
**DISTRICT OF SOOKE
WASTEWATER TREATMENT PLANT
AND COLLECTION SYSTEM**

**OPERATED BY
EPCOR WATER SERVICES INC.**



**OPERATIONS REPORT
MAY 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 May, the effluent quality was excellent with the TSS (total suspended solids) averaging 7 mg/L and CBOD averaging 5 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.

May 1 – Contractor at WWTP removing back drive motor for centrifuge for rebuild.

May 4 – Contractor installed rebuilt back drive motor on centrifuge.

May 4 – Changed oil in gearbox on centrifuge. Metal filings noted in magnetic drain plug.

May 5 – Previous centrifuge vibration issue has improved. Machine running smoother.

May 11 – Centrifuge vibrations back up. Monitoring closely.

May 12 – At midnight, communication faults occurred at all six lift stations. On-call operator called TELUS and TELUS reported all normal within a few minutes.

May 13 – Centrifuge vibration down from operational changes in start-up and shutdown procedure.

May 13 – Operator changed oil in centrifuge gearbox again and metal filings and metal filings noted on magnetic plug again. Took photos for maintenance records.

May 13 – Aeration valve #2 failed to open alarm. On-call operator attended and reset to clear the alarm.

May 14 – Centrifuge continuing to run smoothly.

May 14 – Monthly safety meeting included EPCOR Health and Safety manager and advisor.

May 14 – Aeration valve #2 failed to open twice. Operators set limit switches as per operations and maintenance manual.

May 15 – Motor on de-gritting cyclone making high-pitched noise. Called electrical contractor to evaluate.

May 15 – Called centrifuge millwright and put on stand-by in case centrifuge vibration issue not resolved.

May 15 – Aeration valve #2 continuing to be problematic.

May 19 – Centrifuge vibration now within acceptable limits.



May 21 – Technician replacing lighting in HMI display screen in MCC room.

May 21 – Oil changed in cyclone vortex gearbox.

May 25 – Operations updated working alone procedure.

May 29 – Centrifuge continuing to run well. Vibration within acceptable parameters.

Wastewater Collection System

May 5 – Operator witnessed connections (three) on Larkspur Road. Property had been site of treatment plant for homes built in the area before sewers. Now has been turned into three building lots.

May 7 – Operators responded to odour concern at foot of Murray Road. Checked municipal system, specifically manhole where LPS discharges to gravity flow. No issues there. No odours noted in neighbourhood and odours only noted inside residence. Suspect internal plumbing issue.

May 27 – Witnessed LP connection at Horne Road at seniors co-housing project.

May 28 – Operators located BO/PO port on Horne Road. This port was unable to be found during their servicing in 2012. Service work completed and required brooks box and steel lid. Municipal connection for LPS next to a BO/PO location has a broken concrete lid. Temporary repairs were made to prevent pieces of broken concrete lid falling in, possible damaging fittings.

Lift Stations

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

May 5 – Routine checks at Helgesen station observed swishing sound in valve chamber. Further investigation found swing disc to be broken in one of the check valves. Operators took parts from inventory and made necessary repairs.

May 28 – Serviced and exercised sluice gate 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 $15^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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
	May	YTD	Annual
Effluent Quality & Violations to Operational Certificates	0	0	0
Laboratory QA/QC Activities	29	196	200
Proactive Environmental/Quality Initiatives	0	3	5
Completion of Required Regulatory Reporting	100%	100%	100%
Activity	Actual Values	Actual Values	Acceptable Values
	May	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 May 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							<200		
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	68000	7
May	138	230	43	13.7	1516	1800	1643	<4	6	5	<5	8	7	0.08	0.51	0.28	<0.05	<0.05	<0.05	3.54	4.52	4.07	16	160	37	68830	7
June																											
July																											
August																											
September																											
October																											
November																											
December																											
Total																										301500	31
Annual	147	176	38	8.4	1516	5443	2152	<4	6	5	3	11	6	0.08	2.50	0.81	0.00021	<0.05	<0.05	2.18	4.52	3.42	4	160	27		

