MEMO

Hatfield Ref No.: FORTIS11234

Date: December 16, 2025

From: Karen McMillan and Brett Lucas, Hatfield Consultants

To: Todd Lewis and Danielle Samels, FortisBC

Subject: **Project description for a requested amendment to WDP permit PE-110163 for the Eagle Mountain Natural Gas Pipeline Project.**

1.0 INTRODUCTION

The Eagle Mountain – Woodfibre Gas Pipeline (EGP) Project (the Project) represents a natural gas pipeline project, which includes tunneling as a solution for the installation of the final pipeline segment of the Project between the BC Rail site in Squamish, BC, and the Woodfibre Liquified Natural Gas (WLNG site) export terminal on Howe Sound's northwestern shore. FortisBC, the project proponent, holds a Waste Discharge Permit (WDP PE-110163) from the British Columbia Energy Regulator (BCER) to manage water generated from construction of the tunnel (e.g., precipitation, groundwater intrusion, and process water for drilling, grouting, and tunnel boring). However, since February 2025, water ingress into the tunnel has exceeded volume expectations, resulting in discharge volumes surpassing the permitted limit of 1,500 m³/day at the WLNG end of the tunnel (i.e., West Portal), which has resulted in reassessment of the Project's water management strategies.

On May 9, 2025, BCER issued a letter under WDP PE-110163, which included the following requirements:

- By May 12, 2025, provide a qualified professional (QP) evaluation of the environmental impact of the increased volume on East Creek downstream of the water treatment plant. It is expected that this evaluation will address current and future compliance with clause 2.3.8: “The effluent shall not be discharged in a manner or quantity that impairs the proper ecological function or otherwise causes excessive erosion of the receiving environment into which the discharge of water is conveyed.”
- By May 16, 2025, provide a re-evaluation of the volume ingress water expected from future tunnelling.
- FortisBC will follow all legislative and regulatory requirements as well as adhere to the BCER’s amendment application process. By May 16, 2025, initiate a pre-application meeting.

Each of the above requirements have since been completed within the timelines identified by BCER, including a pre-application meeting between BCER and FortisBC, which was scheduled prior to May 16 and was held on June 5, 2025. As a result of that meeting, this Project Description has been produced to formally request an amendment to WDP PE-110163 to support the continued operation of the EGP Project under these greater water ingress volume conditions. Proposed amendments to WDP PE-110163 are provided in Table 1, with the remaining sections of this project description outlining the background and supporting rationale associated with these recommended amendments.

Table 1 Summary of proposed amendments to permit PE-110163.

Permit Section	Current Requirement	Proposed Amendment
2.3.3.	The maximum authorized rate of discharge is 1,500 m^3/day.	The maximum authorized rate of discharge cannot exceed the capacity of the water treatment plant, which is expected to be 6,815 m^3/day.
2.3.7.	The effluent discharged from the wastewater treatment system shall not exceed the applicable British Columbia Approved and Working Water Quality Guidelines for Freshwater & Marine Aquatic Life, as published by the Ministry of Environment & Climate Change Strategy. Additionally, the effluent shall be free of other contaminants in concentrations that may have an adverse effect on the receiving environment.	The effluent discharged from the wastewater treatment system shall not exceed: ▪ Dissolved copper concentrations of 0.00366 mg/L; ▪ Dissolved aluminum concentrations of 2.42 mg/L; and, ▪ For constituents other than dissolved copper and dissolved aluminum, the applicable British Columbia Approved and Working Water Quality Guidelines, as published by the Ministry of Environment & Climate Change Strategy, as described in the Hatfield (2024) memorandum entitled: “EGP Effluent Discharge Permit Condition Review.”

2.0 PROPONENT

FortisBC is a British Columbia based utility that provides natural gas and electricity and is developing the EGP Project. The Company’s mailing address is:

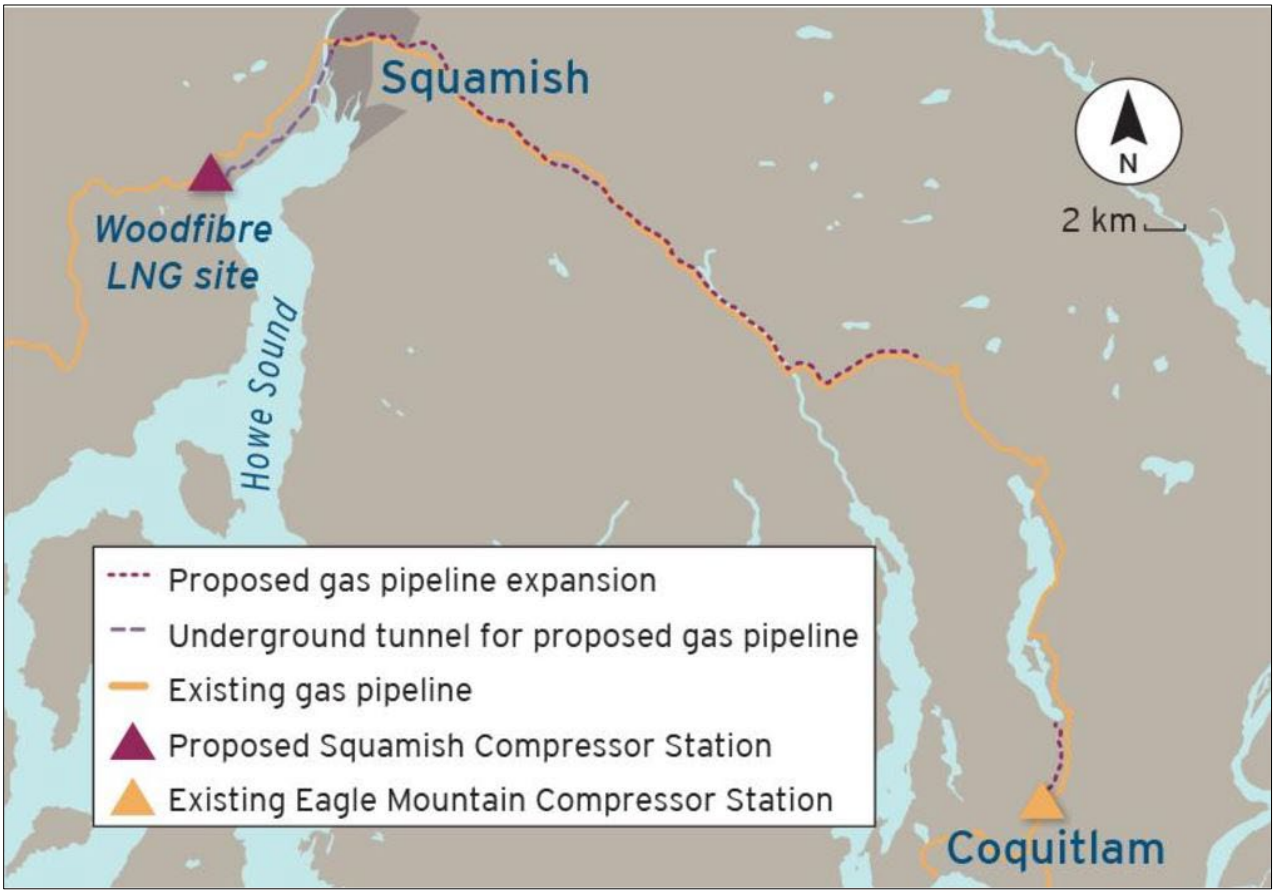
FortisBC Energy Inc.
16705 Fraser Highway
Surrey, BC V4N 0E8

The company’s primary representative related to the WDP is Todd Lewis, Environmental Manager – EGP, who can be reached at the email todd.lewis@fortisbc.com or by phone at 250-320-3828.

3.0 PROJECT CONTEXT

The EGP Project represents a natural gas pipeline project, which includes tunneling between the BC Rail site in Squamish and the WLNG site on the northwestern shore of Howe Sound, BC (Figure 1). The proposed tunnel alignment starts from a portal located on the BC Rail Site just west of Industrial Way in Squamish (East Portal) and terminates in a portal structure on the WLNG site (West Portal), which is located northeast of the proposed WLNG Facility. Tunneling under the Skwelwil’em Squamish Estuary and Wildlife Management Area (WMA) was the avoidance strategy chosen to reduce potential adverse impacts to the area.

Figure 1 Project setting.



Construction activities associated with the EGP tunnel include hard rock tunnelling, equipment to support tunneling, and water treatment plants (WTPs) situated at the mouths of the West Portal on the WLNG site (i.e., WLNG WTP) and at the East Portal at the BC Rail site (BC Rail WTP). The source of the water that is managed at these WTPs and is ultimately discharged to either East Creek (WLNG WTP) or the Squamish River (BC Rail WTP) includes water generated from construction activities related to precipitation, runoff, groundwater ingress within the bedrock tunnel, as well as water used by the tunnel boring machine for drilling, probing, and cleaning equipment.

Banner Environmental Engineering Consultants Ltd. was retained by Frontier-Kemper Michels Joint Venture to commission the Woodfibre WTP Upgrades. The Woodfibre WTP has a process line-up of the following:

Water Treatment Process:

1. Pre-Treatment and Coagulation;
2. Flocculation;
3. Sedimentation with Clarifiers;
4. Sand Filtration;
5. Bag Filtration; and
6. Ion Exchange Metals Treatment.

Solids Handling and Dewatering Process:

1. Centrifugation; and
2. Filter Press.

Commissioning of these upgrades began on December 9, 2024, and was completed on February 3, 2025.

3.1 ORIGINAL PERMIT VOLUME LIMIT DETERMINATIONS

During the original permitting associated with the EGP Project, FortisBC submitted a Technical Assessment Report (TAR; FortisBC 2022) to the BCER to support an application for a WDP under the BC *Environmental Management Act* (EMA) to manage water generated from construction activities from the West and East Portals. FortisBC received WDP PE-110163 from BCER on March 25, 2024 (Appendix A1), which includes combined conditions for discharge at both the BC Rail site and the WLNG site (note that these were originally two separate authorizations, which were later combined into the current WDP PE-110163).

