

**PUBLIC UTILITIES COMMISSION
FOR THE MUNICIPALITY OF CHATHAM-KENT
WHEATLEY WATER POLLUTION CONTROL PLANT**

2019 PERFORMANCE REPORT

January 1 to December 31, 2019

Certificate of Approval # 3-1602-90-927 & 1-822-83-006

Plant Description

The Wheatley Water Pollution Control Plant is located at 289 First Concession Line in Wheatley. The facility was constructed in 1985 with further plant upgrades in the 1990s. Four sewage pump stations serve the facility. The Wheatley Water Pollution Control Plant C of A limits the average daily flow to 2,752 m³/day with a peak flow capacity of 8,500 m³/day. The plant effluent is discharged to Lake Erie.

The existing treatment system uses the following treatment process:

- Raw sewage pumping
- Aeration tanks
- Aerobic digesters
- Sludge storage tank
- Phosphorus Removal System
- Final clarifiers
- Chlorine Contact Chamber with Chlorine for Disinfection

REPORTING REQUIREMENTS UNDER CERTIFICATE OF APPROVAL # 3-1602-90-927 & 1-822-83-006

Summary and Interpretation of Monitoring and Comparison to the Effluent Limits & Objectives: Special Terms and Conditions

Tables 1 and 2 on the following pages outline monthly average results of parameters tested compared to the limits and objectives outlined in Provincial Guideline F-8 and the Certificate of Approval.

No criteria were exceeded during this reporting period for the effluent limits based on the average annual effluent results.

No criteria were exceeded during this reporting period for the effluent objectives based on the average annual effluent results:

Success and Adequacy of the Works

During the reporting period, the annual average daily flow was 1,888 m³/day, which represents approximately 69% of the rated capacity of 2,752 m³/day. The maximum daily flow of 6,263 m³/day is 74% of the peak flow capacity of 8,500 m³/day.

Overall, the Wheatley Water Pollution Control Plant performed well over the operating 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 of 2,752m³/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

(Avg Daily Flow, BOD, S.S and Total P calculated by 12 month arithmetic mean)

Month	Total Monthly Flow m ³	Avg Daily Flow /Month m ³ /day	Avg Daily Flow/Year m ³ /day	% of Plant Capacity	BOD ₅ mg/L Yearly Avg	Total S.S. mg/L Yearly Avg	Total Ammonia mg/L Yearly Avg	Total P mg/L Yearly Avg	pH	E.coli/100mL CFU GeoMean
Limits	None	None	2,752	100	25	25	none	1	none	none
Objectives	None	None	2,752	100	15	15	5	1	none	none
Jan	54,464	1,757			2.65	8.25	0.34	0.36	6.57	10
Feb	56,859	2,031			2.63	8.06	0.34	0.37	6.55	10
Mar	59,961	1,934			2.63	7.79	0.33	0.36	6.76	10
Apr	75,348	2,512			2.65	8.69	0.34	0.37	7.19	14
May	70,384	2,270			2.62	8.19	0.33	0.34	6.98	10
Jun	67,113	2,237			2.62	8.46	0.34	0.35	6.88	12
Jul	51,671	1,667			2.62	8.35	0.37	0.34	6.87	10
Aug	50,233	1,620			2.62	8.12	0.33	0.38	7.04	12
Sept	49,105	1,637			2.62	8.28	0.36	0.39	6.98	10
Oct	50,695	1,635			2.29	8.71	0.20	0.41	7.01	13
Nov	54,456	1,815			2.29	8.67	0.20	0.41	6.82	12
Dec	48,768	1,573			2.08	8.83	0.19	0.38	6.82	12
Yearly Average			1,888	69%						
	Yearly Total Flow m³	Yearly Maximum								
	689,057	2,512			2.65	8.83	0.36	0.41	7.19	14

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

(Avg Daily Flow, BOD, S.S and Total P calculated by 12 month arithmetic mean)

Month	Avg Daily Effluent Flow /Year m ³ /day	BOD5 Kg/day	Total S.S. Kg/day	Total P Kg/day	Total Ammonia kg/day
Limits	None	68.8	68.8	2.75	none
Objectives	None	41.3	41.3	2.75	13.8

