



District of Port Hardy

Wastewater Treatment Plants & Collection System



Annual Operations Report 2014

MOE Certification ME-00385 & PE-04168



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Overview

Port Hardy is located on the northeastern tip of Vancouver Island, British Columbia. There are two major collection areas in the town, each with a wastewater treatment facility. The Airport Wastewater Treatment Plant (AWWTP), built in 1975, is located adjacent to the Transport Canada Airport facility. In February 2012, the existing permit was updated to a new Operational Certificate (ME-105299). Effluent is discharged into the Queen Charlotte Strait. There are three lift stations located in the AWWTP collection system.

The Tsulquate Wastewater Treatment Plant (TWWTP), originally built in 1972, services the majority of the population of Port Hardy, and has historically operated under permit PE-385. The discharge from this facility is sent into Hardy Bay. There are eight lift stations located in the TWWTP collection system. The plant underwent a major upgrade in 2007 which included the addition of two sequential batch reactors, a new headworks and ultraviolet disinfection (UV). The permit was also updated into a more stringent Operational Certificate (ME-00385).

Permits

The Airport wastewater treatment facility is a Class 2 facility and operates under Operational Certificate ME-105299.

The Tsulquate wastewater treatment facility is a Class 3 facility as deemed by the Environmental Operators Certification Program (EOCP), certification number 1488. The fully upgraded Tsulquate plant operates under the Ministry of Environments Operating Certificate of ME-00385. The historical permit that applied before the upgrades were completed was PE-385.

Operator	Title	Certification
Joe Jewell	Utilities Supervisor	WT IV, WWT II, WD II
Justin Reusch	Chief Operator	WT II, WD I, WWT II
Roland LeFort	Operator	WWT III, WT I
Cory Henschke	Operator	WWT I, WD II



Tsulquate Wastewater Treatment Plant Highlights

The upgraded Tsulquate wastewater treatment plant (TWWTP) has performed very well since the new SBR trains have been online and the modifications to the extended aeration plant were completed in 2008. The combined average effluent flow over the course of 2014 was 1956 m³/day. The design capacity for the entire plant with the SBR trains and the extended aeration train is 2700 m³/day.

Receiving waters monitoring was performed this year as well as an LC50 test. Results were returned within operating guidelines

Incidents

- Fecal coliform counts in the effluent were an issue in 2014. Many solutions were tried including cleaning the ultraviolet bulbs several times and eventually replacing the bulbs. Another faulty dissolved oxygen probe on the system giving a high value which caused issues with the biomass.
- On October 31st, a power brown out caused one of the blower valve actuators to fail. Luckily one was borrowed to avoid any down time while a replacement was ordered



Airport Wastewater Treatment Plant Highlights

The Airport wastewater treatment plant (AWWTP) continued to produce excellent effluent in 2014. There were no permit violations. The average influent effluent flow was 654 m³/day.

Receiving waters monitoring was performed this year as well as an LC50 test. Results were returned within operating guidelines

Incidents

Currently, the outfall for the Airport Wastewater Treatment Plant is damaged. A contractor has done and video inspected the outfall. Pacificus Biological Ltd. has been retained to gather samples in the receiving waters to monitor the fecal coliforms to assess the impact. An engineering firm has also been hired to assess the outfall pipe and provide an improved design or other options to divert flow from the Airport Plant back to the Tsulquate Wastewater Plant in town through an upgraded collection system. The situation is currently classified as a spill due to the fact that the treated effluent is not reaching its intended depth and distance for the shore. The beach continues to be closed from shellfish harvesting as it has for many years. The Ministry of Environment has been contacted and a Provincial Emergency Program (PEP) number has been generated.



Collection System

The collection system is operating well considering the age of the infrastructure. The lift stations remain a focus for the maintenance and capital upgrade programs to address aging infrastructure, as identified in the Liquid Waste Management Plan.

Incidents

There were no incidents within the collection system in 2014 resulting in spills to the environment. There were numerous events in which losses of power to the liftstations caused by blown line fuses interrupted service but none of them resulted in a spill. Each liftstation is equipped with an alarm dialer on an Uninterrupted Power Supply (UPS) to alert operators in the event of a loss of power or a failure of equipment.