This WDP currently authorizes the discharge of up to 1,500 m^3/day of treated water into East Creek (station reference number: E1331335), a non-fish bearing stream that flows into Howe Sound approximately 250 meters from the WLNG WTP discharge (Figure 2). The maximum authorized rate of discharge for the WLNG WTP of 1,500 m^3/day was determined based on the anticipated groundwater inflow volume for the entire 4.9 kilometers of tunnel proposed (FortisBC 2022). As outlined in Section 2.3 of the WDP, the authorized discharge period is continuous and FortisBC is required to measure and record daily volumetric rates of discharge. Section 2.3.8 of the WDP also states that "*the effluent shall not be discharged in a manner or quantity that impairs ecological structure or otherwise causes excessive erosion of the receiving environment into which the discharge of water is conveyed.*"

Recent water ingress into the tunnel has been higher than expected in early 2025 and has resulted in elevated water volumes requiring treatment at the WTP, with discharge volumes exceeding permitted limits (1,500 m^3/day) beginning in February 2025. Periods of WDP non-compliance were identified and reported to BCER, including:

- February 8 to 12, 2025: daily discharge volumes ranged from 1,585 to 1,710 m^3/day;
- March 4 to 5, 2025: daily discharge volumes ranged from 1,599 to 1,601 m^3/day;
- March 7 to 31, 2025: daily discharge volumes ranged from 1,580 to 2,085 m^3/day;
- April 1 to 30, 2025: daily discharge volumes ranged from 1,769 to 2,913 m^3/day;
- May 1 to 31, 2025: daily discharge volumes ranged from 2,203 to 2,863 m^3/day;
- June 1 to 30, 2025: daily discharge volumes ranged from 1,954 to 2,839 m^3/day.
- July 1 to 31, 2025: daily discharge volumes ranged from 2,081 to 2,343 m^3/day;
- August 1 to 31, 2025: daily discharge volumes ranged from 2,115 to 2,787 m^3/day;
- September 1 to 30, 2025: daily discharge volumes ranged from 2,301 to 2,994 m^3/day;
- October 1 to 31, 2025: daily discharge volumes ranged from 2,315 to 3,006 m^3/day; and,
- November 1 to 30, 2025: daily discharge volumes ranged from 2,775 to 3,224 m^3/day.

Estimates of potential inflows expected for the remainder of hard rock tunnelling at the EGP Project have recently been updated and are described in Delve (2025).

Figure 2 WLNG discharge and monitoring stations.

Legend

- Compliance Station
- Reference Station
- End of Pipe

0 10 20 40 m

N

Main Map Scale: 1:1,600

Projection: NAD 1983 UTM Zone 10N

Data Sources:
a) Monitoring stations, Hatfield 2025.
b) Background image, District of Squamish 7.5 cm, 14 June 2024, Esri Online Service.

Hatfield

Indian Arm Barge Landing Habitat Assessment

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FORTIS11234_MonitoringStations_20250620_v01_AH

3.2 ADDITIONAL INVESTIGATIONS

3.2.1 Hydrologic Assessments

To effectively manage the higher than originally anticipated maximum daily inflow volumes, an assessment was conducted in East Creek to determine the capacity of the creek to accommodate increased inflows. Monitoring included:

- Hydrological monitoring using a pressure transducer and the development of stage-discharge relationships (SDR). This involved the deployment of a data logger (pressure transducer) at an upstream monitoring station, and field visits were performed throughout the summer (i.e., in May, June, July, and August) to collect discrete flow measurements and water level surveys. Discrete flow measurements and water level surveys were used by Hatfield (2025a) to develop an SDR and derive discharge. SRK (2025) then used these results, as well as LiDAR data collected on East Creek, to model creek capacity under various flow scenarios.
- Monthly (May, June, July, and August) geomorphic assessments at select locations within the channel were performed by Hatfield (2025a) to monitor for erosional changes to the channel banks and to identify if further signs of excessive erosion were occurring.
- Aerial imagery comparison and change detection using Remotely Piloted Aircraft Systems (RPAS) were also attempted; however, as outlined in Hatfield (2025a), these assessments were complicated by the tree canopy and persistent on-site signal interferences preventing the establishment of accurate ground control points.

3.2.2 Water Quality Assessments

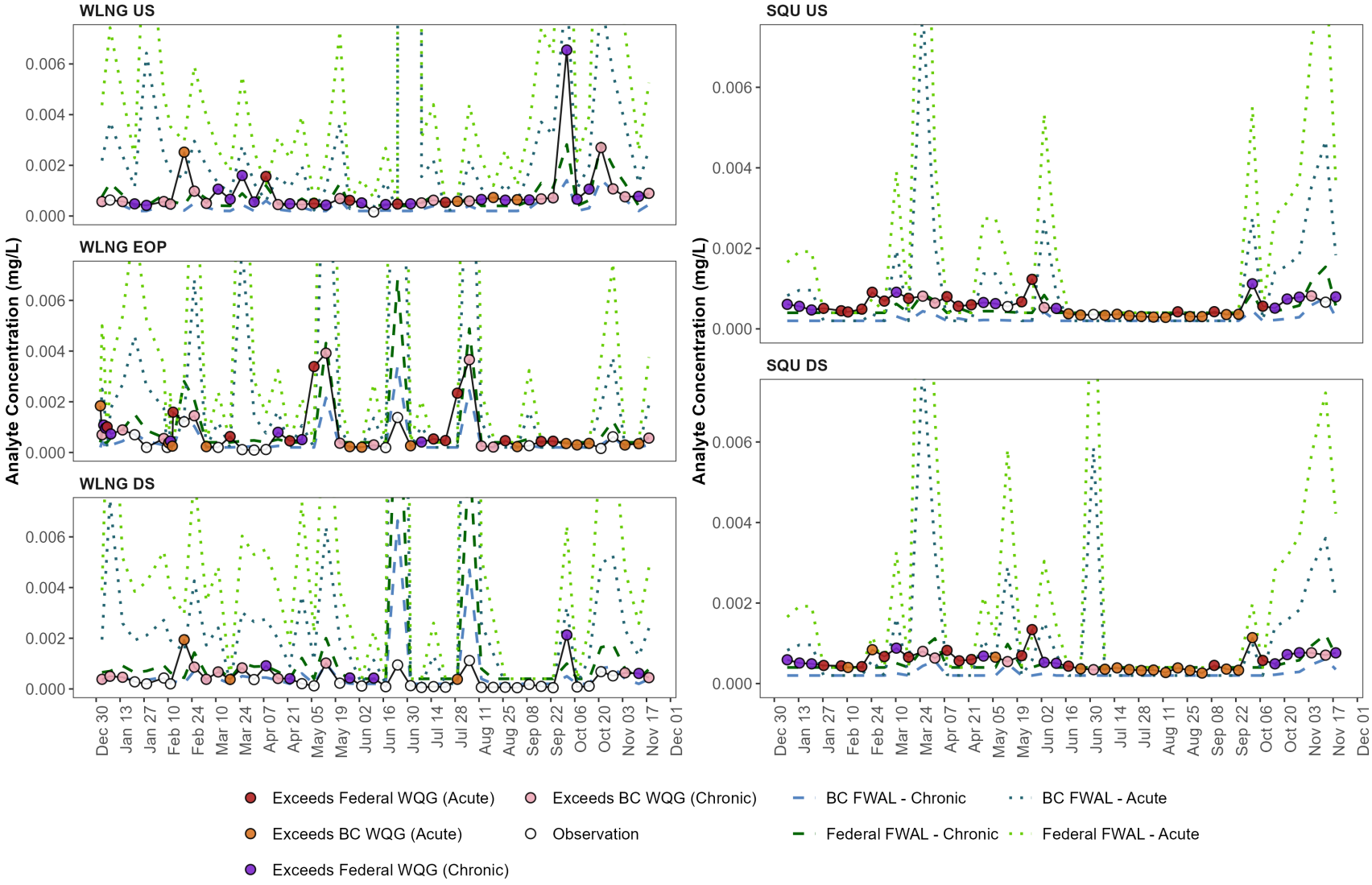
Further, routine weekly water quality monitoring of both discharge and receiving environment quality required under WDP PE-110163 has continued and, as outlined in the routine weekly water quality reports submitted by FortisBC to BCER, results have been generally consistent with water quality screening protocols outlined in Hatfield (2024), which include:

- Concentrations of monitored constituents in the discharges are compared to applicable BC WQGs, which are the **BC freshwater short-term acute WQGs for the protection of aquatic life**. These guidelines should be calculated using co-factor data obtained from the discharges themselves to properly evaluate risk of acute toxicity in the discharged water.
- Results of acute toxicity testing with rainbow trout are compared to a threshold limit of ≥50% survival of organisms in the 100% undiluted effluent, consistent with recommendations outlined in the federal *Fisheries Act*.
- Concentrations of monitored constituents in the receiving environment downstream of the discharge should have monthly average concentrations that are less than applicable BC long-term chronic WQGs.

3.2.2.1 Dissolved Copper Considerations

Besides periodic WTP challenges with turbidity and pH, which have been discussed in previous weekly and quarterly monitoring reports, another constituent that has periodically exceeded BC acute WQGPALs at the WLNG WTP End of Pipe (EOP) is dissolved copper. **However, it should be acknowledged that this guideline incorporates a 2-fold safety factor** in its derivation and upstream background concentrations of dissolved copper have been shown to be elevated at reference stations on both East Creek (WLNG US) and the Squamish River (SQU-US) (Figure 3). As such, these background concentrations appear to represent a regional condition and likely require consideration moving forward from a discharge quality perspective. This is not a surprising finding, given that the Technical Derivation document for the dissolved copper guideline (BC ENV 2019) states that 36.5% of ambient Lower Mainland sites monitored by the province were determined to exceed the 2019 update to the BC chronic WQGPAL, highlighting the conservative nature of this guideline.