* WSER- Quarterly average, **MWR and proposed OC



Table 5 – Influent Water Quality

		INFLUENT								
		IN HOUSE				EXTERNAL				
	Effluent flows	pH	TSS	COD	NH3-N	COD	CBOD	TSS	NH3-N	TP
May	m ³ /d		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
1	1724	7.6	315	1113	51					
2	1681									
3	1800									
4	1753	8.1	270	944						
5	1687									
6	1604	7.8	140	769	46	316	105	250	40	13.3
7	1684									
8	1660	7.9	165	739	47					
9	1627									
10	1649									
11	1593	7.8	310	1121						
12	1673									
13	1603	7.8	230	693	49					
14	1687									
15	1594	7.7	215	879	53					
16	1616									
17	1559									
18	1684	7.8	280	574	53					
19	1681									
20	1651	7.8	170	707	55	464	170	210	47	14.0
21	1695									
22	1516	7.8	260	919						
23	1569									
24	1647									
25	1655	7.7	315	1083						
26	1591									
27	1574		190	1265						
28	1584									
29	1678	7.6	180	634	40					
30	1578									
31	1641									
Min	1516	7.6	140	574	40	316	105	210	40	13.3
Max	1800	8.1	315	1265	55	464	170	250	47	14.0
AVG	1643	7.8	234	880	49	390	138	230	43	13.7



Sooke Wastewater Treatment Plant
Operations Report May 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	FC	pH	TSS	COD	NH3-N	COD	TSS	CBOD	NH3-N	Temp	pH	NH3 (unionized)*	TP	FC
May	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	°C	mg/L	mg/L	mg/L	CFU/100mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	°C	mg/L	mg/L	mg/L	mg/L	CFU/100mL
1	6.5	6		<0.4									6.4	<4		<0.4										
2																										
3																										
4	6.5	4		0.7									6.6	4		0.9										
5																										
6	6.6	4	67	<0.4	58	6	6	0.08	15	6.13	<0.05	4.36	30	6.5	5	60	0.7	47	6	<4	0.43	15	6.21	<0.05	3.54	62
7																										
8	6.5	5		<0.6										6.5	4		1.3									
9																										
10																										
11	6.6	<4		<0.4										6.5	4		0.9									
12																										
13	6.5	5	61	<0.7									16	6.5	5	71	<0.4									20
14																										
15	6.4	4		<0.4										6.5	4		<1.0									
16																										
17																										
18	6.6	4		<0.4										6.5	6		0.6									
19																										
20	6.5	4	50	0.6	50	8	<4	0.10	15	6.49	<0.05	3.86	26	6.5	8	54	<0.4	55	<5	6	0.51	15	6.40	<0.05	4.52	56
21																										
22	6.6	4		<0.4										6.5	9		<0.4									
23																										
24																										
25	6.6	4		<0.4										6.6	8		<0.4									
26																										
27		4	34	<0.4									28		8	46	0.9									160
28																										
29	6.6	5		<0.4										6.5	11		<0.4									
30																										
31																										
Min	6.4	<4	34	<0.4	50	6	<4	0.08	15	6.13	<0.05	3.86	16	6.4	<4	46	<0.4	47	<5	<4	0.43	15	6.21	<0.05	3.54	20
Max	6.6	6	67	0.7	58	8	6	0.10	15	6.49	<0.05	4.36	30	6.6	11	71	1.3	55	6	6	0.51	15	6.40	<0.05	4.52	160
AVG	6.5	4	53	0.5	54	7	5	0.09	15	6.31	<0.05	4.11	24	6.5	6	58	0.7	51	6	5	0.47	15	6.31	<0.05	4.03	58

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. External testing done by an ISO/IEC 17025 accredited Labs, EXOVA, Surrey, 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
BO/PO	Blow off /pump out
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
LPS	Low pressure system
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