

**PUBLIC UTILITIES COMMISSION
FOR THE MUNICIPALITY OF CHATHAM-KENT
RIDGETOWN WASTEWATER TREATMENT PLANT**

2019 PERFORMANCE REPORT

January 1 to December 31, 2019

Amended Certificate of Approval # 5194-7FWQNB

Plant Description

The Ridgetown Wastewater Treatment Plant provides treatment of wastewater for the community of Ridgetown. Wastewater is collected by a separate sanitary sewer system and conveyed by one raw pump station to the Wastewater Treatment Plant. The treated wastewater is subsequently discharged to the Gawne Drain.

The Ridgetown Wastewater Treatment Plant is an Extended Aeration Plant and was commissioned in 2010. The Ridgetown Wastewater Treatment Plant replaces the former Ridgetown Sewage Treatment Lagoons. Replacement of the lagoon system with the mechanical plant was undertaken to accommodate adequate hydraulic storage and system capacity.

The present treatment system consists of:

- Raw sewage pumping
- Packaged inlet plant which includes screening and grit collection/removal
- Chemical phosphorous removal
- pH adjustment
- Anoxic selector cells for nitrification
- Biological treatment using an Extended Aeration Activated Sludge process
- Final settling using secondary clarifiers
- Tertiary treatment provided by continuous backwash sand filter units
- Disinfection of effluent using Ultra Violet irradiation system
- Sludge collection and pumpage
- Aeration bypass and waste activated sludge holding lagoons

The effluent outfall pipe/chamber/channel discharges to the lateral seasonal drain along Mitton Line that subsequently discharges to the Gawne Drain.

REPORTING REQUIREMENTS

UNDER CERTIFICATE OF APPROVAL # 5194-7FWQNB

Summary and Interpretation of Monitoring and Comparison to the Effluent Limits: Condition 10 (6) (a)

Tables 1 and 2 outline monthly average results of parameters tested compared to the limits outlined in the Certificate of Approval Table 2 Effluent Limits.

No criteria were exceeded during this reporting period for the effluent limits as outlined in Condition 7 Effluent Limits of the Certificate of Approval.

Success and Adequacy of the Works

During the reporting period, the annual average daily flow was 1,924 m³/day, which represents approximately 82 % of the rated capacity of 2,347 m³/day. The maximum daily flow was 4,439 m³/day, which is 95 % of the Peak Flow Rate of 4,694 m³/day.

Overall, the Ridgetown 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: 2,347m³/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 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 GeoMean
Limits: Receiver ≤ 12°C	None	None	2,347	100	10	10	5.0	0.30	6.0 - 9.5	100
Limits: Receiver > 12°C	None	None	2,347	100	10	10	2.0	0.30	6.0 - 9.5	100
Objectives: Receiver ≤ 12°C	None	None	2,347	100	5.0	5.0	3.0	0.20	6.0 - 9.5	100
Objectives: Receiver > 12°C	None	None	2,347	100	5.0	5.0	1.0	0.20	6.0 - 9.5	100
Jan	56,130	1,811			2.0	4.8	0.097	0.059	7.56	39
Feb	56,105	2,004			2.0	5.0	1.9	0.061	7.55	90
Mar	56,086	1,809			2.0	5.3	0.33	0.067	7.52	10
Apr	68,060	2,269			2.0	5.4	0.14	0.108	7.61	10
May	83,092	2,680			2.0	2.5	0.081	0.083	7.54	10
Jun	63,113	2,104			2.0	3.0	0.080	0.11	7.55	10
Jul	61,306	1,978			2.0	2.2	0.061	0.051	7.45	10
Aug	58,497	1,887			2.0	2.0	0.085	0.038	7.42	10
Sept	51,848	1,728			2.0	1.6	0.071	0.038	7.28	10
Oct	53,885	1,738			2.0	2.5	0.136	0.035	7.26	17
Nov	48,714	1,624			2.0	3.0	0.117	0.054	7.29	17
Dec	45,486	1,277			2.0	4.4	0.482	0.067	7.25	29
Year			1,924	82%						
	Yearly Total Flow m³	Yearly Maximums								
	702,322	2,680			2.0	5.4	1.9	0.11	7.61	90