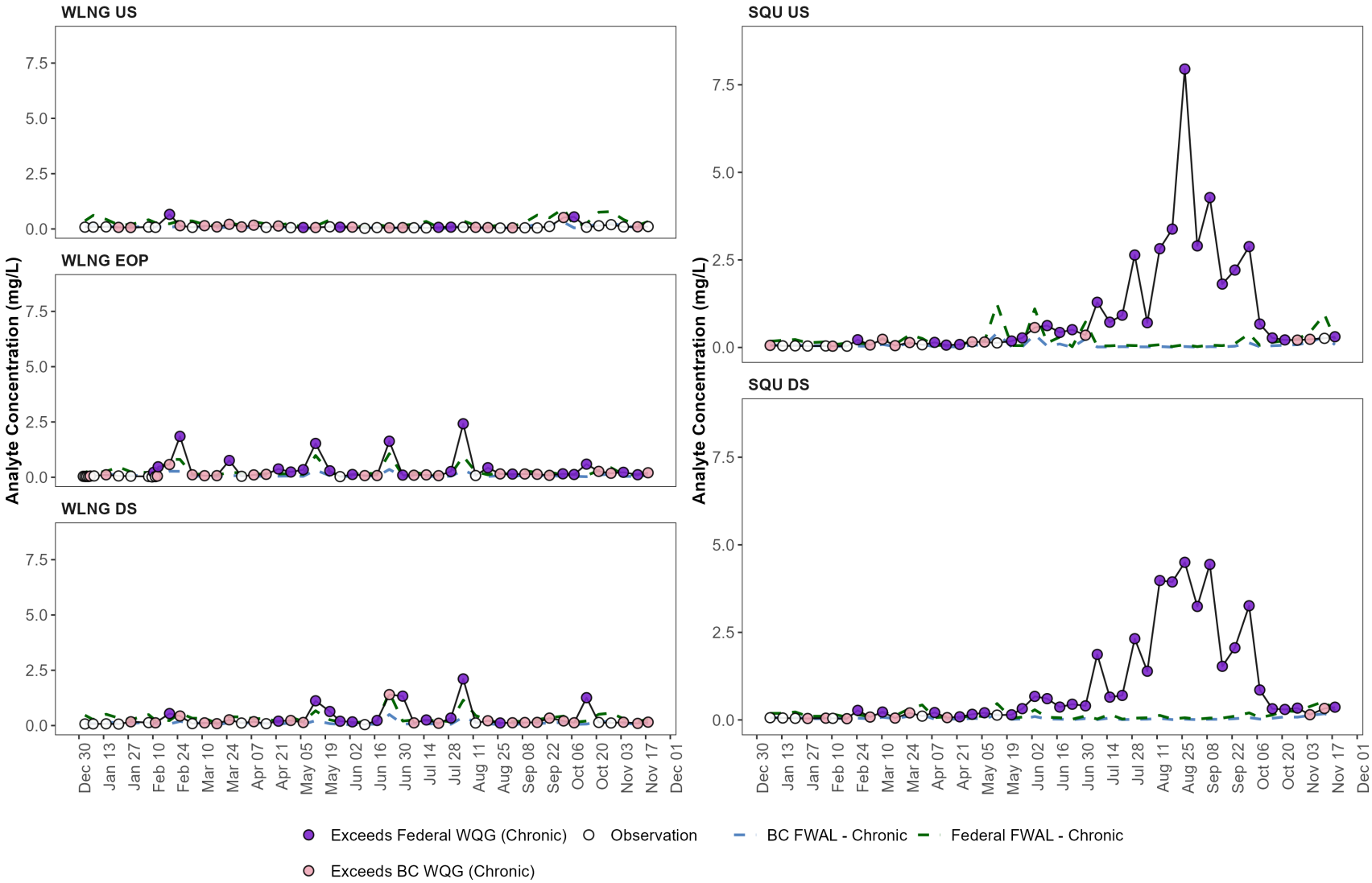
Figure 3 2025 Woodfibre EGP environmental monitoring results for dissolved copper (mg/L).



3.2.2.2 Total Aluminum Considerations

Similarly, although there are no applicable total aluminum BC acute WQGs to be applied at the WLNG EOP, elevated concentrations have been observed above chronic long-term BC WQGPALs at both the WLNG EOP and WLNG DS downstream receiving environment station in East Creek. However, similar to dissolved copper, **the total aluminum BC WQGPAL is based on the federal WQGPAL but incorporates a 3-fold safety factor in its derivation.** Further, upstream background concentrations of total aluminum have been shown to be elevated at reference stations on both East Creek (WLNG US) and the Squamish River (SQU-US) (Figure 4), which have also routinely exceeded the conservative long-term BC WQGPAL. As such, these background concentrations appear to represent a regional condition and likely require consideration moving forward from a discharge quality perspective.

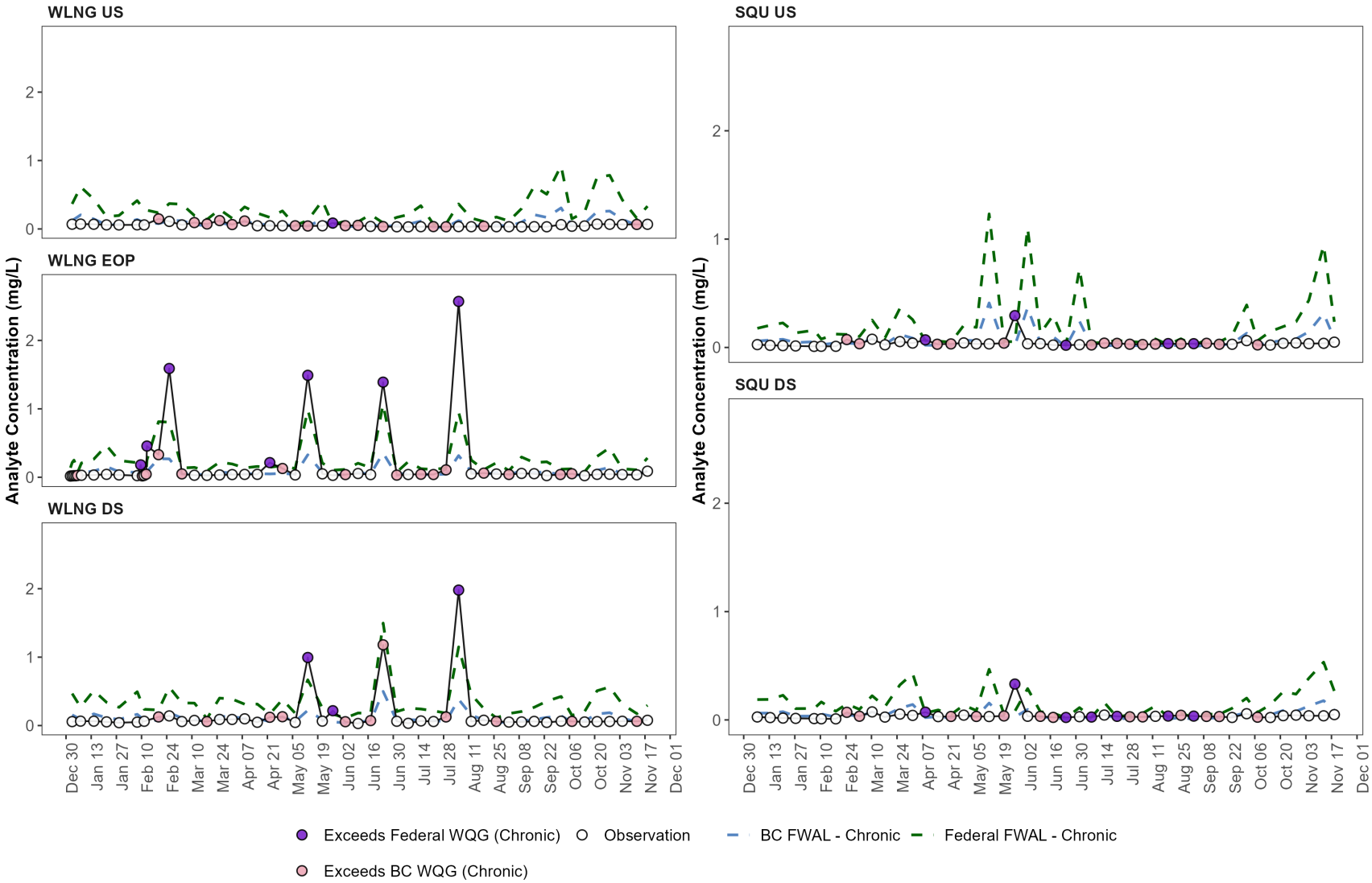
Figure 4 2025 Woodfibre EGP environmental monitoring results for total aluminum (mg/L).



3.2.2.3 Dissolved Aluminum Considerations

Although total aluminum concentrations have exceeded both the long-term BC WQGPAL and federal WQGPAL, these exceedance events at the WLNG DS station do not always align well with patterns in discharge concentrations (Figure 4), suggesting potential catchment related suspension of aluminum in sediments due to faster flows in East Creek downstream of the discharge driven by the steeper gradient between the WLNG EOP and WLNG DS station, compared to that at the WLNG US reference station. Aluminum is the third most abundant element in the Earth's crust and is commonly found in rocks, soil, and sediment, which may explain some of the discrepancies in the pattern of total aluminum shown in Figure 4 between the WLNG EOP and WLNG DS stations. Interestingly, when dissolved aluminum is compared between the WLNG EOP and WLNG DS stations (Figure 5), the concentration patterns appear to be a better match, supporting the interpretation that some of the total aluminum being measured downstream of the WLNG EOP at the WLNG DS station may be catchment related. Importantly, dissolved aluminum is generally considered a better indicator of potential effects to aquatic life given that it tends to be more bioavailable than total aluminum, which can be tightly bound to particulate matter. As outlined in Figure 5 for dissolved aluminum, despite low-level periodic exceedances of the chronic BC WQGPAL (i.e., intended to be applied as a monthly average) throughout 2025, these exceedance events have not been maintained consistently throughout any particular month, and only three isolated exceedance events have been identified for the federal WQGPAL (i.e., likely a better predictor of potential for ecological effects given the uncertainty factor of 3 applied to the BC WQGPAL). As such, aluminum discharge concentrations have not been determined to be at levels that would be expected to elicit adverse biological effects in East Creek during monitoring conducted throughout 2025, further supporting the interpretation of applicable permit limits provided in Hatfield (2024).

