PUBLIC UTILITIES COMMISSION
FOR THE MUNICIPALITY OF CHATHAM-KENT

MITCHELL'S BAY LAGOONS

2018 PERFORMANCE REPORT

January 1 to December 31, 2018

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 154 m^3/day, which represents approximately 30% 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	3,836	124					
Feb	5,968	213			10	26	0.74
Mar	4,811	155					
Apr	6,422	214					
May	6,554	211					
Jun	4,572	152			3	4	0.66
Jul	4,065	131					
Aug	4,055	131					
Sep	3,489	116					
Oct	4,156	134					
Nov	4,606	159					
Dec	3,698	119					
Year			154	30%			
	Yearly Total Flow m^3	**Yearly Maximums**					
	56,232	214			10	26	0.74

Batch TP removal was not performed for the February to March discharge period.
Batch TP removal was performed for the 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: none.

No significant expenditures incurred for additional maintenance activities and equipment replacement during the reporting period.

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, Hydrogen Sulphide.

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

Mitchell's Bay Sewage System
Operational Data Yearly Summary
Works Number
110002087

	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	YEARLY TOTAL	AVERAGE MONTH	MAXIMUM MONTH	MINIMUM MONTH
RAW SEWAGE																
Total Flow 1000 m^3	3.836	5.968	4.811	6.422	6.554	4.572	4.065	4.055	3.489	4.156	4.783	3.698	56.409	4.701	6.554	3.489
Avg. Daily Flow 1000 m^3/d	0.124	0.213	0.155	0.214	0.211	0.152	0.131	0.131	0.116	0.134	0.159	0.119	1.861	0.155	0.214	0.116
Peak Flow 1000 m^3/d	0.266	0.879	0.350	0.673	0.601	0.192	0.170	0.185	0.157	0.339	0.385	0.197	4.394	0.366	0.879	0.157
% of capacity based on average daily flow	24.31	41.87	30.49	42.06	41.54	29.94	25.76	25.70	22.85	26.34	31.32	23.44		30.47	42.06	22.85
RAW SEWAGE																
BOD5 mg/l	170.0	180.0	110.0	66.0	88.0	160.0	170.0	210.0	360.0	120.0	140.0	90.0		155.3	360.0	66.0
PH	7.76	7.97	7.95	7.73	7.45	7.75	8.08	7.90	7.48	7.41	8.01	7.90		7.8	8.1	7.4
Total Phosphorous mg/l	4.80	5.20	4.00	1.90	1.90	4.70	8.00	6.30	9.60	3.50	3.60	3.40		4.7	9.6	1.9
Total Suspended Solids mg/l	180.0	120.0	95.0	54.0	71.0	94.0	180.0	150.0	270.0	190.0	52.0	100.0		129.7	270.0	52.0

CONTENT SAMPLES	Lab Test Results											Field Test Results		
Sample Date	Ammonia mg/L	B.O.D.5 mg/L	TKN mg/L	pH	T.P. mg/L	T.S.S. mg/L	H2S mg/L	ALK CaCo3	Nitrite NO2 mg/L	Nitrate NO3 mg/L	E.Coli cfu/100 ml	pH	D.O. mg/L	Temp. °C
22-Feb-2018	0.26	2	0.7	7.56	0.15	5		34	0.10	0.34	10.00			
7-May-2018	ND	12	2	7.99	1.4	31		140	0.019	ND	90			
12-Jun-2018	ND	0	7.8	7.83	0.54	2		180	0.01	0.00	20	6.83		19.6

Mitchell's Bay Sewage System
Operational Data Yearly Summary
Works Number
110002087

CELL TREATMENT	
Cell Number	
Date Treated	
Chemical Used	
Volume of Chemical	m^3
Volume Treated	1000 m^3
Dosage Rate	mg/L

LAGOON DISCHARGE

Cell Number	3					flow/ hour: 94.31m3	
Date/Time Start	22-Feb-18	10:00					
Date/Time Stop	05-Mar-18	9:00				feb flow: 14995.29	Mar Flow: 9902.55
Duration (hours)				Total Hrs =	264	Feb Hour: 159	Mar Hours: 105
Total Discharge Flow 1000m^3	24.90			Total Flow=	24,900 m3		

