

# Madoc Drinking Water System Annual Water Report

Reporting period of January 1, 2019 – December 31, 2019

Prepared For: Corporation of the Municipality of  
Centre Hastings

Prepared By:  **Ontario Clean Water Agency**  
**Agence Ontarienne Des Eaux**

This report has been prepared to satisfy the annual reporting requirements of the Provincial Regulations and Guidelines established by the Ministry of the Environment in the Province of Ontario including the section 11 and Schedule 22 reports identified in O.Reg 170/03, Drinking Water Systems Regulation and the Permit to Take Water Reports identified in O.Reg 387/04, Water Taking and Transfer Regulation.

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## Compliance Report Card

Drinking Water System Number:	220001575
System Owner:	Corporation of the Municipality of Centre Hastings
Operating Authority:	Ontario Clean Water Agency
Drinking Water System Category:	Large Municipal Residential
Reporting Period:	January 1, 2019 – December 31, 2019

## Report Availability

<b>Population Served:</b>	<b>&lt; 10,000</b>
Website where the annual report can be viewed by the public:	www.centrehastings.com
Alternate location where annual report will be available for inspection and is free of charge:	Municipal Office
How are system users notified that the annual report is available and is free of charge?	Public access/notice via Municipal Website
Number of Designated Facilities served:	None
Has a copy of this report been provided to all Designated Facilities?	N/A
Number of Interested Parties reported to:	N/A
Has a copy of this report been provided to all Interested Parties?	N/A
The following Drinking-Water Systems receive drinking water from this system:	N/A
Has a copy of this report been provided to connected owners?	N/A

Event Summary	# of Events	Date	Details
<b>Ministry of Environment Inspections</b>	1	Jan 31, 2019	Announced – Detailed Drinking Water Inspection – Final Inspection Rating of 100%
<b>Ministry of Labour Inspections</b>	0		
<b>DWQMS Audits</b>	1	Jul 8, 2019	36 Month Audit performed by SAI Global
<b>AWQI's</b>	0		
<b>Non-Compliance</b>	0		
<b>Community Complaints</b>	0		
<b>Spills</b>	0		

## Quality Control Measures

Corporation of the Municipality of Centre Hastings facilities are part of OCWA's operational Trent Valley Hub. The facilities are supported by hub, regional and corporate resources. Operational Services are delivered by OCWA staff that live and work in the surrounding area. OCWA operates facilities in compliance with applicable regulations. The facility has comprehensive manuals detailing operations, maintenance,

instrumentation, and emergency procedures. All procedures are treated as active documents, with annual reviews.

OCWA has additional “Value Added” and operational support services that Corporation of the Municipality of Centre Hastings benefits from including:

- Access to a network of operational compliance and support experts at the regional and corporate level, as well as affiliated programs that include the following:
  - Quality & Environmental Management System, Occupational Health & Safety System and an internal compliance audit system.
  - Process Data Collection (PDC) and PDM (WISKI) facility operating information repository, which consolidates field data, online instrumentation, and electronic receipt of lab test results for reporting, tracking and analysis.
  - Work Management System (WMS) tracks and reports maintenance activities, and creates predictive and preventative reports.
  - Outpost 5 wide-area SCADA system allows for process optimization and data logging, process trending, remote alarming and optimization of staff time.
- Client reporting which includes operational data, equipment inventory, financial statements, maintenance work orders, and capital status reports
- Site-Specific Contingency Plans and Standard Operating Procedures
- Use of accredited laboratories
- Access to a network of operational compliance and support experts at the hub, region and corporate level
- Additional support in response to unusual circumstances, and extra support in an emergency.
- Use of sampling schedules for external laboratory sampling

## System Process Description

### Raw Source

Raw water source for the Madoc Drinking Water System are two groundwater wells. The Rollins Well (Well 3) is considered the main water supply well, while the Whytock Well (Well 2) is proposed as a secondary standby well.