Figure 5 2025 Woodfibre EGP environmental monitoring results for dissolved aluminum (mg/L).



3.2.2.4 Acute Toxicity Considerations

It is important to note that despite these periodic exceedance events, results of bi-weekly acute 96-hour rainbow trout (*Oncorhynchus mykiss*) toxicity testing have consistently met permit conditions throughout 2025, with reported LC50 values consistently being >100% sample (Appendix A2), despite periodic exceedances of conservative BC WQGs for both dissolved copper (acute guideline) and total aluminum (chronic guideline) during these tests. Based on the findings presented in Appendix A2, acute toxicity was not identified during 96-hour rainbow trout survival tests with tested dissolved copper, total aluminum, and dissolved aluminum concentrations up to concentrations described in Table 2. Given these findings and the results of receiving environment monitoring in East Creek described in Figure 3, Figure 4, and Figure 5, it is recommended that the values summarized in Table 2 be adopted as discharge limits for dissolved copper and aluminum. As described above, dissolved aluminum appears to represent a more relevant parameter to be used for discharge quality limits given the influence that background flow conditions can have on total aluminum concentrations in the area of the project. As such, recommendations on alternative discharge quality limit requirements associated with WDP PE-110163 are outlined in Section 5.0 related to these considerations.

Table 2 Maximum tested concentrations of copper and aluminum that were not found to be acutely toxic during routine monitoring

Constituent of Concern	Maximum Tested Concentrations	Date Tested
Total aluminum	2.42	August 5, 2025
Dissolved aluminum	2.57	August 5, 2025
Dissolved copper	0.00366	August 5, 2025

4.0 PHYSICAL SETTING

East Creek (also known as WC 309-S6) is a small and partially ephemeral, incised channel that is divided into three reaches (Stantec 2022), as outlined in Figure 6. Reach 1 flows along the base of a hillslope and is bound by a parallel gravel access road. This reach is considered to have a modest gradient and flows east until the location of the WTP WLNG discharge pipe outlet. At this location, the water pools before entering a culvert (Culvert 1). The channel is then conveyed through Culvert 1 for approximately 10 m before it discharges onto a small flat and descends into a steep (40%), incised gully. At the outlet of the culvert, rip rap has been placed along both banks and across the bed of the channel for armouring purposes, before water descends the slope (Photo 1 and Photo 2).

Figure 6 East Creek reaches.

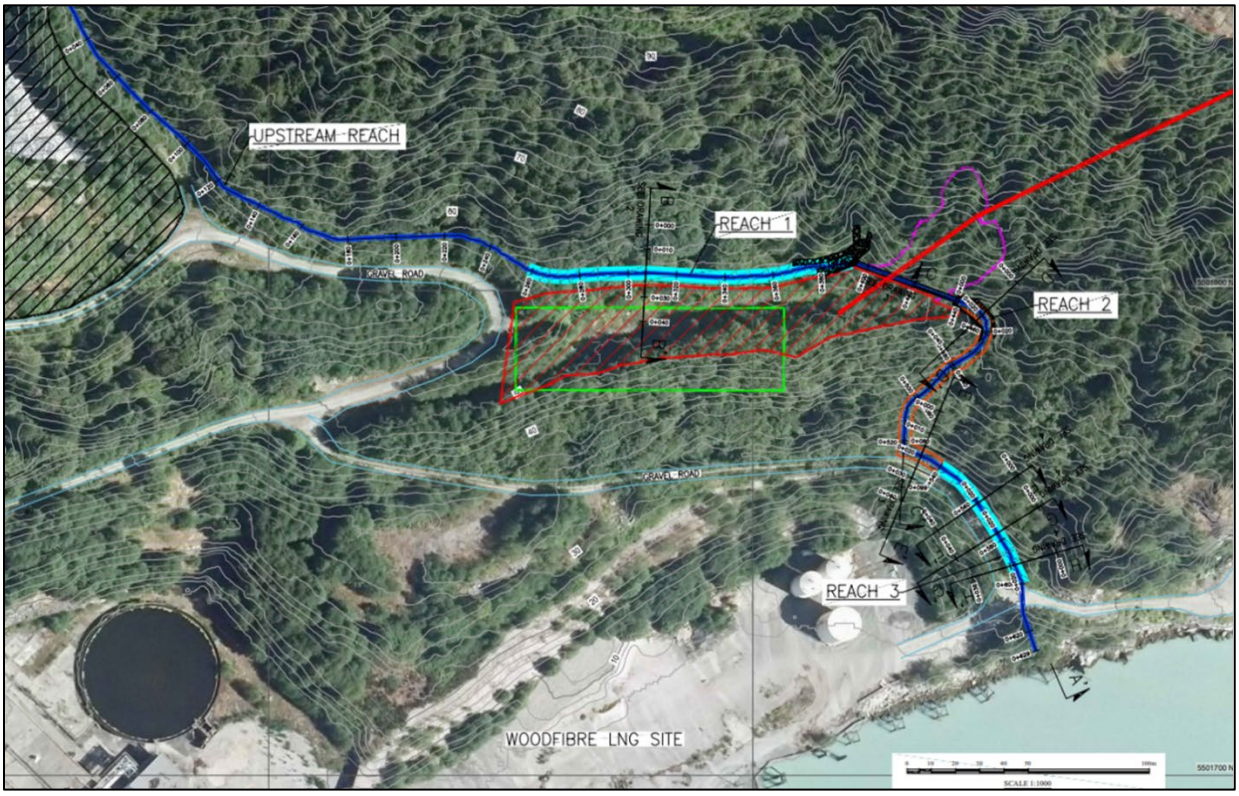


Photo 1 Standing along the top left bank of the gully facing northwest on April 11, 2025.

Photo 2 Standing along the top left bank of the facing downstream (southwest) on April 11, 2025.

The valley walls and channel banks of Reach 2 consist of glacial till, which is comprised of small-grained matrices mixed with large and unsorted boulders, cobbles, and gravels. Large woody debris, boulders, and a mix of cobbles comprise the channel bed. The top of slope on both sides of the gully are lined with mature trees, shrubs, and ferns. The channel flows through this steep, gullied morphology for approximately 15 m, before a distinct reduction in gradient for approximately 8 m occurs, before it descends into a narrow and inaccessible segment of the channel. At the time of the QP site visit (April 11, 2025), the bed and banks of the channel upstream of this location appeared to be in stable condition, despite the elevated flow conditions experienced for approximately 3 months (i.e., February to April). At the base of the gullied morphology, the channel immediately bends (southwest). At this location, it has been estimated

(Stantec 2022) that the channel will overtop the left bank under high flow conditions. Although the left bank is denuded, it is not expected for significant additional erosion to occur, as there is a floodplain accessible to dissipate flows. Beyond the bend, the channel narrows, straightens, and flows through forested terrain that could not be accessed or observed in detail. However, according to existing topographic data (Stantec 2022), it is known to be a steep section of creek (approximately 30% with some short lower-gradient stretches).

The channel emerges at the base of the hillslope as it descends over a bedrock outcrop and is bounded by a gravel access road and a constructed barrier (Photo 3). From this location, the channel was previously conveyed under the constructed gravel access road via a culvert (Culvert 2) and into Howe Sound (Photo 4). However, in November 2025, the constructed barrier was removed by Woodfibre and East Creek now flows down the original reach 3 channel. Reach 3 has been modified through construction of the WLNG site (i.e., independent of the EGP Project), with the channel designed to be able to contain and convey a 200-year flood event. The new reach 3 channel consists of an excavated channel armored with rip-rap and concrete (McDermott, 2025). Culvert 3 is located at the downgradient end of Reach 3, just prior to its discharge into Howe Sound, and consists of a double barrel 1.2 m diameter pipe culvert.

Photo 3 **Standing on the gravel access road at the base of the hillslope of Reach 2 on April 11, 2025, looking upstream (northeast) at the location the channel emerges from the forest and then is conveyed via the culvert in the foreground, toward Howe Sound.**

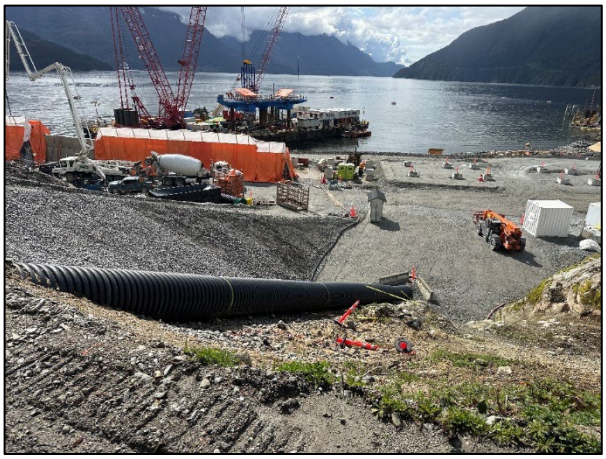


Photo 4 **Standing on the gravel access road looking south along at the culvert that discharges East Creek into Howe Sound on April 11, 2025.**

5.0 PROJECT RATIONALE

Based on observations during the SRK and Hatfield (2025a) QP site visit performed on April 11, 2025, despite discharge rates reaching up to double the currently approved discharge criteria during exceedance events that persisted between February and April (exceedances ranged between 1,580 m^3/day to 2,913 m^3/day over this period), the creek appeared to be in acceptable condition. At the time of the visit, the flows appeared to be a minor fraction of the natural flows occurring in the stream. Additionally, the following was determined:

- No obvious signs of accelerated erosion of the stream banks were observed (bald patches, freshly exposed rocks and roots, cracks, rills, and muddy water);
- The rip rap placed at the outlet of Culvert 1 appeared to remain well placed and seemed to be effectively dispersing flows and reducing velocity before entering the steepest portion of the channel, mitigating erosion risks; and
- The gravel access roads adjacent to Reach 1 and at the base of Reach 2 were in good condition and showed no signs of excessive erosion during the site visit. The constructed barrier and Culvert 2 conveying East Creek under the access road towards Howe Sound appeared to be functioning effectively, with no observed signs of excess erosion damage, flooding, or by-passing.