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

Month	Avg Daily Influent Flow /Month m³/day	CBOD₅ kg/day	Total S.S. kg/day	Total Ammonia kg/day	Total P kg/day
Limits: Receiver ≤ 12°C	None			11.74	
Limits: Receiver > 12°C	None	23.47	23.47	4.69	0.70
Objectives: Receiver ≤ 12°C	None			7.04	
Objectives: Receiver > 12°C	None	11.74	11.74	2.35	0.47
Jan	1,811	3.62	8.69	0.18	0.09
Feb	2,004	4.01	10.02	3.81	0.11
Mar	1,809	3.62	9.50	0.60	0.12
Apr	2,269	4.54	12.25	0.33	0.24
May	2,680	6.03	6.70	0.22	0.22
Jun	2,104	4.21	6.31	0.17	0.23
Jul	1,978	3.96	4.35	0.12	0.10
Aug	1,887	3.77	3.77	0.16	0.07
Sept	1,728	3.46	2.77	0.12	0.06
Oct	1,738	3.48	4.35	0.24	0.06
Nov	1,624	2.74	4.11	0.16	0.07
Dec	1,277	2.93	6.46	0.71	0.10
Yearly Maximums					
		6.03	12.25	3.81	0.24

**Operating Problems and Corrective Action:
Condition 10 (6)(b)**

High E.coli results were obtained in February final effluent sampling. A rebuild of two UV reactors has resolved the E Coli issues.

**Summary of Maintenance Activities:
Condition 10 (6)(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 were completed for the reporting period:

• UV Reactor Rebuild	\$ 12,900
• Aeration Mixer Replacement	9,800
• Wildwood Pump Rebuild	9,200
• Marsh St. Pump Station Pump Rebuild	4,900
• Skimmer Blades for Clarifier	3,600
• Flowmeter Verifications	3,500
• Lagoon Brushing	3,400
• Methane Sensor Replacement (Screen Room)	2,600
• Flowmeter Calibration/Service	2,500
• Genset Service	2,400
• Clarifier Repair (Lift Rental)	2,300
• Chemical Feed Pump Actuator	2,040
• Annual Lifting Device Inspection	1,670
• Lab Supplies	1,400
• Unit Heater Repair	1,230
• Analyser Verifications	1,000
• Effluent Sampler Rebuild	1,000
• Huber Repair	700

AND FOR THAMESVILLE PUMP STATIONS:

• New Generator and Switch Gear (at Sherman Pump Station)	\$144,000
• Pump and Piping Replacement (at Sherman Pump Station)	32,000
• Modems for all Thamesville Pump Stations	3,000
• Reparation of Pump #1 (at Lamilla Pump Station)	2,000

**Quality Assurance and Control Measures:
Condition 10 (6)(d)**

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, Alkalinity 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 CBOD₅, Total Suspended Solids, Total Kjeldhal Nitrogen, Total Phosphorus and Total Ammonia Nitrogen, Alkalinity, pH, Nitrite, 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 Condition 10 (6)(e)

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

Effluent Objectives Condition 10 (6)(f)

Tables 1 and 2 outline monthly average results of parameters tested compared to the objectives outlined in the Certificate of Approval Table 1 Effluent Objectives.

The following criteria was exceeded during this reporting period for the effluent objectives outlined in Condition 6 Effluent Objectives of the Certificate of Approval:

Total Suspended Solids concentration: March and April

Continuing optimization of chemical feed was practiced throughout the year with the goal of achieving effluent objectives. Effluent filters were also cleaned and maintained throughout the year with the goal of achieving the effluent objectives of Total Suspended Solids in the effluent.