### Treatment

A two well supply system, Well # 3– Rollins Street and Well #2 – Whytock Street. Both wells are considered to be groundwater under the direct influence of surface water (GUDI). Well #3 treatment system consists of a dual train cartridge filtration system. The Well #2 treatment system consists of a single train cartridge filtration system. Well #2 went offline on May 31, 2010 and is now a stand-by well. Both wells utilize filtration and ultraviolet light application for primary disinfection and sodium hypochlorite for secondary disinfection and are equipped with on-line alarmed continuous analyzers for treated water free chlorine residual and turbidity. Distribution free chlorine residual is continuously monitored with an on-line alarmed chlorine analyzer. The facility also contains a well pump lock out system in the case disinfection failure.

### Treatment Chemicals used during the reporting year:

Chemical Name	Use	Supplier
Sodium Hypochlorite	Disinfection	Brenntag

## Summary of Non-Compliance

### Non-Compliance Identified in a Ministry Inspection:

Ministry of Environment Inspection Rating: 100%

Legislation	requirement(s) system failed to meet	duration of the failure (i.e. date(s))	Corrective Action	Status
N/A				

### Adverse Water Quality Incidents

Date	AWQI #	Cause			Corrective Action Taken
		Parameter	Result	Exceedance of	
N/A					

### Non-Compliance

Legislation	requirement(s) system failed to meet	duration of the failure	Corrective Action	Status
N/A				

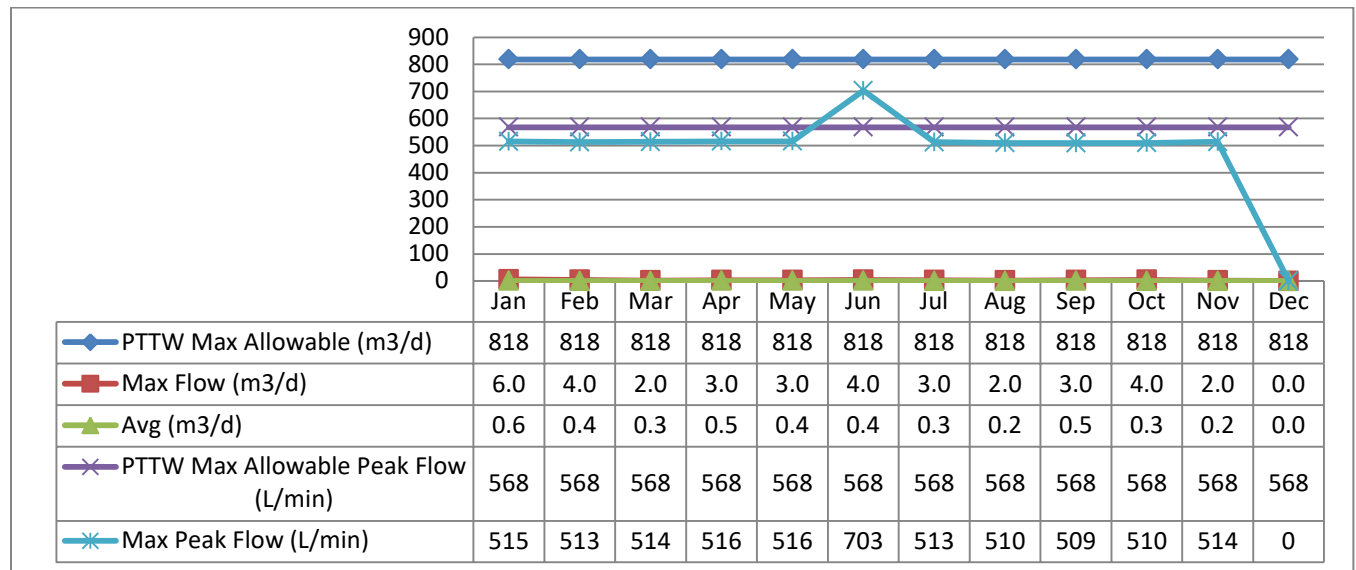
## Flows

The Madoc Drinking Water System has a rated capacity for Rollins Street Pump house - 1,469m<sup>3</sup>/day and Whytock Street Pump house - 527m<sup>3</sup>/day. Additional flow data can be found under the Water Taking and Transfer Data.

