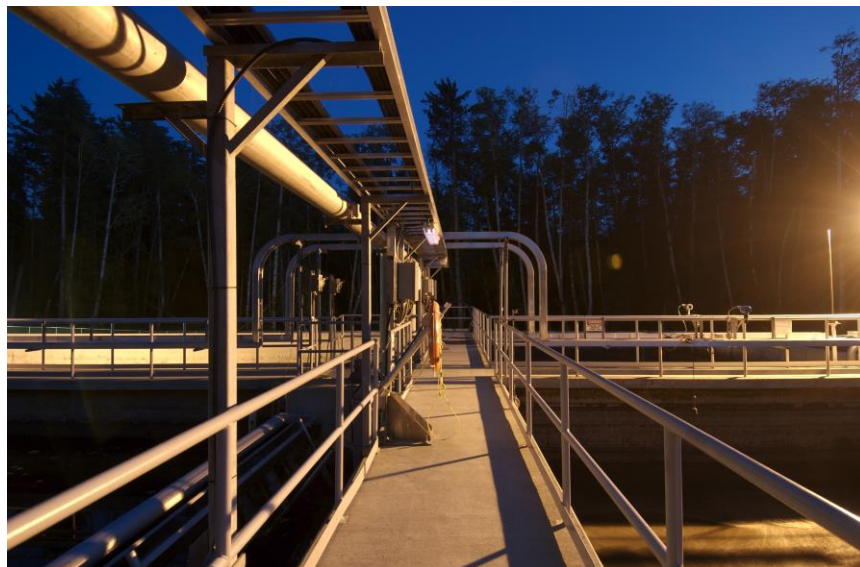




DISTRICT OF SOOKE WASTEWATER TREATMENT PLANT AND COLLECTION SYSTEM

**OPERATED BY
EPCOR WATER SERVICES INC.**



**OPERATIONS REPORT
APRIL 2015
REGISTRATION NUMBER 17300**



INTRODUCTION

The Sooke wastewater collection system and treatment plant are owned by the District of Sooke and operated by EPCOR Water Services Inc. The system services the core area of Sooke.

The system consists of:

- 54 km of collection system piping
- 522 manholes
- 7 pump lift stations (Sooke Road, West Coast Road, Helgesen Road, Sunriver, Prestige Hotel, Mariner's Village and Treatment Plant)
- A secondary treatment wastewater plant with disinfection
- A marine discharge through a 1.7 km long, 30m deep outfall

The treatment plant uses a Sequencing Batch Reactor (SBR) treatment process with UV disinfection to provide secondary wastewater treatment. Plant treatment removes over 95% of the total suspended solids and high levels of other contaminants, providing significant environmental benefits to the District of Sooke and the receiving waters.

The treatment plant has a design capacity of 3,000 m³/day (annual average daily flow), and a peak wet weather flow capacity of 6,900 m³/day. The plant is expandable by an additional 3,000 m³/day (average daily flow).

Construction of the Sooke collection system and wastewater treatment plant began in 2004 and the system was commissioned in December 2005. Individual domestic and commercial connections began in May 2006 and continued throughout 2006 and 2007, with the majority completed by December 2006. Additional connections have continued since that time for new construction in the specified sewer area.



OPERATIONS

Wastewater Treatment Plant

In April, the effluent quality was excellent with the TSS (total suspended solids) averaging 7 mg/L and CBOD averaging 4 mg/L. (MWR limit is ≤ 45 mg/L and WSER limit is ≤ 25 mg/L quarterly average). The results, as detailed in this report, are obtained from samples tested at an independent ISO/IEC 17025 accredited lab.

April 1 – Diesel technician completed annual standby generator service work at treatment plant.

April 7 – Operators found the secondary containment vessel for polymer day tank almost full over the weekend. Drained vessel to try to locate leak in day tank.

April 8 – Polymer day tank leak was located and requires weld repair. Temporary repair made to slow leak to allow solids handling operations to continue.

