THE CORPORATION OF THE MUNICIPALITY OF CHATHAM-KENT

CLEARVILLE PARK WASTEWATER TREATMENT PLANT

2018 PERFORMANCE REPORT

January 1 to December 31, 2018

Amended Certificate of Approval # 7957-762JAZ

Plant Description

The Clearville Park Wastewater Treatment Plant provides treatment of wastewater for Clearville Park. Wastewater is collected by a separate sanitary sewer system and conveyed to two Waterloo Bio-filter treatment units. The treated wastewater is subsequently discharged to Clear Creek.

During April 2005, the PUC was contracted by the Municipal Parks and Recreation Department to operate the plant.

This tertiary wastewater treatment system has a rated capacity of 30 m^3/ day, and services a seasonal campground.

The present treatment system consists of:

- Two septic tanks
- One bio-filter dosing tank and submersible pumps
- Two Waterloo Bio-filter treatment units
- UV disinfection

The effluent outfall pipe discharges to the Clear Creek.

REPORTING REQUIREMENTS
UNDER CERTIFICATE OF APPROVAL # 7957-762JAZ

Summary and Interpretation of Monitoring and Comparison to the Effluent Limits & Objectives: Condition 9 (2) (a) (b)

Tables 1 and 2 on the following pages outlines monthly average results of parameters tested compared to the limits outlined in the Certificate of Approval Tables 3 – Effluent Objectives and Table 2 - Effluent Limits.

An exceedance of the average monthly concentration effluent limit for Total Ammonia occurred for the month July. The Effluent Limit monthly average concentration for Total Ammonia is 5 mg/L. The monthly average Total Ammonia concentration for July was 7.64 mg/L. The plant experienced high influent sewage flows July 28 & 29 due to heavy rainfall combined with increased weekend traffic at the campground. This resulted in an elevated total ammonia concentration on July 30 as well as for the monthly average.

The following criteria exceeded the effluent objectives outlined in the Certificate of Approval Table 3 Effluent Objectives:

Total Phosphorus concentration: June, July, August, September, October

Total Ammonia concentration: July, August

Total Suspended Solids concentration: May, August

Continuing optimization of chemical feed was practiced throughout the year with the goal of achieving effluent objectives.

Success and Adequacy of the Works

During the reporting period, the annual average daily flow was 8.60 m^3/day, which represents approximately 29% of the rated capacity of 30 m^3/day. The maximum daily flow was 46 m^3/day, which is 153% of the rated capacity.

There were no flow exceedances based on the Average Daily Flow during this reporting period.

Overall, the Clearville Park Wastewater Treatment Plant performed well for this reporting period.

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

Plant Rated Capacity (m^3/day): 30

Total flow during calendar year divided by the number of days during which sewage was flowing (measured on the effluent pipe discharging to the outfall)

Month	Total Monthly Flow m^3	Avg Daily Flow /Month m^3/day	Avg Daily Flow /Year m^3/day	% of Plant Capacity	$CBOD_5$ mg/l	Total S.S. mg/l	Total Ammonia mg/l	Total P mg/l	pH	E.Coli /100ml CFU
Limits	**None**	**None**	**30**	**100**	**15**	**15**	**5.0**	**0.7**	**6.0 – 9.5**	**200**
Objectives	**None**	**None**	**30**	**100**	**10**	**10**	**3.0**	**0.3**	**6.0 – 9.5**	**100**
Jan										
Feb										
Mar										
Apr										
May	245.0	7.90			2	13	0.8	0.16	7.99	13
Jun	167.0	5.57			2	1	1.7	0.40	8.18	10
Jul	257.4	8.30			3	2	7.6	0.48	7.87	11
Aug	324.9	10.45			2	13	3.9	0.65	7.86	13
Sept	245.2	8.17			2	2	2.7	0.69	8.03	10
Oct	198.2	11.66			2	2	0.69	0.42	7.77	16
Nov										
Dec										
Year			8.60	29%						
	Yearly Total Flow m^3	**Yearly Maximums**								
	1436.7	11.66	8.60	29%	3	13	7.6	0.69	8.18	16

