Parameter	Units	WQG (LT)	N	N >WQG	Commentary
Total Aluminum	mg/L	0.026 – 0.33[1] (BC) 0.077 – 0.99[1] (Federal)	8	5	The total aluminum concentrations were above the long-term BC WQG in samples from OUT-01 and OUT-02 collected on April 29 (0.104 and 0.238 mg/L, respectively). Concentrations of total aluminum in the sample from OUT-02 was also above the Canadian WQG. The observed total aluminum values are within the ranges observed in pre-construction baseline samples in the freshwater receiving environment.
Dissolved Copper	mg/L	0.00020 – 0.0016[1] (BC) 0.00020-0.0044[1] (Federal)	8	7	The dissolved copper concentrations were above the long-term BC WQG in samples from OUT-01, OUT-02, and OUT-11 collected on April 29 (0.00071, 0.0016, and 0.00065 mg/L, respectively). The dissolved copper concentrations were also above the long-term Canadian WQG in samples from OUT-01 and OUT-02 collected on April 29. The observed dissolved copper values are within the ranges observed in pre-construction baseline samples in the freshwater receiving environment.
Dissolved Zinc	mg/L	0.0030 – 0.015[1] (BC) 0.0060 – 0.030[1] (Federal)	8	1	The dissolved zinc concentration was above the long-term and short-term BC WQG in the sample from OUT-01 collected on April 29 (0.013 mg/L). The observed dissolved zinc value is within the ranges observed in pre-construction baseline samples in the freshwater receiving environment.

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.

3.5 Freshwater and Estuarine Water Receiving Environment

Freshwater and estuarine water receiving environment samples are screened against BC and Federal WQG for the protection of freshwater or estuarine water aquatic life. The analytical results, field parameters and WQGs are summarized in Appendix E and Appendix F.

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) receiving environment samples collected April 28 and 29 are summarized in

Table 6 for parameters that exceed a guideline. All stations are freshwater except the estuarine water collect near the mouth of Mill Creek (station SW-03) Parameter concentrations met WQGs, except field pH, total aluminum (T-Al), and dissolved copper (D-Cu) in some samples. Field pH

and the concentrations of T-Al, and D-Cu were within the concentration ranges observed in the pre-construction baseline monitoring program.

Table 6:
Summary of WQG Exceedances for Freshwater and Estuarine Analytical Samples Collected April 28 and 29, 2024.

Parameter	Units	WQG (LT)	N	N >WQG	Commentary
Field pH	s.u.	6.5 – 9.0	8	1	Field pH was below the lower limit of the WQG in the sample collected from Woodfibre Creek (SW-01; pH = 6.1). The observed pH value is within the ranges observed in the pre-construction baseline samples from Woodfibre Creek.
Total Aluminum	mg/L	0.026 – 0.33[1] (BC) 0.077 – 0.99[1] (Federal)	8	5	The total aluminum concentrations were above the long-term BC WQG in the samples from Mill Creek samples SW-02 and SW-07 collected on April 28 (0.133 and 0.135 mg/L, respectively) and in the Woodfibre Creek sample SW-01 collected on April 29 (0.148 mg/L). Concentrations of total aluminum in samples from SW-01, and SW-02 were also above the Canadian WQG. The observed total aluminum values are within the ranges observed in pre-construction baseline samples from Woodfibre Creek and Mill Creek.
Dissolved Copper	mg/L	0.00020 – 0.0016[1] (BC) 0.00020-0.0044[1] (Federal)	8	7	The dissolved copper concentrations were above the long-term BC WQG in sample SW-01 (Woodfibre Creek), samples SW-02 and SW-07 (Mill Creek) and sample SW-04 (East Creek) collected on April 28 and 29. The dissolved copper concentration from SW-01 was also above the long-term Canadian WQG. The observed dissolved copper values are within the ranges observed in pre-construction baseline samples from Woodfibre, Mill and East creeks.

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.

3.6 Marine Water Receiving Environment

Marine water receiving environment samples are screened against BC and Federal WQG for the protection of marine water aquatic life. The analytical results, field parameters and WQGs are summarized in Appendix G. Screening results are summarized in Table 7 for parameter concentrations that are above a guideline value.

Monthly initial dilution zone (IDZ) and reference station marine monitoring for field and analytical parameters was conducted April 30 in accordance with the requirements specified in Table 2 of

PE-111578. Water column samples were collected at stations IDZ-E1, IDZ-E2, WQR1, and WQR2 at 0.5 and 2 m below the water surface and 2 m above the seafloor.

Results for all samples are within WQG values, except for dissolved oxygen (DO) and total boron (T-B). The concentration of DO was below the minimum WQG level (8.0 mg/L) in deep-water samples at the reference stations WQR1 (7.18 mg/L) and WQR2 (7.31 mg/L). The concentrations of total boron ranged from 0.83 to 3.94 mg/L in all samples and exceeded the WQG (1.2 mg/L) in four surface water and all deep-water samples. The concentrations of DO and total boron observed in the IDZ-E1, IDZ-E2, WQR1, and WQR2 samples are within the concentration ranges observed in the pre-construction baseline monitoring program.

Table 7:
Summary of WQG Exceedances for Marine Water Analytical Samples Collected April 30, 2024.

Parameter	Units	WQG (LT)	Location	N	N >WQG	Commentary
Field Dissolved Oxygen (DO)	mg/L	≥ 8.0 (Federal)	Surface	8	0	Field DO was below the lower limit of the WQG in the deep-water samples collected from the reference stations WQR1 (7.18 mg/L) and WQR2 (7.31 mg/L). 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	4	2	
Total Boron	mg/L	1.2 (BC)	Surface	8	4	Total boron exceeded the WQG in the surface water and deep-water samples at station IDZ-E1 and IDZ-E2. Total boron concentrations range from 0.83 to 3.94 mg/L. This is due to the influence of oceanic marine water in Howe Sound. The observed total boron values are within the ranges observed in pre-construction baseline samples at these stations.
			Deep	4	4	

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. Quality Control

This section presents the results of the quality control (QC) evaluation for the PE-111578 weekly report (Table 7). The evaluation includes a review of field and lab QC, completeness of the weekly report (*i.e.*, pending data), completeness of the monitoring program, evaluation of compliance and review of water management activities. Any items flagged for follow-up will be carried forward in future reports until they are closed.

Table 8: Weekly Report QC Evaluations and Ongoing Items.

