TECHNICAL MEMORANDUM

To:	**Ian McAllister, Ashleigh Crompton, Mike Champion, Jackie Boruch and Ryan Schucroft (Woodfibre LNG)**	**Date:**	**24 Jan 2025**
From:	**Holly Pelletier, Cheng Kuang and Patrick Mueller (Lorax)**	**Project #:**	**A633-9**
Subject:	**PE-111578 Weekly Discharge and Compliance Report #47 for January 12 – 18**		

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 associated WDA discharge and compliance monitoring program 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 to Woodfibre LNG.

This technical memorandum (Report #47) was prepared by Lorax Environmental and summarizes WDA monitoring conducted for the period of January 12 – 18. Monitoring data and pending results from prior monitoring periods available at the time of reporting are tabulated and included as appendices to this memorandum. Report #47 has been prepared to meet the requirements specified in Condition 4.2 of 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."

Site layout and water management figures, and site images are included in Appendix A. Monitoring results are tabulated in Appendix B through Appendix D for contact water, treated water and receiving environment samples.

1. Current Conditions

1.1 Water Management Infrastructure

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, overburden and bedrock excavation, pouring of concrete foundations and construction of contact water management facilities. Shoring works along the foreshore areas were initiated in December 2023, and in early 2024 construction of water management infrastructure commenced and has continued through the January 12 – 18, 2025 monitoring period. The East Wastewater Treatment Plant (WWTP), East Sedimentation Pond and West Sedimentation Pond are commissioned for operation.

Operation of the West WWTP was suspended September 25, 2024. The suspension was implemented for the temporary reconfiguration of the plant to conduct pilot-scale evaluation of alternative treatment processes for improving treatment outcomes. Any process modifications that may result from the pilot-scale evaluation will be submitted to BCER for approval prior to full-scale implementation. Site waters that require treatment will continue to be directed to the East WWTP while the operation of the West WWTP is suspended.

Non-contact water diversion ditches west of Mill Creek have been fully or partially upgraded and discharge to Mill Creek at station OUT-06, or to Howe Sound at station OUT-02 (Appendix A, Figure 1). During heavy precipitation non-contact water from the diversion ditches is also conveyed to Howe Sound via station OUT-01. East of Mill Creek, non-contact water is diverted around the East Catchment along pre-existing road ditches that flow to East Creek or Mill Creek. To facilitate the replacement of the East Creek discharge culvert at OUT-12, the lower reach of East Creek was temporarily diverted to an adjacent culvert, OUT-11, on September 17, 2024.

The East and West catchments conveyance ditches described in PE- 111578 were designed to transport non-contaminated contact water (*i.e.,* stormwater) to the East and West sedimentation ponds and will be constructed following completion of site preparation activities (*e.g.*, site grading, bedrock excavation) along the ditch lines. Until the ditches are operational, contact waters within the catchments are managed to remain on site using a system of berms, sumps, temporary ditches and baker tanks for intermediate storage, and are then directed to the East and West Sedimentation Ponds for TSS settling prior to discharge.

Flocculant-based TSS settling systems are used at the East and West Sedimentation Ponds to remove TSS from non-contaminated contact water at the time of discharge. Some of the clarified water may be recirculated back to the ponds. The first West Sedimentation Pond TSS settling system (ESC) was commissioned for use on September 25, 2024 with an 820 m^3/day installed capacity. A second TSS settling system (W500GPM) was added and commissioned for use on

November 28 and provides an additional 2,725 m^3/day installed capacity for clarifying water. A TSS settling system (E500GPM) for the East Sedimentation Pond was commissioned on December 4, 2024 also with 2,725 m^3/day installed capacity.

Contaminated contact water from within the East and West Catchments, and non-contaminated contact water stored in the East Sedimentation Pond are directed to the East WWTP for treatment prior to discharge to Howe Sound. Direct discharge of East WWTP treated contact water to Howe Sound has been implemented since October 28, 2024.

The East and West Catchment permanent outfall structures have not been completed. Temporary discharge systems (*i.e.*, pumps, hosing and diffusors) are used to convey clarified or treated effluent to the discharge locations authorized for the East and West Catchments. In the East Catchment, treated WWTP effluent and clarified E500GPM effluent are combined to discharge at location SP-E-OUT since December 2, 2024. Similarly, the West Catchment discharge location, SP-W-OUT receives the combined clarified effluents from the ESC and W500GPM TSS settling systems since November 28, 2024. Each of the authorized discharge locations has an initial dilution zone (IDZ) where discharged water mixes with Howe Sound surface waters. The IDZ is defined in PE-111578 and extends 150 m from each point of discharge into Howe Sound.

The construction phase water management layout and monitoring stations are shown in Appendix A, Figure 1. Contact water collection and dewatering locations and photographs of the sedimentation ponds are shown in Appendix A, Figure 2 through Figure 5.

1.2 Weather and Water Management Activities

Weather observed during the monitoring period (January 12 – 18) was consistent with negligible precipitation (<0.5 mm). The daily weather conditions are summarized in Table 1.

Table 1: Summary of Certified Project Area (CPA) Daily Weather Conditions.

Date	Precipitation (mm)	Max. Temp (°C)	Min. Temp (°C)	Weather Description
01-12-2025	0	8.1	0.7	Mix of Sun and Cloud
01-13-2025	0	3.8	-0.2	Sun
01-14-2025	0	5.4	0.7	Sun
01-15-2025	0.4	8.6	1.0	Mix of Sun and Cloud
01-16-2025	0	9.2	0.9	Sun
01-17-2025	0	7.6	-0.6	Sun
01-18-2025	0	4.9	-0.8	Sun

Note: Data retrieved from the Stantec Woodfibre site weather station.

During the January 12 – 18 monitoring period, the East Sedimentation Pond received contact water from Area 1100 Sump, Area 1200-C Contact Sump, Area 1300 Sump and Collection Area, and the Hydrovac Pit (refer to Appendix A, Figure 2).

Routine operation of the East WWTP continued during the monitoring period except on January 12, 17 and 18 when the system was not operational. Contact waters from the West Catchment wash bay were periodically directed to the East WWTP for treatment, as well as water stored in the East Sedimentation Pond (Appendix A, Figure 2 and Figure 3). A total of 114 m^3 of treated effluent from the East WWTP was combined with a total of 388 m^3 of East Sedimentation Pond effluent clarified through the TSS settling system (E500GPM) and directed to the authorized discharge location SP-E-OUT on January 16. Daily discharge volumes from East WWTP, East TSS settling system (E500GPM) and the authorized discharge location SP-E-OUT are provided in Appendix B, Table B-6.

During the January 12 – 18 monitoring period, contact waters from Area 4100 sump and the Surge Pond were directed to the West Sedimentation Pond (Appendix A, Figure 3). West Sedimentation Pond water was clarified through the W500GPM TSS settling systems prior to discharge. The ESC TSS settling system was not operational during the monitoring period. A total of 2,366 m^3 of effluent was clarified through the W500GPM system and directed to the SP-W-OUT discharge location on January 14, 15, and 16. Daily clarified effluent volumes from the TSS settling systems, and volumes discharged to Howe Sound from the West Catchment authorized discharge location (SP-W-OUT) are provided in Appendix C (Table C-6).

2. Monitoring Summary

The locations of the compliance and supplementary monitoring stations are shown on Figure 1. 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.

Compliance and supplementary monitoring stations have been established:

- Non-contact diversion ditch outlet monitoring stations (OUT-01, OUT-02, OUT-06, and OUT-11). East Creek water was temporarily diverted to OUT-11 on September 17 and is monitored at the inlet to temporary diversion (station SW-04), therefore OUT-11 is not currently monitored.
- Creek water monitoring stations for Woodfibre, Mill and East Creek (SW-01, SW-02, SW-03, SW-04, SW-07).
- Contact water monitoring locations (SP-E-IN, SP-E-NE, SP-E-NW, E500GPM-IN, E500GPM-OUT, WWTP-E-IN, WWTP-E-OUT, SP-W-IN, SP-W-W, SP-W-E, ESC-W-IN, ESC-W-OUT, W500GPM-IN and W500GPM-OUT.).
- Effluent compliance stations (SP-E-OUT and SP-W-OUT)

- Howe Sound reference and IDZ monitoring stations (WQR1, WQR2, IDZ-E1, IDZ-E2, IDZ-W1, and IDZ-W2).

The influent culverts for East and West Sedimentation Ponds are not yet operational and the associated influent stations defined in PE-111578 (SP-E-IN-1, SP-E-IN-2, SP-W-IN-1 and SP-W-IN-2) have been replaced with temporary influent monitoring stations SP-E-IN and SP-W-IN (East and West Sedimentation Pond, respectively).

Two flocculant-based TSS settling systems are used at the West Sedimentation Pond (ESC and W500GPM). Influent and effluent is monitored for each system at stations ESC-W-IN, ESC-W-OUT, W500GPM-IN and W500GPM-OUT. One TSS settling system (E500GPM) is used at the East Sedimentation Pond. The influent and effluent stations for this system are E500GPM-IN and E500GPM-OUT, respectively. The TSS settling system stations are supplemental to the PE- 111578 monitoring requirements and are monitored at the discretion of field staff.

Water quality was monitored at stations IDZ-E1, IDZ-E2, IDZ-W1, IDZ-W2, WWTP-E-IN, WWTP-E-OUT, E500GPM-IN, E500GPM-OUT, SP-E-IN, SP-E-OUT, W500GPM-IN, W500GPM-OUT, SP-W-IN and SP-W-OUT during the monitoring period (January 12 – 18). Sampling dates and parameters tested are summarized in Table 2.

Overall, the PE-111578 monitoring requirements that were applicable during the monitoring period (January 12 – 18) were met.

Daily field parameters were not collected at influent stations SP-E-IN (January 17 and 18) and SP-W-IN (January 16 to 18) since there was no influent reporting to the East and West Sedimentation Ponds at the time of monitoring. Daily field parameters were not collected at the influent and effluent stations of the East WWTP (WWTP-E-IN and WWTP-E-OUT, respectively) on January 12, 17, and 18 as the East WWTP was not operational at the time of monitoring. Daily field parameters and a weekly analytical sample were not collected at the influent and effluent stations of the West WWTP (WWTP-W-IN and WWTP-W-OUT, respectively) as the West WWTP was not operational during the monitoring period.

Table 2: Summary of PE-111578 Monitoring Samples Collected January 12 – 18.