There have not been observations of elevated erosion or stream bank instability despite discharge rates reaching double the current approved discharge criteria during exceedance events that have persisted between February and April, which extended through freshet. Findings from the SRK and Hatfield (2025a) QP letter support the determination that effluent has not been discharged in a manner or quantity that would be expected to impair ecological structure or otherwise cause excessive erosion of the receiving environment into which the discharge of water was conveyed, consistent with requirements outlined in Section 2.3.8 of PE-110164. Further, the QP letter involved a preliminary review of information used to support the development of the original permit conditions. The main findings of the letter and observations of the site visit are outlined below:

- Despite three months of elevated discharge rates in East Creek above permitted levels (i.e., between 1,580 to 2,913 m^3/day), obvious signs of recent increased erosion of the stream banks were not observed during the April 11, 2025, field visit.
- Prior assessments of East Creek channel capacity were completed by modelling a 1:200-year flood event. The 1:200-year return period flow represents an extreme flood scenario, with a 0.5% chance of occurring in any given year.
- The discharge from the tunneling operations represents up to 35 L/s (3,000 m^3/day) of additional flows received by East Creek. This flow amounts to approximately 0.4% to 1% of the estimated 1:200-year return period peak flows estimated by previous studies.
- The additional discharge from the tunnelling operations is orders of magnitude below the peak flow of flood events susceptible to occur on site. Extreme events are generally the main drivers for erosion risks. During usual conditions, the constant and relatively low additional discharge is unlikely to significantly increase either the sediment transport competence (largest size of particles the stream can move) or capacity (total amount of sediment the stream can transport) of East Creek.

- Further, peak flows during freshet are expected to peak well below the 1:200-year return period discharge. As the summer months approach, it is expected that the discharge will continue to fall, further reducing risk of excessive bank erosion, barring significant storm events.
- Rip rap has been placed at the outlet of Culvert 1, dispersing flows and reducing velocity before entering the steepest portion of the channel.
- From the distal end of Reach 2 to the marine environment, the channel is conveyed via Culvert 2 and, therefore, there is no risk of erosion within that reach.
- Increased risk of erosion to the road is not expected due to the increased discharge from tunnelling operations into East Creek, as the increases in discharge appear to represent a minor fraction of the creek conveyance capacity.
- As outlined in Photo 1 to Photo 4 above, East Creek has been heavily modified by construction activities associated with the WLNG site (i.e., independent of discharges from the FortisBC EGP Project), including placement of rip rap, channelization of access roads for construction, and rerouting the lower reaches through a culvert. As such, limited natural streambed (<50 m) remains under current conditions between the WLNG WTP discharge and Howe Sound. Given the understanding described above related to a lack of observed impacts on the structural stability associated with the stream banks, and assuming discharge quality remains compliant with applicable discharge quality limits, adverse impacts to ecological structure (i.e., periphyton and benthic invertebrates; non-fish bearing system) are not expected given that current flows in East Creek appear to be well below natural stream flow conditions expected under extreme weather events.

To support the requested amendment to PE-110163, SRK (2025) performed hydraulic modelling using hydrometric data collected by Hatfield (2025a) and LiDAR data collected in 2025 by FortisBC. These data were utilized in the open channel 2D flood modelling software, HEC-RAS 2D, and culvert capacity verification software HY-8, to assess the capacity of East Creek under various discharge scenarios (i.e., current permitted discharge rates of 1,500 m^3/s, recent elevated flow conditions assessed by Hatfield [2025] of 3,000 m^3/day, current WTP treatment capacity limits of 4,090 m^3/day, and potential additional future increases in WTP treatment capacity limits of 6,815 m^3/day). SRK (2025) then evaluated these discharge scenarios under low-flow conditions (i.e., summer conditions identified by Hatfield [2025]), rainfall driven events (i.e., atmospheric river event identified in Hatfield [2025]), and a 2-year return period flow event. Key findings of the SRK (2025) assessment were:

- Localized increases in erosion potential are expected as discharge volumes from the WTP increases. These relative changes would be more significant during low flow conditions and become negligible during greater flow conditions.
- Usual flow conditions at East Creek present overall lower erosion potential relative to freshet conditions.
- The velocity and shear stress profiles during usual conditions increase with WTP discharge; however, the range and order of magnitude of modelled maximum velocity and modelled maximum shear stress statistical distribution over the flood areas is unchanged, suggesting hydraulic-driven erosion behavior would not change significantly with increased discharge from the WTP.

- Under 2-year return period flow conditions, flows are expected to remain confined within the bankfull width of the channel, regardless of the three WTP flow volume scenarios assessed. Higher flows may be contained within the banks of the channel but estimating this carries significant uncertainty due to model limitations.
- The main takeaways of the structure capacity verification were:
    - Culvert 1 and Culvert 3 are adequate to convey East Creek flows during the construction phase of the WLNG site, independently of the WTP discharge scenario;
    - Culvert 2 decommissioning and East Creek redirection through the Reach 3 constructed channel and Culvert 3 represented a significant improvement to East Creek conveyance capacity and operability, significantly reducing overtopping likelihood and associated risks; and,
    - Potential increases in WTP discharge are unlikely to impact constructed channel performance on Reach 3.

The combined findings from the erosion risk assessment and monitoring program suggest that Reach 2 of East Creek can accommodate increased discharge volumes from the WTP without significant acceleration of erosion processes, relative to currently approved conditions. However, continued monitoring and adaptive management were recommended to assess the long-term health of the channel, particularly around the high velocity/shear stress areas along the channel banks.

In case of an extreme flood event, SRK (2025) identified Culvert 1 as the first East Creek conveyance structure expected to reach its capacity at around 5,600 L/s flows. Implementation of mitigation strategies, such as peak flow attenuation, could help avoid overtopping Culvert 1 and potential damage to other structures. As a result, continued hydrometric and geomorphic monitoring performed between May and August 2025 by Hatfield (2025a) is recommended to continue to refine the site-specific stage-discharge relationship, monitor for adverse flow conditions defined by SRK (2025) above, and monitor for evidence of accelerated erosional changes within the channel. This additional monitoring and data collection is outlined in the Hatfield (2025b) hydrometric monitoring plan and will be used to refine the existing modelling outputs as needed and provide continued assessment of the channel conditions to support adaptive management planning, if required.

As such, FortisBC is requesting an amendment to WDP PE-110163 to support the continued operation of the Project. Proposed amendments are provided in Section 6.0, which is supported by the updated creek capacity modeling performed by SRK (2025), as well as preliminary hydrological and morphological monitoring performed between May and August 2025 by Hatfield (2025a).

6.0 PROJECT DESCRIPTION

A summary of proposed changes to permit PE-110163 and supporting rationale are provided in Table 3. In consideration of the additional water management needs, as well as lessons learned from routine discharge and receiving environment monitoring conducted to date under the existing WDP PE-110163, amendments to permit conditions 2.3.3 and 2.3.7 are requested in the present project description:

- Changes to the discharge volume limits are required to accommodate and effectively manage the higher-than-expected volumes of water being encountered during tunneling operations. As outlined in Section 5.0, FortisBC understands that it cannot discharge water that does not meet applicable BC WQGs from construction operations and, therefore, proposes to amend the permit to have a daily volume limit increased to the capacity of the WTP. Currently, the WTP capacity is 4,090 m^3/day, with planned capacity upgrades to 6,815 m^3/day. FortisBC proposes to amend the daily discharge limit to align with water treatment capacity, which is expected to be 6,815 m^3/day. To assess performance of these new discharge volume limits, FortisBC proposes to continue to assess East Creek using hydrological monitoring and discrete geomorphic assessments described in the Hatfield (2025b) hydrometric monitoring plan included in this application. These results will be used to monitor for excessive erosion caused by the discharge and, if these conditions are identified, provide an opportunity to identify and implement adaptive management approaches to address the situation.
- To effectively manage increased discharge flow volumes and consider results of site-specific water quality monitoring for dissolved copper, as well as total and dissolved aluminum, identified in East Creek throughout 2025, discharge quality limits are recommended to remain consistent with interpretations outlined in Hatfield (2024), but with consideration of site-specific acute toxicity results that have been determined for dissolved copper, as well as total and dissolved aluminum, as described in Section 3.2.2.

Routine monitoring and adaptive management are crucial to maintaining compliance and minimizing environmental impact. The proposed changes aim to promote conditions that will allow the EGP Project to operate within the intended conditions outlined in the original version of WDP PE-110163, while accommodating the increased water inflow anticipated during the tunneling and lessons learned through routine weekly environmental monitoring performed throughout 2025.

Table 3 Summary of current and proposed amendments to permit PE-110163 relating to discharges to East Creek.