### Raw Water Flows

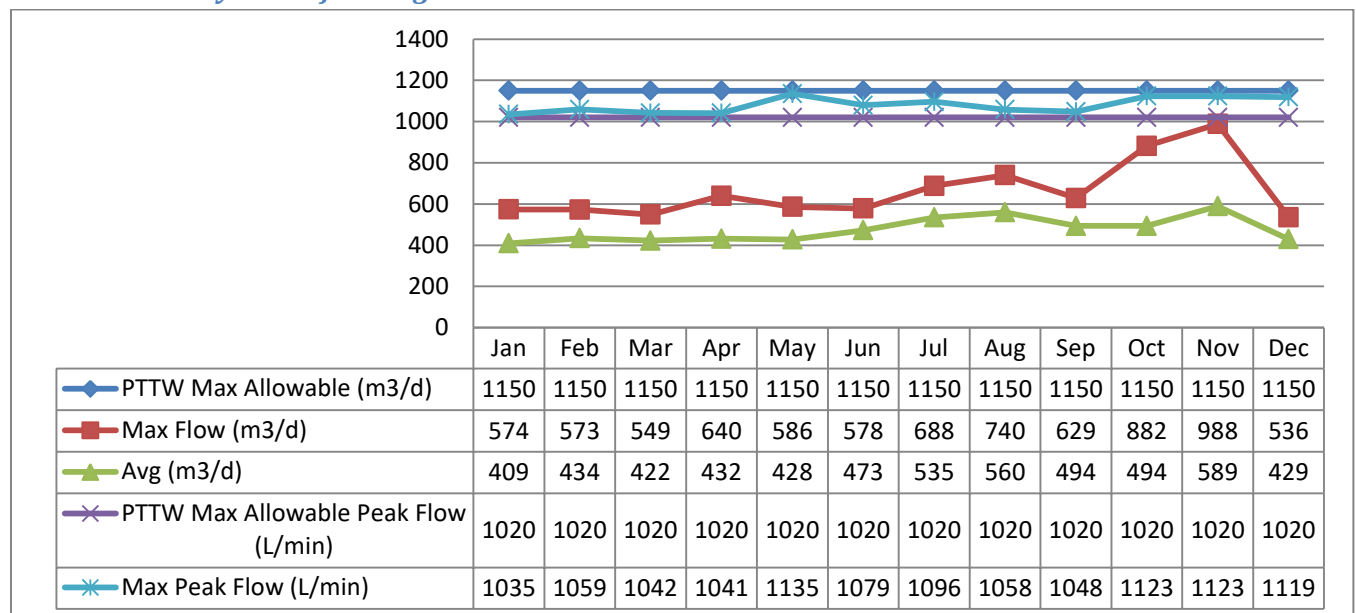
The Raw Water flows are regulated under the Permit to Take Water.

#### Raw Water Volume Taken: RW2



The above table shows there were spikes in instantaneous peak flow rate (L/min) and max flow rate these occurrences were caused during pump start-up/pump to waste. The Peak Flow rate was increased in June 2019 during scheduled flow meter calibrations. Due to a new well coming online in 2020, Raw Well 2 (Whytock St.) was taken offline at the beginning of December.