Table 2: Summary of Monitoring Data and Comparison to Effluent Limits – Loadings

Date	Avg Daily Effluent Flow /Month m^3/day	$CBOD_5$ kg/day	Total S.S. kg/day	Total Ammonia kg/day	Total P kg/day
Limits	**30**	**0.45**	**0.45**	**0.15**	**0.021**
Jan					
Feb					
Mar					
Apr					
May	7.90	0.02	0.10	0.01	0.001
Jun	5.57	0.01	0.01	0.01	0.002
Jul	8.30	0.02	0.02	0.06	0.004
Aug	10.44	0.02	0.14	0.04	0.007
Sep	8.17	0.02	0.02	0.02	0.006
Oct	11.66	0.02	0.02	0.01	0.005
Nov					
Dec					
		Yearly Maximums			
		0.02	0.14	0.06	0.007

Summary of Maintenance Activities:
Condition 9 (2)(c)

Routine maintenance was performed throughout the reporting period. Chatham-Kent PUC utilises an electronic preventative maintenance program to track preventative maintenance. In addition to the routine maintenance, the following additional maintenance activities and equipment replacement was completed for the reporting period:

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

Operating Problems and Corrective Action:
Condition 9 (2)(d)

There were no significant operating problems encountered during this 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.

Composite chemistry samples of the effluent were collected using an auto sampler. Chemistry samples were submitted weekly to an accredited laboratory for analysis of $CBOD_5$, Total Suspended Solids, Total Kjeldhal Nitrogen, Total Phosphorus and Total Ammonia Nitrogen, Alkalinity, pH, Nitrite and Nitrate.

Bacteriological samples of the effluent were collected weekly according to the Sampling Program. Bacteriological samples were submitted weekly to an accredited laboratory for analysis.

Calibration and Maintenance on Effluent Monitoring Equipment

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

- Effluent 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

Monthly and Yearly Operational Data Summary for the Reporting Period

CHATHAM-KENT PUC

Clearville Park Wastewater Treatment Plant

Works # 120002843

Operational Data Yearly Summary

YEAR **2018** 2018

DESCRIPTION														TOTAL	AVERAGE	HIGH	LOW	MOE	Non-
MONTH		JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER					Objective	Compliance
FINAL EFFLUENT FLOW DATA																			
CLEARVILLE FLOW MONTH TOTAL	cu. m.					245.000	167.000	257.400	323.900	245.200	198.200				1436.700				
CLEARVILLE FLOW MONTH AVG.	cu. m.					7.903	5.567	8.303	10.440	8.173	11.659				8.674	11.659	5.567		30 / day
CLEARVILLE FLOW MONTH PEAK	cu. m.					46.000	13.000	28.100	41.400	22.900	29.000					46.000	13.000		
FINAL EFFLUENT CHEMICAL																			
AMMONIA	mg/l					0.75	1.65	7.64	3.93	2.65	0.69								**5**
AMMONIA	kg/day					0.01	0.01	0.06	0.04	0.02	0.01								**0.15**
CBOD5	mg/l					2	2	3	2	2	2								**15**
CBOD5	kg/day					0.02	0.01	0.02	0.02	0.02	0.02								**0.45**
TKN	mg/l					1.81	3.48	8.50	6.45	3.90	2.50								
pH						7.99	8.18	7.87	7.86	8.03	7.77								**6.9-9.5**
TOTAL P	mg/l					0.16	0.40	0.48	0.65	0.69	0.42								**0.7**
TOTAL P	kg/day					0.001	0.002	0.004	0.007	0.006	0.005								**0.021**
SS	mg/l					13	1	2	13	2	2								**15**
SS	kg/day					0.10	0.01	0.02	0.14	0.02	0.02								**0.45**
ALKALINITY	mg/l					353	713	498	455	525	433								
NITRITE	mg/l					0.015	0.086	0.941	0.703	0.365	0.135				0.374	0.941	0.015		
NITRATE	mg/l					16.90	61.15	73.90	53.20	81.55	45.20				55.3	81.6	16.9		
FINAL EFFLUENT (BACTERIOLOGICAL)																			
E. COLI.	# / 100ml					13	10	11	10	10	16								**200**