QC Procedure	Observation	Investigation/Resolution
Reporting Period (April 28 – May 4, Report #12)		
Monitoring Program Evaluation	PE-111578 contact water, non-contact water and initial dilution zone monitoring stations have not been fully established.	The PE-111578 authorized works were under construction during the reporting period. Monitoring stations are progressively established as water management infrastructure is completed. The East Sedimentation Pond and East WWTP are completed, and pilot testing of the East WWTP is ongoing. The East Sedimentation Pond was commissioned for discharge on April 15. The West Sedimentation Pond is complete, except the outfall structure and West WWTP is under construction. The West Sedimentation Pond is not commissioned for discharge and did not discharge. The non-contact water diversion ditch that discharges at station OUT-06 was commissioned for discharge on April 7, and stations for pre-existing outfalls OUT-01 and OUT-02 have also been established.
Compliance Evaluation	May 3 monitoring results for East Sedimentation Pond discharge exceeded the PE-111578 limits for total Cu, Pb, V, and Zn and WQG for T-Hg.	Discharge from the East Sedimentation Pond was suspended following receipt of May 3 analytical results on May 4. Follow-up investigation and monitoring concluded that some settled sediments in the East Sedimentation Pond were likely re-suspended during discharge, resulting in the discharge limit exceedances observed in the May 3 sample. Accumulated sediment will be removed from the pond and follow-up monitoring will be conducted to confirm effluent compliance prior to resuming discharge. This item remains open.
Pending Data	Methyl mercury, dioxin and furan results for samples collected April 28-30 were not reported.	Methyl mercury, dioxins and furans results were not complete at the time of reporting. Testing of these parameters typically requires up to 4 weeks to complete. The pending results are expected at the end of May. This item remains open.
Ongoing Items from Previous Weekly Reports		
Report #10: Water Management Evaluation	April 16 monitoring results for East Sedimentation Pond influent (station SP-E-IN-2) indicated contaminated contact water was directed to the pond.	On April 16, non-contaminated contact water that was previously pumped to a baker tank for storage was transferred to the sedimentation pond as influent. On April 18, after receiving the test results, site staff determined that the baker tank was previously used to store contaminated contact water and that residues from the tank were likely entrained in the water that was transferred from the baker tank to the pond influent. Corrective actions were implemented by site staff on April 18 and included suspending further discharges until WQ monitoring indicated PAHs have been removed from the sedimentation pond, and recirculating water from the baker tanks used for storing non-contaminated contact water through the East WWTP until influent PAH concentrations indicate residual contamination has been removed. Site staff collected a pond sample on April 18 proximal to the intake for the effluent discharge pump located in the northeast corner of the pond (SP-E-POND). PAHs met WQG in the April 18 sedimentation pond sample indicating the residual PAHs were removed from the pond waters. Additional influent monitoring was conducted April 29 (SP-E-IN-2). PAHs were detected in the influent sample, and this is attributed to elevated TSS in the sample (192 mg/L). Further investigation of the potential source is ongoing. Note the concurrent April 29 East Sedimentation Pond effluent sample met WQGs for PAHs. This item remains open pending the results of additional influent monitoring.
Report #10: Result QA/QC Screening	Detection limits for total Cd, Cu, Pb, Ni, Se, V, and Zn were raised above WQG values for the IDZ-E1 and IDZ-E2 seawater samples.	The total and dissolved metal analysis was processed using a less sensitive test method than normally used for seawater testing. This resulted in detection limits that were elevated above WQG for Cd, Cu, Pb, Ni, Se, V, and Zn. Site staff indicate total and dissolved metals will be tested using a higher sensitivity method for seawater moving forward to achieve the typically reported detection limits. Additional sampling was conducted at these stations on April 30 and lab submission reports confirm the higher sensitivity test method was used for seawater metals testing. This item is now closed.

Notes:
Result QA/QC screening includes the evaluation of field and lab QC results, comparison of total and dissolved metal results and review for modified detection limits.
Pending data are outstanding results from monitoring samples reported in the current or previous weekly reports.
Monitoring program evaluation is an assessment of the completeness of the monitoring program compared to PE-111578 requirements.

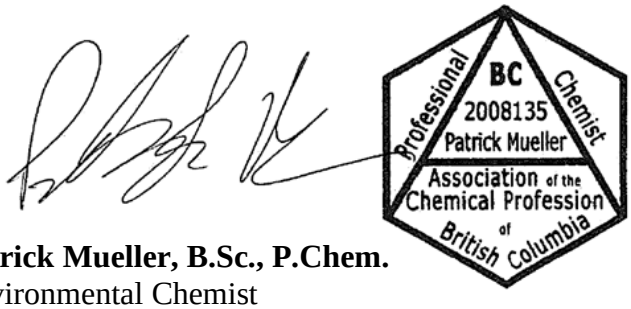
5. Closure

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 and prime contractor McDermott International and their sub-contractors. The records reviewed and analyzed by Lorax include ALS Environmental laboratory test reports and site reports (from Roe Environmental, LB LNG, McDermott and Woodfibre LNG). Verbal or electronic communications between Lorax, and Roe Environmental, LB LNG, McDermott, Woodfibre LNG and Keystone Environmental staff are conducted as needed to confirm the information presented in this report.