Sampling Date	Sample	Description	Parameters Tested	Monitoring Frequency
January 12, 2025	SP-E-IN	East Sedimentation Pond influent entering the pond and collected at cell 1	Field Parameters.	D
	SP-W-IN	West Sedimentation Pond influent entering the pond and collected at cell 1	Field Parameters.	D
January 13, 2025	SP-E-IN	East Sedimentation Pond influent entering the pond and collected at cell 1	Field Parameters.	D
	WWTP-E-IN	East WWTP at the influent meter box	Field Parameters.	D
	WWTP-E-OUT	East WWTP at the effluent meter box		
	SP-W-IN	West Sedimentation Pond influent entering the pond and collected at cell 1	Field Parameters.	D
January 14, 2025	SP-E-IN	East Sedimentation Pond influent entering the pond and collected at cell 1	Field Parameters.	D
	WWTP-E-IN	East WWTP at the influent meter box	Field, Physical & General Parameters, VH & BTEX, EPHs & PAHs, Total, Dissolved and Speciated Metals, VOCs, Methylmercury, Dioxins & Furans.	D, W_1, W_2
	WWTP-E-OUT	East WWTP at the effluent meter box		
	SP-W-IN	West Sedimentation Pond influent entering the pond and collected at cell 1	Field, Physical & General Parameters, VH & BTEX, EPHs & PAHs, Total, Dissolved and Speciated Metals, VOCs, Methylmercury, Dioxins & Furans.	D, W_1, W_2
	SP-W-OUT	West Sedimentation Pond clarified effluent discharge to Howe Sound, collected at sampling port		
	W500GPM-IN	West Sedimentation Pond 500 GPM TSS settling system at the influent meter box	Field Parameters.	P
	W500GPM-OUT	West Sedimentation Pond 500 GPM TSS settling system at the effluent meter box		
January 15, 2025	SP-E-IN	East Sedimentation Pond influent entering the pond and collected at cell 1	Field Parameters.	D
	WWTP-E-IN	East WWTP at the influent meter box	Field Parameters.	D
	WWTP-E-OUT	East WWTP at the effluent meter box		
	E500GPM-IN	East Sedimentation Pond 500 GPM TSS settling system at the influent meter box	Field Parameters.	P
	E500GPM-OUT	East Sedimentation Pond 500 GPM TSS settling system at the effluent meter box		
	SP-W-IN	West Sedimentation Pond influent entering the pond and collected at cell 1	Field Parameters.	D
	SP-W-OUT	West Sedimentation Pond clarified effluent discharge to Howe Sound, collected at sampling port		
	IDZ-W1-0.5	Howe Sound IDZ station W1; 0.5 m below surface	Field and Physical Parameters.	W_3
	IDZ-W1-2m	Howe Sound IDZ station W1; 2 m below surface		
	IDZ-W1-SF	Howe Sound IDZ station W1; 2 m above the seafloor		
	IDZ-W2-0.5	Howe Sound IDZ station W2; 0.5 m below surface		
	IDZ-W2-2m	Howe Sound IDZ station W2; 2 m below surface		
	IDZ-W2-SF	Howe Sound IDZ station W2; 2 m above the seafloor		
January 16, 2025	SP-E-IN	East Sedimentation Pond influent entering the pond and collected at cell 1	Field, Physical & General Parameters, VH & BTEX, EPHs & PAHs, Total, Dissolved and Speciated Metals, VOCs, Methylmercury, Dioxins & Furans.	D, W_1, W_2
	SP-E-OUT	East Sedimentation Pond clarified effluent discharge to Howe Sound, collected at sampling port		
	WWTP-E-IN	East WWTP at the influent meter box	Field Parameters.	D
	WWTP-E-OUT	East WWTP at the effluent meter box		
	E500GPM-IN	East Sedimentation Pond 500 GPM TSS settling system at the influent meter box	Field Parameters.	P
	E500GPM-OUT	East Sedimentation Pond 500 GPM TSS settling system at the effluent meter box		
	SP-W-OUT	West Sedimentation Pond clarified effluent discharge to Howe Sound, collected at sampling port	Field Parameters.	D
	W500GPM-IN	West Sedimentation Pond 500 GPM TSS settling system at the influent meter box	Field Parameters.	P
	W500GPM-OUT	West Sedimentation Pond 500 GPM TSS settling system at the effluent meter box		
	IDZ-E1-0.5	Howe Sound IDZ station E1; 0.5 m below surface	Field and Physical Parameters.	W_3
	IDZ-E1-2m	Howe Sound IDZ station E1; 2 m below surface		
	IDZ-E1-SF	Howe Sound IDZ station E1; 2 m above the seafloor		
	IDZ-E2-0.5	Howe Sound IDZ station E2; 0.5 m below surface		
	IDZ-E2-2m	Howe Sound IDZ station E2; 2 m below surface		
	IDZ-E2-SF	Howe Sound IDZ station E2; 2 m above the seafloor		

Notes:
Monitoring frequency requirements under PE-111578 are indicated as follows:
D – daily monitoring of field parameters at WWTP and sedimentation pond influent and effluent stations.
M – monthly monitoring for all parameters at WWTP, sedimentation pond and receiving environment stations.
W_1 – initial high frequency monitoring for physical parameters at WWTP and sedimentation pond influent and effluent stations.
W_2 – initial high frequency monitoring for all parameters at WWTP and sedimentation pond influent and effluent stations.
W_3 – initial high frequency monitoring for physical parameters at IDZ stations.
P – periodic monitoring for targeted parameters that is supplementary to PE-111578 requirements.
Monitoring was not conducted on January 17 and 18 as the East and West Sediment Pond levels were low and the East WWTP and TSS settling systems were not operational. No discharges occurred January 17 and 18.

3. Water Quality Results

3.1 Screening and Reporting Overview

Water quality and flow monitoring results are screened against field quality control (QC) criteria, benchmark values, operational minimum discharge objectives (MDOs) that the WWTPs are currently being operated to meet, PE-111578 discharge limits, as well as Canadian, Federal and BC water quality guidelines (WQGs). All water quality data are recorded in the Woodfibre LNG environmental monitoring database. However, for brevity, a sub-set of the results are presented in the weekly report appendices. Results are reported for parameters with a freshwater, estuarine or marine water quality guideline for the protection of aquatic life, parameters with a discharge limit, parameters of potential concern (*i.e.*, dioxins and furans) as well as other parameters that are relevant for water quality interpretation.

Canadian, Federal and BC WQGs are not specified for dioxins and furans. The general term "dioxins and furans" refers to chlorinated dibenzo-*p*-dioxins and chlorinated dibenzofurans. A sub-set of 17 polychlorinated dibenzo-*p*-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) are typically evaluated for toxicity and the individual parameter concentrations are converted to toxic equivalent (TEQ) values that are summed and reported as a single PCDD/F TEQ parameter. To address uncertainties for results reported as not detected, two PCDD/F TEQ values are reported. A "lower-bound PCDD/F TEQ" is calculated assuming a concentration of zero for results reported as not detected, therefore, if all 17 of the individual compounds in the sub-set are not detected the lower-bound PCDD/F TEQ will equal zero. An "upper-bound PCDD/F TEQ" is calculated assuming a concentration equal to the detection limit for results reported as not detected. These two parameters span the range of possible TEQs if one or more of the sub-set of 17 individual PCDDs and PCDFs are reported as not detected.

The BC WQG for total mercury is a sample-specific calculated value that is based on the concentration of methylmercury in a sample. Although an approved BC WQG for the protection of aquatic life for methylmercury has not been explicitly established, the BC Ambient Water Quality Guidelines for Mercury Overview Report indicates the total mercury WQG is derived from a methylmercury concentration threshold of 0.0001 µg/L (0.1 ng/L) that is set at a concentration that protects fish from mercury bioaccumulation that may harm wildlife that consumes fish. Therefore, if methylmercury results are reported, the 0.0001 µg/L value is presented as a methylmercury WQG to support the interpretation of total mercury and methylmercury results.

3.2 Summary of Reported Results

Field measurements and analytical results available at the time of reporting for samples collected during the monitoring period (January 12 – 18) and for other samples that have not been previously reported are listed below in Table 3. Testing for methylmercury, dioxins and furans typically requires up to four weeks to complete. Analytical results not available at the time of reporting will be included in future weekly reports when testing is completed. Reporting of results is pending for the following samples and parameters:

- WWTP-E-IN, WWTP-E-OUT, SP-W-IN, and SP-W-OUT collected January 14 (methylmercury, dioxins and furans)
- IDZ-W1 and IDZ-W2 collected January 15 (field parameters and all analytical parameters)
- SP-E-IN and SP-E-OUT collected January 16 (dioxins and furans)
- IDZ-E1 and IDZ-E2 collected January 16 (field parameters and all analytical parameters)

Table 3: Summary of Analytical Results Included in Weekly Discharge and Compliance Report #47.

Sample	Description	Sampling Date	Parameters Reported
IDZ-E1-0.5	Howe Sound IDZ station E1; 0.5 m below surface	October 23, 2024	Chronic Toxicity
IDZ-E2-0.5	Howe Sound IDZ station E2; 0.5 m below surface		
IDZ-W1-0.5	Howe Sound IDZ station W1; 0.5 m below surface		
IDZ-W2-0.5	Howe Sound IDZ station W2; 0.5 m below surface		
WQR1-0.5	Reference site 1; 0.5 m below surface		
WQR2-0.5	Reference site 2; 0.5 m below surface		
IDZ-E1-0.5	Howe Sound IDZ station E1; 0.5 m below surface	November 19, 2024	Chronic Toxicity
IDZ-E2-0.5	Howe Sound IDZ station E2; 0.5 m below surface		
IDZ-W1-0.5	Howe Sound IDZ station W1; 0.5 m below surface		
IDZ-W2-0.5	Howe Sound IDZ station W2; 0.5 m below surface		
WQR1-0.5	Reference site 1; 0.5 m below surface		
WQR2-0.5	Reference site 2; 0.5 m below surface		
SP-E-IN	East Sedimentation Pond influent entering the pond and collected at cell 1	2024-12-16	Dioxins and Furans.
WWTP-E-IN	East WWTP at the influent meter box		
WWTP-E-OUT	East WWTP at the effluent meter box		
SP-W-IN	West Sedimentation Pond influent entering the pond and collected at cell 1		
SP-W-OUT	West Sedimentation Pond clarified effluent discharge to Howe Sound, collected at the sampling port		
IDZ-E1-0.5	Howe Sound IDZ station E1; 0.5 m below surface		
IDZ-E1-2m	Howe Sound IDZ station E1; 2 m below surface		
IDZ-E1-SF	Howe Sound IDZ station E1; 2 m above the seafloor		
IDZ-E2-0.5	Howe Sound IDZ station E2; 0.5 m below surface		
IDZ-E2-2m	Howe Sound IDZ station E2; 2 m below surface		
IDZ-E2-SF	Howe Sound IDZ station E2; 2 m above the seafloor		
SP-E-OUT	East Sedimentation Pond clarified and/or treated effluent discharge to Howe Sound, collected at the sampling port	2024-12-20	Methylmercury, Dioxins and Furans.
SP-E-IN	East Sedimentation Pond influent entering the pond and collected at cell 1	2024-12-22	Methylmercury.
SP-E-OUT	East Sedimentation Pond clarified and/or treated effluent discharge to Howe Sound, collected at the sampling port		
WWTP-E-IN	East WWTP at the influent meter box		
WWTP-E-OUT	East WWTP at the effluent meter box		
SP-W-IN	West Sedimentation Pond influent entering the pond and collected at cell 1		
SP-W-OUT	West Sedimentation Pond clarified effluent discharge to Howe Sound, collected at the sampling port		
SP-E-IN	East Sedimentation Pond influent entering the pond and collected at cell 1	2025-01-03	Methylmercury.
SP-E-OUT	East Sedimentation Pond clarified and/or treated effluent discharge to Howe Sound, collected at the sampling port		
WWTP-E-IN	East WWTP at the influent meter box		
WWTP-E-OUT	East WWTP at the effluent meter box		
WWTP-E-IN	East WWTP at the influent meter box	2025-01-14	Field, Physical and General Parameters, Total and Dissolved Metals, Hexavalent Chromium, PAHs, and VOCs.
WWTP-E-OUT	East WWTP at the effluent meter box		
SP-W-IN	West Sedimentation Pond influent entering the pond and collected at cell 1		
SP-W-OUT	West Sedimentation Pond clarified effluent discharge to Howe Sound, collected at the sampling port		
SP-E-IN	East Sedimentation Pond influent entering the pond and collected at cell 1	2025-01-16	Field, Physical and General Parameters, Total and Dissolved Metals, Hexavalent Chromium, PAHs, VOCs, and Methylmercury.
SP-E-OUT	East Sedimentation Pond clarified and/or treated effluent discharge to Howe Sound, collected at the sampling port		

Notes:

[1] As a result of the reconfigured pathway for effluent discharge at station SP-E-OUT effective October 28, 2024, contact water stored in the East Sedimentation Pond is directed to the East WWTP for treatment and East WWTP effluent is discharged at station SP-E-OUT. Field measurements and analytical samples collected at station SP-E-OUT also fulfill the water quality monitoring requirements for station WWTP-E-OUT until December 3, 2024. Beginning December 4, contact water stored in the pond is also clarified using the E500GPM TSS settling system and the clarified effluent is combined with East WWTP treated effluent prior to monitoring and discharge at SP-E-OUT. There are no PE-111578 monitoring requirements for TSS settling system (E500GPM), therefore stations at the facility are monitored at the discretion of field staff.

