PUBLIC UTILITIES COMMISSION
FOR THE MUNICIPALITY OF CHATHAM-KENT

MITCHELL'S BAY LAGOONS

2019 PERFORMANCE REPORT

January 1 to December 31, 2019

Amended Certificate of Approval # 1-502-77-006

Plant Description

The Mitchell's Bay Sewage Lagoon System provides treatment of wastewater for approximately 500 residents of the Mitchell's Bay community. Wastewater is collected and pumped to the sewage lagoon system from one sanitary pump station.

The Mitchell's Bay Sewage Lagoon System was built in 1977 with a maximum design flow of 509 m^3/day. This sewage treatment facility consists of 3 treatment cells each 5 acres in size. Final effluent is discharged to Rankin Creek in the spring and fall if required.

REPORTING

Summary and Interpretation of Monitoring and Comparison to the Effluent Limits

The following Ministry Procedures / Guidelines apply:

Procedure F-5-1:	Minimum effluent limits BOD_5, Suspended Solids
Guideline F-8:	Effluent limits Phosphorus
Procedure F-10-1:	Minimum monitoring program
Table C-1:	Monitoring, recording and reporting bypasses

Table 1 on the following page outlines monthly average results of parameters tested compared to the Effluent Guidelines & Effluent Design Objectives set out in one or more of the above Ministry Procedures /Guidelines.

Success and Adequacy of the Works

During the reporting period, the annual average daily flow was 201 m^3/day, which represents approximately 40% of the rated capacity of 509 m^3/day.

Overall, the Mitchell's Bay Lagoons performed well for this reporting period

Table 1: Summary of Monitoring Data and Comparison to Effluent Guidelines & Effluent Design Objectives - Concentrations
as well as rated capacity to the sewage works

Rated capacity: 509 m^3/day

Total sewage flow to the works during a calendar year divided by the number of days during which sewage was flowing to the works that year

Month	Total Monthly Influent Flow m^3	Avg Daily Influent Flow /Month m^3/day	Avg Daily Influent Flow/Year m^3/day	% of Rated Capacity	BOD_5 mg/L	Total S.S mg/L	Total P mg/L
Limits: without batch TP removal	**None**	**None**	**509**	**100**	**30**	**40**	**1.0**
Objectives: without batch TP removal	**None**	**None**	**509**	**100**	**25**	**30**	**0.5 - 1.0**
Limits: with batch TP removal	**None**	**None**	**509**	**100**	**25**	**25**	**1.0**
Objectives: with batch TP removal	**None**	**None**	**509**	**100**	**15**	**20**	**0.5 - 1.0**
Jan	4,030	130					
Feb	4,610	165			5.5	9	0.17
Mar	4,607	149					
Apr	6,987	233			2.3	9	0.13
May	8,097	261			5.5	11	0.18
Jun	7,942	265			4.3	5	0.13
Jul	11,251	363					
Aug	6,808	220					
Sep	5,211	174					
Oct	5,058	163					
Nov	4,894	163					
Dec	3,847	124					
Year			201	40%			
	Yearly Total Flow m^3	**Yearly Maximums**					
	73,342	363			5.5	11	0.18

Batch TP removal was not performed for the February discharge period.
Batch TP removal was performed for the April-June discharge period.

Operating Problems and Corrective Action:

There were no significant operating problems encountered during this reporting period.

Summary of Maintenance Activities:

Routine maintenance was performed throughout the reporting period. Chatham-Kent PUC utilizes the electronic preventative maintenance program to track preventative maintenance. In addition to routine maintenance, the following additional maintenance activity was completed for the reporting period:

- Spring Discharge Equipment Rental $ 12,300

Quality Assurance and Control Measures:

The Chatham-Kent Public Utilities Commission followed a sampling schedule developed in accordance with the Certificate of Approval and applicable regulations for this reporting period.

Raw chemistry samples were collected and submitted monthly to an accredited laboratory for analysis of BOD_5, Total Suspended Solids, pH and Total Phosphorus.

During reporting periods where there is discharge, the following sampling program is followed: Final Effluent chemistry samples are collected and submitted during discharge periods to an accredited laboratory for analysis of Total BOD, Total Suspended Solids, Total Kjeldahl Nitrogen, Total Phosphorus, Total Ammonia as N, Alkalinity, pH, Nitrite and Nitrate.

Bacteriological samples of the effluent are collected during discharge periods according to the Sampling Program. Bacteriological samples are submitted during discharge periods to an accredited laboratory for analysis.