#### Raw Water Daily Rate of Taking: RW3

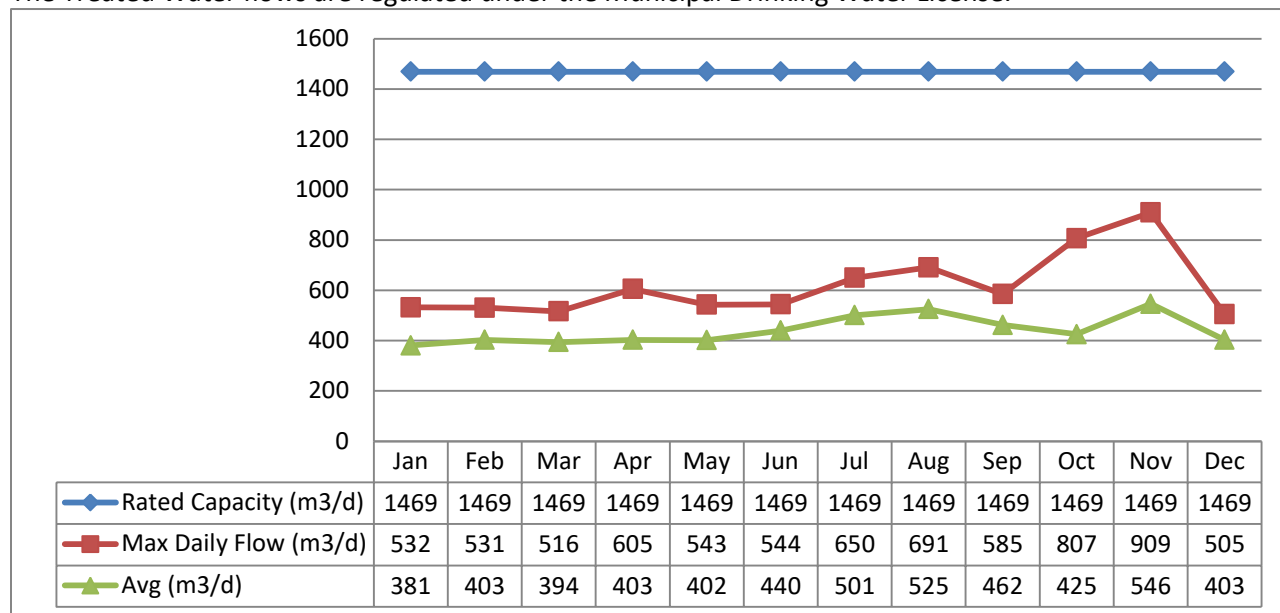


The above table shows there were spikes in instantaneous peak flow rate (L/min) and max flow rate these occurrences

were caused during pump start-up/pump to waste. The Peak Flow rate was increased in May 2019 during scheduled flow meter calibrations.

### Treated Water Flows - TW3

The Treated Water flows are regulated under the Municipal Drinking Water License.



### Regulatory Sample Results Summary

- RW2 = Raw Water Well 2
- RW3 = Raw Water Well 3
- TW3 = Treated Water Well 3
- DW = Distribution Water

### Microbiological Testing

Location	Number of Samples	E. Coli Results (min) - (max)	Total Coliform Results (min) - (max)	Number of HPC Samples	HPC Results (min) - (max)
Raw - RW2	48*	0 - 0	0 - 1	~	~
Raw - RW3	53	0 - 8	0 - 620	~	~
Treated - TW3	54	0 - 0	0 - 0	54	0 - 3
Distribution - DW	127	0 - 0	0 - 0	127	0-1020

\* Due to a new well coming online in 2020, Raw Well 2 (Whytock St.) was taken offline at the beginning of December, ceasing all microbiological sampling.

### Operational Testing

#### On-Line

Parameter	Range of Results (min # - max #)
Turbidity, Well #3 Filter Effluent Train # 1 (NTU)	0.00 – 2.00 NTU*
Turbidity, Well #3 Filter Effluent Train # 2 (NTU)	0.00 – 2.00 NTU*
Chlorine, Well #3 Treated	0.00 – 5.00 mg/L*
Total Chlorine, Distribution	0.00 – 4.30 mg/L

Free Chlorine, Distribution

0.00 – 4.00 mg/L

\* Instrument spikes and dips recorded by on-line instrumentation were a result of air bubbles and various maintenance and calibration activities. Power interruptions may also cause an instrument reading to drop to zero. All events are reviewed for compliance with O. Reg. 170/03 and if warranted, are reported to the Ministry of Environment as Adverse Water Quality Incidents.