[2] As a result of the reconfigured pathway for effluent discharge at station SP-W-OUT effective October 28, 2024, the West Sedimentation Pond discharge is routed through a TSS settling system (ESC) prior to discharge and the monitoring results are considered representative of water quality at station ESC-W-OUT until November 28, 2024, when clarified effluent from the second TSS settling system (W500GPM) was combined with effluent from ESC system prior to monitoring and discharge at SP-W-OUT. There are no PE-111578 monitoring requirements for TSS settling systems (ESC and W500GPM), therefore stations at these facilities are monitored at the discretion of field staff.

3.3 East Catchment

The East Catchment water quality monitoring results for stations at the East Sedimentation Pond, East WWTP and the authorized discharge location are discussed in this section. Results for the sedimentation pond and authorized discharge location are screened against PE-111578 discharge limits. Parameters without a discharge limit are screened against Canadian, Federal and BC WQGs for the protection of marine water aquatic life. East WWTP monitoring results are screened against operational MDOs which are equivalent to the PE-111578 discharge limits and the lowest applicable WQGs for parameters without discharge limits. The screened water quality results for analytical samples available at the time of reporting and for field parameters collected during the monitoring period are presented in Appendix B. Exceedances of PE-111578 discharge limits and WQGs in samples of effluent discharged to Howe Sound and results received for methylmercury, dioxins and furans are summarized below.

During the monitoring period (January 12 – 18), East WWTP treated effluent and clarified water from the East Sedimentation Pond TSS settling system (E500GPM) were combined in the SP-E-OUT pre-discharge holding tank and released to Howe Sound at the authorized discharge location (station SP-E-OUT) on January 16. Daily discharge volumes from the East Catchment are summarized in Appendix B, Table B-6.

Field measurements were collected January 12 – 18 at multiple influent and effluent locations, as outlined in Section 2, and are tabulated in Appendix B, Table B-5. Analytical samples collected on January 14 (stations WWTP-E-IN and WWTP-E-OUT) and January 16 (SP-E-IN and SP-E-OUT) were available at the time of reporting. Screening results for East Catchment contact water influent and effluent quality are tabulated in Table B-1 and Table B-2 of Appendix B.

During the monitoring period (January 12 – 18), analytical results and field measurements monitored at station SP-E-OUT met PE-111578 discharge limits and WQGs except total copper and total zinc on January 16 (Table 4). Total copper was above the MDO in the East WWTP effluent sample (WWTP-E-OUT) collected January 14. East WWTP treated effluent was stored in the SP-E-OUT pre-discharge holding tank and did not discharge to Howe Sound on January 14. This item is tracked in Table 5.

Table 4:
Summary of Parameters Exceeding PE-111578 Discharge Limits in Effluent Discharged from SP-E-OUT for Field and Analytical Results Available at the Time of Reporting

Parameter	Units	Discharge Limit	N	N >Limit	Commentary
Total Copper	mg/L	0.0043	1	1	Total copper measured at station SP-E-OUT on January 16 (0.0162 mg/L) was 3.8 times greater than the PE-111578 discharge limit. BCER was notified on January 23.
Total Zinc	mg/L	0.0133	1	1	Total zinc measured at station SP-E-OUT on January 16 (0.0168 mg/L) was 1.3 times greater than the PE-111578 discharge limit. BCER was notified on January 23.

N = number of samples.

Methylmercury analytical results were available at the time of reporting for WWTP influent (WWTP-E-IN) collected December 22 and January 3 (as discussed in Report #45) as well as East Sedimentation Pond influent (SP-E-IN) collected December 22 and January 3 (Report #45), and January 16. Results were also reported for treatment plant effluent (WWTP-E-OUT) samples collected December 22 (Report #45) and January 3, and effluent discharged to Howe Sound (SP-E-OUT) for samples collected December 20 and 22 (Report #45), as well as January 3 and 16. Methylmercury concentrations ranged from 0.000023 to 0.000060 µg/L in effluent discharged at SP-E-OUT on December 20, December 22, January 3, and January 16 and met WQGs for methylmercury and total mercury (Appendix B, Table B-3).

Dioxin and furan analytical results were reported for East Sedimentation Pond influent (SP-E-IN) and WWTP influent (WWTP-E-IN) collected December 16 (as discussed in Report #45). Results were also reported for WWTP effluent (WWTP-E-OUT) collected December 16 and effluent discharged at station SP-E-OUT on December 20 (as discussed in Report #45). The PCDD/F TEQ concentrations in the duplicate effluent samples collected December 20 at SP-E-OUT ranged from 0.0161 to 0.0347 pg/L (lower bound) and from 0.706 to 1.11 pg/L (upper bound). Results are presented in Appendix B, Table B-4.

3.4 West Catchment

The West Catchment water quality monitoring results for stations at the West Sedimentation Pond, the TSS settling systems (ESC and W500GPM) and West WWTP monitoring stations, and the authorized discharge location are discussed in this section. Results for sedimentation pond and TSS settling system influent and effluent stations are screened against PE-111578 discharge limits. Parameters without a discharge limit are screened against Canadian, Federal and BC WQGs for the protection of marine water aquatic life. The screened water quality results for analytical samples and field parameters are presented in Appendix C. Operation of the West WWTP is currently suspended (refer to Section 1.1) and monitoring results are therefore not available.

Exceedances of PE-111578 discharge limits and WQGs in samples of effluent discharged to Howe Sound and results received for methylmercury, dioxins and furans are summarized below.

During the monitoring period (January 12 – 18), the TSS settling system (W500GPM) intermittently treated water stored in the West Sedimentation Pond and produced clarified effluent that was discharged to Howe Sound on January 14, 15, and 16 at the authorized discharge location, SP-W-OUT. The smaller TSS settling system (ESC) was not operated during the monitoring period. Daily clarified effluent and discharge volumes from the West Catchment are summarized in Appendix C, Table C-6.

Field measurements were collected January 12 – 18 at multiple influent and effluent locations, as outlined in Section 2, and are tabulated in Appendix C, Table C-5. Analytical samples collected on January 14 (SP-W-IN and SP-W-OUT) were available at the time of reporting. Screening results for West Catchment contact water influent quality and effluent quality are tabulated in Table C-1 and Table C-2 of Appendix C, respectively.

During the monitoring period (January 12 – 18), analytical results and field measurements monitored at station SP-W-OUT met PE-111578 discharge limits and WQGs.

Methylmercury analytical results were available at the time of reporting for West Sedimentation Pond influent (station SP-W-IN) and effluent discharged at SP-W-OUT on December 22 (as discussed in Report #45). The methylmercury concentration was 0.000021 µg/L in effluent discharged at SP-W-OUT on December 22 and met WQGs for methylmercury and total mercury (Appendix C, Table C-3).

Dioxin and furan results were reported for West Sedimentation Pond influent (station SP-W-IN) and effluent discharged at station SP-W-OUT on December 16 (as discussed in Report #45). The PCDD/F TEQ concentrations in the December 16 station SP-W-OUT effluent sample was 0.0217 pg/L (lower bound) and 1.85 pg/L (upper bound). Results are presented in Appendix C, Table C-4.

3.5 Non-Contact Water Diversion Ditch Outlets

Non-contact water diversion ditch samples are screened against Canadian, Federal and BC WQGs for the protection of freshwater aquatic life.

East Creek was temporarily diverted to OUT-11 on September 17 to facilitate replacement of the OUT-12 culvert through which East Creek previously discharged. Only East Creek water is flowing through the OUT-11 culvert. East Creek is monitored at freshwater receiving environment station SW-04 and station OUT-11 is not monitored while diversion is in place.

There were no outstanding analytical results for non-contact water diversion ditch outlets at the time of reporting.

3.6 Freshwater and Estuarine Water Receiving Environment

Freshwater and estuarine water receiving environment samples are screened against Canadian, Federal and BC WQGs for the protection of freshwater and estuarine aquatic life. Parameter concentrations above a WQG value, but within the range of values observed in the baseline monitoring program are considered to represent the natural condition of the water and are not flagged as a possible indicator of project influence.

There were no outstanding analytical results for the freshwater and estuarine water receiving environment at the time of reporting.

3.7 Marine Water Receiving Environment

Marine water receiving environment samples are screened against Canadian, Federal and BC WQGs for the protection of marine water aquatic life. Parameter concentrations above a WQG value, but within the range of values observed in the baseline monitoring program or reference stations are considered to represent the natural condition of the water and not flagged as a possible indicator of project influence. Similarly, WQG exceedances at marine reference stations are considered to represent background conditions that are not influenced by the project. It is expected that samples collected within the IDZ (*i.e.*, mixing zone) defined in PE-111578 for the authorized discharge locations may have parameter concentrations above baseline or background (*i.e.*, reference station) concentrations due to project influence. The analytical results, field parameters and WQGs are summarized in Appendix D.

Dioxins and furans analytical results were available at the time of reporting for marine samples collected from 0.5 and 2 m below the water surface and 2 m above the seafloor at stations IDZ-E1 and IDZ-E2 on December 16 (as discussed in Weekly Report #45). For all samples, the lower and upper bound PCDD/F TEQ concentrations ranged from 0 to 0.0388 pg/L, and 1.20 to 1.69 pg/L, respectively. The lower and upper bound PCDD/F TEQ concentrations were within the concentration ranges observed in the baseline monitoring program or within background ranges observed at marine reference stations.

Chronic toxicity test results for the October 23 and November 19 marine receiving environment samples were available at the time of reporting. Marine water samples were tested for chronic toxicity to Pacific topsmelt (fish) and echinoderm (invertebrate). All chronic toxicity tests were conducted using 100% (undiluted) marine water collected from 0.5 m below the surface at the IDZ stations (IDZ-E1, IDZ-E2, IDZ-W1, IDZ-W2) and marine reference stations (WQR1, WQR2) in the receiving environment of Howe Sound. The salinity of the October 23 samples (3.1 to 5.3 ppt) and November 19 samples (4.7 to 12 ppt) was below the acceptable range for marine toxicity tests; therefore, salinity was adjusted to 30 ±2 ppt prior to testing as per standard test protocol.

The October 23 chronic toxicity test results showed no statistically significant differences between the marine samples and laboratory controls (natural seawater) for Pacific topsmelt, except for the 0.5 m sample collected at station IDZ-W1. A statistically significant effect on dry weight was observed in the IDZ-W1 sample (1.4 ± 0.18 mg) relative to the laboratory control (1.7 ± 0.12 mg) at a significance level of α=0.05. For the echinoderm test, a statistically significant difference in fertilization rate was observed in samples collected from stations IDZ-E2, IDZ-W1, WQR1, and WQR2 relative to the laboratory controls.