April 10 – Hauled bio solids bin from centrifuge room to allow room for polymer day tank removal/repairs. Contractor on site to disconnect electrical from day tank and lift with crane onto truck for transport to welding shop. Secondary containment pan worked well and prevented a polymer leak from spilling onto the floor of centrifuge room. Welding shop repairs were made quickly and day tank back in place within hours. All plumbing and electrical reassembled and centrifuge/polymer system started and monitored to insure repairs were successful.

April 10 – High vibrations noted during centrifuge operation. Close observations continued.

April 13 – All gate padlocks were replaced due to deteriorating condition.

April 13 – Received cell phone to replace pager as Telus no longer supports pager service.

April 14 – Ordered cell phone signal booster for administrative building.

April 15 – Centrifuge vibration issues continued and troubleshooting underway to identify vibration source. Contracted centrifuge millwright contractor to put on standby for possible centrifuge dismantle.

April 16 – Aeration valve #1 failed to open after hours. On-call operator attended and corrected situation.

April 17 – Operators running hot water through centrifuge in case internal dried polymer is source of vibration. Efforts reduced vibration somewhat but did not completely resolve issue.

April 20 – Troubleshooting continuing for vibration in centrifuge.

April 21 – Consultation made with centrifuge sales/service contractor to aid in troubleshooting ideas.



April 22 – Centrifuge back drive motor VFD faulted. Called electrical contractor to plant to assess back drive motor condition.

April 24 – Suspect back drive motor bearings are failing and are source of centrifuge high vibration issue.

April 27 – Operations making plans to lower digester levels to make room for sludge storage while centrifuge back drive motor is removed and repaired.

April 28 – Cell-Fi signal booster not performing as expected. Plans underway for Telus technicians to visit site for more thorough investigation into no cell service in administration building.

April 28 – Operators adjusting bacterial process in response to warming temperatures that have seen increased speed in which organic matter is oxidized. Increased organic oxidization results in bacteria running out of organic matter/food too soon which causes starvation. Operators decreased sludge volume in reactors to reduce bacterial population to compensate for warmer trends.

April 30 – Operators rented brush cutting machine and did annual brush clearing at the treatment plant.

April 30 – Centrifuge operations have been working overtime to reduce sludge inventory for centrifuge back drive motor removal scheduled for May 1.

Wastewater Collection System

April 7 – EPCOR Sooke lead hand operator in contact with EPCOR Alberta lead hand operator reviewing collection system monthly reports and duties.

Lift Stations

The lift stations operated well throughout the month of April. Routine lift station checks were completed including LIT cleanings and alarm dial-out function tests.

April 1 – Diesel technician completed annual standby generator service work at all lift stations.

April 9 – Communication faults experienced at all lift stations. Operations contacted Telus, who was already aware of the situation. Telus reported a core equipment power loss that affected many areas throughout BC. Telus ADSL group technician called back that repairs were made and equipment back on line. No emergency resulted from lift station communication loss as alarms could still be dialed out from plant concentrator which is part of the redundancy back up system.

April 21 – Standby power generators were checked, ran and tested at four lift stations as part of routine maintenance.

April 21 – Grounds maintenance done at Sunriver lift station.



April 28 – Checked, ran and tested standby power generators at Mariner’s Village and Prestige Hotel.

April 28 – Grounds maintenance and kiosk washing was done at West Coast Road lift station.

Plant and Operator Classification

The Wastewater Treatment Plant is a Class III plant, classified under EOCP # 1358 and is operated under MOE Guidelines. The Sooke WWT plant is operated in compliance with the MWR and meets the certification requirements.

The collection system is a Class III Wastewater Collection System, classified under EOCP # 1827 in accordance with the Environmental Operators Certification Program.

Table 1– Operator Certification

Name	Position	Qualifications
Shawn Pearson	Lead Operator	BC EOCP Certified: Level III Wastewater Treatment & Level I Wastewater Collection System
Corey Hodgson	Operator	Alberta Environment Level III Collection System
Jesse Forcier	Operator	BC EOCP OIT (Operator in Training)

QUALITY

The District of Sooke Liquid Waste Management Plan was approved by the Ministry of Environment in June 2011. Contained in the approved plan is a proposed Operational Certificate (OC). The OC provides more extensive standards and guidelines for the operation of the wastewater treatment plant than is contained in the plant registration that was submitted by the District to the Ministry in 2002 or in the general guidelines provided in the Municipal Waste Regulations (MWR). The Operational Certificate will be finalized in the coming months and will become the standard for the plant operation.