**In-House**

Parameter	# of grab samples taken	Range of Results (min # - max #)
Raw Water Turbidity grabs - Well 2	12	0.05 – 1.24 NTU
Raw Water UVT grabs – Well 2	12	93.90 – 97.30 %
Raw Water Turbidity grabs - Well 3	12	0.07 – 0.22 NTU
Raw Water UVT grabs – Well 3	12	94.60 – 97.60 %
Well #3 Treated Water Free Chlorine	54	1.79 – 2.5 mg/L
Well #3 Treated Water Total Chlorine	54	2.04 – 3.8 mg/L
Distribution Free Chlorine	131	1.01 – 2.3 mg/L
Distribution Total Chlorine	130	1.62 – 2.26 mg/L

**Additional Legislated Samples**

Date of Legal Instrument issued	Parameter	Sample Location	# of grab samples taken	Range of Results (min # - max #)
<b>MDWL : 153-101 Drinking Water Health Related Parameters</b>	Antimony (ug/L)	RW 2	12	0.002 – 0.004
		RW 3	1	0.001
		TW 3	1	0.83
		DW	1	0.87
<b>MDWL : 153-101 Drinking Water Non-Health Related Parameters</b>	Organic Nitrogen (mg/L)	RW 2	4	<0.02 - <0.05
		RW 3	4	<0.02 - <0.05
	Dissolved Organic Carbon (mg/L)	RW 2	4	1.0 – 2.0
		RW 3	4	1.00 – 2.00
<b>Additional Samples</b>	Total Kjeldahl Nitrogen (N) (mg/L)	RW 2	4	<0.05-<0.34
		RW 3	4	<0.05-<0.32
	Total Ammonia Nitrogen (mg/L)	RW 2	4	<0.01-<0.04
		RW 3	4	<0.04-<0.07
	Fluoride	TW	Fluoride is not used at this facility	

**Lead Sampling**

The Lead Sampling Program is required under O.Reg 170/03. This system qualified for the plumbing exemption.

Location	Date	Lead (ug/L)	pH	Alkalinity (mg/L) as CaCO3
<b>Limits/Ranges</b>				
		<b>10.0</b>	<b>6.5-8.5</b>	<b>30-500</b>
Hydrant #02	Mar-19	--	7.81	280
Hydrant #78	Mar-19	--	7.79	290



Hydrant #82	Sept-19	--	7.55	314
Hydrant #87	Sept-19	--	7.56	314

Inorganic Parameters

- MAC = Maximum Allowable Concentration as per O.Reg 169/03
- BDL = Below the laboratory detection level
- Fluoride and Sodium are only required to be tested every 60 months.