Analytical results of water samples collected from the marine receiving environment in tandem with the October 23 toxicity sampling were presented in Weekly Report #39. Water quality results met WQGs except for pH in the IDZ-W1 sample (pH 6.7). Given the lab pH of test solutions after salinity adjustment and equilibration was with the WQG range (7.0-8.7), the relatively low field pH measured the at time of sampling does not explain the observed chronic effect on Pacific topsmelt dry weight in the IDZ-W1 test water. The chronic effect on echinoderm fertilization rate was observed in samples collected from two IDZ stations (IDZ-E2 and IDZ-W1) and the marine reference stations (WQR1 and WQR2), suggesting natural variability in echinoderm chronic toxicity in the Howe Sound receiving environment unrelated to project influence.

The November 19 chronic toxicity test results showed no statistically significant differences between the marine samples and laboratory controls for any of the endpoints tested for Pacific topsmelt and echinoderm. Analytical results of water samples collected from the marine receiving environment in tandem with the November 19 toxicity sampling were presented in Weekly Report #43. Water quality results met WQGs except for total boron in samples collected from stations IDZ-E2 (1.84 mg/L), WQR1 (1.7 mg/L), and WQR2 (1.21 mg/L). Results do not reveal a clear link between water quality and chronic effect on the test species. Rather, the toxicity tests completed in September (discussed in Weekly Reports #40 and #44), October, and November suggest there is natural variability in Pacific topsmelt and echinoderm chronic toxicity in the Howe Sound receiving environment unrelated to project influence.

4. Quality Control

This section presents the results of the quality control (QC) evaluation for the PE-111578 weekly report (Table 5). The evaluation includes a review of field and lab QC, completeness of the weekly report (*e.g.*, pending data), completeness of the monitoring program, confirmation of recordkeeping, evaluation of compliance and review of water management activities. Items flagged for follow-up in Section 3 are also tracked in Table 5. Any items flagged for follow-up are carried forward to future reports until they are closed.

Table 5: Weekly Report QC Evaluations and Ongoing Items

QC Procedure	Observation	Investigation/Resolution
Reporting Period (January 12 – 18, Report #47)		
Authorized Works and Monitoring Program Evaluation	The authorized works and monitoring stations have not been established as described in PE-111578.	The PE-111578 authorized works were under construction during the reporting period. The East and West Sedimentation Ponds and WWTPs have been constructed. The sedimentation pond conveyance ditches have not been constructed and influent culverts have not been activated, and the associated influent monitoring stations have not been established. Temporary outfalls are used for the East and West authorized discharge locations until the permanent structures are completed. Operation of the West WWTP has been suspended since September 25, and the plant has been repurposed to evaluate alternative treatment processes. The lower reach of East Creek has been temporarily diverted through OUT-11 outfall since September 17 to facilitate replacement of the East Creek outfall culvert (OUT-12). East Creek is monitored at SW-04 therefore monitoring at OUT-11 has been suspended. As communicated to BCER, the East Catchment discharge pathway for authorized discharge location SP-E-OUT was reconfigured on October 28 to direct sedimentation pond water to the East WWTP and to only discharge East WWTP treated effluent. On November 28 and December 4 TSS settling systems were commissioned for use at the West and East Sedimentation Ponds, respectively, to increase the capacity for TSS settling in pond effluent. This item remains open.
Non-Compliant Effluent	Non-compliant discharge from the East Catchment on January 16.	Total copper and total zinc concentrations measured at station SP-E-OUT on January 16 were, respectively, 3.8 and 1.3 times above the PE-111578 discharge limits. BCER was notified on January 23. Review of the non-compliance is underway, and outcomes will be communicated to BCER. This item remains open.
WWTP Performance Evaluation	T-Cu above the MDO	This item was first noted in Report #46 (January 8 sample) and has been updated with January 14 results. The T-Cu concentration was 0.00809 and 0.00595 mg/L in samples collected at WWTP-E-OUT on January 8 and January 14, respectively. Review of possible causes is ongoing. The effluent discharged to Howe Sound at SP-E-OUT met the discharge limits on January 8. East WWTP effluent was routed to the pre-discharge holding tank and did not discharge to Howe Sound on January 14. This item remains open.
Pending Data	Analytical results not reported.	Analytical results for marine receiving environment samples collected January 15 and 16 were not complete at the time of Report #47 preparation. Methylmercury, dioxins and furans results for samples collected January 14 and 16 were not complete at the time of Report #47 preparation. The pending results will be included in future weekly reports when available. This item remains open.
Ongoing Items from Previous Weekly Reports		
Report #45: Data QC	Methylmercury above WQG at SP-W-OUT on December 4.	The originally reported methylmercury concentration was 0.00034 ug/L, 3.4 times greater than the WQG in the West Catchment effluent discharged at SP-W-OUT on December 4. Laboratory reanalysis determined the original result was incorrect due to laboratory error and issued a revised result of <0.000020 ug/L, which is below the WQG. This item is closed.
Report #45: Pending Data	Analytical results not reported.	Methylmercury results for samples collected December 20, 22, and January 3 are discussed in Sections 3.3 and 3.4 of Report #47. Dioxins and furans results for samples collected December 16 and 20 are discussed in Sections 3.3, 3.4, and 3.7 of Report #47. Dioxins and furans results for samples collected December 22, January 1 and 3 were not complete at the time of Report #47 preparation. The pending results will be included in future weekly reports when available. This item remains open.
Report #46: Pending Data	Analytical results not reported.	Analytical results for marine receiving environment samples collected January 8 and 9 were not complete at the time of Report #47 preparation. Dioxins and furans results for samples collected January 8 and 9 were not complete at the time of Report #47 preparation. The pending results will be included in future weekly reports when available. This item remains open.

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.
Authorized works and monitoring program evaluation is an assessment of the completeness of the authorized works and monitoring program compared to PE-111578 specified or implied requirements.
WWTP performance evaluation is an assessment of WWTP effluent quality compared to operational MDOs.
Data QC indicates an evaluation of data trends or inter-parameter relationships that suggest a test result may not be representative of water quality at the time of monitoring.
Non-compliant discharge indicates exceedance of a discharge limit or a discharge that bypasses the sedimentation pond discharge location.
Potential project influence is an assessment that water quality at creek and Howe Sound baseline stations are above the baseline concentration range and may indicate project influence at these stations.

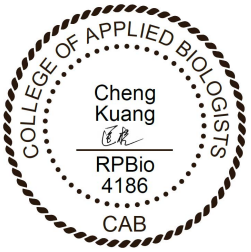
5. Closure

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, and Woodfibre LNG staff are conducted as needed to confirm the information presented in this report.

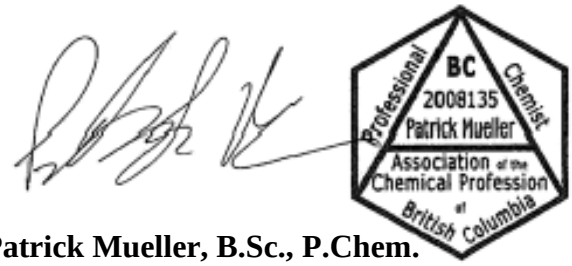
Regards,

LORAX ENVIRONMENTAL SERVICES LTD.

Holly Pelletier, B.Sc., GIT.
Environmental Geoscientist

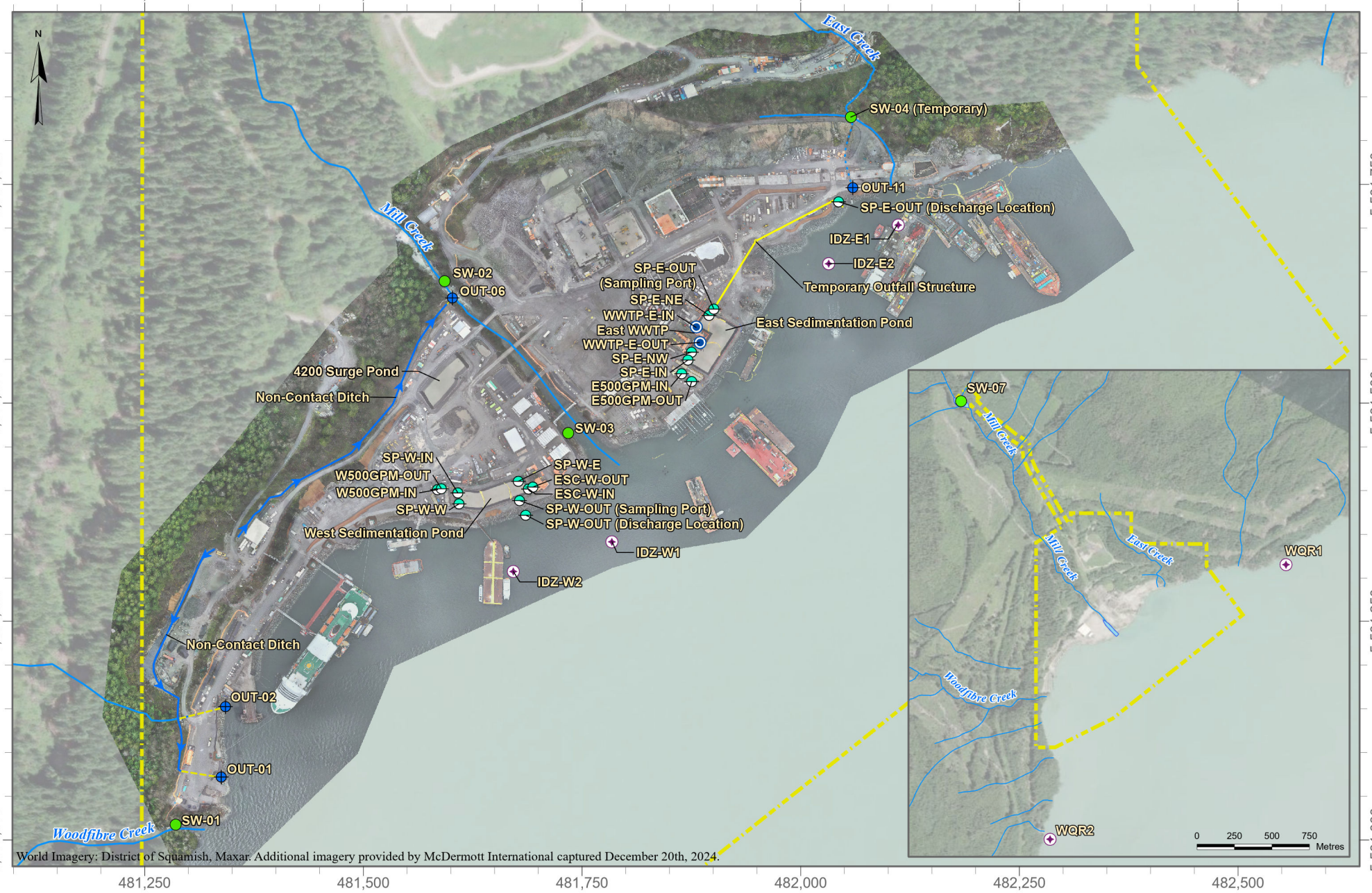


Cheng Kuang, M.Sc., RPBio.
Environmental Scientist



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

Appendix A: Figures and Site Images



World Imagery: District of Squamish, Maxar. Additional imagery provided by McDermott International captured December 20th, 2024.