Effluent Waste Loading over any consecutive 12 month period (CofA #3-1602-90-927) reported in kg/d

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BOD	5.6	5.5	5.6	5.7	5.6	5.7	5.8	5.7	5.7	5.1	5.3	4.9
Total S.S.	17.4	16.9	16.5	18.7	17.5	18.5	18.4	17.7	18.1	19.5	20.1	20.7
Total P.	0.77	0.77	0.76	0.79	0.72	0.77	0.81	0.83	0.86	0.91	0.95	0.90
Total Ammonia	0.73	0.72	0.71	0.72	0.71	0.73	0.74	0.72	0.79	0.44	0.45	0.44

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 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:

- New Flyght Pump (Main Plant Station) \$ 17,000
- New pump for Main Plant Pump Station 15,000
- Grinder Volute and Maintenance for Pump #2 at Station #2 7,700
- Line Repair (for Sludge Transferring and Hauling) 3,820
- Repair and Grinder added to pump #3 from Station #1 3,620
- Fall Pump Station Cleaning 3,500
- Spring Pump Station Cleaning 3,120
- Emergency Clean Out of Main Plant (Stn #6) Pump Station 2,610
- PVC Piping and Hose (for Sludge Transferring and Hauling) 2,000
- New Locks for Plant and Pump Stations 1,670
- New Hook (for lifting pumps from stations) 100

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 raw flow were collected using an auto sampler. Chemistry samples were submitted weekly to an accredited laboratory for analysis of BOD₅, Total Suspended Solids, Total Kjeldhal Nitrogen, Total Phosphorus, Total Ammonia Nitrogen, and pH.

Composite chemistry samples of the effluent were collected using an auto sampler. Chemistry samples were submitted weekly to an accredited laboratory for analysis of BOD₅, CBOD, Total Suspended Solids, Total Kjeldhal Nitrogen, Total Phosphorus and Total Ammonia Nitrogen, pH, Nitrite and Nitrate and Unionized Ammonia.

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

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

Calibration and Maintenance on Effluent Monitoring Equipment

All required probes and sensors are cleaned, maintained and/or calibrated on a monthly basis or as required by manufacturers' specifications.

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

- Influent flow meter
- Effluent flow meter
- Spectrophotometer
- pH meter

Sludge Management: Certificate of Approval 3-1602-90-927 Condition 5 (iii):

Overview of the Sludge Disposal Program:

During the reporting period, liquid sludge from the digester was transferred to the Chatham WPCP.

Tabulation of the Volume of Sludge Generated

	SLUDGE VOLUME in m³	TRANSFER TO LOCATION
Total transferred during the reporting period January 1, 2019 to December 31, 2019	5,330	Chatham WPCP

Sludge Handling For the Next Reporting Period:

1. Proposed Sludge Handling Method

The sludge production and sludge handling method for the coming reporting period is anticipated to be the similar to that of this reporting period.

2. Anticipated Disposal Area(s)

Transfer to Chatham WPCP

Community Complaints:

There were no Customer Complaints received during the reporting period.

By-pass, Spill, or Abnormal Discharge Events:

There was 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

	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	TOTAL	MAX	MIN	AVG
Raw Sewage Flow																
Total Flow 1000m ³	54.464	56.859	59.961	75.348	70.384	67.113	51.671	50.233	49.105	50.695	54.456	48.768	689.057	75.348	48.768	57.421
Average Daily Flow 1000m ³	1.757	2.031	1.934	2.512	2.270	2.237	1.667	1.620	1.637	1.635	1.815	1.573		2.5	1.6	1.9
Maximum Daily Flow 1000m ³	2.777	3.397	3.834	6.263	3.585	3.574	2.693	1.950	2.224	2.380	3.609	2.101		6.263	1.950	3.199
Raw Sewage Average																
Suspended Solids mg/L	272	150	138	133	118	154	168	306	318	318	268	226		318	118	214
BOD mg/L	63	59	53	92	79	131	75	85	84	142	203	75		203	53	95
Total P mg/L	2.8	2.5	2.0	2.1	4.7	4.2	3.1	6.5	4.7	5.2	6.2	3.0		6.5	2.0	3.9
TKN mg/L	17.8	14.5	15.8	15.6	17.0	18.0	21.4	20.8	23.4	31.3	33.0	18.6		33.0	14.5	20.6
Ammonia mg/L	11.7	9.5	10.2	9.2	11.2	11.4	16.4	15.4	18.4	23.5	21.8	13.1		23.5	9.2	14.3
pH	7.29	7.03	7.16	7.76	7.43	7.40	7.32	7.49	7.38	7.38	7.19	7.45		7.76	7.03	7.36
Temperature C	11.4	9.9	10.2	11.6	13.4	15.6	17.8	18.6	19.9	18.1	15.0	19.3		19.9	9.9	15.1
Final Effluent Average																
Final Effluent Total Flow 1000m ³	58.754	63.843	69.636	82.225	78.991	76.919	67.027	62.492	66.943	72.853	83.596	71.223	854.502	83.60	58.75	71.21
Final Effluent Avg Daily Flow 1000m ³	1.895	2.280	2.246	2.741	2.548	2.564	2.162	2.016	2.231	2.350	2.787	2.298		2.79	1.90	2.34
Suspended Solids mg/L	7	5	2	18	4	9	3	5	10	17	9	15		18	2	8.6
BOD mg/L	2	2	2	2	2.00	2.00	2.00	2	2	2	2	2		2	2	2
Total P mg/L	0.50	0.25	0.11	0.43	0.30	0.75	0.35	0.44	0.42	0.45	0.24	0.34		0.75	0.11	0.38
TKN mg/L	0.7	0.5	0.5	0.8	0.8	1.1	0.77	0.9	1.3	0.9	1.0	0.7		1.3	0.5	0.8
Nitrites mg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.04	0.02	0.01	0.01		0.04	0.01	0.01
Nitrates mg/L	13.4	11.9	0.5	6.6	10.1	19.8	20.3	25.6	11.7	7.6	10.2	20.5		25.6	0.5	13.2
pH	6.57	6.55	6.76	7.19	6.98	6.88	6.87	7.04	6.98	7.01	6.82	6.82		7.19	6.55	6.87
Ammonia mg/L	0.11	0.06	0.01	0.12	0.05	0.08	0.08	0.09	0.55	0.51	0.27	0.23		0.55	0.01	0.18
Unionized Ammonia mg/L (Fed)	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0007	0.0037	0.0023	0.0010	0.0008		0.00366	0.00061	0.00106
CBOD mg/L (Fed)	2	2	2	2	2	2	2	2	2	2	2	2		2	2	2
Temperature C	10.7	9.3	10.0	12.5	14.6	17.4	20.2	20.6	21.3	18.9	15.2	13.1		21.3	9.3	15.3
Disinfection																
Total Chlorine Used Kg	108.1	89.1	73.5	105.7	148.6	143.8	118.6	86.7	67.0	120.9	98.1	81.6	1241.7	1241.7	67.0	191.0
Chlorine Dose mg/L	2.070	1.608	1.259	1.431	2.151	2.242	2.334	1.721	1.393	2.554	1.884	1.659		2.55	1.26	1.86
Chlorine Residual mg/l	1.16	1.02	0.70	0.68	0.72	0.83	0.83	0.76	0.82	0.97	0.77	0.68		1.16	0.68	0.83
E-Coli Average /100mL	10	10	10	14	10	12	10	12	10	13	12	12		14	10	11
Aeration																
Aeration Flow 1000m ³	54.464	56.859	59.961	75.348	70.364	67.113	51.671	50.233	49.105	50.695	54.456	48.768	689.037	75.348	48.768	57.420
# of tanks in service	2	2	2	2	2	2	2	2	2	2	2	2		2	2	2
Aeration Vol. 1000m ³	1.76	2.03	1.93	2.49	2.27	2.24	1.67	1.62	1.64	1.64	1.82	1.57		2.49	1.57	1.89
BOD (Influent) mg/L	63	59	53	100	79	131	56	85	84	142	203	75		203	53	94
S.S. (Influent) mg/L	272	150	138	125	118	154	168	306	318	318	268	226		318	118	213