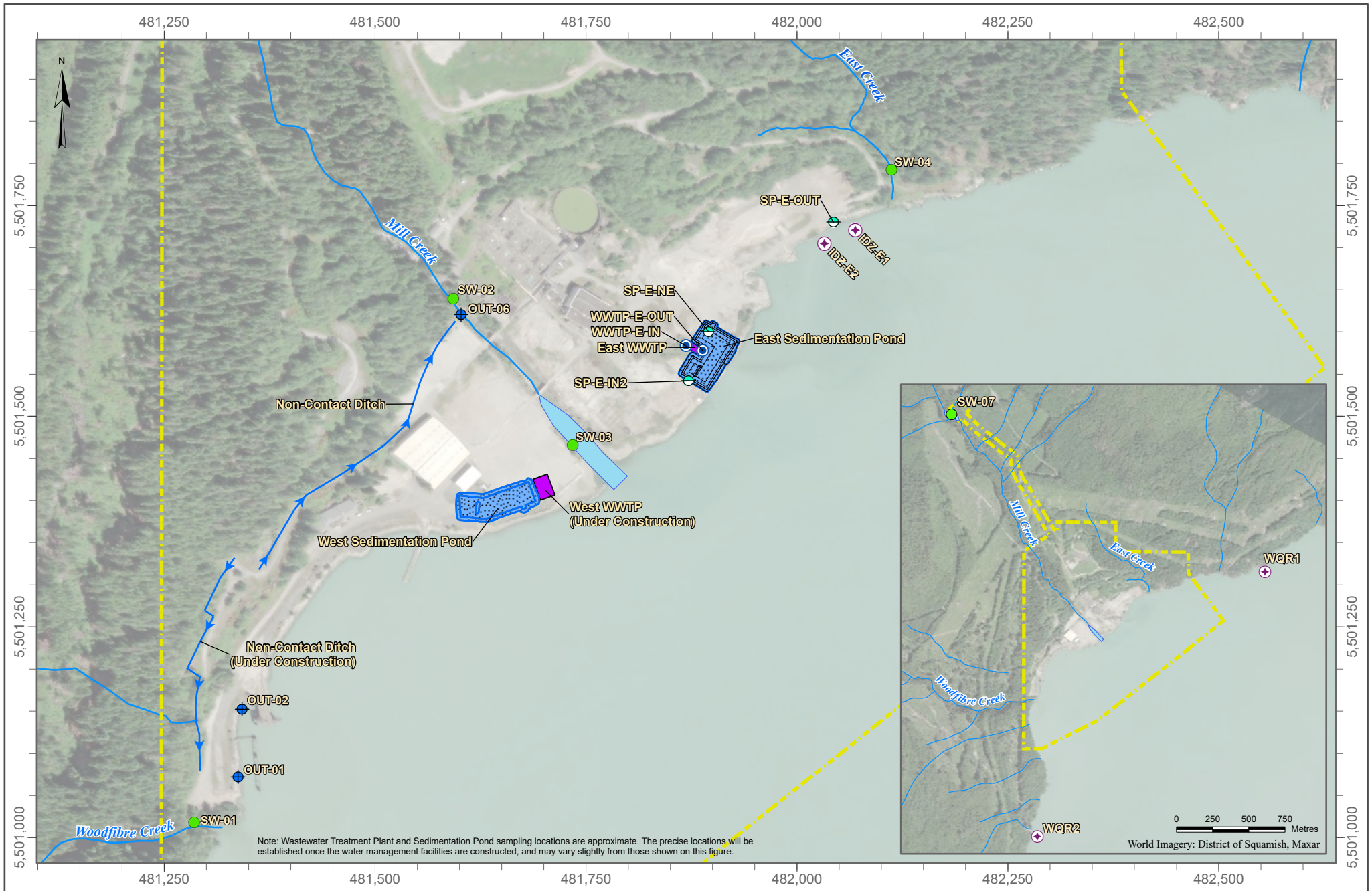
Regards,

LORAX ENVIRONMENTAL SERVICES LTD.

Holly Pelletier, B.Sc., GIT
Environmental Geoscientist



Patrick Mueller, B.Sc., P.Chem.
Environmental Chemist



LEGEND

- Freshwater Monitoring Station
- Marine Water Monitoring Station
- Certified Project Area
- Waterbody
- Watercourse
- Non-Contact Diversion Ditch
- Clean Water Diversion Discharge Station
- Sediment Pond
- Sediment Pond Monitoring Stations (Water Quality)
- WWTP

DATE SAVED:	May 10, 2024
DRAWN BY:	DM
REVIEWED:	PM
VERSION:	1

Coordinate System: *NAD 1983 UTM Zone 10N*
Projection: *Transverse Mercator*
Datum: *North American 1983*
Units: *Metre*

1:6,000

0 50 100 150 Metres

CLIENT: Woodfibre LNG

LORAX ENVIRONMENTAL

PROJECT:

Woodfibre LNG Project Construction Phase

TITLE: Completed or Under Construction Water Management Facilities and Established PE-111578 Monitoring Stations (May 4, 2024)

PROJECT #: A633-7

FIGURE: 1

P:\@Drafting\Woodfibre\Drafting Figures\APRX\WLNG Construction Phase 2024\WLNG Construction Phase 2024 - Weekly Reporting.aprx Figure 1 Monitoring and Compliance Locations

Appendix A: East and West Catchment Photographs

Figure 2. Areal view of the East WWTP and East Sedimentation Pond showing the placement of two sediment curtains. Water at the inlet (southwest) section of the pond is brown due to elevated TSS in the influent. A progression to less turbid water is observed in the sediment curtain cells from the pond inlet (southwest corner) to the outlet (northern corner) (May 3, 2024).

Figure 3: Areal view showing the current stage of construction for the West Sedimentation Pond and West WWTP (located west of pond) on May 3, 2024.