In house samples were analyzed by a licensed operator for pH and temperature.

Calibration and Maintenance on Monitoring Equipment

Monitoring equipment calibration/verification report(s) included for the following:

- Influent flow meter

Community Complaints:

There were no Customer Complaints received during the reporting period.

By-pass, Spill, or Abnormal Discharge Events:

There were no by-pass, spill, or abnormal discharge events for the reporting period.

Other Information the District Manager Requires:

No other information was required from the District Manager during this reporting period.

APPENDIX A

Yearly Operational Data Summary for the Reporting Period

CHATHAM-KENT PUC

Mitchell's Bay Lagoon System — **Works # 110002087**

Operational Data Yearly Summary

YEAR **2019**

DESCRIPTION														TOTAL	AVERAGE	HIGH	LOW	Summer MOE	Winter MOE	Summer Non-	Winter Non-
MONTH		JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER					Objective	Objective	Compliance	Compliance
RAW FLOW DATA																					
RAW FLOW MONTH TOTAL	1000 cu. m.	4.030	4.610	4.607	6.987	8.097	7.942	11.251	6.808	5.211	5.058	4.894	3.611	73.106	6.092	11.251	3.611				
RAW FLOW MONTH AVG.	1000 cu. m.	0.130	0.165	0.149	0.233	0.261	0.265	0.363	0.220	0.174	0.163	0.163	0.120		0.200	0.363	0.120				
RAW FLOW MONTH PEAK	1000 cu. m.	0.400	0.299	0.343	1.027	0.849	0.315	1.267	0.273	0.271	0.509	0.389	0.184			1.267	0.184				

RAW SEWAGE CHEMICAL														TOTAL	AVERAGE	HIGH	LOW				
BOD5	mg/l	160	37	88	55	100	39	190	77	97	100	100	59		92	190	37				
pH		8	8	8	8	8	8	7	7	7	7	8	8		8	8	7				
TOTAL P	mg/l	2.6	0.9	1.8	1.3	3.3	2.3	2.2	3.1	3.0	3.4	3.1	3.0		2.5	3.4	0.9				
SS	mg/l	120	48	78	48	120	34	120	90	91	110	79	83		85	120	34				

FINAL EFFLUENT CHEMICAL														TOTAL	AVERAGE	HIGH	LOW				
AMMONIA	mg/l		0.68		2.70	5.01	4.69								3.27	5.01	0.68				
UN-IONZED AMMONIA	mg/l		0.0012		0.0314	0.1040									0.0455	0.1040	0.0012				
BOD5	mg/l		5.5		2.3	5.5	4.3								4.38	5.5	2.3				
CBOD5	mg/l		4		2.3	3.5	4								3.26	4	2				
TKN	mg/l		1.9		3.7	5.9	6.1								4.4	6.1	1.9				
pH (IN HOUSE)			7.78		7.54	7.83	8.03								7.79	8.03	7.54				
pH (LABORATORY)			7.63		8.02	8.08	8.10								7.96	8.10	7.63				
TOTAL P	mg/l		0.16		0.13	0.20	0.13								0.15	0.20	0.13				
SS	mg/l		9		9	11	5								8.4	11	5				
ALKALINITY	mg/l		104		136	182	178								150	182	104				
NITRITE	mg/l		0.010		0.042	0.051	0.105								0.052	0.105	0.010				
NITRATE	mg/l		0.11		0.14	0.13	0.16								0.14	0.16	0.11				
TEMPERATURE	^{0}C		3.5		13.1	11.7	19.9								12.0	19.9	3.5				

FINAL EFFLUENT (BACTERIOLOGICAL)														TOTAL	AVERAGE	HIGH	LOW				
E. COLI	cfu / 100ml		259		406	1172	59								473.8	1172	59				

FINAL EFFLUENT FLOW														TOTAL	AVERAGE	HIGH	LOW				
TOTAL MONTH FLOW	1000 cu. m.		10.744		17.972	20.268	8.594							57.5777	14.394	20.268					
MONTH AVG. DAY FLOW	1000 cu. m.		2.149		2.567	2.533	2.149								2.350	2.567	2.149				
MONTH MAX DAY FLOW	1000 cu. m.		2.687		2.687	2.687	2.687								2.687	2.687					

FEDERAL (Annually)

Effluent Flow per Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
	No	Yes	No	Yes	Yes	Yes	No	No	No	No	No	No
Final Flow Qtr. m3	57577.7											
CBOD Qtr. mg/L	3.3											
SS Qtr. mg/L	8.4											
Number of Days	24											

FEDERAL WSER Acute Lethality

Average Daily Volume Effluent (m^3): 158

APPENDIX B

Calibration Reports for the Reporting Period

Flowmetrix
Technical Services Inc.