The Wastewater Systems Effluent Regulations (WSER), under the Federal Fisheries Act, was gazetted on July 18, 2012. The Government of Canada worked with the provinces and engaged municipalities and others to establish the country’s first national standards for wastewater treatment. It establishes limits for deleterious substances in the wastewater plant effluent that can be released into the natural environment. The substances and the limits are: Carbonaceous BOD: ≤25 mg/L, Total Suspended Solids: ≤25 mg/L, and a maximum of Un-ionized Ammonia: <1.25 mg/L of N @ at 15°C ± 1°C. The limits come into force on February 1, 2015, but the monitoring provisions were in effect on February 1, 2013. Un-ionized Ammonia testing is no longer required after July 1, 2014, however testing will continue as part of EPCOR’s due diligence.

Table 2 contains the WSER, MWR and the proposed OC requirements for information.

Table 2 – Summary of Regulatory Requirements

Parameters or Description	WSER		MWR		Proposed OC	
	Limits	Frequency	Limits	Frequency	Limits	Frequency
Ammonia-Nitrogen			NA	Quarterly (Grab)	NA	Quarterly (grab)
Ammonia (un-ionized) as N at 15°C (WSER)	<1.25 mg/L	Monthly (until June 30, 2014)	NA	NA	NA	NA
CBOD	≤25 mg/L (Quarterly Average)	Monthly (Grab)	≤45 mg/L	Monthly (Grab)	≤45 mg/L	Monthly (Grab)
Fecal Coliforms	NA		<200 CFU/100 ml * Geometric Mean	5 samples GM/ 30 days	NA	6 x / year
<i>Enterococci</i>	NA		NA	NA	NA	6 x / year
pH			6.0 - 9.0		6.0 - 9.0	Monthly (Grab)
Receiving Environment Testing			Required	Annually	As per Receiving Environment Monitoring Plan	1/year
Operator Certification			Required notification to regulator when there is a change in operator with the highest certification level in the plant	NA	Required notification to regulator when there is a change in operator with the highest certification level in the plant	NA
Reports, Annual			As requested by Director	As requested by Director	1/year	Within 120 days of calendar Year
Reports, General	Quarterly	Within 45 days after the end of the quarter	Data submission 2 times per year		Quarterly	Within 31 days of quarter ends
Flow Measurement		Daily Total			NA	Daily Total
Flow, Average			To be determined	2/week	3,000 m ³ /day	2/week
Flow, Maximum			To be determined	2/week	6,900 m ³ /day	2/week
Total Phosphorus			NA	Quarterly (Grab)	Not Required	NA
Effluent TSS	≤25 mg/L (Quarterly Average)	Monthly (Grab)	≤ 45 mg/L	Monthly (Grab)	≤ 45 mg/L	Monthly (Grab)
Post of Outfall Sign			Required		Erect sign above high water mark.	NA
Out fall Inspection			Required	Every 5 years	Required	Every 5 years. Next Due 2018
Biosolids Management			NA		Shall be transported to an approved receiving facility	NA

*<200 CFU/100 mL on a geometric mean on the last 5 samples in 30 days at the edge of the dilution zone for recreational water use and <14 CFU/100 mL for shellfish bearing waters. ** All regulated tests are conducted by an ISO/IEC 17025 accredited laboratory. ***Un-ionized ammonia testing only required from Jan.1, 2013 to July 1, 2014. “Grab” refers to a grab sample, which is a single sample that represents the composition of the water at that specific time and place.