Appendix B: East Sedimentation Pond Results

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

Parameter	Units	Lowest Applicable Marine Water Guideline [1, 2]		PE-111578 Discharge Limit *	East Sedimentation Pond			
					Influent	Effluent	Effluent (in-pond, at effluent intake)	Effluent
					SP-E-IN-2	SP-E-OUT	SP-E-NE	SP-E-OUT
					VA24A9284-002	VA24A9284-001	VA24A9527-001	VA24A9775-001
		Long Term	Short Term		29-Apr-2024	29-Apr-2024	01-May-2024	03-May-2024
General Parameters								
pH - Field	pH units	- [6]	-	5.5 - 9.0	8.46	8.70	7.62	7.73
Specific Conductivity - Field	µS/cm	-	-	-	195	247	187	230
Temperature - Field	°C	-	-	-	17.7	14.5	13.1	15.2
Salinity - Field	ppt	-	-	-	0.11	0.15	0.15	0.14
Turbidity - Field	NTU	-	-	-	351	15.3	1.87	22.3
TSS	mg/L	- [6]	-	25	192	9.1	-	-
Dissolved Oxygen - Field	mg/L	>=8	-	-	***6.21***	9.59	11.63	29.46
Anions and Nutrients								
Sulphate	mg/L	-	-	-	22.0	31.6	-	-
Chloride	mg/L	-	-	-	7.2	12.5	-	-
Fluoride	mg/L	-	1.5	-	0.079	0.165	-	-
Ammonia ($N\text{-}NH_3$)	mg/L	Variable [3]	Variable [3]	-	0.0522	0.0106	-	-
Nitrite ($N\text{-}NO_2$)	mg/L	-	-	-	0.0032	0.0046	-	-
Nitrate ($N\text{-}NO_3$)	mg/L	3.7	339	-	0.0318	0.0130	-	-
Total Metals								
Aluminum, total (T-Al)	mg/L	-	-	-	16.9	0.551	0.153	1.6
Antimony, total (T-Sb)	mg/L	-	0.27 [4]	-	0.00344	0.00168	0.00182	0.00212
Arsenic, total (T-As)	mg/L	0.0125	0.0125	-	0.00936	0.00347	0.00322	0.00357
Barium, total (T-Ba)	mg/L	-	-	-	0.121	0.00531	0.00238	0.0175
Beryllium, total (T-Be)	mg/L	0.1	-	-	0.00028	<0.0001	<0.0001	<0.0001
Boron, total (T-B)	mg/L	1.2	-	-	0.085	0.052	0.052	0.064
Cadmium, total (T-Cd)	mg/L	0.00012	-	-	***0.00086***	<0.00004	0.000011	0.0000941
Chromium, total (T-Cr)	mg/L	-	-	-	0.0158	0.00173	0.00135	0.0028
Cobalt, total (T-Co)	mg/L	-	-	-	0.00502	0.00021	<0.0001	0.00051
Copper, total (T-Cu)	mg/L	- [6]	- [6]	0.0043	0.0364	0.00266	0.0019	0.00555
Iron, total (T-Fe)	mg/L	-	-	-	11.3	0.289	0.028	0.936
Lead, total (T-Pb)	mg/L	- [6]	- [6]	0.0035	0.0507	0.0016	0.000183	0.00618
Manganese, total (T-Mn)	mg/L	-	-	-	0.316	0.0101	0.00171	0.0294
Mercury, total (T-Hg) [5]	mg/L	0.000016	-	-	***0.000208***	0.000006	<0.000005	***0.0000197***
Molybdenum, total (T-Mo)	mg/L	-	-	-	0.0209	0.0434	0.0391	0.0341
Nickel, total (T-Ni)	mg/L	0.0083	-	-	***0.00982***	0.00066	<0.0005	0.00196
Selenium, total (T-Se)	mg/L	0.002	-	-	0.000321	0.000267	0.000206	0.000191
Silver, total (T-Ag)	mg/L	0.0015	0.003	-	0.000108	<0.00001	<0.00001	0.000013
Thallium, total (T-Tl)	mg/L	-	-	-	0.000083	<0.00001	<0.00001	<0.00001
Uranium, total (T-U)	mg/L	-	-	-	0.0135	0.0258	0.0221	0.02
Vanadium, total (T-V)	mg/L	- [6]	-	0.0081	0.0358	0.00793	0.00739	0.0097
Zinc, total (T-Zn)	mg/L	- [6]	- [6]	0.0133	0.125	0.0048	<0.003	0.0146
Hexavalent Chromium, total	mg/L	0.0015	-	-	***0.00185***	0.00116	0.00131	0.00117
Dissolved Metals								
Cadmium, dissolved (D-Cd)	mg/L	-	-	-	<0.00001	<0.000015	0.0000079	<0.00001
Copper, dissolved (D-Cu)	mg/L	-	-	-	0.00264	0.00171	0.00173	0.00217
Iron, dissolved (D-Fe)	mg/L	-	-	-	<0.01	<0.01	<0.01	0.092
Lead, dissolved (D-Pb)	mg/L	-	-	-	0.000074	<0.00005	<0.00005	0.0001
Manganese, dissolved (D-Mn)	mg/L	-	-	-	0.00109	0.00113	0.00059	0.00083
Strontium, dissolved (D-Sr)	mg/L	-	-	-	0.0822	0.107	0.111	0.107
Vanadium, dissolved (D-V)	mg/L	-	-	-	0.00872	0.00708	0.00688	0.00707
Zinc, dissolved (D-Zn)	mg/L	-	-	-	0.0011	<0.001	0.0016	0.0014
Polycyclic Aromatic Hydrocarbons (PAHs)								
Acenaphthene	mg/L	0.006	-	-	0.00006	<0.00001	-	-
Acridine	mg/L	-	-	-	<0.000025	<0.00001	-	-
Anthracene	mg/L	-	-	-	0.000072	<0.00001	-	-
Benz(a)anthracene	mg/L	-	-	-	0.000296	<0.00001	-	-
Benzo(a)pyrene	mg/L	0.00001	-	-	***0.000242***	<0.000005	-	-
Chrysene	mg/L	0.0001	-	-	***0.000319***	<0.00001	-	-
Fluoranthene	mg/L	-	-	-	0.000799	0.000021	-	-
Fluorene	mg/L	0.012	-	-	0.000057	<0.00001	-	-
1-methylnaphthalene	mg/L	0.001	-	-	0.000012	<0.00001	-	-
2-methylnaphthalene	mg/L	0.001	-	-	0.000018	<0.00001	-	-
Naphthalene	mg/L	0.001	-	-	<0.00005	<0.00005	-	-
Phenanthrene	mg/L	-	-	-	0.000368	<0.00002	-	-
Pyrene	mg/L	-	-	-	0.000655	0.000017	-	-
Volatile Organic Compounds (VOCs)								
Benzene	mg/L	0.11	-	-	<0.0005	<0.0005	-	-
Ethylbenzene	mg/L	0.25	-	-	<0.0005	<0.0005	-	-
Methyl-tert-butyl-ether	mg/L	5	0.44	-	<0.0005	<0.0005	-	-
Styrene	mg/L	-	-	-	<0.0005	<0.0005	-	-
Toluene	mg/L	0.215	-	-	<0.0004	<0.0004	-	-
Total Xylenes	mg/L	-	-	-	<0.0005	<0.0005	-	-
Chlorobenzene	mg/L	0.025	-	-	<0.0005	<0.0005	-	-
1,2-Dichlorobenzene	mg/L	0.042	-	-	<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.
Results in orange text exceeded the PE11578 East Sedimentation Pond Discharge Limit.
* The PE111578 East Sedimentation Pond Discharge Limit applies only to the point of discharge from the East Sedimentation Pond (SP-E-Out).
[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] 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).
[4] The working BC WQG for trivalent antimony [SB(III)] is 0.27 mg/L and is applied to total antimony results.
[5] When MeHg ⩽ 0.5% of total Hg, BC WQG = 0.00002 mg/L.
[6] Where discharge limits apply, the water quality guideline was not evaluated.
The lowest applicable guidelines are shown in the table; however, water quality data was screened to all applicable guidelines.

Table B-2: Summary of East Sedimentation Pond Daily Field Parameters Received at the Time of Reporting.

Station ID	Date	Time	Temperature	DO	Salinity	Turbidity	pH	Conductivity	Visibility of Sheen
			°C	mg/L	ppt	NTU	s.u.	µS/cm	
SP-E-NE	28-04-2024	9:32	12.1	9.95	0.14	2.66	7.69	223.1	No
SP-E-IN-2	29-04-2024	16:38	17.7	6.21	0.11	351	8.46	194.5	No
SP-E-OUT	29-04-2024	14:26	14.5	9.59	0.15	15.25	8.7	246.7	No
SP-E-NE	29-04-2024	9:24	11.6	10.9	0.15	7.61	8.08	228.5	No
SP-E-NE	30-04-2024	16:54	14.1	10.54	0.16	3.84	7.93	256.5	No
SP-E-NE	01-05-2024	10:16	13.1	11.63	0.15	1.87	7.62	-[1]	No
SP-E-NE	02-05-2024	13:11	15.2	11.16	0.15	1.17	7.91	248.8	No
SP-E-OUT	03-05-2024	16:05	15.2	29.46	0.14	22.3	7.73	229.5	No
SP-E-NE	03-05-2024	15:38	15.3	27.65	0.15	11.8	7.55	246.4	No
SP-E-OUT	04-05-2024	14:32	15.6	7.02	0.13	20.5	8.16	219.7	No
SP-E-NE	04-05-2024	14:11	15.5	17.47	0.15	19.6	6.75	252.7	No

No water sources were pumped to the East Sedimentation Pond April 28, and April 30 – May 4, therefore station SP-E-IN-2 was not sampled.
Intermittent discharge from the East Sedimentation Pond occurred April 28 – 29 and May 3 – 4.
[1]Result not available..

Appendix C: East Wastewater Treatment Plant Results

Table C-1: Summary of East Wastewater Treatment Plant Daily Field Parameters Received at the Time of Reporting.

