

British Columbia Energy Regulator

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

PERMIT
PE-111578

Under Section 14 of the Environmental Management Act

**Woodfibre LNG General Partner Inc., as General Partner on behalf of the
Woodfibre LNG Limited Partnership**

is authorized to discharge treated effluent to the environment from the **Woodfibre LNG Export Facility** 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. **Application** means the “Technical Assessment Report for the Woodfibre LNG Export Facility Construction Phase Waste Discharge Authorization, February 17, 2023, by Lorax Environmental Services Ltd.”, and all the supporting documents and appendices.
- 1.3. **BCER** means the British Columbia Energy Regulator;
- 1.4. **Discharge** means the total mass of a solid, liquid or gaseous material introduced into the environment;
- 1.5. **Dry Conditions** refers to precipitation less than 20mm within a 24-hour period, or as deemed appropriate by the Manager.



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- 1.6. **Initial Dilution Zone (IDZ)** means a cylinder with a maximum 150m radius around the discharge point, extending from the sediment to the water surface (MOE 1987) for Marine point discharges.
- 1.7. **Manager** means a BCER employee authorized to exercise the powers of the BCER under Section 14 of the *Environmental Management Act*;
- 1.8. **Permittee** means Woodfibre LNG General Partner Inc.
- 1.9. **Qualified Professional** is 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.
- 1.10. **Site** means the Certified Project Area (CPA) identified in the Environmental Assessment Certificate for the Project including:
- PID 015-791-611, District Lot 6237, New Westminster District, Except Plan EPP86841
 - PID 015-822-061, District Lot 5899, New Westminster District, Except Part in Reference Plan 5238
 - PID: 031-814-026; Lot A, District Lots 2351 and 8295, Group 1, New Westminster District, Plan EPP86843PID: 031-813-992; Lot 1, District Lots 2802 and 8294, Group 1, New Westminster District, Plan EPP86842.
 - Water Lot Lease (File No. 2412152) commencing September 1, 2023, granted by His Majesty the King in right of the Province of British Columbia by the minister responsible for the Ministry of Lands, Parks and Housing Act in respect of District Lot 8296, Group 1, New Westminster District, 66.4 hectares, as shown on EPC1844.
- 1.11. **Wet Conditions** means when 20mm of precipitation or more falls within a 24-hour period, or as deemed appropriate by the Manager.

2. **AUTHORIZED DISCHARGES**

- 2.1. This subsection applies to the discharge of effluent from the **East Sedimentation Pond Outlet**. The site reference number for this discharge is E332536.
- 2.1.1. The location of the source of the discharge is described as the eastern catchment area of the Site. The source of the discharge are surface waters and groundwater associated with activities related to the construction of



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the proposed Woodfibre LNG export facility including excavations, surface runoff, truck wash stations, vehicle fuelling, blasting and concrete work. The authorized works and discharge locations are as shown in attached Figure 1.

- 2.1.2. The authorized point of discharge is described as 49.6678°, -123.2488°.
- 2.1.3. The maximum authorized rate of discharge from the East Wastewater Treatment Plant is 1100 m³/day.
- 2.1.4. The annual average authorized discharge rate from the East Sedimentation Pond has been set to 650 m³/day for the purpose of calculating discharge fees as required by the Permit and Approval Fees and Charges Regulation. The actual discharge rate may deviate from the average rate due to annual variations in precipitation amounts within the catchment area. The authorized discharge period is continuous.
- 2.1.5. The permittee shall measure and record the daily volumetric rate of discharge and the daily sources of influent. The permittee shall keep record application of any flocculant treatment application including flocculant type, volume and date of use.
- 2.1.6. The authorized works for the East Wastewater Treatment Plant include sedimentation tanks, chemical mixers, sand filter units, bag filter units, Granular Activated Carbon (GAC) vessels, mixing tanks, sampling ports, pumps, conveyance lines and ditching.
- 2.1.7. The authorized works for the East Sedimentation Pond include sedimentation ponds, discharge control outlet manholes, sampling ports, pumps, conveyance lines and ditching.
- 2.1.8. The East Sedimentation Pond effluent quality shall meet the following criteria at the point of discharge to Howe Sound:
 - Total Suspended Solids (TSS)
 - Maximum 25 mg/L under dry conditions
 - Maximum 75 mg/L for each day of Wet Conditions, and for one day following the end of Wet Conditions
 - Copper (Total): Maximum 0.0043 mg/L
 - Lead (Total): Maximum 0.0035 mg/L
 - Vanadium (Total): Maximum 0.0081 mg/L
 - Zinc (Total): Maximum 0.0133 mg/L
 - pH range: 5.5 – 9.0



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With the exception of those water quality criteria listed above, the effluent shall be free of other contaminants in concentrations that may have an adverse effect on the receiving environment.