	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	TOTAL	MAX	MIN	AVG
Return Activated Sludge																
Total Flow 1000m3	182.89	166.25	181.49	178.98	180.35	179.57	179.13	164.49	178.01	184.37	178.33	178.71	2132.57	184.37	164.49	177.71
Plant Flow to Return %	349.52	307.31	315.15	259.65	262.00	280.94	356.06	329.52	371.77	380.78	160.61	374.61		380.78	160.61	312.33
Waste Activated Sludge																
Total Flow 1000m3	0.355	0.411	0.599	0.689	0.241	0.010	0.166	1334	505.5	819.0	706.0	751.0	4117.971	1334.000	0.010	343.164
Septage Received																
Total Volume in m3	37	38	93	98	0	349	180	338	192	137	178	215	1855.96	348.92	0.00	154.66
Sludge Haulage																
Liquid Volume m3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sludge to Chatham m3	0.00	0.00	0.00	0.00	1189.00	1189.00	451.00	533.00	779.00	492.00	533.00	164.00	5330.00	1189.00	0.00	444.17
Hauled Sludge or Digester Contents (average)																
Total Solids	37000	37000	33000	36000	36000	20000	17000	45000	7800	27000	31000	43000		45000	7800	30817
Volatile Solids	47	47	48	50	52	54	48	49	49	51	54	58		58	47	51
Ammonia ug/L	27	25	25	25	150	25	38	67	57	85	77	130		150	25	61
Nitrate ug/L	62	30	53	61	5	5	5	5	5	5	5	5		62	5	21
Nitrite ug/L	0.7	2.2	1.5	1.1	0.5	0.5	0.7	0.5	0.5	0.5	0.5	0.5		2.2	0.5	0.8
TKN ug/L	1290	1340	1190	1400	1290	723	670	1540	286	1110	1460	2810		2810	286	1259
Potassium mg/L	170	160	160	160	140	110	130	200	66	110	180	170		200	66	146
Total P mg/L	840	780	820	970	830	310	290	1600	120	260	480	600		1600	120	658
Arsenic As ug/L	0.4	0.4	0.4	0.4	0.3	0.1	0.1	0.6	0.1	0.1	0.3	0.2		0.6	0.1	0.3
Cadmium Cd ug/L	0.040	0.040	0.030	0.030	0.030	0.020	0.020	0.030	0.030	0.020	0.020	0.020		0.04	0.02	0.03
Chromium Cr ug/L	0.8	0.6	0.7	0.7	0.6	0.2	0.2	1.0	0.10	0.2	0.5	0.4		1.0	0.1	0.50
Cobalt Co ug/L	0.15	0.14	0.13	0.14	0.13	0.05	0.10	0.23	0.10	0.05	0.10	0.10		0.23	0.05	0.12
Copper Cu ug/L	6.1	5.6	5.4	6.6	5.3	2.2	2.0	11.0	0.8	1.9	3.3	4.3		11.0	0.8	4.5
Lead Pb ug/L	0.3	0.4	0.3	0.4	0.4	0.2	0.2	0.9	0.1	0.2	0.3	0.2		0.9	0.1	0.3
Mercury Hg ug/L	0.007	0.007	0.006	0.006	0.008	0.006	0.006	0.015	0.006	0.006	0.006	0.012		0.015	0.006	0.008
Molybdenum Mo ug/L	0.18	0.18	0.19	0.21	0.17	0.08	0.10	0.31	0.10	0.060	0.10	0.12		0.31	0.06	0.15
Nickel Ni ug/L	0.61	0.53	0.53	0.55	0.48	0.23	0.20	0.96	0.10	0.19	0.40	0.42		0.96	0.10	0.43
Selenium Se ug/L	0.02	0.02	0.20	0.20	2.00	0.20	0.20	0.30	0.20	0.20	0.20	0.20		2.00	0.02	0.33
Zinc Zn ug/L	12.0	11.0	11.0	12.0	11.0	4.3	4.1	21.0	1.5	0.4	6.8	8.3		21.0	0.4	8.6
Ecoli cfu/g	20	170	120	160	430	1200	70	6000	340	80	4100	5800		6000	20	1541

Federal (Quarterly)

Final Flow Qtr. m3	192233.0	238135.0	196462.0	227672.00
CBOD Qtr. mg/L	2.0	2.0	2.1	2.15
SS Qtr. mg/L	4.9	10.3	6.0	13.42
Number of Days	90	91	92	92

