

Joint venture companies



## KITIMAT TERMINAL

ANNUAL REPORT – PERMIT 6006

2019

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## **1.0 INTRODUCTION**

### **1.1 Overview**

The purpose of the annual report is to provide an updated summary of site operations and environmental reporting requirements related to Permit 6006. This report is written with respect to the status of the site on Dec 31<sup>st</sup>, 2019. The terminal facilities associated with storage and handling of methanol were decommissioned in March 2017, followed by demolition of 6 large atmospheric storage tanks and all associated above and below ground process piping and utilities. Demolition of assets was completed in December 2017.

An amendment to permit 6006 was received on August 7<sup>th</sup>, 2018. In the amended permit the discharges to aquatic freshwater and marine remain the same, but the collection and flow of surface water on site has been altered to account for the removal of most of the below ground stormwater collection system.

The operations of the wastewater system and site raw water pond (that discharged to Kitimat River) ceased in the third quarter of 2019, to support demolition activities at the Kitimat Terminal (to allow for construction of the Administration and Services Area for the LNG Canada Project). Washcars were mobilized to site, with a pump and haul contract established to remove the domestic wastewater off-site. Demolition permits were also obtained from the District of Kitimat for associated building structures

### **1.2 Site description**

The primary purpose of the site listed on Permit 6006 is the future location of the LNG Canada Plant. The site had 4 occupied buildings, a basin for firewater storage, a basin for effluent storage, a stormwater collection system, and potable water treatment. The aforementioned facilities are located in future Administrative and Services Area for the LNG Canada Project, therefore were decommissioned and demolition activities commenced.

Four kilometers south at the head of the Douglas Channel, LNG Canada's wharf facility is capable of handling tankers of up to 50,000 metric tonnes capacity or vessels with equivalent berthing requirements.

### **1.3 Site Environmental Responsibility**

LNG Canada is committed to the protection of the environment and will meet or exceed requirements in environmental legislation and internal standards.

JGC Fluor BC LNG Joint Venture (JFJV) is providing Engineering, Procurement, and Construction (EPC) services to the Project.

## 2.0 WASTE MANAGEMENT PERMITS

The Ministry of Environment has issued the site one permit, Permit 6006, that covers the discharges of wastewater. The permit is described in section 2.1.

### 2.1 Effluent and Stormwater Systems – Permit 6006

The effluent discharge permit PE-6006 was first issued in January 1982. Since that time, the permit has been amended several times to reflect the changes in the effluent system. The Permit was amended on August 7, 2019 and the Ministry of Environment (MOE), and subsequently transferred to the British Columbia Oil and Gas Commission (BCOGC).

Permit 6006 describes the aspects of a program for effluent and stormwater management along with acceptable criteria for protection of the environment. It outlines the site works associated with each discharge stream and the quality and quantity of the discharges from those outfalls, and delineates a monitoring and reporting program for each.

The outfalls on the permit are the main terminal final effluent to Kitimat Arm and storm water to the Kitimat River. Each outfall serves a specific purpose as described in the following section. The site plan on page 4 shows the location of each discharge point.

The monitoring program portion of the permit describes the frequency of sampling, types of sampling and types of analyses that must be carried out on the effluent streams, as well as the frequency of reporting this information. A summary of this monitoring program is given in **Table 1**.

Other requirements in the permit cover reporting, maintenance of works, emergency procedures, bypasses, non-compliance notification and modifications to works.

A quarterly report summarizing monitoring data and testing results is submitted to the BCOGC via email to communicate ongoing sampling and testing results related to the permit.

#### 2.1.1 Terminal Effluent Monitoring

The flow and pH of the terminal effluent are monitored continuously. The data is compiled in a daily report for inclusion in the quarterly reports. The permit requires physical sampling of the terminal effluent outfall a minimum of once every quarter. The quarterly grab sample is analyzed as described in Table 1.

#### 2.1.2 Storm Water to Kitimat River Monitoring

Storm water is directed through a storm water interceptor sump to a common raw water pond, where it overflows to the Kitimat River discharge. The raw water pond is also reservoir for firewater protection. A quarterly grab sample is always taken from the raw water pond to the Kitimat River.