- 2.1.9. 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 section applies to the discharge of effluent from the **West Sedimentation Pond Outlet**. The site reference number for this discharge is E332537.
 - 2.2.1. The location of the source of the discharge is described as the western catchment area of the Site. The source of the discharge are surface waters and groundwater associated with activities related to the construction of the proposed Woodfibre LNG export facility including excavations, surface runoff, vehicle fuelling areas, truck wash stations, blasting, and concrete work. The authorized works and discharge locations are as shown in attached Figure 1.
 - 2.2.2. The authorized point of discharge is 49.6646°, -123.2538°.
 - 2.2.3. The maximum authorized rate of discharge from the West Wastewater Treatment Plant is 120 m³/day.
 - 2.2.4. The annual average authorized discharge rate from the West Sedimentation Pond has been set to 310 m³/day for the purpose of calculating discharge fees as required by the Permit and Approval Fees and Charges Regulation. The actual discharge rate may deviate from the average rate due to annual variations in precipitation amounts within the catchment area. The authorized discharge period is continuous.
 - 2.2.5. The permittee shall measure and record the daily volumetric rate of discharge and the daily sources of influent. The permittee shall keep record application of any flocculant treatment application including flocculant type, volume and date of use.
 - 2.2.6. The authorized works for the West Wastewater Treatment Plant include sedimentation tanks, chemical mixers, sand filter units, bag filter units, Granular Activated Carbon (GAC) vessels, mixing tanks, sampling ports, pumps, conveyance lines and ditching.



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- 2.2.7. The authorized works for the West Sedimentation Pond include sedimentation ponds, discharge control outlet manholes, sampling ports, pumps, conveyance lines and ditching.
- 2.2.8. The effluent quality shall meet the following criteria at the point(s) of discharge:
- Total Suspended Solids (TSS)
 - Maximum 25 mg/L under dry conditions
 - Maximum 75 mg/L for each day of Wet Conditions, and for one day following the end of Wet Conditions
 - Copper (Total): Maximum 0.0043 mg/L
 - Lead (Total): Maximum 0.0035 mg/L
 - Vanadium (Total): Maximum 0.0081 mg/L
 - Zinc (Total): Maximum 0.0133 mg/L
 - pH range: 5.5 – 9.0

With the exception of those water quality criteria listed above, the effluent shall be free of other contaminants in concentrations that may have an adverse effect on the receiving environment.

- 2.2.9. 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.

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.



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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 must 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 must carry out analyses in accordance with the procedures described in the most recent edition of the "*British Columbia Environmental Laboratory Manual*". Alternative procedures shall be authorized by the Manager.

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 any mitigations set out in the 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



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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 for a period of no less than 5 years.
- 4.1.2 The Permittee shall retain a Qualified Professional to implement and oversee the monitoring and sampling program. The monitoring and sampling program must meet the minimum sampling requirements described in Tables 1, 2, and 3 in this Section. If data indicates non-compliance with permit limits stipulated in sections 2.1.8, and 2.2.7, the Qualified Professional shall provide an explanation of the most probable cause(s) of the non-compliance and remedial action planned and/or taken to prevent similar noncompliance(s) in the future.
- 4.1.3 Upon monitored/measured exceedance of the discharge quality defined in Section 2, the sampling frequency for the exceeding parameter(s) shall revert to the highest frequency indicated in Table 1, and/or Table 3, for the station(s) at which the exceedance occurred, until it is demonstrated that the water quality is consistently meeting the specifications defined in Section 2.