LEGEND

- Freshwater Monitoring Station
- Marine Water Monitoring Station
- Certified Project Area
- Watercourse
- East Creek Temporary Diversion
- Non Contact Ditch (Under Construction)
- Outfall
- Clean Water Diversion Discharge Station
- Sedimentation Pond Monitoring Stations (Water Quality)
- Wastewater Treatment Plant (WWTP)

DATE SAVED:	Jan 24, 2025
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 (January 18, 2025)

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

Figure 2: East Catchment contact water management facilities (January 12 – 18).

Figure 3: West Catchment contact water management facilities (January 12 – 18).

Figure 4: Aerial view of the East Sedimentation Pond (January 17, 2024). The East WWTP is located on the left side and the E500GPM TSS settling system is situated along the bottom edge of the pond.

Figure 5: Aerial view of the West Sedimentation Pond (January 17, 2024). The TSS settling systems are located to the left (W500GPM) and right (ESC) of the pond.

Appendix B: East Catchment Monitoring Results

Table B-1: East Catchment Contact Water Influent Analytical Results Received at the Time of Reporting.

Parameter	Unit	Lowest Applicable Guideline [1]		PE-111578 Discharge Limit	Station WWTP-E-IN	Station SP-E-IN
					Influent	Influent
					WWTP-E-IN	SP-E-IN
					VA25A0958-001	VA25A1107-001
		Long Term	Short Term		2025-01-14 17:05	2025-01-16 10:31
General Parameters						
pH - Field	pH units	- [2]	-	5.5 - 9.0	6.6	7.0
Conductivity - Field	µS/cm	-	-	-	483	718
Temperature - Field	°C	-	-	-	5.7	6.0
Salinity - Field	ppt	-	-	-	0.37	0.56
Turbidity - Field	NTU	-	-	-	10.12	16.67
TSS	mg/L	-	-	25 [6]	5.1	24.8
Dissolved Oxygen - Field	mg/L	≥8	-	-	11.91	12.91
Anions and Nutrients						
Sulphate	mg/L	-	-	-	87.4	87.8
Chloride	mg/L	-	-	-	11.9	12
Fluoride	mg/L	-	1.5	-	0.235	0.222
Ammonia ($N\text{-}NH_3$)	mg/L	29 [3]	191 [3]	-	0.0542	0.0412
Nitrite ($N\text{-}NO_2$)	mg/L	-	-	-	0.0162	0.0128
Nitrate ($N\text{-}NO_3$)	mg/L	3.7	339	-	0.748	0.886
Total Metals						
Aluminum, total (T-Al)	mg/L	-	-	-	0.565	1.22
Antimony, total (T-Sb)	mg/L	-	0.27 [4]	-	0.00153	0.00156
Arsenic, total (T-As)	mg/L	0.0125	0.0125	-	0.00273	0.00315
Barium, total (T-Ba)	mg/L	-	-	-	0.0145	0.016
Beryllium, total (T-Be)	mg/L	0.1	-	-	0.000042	0.000045
Boron, total (T-B)	mg/L	1.2	-	-	0.047	0.038
Cadmium, total (T-Cd)	mg/L	0.00012	-	-	<0.0000300	0.0000261
Chromium, total (T-Cr)	mg/L	-	-	-	0.00094	0.00126
Cobalt, total (T-Co)	mg/L	-	-	-	0.00032	0.00049
Copper, total (T-Cu)	mg/L	- [2]	- [2]	0.0043	0.00293	0.00374
Iron, total (T-Fe)	mg/L	-	-	-	0.39	1.05
Lead, total (T-Pb)	mg/L	- [2]	- [2]	0.0035	0.00107	0.00211
Manganese, total (T-Mn)	mg/L	-	-	-	0.0687	0.0699
Mercury, total (T-Hg)	mg/L	0.000016 [5]	-	-	0.0000085	0.0000138
Molybdenum, total (T-Mo)	mg/L	-	-	-	0.0405	0.0389
Nickel, total (T-Ni)	mg/L	0.0083	-	-	0.00064	0.00094
Selenium, total (T-Se)	mg/L	0.002	-	-	0.000224	0.000206
Silver, total (T-Ag)	mg/L	0.0015	0.003	-	<0.000010	0.00001
Thallium, total (T-Tl)	mg/L	-	-	-	0.000033	0.000041
Uranium, total (T-U)	mg/L	-	-	-	0.0168	0.0178
Vanadium, total (T-V)	mg/L	- [2]	-	0.0081	0.00308	0.00433
Zinc, total (T-Zn)	mg/L	- [2]	- [2]	0.0133	0.0335	0.0112
Hexavalent Chromium, total	mg/L	0.0015	-	-	<0.00050	<0.00050
Dissolved Metals						
Cadmium, dissolved (D-Cd)	mg/L	-	-	-	<0.0000250	<0.0000100
Copper, dissolved (D-Cu)	mg/L	-	-	-	0.00137	0.00113
Iron, dissolved (D-Fe)	mg/L	-	-	-	0.017	0.018
Lead, dissolved (D-Pb)	mg/L	-	-	-	<0.000050	<0.000050
Manganese, dissolved (D-Mn)	mg/L	-	-	-	0.0572	0.0431
Nickel, dissolved (D-Ni)	mg/L	-	-	-	<0.00050	<0.00050
Strontium, dissolved (D-Sr)	mg/L	-	-	-	0.128	0.11
Vanadium, dissolved (D-V)	mg/L	-	-	-	0.00214	0.00221
Zinc, dissolved (D-Zn)	mg/L	-	-	-	0.0192	0.0036
Polycyclic Aromatic Hydrocarbons (PAHs)						
Acenaphthene	mg/L	0.006	-	-	<0.000010	<0.000010
Acridine	mg/L	-	-	-	<0.000010	<0.000010
Anthracene	mg/L	-	-	-	<0.000010	<0.000010
Benz(a)anthracene	mg/L	-	-	-	<0.000010	<0.000010
Benzo(a)pyrene	mg/L	0.00001	-	-	<0.0000050	<0.0000050
Chrysene	mg/L	0.0001	-	-	<0.000010	<0.000010
Fluoranthene	mg/L	-	-	-	<0.000010	0.000014
Fluorene	mg/L	0.012	-	-	<0.000010	<0.000010
1-methylnaphthalene	mg/L	0.001	-	-	<0.000010	<0.000010
2-methylnaphthalene	mg/L	0.001	-	-	<0.000010	<0.000010
Naphthalene	mg/L	0.001	-	-	<0.000050	<0.000050
Phenanthrene	mg/L	-	-	-	<0.000020	<0.000020
Pyrene	mg/L	-	-	-	<0.000010	0.000013
Quinoline	mg/L	-	-	-	<0.000050	<0.000050
Volatile Organic Compounds (VOCs)						
Benzene	mg/L	0.11	-	-	<0.00050	<0.00050
Ethylbenzene	mg/L	0.25	-	-	<0.00050	<0.00050
Methyl-tert-butyl-ether	mg/L	5	0.44	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	<0.00050	<0.00050
Toluene	mg/L	0.215	-	-	<0.00040	<0.00040
Total Xylenes	mg/L	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.025	-	-	<0.00050	<0.00050
1,2-Dichlorobenzene	mg/L	0.042	-	-	<0.00050	<0.00050

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 PE-111578 East Sedimentation Pond Discharge Limit.
The East Sedimentation Pond discharged during the monitoring period (January 12 – 18) on January 16.
[1] The lowest applicable guidelines from approved or working BC WQGs, Canadian (CCME) WQGs and Federal WQGs.
[2] The WQG was not evaluated for parameters with discharge limits.
[3] The BC WQG for total ammonia is salinity, pH and temperature dependent; see Tables 27E and 27F in BC WQG guidance document.
[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, the BC WQG = 0.00002 mg/L. The Canadian WQG = 0.000016 mg/L.
[6] The PE-111578 discharge limit for TSS is 25 mg/L under dry conditions and 75 mg/L for Wet Conditions. Wet Conditions did not apply during the monitoring period.

Table B-2: East Catchment Effluent Analytical Results Received at the Time of Reporting

Parameter	Unit	Lowest Applicable Guideline [1]		PE-111578 Discharge Limit	Station WWTP-E-OUT	Station SP-E-OUT [7]
					Effluent	Effluent
					WWTP-E-OUT	SP-E-OUT
					VA25A0958-002	VA25A1107-002
		Long Term	Short Term		2025-01-14 16:55	2025-01-16 10:07
General Parameters						
pH - Field	pH units	- [2]	-	5.5 - 9.0	6.2	6.8
Conductivity - Field	µS/cm	-	-	-	790	757
Temperature - Field	°C	-	-	-	6.2	6.3
Salinity - Field	ppt	-	-	-	0.61	0.59
Turbidity - Field	NTU	-	-	-	2.24	4.23
TSS	mg/L	-	-	25 [6]	<3.0	<3.0
Dissolved Oxygen - Field	mg/L	≥8	-	-	9.82	12.48
Anions and Nutrients						
Sulphate	mg/L	-	-	-	94.2	87.7
Chloride	mg/L	-	-	-	11.8	11.9
Fluoride	mg/L	-	1.5	-	<0.100	0.197
Ammonia ($N\text{-}NH_3$)	mg/L	29 [3]	191 [3]	-	0.0928	0.0468
Nitrite ($N\text{-}NO_2$)	mg/L	-	-	-	0.0193	0.0124
Nitrate ($N\text{-}NO_3$)	mg/L	3.7	339	-	0.924	0.872
Total Metals						
Aluminum, total (T-Al)	mg/L	-	-	-	0.058	0.0386
Antimony, total (T-Sb)	mg/L	-	0.27 [4]	-	0.00152	0.00157
Arsenic, total (T-As)	mg/L	0.0125	0.0125	-	0.00292	0.00269
Barium, total (T-Ba)	mg/L	-	-	-	0.00595	0.00666
Beryllium, total (T-Be)	mg/L	0.1	-	-	0.000069	<0.000020
Boron, total (T-B)	mg/L	1.2	-	-	0.031	0.034
Cadmium, total (T-Cd)	mg/L	0.00012	-	-	<0.0000150	<0.0000100
Chromium, total (T-Cr)	mg/L	-	-	-	0.00054	<0.00050
Cobalt, total (T-Co)	mg/L	-	-	-	0.00013	0.00013
Copper, total (T-Cu)	mg/L	- [2]	- [2]	0.0043	0.00595 [8]	0.0162
Iron, total (T-Fe)	mg/L	-	-	-	0.02	0.035
Lead, total (T-Pb)	mg/L	- [2]	- [2]	0.0035	0.000274	0.000899
Manganese, total (T-Mn)	mg/L	-	-	-	0.0554	0.0401
Mercury, total (T-Hg)	mg/L	0.000016 [5]	-	-	0.00000217	0.00000188
Molybdenum, total (T-Mo)	mg/L	-	-	-	0.0382	0.0396
Nickel, total (T-Ni)	mg/L	0.0083	-	-	<0.00050	0.00052
Selenium, total (T-Se)	mg/L	0.002	-	-	0.000197	0.000198
Silver, total (T-Ag)	mg/L	0.0015	0.003	-	<0.000010	<0.000010
Thallium, total (T-Tl)	mg/L	-	-	-	0.000071	0.000039
Uranium, total (T-U)	mg/L	-	-	-	0.00439	0.0169
Vanadium, total (T-V)	mg/L	- [2]	-	0.0081	0.00254	0.00241
Zinc, total (T-Zn)	mg/L	- [2]	- [2]	0.0133	0.0064	0.0168
Hexavalent Chromium, total	mg/L	0.0015	-	-	0.00053	<0.00050
Dissolved Metals						
Cadmium, dissolved (D-Cd)	mg/L	-	-	-	<0.0000150	<0.0000100
Copper, dissolved (D-Cu)	mg/L	-	-	-	0.00241	0.00138
Iron, dissolved (D-Fe)	mg/L	-	-	-	0.01	0.019
Lead, dissolved (D-Pb)	mg/L	-	-	-	0.000128	0.000123
Manganese, dissolved (D-Mn)	mg/L	-	-	-	0.0557	0.0392
Nickel, dissolved (D-Ni)	mg/L	-	-	-	<0.00050	<0.00050
Strontium, dissolved (D-Sr)	mg/L	-	-	-	0.114	0.105
Vanadium, dissolved (D-V)	mg/L	-	-	-	0.00236	0.00239
Zinc, dissolved (D-Zn)	mg/L	-	-	-	0.0067	0.0062
Polycyclic Aromatic Hydrocarbons (PAHs)						
Acenaphthene	mg/L	0.006	-	-	<0.000010	<0.000010
Acridine	mg/L	-	-	-	<0.000010	<0.000010
Anthracene	mg/L	-	-	-	<0.000010	<0.000010
Benz(a)anthracene	mg/L	-	-	-	<0.000010	<0.000010
Benzo(a)pyrene	mg/L	0.00001	-	-	<0.0000050	<0.0000050
Chrysene	mg/L	0.0001	-	-	<0.000010	<0.000010
Fluoranthene	mg/L	-	-	-	<0.000010	<0.000010
Fluorene	mg/L	0.012	-	-	<0.000010	<0.000010
1-methylnaphthalene	mg/L	0.001	-	-	<0.000010	<0.000010
2-methylnaphthalene	mg/L	0.001	-	-	<0.000010	<0.000010
Naphthalene	mg/L	0.001	-	-	<0.000050	<0.000050
Phenanthrene	mg/L	-	-	-	<0.000020	<0.000020
Pyrene	mg/L	-	-	-	<0.000010	<0.000010
Quinoline	mg/L	-	-	-	<0.000050	<0.000050
Volatile Organic Compounds (VOCs)						
Benzene	mg/L	0.11	-	-	<0.00050	<0.00050
Ethylbenzene	mg/L	0.25	-	-	<0.00050	<0.00050
Methyl-tert-butyl-ether	mg/L	5	0.44	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	<0.00050	<0.00050
Toluene	mg/L	0.215	-	-	<0.00040	<0.00040
Total Xylenes	mg/L	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.025	-	-	<0.00050	<0.00050
1,2-Dichlorobenzene	mg/L	0.042	-	-	<0.00050	<0.00050