Station ID	Date	Time	Temperature	DO	Salinity	Turbidity	pH	Conductivity	Visibility of Sheen
			°C	mg/L	ppt	NTU	s.u.	µS/cm	
WWTP-E-IN	28-04-2024	9:26	12.3	10.43	0.14	60.00	7.65	215.2	No
WWTP-E-OUT	28-04-2024	9:28	10.5	11.35	0.14	3.13	7.48	212.7	No
WWTP-E-IN	29-04-2024	9:21	11.4	10.39	0.13	83.00	8.15	207.1	No
WWTP-E-OUT	29-04-2024	9:19	10.6	12.2	0.15	2.52	7.7	228.8	No
WWTP-E-IN	30-04-2024	16:53	12.8	11.31	0.14	57.00	7.94	228.8	No
WWTP-E-OUT	30-04-2024	16:55	14.0	10.37	0.16	0.13	7.9	259.4	No
WWTP-E-IN	01-05-2024	10:18	12.9	10.23	0.14	32.13	8.16	224.8	No
WWTP-E-OUT	01-05-2024	10:17	12.2	10.99	0.14	0.25	7.85	222.4	No
WWTP-E-IN	02-05-2024	13:19	22.8	8.47	0.14	11.10	8.03	287	No
WWTP-E-OUT	02-05-2024	13:07	14.4	10.2	0.15	1.03	7.2	256	No
WWTP-E-IN	03-05-2024	15:22	15.1	16.28	0.14	26.40	8.02	228.5	No
WWTP-E-OUT	04-05-2024	14:22	15.0	10.14	0.14	1.16	7.84	232.4	No

The East WWTP was not actively discharging to the East Sedimentation Pond at the time of sample collection on May 3, therefore station WWTP-E-OUT was not sampled.
No water sources were pumped to the East WWTP at the time of sample collection on May 4, therefore station WWTP-E-IN was not sampled.

Appendix D: Non-Contact Diversion Outlet Results

Table D-1: Summary of Non-Contact Diversion Outlet Water Quality Results Received at the Time of Reporting.

Parameter	Unit	Lowest Applicable Guideline [1, 2]		OUT-01	OUT-02	OUT-06	OUT-11
				VA24A9285-003	VA24A9285-004	VA24A9263-003	VA24A9285-005
		Long Term	Short Term	29-Apr-2024	29-Apr-2024	28-Apr-2024	29-Apr-2024
General Parameters							
pH - Field	pH units	6.5 - 9.0	-	6.6	6.5	7.9	7.5
Specific Conductivity - Field	µS/cm	-	-	38.9	37.1	40.6	41.9
Temperature - Field	°C	-	-	10.2	10.4	9.9	9.7
Salinity - Field	ppt	-	-	0.03	0.03	0.03	0.03
Turbidity - Field	NTU	-	-	0.0	3.11	1.18	0.61
TSS	mg/L	-	-	<3	<3	<3	<3
Dissolved Oxygen - Field	mg/L	>=8	>=5	11.5	10.8	11.1	12.1
Anions and Nutrients							
Sulphate	mg/L	128 [3]	-	2.35	1.76	3.07	2.96
Chloride	mg/L	120	600	0.89	<0.5	<0.5	<0.55
Fluoride	mg/L	-	0.4 - 0.7 [3]	<0.02	<0.02	<0.02	<0.02
Ammonia (N-NH_3)	mg/L	1.35 - 1.94 [3]	7.04 - 26.8 [3]	<0.005	<0.005	0.0073	<0.005
Nitrite (N-NO_2)	mg/L	0.02 [3]	0.06 [3]	<0.001	<0.001	0.0012	<0.001
Nitrate (N-NO_3)	mg/L	3	32.8	0.0747	0.0806	0.133	0.113
Total Metals							
Aluminum, total (T-Al)	mg/L	0.026 - 0.33 [3]	-	***0.104***	***0.238***	0.288	0.0937
Antimony, total (T-Sb)	mg/L	0.074	-	<0.0001	<0.0001	0.00054	<0.0001
Arsenic, total (T-As)	mg/L	0.005	-	0.00011	0.00012	0.00068	0.00011
Barium, total (T-Ba)	mg/L	1	-	0.00361	0.00387	0.00355	0.00542
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	<0.01	<0.01	<0.01
Cadmium, total (T-Cd)	mg/L	0.000036 - 0.000043 [3]	0.00011 - 0.00042 [3]	<0.000005	0.0000115	0.0000081	0.0000074
Chromium, total (T-Cr) [5]	mg/L	0.001	-	<0.0005	<0.0005	0.0007	<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	-	-	0.00073	0.00171	0.00125	0.00082
Iron, total (T-Fe)	mg/L	0.3	1	0.039	0.028	0.069	0.085
Lead, total (T-Pb)	mg/L	0.0034 - 0.0037 [3]	0.003 - 0.011 [3]	<0.00005	0.000144	0.000358	0.000091
Manganese, total (T-Mn)	mg/L	0.77 [3]	0.82 [3]	0.00154	0.00185	0.00308	0.00429
Mercury, total (T-Hg)	mg/L	0.00002	-	<0.000005	<0.000005	0.0000051	<0.000005
Molybdenum, total (T-Mo)	mg/L	0.073	46	0.000323	0.00136	0.000931	0.000726
Nickel, total (T-Ni)	mg/L	0.025 [3]	-	<0.0005	<0.0005	<0.0005	<0.0005
Selenium, total (T-Se)	mg/L	0.001	-	<0.00005	0.000052	<0.00005	<0.00005
Silver, total (T-Ag)	mg/L	0.00005 [3]	0.0001 [3]	<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	0.000075	0.000376	0.000187	0.000102
Vanadium, total (T-V)	mg/L	0.12	-	<0.0005	<0.0005	0.00128	<0.0005
Zinc, total (T-Zn)	mg/L	-	-	0.0134	<0.003	<0.003	<0.003
Hexavalent Chromium, total	mg/L	0.001	-	<0.0005	<0.0005	0.00075	<0.0005
Dissolved Metals							
Cadmium, dissolved (D-Cd)	mg/L	0.000018 - 0.000066 [3]	0.000038 - 0.00012 [3]	<0.000005	0.0000085	<0.000005	0.0000051
Copper, dissolved (D-Cu)	mg/L	0.0002 - 0.0016 [3]	0.0004 - 0.0094 [3]	***0.00071***	***0.0016***	0.00106	***0.00065***
Iron, dissolved (D-Fe)	mg/L	-	0.35	0.031	0.016	0.017	0.02
Lead, dissolved (D-Pb)	mg/L	0.0032 - 0.0064 [3]	-	<0.00005	0.000111	0.000098	<0.00005
Manganese, dissolved (D-Mn)	mg/L	0.29 - 0.38 [3]	1.97 [3]	0.0014	0.00137	0.00145	0.00181
Strontium, dissolved (D-Sr)	mg/L	2.5	-	0.00964	0.0114	0.0257	0.0234
Vanadium, dissolved (D-V)	mg/L	-	-	<0.0005	<0.0005	0.00109	<0.0005
Zinc, dissolved (D-Zn)	mg/L	0.0030 - 0.015 [3]	0.0092 - 0.015 [3]	***0.013***	0.0011	<0.001	0.0018
Polycyclic Aromatic Hydrocarbons (PAHs)							
Acenaphthene	mg/L	0.0058	-	-	-	-	-
Acridine	mg/L	0.003	-	-	-	-	-
Anthracene	mg/L	0.000012	-	-	-	-	-
Benz(a)anthracene	mg/L	0.000018	-	-	-	-	-
Benzo(a)pyrene	mg/L	0.00001	-	-	-	-	-
Chrysene	mg/L	-	-	-	-	-	-
Fluoranthene	mg/L	0.00004	-	-	-	-	-
Fluorene	mg/L	0.003	-	-	-	-	-
1-methylnaphthalene	mg/L	-	-	-	-	-	-
2-methylnaphthalene	mg/L	-	-	-	-	-	-
Naphthalene	mg/L	0.001	0.001	-	-	-	-
Phenanthrene	mg/L	0.0003	-	-	-	-	-
Pyrene	mg/L	0.00002	-	-	-	-	-
Quinoline	mg/L	0.0034	-	-	-	-	-
Volatile Organic Compounds (VOCs)							
Benzene	mg/L	0.04	-	-	-	-	-
Ethylbenzene	mg/L	0.09	-	-	-	-	-
Methyl-tert-butyl-ether	mg/L	10	3.4	-	-	-	-
Styrene	mg/L	0.072	-	-	-	-	-
Toluene	mg/L	0.0005	-	-	-	-	-
Total Xylenes	mg/L	0.03	-	-	-	-	-
Chlorobenzene	mg/L	-	-	-	-	-	-
1,2-Dichlorobenzene	mg/L	-	-	-	-	-	-