**Table 1:** Summary of Routine Monitoring Program (Condition 4.1.2)

Parameter	Sampling Frequency & Method	
	Final Effluent to Kitimat Arm E103472	Stormwater to Kitimat River <sup>1</sup> E216069
Flow (m <sup>3</sup> /day)	Continuous Monitor	N/A
pH	Continuous Monitor <sup>3</sup>	Quarterly: Grab <sup>2</sup>
Temperature (°C)	Quarterly: Grab <sup>2</sup>	Quarterly: Grab <sup>2</sup>
COD (mg/L)	Quarterly: Grab <sup>2</sup>	Quarterly: Grab <sup>2</sup>
Methanol (mg/L)	Quarterly: Grab <sup>2</sup>	Quarterly: Grab <sup>2</sup>
TSS (mg/L)	Quarterly: Grab <sup>2</sup>	Quarterly: Grab <sup>2</sup>
Total Extractable Hydrocarbons (TEH)	Quarterly: Grab <sup>2</sup>	2x/year: Grab <sup>2</sup>
NH <sub>3</sub> as N (mg/L)	Quarterly: Grab <sup>2</sup>	N/A
Fecal Coliform (MPN/100 ml)	Quarterly: Grab <sup>2</sup>	N/A
BOD <sub>5</sub> (mg/L)	Quarterly: Grab <sup>2</sup>	N/A
Rainbow Trout 96 hr Acute Lethality: Single Concentration	2x/year: Grab <sup>2</sup>	2x/year: Grab <sup>2</sup>

<sup>1</sup> Shall be sampled when works are discharging, with the frequency indicated, unless there is no discharge.

### 3.0 QUALITY ASSURANCE

#### 3.1 Laboratory Methods

All analyses required by the permits are carried out in accordance with procedures described in the appropriate Laboratory Manual, available from the Ministry or by a suitable alternative procedure as authorized by the Regional Waste Manager. LNG Canada and JFJV use external contract labs to sample and analyze effluent and storm water discharges and ensures the procedures used are carried out in accordance with Ministry approved procedures.

#### 3.2 Laboratory Registration Program

The BCMOE has established a Registration Program that is mandatory for all labs submitting data to the Ministry as a requirement of a permit monitoring program. Industrial and consulting labs alike must participate in a regular Performance Evaluation Testing Program by performing analyses on unknown quality

assurance samples provided by the Canadian Association Laboratory Accreditation (CALA). Periodic reports on the results of the Performance Evaluation provide information regarding an individual lab's performance, and performance of labs overall. Labs that do not meet required standards for a given parameter two consecutive times lose their registration status with CALA for that parameter. They cannot continue to perform permit related analyses until deficiencies are corrected.

All compliance analyses are carried out by a contract laboratory which is CALA registered.

#### **4.0 YEAR END EVALUATION - 2019**

This section of the report summarizes and discusses the results of all monitoring programs carried out in the reporting year, and to review other significant environmental events and issues.

##### **4.1 Reporting and Monitoring Program**

Monitoring programs are discussed in the following subsections. Quarterly reports include all the monitoring results, separate reports for spills, and special monitoring programs were submitted where necessary.

###### *4.1.1 Effluent Monitoring Program*

In Quarter 2 (April – June), an additional sampling event occurred in July for ammonia to confirm conformance with the permit limit.

In Quarter 3 (July-September), there were elevated concentrations of ammonia due to a change in biological activity (limited discharges from the wastewater system). There was a discharge recorded on September 14 and 15 (in the period of the sample being taken and results received) where the site may have unknowingly discharged effluent in excess of the permit limit for ammonia; however, the volume was small (332 cubic meters over two days), therefore receiving environmental effects were unlikely. There were no discharges from the system after September 15 2019.

In Quarter 4 (October to December), the system was not operating, therefore no sampling was undertaken.

All sampling and reporting requirements in Permit 6006 were met while the system was operational. The average effluent flow rate in 2019, when discharging to the outfall, was 136.9 cubic meters per day. A trend of effluent flow and pH data is provided in Appendix 1.