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 PE-111578 East Sedimentation Pond Discharge Limit.
The East Sedimentation Pond discharged during the monitoring period (January 12 – 18) on January 16.
[1] The lowest applicable guidelines from approved or working BC WQGs, Canadian (CCME) WQGs and Federal WQGs.
[2] The WQG was not evaluated for parameters with discharge limits.
[3] The BC WQG for total ammonia is salinity, pH and temperature dependent; see Tables 27E and 27F in BC WQG guidance document.
[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, the BC WQG = 0.00002 mg/L. The Canadian WQG = 0.000016 mg/L.
[6] The PE-111578 discharge limit for TSS is 25 mg/L under dry conditions and 75 mg/L for Wet Conditions. Wet Conditions did not apply during the monitoring period.
[7] Field measurements and analytical samples were collected at the SP-E-OUT sample collection port.
[8] East WWTP treated effluent was stored in the pre-discharge holding tank and did not discharge to Howe Sound on January 14.

Table B-3: East Catchment Methylmercury and Corresponding Total Mercury Results Received at the Time of Reporting.

Parameter					**Total Methylmercury**	**Total Mercury**
Unit					**µg/L**	**µg/L**
Lowest Applicable Guideline[1]					0.0001 [2]	0.0037 – 0.020 [3,4]
Station	**Water Type**	**Sample ID**	**Lab ID**	**Sampling Date**		
Influent						
SP-E-IN	Influent	SP-E-IN	VA24D4203-001	2024-12-22	0.000097	0.0135
SP-E-IN	Influent	SP-E-IN	VA25A0151-004	2025-01-03	0.000059	***0.0254***
SP-E-IN	Influent	SP-E-IN	VA25A1107-001	2025-01-16	0.000060	0.0138
WWTP-E-IN	Influent	WWTP-E-IN	VA24D4203-005	2024-12-22	0.000093	0.0197
WWTP-E-IN	Influent	WWTP-E-IN	VA25A0151-002	2025-01-03	0.000049	0.00491
Effluent						
SP-E-OUT	Effluent	SP-E-OUT	VA24D4145-001	2024-12-20	0.000060	0.00383
SP-E-OUT	Effluent	SP-E-OUT-DUP	VA24D4145-002	2024-12-20	0.000058	0.00374
SP-E-OUT	Effluent	SP-E-OUT	VA24D4203-002	2024-12-22	0.000042	0.00157
SP-E-OUT	Effluent	SP-E-OUT	VA25A0151-001	2025-01-03	0.000040	0.00334
SP-E-OUT	Effluent	SP-E-OUT	VA25A1107-002	2025-01-16	0.000023	0.00188
WWTP-E-OUT	Effluent	WWTP-E-OUT	VA24D4203-006	2024-12-22	0.000037	0.00292
WWTP-E-OUT	Effluent	WWTP-E-OUT	VA25A0151-003	2025-01-03	0.000043	0.00720

Notes:
Results ***underlined in bold italics*** exceed the applicable long-term water quality guideline for the protection of marine aquatic life.
[1] The lowest applicable guidelines from approved or working BC WQGs, Canadian (CCME) WQGs and Federal WQGs.
[2] From BC Ambient Water Quality Guidelines for Mercury Overview Report. The methylmercury concentration threshold of 0.0001 µg/L (0.1 ng/L) is indicated as a WQG for the protection of wildlife and is set at a concentration that protects fish from mercury bioaccumulation to a level that may harm wildlife that consume fish.
[3] CCME guideline for total mercury = 0.016 µg/L.
[4] When MeHg ≤ 0.5% of total Hg, BC WQG = 0.02 µg/L. When MeHg > 0.5% of total Hg, BC WQG = 0.0001/(MeHg/Total Hg). Detection limit values are used to calculate the WQG for result reported as not detected.
Non-detect results are screened using the detection limit value.

Table B-4: East Catchment Dioxin and Furan Toxicity Equivalency Quantity (TEQ) Results Received at the Time of Reporting.

Parameter					**Lower Bound PCDD/F TEQ**	**Upper Bound PCDD/F TEQ**
Unit					**pg/L**	**pg/L**
Station	**Water Type**	**Sample ID**	**Lab ID**	**Sampling Date**		
Influent						
SP-E-IN	Influent	SP-E-IN	L2758448-1	2024-12-16	0.00642	2.13
WWTP-E-IN	Influent	WWTP-E-IN	L2758448-3	2024-12-16	0.238	1.92
Effluent						
SP-E-OUT	Effluent	SP-E-OUT	L2758507-1	2024-12-20	0.0161	1.11
SP-E-OUT	Effluent	SP-E-OUT-DUP	L2758507-2	2024-12-20	0.0347	0.706
WWTP-E-OUT	Effluent	WWTP-E-OUT	L2758448-2	2024-12-16	0.0143	1.53

Notes:
PCDD = polychlorinated dibenzodioxins (dioxins)
PCDF = polychlorinated dibenzofurans (furans)
TEQ = toxic equivalency
Lower bound PCDD/F TEQ is the sum of the toxic equivalency results for the individual PCDD/F parameters. Non-detectable parameters are assigned a value of zero (0).
Upper bound PCDD/F TEQ is the sum of the toxic equivalency results for the individual PCDD/F parameters. Non-detectable parameters are assigned the value of the detection limit.

Table B-5: East Catchment Field Measurements Collected During the Monitoring Period (January 12 – 18).

Parameter			**Temp.**	**Dissolved Oxygen (DO)**	**Salinity**	**Turbidity**	**Estimated TSS [3]**	**pH**	**Conductivity**	**Visibility of Sheen**
Unit			**°C**	**mg/L**	**ppt**	**NTU**	**mg/L**	**s.u.**	**µS/cm**	
PE-111578 Discharge Limit			-	-	-	-	25 [6]	5.5 - 9.0	-	-
Lowest Applicable Guideline [1]			-	≥8	-	-	- [2]	- [2]	-	-
Station ID	**Water Type**	**Date**								
Influent [4]										
SP-E-IN	Influent	2025-01-12 15:40	5.1	13.21	0.26	26.67	22.9	8.0	337	No
SP-E-IN	Influent	2025-01-13 15:20	6.1	9.27	0.46	10.93	11.2	6.0	598	No
SP-E-IN	Influent	2025-01-14 9:34	5.5	12.08	0.36	3.71	5.8	6.5	461	No
SP-E-IN	Influent	2025-01-15 15:31	6.4	12.22	0.50	2.24	4.7	6.6	656	No
SP-E-IN	Influent	2025-01-16 10:31	6.0	12.91	0.56	16.67	15.4	7.0	718	No
WWTP-E-IN	Influent	2025-01-13 15:15	5.4	12.10	0.32	21.92	19.3	6.8	408	No
WWTP-E-IN	Influent	2025-01-14 9:43	5.1	12.19	0.33	23.84	20.8	6.3	418	No
WWTP-E-IN	Influent	2025-01-14 17:05	5.7	11.91	0.37	10.12	10.5	6.6	483	No
WWTP-E-IN	Influent	2025-01-15 15:15	5.8	12.05	0.47	4.80	6.6	6.4	598	No
WWTP-E-IN	Influent	2025-01-16 10:56	6.2	12.40	0.54	2.84	5.1	6.8	693	No
E500GPM-IN	Influent	2025-01-15 15:39	5.4	12.15	0.46	4.44	6.3	6.4	532	No
E500GPM-IN	Influent	2025-01-16 11:00	6.1	12.37	0.54	2.72	5.0	6.9	693	No
Effluent [5]										
SP-E-OUT	Effluent	2025-01-16 10:07	6.3	12.48	0.59	4.23	6.2	6.8	757	No
WWTP-E-OUT	Effluent	2025-01-13 15:07	7.0	7.24	0.49	4.38	6.3	5.8	651	No
WWTP-E-OUT	Effluent	2025-01-14 9:49	6.5	11.80	0.33	2.13	4.6	7.5	439	No
WWTP-E-OUT	Effluent	2025-01-14 16:55	6.2	9.82	0.61	2.24	4.7	6.2	790	No
WWTP-E-OUT	Effluent	2025-01-15 15:33	6.6	10.79	0.61	2.83	5.1	6.1	788	No
WWTP-E-OUT	Effluent	2025-01-16 10:53	7.3	13.05	0.68	2.14	4.6	6.6	901	No
E500GPM-OUT	Effluent	2025-01-15 15:37	6.2	12.71	0.46	3.59	5.7	6.8	602	No
E500GPM-OUT	Effluent	2025-01-16 11:04	6.1	13.47	0.53	1.84	4.4	7.2	677	No

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 PE-111578 East Sedimentation Pond Discharge Limit.
[1] The lowest applicable guidelines from approved or working BC WQGs, Canadian (CCME) WQGs and Federal WQGs.
[2] The WQG was not evaluated for parameters with discharge limits.
[3] TSS concentration is estimated from field turbidity measurements using a site-specific relationship TSS = 0.7458 * [turbidity as NTU] + 3.
[4] Site staff noted there was no active input of influent to the pond at the time of monitoring on January 17 and 18 and the pond water level was too low to access cell 1 of the pond, therefore daily measurements for station SP-E-IN were not collected.
[5] There was no discharge January 12 to 15 and January 17 and 18, therefore daily field measurements for SP-E-OUT were not collected on those days.
[6] The PE-111578 discharge limit for TSS is 25 mg/L under dry conditions and 75 mg/L for Wet Conditions. Wet Conditions did not apply during the monitoring period.