Federal WSER Acute Lethality

Average Daily Volume Effluent (m ³):	2341
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APPENDIX B

Calibration Reports for the Reporting Period



AS FOUND CERTIFICATION

PASS

CLIENT DETAIL

CUSTOMER Chatham-Kent, Wheatey STP
CONTACT Todd Unsworth
Senior Operator
519-825-4183

EQUIPMENT DETAIL

[MUT] MANUFACTURER Siemens
MODEL Sitrans LUT400
CONVERTER SERIAL NUMBER PBD/EO210328

PLANT ID Wheateley Pollution Control Plant
METER ID Raw Influent
FIT ID N/A
CLIENT TAG N/A
OTHER N/A
GPS COORDINATES N42 4.569 W082 27 449

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

VERIFICATION DATE March 15, 2019
CAL. FREQUENCY Annual
CAL. DUE DATE March, 2020

PROGRAMMING PARAMETERS

THROAT DIMENSION (DN)	inches	9
EMPTY DISTANCE	m	1.093
MAX. HEAD	m	0.334
DEAD ZONE	m	0.759
BLANKING DISTANCE	m	0.300
MAX. FLOW	LPS	100.0
F.S. RANGE - O/P	LPS	100.0

TOTALIZER

AS FOUND	2336352.96	M3
AS LEFT	2336377.75	M3
DIFFERENCE	24.79	M3

TEST CRITERIA

AS FOUND CERTIFICATION TEST	Yes
ALLOWABLE [%] ERROR	5

COMPONENTS TESTED

CONVERTER DISPLAY	Yes
mA OUTPUT	Yes
TOTALIZER	Yes
ACCURACY BASED ON [% o.r.]	No

Ultrasonic sensor installed to ensure full scale flow condition

ERROR DOCUMENTED IN THIS REPORT; BASED ON % F.S.

AS FOUND TEST RESULTS

		5.5	15.8	29.4	45.6	84.9	% F.S. Range
		0.050	0.100	0.150	0.200	0.300	m
REF. FLOW RATE		5.47	15.80	29.38	45.63	84.85	LPS
MUT [Reading]		6.02	16.42	30.65	46.36	85.80	LPS
MUT [Difference]		0.55	0.62	1.27	0.73	0.95	LPS
MUT [% Error]		0.55	0.62	1.27	0.73	0.95	%
mA OUTPUT		4.875	6.528	8.701	11.301	17.576	mA
MUT [Reading]	min. 4.000 mA	4.949	6.647	8.895	11.461	17.735	mA
MUT [Difference]	max. 20.000 mA	0.074	0.119	0.194	0.160	0.159	mA
MUT [% Error]		0.37	0.59	0.97	0.80	0.79	%
TOTALIZER - REF. FLOW RATE						84.854	LPS
TOTALIZER [MUT]						6.46	M3
TEST TIME						74.52	SECONDS
CALC. TOTALIZER						6.323	M3
ERROR						2.12	%

COMMENTS

QUALITY MANAGEMENT STANDARDS INFO.

[QMS] INFORMATION	IDENT.	ID #
[REFERENCE] LEVEL	Sim. BOARD	Yes
PROCESS METER	DMM	11
STOP WATCH	SW	Yes

RESULTS

TEST	AVG %FS	PASS FAIL
DISPLAY	0.89	PASS
mA OUTPUT	0.71	PASS
TOTALIZER	2.12	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.



AS FOUND CERTIFICATION

PASS

CLIENT DETAIL		EQUIPMENT DETAIL	
CUSTOMER	Chatham-Kent, Wheatley STP	[MUT] MANUFACTURER	Siemens
CONTACT	Todd Unsworth Senior Operator 519-825-4183	MODEL	Sitrans LUT440
		CONVERTER SERIAL NUMBER	PBD/F67220386

PLANT ID	Wheatley Pollution Control Plant
METER ID	Final Effluent
FIT ID	N/A
CLIENT TAG	N/A
OTHER	N/A
GPS COORDINATES	N42 4.569 W082 27.449