Parameter	Sample Date	Result Value	MAC	Exceedance	
				MAC	½ MAC
<b>Antimony: Sb (ug/L) - TW3</b>	2019/03/18	0.83	6.0	No	No
<b>Arsenic: As (ug/L) - TW3</b>	2019/03/18	2.3	25.0	No	No
<b>Barium: Ba (ug/L) - TW3</b>	2019/03/18	135.0	1000.0	No	No
<b>Boron: B (ug/L) - TW3</b>	2019/03/18	24.0	5000.0	No	No
<b>Cadmium: Cd (ug/L) - TW3</b>	2019/03/18	0.119	5.0	No	No
<b>Chromium: Cr (ug/L) - TW3</b>	2019/03/18	0.09	50.0	No	No
<b>Mercury: Hg (ug/L) - TW3</b>	2019/03/18	<MDL 0.01	1.0	No	No
<b>Selenium: Se (ug/L) - TW3</b>	2019/03/18	0.5	50.0	No	No
<b>Uranium: U (ug/L) - TW3</b>	2019/03/18	0.833	20.0	No	No
<b>Additional Inorganics</b>					
<b>Nitrite (mg/L) - TW3</b>	2019/01/02	<MDL 0.003	1.0	No	No
<b>Nitrite (mg/L) - TW3</b>	2019/04/01	<MDL 0.003	1.0	No	No
<b>Nitrite (mg/L) - TW3</b>	2019/07/08	<MDL 0.003	1.0	No	No
<b>Nitrite (mg/L) - TW3</b>	2019/10/07	<MDL 0.003	1.0	No	No
<b>Nitrate (mg/L) - TW3</b>	2019/01/02	3.24	10.0	No	No
<b>Nitrate (mg/L) - TW3</b>	2019/04/01	1.89	10.0	No	No
<b>Nitrate (mg/L) - TW3</b>	2019/07/08	2.41	10.0	No	No
<b>Nitrate (mg/L) - TW3</b>	2019/10/07	1.53	10.0	No	No
<b>60 Month Sampling</b>					
<b>Sodium(mg/L)-TW3</b>	2018/07/25	63.7	20.0	Yes	Yes
<b>Fluoride(mg/L)-TW3</b>	2018/06/25	0.45	1.50	No	No

### Organic Parameters

- MAC = Maximum Allowable Concentration as per O.Reg 169/03
- BDL = Below the laboratory detection level

Parameter	Sample Date	Result Value	MAC	Exceedance	
				MAC	½ MAC
Alachlor (ug/L) - TW3	2019/03/18	<MDL 0.02	5.00	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW3	2019/03/18	<MDL 0.01	5.00	No	No
Azinphos-methyl (ug/L) - TW3	2019/03/18	<MDL 0.05	20.00	No	No
Benzene (ug/L) - TW3	2019/03/18	<MDL 0.32	1.00	No	No
Benzo(a)pyrene (ug/L) - TW3	2019/03/18	<MDL 0.004	0.01	No	No
Bromoxynil (ug/L) - TW3	2019/03/18	<MDL 0.33	5.00	No	No
Carbaryl (ug/L) - TW3	2019/03/18	<MDL 0.05	90.00	No	No
Carbofuran (ug/L) - TW3	2019/03/18	<MDL 0.01	90.00	No	No
Carbon Tetrachloride (ug/L) - TW3	2019/03/18	<MDL 0.17	2.00	No	No
Chlorpyrifos (ug/L) - TW3	2019/03/18	<MDL 0.02	90.00	No	No
Diazinon (ug/L) - TW3	2019/03/18	<MDL 0.02	20.00	No	No
Dicamba (ug/L) - TW3	2019/03/18	<MDL 0.2	120.00	No	No
1,2-Dichlorobenzene (ug/L) - TW3	2019/03/18	<MDL 0.41	200.00	No	No
1,4-Dichlorobenzene (ug/L) - TW3	2019/03/18	<MDL 0.36	5.00	No	No
1,2-Dichloroethane (ug/L) - TW3	2019/03/18	<MDL 0.35	5.00	No	No
1,1-Dichloroethylene (ug/L) - TW3	2019/03/18	<MDL 0.33	14.00	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW3	2019/03/18	<MDL 0.35	50.00	No	No
2,4-Dichlorophenol (ug/L) - TW3	2019/03/18	<MDL 0.15	900.00	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW3	2019/03/18	<MDL 0.19	100.00	No	No
Diclofop-methyl (ug/L) - TW3	2019/03/18	<MDL 0.4	9.00	No	No
Dimethoate (ug/L) - TW3	2019/03/18	<MDL 0.06	20.00	No	No
Diquat (ug/L) - TW3	2019/03/18	<MDL 1.0	70.00	No	No
Diuron (ug/L) - TW3	2019/03/18	<MDL 0.03	150.00	No	No
Glyphosate (ug/L) - TW3	2019/03/18	<MDL 1.0	280.00	No	No
Malathion (ug/L) - TW3	2019/03/18	<MDL 0.02	190.00	No	No
Metolachlor (ug/L) - TW3	2019/03/18	<MDL 0.01	50.00	No	No
Metribuzin (ug/L) - TW3	2019/03/18	<MDL 0.02	80.00	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW3	2019/03/18	<MDL 0.3	80.00	No	No
Paraquat (ug/L) - TW3	2019/03/18	<MDL 1.0	10.00	No	No
PCB (ug/L) - TW3	2019/03/18	<MDL 0.04	3.00	No	No
Pentachlorophenol (ug/L) - TW3	2019/03/18	<MDL 0.15	60.00	No	No
Phorate (ug/L) - TW3	2019/03/18	<MDL 0.01	2.00	No	No
Picloram (ug/L) - TW3	2019/03/18	<MDL 1.0	190.00	No	No