Sludge Management Condition 10 (6)(g)

During the reporting period, waste activated sludge totalling 23,010 m³ was transferred to Lagoon # 2 for sludge stabilization and storage.

Outline of Anticipated Volumes in Next Reporting Period

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

**Community Complaints:
Condition 10 (6)(h)**

There were no Customer Complaints received during the reporting period.

**By-pass, Spill, or Abnormal Discharge Events:
Condition 10 (6)(i)**

A Pump Station Overflow of approximately 250 m³ occurred from the Thamesville Sewage Pumping Station on April 29. The overflow was due to failure of the body of the air relief mechanism. The air relief mechanism was repaired.

**Other Information the District Manager Requires:
Condition 10 (6)(j)**

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

Ridgetown Wastewater Treatment Plant Operational Data Yearly Summary

Works # 120002996

YEAR: 2019

DESCRIPTION	TOTAL												LOW	HIGH	AVERAGE	Summer MOE Objective	Winter MOE Objective	Summer Non-Compliance	Winter Non-Compliance
	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER							
RAW SEWAGE FLOW DATA																			
ERIE ST. PUMPING STATION	39,723	39,258	39,907	41,964	48,300	35,184	38,022	35,642	29,823	30,923	30,125	28,245	437,117	36,426	48,300	28,245			
WILDWOOD PS	2,585	3,386	3,124	4,254	4,079	3,421	3,123	2,473	1,271	1,545	1,466	1,752	32,449	2,704	4,254				
THAMESVILLE PS	7,877	7,844	8,147	10,109	13,551	8,313	7,580	7,061	6,586	6,976	6,895	6,850	97,789	8,149	13,551				
LAGOON RETURN	1,617	1,617	2,803	3,638	7,059	5,765	2,443	1,930	3,922	3,803	2,593	2,748	38,239	3,187	7,059				
TOTAL FLOW MONTH (Parshall Flow)	56,130	56,105	56,066	63,113	83,082	63,113	61,306	56,497	51,848	53,885	48,714	45,486	702,322	56,527	83,082	45,486			
TOTAL FLOW MONTH AVG	1,811	1,811	1,809	2,004	2,680	2,104	1,978	1,887	1,728	1,738	1,624	1,277	22,222	1,924	2,680	1,277			
TOTAL FLOW MONTH PEAK	2,517	2,646	2,353	4,080	3,623	2,583	4,439	2,453	1,867	2,554	2,082	1,467	44,439		4,439				

LAGOON FLOW DATA																		
PLANT BYPASS			0.09768											0.098	0.008			
SEPTAGE														0.098	0.009			
TOTAL FLOW																		

RAW SEWAGE CHEMICAL	TOTAL												LOW	HIGH	AVERAGE	Summer MOE Objective	Winter MOE Objective	Summer Non-Compliance	Winter Non-Compliance
	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER							
AMMONIA NITROGEN	24	20	25	30	17	20	21	22	23	33	40	37		26	40	17			
BOD5	199	225	203	510	103	120	92	109	71	161	253	108		179	510	71			
TKN	35	30	40	48	23	26	27	27	27	38	47	42		34.1	47.6	23.3			
pH	7.55	7.69	7.68	7.57	7.91	7.64	7.64	7.78	7.85	7.63	7.78	7.76		7.71	7.91	7.55			
TOTAL P	6.7	6.1	6.6	10.7	3.4	3.5	3.5	3.7	3.4	5.5	7.6	4.3		5.4	10.7	3.4			
SS	382	280	268	360	119	128	122	128	89	222	423	121		218	423	89			
ALKALINITY	342	315	353	390	295	310	314	320	310	338	375	368		336	390	295			