EFFLUENT SAMPLES	**Lab Test Results**											**Field Test Results**			Federal (15°C)			
Sample Date	**Ammonia mg/L**	**B.O.D.5 mg/L**	**TKN mg/L**	**pH**	**T.P. mg/L**	**T.S.S. mg/L**	**H2S mg/L**	**ALK CaCo3**	**Nitrite NO2 mg/L**	**Nitrate NO3 mg/L**	**E.Coli cfu/100 ml**	**pH**	**D.O. mg/L**	**Temp. °C**	**CBOD 5 mg/L**	**pH 15°C**	**Un-ionized Ammonia mg/L**	**T.S.S. mg/L**
22-Feb-2018	0.26	2.00	0.71	7.56	0.15	5.00		34.00	0.10	0.34	10							5.00
23-Feb-2018	0.22	8.00	1.00	7.76	0.35	13.00		51.00	0.01	0.30	30				6.00			13.00
26-Feb-2018	3	12.00	5.10	7.90	1.30	26.00		170.00	0.01	0.10	50				12.00			26.00
28-Feb-2018	2.40	14.00	4.00	7.84	1.00	25.00		170.00	0.01	0.10	10				13.00			25.00
05-Mar-2018	2.5	15.00	4.3	7.77	0.88	62.00		190.00	0.01	0.10	10				15.00			62.00
Average	1.68	10.20	3.02	7.77	0.74	26.20	#DIV/0!	123.00	0.03	0.19	22.00	#DIV/0!	#DIV/0!	#DIV/0!	11.50	#DIV/0!	#DIV/0!	26.20

LAGOON DISCHARGE

Cell Number	3					flow/ hour:	81.78
Date/Time Start	12-Jun-18	7:45					
Date/Time Stop	18-Jun-18	9:00				June Flow:	11879 m3
Duration (hours)				Total Hrs =	145.25	June Hours:	145.25 hrs
Total Discharge Flow 1000m^3	11.88			Total Flow m3=	11879		

EFFLUENT SAMPLES	**Lab Test Results**											**Field Test Results**			Federal (15°C)			
Sample Date	**Ammonia mg/L**	**B.O.D.5 mg/L**	**TKN mg/L**	**pH**	**T.P. mg/L**	**T.S.S. mg/L**	**H2S mg/L**	**ALK CaCo3**	**Nitrite NO2 mg/L**	**Nitrate NO3 mg/L**	**E.Coli cfu/100 ml**	**pH**	**D.O. mg/L**	**Temp. °C**	**CBOD 5 mg/L**	**pH 15°C**	**Un-ionized Ammonia mg/L**	**T.S.S. mg/L**
12-Jun-2018	7.0	2.00	8.0	7.85	0.57	4.00		190.00	0.01	0.10	20	6.83			2.00	7.85	0.022	4.00
14-Jun-2018	7.5	5.00	7.9	7.89	0.52	3.00		190.00	0.02	0.10	20	7.60		18	5.00	7.89	0.120	3.00
18-Jun-2018	8.2	3.00	8.7	8.0	0.90	6		200.00	0.01	0.10	130	88.00		23	2.00	7.99	0.150	6
Average	7.57	3.33	8.20	7.91	0.66	4.33	#DIV/0!	193.33	0.01	0.10	56.67	34.14	#DIV/0!	20.50	3.00	7.91	0.10	4.33

	Month Average		
	BOD_5	TSS	TP
Yearly Average	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**

Total Effluent Flow 2018

36,779 **m3**

Average CBOD: 7.25
Average TSS: 15.27
Number of days: 19

Annual Average Daily Effluent Flow 2019

Acute Lethality

101 m^3

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 Municipality of Chatham-Kent - North
CONTACT Brian Patrick
Senior/Chief Operator, OWRC Wallaceburg Pollution Control Plant
795 Gillard Street
Wallaceburg, ON N8A 5G7
T: 519-627-1211
C: 519-354-5664
E: brianpa@chatham-kent.ca

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	February 01, 2018
CAL. FREQUENCY	Annual
CAL. DUE DATE	February, 2019

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	583/21/35

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	859/10/9	
ALLOWABLE TOLERANCE	%	5.0	

CURRENT OUTPUT

OUTPUT TEST	4.00 20.00	READING mA	ERROR %	PASS FAIL
4.0 mA	4.00	3.995	-0.12	PASS
12.0 mA	12.00	11.974	-0.22	PASS
20.0 mA	20.00	19.981	-0.09	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	81795.64	m3
REVERSE	16.85	m3
NET	81778.79	m3

SENSOR DATA

COIL CURRENT	179.9	mA
COIL INDUCTANCE	222.6	mH
COIL SHIFT	-0.2	%
COIL/LOOP RESISTANCE	37.7	ohm

TRANSMITTER DATA

TX GAIN - ADJUSTMENT	0.1	%

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.