Facility Begin Operation on May 4, 2018
Effluent Flow halted on Oct. 17, 2018

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

Endress Hauser ProMag Series
Verification Report

AS FOUND CERTIFICATION

FORWARD FLOW DIRECTION

PASS

CLIENT DETAIL

CUSTOMER Municipality of Chatham-Kent
CONTACT Larry Garside
Senior Operator - Ridgetown
4 Tecumseh Street
Ridgetown, Ontario
N0P 2C0
t: 519-674-2802
c: 519-358-6661
e: larryg@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

[MUT] MANUFACTURER	ENDRESS & HAUSER
MODEL	Prosonic 91W
CONVERTER S/N:	C3014E16000
FUSE	Pull Plug on Unit
PLANT ID	CLWW Plant
METER ID	Final Effluent Flow
FIT ID	n/a
CLIENT TAG	n/a
OTHER	
GPS COORDINATES	N42 27.321 W081 41.849
VERIFICATION DATE	March 27, 2018
CAL. FREQUENCY	Annual
CAL. DUE DATE	March, 2019

PROGRAMMING PARAMETERS

DIAMETER (DN)	mm	100
F.S. FLOW - MAG	LPS	78.538
F.S. RANGE - O/P	LPS	50.000
TUBE k-FACTOR		1.0000
TUBE zero		0

FORWARD TOTALIZER INFORMATION

AS FOUND	13256.3	M3
AS LEFT	13276.3	M3
DIFFERENCE	20	M3

TEST CRITERIA

AS FOUND CERTIFICATION TEST	Yes
FORWARD FLOW DIRECTION	Yes
ALLOWABLE [%] ERROR	5

COMPONENTS TESTED

CONVERTER DISPLAY	yes
mA OUTPUT	no
TOTALIZER	yes
ACCURACY BASED ON [% o.r.]	yes

ERROR DOCUMENTED IN THIS REPORT; BASED ON % o.r.

FLOW TUBE SIMULATION

		0.0	**12.5**	**25.0**	**37.5**	**50.0**	**LPS**
		0.0	**15.9**	**31.8**	**47.7**	**63.7**	**% F.S. Flow**
		0.0	**25.0**	**50.0**	**75.0**	**100.0**	**% F.S. Range**
REF. FLOW RATE		**0.000**	**12.500**	**25.000**	**37.500**	**50.000**	LPS
MUT [Reading]		0.000	12.511	25.027	37.537	50.045	LPS
MUT [Difference]		0.000	0.011	0.027	0.037	0.045	LPS
MUT [% Error]		n/a	0.09	0.11	0.10	0.09	% O.R
mA OUTPUT							
MUT [Reading]	min. 4 mA						
MUT [Difference]	max. 20 mA						
MUT [% Error]							
TOTALIZER - REF. FLOW RATE						**50.000**	LPS
TOTALIZER [MUT]						4	M3
TEST TIME						79.93	SECONDS
CALC. TOTALIZER						3.997	M3
ERROR						0.09	%

COMMENTS

Note: mA output not used therefore not checked.

QUALITY MANAGEMENT STANDARDS INFO.

[QMS] INFORMATION	IDENT.	ID #
[REFERENCE] FTS	E&H (FC)	1
PROCESS METER	PM	2
ANALOG METER	AM	n/a
STOP WATCH	SW	Yes

RESULTS

TEST	AVG % o.r.	PASS FAIL
DISPLAY	0.10	PASS
mA OUTPUT	N/A	N/A
TOTALIZER - R	0.09	PASS

This report reflects the test results of the overall accuracy for the above flow converter using the specified manufacturers flow tube simulator to within the specified tolerance as identified within this report.