FINAL EFFLUENT CHEMICAL	TOTAL												LOW	HIGH	AVERAGE	Summer MOE Objective	Winter MOE Objective	Summer Non-Compliance	Winter Non-Compliance
	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER							
AMMONIA NITROGEN	0.097	1.903	0.330	0.144	0.081	0.080	0.061	0.085	0.071	0.136	0.117	0.482		0.289	1.903	0.061			
AMMONIA NITROGEN	0.18	0.31	0.60	0.22	0.33	0.17	0.12	0.16	0.12	0.24	0.16	0.71		0.56	3.81	0.12			
UNIONIZED AMMONIA	0.0009	0.0101	0.0026	0.0016	0.0008	0.0010	0.0008	0.0011	0.0007	0.0010	0.0007	0.0029		0.0020	0.0101	0.0007			
CBOD5	2	2	2	2	2	2	2	2	2	2	2	2		2	2	2			
CBOD5	3.62	4.01	3.62	4.54	6.03	4.21	3.96	3.77	3.46	3.48	2.74	2.93		3.89	6.03	2.74			
TKN	0.5	2.5	0.9	0.7	0.6	0.6	0.4	0.6	0.8	0.7	0.7	0.9		0.8	2.5	0.4			
pH (IN HOUSE)	7.56	7.55	7.52	7.61	7.54	7.55	7.45	7.42	7.28	7.26	7.29	7.25		7.44	7.61	7.25			
pH (LABORATORY)	7.73	7.88	7.68	7.93	7.94	7.77	7.83	7.92	7.89	7.84	7.85	7.79		7.84	7.94	7.68			
TOTAL P	0.059	0.081	0.067	0.108	0.083	0.110	0.051	0.038	0.038	0.035	0.054	0.067		0.064	0.110	0.035			
TOTAL P	0.09	0.11	0.12	0.24	0.23	0.23	0.10	0.07	0.06	0.06	0.07	0.10		0.12	0.24	0.06			
SS	8.69	5.0	5.3	5.4	2.5	1.6	2.2	2.0	4.4	2.5	3.0	4.0		3	5	4.4			
SS	8.69	10.02	9.50	12.25	6.70	6.31	4.35	3.77	2.77	4.35	4.11	6.46		6.68	12.25	2.77			
ALKALINITY	188	193	175	196	205	178	160	173	146	140	168	170		174	205	140			
NITRITE	0.011	0.033	0.020	0.014	0.014	0.010	0.012	0.011	0.010	0.010	0.012	0.011		0.014	0.033	0.010			
NITRATE	7.8	5.2	6.5	5.9	5.7	7.3	8.2	7.4	8.9	7.3	6.8	7.5		7.0	8.9	5.2			
TEMPERATURE	10.3	8.9	9.1	10.2	12.5	15.9	18.9	19.6	20.0	17.6	14.1	12.0		14.1	20.0	8.9			
DISSOLVED OXYGEN																			

FINAL EFFLUENT (BACTERIOLOGICAL)																			
E. COLI	39	90	10	10	10	10	10	10	10	17	17	29		22	90	10			

FINAL EFFLUENT FLOW																			
TOTAL MONTH FLOW	38,180	39,268	40,924	44,069	53,751	39,432	38,845	34,244	31,802	32,766	30,490	28,118		37,657	53,751	28,118			
MONTH AVG. DAY FLOW	1,232	1,402	1,320	1,469	1,734	1,314	1,253	1,105	1,060	1,057	1,016	907		1,239	1,734	907			
MONTH MAX DAY FLOW	1,779	1,816	1,569	2,401	2,165	1,532	4,103	1,734	1,182	1,465	1,222	1,087		4,103					

CHATHAM-KENT PUC

Ridgetown Wastewater Treatment Plant Operational Data Yearly Summary

Works # 120002996

YEAR: 2019

DESCRIPTION	TOTAL												LOW	HIGH	AVERAGE	Summer MOE Objective	Winter MOE Objective	Summer Non-Compliance	Winter Non-Compliance
	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER							
FINAL EFFLUENT (BACTERIOLOGICAL)																			
E. COLI	39	90	10	10	10	10	10	10	10	17	17	29		22	90	10			