Permit Section	Current Requirement	Proposed Amendment	Rationale
2.3.3.	The maximum authorized rate of discharge is 1,500 m^3/day.	The maximum authorized rate of discharge cannot exceed the capacity of the water treatment plant, which is expected to be 6,815 m^3/day.	The QP assessment found that the recent discharge rate exceedances have not impacted the structural stability of East Creek and that flows appear to be well below natural stream flow conditions expected under extreme weather events (SRK and Hatfield 2025). The assessment also noted that assuming discharge quality remains compliant with applicable discharge quality limits, adverse impacts to ecological structure (i.e., periphyton and benthic invertebrates; non-fish bearing system) are not expected (SRK and Hatfield 2025). Therefore, to maintain effluent quality under higher discharge flow scenarios, an amendment to section 2.3.3 of the Permit is recommended, which would involve discharge volume limits being tied to water treatment capacity. This condition would maintain that only treated water would be discharged to East Creek and, given the wide range of potential water ingress volumes identified by Delve (2025), would also provide flexibility to increase WTP capacity to meet project demands. To assess performance of these new discharge volume limits, FortisBC proposes to continue to assess East Creek using hydrological monitoring and discrete geomorphic assessments described in the Hatfield (2025b) hydrometric monitoring plan included in this application. These results will be used to monitor for excessive erosion caused by the discharge and, if these conditions are identified, provide an opportunity to identify and implement adaptive management approaches to address the situation.
2.3.7.	The effluent discharged from the wastewater treatment system shall not exceed the applicable British Columbia Approved and Working Water Quality Guidelines for Freshwater & Marine Aquatic Life, as published by the Ministry of Environment & Climate Change Strategy. Additionally, the effluent shall be free of other contaminants in concentrations that may have an adverse effect on the receiving environment.	The effluent discharged from the wastewater treatment system shall not exceed: ▪ Dissolved copper concentrations of 0.00366 mg/L; ▪ Dissolved aluminum concentrations of 2.42 mg/L; and ▪ For constituents other than dissolved copper and dissolved aluminum, the applicable British Columbia Approved and Working Water Quality Guidelines, as described in the Hatfield (2024) memorandum entitled: “EGP Effluent Discharge Permit Condition Review.”	To effectively manage increased discharge flow volumes and consider results of site-specific water quality monitoring for dissolved copper, as well as total and dissolved aluminum, identified in East Creek throughout 2025, discharge quality limits are recommended to remain consistent with interpretations outlined in Hatfield (2024), but with consideration of site-specific acute toxicity results that have been determined for dissolved copper, as well as total and dissolved aluminum, through monitoring conducted in 2025.

7.0 CONSULTATION AND ENGAGEMENT

The EGP Project is situated on the western shores of Howe Sound, which lies within the ancestral and traditional territory of the Sḵwx̱wú7mesh Úxwumixw (Squamish Nation). The Project is also located within the District of Squamish and is approximately 5 km northeast of town center.

FortisBC has actively engaged with representatives of BCER and the Squamish Nation during the original permitting of PE-110163, as well as during weekly and quarterly reporting of routine monitoring results. FortisBC intends to continue to consult with these parties on the proposed amendment applications.

7.1 MANAGEMENT AND MONITORING PLANS

To assess performance of new proposed discharge volume limits, FortisBC proposes to continue to monitor East Creek using hydrological monitoring and geomorphic assessments described in the Hatfield (2025b) hydrometric monitoring plan included in this application. These results will be used to monitor for excessive erosion caused by the discharge and, if these conditions are identified, provide an opportunity to identify and implement adaptive management approaches to address the situation. Further, interpretation of "applicable" BC WQGPALs to be assessed for compliance purposes at end-of-pipe will continue to be based on interpretations provided in Hatfield (2024).

No other modifications to existing management or monitoring plans are proposed, besides the requested amendments outlined in Table 1 above.

8.0 CLOSURE

We trust the above information meets your requirements. If you have any questions or comments, please contact the undersigned.

Brett Lucas, MSc, RPBio
Manager, Ecotoxicology & Risk Assessment | Partner
HATFIELD CONSULTANTS LLP

Karen McMillan, MES
Manager, Infrastructure & Environment | Partner
HATFIELD CONSULTANTS LLP

Camilo Gallard, MScEng, PEng/Ing
Senior Consultant (Water Resources)
SRK Consulting

9.0 REFERENCES

British Columbia Ministry of Environment and Climate Change Strategy. 2019. Copper Water Quality Guideline for the Protection of Freshwater Aquatic Life – Technical Report. Water Quality Series, WQG-03-1. Victoria, BC.

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FortisBC Energy Inc. (FortisBC). 2022. Technical Assessment Report for Waste Discharge Authorization at the WLNG Site. Eagle Mountain – Woodfibre Gas Pipeline Project. Dated August 31, 2022

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Hatfield Consultants LLP. 2025. East Creek Hydrometric Flow Monitoring and Geomorphological Assessment Summary for the Period of May to August 2025. Dated November 10, 2025.

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SRK Consulting. 2025. East Creek Hydraulics – Discharge Capacity Assessment. CAPR003790. Dated December 16, 2025

Stantec Consulting Ltd. (Stantec). 2022. Woodfibre LNG Project – Hydrology and Hydraulics Assessment of East Creek. Project Number 123221907. Dated August 2, 2022.

APPENDICES

Appendix A1

WDP Permit PE-110163

British Columbia Energy Regulator

6534 100th Avenue, Fort St. John, B.C
V1J 8C5

PERMIT
PE-110163

Under Section 14 of the Environmental Management Act

FortisBC Energy Inc.
16705 Fraser Highway
Surrey, B.C
V4N 0E8

is authorized to discharge effluent to the environment from the **Eagle Mountain Pipeline Tunnel** construction project subject to the conditions listed below. Contravention of any of these conditions is a violation of the *Environmental Management Act* and may result in prosecution.

1. DEFINITIONS

For the purpose of this permit, the following definitions apply:

1.1. ***Act*** means the Environmental Management Act;

1.2. ***BCER*** means the British Columbia Energy Regulator;

1.3. ***Discharge*** means the total mass of a solid, liquid or gaseous material introduced into the environment;

1.4. ***Manager*** means a BCER employee authorized to exercise the powers of the BCER under Section 14 of the *Environmental Management Act*;

1.5. ***Permittee*** means FortisBC Energy Inc.

1.6. ***Qualified Professional*** a person who has training, experience and expertise in a discipline relevant to the area of practice set out in the condition, and who is registered with the appropriate professional organization in British Columbia, is acting under that organization's code of ethics and is subject to disciplinary action by that organization.

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Supervisor, Environmental Stewardship

1.7. ***Operational Phase Change*** – refers to the transitions between distinct stages of tunnel construction that could result in quantifiable changes to the effluent quality (i.e. site and portal preparation, tunneling process, pipeline hydrostatic testing, and tunnel backfilling).

2. AUTHORIZED DISCHARGES

2.1 This subsection applies to the discharge of effluent from the **BC RAIL SITE**. The site reference number for this discharge is E331334.

2.1.1. The location of the source of the discharge is described as the BC Rail Site, PID 013-336-282, District Lot 4262. The source of the discharge includes contact water from precipitation, groundwater and water generated during the construction process including drilling, grouting and tunnel boring.

2.1.2. The authorized point of discharge into the existing BC Rail Properties Ltd. storm sewer is described as 49.7236 N, -123.1597W, referenced in this permit as the point of compliance.

2.1.3. The authorized point of discharge into the receiving environment is described as from the existing BC Rail Properties Ltd. storm sewer outfall located at 49.7261 N, -123.1646 W.

2.1.4. During heavy rainfall or melt events, the discharge input shall not cause the storm system to be overwhelmed, discharge rates shall be adjusted accordingly.

2.1.5. The maximum authorized rate of discharge is 515 m^3/day.

2.1.6. The authorized discharge period is continuous.

2.1.7. The Permittee shall measure and record the daily volumetric rate of discharge.

2.1.8. The authorized works include a wastewater treatment system, tanks, pumps, hoses, energy dissipating equipment, sediment controls and ancillary equipment.

2.1.9. The effluent discharged from the wastewater treatment system at the point of compliance, shall not exceed the applicable British Columbia Approved and Working Water Quality Guidelines for Freshwater & Marine Aquatic Life, as published by the Ministry of Environment & Climate Change

Strategy. Additionally, the effluent shall be free of other contaminants in concentrations that may have an adverse effect on the receiving environment.

2.1.10. The effluent shall not be discharged in a manner or quantity that impairs the proper ecological function or otherwise causes excessive erosion of the receiving environment into which the discharge of water is conveyed.

2.2 This subsection applies to the discharge of effluent from pipeline hydrostatic testing at the **BC RAIL SITE**. The site reference number for this discharge is E331351.

2.2.1. The source of the discharge is non treated water obtained for the purposes of conducting the hydrostatic pipeline test.

2.2.2. The authorized point of discharge into the existing BC Rail Properties Ltd. storm sewer is described as 49.7236 N, -123.1597 W, referenced in this permit as the point of compliance.

2.2.3. The authorized point of discharge into the receiving environment is described as from the existing BC Rail Properties Ltd. storm sewer outfall located at 49.7261 N, -123.1646 W.

2.2.4. During heavy rainfall or melt events, the discharge input shall not cause the storm system to be overwhelmed, discharge rates shall be adjusted accordingly.

2.2.5. The maximum authorized volume of discharge is 2700 m^3.

2.2.6. The authorized discharge period is continuous.

2.2.7. The Permittee shall measure and record the daily volumetric rate of discharge.

2.2.8. The authorized works include hydrostatic test equipment, wastewater treatment system, tanks, pumps, hoses, energy dissipating equipment, sediment controls and ancillary equipment.

2.2.9. The effluent discharged from the wastewater treatment system at the point of compliance, shall not exceed the applicable British Columbia Approved and Working Water Quality Guidelines for Freshwater & Marine Aquatic Life, as published by the Ministry of Environment & Climate Change Strategy. Additionally, the effluent shall be free of other contaminants in

concentrations that may have an adverse effect on the receiving environment.

2.2.10. The effluent shall not be discharged in a manner or quantity that impairs the proper ecological function or otherwise causes excessive erosion of the receiving environment into which the discharge of water is conveyed.

2.3 This section applies to the discharge of effluent from the **WOODFIBRE SITE**. The site reference number for this discharge is E331335.

2.3.1. The location of the source of the discharge is described as the Woodfibre Site, PID 015-791-611, District Lot 6237, DL1337 & DL6232. The source of the discharge includes contact water from precipitation, runoff, groundwater inflow within the bedrock tunnel and tunnel boring machine industrial water including water for drilling, probing and cleaning equipment, and precipitation and runoff from the potential acid generating rock temporary storage.

2.3.2. The authorized point of discharge is described as into East Creek, discharge outfall located at 49.6694 N, -123.2484 W.