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, 2023). 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] 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.
[4] When MeHg $\leqslant$ 0.5% of total Hg, BC WQG = 0.00002 mg/L.
[5] 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.
The lowest applicable guidelines are shown in the table; however, water quality data was screened to all applicable guidelines.

Appendix E: Freshwater Receiving Environment Results

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

Parameter	Unit	Lowest Applicable Guideline [1, 2]		Woodfibre Creek (near mouth)	Mill Creek (upstream of third bridge)	East Creek (outfall culvert)	Mill Creek (diversion inlet)
				SW-01	SW-02	SW-04	SW-07
				VA24A9285-001	VA24A9263-002	VA24A9285-002	VA24A9263-001
		Long Term	Short Term	29-Apr-2024	28-Apr-2024	29-Apr-2024	28-Apr-2024
General Parameters							
pH - Field	pH units	6.5 - 9.0	-	***6.1***	6.6	7.1	6.9
Specific Conductivity - Field	µS/cm	-	-	32.9	12.2	64.3	35.8
Temperature - Field	°C	-	-	5.1	5.5	9.4	5.1
Salinity - Field	ppt	-	-	0.02	0.01	0.04	0.03
Turbidity - Field	NTU	-	-	0.08	0	1.19	0.0
TSS	mg/L	-	-	<3	<3	<3	<3
Dissolved Oxygen - Field	mg/L	>=8	>=5	14.5	20.8	12.7	16.3
Anions and Nutrients							
Sulphate	mg/L	128 [3]	-	0.46	1.35	2.91	1.32
Chloride	mg/L	120	600	<0.5	<0.5	<0.55	<0.5
Fluoride	mg/L	-	0.4 - 0.7 [3]	<0.02	<0.02	<0.02	<0.02
Ammonia (N-NH_3)	mg/L	1.35 - 1.94 [3]	7.04 - 26.8 [3]	<0.005	<0.005	<0.005	<0.005
Nitrite (N-NO_2)	mg/L	0.02 [3]	0.06 [3]	<0.001	<0.001	<0.001	<0.001
Nitrate (N-NO_3)	mg/L	3	32.8	0.0261	0.0370	0.116	0.0354
Total Metals							
Aluminum, total (T-Al)	mg/L	0.026 - 0.33 [3]	-	***0.148***	***0.133***	0.0805	***0.135***
Antimony, total (T-Sb)	mg/L	0.074	-	<0.0001	<0.0001	<0.0001	<0.0001
Arsenic, total (T-As)	mg/L	0.005	-	<0.0001	<0.0001	0.00011	<0.0001
Barium, total (T-Ba)	mg/L	1	-	0.0016	0.00194	0.00514	0.00174
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	<0.01	<0.01	<0.01
Cadmium, total (T-Cd)	mg/L	0.000036 - 0.000043 [3]	0.00011 - 0.00042 [3]	<0.000005	0.000005	0.0000078	<0.000005
Chromium, total (T-Cr) [5]	mg/L	0.001	-	<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	0.00075	<0.0005
Iron, total (T-Fe)	mg/L	0.3	1	0.028	0.024	0.078	0.023
Lead, total (T-Pb)	mg/L	0.0034 - 0.0037 [3]	0.003 - 0.011 [3]	0.000053	<0.00005	0.000068	<0.00005
Manganese, total (T-Mn)	mg/L	0.77 [3]	0.82 [3]	0.00088	0.00086	0.00418	0.00082
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	0.000182	0.000301	0.000691	0.000268
Nickel, total (T-Ni)	mg/L	0.025 [3]	-	<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 [3]	0.0001 [3]	<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	0.000532	0.000208	0.000106	0.000211
Vanadium, total (T-V)	mg/L	0.12	-	<0.0005	<0.0005	<0.0005	<0.0005
Zinc, total (T-Zn)	mg/L	-	-	<0.003	<0.003	<0.003	<0.003
Hexavalent Chromium, total	mg/L	0.001	-	<0.0005	<0.0005	<0.0005	<0.0005
Dissolved Metals							
Cadmium, dissolved (D-Cd)	mg/L	0.000018 - 0.000066 [3]	0.000038 - 0.00012 [3]	<0.000005	<0.000005	0.0000069	<0.000005
Copper, dissolved (D-Cu)	mg/L	0.0002 - 0.0016 [3]	0.0004 - 0.0094 [3]	***0.00023***	***0.00024***	***0.00065***	***0.00022***
Iron, dissolved (D-Fe)	mg/L	-	0.35	0.018	0.011	0.032	0.011
Lead, dissolved (D-Pb)	mg/L	0.0032 - 0.0064 [3]	-	<0.00005	<0.00005	<0.00005	<0.00005
Manganese, dissolved (D-Mn)	mg/L	0.29 - 0.38 [3]	1.97 [3]	0.00044	0.00046	0.00244	0.00049
Strontium, dissolved (D-Sr)	mg/L	2.5	-	0.00287	0.0042	0.022	0.00386
Vanadium, dissolved (D-V)	mg/L	-	-	<0.0005	<0.0005	<0.0005	<0.0005
Zinc, dissolved (D-Zn)	mg/L	0.0030 - 0.015 [3]	0.0092 - 0.015 [3]	<0.001	<0.001	0.0018	<0.001
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
Quinoline	mg/L	0.0034	-	<0.00005	<0.00005	<0.00005	<0.00005
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, 2023). 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] 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.
[4] When MeHg ⩽ 0.5% of total Hg, BC WQG = 0.00002 mg/L.
[5] 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.
The lowest applicable guidelines are shown in the table; however, water quality data was screened to all applicable guidelines.