Western Office
2088 Jetstream Road
London, Ontario
N5V 3P6

Eastern Office
1602 Old Wooler Road
Wooler, Ontario
K0K 3M0

ABB WATERMASTER
Verification Report

AS FOUND CERTIFICATION

PASS

CLIENT DETAIL

CUSTOMER	Chatham-Kent - Wallaceburg
CONTACT	Stew Bechard, Senior Operator
	OWRC Wallaceburg Pollution Control Plant
	795 Gillard Street, Wallaceburg ON
	Cell: 519-359-2697

VER. BY - FM Paris Machuk

Quality Management Standards Information - Reference equipment and instrumentation used to conduct this verification test is found in our AC-QMS document at the time this test was

EQUIPMENT DETAIL

MODEL	FEV125 WaterMaster
SENSOR SERIAL NUMBER	3K620000200759
CONVERTER SERIAL NUMBER	3K620000200759
SENSOR SIZE (DN)	100
PLANT ID	Mitchell's Bay Pumping Station
METER ID	Station Flow Meter
FIT ID	N/A
CLIENT TAG	N/A
OTHER	N/A
GPS COORDINATES	N/A
VERIFICATION DATE	January 30, 2019
CAL. FREQUENCY	Annual
CAL. DUE DATE	January, 2020

SENSOR INFORMATION

Q3	l/s	69.44
CALIBRATION ACCURACY		OIML Class 2
SENSOR CAL. ACCURACY	%	89.3
	mm/sec	-2
	~	11
DATE OF MANUFACTURE		Sept 25, 2015
RUN HOURS	d/h/m	946/18/35

TRANMITTER INFORMATION

APPLICATION VERSION		V01.06.00	03/03/151
MSP VERSION		01.00.00	
DATE OF MANUFACTURE		Sept 25, 2015	
RUN HOURS	d/h/m	1405/18/21	
ALLOWABLE TOLERANCE	%	5.0	

CURRENT OUTPUT

OUTPUT TEST	4.00 20.00	READING mA	ERROR %	PASS FAIL
4.0 mA	4.00	3.994	-0.15	PASS
12.0 mA	12.00	11.971	-0.24	PASS
20.0 mA	20.00	19.976	-0.12	PASS

PULSE OUTPUT

OUTPUT TEST		READING mA	ERROR %	PASS FAIL
OUTPUT 1, Hz	500	N/A	N/A	N/A
OUTPUT 1, Hz	250	N/A	N/A	N/A
OUTPUT 2, Hz	100	N/A	N/A	N/A
OUTPUT 2, Hz	50	N/A	N/A	N/A

VERIFICATION HISTORY

OIML Accuracy Alarms	0

TOTALIZER INFORMATION

FORWARD	143161.49	m3
REVERSE	24.94	m3
NET	143136.55	m3

SENSOR DATA

COIL CURRENT	179.9	mA
COIL INDUCTANCE	222.6	mH
COIL SHIFT	-0.3	%
COIL/LOOP RESISTANCE	37.6	ohm

TRANSMITTER DATA

TX GAIN - ADJUSTMENT	0	%

VeriMASTER INFORMATION

VERSION	01.00.01
LIMIT VERSION	01.00.01

CONFIGURATION SETTINGS

MAINS/FREQUENCY		60	Hz
QMAX		50	l/s
PULSES/UNIT		120	
PULSES LIMIT FREQUENCY		1200	Hz
SENSOR USER	SPAN	100	%
	ZERO	0	mm/s
USER FLOW	CUTOFF	1	%
	HYSTERESIS	20	%
METER MODE		Normal Operation	

COMMENTS

QUALITY MANAGEMENT STANDARDS INFO.

[QMS] INFORMATION	IDENT.	ID #
[REFERENCE] FTS	ABBWM	1
PROCESS METER	DMM	2

The information contained within this report was produced by "VeriMASTER - Flow Meter Verification Report". The AS LEFT information is the same as the AS FOUND information within this report. If changes have been made relative to the accuracy of the calibration, an AS LEFT certificate will be issued.