2.3.3. The maximum authorized rate of discharge is 1500 m^3/day.

2.3.4. The authorized discharge period is continuous.

2.3.5. The Permittee shall measure and record the daily volumetric rate of discharge.

2.3.6. The authorized works include, wastewater treatment system, tanks, pumps, hoses, energy dissipating equipment, sediment controls and ancillary equipment.

2.3.7. The effluent discharged from the wastewater treatment system shall not exceed the applicable British Columbia Approved and Working Water Quality Guidelines for Freshwater & Marine Aquatic Life, as published by the Ministry of Environment & Climate Change Strategy. Additionally, the effluent shall be free of other contaminants in concentrations that may have an adverse effect on the receiving environment.

2.3.8. The effluent shall not be discharged in a manner or quantity that impairs the proper ecological function or otherwise causes excessive erosion of the receiving environment into which the discharge of water is conveyed.

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3.0 GENERAL REQUIREMENTS

3.1 Maintenance of Works and Emergency Procedures

The Permittee shall inspect the authorized works regularly and maintain them in good working order. Records of inspection shall be maintained and made available to BCER upon request.

In the event of an emergency or condition beyond the control of the Permittee, which prevents continuing operation of the authorized works, the Permittee shall immediately notify the Manager and take appropriate remedial action.

Instances of permit non-compliance shall be self-disclosed upon discovery, as outlined within Chapter 3 of the BCER Compliance & Enforcement Manual; Waste.Management@bc-er.ca shall also be informed of the self-disclosure.

For spills which meet the Spill Reporting Regulation reporting criteria, a report shall be made immediately to the Provincial Emergency Program telephone 1-800-663-3456.

3.2 Bypasses

The discharge of contaminants, which have bypassed the authorized works, is prohibited unless the consent of the Manager is obtained and confirmed in writing.

3.3 Process Modifications

The Permittee shall notify the Manager prior to implementing changes to any process that may affect the quality and/or quantity of the discharge.

3.4 Sampling Procedures

The Permittee shall carry out sampling in accordance with the procedures described in the most recent edition of the "British Columbia Field Sampling Manual". Alternative procedures shall be authorized by the Manager.

3.5 Analytical Procedures

The Permittee shall carry out analyses in accordance with the procedures described in the latest edition of the "British Columbia Laboratory Manual". Alternative procedures shall be authorized by the Manager.

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3.6 Post Discharge

The Permittee shall ensure that all temporary equipment associated with the discharge is removed from the work area in a manner as to minimize environmental impact.

3.7 Methods and Mitigations

The Permittee shall undertake all authorized works based on the methods and mitigations set out in the permit application, unless superseded by conditions in this permit.

4 SAMPLING, MONITORING AND REPORTING REQUIREMENTS

The Manager may alter the monitoring and reporting program as needed. The need for changes to the program shall be based upon the results submitted as well as any other information obtained by the BCER and Environmental Protection staff in connection with the discharges.

4.1 Discharge and Compliance Monitoring

4.1.1. The Permittee shall maintain information, analytical data and flow measurements as described in Section 2 for records and inspection by BCER.

4.1.2. The Permittee shall retain a qualified professional to implement and oversee the monitoring and sampling program. The monitoring and sampling program shall demonstrate the discharge quality meets the discharge quality defined in Section 2 and that increased flows to the receiving environment do not impact water quality or the receiving environment.

Table 1. B.C Rail Site Sampling and Monitoring Program

Description	Sampling Location*	Sampling Frequency*	Parameters*
Batch Testing Prior to Discharge	At the point of discharge from the water treatment system	Once to confirm compliance with each operational phase change	• In situ field parameters including turbidity, dissolved oxygen (mg/L), pH, temperature (˚C), electrical conductivity (µS/cm), visible sheen (visual), oxidation reduction potential (ORP), salinity (ppt) • Routine parameters

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			including pH, salinity, hardness, alkalinity, electrical conductivity (µS/cm), solids total dissolved (TDS), solids total suspended (TSS), turbidity, ORP • Major Ions including Br, Ca, Cl, F, Mg, K, Na, SO_4, sulphide (as unionized H_2S) • Nutrients including NH_3, NH_4, NO_2, NO_3, total nitrogen, total phosphorous, • Dissolved and Total Contaminated Sites Regulation (CSR) metals, • Glycols including ethylene glycol, propylene glycol, 1, 2- • Organics including $EPH_{(10-19)}$, Polycyclic Aromatic Hydrocarbons acenaphthene, acridine, anthracene, benzo(a)anthracene, benzo(a)pyrene, chrysene, fluoranthene, fluorene, naphthalene, phenanthrene, pyrene • Organics including Volatile Organic Compounds, VPHs, benzene, ethylbenzene (C_8H_{10}), monochlorobenzene, styrene, toluene, xylene ($C_6H_4(CH_3)_2$) • Organics - Others phenols, total & dissolved organic carbon
Active Discharge Operations	At the point of discharge from the	Real Time	pH, temperature, NTU, electrical conductivity

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	water treatment system	Daily	Visible sheen, DO, ORP, salinity
		Daily for one week following an operational phase change Weekly thereafter	• Routine parameters • Major Ions • Nutrients • Dissolved and Total CSR metals • Glycols including ethylene glycol, propylene glycol, 1, 2- • Organics including $EPH_{(10-19)}$, Polycyclic Aromatic Hydrocarbons acenaphthene, acridine, anthracene, benzo(a)anthracene, benzo(a)pyrene, chrysene, fluoranthene, fluorene, naphthalene, phenanthrene, pyrene • Organics including Volatile Organic Compounds VPHs, benzene, ethylbenzene (C_8H_{10}), monochlorobenzene, styrene, toluene, xylene ($C_6H_4(CH_3)_2$) • Organics – Others Phenols, total & dissolved organic carbon
		Every two weeks	Toxicity Testing 96-hr LC50 Rainbow Trout
	Receiving Environment Upstream of Discharge (49.726866N, -123.163912W)	Real Time	pH, temperature, NTU, electrical conductivity
		Daily	Visible sheen, DO, ORP, salinity
		Weekly	• Routine parameters
		As necessary based on the discharge & downstream data	• Routine parameters • Major Ions • Nutrients • Dissolved and Total CSR metals
	Receiving Environment Downstream of	Real Time	pH, temperature, NTU, electrical conductivity

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Supervisor, Environmental Stewardship

	Discharge (49.725282N, -123.165175W)	Daily	Visible sheen, DO, ORP, salinity
		Weekly	• Routine parameters • Major Ions • Nutrients • Dissolved and Total CSR metals

*The sampling frequency, parameters and locations may be revised or reduced upon a history of compliance and stabilization of parameters. Sampling frequency, parameters and locations may be revised or reduced upon written confirmation from the BCER. Upon monitored/measured exceedance the sampling frequency for the exceeding parameter(s) shall revert to the most stringent.

Table 2. Woodfibre Site Sampling and Monitoring Program

Description	Sampling Location*	Sampling Frequency*	Parameters*
Batch Testing Prior to Discharge	At the point of discharge from the water treatment system	Once to confirm compliance with each operational phase change	• In situ field parameters including turbidity, dissolved oxygen (mg/L), pH, temperature (˚C), electrical conductivity (µS/cm), visible sheen (visual), oxidation reduction potential (ORP), salinity (ppt) • Routine parameters including pH, salinity, hardness, alkalinity, electrical conductivity (µS/cm), solids total dissolved (TDS), solids total suspended (TSS), turbidity, ORP • Major Ions including Br, Ca, Cl, F, Mg, K, Na, SO_4, sulphide (as unionized H_2S) • Nutrients including NH_3, NH_4, NO_2, NO_3, total nitrogen, total phosphorous, • Dissolved and Total Contaminated Sites Regulation (CRD) metals, • Glycols including ethylene glycol, propylene glycol, 1, 2- • Organics including

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			$EPH_{(10-19)}$, Polycyclic Aromatic Hydrocarbons acenaphthene, acridine, anthracene, benzo(a)anthracene, benzo(a)pyrene, chrysene, fluoranthene, fluorene, naphthalene, phenanthrene, pyrene • Organics including Volatile Organic Compounds, VPHs, benzene, ethylbenzene (C_8H_{10}), monochlorobenzene, styrene, toluene, xylene ($C_6H_4(CH_3)_2$) • Organics – Others Phenols, total & dissolved organic carbon
Active Discharge Operations	At the point of discharge from the water treatment system	Real Time	pH, temperature, NTU, electrical conductivity
		Daily	Visible sheen, DO, ORP, salinity
		Daily for one week following an operational phase change. Weekly thereafter	• Routine parameters • Major Ions • Nutrients • Dissolved and Total CSR metals • Glycols including ethylene glycol, propylene glycol, 1, 2- • Organics including $EPH_{(10-19)}$, Polycyclic Aromatic Hydrocarbons acenaphthene, acridine, anthracene, benzo(a)anthracene, benzo(a)pyrene, chrysene, fluoranthene, fluorene, naphthalene, phenanthrene, pyrene • Organics including Volatile Organic

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			Compounds VPHs, benzene, ethylbenzene (C_8H_{10}), monochlorobenzene, styrene, toluene, xylene ($C_6H_4(CH_3)_2$) • Organics – Others phenols, total & dissolved organic carbon
		Every two weeks	Toxicity Testing 96-hr LC50 Rainbow trout
	Receiving Environment Upstream of Discharge (49.669455˚N, -123.250870˚W)	Real Time	pH, temperature, NTU, electrical conductivity
		Daily	Visible sheen, DO, ORP, salinity
		Weekly	• Routine parameters
		As necessary based on the discharge & downstream data	• Routine parameters • Major Ions • Nutrients • Dissolved and Total CSR metals
	Receiving Environment Downstream of Discharge (49.668300˚N, -123.247958˚W)	Real Time	pH, temperature, NTU, electrical conductivity
		Daily	Visible sheen, DO, ORP, salinity
		Weekly	• Routine parameters • Major Ions • Nutrients • Dissolved and Total CSR metals

* The sampling frequency, parameters and locations may be revised or reduced upon a history of compliance and stabilization of parameters. Sampling frequency, parameters and locations may be revised or reduced upon written confirmation from the BCER. Upon monitored/measured exceedance the sampling frequency for the exceeding parameter(s) shall revert to the most stringent.