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Table 1: Monitoring Requirements for Sedimentation Ponds

Station Name	Sample Type	Description	Coordinates		Flow	Field Parameters	Physical Parameters	General Parameters	VH & BTEX	EPHs & PAHs	Metals ^{1,2}	Chromium Speciation	VOCs	Dioxins & Furans	MeHg	Acute Toxicity
			Latitude	Longitude												
Pond Water																
SP-E-IN-1	Influent	Influent pipe northwest of the East Sedimentation Pond	49.6663°	-123.2513°	-	D	2xM (W)	M (W)	M (W)	M (W)	M (W)	M (W)	M (W)	M (W)	-	-
SP-E-IN-2	Influent	Influent pipe southwest of the East Sedimentation Pond	49.6661	-123.2512	-	D	2xM (W)	M (W)	M (W)	M (W)	M (W)	M (W)	M (W)	M (W)	-	-
SP-E-OUT	Effluent	Discharge from the East Sedimentation Pond to Howe Sound (compliance point).	49.6678°	-123.2488°	C	D	2xM (W)	M (W)	M (W)	M (W)	M (W)	M (W)	M (W)	M (W)	M (W)	Q
SP-W-IN-1	Influent	Influent pipe north of the West Sedimentation Pond.	49.6650°	-123.2548°	-	D	2xM (W)	M (W)	M (W)	M (W)	M (W)	M (W)	M (W)	M (W)	-	-
SP-W-IN-2	Influent	Influent pipe west of the West Sedimentation Pond.	49.6648	-123.2551	-	D	2xM (W)	M (W)	M (W)	M (W)	M (W)	M (W)	M (W)	M (W)	-	-
SP-W-OUT	Effluent	Discharge from the West Sedimentation Pond to Howe Sound (compliance point).	49.6646°	-123.2538°	C	D	2xM (W)	M (W)	M (W)	M (W)	M (W)	M (W)	M (W)	M (W)	M (W)	Q

Table 2: Monitoring Requirements for the Howe Sound Receiving Environment

Station Name	Sample Type	Description	Coordinates		Field Parameters	Physical Parameters	General Parameters	VH & BTEX	EPHs & PAHs	Metals ^{1,2}	Chromium Speciation	VOCs	Dioxins & Furans	MeHg	Chronic Toxicity ³
			Latitude	Longitude											
Freshwater															
SW-01	Freshwater	Woodfibre Creek; lower reach (near the mouth).	49.6613°	-123.2589°	M	M	M	M	M	M	M	M	M	M	-
SW-02	Freshwater	Mill Creek; upper reach (upstream of the third bridge).	49.6679°	-123.2565°	M	M	M	M	M	M	M	M	M	M	-
SW-03	Freshwater	Mill Creek; lower reach (near the mouth, in the estuarine zone).	49.6652°	-123.2525°	M	M	M	M	M	M	M	M	M	M	-
SW-04	Freshwater	East Creek; lower reach (near the outlet to the outfall culvert).	49.6680°	-123.2478°	M	M	M	M	M	M	M	M	M	M	-
SW-07	Freshwater	Mill Creek; upstream (at the diversion inlet).	49.6791°	-123.2669°	M	M	M	M	M	M	M	M	M	M	-
Non-Contact Ditches															
OUT-01	Freshwater	Discharge from West Catchment non-contact water diversion ditch to Howe Sound	49.6619°	-123.2585°	M	M	M	-	-	M	-	-	-	M	-
OUT-02	Freshwater	Discharge from West Catchment non-contact water diversion ditch to Howe Sound	49.6626°	-123.2585°	M	M	M	-	-	M	-	-	-	M	-
OUT-06	Freshwater	Discharge from West Catchment non-contact water diversion ditch to Mill Creek	49.6668°	-123.2549°	M	M	M	-	-	M	-	-	-	M	-
OUT-11	Freshwater	Discharge from East Catchment non-contact water diversion ditch to Howe Sound	49.6679°	-123.2486°	M	M	M	-	-	M	-	-	-	M	-
Marine Water															
WQR1	Marine Water	Reference site located northeast of East Creek 500 m northeast of the Project boundary.	49.6693°	-123.2368°	M	M	M	M	M	M	M	M	M	M	-