<b>Prometryne (ug/L) - TW3</b>	2019/03/18	<MDL 0.03	1.00	No	No
<b>Simazine (ug/L) - TW3</b>	2019/03/18	<MDL 0.01	10.00	No	No
<b>Terbufos (ug/L) - TW3</b>	2019/03/18	<MDL 0.01	1.00	No	No
<b>Tetrachloroethylene (ug/L) - TW3</b>	2019/03/18	<MDL 0.35	10.00	No	No
<b>2,3,4,6-Tetrachlorophenol (ug/L) - TW3</b>	2019/03/18	<MDL 0.2	100.00	No	No
<b>Triallate (ug/L) - TW3</b>	2019/03/18	<MDL 0.01	230.00	No	No
<b>Trichloroethylene (ug/L) - TW3</b>	2019/03/18	<MDL 0.44	5.00	No	No
<b>2,4,6-Trichlorophenol (ug/L) - TW3</b>	2019/03/18	<MDL 0.25	5.00	No	No
<b>(MCPA) (ug/L) - TW3</b>	2019/03/18	<MDL 0.12	45.00	No	No
<b>Trifluralin (ug/L) - TW3</b>	2019/03/18	<MDL 0.02	1.00	No	No
<b>Vinyl Chloride (ug/L) - TW3</b>	2019/03/18	<MDL 0.17	100.00	No	No
<b>DISTRIBUTION WATER</b>					
<b>Trihalomethane: Total (ug/L) Annual Average - DW</b>	2019/01/01	21.0	100.00	No	No
<b>HAA Total (ug/L) Annual Average - DW</b>	2019/01/01	11.775	80	N/A	N/A

## Maintenance Summary

OCWA uses a risk-based preventative maintenance framework that ensures assets are maintained to manufacturer’s and/or industry standards. Maintenance is completed using various tools and operational supports.

OCWA uses a Work Tracking Database (Maximo). Maximo is a maintenance tracking system that can generate work orders as well as give summaries of completed and scheduled work. During the year, the operating authority at the facility generates scheduled work orders on a weekly, monthly and annual basis. The service work is recorded in the work order history. This ensures routine and preventive maintenance is carried out. Emergency and capital repair maintenance is completed and added to the system.

Capital projects are listed and provided to the Corporation of the Municipality of Centre Hastings in the form of a “Capital Forecast”. This list is developed by facility staff and provides recommendations for facility components requiring upgrading or improvement.

Preventative/Weekly Maintenance Work Orders Completed	265
Operational Maintenance Work Orders Completed	14
Capital Maintenance Work Orders Completed	9