APPENDIX B

Calibration Reports for the Reporting Period



AS FOUND CERTIFICATION

PASS

CLIENT DETAIL

CUSTOMER CK-South Area - Ridgetown
CONTACT Larry Garside
Chief Operator
c: 519-358-6661

EQUIPMENT DETAIL

[MUT] MANUFACTURER Siemens
MODEL Multiranger 200
CONVERTER SERIAL NUMBER PBD/X5080621

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

PLANT ID Ridgetown WWTP
METER ID Plant Influent Raw Sewage Flow
FIT ID N/A
CLIENT TAG N/A
OTHER N/A
GPS COORDINATES N42 26.751 W081 54.294

VERIFICATION DATE March 25, 2019
CAL. FREQUENCY Annual
CAL. DUE DATE March, 2020

PROGRAMMING PARAMETERS

THROAT DIMENSION (DN)	inches	12
EMPTY DISTANCE	m	0.972
MAX. HEAD	m	0.745
DEAD ZONE	m	0.227
BLANKING DISTANCE	m	0.305
MAX. FLOW	LPS	441.4
F.S. RANGE - O/P	LPS	441.4

TOTALIZER		
AS FOUND	737821.56	M3
AS LEFT	738144.38	M3
DIFFERENCE	322.82	M3

TEST CRITERIA	
AS FOUND CERTIFICATION TEST	Yes
ALLOWABLE [%] ERROR	15

COMPONENTS TESTED

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

Ultrasonic Sensor is not installed high enough, to ensure full scale flow conditions

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

AS FOUND TEST RESULTS

		4.7	13.5	38.8	71.9	85.1	% F.S. Range
		0.100	0.200	0.400	0.600	0.670	m
REF. FLOW RATE		20.77	59.65	171.30	317.51	375.58	LPS
MUT [Reading]		22.33	62.42	176.30	318.30	377.90	LPS
MUT [Difference]		1.56	2.77	5.00	0.79	2.32	LPS
MUT [% Error]		7.52	4.65	2.92	0.25	0.62	%
mA OUTPUT		4.753	6.162	10.209	15.509	17.614	mA
MUT [Reading]	min. 4.000 mA	4.802	6.487	10.384	15.525	17.696	mA
MUT [Difference]	max. 20.000 mA	0.049	0.325	0.175	0.016	0.082	mA
MUT [% Error]		0.25	1.62	0.87	0.08	0.41	%
TOTALIZER - REF. FLOW RATE						375.579	LPS
TOTALIZER [MUT]						52.43	M3
TEST TIME						152.50	SECONDS
CALC. TOTALIZER						57.276	M3
ERROR						-9.24	%

COMMENTS

COMMENTS	QUALITY MANAGEMENT STANDARDS INFO.			RESULTS		
	[QMS] INFORMATION	IDENT.	ID #	TEST	AVG %FS	PASS FAIL
Note: the full scale level exceeds the max level with regards to blanking - the maximum level with this setup would be 0.672 m. Being that SCADA reads 441 l/s when 20 mA applied gives a level of 0.745 m.	[REFERENCE] LEVEL	Sim. BOARD	n/a			
	PROCESS METER	PM	11	DISPLAY	2.11	PASS
	STOP WATCH	SW	n/a	mA OUTPUT	0.65	PASS
				TOTALIZER	-9.24	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

CUSTOMER CK-South Area - Ridgetown
CONTACT Larry Garside
Chief Operator
c: 519-358-6661

EQUIPMENT DETAIL

[MUT] MANUFACTURER Milltronics
MODEL OCM-III
CONVERTER SERIAL NUMBER PBD/X0280019

PLANT ID Ridgetown WWTP
METER ID Effluent Flow
FIT ID N/A
CLIENT TAG N/A
OTHER N/A
GPS COORDINATES N/A

VER. BY - FM Paris Machuk / Bendon Jacksic

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 27, 2019
CAL. FREQUENCY Annual
CAL. DUE DATE March, 2020