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Station Name	Sample Type	Description	Coordinates		Field Parameters	Physical Parameters	General Parameters	VH & BTEX	EPHs & PAHs	Metals ^{1,2}	Chromium Speciation	VOCs	Dioxins & Furans	MeHg	Chronic Toxicity ³
			Latitude	Longitude											
WQR2	Marine Water	Reference site located south of Woodfibre Creek and 500 m south of the Project boundary.	49.6528°	-123.2585°	M	M	M	M	M	M	M	M	M	M	-
IDZ-E1	Marine Water	IDZ monitoring station 20-30 m southeast of East Sedimentation Pond discharge (SP-E-OUT).	49.6676°	-123.2479°	M (W)	M (W)	M	M	M	M	M	M	M	M	Q
IDZ-E2	Marine Water	IDZ monitoring station 20-30 m southwest of East Sedimentation Pond discharge (SP-E-OUT).	49.6672°	-123.2490°	M (W)	M (W)	M	M	M	M	M	M	M	M	Q
IDZ-W1	Marine Water	IDZ monitoring station 20-30 m southeast of West Sedimentation Pond discharge (SP-W-OUT).	49.6643°	-123.2525°	M (W)	M (W)	M	M	M	M	M	M	M	M	Q
IDZ-W2	Marine Water	IDZ monitoring station 20-30 m southwest of West Sedimentation Pond discharge (SP-W-OUT).	49.6637°	-123.2542°	M (W)	M (W)	M	M	M	M	M	M	M	M	Q
Marine Sediment															
IDZ-E-SED	Sediment	IDZ sediment monitoring station proximal to the East Sedimentation Pond discharge (SP-E-OUT).	49.6675°	-123.2486°	-	-	A	A	A	A	A	A	A	A	-
IDZ-W-SED	Sediment	IDZ sediment monitoring station proximal to the West Sedimentation Pond discharge (SP-W-OUT).	49.6643°	-123.2536°	-	-	A	A	A	A	A	A	A	A	-

Table 3: Monitoring Requirements for Wastewater Treatment Plants

Station Name	Sample Type	Description	Coordinates		Flow	Field Parameters	Physical Parameters	General Parameters	VH & BTEX	EPHs & PAHs	Metals ¹	Chromium Speciation	VOCs	Dioxins & Furans
			Latitude	Longitude										
WWTP-E-IN	Influent	Combined influent to the East WWTP from chromium reduction pre-treatment step and additional contaminant sources within the East catchment area.	49.6661°	-123.2515°	-	D	2xM (W)	M (W)	M (W)	M (W)	M (W)	M (W)	M (W)	M (W)
WWTP-E-OUT	Effluent	Effluent from the East WWTP discharged to the East Sedimentation Pond	49.6660°	-123.2512°	C	D	2xM (W)	M (W)	M (W)	M (W)	M (W)	M (W)	M (W)	M (W)
WWTP-W-IN	Influent	Combined influent to the West WWTP from chromium reduction pre-treatment step and additional contaminant sources within the West catchment area.	49.6652°	-123.2543°	-	D	2xM (W)	M (W)	M (W)	M (W)	M (W)	M (W)	M (W)	M (W)
WWTP-W-OUT	Effluent	Effluent from the West WWTP discharged to the West Sedimentation Pond	49.6650°	-123.2544°	C	D	2xM (W)	M (W)	M (W)	M (W)	M (W)	M (W)	M (W)	M (W)

- Notes:
- All coordinates are in decimal degrees. Coordinates are approximate and the precise locations will be recorded when the stations are established.
 - C = continuous flow measurement using a data logging flow sensor.
 - D = daily
 - M = monthly, for receiving environment water quality monitoring (Table 2) and will include 5-in-30 sampling twice annually (once each in spring and fall).
 - 2xM (W) = weekly for the first 6 months of monitoring, then twice monthly (at the discretion of the Manager, based on compliance)



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- M (W) = weekly for first 5 weeks of monitoring, then monthly (at the discretion of the Manager, based on compliance)
- A = Annually
- Q = Quarterly
- 2xA = twice annually
- Marine Water samples (Table 2) are collected at 3 depths: 2 m above seafloor, 2 m below water surface, and at 0.5 m below water surface.
- Baseline Marine Sediment samples (Table 2) will be collected in the vicinity of IDZ-E-SED and IDZ-W-SED (5 samples at each) prior to the commencement of effluent discharge, within 50 m of the outfall pipe, in the area of the initial dilution zone (IDZ).
- Field Parameters: pH, Turbidity, Conductivity, Salinity, Dissolved Oxygen, Temperature and visibility of sheen
- Physical Parameters: pH, Total Suspended Solids, Total Dissolved Solids, Turbidity
- General Parameters (for freshwater, marine water, influent and effluent): Hardness (as CaCO₃), Chloride, Fluoride, Sulphate, Ammonia (as N), Nitrate (as N), Nitrite (as N), Total Organic Carbon (only for freshwater, influent and effluent), Dissolved Organic Carbon (only for freshwater, influent and effluent), Total Alkalinity (only for freshwater, influent and effluent)
- General Parameters (for sediment): Moisture, Total Organic Carbon, Total Sulphur (S) and Particle Size Distribution.
- Chromium Speciation: Inorganic Trivalent and Hexavalent Chromium
- ¹Water quality samples will be tested for Dissolved and Total Metals, and Total and Dissolved Mercury
- ²Sediment samples will be tested for Total Extractable Metals and Total Extractable Mercury, on the <63 µm fraction of the sediment
- ³Chronic Toxicity testing will be conducted in the marine water sample collected from 0.5 m below the water surface.