###### *4.1.2 Stormwater Monitoring*

There were no permit non-compliances in 2019 related to effluent monitoring. All sampling and reporting requirements in Permit 6006 were met while the system was operational.

#### 4.1.3 *Spills*

There were no reportable spills in 2019. Prevention of the release of hydrocarbons and other chemicals is part of LNG Canada's Goal Zero Campaign, and is built into all site policies, procedures, and construction execution plans.

## 5.0 ENVIRONMENTAL IMPACT OF EFFLUENT AND EMISSIONS

### 5.1 Receiving Environment Monitoring

A marine impact study was commissioned in 2005 to determine any impact near the wharf area located near the mouth of the Kitimat River. Both the intertidal and sub tidal biota adjacent to the discharge do not appear to be significantly affected by the discharge. The survey revealed a diverse population of marine life including mussels, barnacles, cucumbers, urchins, crabs, shrimp, seastars, tubeworms, flatfish, algae, bryozoans, tunicates, fish and seals. No evidence of impact from the outfall located under the wharf, in terms of the distribution or diversity of sub tidal marine life, was noted during the survey.

### 5.2 Effluent

Wastewater normally consists of treated domestic sewage. The effluent system has the capacity to treat hydrocarbons stored on site in the event of small scale leaks.

The operations staff screens COD and pH across the biological effluent treatment system to detect problems before the effluent is sent to the wharf.