Table 3. Hydrostatic Test Discharge Monitoring Program BC Rail Site

Description	Sampling Location	Frequency	Parameters
Active Discharge Operations	Point of Discharge from the Water Treatment System	Daily	In situ field parameters
	Receiving Environment Downstream of Discharge (49.725282N, -123.165175W)	Daily	In situ field parameters

4.1.3. The Permittee shall provide notification to the BCER, Waste.Management@bc-er.ca,

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at the start of the commissioning phase of the water treatment plant. Process flow as-builts of the water treatment plant shall be submitted to the BCER at the same email address.

4.1.4. Discharge to the receiving environment shall be halted immediately upon observed exceedance of any parameter at the point of discharge from the water treatment system.

4.1.5. The Permittee shall track the status of the daily discharge, including discharge rates, monitoring logs, field and lab sample results, field notes, field meter calibration logs, reports & photos. Daily records shall be compiled.

4.1.6. If, in the opinion of the qualified professional responsible for the monitoring program, the discharge is or is likely causing adverse effects to the environment, the discharge shall be halted immediately.

4.1.7. If, in the opinion of the qualified professional responsible for the monitoring program, the discharge is or is likely causing adverse effect to the environment, the Manager shall be notified immediately at (250) 883-4958.

4.1.8. Photographs of the authorized works and authorized discharge shall be taken prior to, throughout and after the discharge. These shall be submitted upon request from the BCER and included as part of the weekly reporting.

4.2 Reporting

The Permittee shall summarize the results of the discharge and receiving environment compliance sampling and monitoring program in a report that shall be submitted weekly over the term of this permit. The sampling and monitoring results shall be suitably tabulated and include comparison to the respective British Columbia Approved and Working Water Quality Guidelines for Freshwater & Marine Aquatic Life, as published by the Ministry of Environment & Climate Change Strategy. Any exceedance of regulatory guidelines shall be clearly highlighted, and any missed sampling events/missing data shall 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 the subject permit, and also made publicly available on the FortisBC Eagle Mountain-Woodfibre Gas Pipeline Project | Talking Energy webpage.

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Eagle Mountain Woodfibre Gas Pipeline

Figure 2.
BC Rail Site Authorized Discharge

Legend

- Catchbasin
- Floodbox
- Manhole
- Discharge
- Downstream Receiving
- Upstream Background
- Culvert
- Storm Main
- Proposed EGP North 610 TP Pipeline
- Proposed Tunnel Route
- Easement
- Skwelwil'em Squamish Estuary WMA

Sources and Disclaimer

1. Base map Source: ESRI World Imagery
2. Base map Data: Client Provided Data
3. Disclaimer: This map has been prepared to illustrate the results of our work, and is **not intended to be used for navigational purposes**. Information displayed on this map is based, in whole or in part, on geographic information that may have been provided by third parties, including government data. Triton Environmental Consultants Ltd. disclaims (without limiting the generality of the foregoing) all responsibility for the accuracy of any such third party information, regardless of the source.

DATE	SCALE	PROJECT NUMBER
August 2, 2023	1:5,000	11581
PROJECTION	REVISION	PAGE SIZE
UTM Zone 10 (NAD 1983)	07	11 x 17
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Environmental Consultants

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5502095 5501895 5501695

EAS US1

E331335

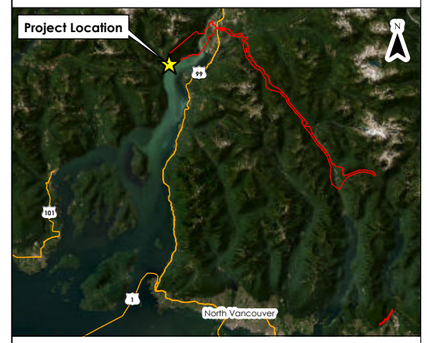
EAS DS1

N W E S

Eagle Mountain Woodfibre Gas Pipeline

Figure 1.

Woodfibre Site Authorized Discharge



Legend

- Discharge
- Downstream Receiving
- Upstream Background
- Proposed Tunnel Route
- Approved Project Area

Sources and Disclaimer

1. Base map Source: ESRI World Imagery
2. Base map Data: Client Provided Data
3. Disclaimer: This map has been prepared to illustrate the results of our work, and is **not intended to be used for navigational purposes**. Information displayed on this map is based, in whole or in part, on geographic information that may have been provided by third parties, including government data. Triton Environmental Consultants Ltd. disclaims (without limiting the generality of the foregoing) all responsibility for the accuracy of any such third party information, regardless of the source.

DATE	SCALE	PROJECT NUMBER
August 21, 2023	1:2,000	11581
PROJECTION	REVISION	PAGE SIZE
UTM Zone 10 (NAD 1983)	04	11 x 17
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GF	SH	

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Appendix A2

Summary of 2025 Acute Toxicity Results

Date	Analyte	WLNG EOP	RBT_tox_perc_survival
2025-01-14	Aluminum (Al)-Dissolved_Concentration (liquid)	0.0325	>100%
2025-01-14	Aluminum (Al)-Total_Concentration (liquid)	0.113	>100%
2025-01-14	Copper (Cu)-Dissolved_Concentration (liquid)	0.00089	>100%
2025-01-28	Aluminum (Al)-Dissolved_Concentration (liquid)	0.034	>100%
2025-01-28	Aluminum (Al)-Total_Concentration (liquid)	0.047	>100%
2025-01-28	Copper (Cu)-Dissolved_Concentration (liquid)	0.0002	>100%
2025-02-11	Aluminum (Al)-Dissolved_Concentration (liquid)	0.0274	>100%
2025-02-11	Aluminum (Al)-Total_Concentration (liquid)	0.0283	>100%
2025-02-11	Copper (Cu)-Dissolved_Concentration (liquid)	0.00045	>100%
2025-02-25	Aluminum (Al)-Dissolved_Concentration (liquid)	1.59	>100%
2025-02-25	Aluminum (Al)-Total_Concentration (liquid)	1.85	>100%
2025-02-25	Copper (Cu)-Dissolved_Concentration (liquid)	0.00145	>100%
2025-03-18	Aluminum (Al)-Dissolved_Concentration (liquid)	0.028	>100%
2025-03-18	Aluminum (Al)-Total_Concentration (liquid)	0.0728	>100%
2025-03-18	Copper (Cu)-Dissolved_Concentration (liquid)	0.000629	>100%
2025-04-01	Aluminum (Al)-Dissolved_Concentration (liquid)	0.039	>100%
2025-04-01	Aluminum (Al)-Total_Concentration (liquid)	0.043	>100%
2025-04-01	Copper (Cu)-Dissolved_Concentration (liquid)	0.000094	>100%
2025-04-15	Aluminum (Al)-Dissolved_Concentration (liquid)	0.0425	>100%
2025-04-15	Aluminum (Al)-Total_Concentration (liquid)	0.132	>100%
2025-04-15	Copper (Cu)-Dissolved_Concentration (liquid)	0.000796	>100%
2025-04-29	Aluminum (Al)-Dissolved_Concentration (liquid)	0.128	>100%
2025-04-29	Aluminum (Al)-Total_Concentration (liquid)	0.237	>100%
2025-04-29	Copper (Cu)-Dissolved_Concentration (liquid)	0.000507	>100%
2025-05-21	Aluminum (Al)-Dissolved_Concentration (liquid)	0.0497	>100%
2025-05-21	Aluminum (Al)-Total_Concentration (liquid)	0.291	>100%
2025-05-21	Copper (Cu)-Dissolved_Concentration (liquid)	0.000366	>100%
2025-06-03	Aluminum (Al)-Dissolved_Concentration (liquid)	0.039	>100%
2025-06-03	Aluminum (Al)-Total_Concentration (liquid)	0.125	>100%
2025-06-03	Copper (Cu)-Dissolved_Concentration (liquid)	0.000209	>100%
2025-06-17	Aluminum (Al)-Dissolved_Concentration (liquid)	0.0385	>100%
2025-06-17	Aluminum (Al)-Total_Concentration (liquid)	0.0784	>100%
2025-06-17	Copper (Cu)-Dissolved_Concentration (liquid)	0.000193	>100%
2025-07-02	Aluminum (Al)-Dissolved_Concentration (liquid)	0.0312	>100%
2025-07-02	Aluminum (Al)-Total_Concentration (liquid)	0.0972	>100%
2025-07-02	Copper (Cu)-Dissolved_Concentration (liquid)	0.000264	>100%
2025-07-15	Aluminum (Al)-Dissolved_Concentration (liquid)	0.0437	>100%
2025-07-15	Aluminum (Al)-Total_Concentration (liquid)	0.108	>100%
2025-07-15	Copper (Cu)-Dissolved_Concentration (liquid)	0.000533	>100%
2025-08-05	Aluminum (Al)-Dissolved_Concentration (liquid)	2.57	>100%
2025-08-05	Aluminum (Al)-Total_Concentration (liquid)	2.42	>100%
2025-08-05	Copper (Cu)-Dissolved_Concentration (liquid)	0.00366	>100%
2025-08-12	Aluminum (Al)-Dissolved_Concentration (liquid)	0.0497	>100%
2025-08-12	Aluminum (Al)-Total_Concentration (liquid)	0.0792	>100%
2025-08-12	Copper (Cu)-Dissolved_Concentration (liquid)	0.000254	>100%
2025-08-26	Aluminum (Al)-Dissolved_Concentration (liquid)	0.0478	>100%
2025-08-26	Aluminum (Al)-Total_Concentration (liquid)	0.151	>100%
2025-08-26	Copper (Cu)-Dissolved_Concentration (liquid)	0.000466	>100%
2025-09-09	Aluminum (Al)-Dissolved_Concentration (liquid)	0.056	>100%
2025-09-09	Aluminum (Al)-Total_Concentration (liquid)	0.148	>100%
2025-09-09	Copper (Cu)-Dissolved_Concentration (liquid)	0.000266	>100%