Table B-6: East Catchment Daily Discharge Volumes for the Monitoring Period (January 12 – 18).

	East Sedimentation Pond Effluent	**East TSS Settling System (E500GPM) Clarified Effluent (Station E500GPM-OUT)**	**East WWTP Treated Effluent (Station WWTP-E-OUT)**	**Discharge to Howe Sound (Station SP-E-OUT)**
Unit	**m^3**	**m^3**	**m^3**	**m^3**
PE-111578 Discharge Limit	- [1]	- [1]	1100	- [1]
Date				
2025-01-12	0	0	0	0
2025-01-13	0	0	0	0
2025-01-14	0	0	34 [2]	0
2025-01-15	0	0	0	0
2025-01-16	0	388	114	502
2025-01-17	0	0	0	0
2025-01-18	0	0	0	0

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 PE-111578 East Sedimentation Pond Discharge Limit.
[1] The annual average authorized discharge rate from the East Sedimentation Pond is 650 m^3/day. As noted in PE-111578 Condition 2.1.4, the actual discharge rate may deviate from the annual average rate due to annual variations in precipitation amounts within the catchment area. Therefore, the annual average authorized discharge rate is not evaluated as a discharge limit.
[2] On January 14, East WWTP treated effluent was stored in the SP-E-OUT pre-discharge holding tank and did not discharge to Howe Sound.

Appendix C: West Catchment Monitoring Results

Table C-1: West Catchment Contact Water Influent Analytical Results Received at the Time of Reporting.

Parameter	Unit	Lowest Applicable Guideline [1]		PE-111578 Discharge Limit	Station SP-W-IN Influent SP-W-IN VA25A0958-001 2025-01-14 17:41
		Long Term	Short Term		
General Parameters					
pH - Field	pH units	- [2]	-	5.5 - 9.0	7.7
Conductivity - Field	µS/cm	-	-	-	58
Temperature - Field	°C	-	-	-	4.1
Salinity - Field	ppt	-	-	-	0.04
Turbidity - Field	NTU	-	-	-	3.82
TSS	mg/L	-	-	25 [6]	<3.0
Dissolved Oxygen - Field	mg/L	≥8	-	-	13.99
Anions and Nutrients					
Sulphate	mg/L	-	-	-	5.36
Chloride	mg/L	-	-	-	4.09
Fluoride	mg/L	-	1.5	-	0.064
Ammonia (N-NH_3)	mg/L	10 [3]	69 [3]	-	0.0189
Nitrite (N-NO_2)	mg/L	-	-	-	0.0018
Nitrate (N-NO_3)	mg/L	3.7	339	-	0.215
Total Metals					
Aluminum, total (T-Al)	mg/L	-	-	-	0.170
Antimony, total (T-Sb)	mg/L	-	0.27 [4]	-	0.00049
Arsenic, total (T-As)	mg/L	0.0125	0.0125	-	0.00066
Barium, total (T-Ba)	mg/L	-	-	-	0.00277
Beryllium, total (T-Be)	mg/L	0.1	-	-	<0.000020
Boron, total (T-B)	mg/L	1.2	-	-	<0.010
Cadmium, total (T-Cd)	mg/L	0.00012	-	-	0.0000082
Chromium, total (T-Cr)	mg/L	-	-	-	<0.00050
Cobalt, total (T-Co)	mg/L	-	-	-	<0.00010
Copper, total (T-Cu)	mg/L	- [2]	- [2]	0.0043	0.00140
Iron, total (T-Fe)	mg/L	-	-	-	0.112
Lead, total (T-Pb)	mg/L	- [2]	- [2]	0.0035	0.000775
Manganese, total (T-Mn)	mg/L	-	-	-	0.00778
Mercury, total (T-Hg)	mg/L	0.000016 [5]	-	-	0.00000166
Molybdenum, total (T-Mo)	mg/L	-	-	-	0.00716
Nickel, total (T-Ni)	mg/L	0.0083	-	-	<0.00050
Selenium, total (T-Se)	mg/L	0.002	-	-	0.000058
Silver, total (T-Ag)	mg/L	0.0015	0.003	-	<0.000010
Thallium, total (T-Tl)	mg/L	-	-	-	<0.000010
Uranium, total (T-U)	mg/L	-	-	-	0.00307
Vanadium, total (T-V)	mg/L	- [2]	-	0.0081	0.00065
Zinc, total (T-Zn)	mg/L	- [2]	- [2]	0.0133	0.0033
Hexavalent Chromium, total	mg/L	0.0015	-	-	<0.00050
Dissolved Metals					
Cadmium, dissolved (D-Cd)	mg/L	-	-	-	0.0000059
Copper, dissolved (D-Cu)	mg/L	-	-	-	0.00097
Iron, dissolved (D-Fe)	mg/L	-	-	-	0.042
Lead, dissolved (D-Pb)	mg/L	-	-	-	0.000322
Manganese, dissolved (D-Mn)	mg/L	-	-	-	0.00643
Nickel, dissolved (D-Ni)	mg/L	-	-	-	<0.00050
Strontium, dissolved (D-Sr)	mg/L	-	-	-	0.0342
Vanadium, dissolved (D-V)	mg/L	-	-	-	<0.00050
Zinc, dissolved (D-Zn)	mg/L	-	-	-	<0.0010
Polycyclic Aromatic Hydrocarbons (PAHs)					
Acenaphthene	mg/L	0.006	-	-	<0.000010
Acridine	mg/L	-	-	-	<0.000010
Anthracene	mg/L	-	-	-	<0.000010
Benz(a)anthracene	mg/L	-	-	-	<0.000010
Benzo(a)pyrene	mg/L	0.00001	-	-	<0.0000050
Chrysene	mg/L	0.0001	-	-	<0.000010
Fluoranthene	mg/L	-	-	-	<0.000010
Fluorene	mg/L	0.012	-	-	<0.000010
1-methylnaphthalene	mg/L	0.001	-	-	<0.000010
2-methylnaphthalene	mg/L	0.001	-	-	<0.000010
Naphthalene	mg/L	0.001	-	-	<0.000050
Phenanthrene	mg/L	-	-	-	<0.000020
Pyrene	mg/L	-	-	-	<0.000010
Quinoline	mg/L	-	-	-	<0.000050
Volatile Organic Compounds (VOCs)					
Benzene	mg/L	0.11	-	-	<0.00050
Ethylbenzene	mg/L	0.25	-	-	<0.00050
Methyl-tert-butyl-ether	mg/L	5	0.44	-	<0.00050
Styrene	mg/L	-	-	-	<0.00050
Toluene	mg/L	0.215	-	-	<0.00040
Total Xylenes	mg/L	-	-	-	<0.00050
Chlorobenzene	mg/L	0.025	-	-	<0.00050
1,2-Dichlorobenzene	mg/L	0.042	-	-	<0.00050

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 PE-111578 West Sedimentation Pond Discharge Limit.
The West Sedimentation Pond discharged during the monitoring period (January 12 – 18) on January 14 to 16.
[1] The lowest applicable guidelines from approved or working BC WQGs, Canadian (CCME) WQGs and Federal WQGs.
[2] The WQG was not evaluated for parameters with discharge limits.
[3] The BC WQG for total ammonia is salinity, pH and temperature dependent; see Tables 27E and 27F in BC WQG guidance document.
[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, the BC WQG = 0.00002 mg/L. The Canadian WQG = 0.000016 mg/L.
[6] The PE-111578 discharge limit for TSS is 25 mg/L under dry conditions and 75 mg/L for each day of Wet Conditions. Wet Conditions did not apply during the monitoring period.

Table C-2: West Catchment Effluent Analytical Results Received at the Time of Reporting.

Parameter	Unit	Lowest Applicable Guideline [1]		PE-111578 Discharge Limit	Station SP-W-OUT [7]
					Effluent
					SP-W-OUT
					VA25A0958-002
		Long Term	Short Term		2025-01-14 17:24
General Parameters					
pH - Field	pH units	- [2]	-	5.5 - 9.0	7.7
Conductivity - Field	µS/cm	-	-	-	57
Temperature - Field	°C	-	-	-	4.1
Salinity - Field	ppt	-	-	-	0.04
Turbidity - Field	NTU	-	-	-	5.13
TSS	mg/L	-	-	25 [6]	<3.0
Dissolved Oxygen - Field	mg/L	≥8	-	-	13.21
Anions and Nutrients					
Sulphate	mg/L	-	-	-	5.34
Chloride	mg/L	-	-	-	4.03
Fluoride	mg/L	-	1.5	-	0.065
Ammonia ($N\text{-}NH_3$)	mg/L	10 [3]	69 [3]	-	0.0128
Nitrite ($N\text{-}NO_2$)	mg/L	-	-	-	0.0016
Nitrate ($N\text{-}NO_3$)	mg/L	3.7	339	-	0.215
Total Metals					
Aluminum, total (T-Al)	mg/L	-	-	-	0.149
Antimony, total (T-Sb)	mg/L	-	0.27 [4]	-	0.00046
Arsenic, total (T-As)	mg/L	0.0125	0.0125	-	0.00062
Barium, total (T-Ba)	mg/L	-	-	-	0.0027
Beryllium, total (T-Be)	mg/L	0.1	-	-	<0.000020
Boron, total (T-B)	mg/L	1.2	-	-	<0.010
Cadmium, total (T-Cd)	mg/L	0.00012	-	-	0.0000068
Chromium, total (T-Cr)	mg/L	-	-	-	<0.00050
Cobalt, total (T-Co)	mg/L	-	-	-	<0.00010
Copper, total (T-Cu)	mg/L	- [2]	- [2]	0.0043	0.00135
Iron, total (T-Fe)	mg/L	-	-	-	0.113
Lead, total (T-Pb)	mg/L	- [2]	- [2]	0.0035	0.000769
Manganese, total (T-Mn)	mg/L	-	-	-	0.00747
Mercury, total (T-Hg)	mg/L	0.000016 [5]	-	-	0.00000173
Molybdenum, total (T-Mo)	mg/L	-	-	-	0.00724
Nickel, total (T-Ni)	mg/L	0.0083	-	-	<0.00050
Selenium, total (T-Se)	mg/L	0.002	-	-	0.000075
Silver, total (T-Ag)	mg/L	0.0015	0.003	-	<0.000010
Thallium, total (T-Tl)	mg/L	-	-	-	<0.000010
Uranium, total (T-U)	mg/L	-	-	-	0.00269
Vanadium, total (T-V)	mg/L	- [2]	-	0.0081	0.00058
Zinc, total (T-Zn)	mg/L	- [2]	- [2]	0.0133	0.0031
Hexavalent Chromium, total	mg/L	0.0015	-	-	<0.00050
Dissolved Metals					
Cadmium, dissolved (D-Cd)	mg/L	-	-	-	<0.0000050
Copper, dissolved (D-Cu)	mg/L	-	-	-	0.00106
Iron, dissolved (D-Fe)	mg/L	-	-	-	0.049
Lead, dissolved (D-Pb)	mg/L	-	-	-	0.00033
Manganese, dissolved (D-Mn)	mg/L	-	-	-	0.00641
Nickel, dissolved (D-Ni)	mg/L	-	-	-	<0.00050
Strontium, dissolved (D-Sr)	mg/L	-	-	-	0.0346
Vanadium, dissolved (D-V)	mg/L	-	-	-	<0.00050
Zinc, dissolved (D-Zn)	mg/L	-	-	-	0.0024
Polycyclic Aromatic Hydrocarbons (PAHs)					
Acenaphthene	mg/L	0.006	-	-	<0.000010
Acridine	mg/L	-	-	-	<0.000010
Anthracene	mg/L	-	-	-	<0.000010
Benz(a)anthracene	mg/L	-	-	-	<0.000010
Benzo(a)pyrene	mg/L	0.00001	-	-	<0.0000050
Chrysene	mg/L	0.0001	-	-	<0.000010
Fluoranthene	mg/L	-	-	-	<0.000010
Fluorene	mg/L	0.012	-	-	<0.000010
1-methylnaphthalene	mg/L	0.001	-	-	<0.000010
2-methylnaphthalene	mg/L	0.001	-	-	<0.000010
Naphthalene	mg/L	0.001	-	-	<0.000050
Phenanthrene	mg/L	-	-	-	<0.000020
Pyrene	mg/L	-	-	-	<0.000010
Quinoline	mg/L	-	-	-	<0.000050
Volatile Organic Compounds (VOCs)					
Benzene	mg/L	0.11	-	-	<0.00050
Ethylbenzene	mg/L	0.25	-	-	<0.00050
Methyl-tert-butyl-ether	mg/L	5	0.44	-	<0.00050
Styrene	mg/L	-	-	-	<0.00050
Toluene	mg/L	0.215	-	-	<0.00040
Total Xylenes	mg/L	-	-	-	<0.00050
Chlorobenzene	mg/L	0.025	-	-	<0.00050
1,2-Dichlorobenzene	mg/L	0.042	-	-	<0.00050