Table 3 – Performance Measures – District of Sooke O&M Key Performance Indicators

Water Quality & Environmental Performance Measures			
Activity	Actual Values	Actual Values	Target Values
	April	YTD	Annual
Effluent Quality & Violations to Operational Certificates	0	0	0
Laboratory QA/QC Activities	38	167	200
Proactive Environmental/Quality Initiatives	1	3	5
Completion of Required Regulatory Reporting	100%	100%	100%
Activity	Actual Values	Actual Values	Acceptable Values
	April	YTD	Annual
Releases*	0	0	2

* Uncontrolled discharges of wastewater that are reportable to Provincial Emergency Plan under legislation, excluding abnormal circumstances



Sooke Wastewater Treatment Plant
Operations Report April 2015



Table 4 – Monthly Quality Summary

	Influent				Effluent																		Biosolids Shipped					
	CBOD mg/L	TSS mg/L	NH3-N mg/L	TP	Flow m ³ /day			CBOD mg/L			TSS mg/L			NH3-N mg/L			Un-ionized NH3-N mg/L			TP			FC CFU/100mL			Kg	# of Loads	
	Ave	Ave	Ave	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave	Min	Max	Geo Mean			
Regulatory Limit						14400	3000		≤45**	≤25 *		≤45**	≤25 *						<1.25									
January	152	168	28	5.2	1931	5443	2613	<4	5	5	5	6	5	1.14	2.50	1.68	<0.05	<0.05	<0.05	2.18	3.28	2.72	10	64	29	72990	8	
February	70	86	37	7.8	1767	3543	2313	<4	<4	<4	5	6	6	0.17	2.19	1.00	<0.05	<0.05	<0.05	2.33	4.35	3.25	4	96	19	41270	4	
March	163	156	39.1	7.01	1574	3305	2220	<4	<4	<4	3	4	4	0.17	1.69	0.72	0.00021	<0.05	0.025	2.57	3.64	3.19	22	68	38	50410	5	
April	214	239	43	8.30	1718	2485	1973	<4	5	4	<5	11	7	0.13	0.61	0.37	<0.05	<0.05	<0.05	3.25	4.37	3.89	6	76	19	57390	6	
May																												
June																												
July																												
August																												
September																												
October																												
November																												
December																												
Total																												
Annual	150	162	37	7.1	1574	5443	2280	<4	5	4	3	11	5	0.13	2.50	0.94	0.00021	<0.05	<0.05	2.18	4.37	3.26	4	96	25	222060	23	

* WSER- Quarterly average, **MWR



Table 5 – Influent Water Quality

		INFLUENT										
		IN HOUSE				EXTERNAL						
	Effluent flows	pH	TSS	COD	NH3-N	COD	CBOD	TSS	NH3-N	TP	Conductivity	Surfactants
April	m ³ /d		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µS/cm at 25 C	mg/L
1	2485											
2	2297	7.7	230	562	34							
3	2245											
4	2169											
5	2201	7.4	105	385	25							
6	2165											
7	2117											
8	1992	7.7	225	763	43	724	172	262	37	8.20	604.00	2.02
9	1983											
10	1880	7.8	235	840	45							
11	1995											
12	2124											
13	2073	7.8	210	675								
14	2024											
15	2043	7.8	150	584								
16	1843											
17	1806	7.7	225	710	45							
18	1855											
19	1883											
20	1883	7.8	225	797	44							
21	1878											
22	1718	7.9	250	1205	48	735	255	216	50	8.40		
23	1722											
24	1911	8.0	285	792	55							
25	1822											
26	1896											
27	1760	7.9	225	692	50							
28	1789											
29	1866	7.8	255	1046	53							
30	1775											
Min	1718	7.4	105	385	25	724	172	216	37	8.20	604	2.02
Max	2485	8.0	285	1205	55	735	255	262	50	8.40	604	2.02
AVG	1973	7.8	218	754	44	730	214	239	43	8.30	604	2.02