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

VERIFICATION DATE	March 15, 2019
CAL. FREQUENCY	Annual
CAL. DUE DATE	March, 2020

PROGRAMMING PARAMETERS			TOTALIZER	
THROAT DIMENSION (DN)	inches	12	AS FOUND	2794202.75 M3
EMPTY DISTANCE	m	1.172	AS LEFT	2794232.66 M3
MAX. HEAD	m	0.281	DIFFERENCE	29.91 M3
DEAD ZONE	m	0.891	TEST CRITERIA	
BLANKING DISTANCE	m	0.300	AS FOUND CERTIFICATION TEST	Yes
MAX. FLOW	LPS	100.1	ALLOWABLE [%] ERROR	15
F.S. RANGE - O/P	LPS	100.0	COMPONENTS TESTED	

CONVERTER DISPLAY	Yes
mA OUTPUT	Yes
TOTALIZER	Yes
ACCURACY BASED ON [% o.r.]	No
ERROR DOCUMENTED IN THIS REPORT; BASED ON % F.S.	

Ultrasonic sensor installed to ensure full scale flow condition

AS FOUND TEST RESULTS

		7.2	20.8	38.5	59.6	94.1	% F.S. Range	
		0.050	0.100	0.150	0.200	0.270	m	
REF. FLOW RATE		7.232	20.769	38.497	59.646	94.178	LPS	
MUT [Reading]		7.400	19.900	37.800	59.300	92.680	LPS	
MUT [Difference]		0.168	-0.869	-0.697	-0.346	-1.498	LPS	
MUT [% Error]		0.17	-0.87	-0.70	-0.35	-1.50	%	
mA OUTPUT		5.156	7.320	10.155	13.536	19.057	mA	
MUT [Reading]	min. 4.000 mA	5.123	7.197	10.042	13.446	18.779	mA	
MUT [Difference]	max. 20.000 mA	-0.033	-0.123	-0.113	-0.090	-0.278	mA	
MUT [% Error]		-0.17	-0.62	-0.56	-0.45	-1.39	%	
TOTALIZER - REF. FLOW RATE							94.178	LPS
TOTALIZER [MUT]							9.17	M3
TEST TIME							98.93	SECONDS
CALC. TOTALIZER							9.317	M3
ERROR							-1.60	%

COMMENTS

QUALITY MANAGEMENT STANDARDS INFO.

[QMS] INFORMATION	IDENT.	ID #
[REFERENCE] LEVEL	Sim. BOARD	n/a
PROCESS METER	DMM	11
STOP WATCH	SW	Yes

RESULTS

TEST	AVG %FS	PASS FAIL
DISPLAY	-0.85	PASS
mA OUTPUT	-0.64	PASS
TOTALIZER	-1.60	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.



[MUT] AS FOUND **NA**
[MUT] AS LEFT **PASS**

CUSTOMER CONTACT	Municipality of Chatham-Kent Todd Unsworth Chief Operator, Wheatley 115 Detroit Line Wheatley, ON N0P 2P0 T. 519-825-4183 C. 519-796-6089 E. toddu@chatham-kent.ca <i>Randy Nichol</i>	[MUT] MANUFACTURER MODEL SERIAL NUMBER CLIENT TAG LOCATION OTHER	HACH HQ11D 120800077797 n/a Wheatley STP n/a
VER. BY		TOLERANCE [pH]	0.05
Quality Management Standards Information - Standards, reference equipment, and instrumentation used to conduct this test outlining the lot#, and expiry date is found in our current		VERIFICATION DATE CAL. FREQUENCY CAL. DUE DATE	Mar 11, 2019 Annual Mar-2020

**pH VERIFICATION
NIST TRACEABLE (BUFFERS)**

BEFORE CALIBRATION

REFERENCE BUFFER			[MUT] READINGS			
pH BUFFER	TEMP. °C	pH CORRECTED	pH	TEMP. °C	pH - ERROR DIFF.	PASS FAIL
4.01	13.1	4.00	3.95	13.5	-0.05	PASS
7.01	13.1	7.05	6.97	13.8	-0.08	FAIL
10.01	13.1	10.13	10.05	13.4	-0.08	FAIL
RESULT						FAIL