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- 4.1.4 The Permittee shall provide notification to the BCER, Waste.Management@bc-er.ca, at the start of the commissioning phase of each water treatment plant. Process flow as-built of each water treatment plant shall be submitted to the BCER at the same email address.
- 4.1.5 The Permittee must 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 temporarily halted and mitigation measures shall be immediately implemented.
- 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, weekly throughout the permit duration and subsequent to cessation of discharge. These shall be submitted upon request from the BCER and included as part of the weekly reporting.

4.2 Reporting

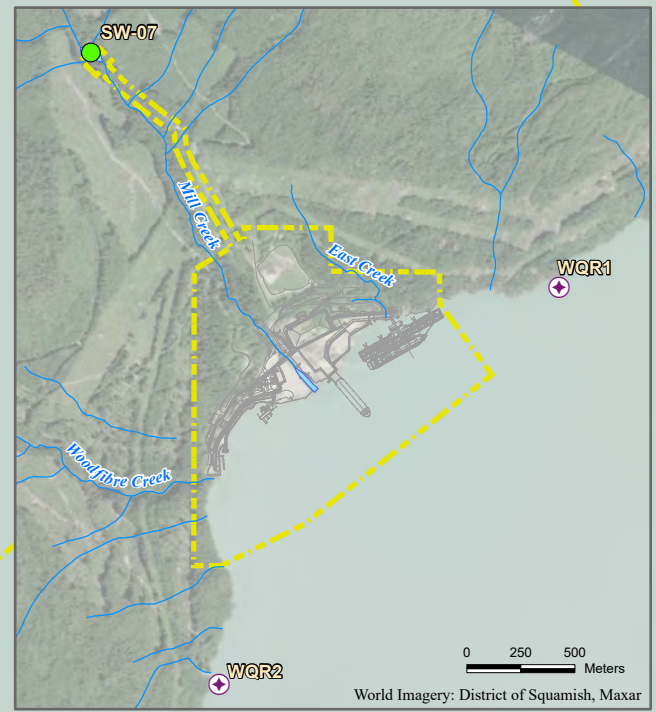
The Permittee shall summarize the results of the discharge and compliance monitoring program in a report that shall be submitted to the BCER weekly over the term of this permit. Reports must include suitable tabulated data. The table must include any applicable regulatory limits/guidelines e.g. permit 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.



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Note: Wastewater Treatment Plant and Sediment Pond sampling locations are approximate. The precise locations will be established once the water management facilities are constructed, and may vary slightly from those shown on this figure.



LEGEND	
	Collection Ditch
	Diversion Ditch
	Culvert Pipe
	Wastewater Treatment Plant Monitoring Station
	Sediment Pond Monitoring Stations (Water Quality)
	Sediment Pond Monitoring Stations (Sediment Quality)
	Compliance Point Monitoring Station
	Marine Water Monitoring Station
	Marine Sediment Monitoring Station
	Freshwater Monitoring Station
	Clean Water Diversion Discharge Stations
	Wastewater Treatment Plant
	Sediment Pond
	Certified Project Area
	Site Infrastructure
	Watercourse
	Waterbody

DATE SAVED:	Oct 18, 2023
DRAWN BY:	DM
REVIEWED:	PM
VERSION:	1

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

1:6,000

CLIENT:

PROJECT:	Woodfibre LNG Project Construction Phase	
TITLE:	Water Management Layout and Monitoring Stations for Water and Sediment Quality	
PROJECT #:	A633-7	FIGURE: 1