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 PE-111578 West Sedimentation Pond Discharge Limit.
The West Sedimentation Pond discharged during the monitoring period (January 12 – 18) on January 14 to 16.
[1] The lowest applicable guidelines from approved or working BC WQGs, Canadian (CCME) WQGs and Federal WQGs.
[2] The WQG was not evaluated for parameters with discharge limits.
[3] The BC WQG for total ammonia is salinity, pH and temperature dependent; see Tables 27E and 27F in BC WQG guidance document.
[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, the BC WQG = 0.00002 mg/L. The Canadian WQG = 0.000016 mg/L.
[6] The PE-111578 discharge limit for TSS is 25 mg/L under dry conditions and 75 mg/L for each day of Wet Conditions. Wet Conditions did not apply during the monitoring period.
[7] Field measurements and analytical samples were collected at the SP-W-OUT sampling port.

Table C-3: West Catchment Methylmercury and Corresponding Total Mercury Results Received at the Time of Reporting.

Parameter					**Total Methylmercury**	**Total Mercury**
Unit					**µg/L**	**µg/L**
Lowest Applicable Guideline[1]					0.0001 [2]	0.0083 – 0.020 [3,4]
Station	**Water Type**	**Sample ID**	**Lab ID**	**Sampling Date**		
Influent						
SP-W-IN	Influent	SP-W-IN	VA24D4203-003	2024-12-22	0.000074	***0.0326***
Effluent						
SP-W-OUT	Effluent	SP-W-OUT	VA24D4203-004	2024-12-22	0.000021	0.00166

Notes:
Results ***underlined in bold italics*** exceed the applicable long-term water quality guideline for the protection of marine aquatic life.
[1] The lowest applicable guidelines from approved or working BC WQGs, Canadian (CCME) WQGs and Federal WQGs.
[2] From BC Ambient Water Quality Guidelines for Mercury Overview Report. The methylmercury concentration threshold of 0.0001 µg/L (0.1 ng/L) is indicated as a WQG for the protection of wildlife and is set at a concentration that protects fish from mercury bioaccumulation to a level that may harm wildlife that consume fish.
[3] CCME guideline for total mercury = 0.016 µg/L.
[4] When MeHg ≤ 0.5% of total Hg, BC WQG = 0.02 µg/L. When MeHg > 0.5% of total Hg, BC WQG = 0.0001/(MeHg/Total Hg). Detection limit values are used to calculate the WQG for result reported as not detected.

Table C-4: West Catchment Dioxin and Furan Toxicity Equivalency Quantity (TEQ) Results Received at the Time of Reporting.

Parameter					**Lower Bound PCDD/F TEQ**	**Upper Bound PCDD/F TEQ**
Unit					**pg/L**	**pg/L**
Station	**Water Type**	**Sample ID**	**Lab ID**	**Sampling Date**		
Influent						
SP-W-IN	Influent	SP-W-IN	L2758448-5	2024-12-16	0.192	1.63
Effluent						
SP-W-OUT	Effluent	SP-W-OUT	L2758448-4	2024-12-16	0.0217	1.85

Notes:
PCDD = polychlorinated dibenzodioxins (dioxins)
PCDF = polychlorinated dibenzofurans (furans)
TEQ = toxic equivalency
Lower bound PCDD/F TEQ is the sum of the toxic equivalency results for the individual PCDD/F parameters. Non-detectable parameters are assigned a value of zero (0).
Upper bound PCDD/F TEQ is the sum of the toxic equivalency results for the individual PCDD/F parameters. Non-detectable parameters are assigned the value of the detection limit.

Table C-5: West Catchment Field Measurements Collected During the Monitoring Period (January 12 – 18).

Parameter			**Temperature**	**Dissolved Oxygen (DO)**	**Salinity**	**Turbidity**	**Estimated TSS [3]**	**pH**	**Conductivity**	**Visibility of Sheen**
Unit			**°C**	**mg/L**	**ppt**	**NTU**	**mg/L**	**s.u.**	**µS/cm**	
PE-111578 Discharge Limit			-	-	-	-	25 [6]	5.5 - 9.0	-	-
Lowest Applicable Guideline [1]			-	≥8	-	-	- [2]	- [2]	-	-
Station ID	**Water Type**	**Date**								
Influent [4]										
SP-W-IN	Influent	2025-01-12 15:48	5.1	13.02	0.11	14.36	13.7	8.4	148	No
SP-W-IN	Influent	2025-01-13 15:44	3.9	14.38	0.04	9.58	10.1	7.9	57	No
SP-W-IN	Influent	2025-01-14 9:14	4.7	14.16	0.05	3.45	5.6	8.1	60	No
SP-W-IN	Influent	2025-01-14 17:41	4.1	13.99	0.04	3.82	5.8	7.7	58	No
SP-W-IN	Influent	2025-01-15 23:17	6.9	13.41	0.04	8.62	9.4	7.1	62	No
W500GPM-IN	Influent	2025-01-14 17:41	4.1	14.66	0.04	4.76	6.6	7.8	56	No
W500GPM-IN	Influent	2025-01-16 9:07	4.8	13.58	0.04	10.42	10.8	7.3	56	No
Effluent [5]										
SP-W-OUT	Effluent	2025-01-14 17:24	4.1	13.21	0.04	5.13	6.8	7.7	57	No
SP-W-OUT	Effluent	2025-01-15 8:53	4.6	15.02	0.04	3.89	5.9	7.1	58	No
SP-W-OUT	Effluent	2025-01-16 8:54	5.0	9.60	0.05	3.49	5.6	7.3	63	No
W500GPM-OUT	Effluent	2025-01-14 16:59	4.6	11.70	0.05	3.55	5.6	7.2	60	No
W500GPM-OUT	Effluent	2025-01-16 9:03	4.6	13.94	0.04	4.41	6.3	7.4	58	No

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 PE-111578 West Sedimentation Pond Discharge Limit.
[1] The lowest applicable guidelines from approved or working BC WQGs, Canadian (CCME) WQGs and Federal WQGs.
[2] The WQG was not evaluated for parameters with discharge limits.
[3] TSS concentration is estimated from field turbidity measurements using a site-specific relationship TSS = 0.7458 * [turbidity as NTU] + 3.
[4] Site staff noted there was no active input of influent sources to the pond at the time of monitoring on January 16 to 18 and the water level in the pond was too low to access cell 1 of the pond, therefore daily measurements for station SP-W-IN were not collected.
[5] There was no discharge January 12 to 13 and January 17 to 18, therefore daily field measurements for SP-W-OUT were not collected on those days.
[6] The PE-111578 discharge limit for TSS is 25 mg/L under dry conditions and 75 mg/L for each day of Wet Conditions. Wet Conditions did not apply during the monitoring period.

Table C-6: West Catchment Daily Discharge Volumes for the Monitoring Period (January 12 – 18).

	West Sedimentation Pond Effluent	**West TSS Settling System (W500GPM) Clarified Effluent (Station W500GPM-OUT)**	**West TSS Settling System (ESC) Clarified Effluent (Station ESC-W-OUT)**	**West WWTP Treated Effluent [1] (Station WWTP-W-OUT)**	**Discharge to Howe Sound (Station SP-W-OUT)**
Unit	**m^3**	**m^3**	**m^3**	**m^3**	**m^3**
PE-111578 Discharge Limit	- [2]	- [2]	- [2]	120	- [2]
Date					
2025-01-12	0	0	0	0	0
2025-01-13	0	0	0	0	0
2025-01-14	0	546	0	0	546
2025-01-15	0	366	0	0	366
2025-01-16	0	1,454	0	0	1,454
2025-01-17	0	0	0	0	0
2025-01-18	0	0	0	0	0

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 PE-111578 West Sedimentation Pond Discharge Limit.
[1] The West WWTP is not being operated, therefore discharges are not expected from this facility.
[2] The annual average authorized discharge rate from the West Sedimentation Pond is 310 m^3/day. As noted in PE-111578 Condition 2.1.4, the actual discharge rate may deviate from the annual average rate due to annual variations in precipitation amounts within the catchment area. Therefore, the annual average authorized discharge rate is not evaluated as a discharge limit.

Appendix D: Marine Water Receiving Environment Results

Table D-1: Summary of Marine Water Quality Results for Dioxins and Furans Received at the Time of Reporting.

Parameter					**Lower Bound PCDD/F TEQ**	**Upper Bound PCDD/F TEQ**
Unit					**pg/L**	**pg/L**
Station	**Water Type**	**Sample ID**	**Lab ID**	**Sampling Date**		
Station IDZ-E1						
IDZ-E1	0.5 m Below Surface	IDZ-E1-0.5	L2758450-1	2024-12-16	0.00282	1.20
IDZ-E1	2 m Below Surface	IDZ-E1-2m	L2758450-2	2024-12-16	0.00641	1.20
IDZ-E1	2 m Above Seafloor	IDZ-E1-SF	L2758450-3	2024-12-16	0.0128	1.58
Station IDZ-E2						
IDZ-E2	0.5 m Below Surface	IDZ-E2-0.5	L2758450-4	2024-12-16	0.0388	1.69
IDZ-E2	2 m Below Surface	IDZ-E2-2m	L2758450-5	2024-12-16	0.00265	1.36
IDZ-E2	2 m Above Seafloor	IDZ-E2-SF	L2758450-6	2024-12-16	0	1.45

Notes:
PCDD = polychlorinated dibenzodioxins (dioxins)
PCDF = polychlorinated dibenzofurans (furans)
TEQ = toxic equivalency
Lower bound PCDD/F TEQ is the sum of the toxic equivalency results for the individual PCDD/F parameters. Non-detectable parameters are assigned a value of zero (0).
Upper bound PCDD/F TEQ is the sum of the toxic equivalency results for the individual PCDD/F parameters. Non-detectable parameters are assigned the value of the detection limit.