On October 24th, operators were called to the Fort Rupert School Liftstation at 2:00am because for a high level alarm. Upon arrival an odour of burnt plastic and electrical was noted. It was found that the pump contactor for Pump #1 was completely burnt and would need to be replaced. The station is a duplex station with two pumps but the check valve on Pump #2 had failed which was causing the forcemain to drain back into the station's wetwell each time the pump was shut off. This resulted in a drastic increase in pump hours while the wastewater recirculated. As a result, Pump #2's checkvalve was isolated and the pump isolated. An electrician was called to the station in an effort to switch contactors to energize Pump #1 but upon further inspection it was found that the pump's motor was also burnt out. A sewage vacuum truck was called to site start pumping out the wetwell but was not able to keep up with the incoming flow. A HIAB truck capable of lifting the pumps out of the wetwell was called in to remove the broken Pump #1 and also take Pump #2 and put in back down the well in Pump #1's position. We were then able to start pumping down the well and avoid a spill.

Due to the age of the Fort Rupert Liftstation, repair parts for the checkvalve are not attainable; the manufacturer no longer makes a rebuild kit or makes a new checkvalve assembly of that exact same dimension. To order another to put in it's place will require a substantial retrofit of the station. Pump #1 has been rebuilt and is back in service.



EFFLUENT QUALITY DATA

Effluent quality monitoring of the plant has increased substantially for the upgraded TWWTP, partially due to the monitoring requirements identified in the operational certificate and also due to the increased monitoring that is required to meet higher treatment standards. The data presented in this report includes the results from samples sent to an external laboratory, certified to ISO17025 by CALA, as well as the internal testing results for some of the parameters completed onsite. While the internal data is not CALA accredited, it goes through an extensive QA/QC process. It complements the external data in demonstrating treatment performance due to the increased frequency of the internal testing.

The following two tables summarize the key quality parameters for the Tzulquate and Airport Wastewater Treatment Plants. Receiving environment monitoring was also completed.

Table 1 - TWWTP Effluent Quality Summary

Month	Flow cubic meters / day		TSS mg/L	CBOD mg/L	Total Coliforms cfu/100 ml	Total Ammonia mg/L	Un-Ionized Ammonia mg/L
	Avg	Max					
Monthly Average							
January	2011	3579	8	5	124	14.9	0.04
February	2082	3349	15	5	524	19.6	0.07
March	2045	3337	11	0	496	14.0	0.03
April	1861	2579	23	0	651	15.8	0.04
May	1685	2260	20	0	329	16.0	0.08
June	1581	2083	36	0	3819	15.8	0.08
July	1532	2047	9	6	26	15.9	0.07
August	1663	3050	7	0	7	3.4	0.01
September	1732	2576	5	<5	9	0.3	<0.01
October	2457	4109	7	0	26	2.5	<0.01
November	2441	5506	12	7	173	8.0	0.02
December	2379	4195	10	9	148	13.1	0.04

Table 2 - AWWTP Effluent Quality Summary

Month	Flow cubic meters / day		pH	TSS mg/L	CBOD ₅ mg/L	Total Ammonia mg/L	Unionized Ammonia mg/L	Fecal Coliforms cfu/100ml	Enterococcus cfu/100ml
	Avg	Max							
January	748	1085	6.4	10	<5	6.03	<0.01		
February	723	928	7.3	22	13	6.03	0.03	450000	94500
March	710	928	6.2	11	<5	0.03	<0.01		
April	678	998	6.9	7	<5	0.05	<0.01	100000	125000
May	652	805	6.7	<5	<5	0.13	<0.01		
June	562	713	6.7	25	20	0.06	<0.01	790000	1155000
July	528	686	6.3	<5		0.19	<0.01		
August	528	623	6.8	14	<5	0.16	<0.01		
September	559	752	6.6	27	<5	0.04	<0.01		
October	704	975	7.0	18	<5	0.09	<0.01	8700	45000
November	722	1263	7.3	20	26	10.20	0.06		
December	735	1071	7.2	19	7	5.10	0.02	3100	56000