Appendix F: Estuarine Receiving Environment Results

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

Parameter	Unit	Lowest Applicable Guideline [1, 2]		Mill Creek (estuary, near mouth)
				SW-03
				VA24A9263-004
		Long Term	Short Term	28-Apr-2024
General Parameters				
pH - Field	pH units	7.0 - 8.7	-	7.1
Specific Conductivity - Field	µS/cm	-	-	40.5
Temperature - Field	°C	-	-	9.9
Salinity - Field	ppt	-	-	0.03
Turbidity - Field	NTU	-	-	0.86
TSS	mg/L	-	-	<3
Dissolved Oxygen - Field	mg/L	-	-	11.03
Anions and Nutrients				
Sulphate	mg/L	-	-	1.58
Chloride	mg/L	-	-	<0.5
Fluoride	mg/L	-	-	<0.02
Ammonia (N-NH_3)	mg/L	-	-	<0.005
Nitrite (N-NO_2)	mg/L	-	-	<0.001
Nitrate (N-NO_3)	mg/L	-	-	0.0405
Total Metals				
Aluminum, total (T-Al)	mg/L	-	-	0.201
Antimony, total (T-Sb)	mg/L	-	-	<0.0001
Arsenic, total (T-As)	mg/L	-	-	0.00013
Barium, total (T-Ba)	mg/L	-	-	0.00242
Beryllium, total (T-Be)	mg/L	-	-	<0.0001
Boron, total (T-B)	mg/L	-	-	<0.01
Cadmium, total (T-Cd)	mg/L	-	-	0.0000066
Chromium, total (T-Cr)	mg/L	-	-	<0.0005
Cobalt, total (T-Co)	mg/L	-	-	<0.0001
Copper, total (T-Cu)	mg/L	0.002	0.003	<0.0005
Iron, total (T-Fe)	mg/L	-	-	0.068
Lead, total (T-Pb)	mg/L	0.002	0.14	0.000142
Manganese, total (T-Mn)	mg/L	-	-	0.00193
Mercury, total (T-Hg) [3]	mg/L	0.00002	-	<0.000005
Molybdenum, total (T-Mo)	mg/L	-	-	0.000385
Nickel, total (T-Ni)	mg/L	-	-	<0.0005
Selenium, total (T-Se)	mg/L	-	-	<0.00005
Silver, total (T-Ag)	mg/L	0.0015	0.003	<0.00001
Thallium, total (T-Tl)	mg/L	-	-	<0.00001
Uranium, total (T-U)	mg/L	-	-	0.000234
Vanadium, total (T-V)	mg/L	-	-	<0.0005
Zinc, total (T-Zn)	mg/L	-	-	<0.003
Hexavalent Chromium, total	mg/L	-	-	<0.0005
Dissolved Metals				
Cadmium, dissolved (D-Cd)	mg/L	-	-	0.0000056
Copper, dissolved (D-Cu)	mg/L	-	-	0.00028
Iron, dissolved (D-Fe)	mg/L	-	-	0.011
Lead, dissolved (D-Pb)	mg/L	-	-	<0.00005
Manganese, dissolved (D-	mg/L	-	-	0.0005
Strontium, dissolved (D-Sr)	mg/L	-	-	0.00543
Vanadium, dissolved (D-V)	mg/L	-	-	<0.0005
Zinc, dissolved (D-Zn)	mg/L	-	-	<0.001
Polycyclic Aromatic Hydrocarbons (PAHs)				
Acenaphthene	mg/L	-	-	<0.00001
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	-	-	<0.00001
Fluorene	mg/L	-	-	<0.00001
1-methylnaphthalene	mg/L	-	-	<0.00001
2-methylnaphthalene	mg/L	-	-	<0.00001
Naphthalene	mg/L	-	-	<0.00005
Phenanthrene	mg/L	-	-	<0.00002
Pyrene	mg/L	-	-	<0.00001
Quinoline	mg/L	-	-	<0.00005
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).
[3] When MeHg $\leqslant$ 0.5% of total Hg, BC WQG = 0.00002 mg/L.

Appendix G: Marine Water Receiving Environment Results

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

Parameter	Unit	Lowest Applicable Guideline [1, 2]		Station IDZ-E1			Station IDZ-E2		
				0.5 m Below Surface	2 m Below Surface	2 m Above Seafloor	0.5 m Below Surface	2 m Below Surface	2 m Above Seafloor
				IDZ-E1-0.5	IDZ-E1-2m	IDZ-E1-SF	IDZ-E2-0.5	IDZ-E2-2m	IDZ-E2-SF
				VA24A9402-001	VA24A9402-002	VA24A9402-003	VA24A9402-004	VA24A9402-005	VA24A9402-006
		Long Term	Short Term	30-Apr-2024	30-Apr-2024	30-Apr-2024	30-Apr-2024	30-Apr-2024	30-Apr-2024
General Parameters									
pH - Field	pH units	7.0 - 8.7	-	8.45	8.60	8.40	8.40	8.58	8.51
Specific Conductivity - Field	µS/cm	-	-	10021	27486	30261	9323	24796	29805
Temperature - Field	°C	-	-	10.6	11.1	10.0	10.7	10.6	10.7
Salinity - Field	ppt	Narrative[3]	-	8.62	23.66	27.63	7.43	21.50	26.01
Turbidity - Field	NTU	Narrative[3]	Narrative[3]	12.3	0.01	0.05	1.15	0.34	0.04
TSS	mg/L	Narrative[3]	Narrative[3]	<2	<2	<2	<2	<2	<2
Dissolved Oxygen - Field	mg/L	>=8	-	13.32	13.08	12.60	13.17	12.70	11.98
Anions and Nutrients									
Sulphate	mg/L	-	-	576	1830	1900	427	436	2080
Chloride	mg/L	-	-	4490	13400	14200	3600	3710	15300
Fluoride	mg/L	-	1.5	<1	<1	<1	<1	<1	<1
Ammonia (N-NH_3)	mg/L	Variable [4]	Variable [4]	0.0083	0.0105	0.0090	0.0069	0.0077	0.0157
Nitrite (N-NO_2)	mg/L	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrate (N-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	-	-	0.105	0.0113	0.008	0.109	0.116	0.0078
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	0.00078	0.00271	0.00307	0.00068	0.00076	0.00319
Barium, total (T-Ba)	mg/L	-	-	0.0067	0.0045	0.0046	0.0061	0.007	0.0052
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	-	0.88	***3.27***	***3.42***	0.83	0.96	***3.79***
Cadmium, total (T-Cd)	mg/L	0.00012	-	0.000021	0.000057	0.000057	<0.00002	<0.00002	0.000053
Chromium, total (T-Cr)	mg/L	-	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Cobalt, total (T-Co)	mg/L	-	-	0.000097	0.000058	0.000061	0.000082	0.000091	0.000059
Copper, total (T-Cu)	mg/L	0.002	0.003	0.00083	<0.0005	0.00064	0.00072	0.00086	<0.0005
Iron, total (T-Fe)	mg/L	-	-	0.13	0.013	0.011	0.119	0.14	0.017
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	-	-	0.00735	0.00208	0.00164	0.0077	0.00814	0.00119
Mercury, total (T-Hg)	mg/L	0.000016	-	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Molybdenum, total (T-Mo)	mg/L	-	-	0.00254	0.00773	0.00837	0.0022	0.00254	0.00889
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	-	-	0.000708	0.00221	0.00229	0.000624	0.000678	0.00244
Vanadium, total (T-V)	mg/L	0.005 [7]	-	0.0008	0.00113	0.00123	0.00069	0.00082	0.00127
Zinc, total (T-Zn)	mg/L	0.01	0.055	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Hexavalent Chromium, total	mg/L	0.0015	-	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015
Dissolved Metals									
Cadmium, dissolved (D-Cd)	mg/L	-	-	<0.00002	0.000053	0.000062	<0.00002	0.000025	0.000046
Copper, dissolved (D-Cu)	mg/L	-	-	0.00065	<0.0005	<0.0005	0.00055	0.00068	<0.0005
Iron, dissolved (D-Fe)	mg/L	-	-	0.02	<0.01	<0.01	0.021	0.027	<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	-	-	0.00581	0.0021	0.00104	0.00623	0.00644	0.00103
Strontium, dissolved (D-Sr)	mg/L	-	-	1.70	5.19	6.38	1.60	1.67	5.97
Vanadium, dissolved (D-V)	mg/L	-	-	0.00051	0.00111	0.0013	0.00056	0.0006	0.0012
Zinc, dissolved (D-Zn)	mg/L	-	-	<0.001	<0.001	<0.001	<0.001	0.0023	<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	-	0.000013	<0.00001	<0.00001	0.000011	<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
Quinoline	mg/L	-	-	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
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 water quality data presented in the table were collected when the site was discharging, therefore the guidelines were 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] When MeHg ⩽ 0.5% of total Hg, BC WQG = 0.00002 mg/L.