## Maintenance Highlights: major expenses incurred to install, repair or replace required equipment

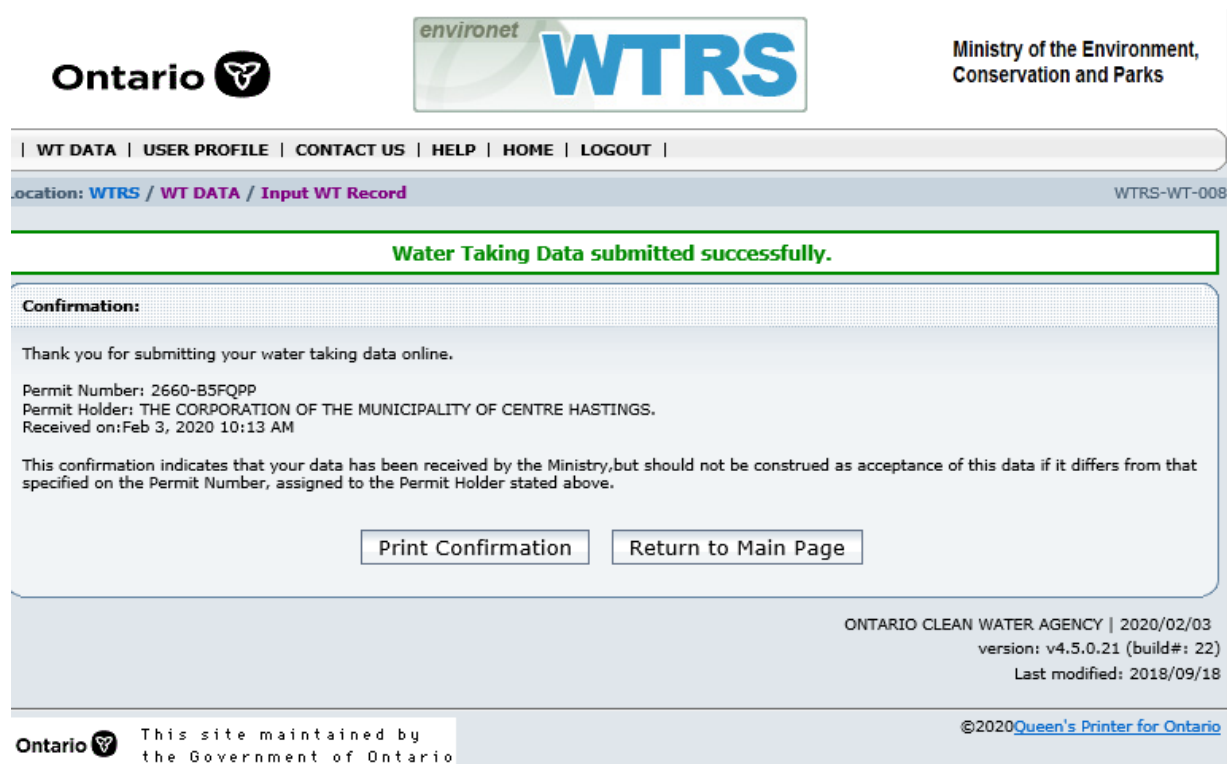
- Annual UV/Reference Sensor Calibration
- Water Tower Inspection
- Chlorine Parts and Maintenance
- Trojan UV Replacement Parts


## QEMS

A 36 month on-site audit was conducted by QMI-SAI Canada Limited on July 8, 2019. The Corporation of the Municipality of Centre Hastings Quality Management System conforms to the Standard.

## Water Taking and Transfer Data

Data for the reporting period of January 1, 2019 December 31, 2019 was submitted electronically to the Ministry of the Environment and Climate Change on Feb 3, 2020 under Permit to Take Water #2660-B5FQPP.



Ontario 

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Ministry of the Environment,  
Conservation and Parks

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Location: [WTRS](#) / [WT DATA](#) / [Input WT Record](#) WTRS-WT-008

**Water Taking Data submitted successfully.**

**Confirmation:**


Thank you for submitting your water taking data online.

Permit Number: 2660-B5FQPP  
Permit Holder: THE CORPORATION OF THE MUNICIPALITY OF CENTRE HASTINGS.  
Received on: Feb 3, 2020 10:13 AM

This confirmation indicates that your data has been received by the Ministry, but should not be construed as acceptance of this data if it differs from that specified on the Permit Number, assigned to the Permit Holder stated above.

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