PROGRAMMING PARAMETERS

THROAT WIDTH, (exp 1.5)	m	1.5
EMPTY DISTANCE, TX to notch	m	0.489
TRANSDUCER (TX), to sump flc	m	n/a
SUMP LEVEL, zero flow	m	n/a
MAX. HEAD	m	0.152
BLANKING DISTANCE	m	0.250
DEAD ZONE	m	0.337
MAX. FLOW	USGPM	2600.2
F.S. RANGE - O/P	USGPM	2589.0

TOTALIZER	
AS FOUND	86666798 USGAL
AS LEFT	86678346 USGAL
DIFFERENCE	11548 USGAL

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

		0.0	18.9	53.4	70.2	88.4	% F.S. Range	
		0.000	0.050	0.100	0.120	0.140	m	
REF. FLOW RATE		0.0	488.6	1382.0	1816.7	2289.4	USGPM	
MUT [Reading]		0.1	572.6	1447.7	1911.9	2376.0	USGPM	
MUT [Difference]		0.1	83.9	65.6	95.2	86.7	USGPM	
MUT [% Error]		0.0	3.2	2.5	3.7	3.3	%	
mA OUTPUT		4.000	7.020	12.541	15.227	18.148	mA	
MUT [Reading]	min. 4.000 mA	4.011	7.555	12.999	15.794	18.706	mA	
MUT [Difference]	max. 20.000 mA	0.011	0.535	0.458	0.567	0.558	mA	
MUT [% Error]		0.06	2.68	2.29	2.83	2.79	%	
TOTALIZER - REF. FLOW RATE							2289.361	USGPM
TOTALIZER [MUT]							4489	USGAL
TEST TIME							113.06	SECONDS
CALC. TOTALIZER							4313.918	USGAL
ERROR							3.90	%

COMMENTS

COMMENTS	QUALITY MANAGEMENT STANDARDS INFO.			RESULTS		
	[QMS] INFORMATION	IDENT.	ID #	TEST	AVG %FS	PASS FAIL
Note: setup Flowmetrix equipment to simulate customer setup and performed test points. unit responded as expected but over reading but within limits.	[REFERENCE] LEVEL	Sim. BOARD	n/a			
	PROCESS METER	PM	11	DISPLAY	3.19	PASS
	STOP WATCH	SW	n/a	mA OUTPUT	2.13	PASS
				TOTALIZER	3.90	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.

Dissolved Oxygen Verification/Calibration Report



CUSTOMER CONTACT	Municipality of Chatham-Kent Larry Garside Chief Operator - Ridgetown 4 Tecumseh St Ridgetown, ON N0P 2C0 C: 519-358-6661 E: larryg@chatham-kent.ca	[MUT] MANUFACTURER	HACH
		MODEL	HQ30D
		SERIAL NUMBER	101100048209
		CLIENT TAG	n/a
		LOCATION	CK Ridgetown STP
		OTHER	n/a
VER. BY	<i>Randy Nichol</i>	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 QMS document.		VERIFICATION DATE	Mar 27, 2019
		CAL. FREQUENCY	Annual
		CAL. DUE DATE	Mar-2020

AS FOUND

DO Concentration [mg/L]	10.12
DO Concentration [%]	99.8
Barometric Pressure [hpa]	1009
Temperature	14.5

AS LEFT

DO Concentration [mg/L]	10.12
DO Concentration [%]	99.9
Barometric Pressure [hpa]	1009
Temperature	14.6

COMMENTS

Calibration performed as per manufacturer's recommended procedure.
Slope 106

QMSI INFORMATION

ITEM

ID #

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.

Western Office Eastern Office
2088 Jetstream Road 1602 Old Wooler Road
London, Ontario Wooler, Ontario
N5V 3P6 K0K 3M0

[MUT] AS FOUND

n/a

[MUT] AS LEFT

PASS

CUSTOMER CONTACT	Municipality of Chatham-Kent Larry Garside Chief Operator - Ridgetown 4 Tecumseh St Ridgetown, ON N0P 2C0 C: 519-358-6661 E: larryg@chatham-kent.ca	[MUT] MANUFACTURER MODEL SERIAL NUMBER CLIENT TAG LOCATION OTHER	HACH 2100N 021200008019 n/a Ridgetown STP n/a
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VER. BY	Randy Nichol	TOLERANCE [%]	5.0
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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 QMS document.