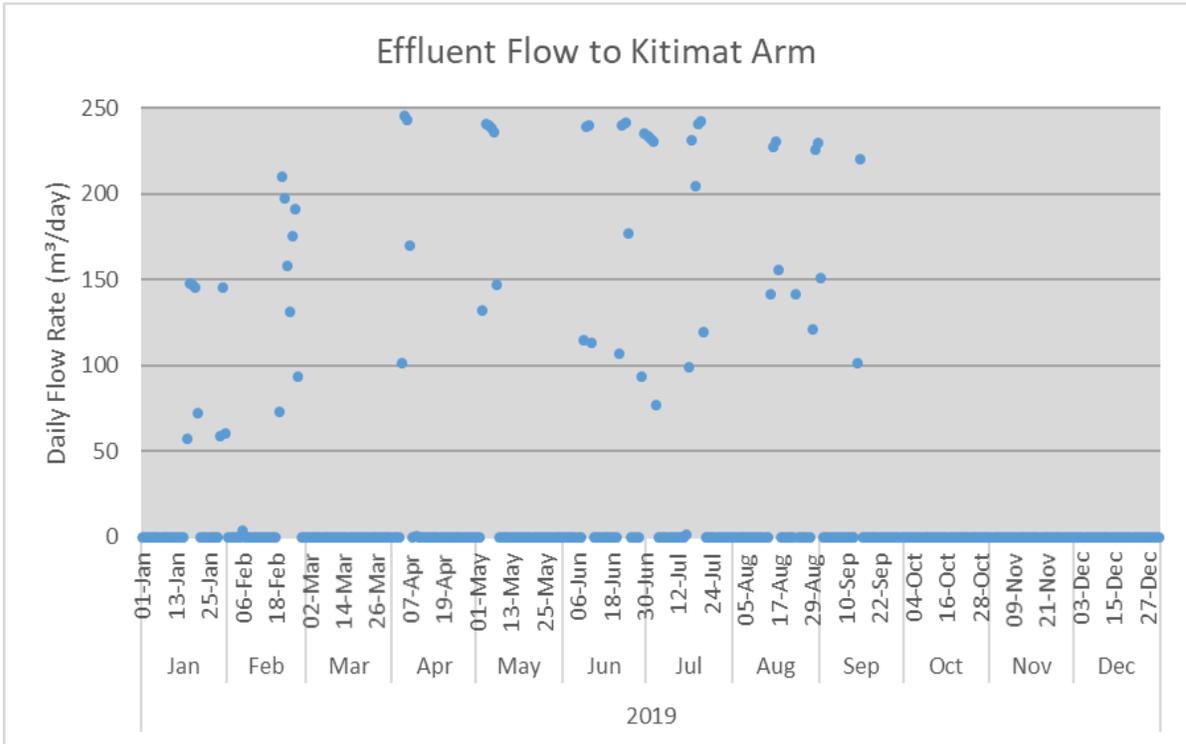
### 5.3 Storm Water

The storm water discharge is rain water collected on the site in the former Methanex facilities area. Storm water is considered a low risk for contamination, and is managed through a simple collection basin system before eventually being routed to a storm water interceptor and then to the raw water pond. There is a low potential for contamination from road surfaces, so precautions are taken to ensure that storm water is properly managed. All storm water passes through the storm water interceptor, which acts as a basic gravity separator, before going to the raw water pond.

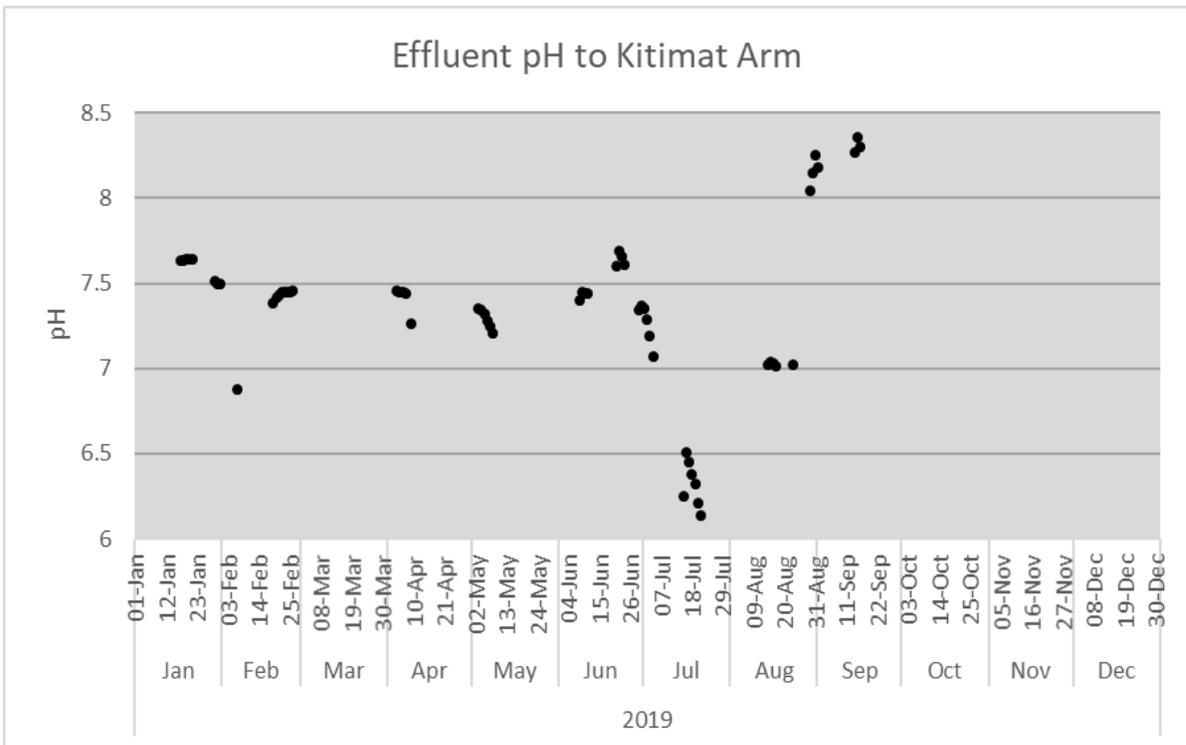
### 5.4 Air Emissions

NPRI reporting is no longer required, a site closure notification was provided to Environment Canada

**APPENDIX 1 – EFFLUENT DISCHARGE CHARACTERISTICS**



(Permit Limit – Flow Rate: 400 m<sup>3</sup>/day)



(Permit Limit – Average Continuous pH: 6.0 to 9.0)