Sooke Wastewater Treatment Plant
Operations Report April 2015



Table 6 – Daily Water Quality of Effluent

	SBR 1 EFFLUENT														SBR 2 EFFLUENT													
	IN HOUSE				EXTERNAL										IN HOUSE				EXTERNAL									
	pH	TSS	COD	NH3-N	COD	TSS	CBOD	NH3-N	Temp	pH	NH3 (unionized)*	TP	Enter-ococci	FC	pH	TSS	COD	NH3-N	COD	TSS	CBOD	NH3-N	Temp	pH	NH3 (unionized)*	TP	Enter-ococci	FC
April	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	°C		mg/L	mg/L	CFU/100mL	CFU/100mL		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	°C		mg/L	mg/L	CFU/100mL	CFU/100mL	
1																												
2	6.6	<4	58	<0.4										6.6	4	37	1.5											
3																												
4				<0.4																								
5	6.5	<4		<0.4										6.5	<4		0.4											
6																												
7																												
8	6.5	<4	71	<0.4	58	<5	<4	0.13	15	6.17	<0.05	3.25	8	6.6	6	78	1.4	76	11	5	0.61	15	6.24	<0.05	3.89		76	
9																												
10	6.7	<4		<0.4											4		1.0											
11																												
12																												
13	6.5	<4												6.5	<4													
14																												
15	6.9	5	51										34	6.5	<4	56												12
16																												
17	6.5	<4		<0.4										6.6	<4		1.0											
18																												
19																												
20	6.7	<4		<0.4										6.6	<4		<0.4											
21																												
22	6.6	<4	70	0.5	58	6	<4	0.13		6.22	<0.05	4.37	30	6.8	<4	62	0.4	64	7	<4	0.60		6.25	<0.05	4.04	20	24	
23																												
24	6.5	<4		0.4										6.5	4		1.8											
25																												
26																												
27	6.5	4		<0.4										6.5	<4		0.4											
28																												
29	6.5	<4	55	<0.4										6.6	<4		1.5											22
30																												
Min	6.5	<4	51	<0.4	58	<5	<4	0.13	15	6.17	<0.05	3.25	30	6.5	<4	37	<0.4	64	7	<4	0.60	15	6.24	<0.05	3.89	20	12	
Max	6.9	5	71	0.5	58	6	<4	0.13	15	6.22	<0.05	4.37	30	6.8	6	78	1.8	76	11	5	0.61	15	6.25	<0.05	4.04	20	76	
Avg	6.6	4	61	0.4	58	5	<4	0.13	15	6.20	<0.05	3.81	30	6.6	<4	58	1.0	70	9	5	0.61	15	6.25	<0.05	3.97	20	26	

Note: Monthly average reported for fecal coliforms is a geometric mean. WSER limit is <25 mg/L quarterly average TSS/CBOD. MDL = Method Detection Limit, nt=not tested. External testing done by an ISO/IEC 17025 accredited Labs, EXOVA, Surrey, BC, Maxxam, Victoria, BC



Table 7: Acronyms

Acronyms /Abbreviations	Description
ATS	Automatic Transfer Switch
AVE or AVG	Average
BC EOCP	British Columbia Environmental Operators Certification Program
BOD	Biochemical Oxygen Demand
CBOD	Carbonaceous Biochemical Oxygen Demand
CFU/100mL	Colony Forming Units Per 100 milliliters
COD	Chemical Oxygen Demand
FC	Fecal Coliforms
F/M ratio	Food-to-microorganism ratio
HMI	Human Machine Interface
IC	Inspection Chamber
I/I	Inflow & Infiltration
LIT	Level Indicator Transmitter
m ³ /day	Cubic meters per day (flow)
mg/L	Milligram per liter
MDL	Method detection limit
MSR	Municipal Sewage Regulation
MWR	Municipal Wastewater Regulation
NH ₃	Ammonia
OC	Operational Certificate
PLC	Programmable Logic Controller
Q	Yearly Quarter
SBR	Sequencing Batch Reactor
SCADA	Supervisory Control And Data Acquisition (system)
SSA	Specified Sewer Area
TP	Total Phosphorus
TSS	Total Suspended Solids
VFD	Variable Frequency Drive
WWC	Wastewater Collection System
WSER	Wastewater Systems Effluent Regulations
WWTP	Wastewater Treatment Plant
YTD	Year to Date