VERIFICATION DATE	March 27, 2019
CAL. FREQUENCY	Annual
CAL. DUE DATE	Mar 2020

TURBIDITY PRIMARY STANDARDS - Sealed StabICAL Formazin Solution

STANDARD	NIST STD [NTU]			READING NTU	PASS FAIL
STD 1	20	+/-	1.0	18.9	FAIL
STD 2	200	+/-	10.0	185	FAIL
STD 3	1000	+/-	50.0	946	FAIL
STD 4	4000	+/-	200.0	3813	PASS
				3731	FAIL

BEFORE CALIBRATION

TURBIDITY PRIMARY STANDARDS - Sealed StabICAL Formazin Solution

STANDARD	NIST STD [NTU]			READING NTU	PASS FAIL
STD 1	20.00	+/-	1.0	20	PASS
STD 2	200	+/-	10.0	202	PASS
STD 3	1000	+/-	50.0	1012	PASS
STD 4	4000	+/-	200.0	4002	PASS
				RESULT	PASS

AFTER CALIBRATION

CALIBRATION NOTE Manufacturers recommendation for calibration is every 3-months (Quarterly), at minimum.

COMMENTS

[QMS] INFORMATION
Sealed StabICAL Formazin

IDENTIFICATION
AS-2100-N

ID #
1

NIST Traceable Primary Standards were used to confirm the overall accuracy of this instrument. All "BEFORE" and "AFTER" calibration values referenced to the primary standards are indicated within this report.

Western Office Eastern Office
2088 Jetstream Road 1602 Old Wooler Road
London, Ontario Wooler, Ontario
N5V 3P6 K0K 3M0

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

CUSTOMER CONTACT	Municipality of Chatham-Kent Larry Garside Chief Operator - Ridgetown 4 Tecumseh St. Ridgetown, ON N0P 2C0 C: 519-358-6661 E: larryg@chatham-kent.ca	[MUT] MANUFACTURER MODEL SERIAL NUMBER CLIENT TAG LOCATION OTHER	HACH 2100P 09020C034937 n/a Ridgetown n/a
VER. BY	Randy Nichol	TOLERANCE [%]	5.0
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 QMS document.		VERIFICATION DATE CAL. FREQUENCY CAL. DUE DATE	March 27, 2019 Annual March-2020

TURBIDITY PRIMARY STANDARDS - Sealed StabICAL Formazin Solution

STANDARD	NIST STD [NTU]			READING NTU	PASS FAIL
STD 1	20	+/-	1.0	19.2	PASS
STD 2	100	+/-	5.0	96.9	PASS
STD 3	800	+/-	40.0	797	PASS
				RESULT	PASS

BEFORE CALIBRATION

TURBIDITY PRIMARY STANDARDS - Sealed StabICAL Formazin Solution

STANDARD	NIST STD [NTU]			READING NTU	PASS FAIL
VER 1	10.00	+/-	0.50	9.92	PASS
STD 2	20	+/-	1.0	19.8	PASS
STD 2	100	+/-	5.0	100.0	PASS
STD 3	800	+/-	40.0	791	PASS
				RESULT	PASS

AFTER CALIBRATION

CALIBRATION NOTE Manufacturers recommendation for calibration is every 3-months (Quarterly), at minimum.

COMMENTS

[QMS] INFORMATION
Sealed StabICAL Formazin

IDENTIFICATION
AS-2100-P/Q

ID #
1

NIST Traceable Primary Standards were used to confirm the overall accuracy of this instrument. All "BEFORE" and "AFTER" calibration values referenced to the primary standards are indicated within this report.