AFTER CALIBRATION

REFERENCE BUFFER			[MUT] READINGS			
pH BUFFER	TEMP °C	pH CORRECTED	pH	TEMP. °C	pH - ERROR DIFF.	PASS FAIL
4.01	13.1	4.00	4.01	13.7	0.01	PASS
7.01	13.1	7.05	7.02	14.0	-0.03	PASS
10.01	13.1	10.13	10.17	13.5	0.04	PASS
RESULT						PASS

mv offset/Assymetry 0.9
Slope 56.05

COMMENTS

<u>[QMS] INFORMATION</u>	<u>ITEM</u>	<u>ID #</u>
[REFERENCE]		
4.01 BUFFER	pHBUFF4	1
7.01 BUFFER	pHBUFF7	1
10.01 BUFFER	pHBUFF10	1
TEMPERATURE REF.	DDTEMP	1

NIST Traceable Buffers were used to confirm the overall accuracy of this instrument. "AS FOUND" readings and "AS FOUND" readings are reported within this report. A temperature device was used to measure and record the buffer temperature to correct for pH values due to the effects related to buffer temperature.



CERTIFICATE NUMBER: 6058

CUSTOMER	Municipality of Chatham-Kent, <i>Wheatley WWTP</i>
ADDRESS PHONE	289 First Concession Line, Wheatley, ON N0P 2P0
REQUESTED BY	Todd Unsworth

VISUAL AND FUNCTIONAL INSPECTION

Visual Inspection – Sensors, enclosures, connections, display, switches, pushbuttons, nameplates, tags are to be checked for its presence, physical integrity, cleanliness, readability and adequacy of installation
Functional Inspection – Switches, pushbuttons, display, signal integrity, response to process variable and response to calibration standards are to be checked for functionality, response within manufacturer's and end-user specifications

The sensors were cleaned and the analyzer calibrated.

CALIBRATION DATA

PASS/FAIL CRITERIA +/- 0.3 ppm O₂

AYSIX MODEL MPA48 D.O. ANALYZER S/N 48A1272

STANDARD	0.00 PPM	AS FOUND	8.4 PPM @ 25.0°C	0.00PPM	AS LEFT	8.4 PPM @ 25.0°C
Plant 1						
PROBE 1 S/N 10S7014 D.O.	0.07		8.4	0.00		8.4
DELTA	0.07		0.0	0		0
PASS/FAIL/COMMENTS	PASS		PASS	PASS		PASS

STANDARD	0.00 PPM	AS FOUND	8.2 PPM @ 25.6°C	0.00PPM	AS LEFT	8.2 PPM @ 25.6°C
PROBE 2 S/N 10S7005 DO	0.04		8.3	0.00		8.2
DELTA	0.04		0.1	0		0
PASS/FAIL/COMMENTS	PASS		PASS	PASS		PASS

STANDARD	0.00 PPM	AS FOUND	8.5 PPM @ 24.4°C	0.00PPM	AS LEFT	8.5 PPM @ 24.4°C
PROBE 2 S/N 10S7013 DO	0.05		8.6	0.00		8.5
DELTA	0.05		0.1	0		0
PASS/FAIL/COMMENTS	PASS		PASS	PASS		PASS

STANDARD	0.00 PPM	AS FOUND	8.4 PPM @ 25.8°C	0.00PPM	AS LEFT	8.4 PPM @ 25.8°C
PROBE 2 S/N 10S7074 DO	0.04		8.5	0.00		8.4
DELTA	0.04		0.1	0		0
PASS/FAIL/COMMENTS	PASS		PASS	PASS		PASS

REFERENCE STANDARDS

Zero solution - solution of water saturated with sodium sulfite.
 Span solution – Oxygen saturated clean water.