[7] 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.

Table G-2: Summary of Marine Water Quality Results Received at the Time of Reporting

Parameter	Unit	Lowest Applicable Guideline [1, 2]		Station WQR1			Station WQR2		
				0.5 m Below Surface	2 m Below Surface	2 m Above Seafloor	0.5 m Below Surface	2 m Below Surface	2 m Above Seafloor
				WQR1-0.5	WQR1-2m	WQR1-SF	WQR2-0.5	WQR2-2m	WQR2-SF
				VA24A9402-007	VA24A9402-008	VA24A9402-009	VA24A9402-010	VA24A9402-011	VA24A9402-012
		Long Term	Short Term	30-Apr-2024	30-Apr-2024	30-Apr-2024	30-Apr-2024	30-Apr-2024	30-Apr-2024
General Parameters									
pH - Field	pH units	7.0 - 8.7	-	8.46	8.62	7.78	8.24	8.62	7.81
Specific Conductivity - Field	µS/cm	-	-	9201	12846	39991	7391	8240	30966
Temperature - Field	°C	-	-	10.9	10.4	8.7	9.3	9.1	8.8
Salinity - Field	ppt	Narrative[3]	-	7.50	10.75	28.89	6.00	7.19	21.71
Turbidity - Field	NTU	Narrative[3]	Narrative[3]	1.18	1.04	0.22	1.37	1.30	0.30
TSS	mg/L	Narrative[3]	Narrative[3]	<2	<2	<2	<2	<2	<2
Dissolved Oxygen - Field	mg/L	>=8	-	11.8	12.45	***7.18***	11.65	13.1	***7.31***
Anions and Nutrients									
Sulphate	mg/L	-	-	825	894	2040	460	1170	2160
Chloride	mg/L	-	-	6280	7030	15400	3840	8880	15800
Fluoride	mg/L	-	1.5	<1	<1	<1	<1	<1	<1
Ammonia (N-NH_3)	mg/L	Variable [4]	Variable [4]	0.0093	0.0100	0.0324	0.0090	0.0088	0.0341
Nitrite (N-NO_2)	mg/L	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrate (N-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	-	-	0.0805	0.0477	0.012	0.117	0.0569	0.0113
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	0.00137	0.00192	0.00331	0.0008	0.00186	0.00351
Barium, total (T-Ba)	mg/L	-	-	0.0067	0.0058	0.0083	0.0072	0.0063	0.0097
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	-	***1.62***	***2.33***	***3.94***	0.96	***2.13***	***3.88***
Cadmium, total (T-Cd)	mg/L	0.00012	-	0.000037	0.000042	0.000084	0.000023	0.000041	0.000085
Chromium, total (T-Cr)	mg/L	-	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Cobalt, total (T-Co)	mg/L	-	-	0.000086	0.000073	0.000057	0.000096	0.00008	0.000055
Copper, total (T-Cu)	mg/L	0.002	0.003	0.00075	0.0007	<0.0005	0.00087	0.00097	<0.0005
Iron, total (T-Fe)	mg/L	-	-	0.108	0.058	0.017	0.146	0.075	0.014
Lead, total (T-Pb)	mg/L	0.002	0.14	<0.0001	<0.0001	<0.0001	<0.0001	0.00012	<0.0001
Manganese, total (T-Mn)	mg/L	-	-	0.00671	0.00462	0.00133	0.0081	0.00509	0.00116
Mercury, total (T-Hg)	mg/L	0.000016	-	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Molybdenum, total (T-Mo)	mg/L	-	-	0.00388	0.00548	0.0094	0.0024	0.00528	0.00912
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	-	-	0.00102	0.0016	0.0026	0.000618	0.00156	0.00256
Vanadium, total (T-V)	mg/L	0.005 [7]	-	0.00089	0.00096	0.00148	0.00082	0.00102	0.00142
Zinc, total (T-Zn)	mg/L	0.01	0.055	<0.003	<0.003	0.0036	<0.003	<0.003	<0.003
Hexavalent Chromium, total	mg/L	0.0015	-	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015
Dissolved Metals									
Cadmium, dissolved (D-Cd)	mg/L	-	-	0.000025	0.00004	0.000069	0.000021	0.000038	0.000082
Copper, dissolved (D-Cu)	mg/L	-	-	0.00061	0.00071	0.00059	0.00065	0.00063	0.00061
Iron, dissolved (D-Fe)	mg/L	-	-	0.021	<0.01	<0.01	0.03	<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	-	-	0.00588	0.00375	0.00074	0.00644	0.00182	0.00051
Strontium, dissolved (D-Sr)	mg/L	-	-	1.82	3.74	6.20	1.35	5.04	6.50
Vanadium, dissolved (D-V)	mg/L	-	-	0.00058	0.00088	0.0013	0.0005	0.00107	0.00136
Zinc, dissolved (D-Zn)	mg/L	-	-	0.0019	<0.001	<0.001	0.0014	<0.001	0.0012
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
Quinoline	mg/L	-	-	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
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.

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[5] The working BC WQG for trivalent antimony [SB(III)] is 0.27 mg/L and is applied to total antimony results.

[6] When MeHg ⩽ 0.5% of total Hg, BC WQG = 0.00002 mg/L.

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The lowest applicable guidelines are shown in the table; however, water quality data was screened to all applicable guidelines.