	PRINT NAME	SIGNATURE	DATE
PERFORMED BY	James Griffin		July 25 2019

Next calibration due July 2020

APPENDIX C

Effluent Parameter Concentration and Waste Loading Calculation Spreadsheet



**CHATHAM-KENT PUC
WHEATLEY WW
EFFLUENT PARAMETER CONCENTRATION AND WASTE LOADING**

2018	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18
BOD												
# of Samples Collected	5	4	4	5	4	4	5	4	4	5	4	4
Sum of Sample Results	10	9	8	10	10	8	10	8	8	28	8	21
Total S.S.												
# of Samples Collected	5	4	4	5	4	4	5	4	4	5	4	4
Sum of Sample Results	23	31	22	43	43	20	21	30	35	53	36	58
Total P.												
# of Samples Collected	5	4	4	5	4	4	5	4	4	5	4	4
Sum of Sample Results	1.17	0.92	0.86	1.74	2.68	2.15	0.87	1.32	0.85	1.53	0.79	2.73
Total Ammonia												
# of Samples Collected	5	4	4	5	4	4	5	4	4	5	4	4
Sum of Sample Results	0.342	0.218	0.748	0.524	0.360	0.200	0.310	0.644	0.750	11.050	1.110	1.420
Average Daily Effluent Flow 1000m3	1.910	2.529	2.015	2.340	2.724	1.870	1.978	2.264	2.192	1.701	1.894	1.975

2019	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19
BOD												
# of Samples Collected	5	4	4	5	4	4	5	4	5	4	4	5
Sum of Sample Results	10	8	8	11	8	8	10	8	11	8	8	12
Total S.S.												
# of Samples Collected	5	4	4	5	4	4	5	4	5	4	4	5
Sum of Sample Results	37	21	8	90	17	34	15	18	52	67	34	75
Total P.												
# of Samples Collected	5	4	4	5	4	4	5	4	5	4	4	5
Sum of Sample Results	2.48	1.01	0.45	2.17	1.19	2.98	1.77	1.75	2.08	1.80	0.94	1.69
Total Ammonia												
# of Samples Collected	5	4	4	5	4	4	5	4	5	4	4	5
Sum of Sample Results	0.560	0.250	0.228	0.590	0.210	0.310	0.401	0.367	2.750	2.030	1.060	1.170
Average Daily Effluent Flow 1000m3	1.895	2.280	2.246	2.741	2.548	2.564	2.162	2.016	2.231	2.350	2.787	2.298

Effluent Parameter Concentration over any consecutive 12 month period (CofA #1-822-83-006) reported in mg/L

	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19
BOD	2.65	2.63	2.63	2.65	2.62	2.62	2.62	2.62	2.62	2.29	2.29	2.08
Total S.S.	8.25	8.06	7.79	8.69	8.19	8.46	8.35	8.12	8.28	8.71	8.67	8.83
Total P.	0.36	0.37	0.36	0.37	0.34	0.35	0.37	0.38	0.39	0.41	0.41	0.38
Total Ammonia	0.34	0.34	0.33	0.34	0.33	0.34	0.34	0.33	0.36	0.20	0.20	0.19

Effluent Waste Loading over any consecutive 12 month period (CofA #1-822-83-006) reported in kg/d

	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19
BOD	5.6	5.5	5.6	5.7	5.6	5.7	5.8	5.7	5.7	5.1	5.3	4.9
Total S.S.	17.4	16.9	16.5	18.7	17.5	18.5	18.4	17.7	18.1	19.5	20.1	20.7
Total P.	0.77	0.77	0.76	0.79	0.72	0.77	0.81	0.83	0.86	0.91	0.95	0.90
Total Ammonia	0.73	0.72	0.71	0.72	0.71	0.73	0.74	0.72	0.79	0.44	0.45	0.44

Wheatley WPCP-Rated Capacity-2,752m3	
Effluent Parameter Limits	
BOD	25mg/L
Total S.S.	25mg/L
Total P.	1.0 mg/L
Effluent Waste Loadings Limits	
BOD	68.8kg/d
Total S.S.	68.8kg/d
Total P.	2.75kg/d

	Jan-19	2.115
Feb-19	2.094	
Mar-19	2.113	
Apr-19	2.147	
May-19	2.132	
Jun-19	2.190	
Jul-19	2.205	
Aug-19	2.185	
Sep-19	2.188	
Oct-19	2.242	
Nov-19	2.316	
Dec-19	2.343	

Average Daily Flow over any 12 month period reported in 1000m3

Effluent Concentration - 2019	MIN	MAX	AVG
BOD	2.08	2.65	2.53
Total S.S.	7.8	8.8	8.4
Total P.	0.34	0.41	0.37
Total Ammonia	0.19	0.36	0.30

Effluent Waste Loading - 2019	MIN	MAX	AVG
BOD	4.86	5.77	5.52
Total S.S.	16.5	20.7	18.3
Total P.	0.72	0.95	0.82
Ammonia	0.44	0.79	0.66