

The Corporation of the Town of Mattawa

P.O. Box 390, 160 Water St.,
Mattawa, Ontario, P0H 1V0

2018 Summary Report for Municipalities— Mattawa Drinking Water System per O. Reg 170 / 03 Schedule 22

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March 21, 2019

PLANT: **Mattawa Drinking Water System**

DWS NUMBER: 2100001905

PLANT TYPE: Municipal Drilled Wells

OWNER: The Corporation of the Town of Mattawa

OPERATORS: The Corporation of the Town of Mattawa (Certified Municipal Staff)

ADDRESS: Corporation of the Town of Mattawa
P.O. Box 390
160 Water Street
Mattawa, Ont., P0H 1V0

CONTACT PERSON: Josh Dewaal, Water / Wastewater Operator
Corporation of the Town of Mattawa
(705) 303-8117

DESCRIPTION:

- Water Source is from two deep drilled wells. Well #1 – 26.67m & Well #2 – 23.77m.
- Storage by in-ground concrete reservoir w/ 690 Cubic Meter capacity.
- Distribution system is gravity fed from the reservoir when the pumps are idle, and concurrently fed from the pumps and the reservoir when the well pumps are producing water
- Average water pressure throughout distribution system is between 97 and 102 psi.
- Distribution system comprises of a mixture of PVC, ductile iron and cast iron.
- Pump # 1 is rated at 53.0 L/s and pump #2 is rated at 22.7 L/s.
- The only treatment required for this system is disinfection. Disinfection is presently achieved by U.V. exposure via Trojan Swift Reactors. Chlorination is being used to maintain residuals throughout the distribution system to meet our Drinking Water Works Permit, Municipal Drinking Water Licence and O.Reg 170/03 as amended.

REPORTS TO THE MINISTRY

Per Section 18 of the Safe Drinking Water Act:

- There were no Adverse Water Quality Incidents during 2018.

COMPLIANCE WITH TERMS & CONDITIONS OF THE DRINKING WATER WORKS PERMIT:

- As far as OCWA has been able to ascertain, with the exception of the items listed in the next section, in 2018 we operated the Town of Mattawa Waterworks in accordance with our Municipal Drinking Water Licence #195-101 (Issue 2), our Drinking Water Works Permit #195-201(Issue 2), and O.Reg 170/03 as amended.
- Chlorine readings in the distribution system are being taken using handheld chlorine meters.
- Chlorine at the plant is being monitored at the plant using an in-line analyzer.
- Water flows are measured in cubic meters. Our SCADA system records the meter readings and provides for an ongoing report of the water produced during each daily period. As such, daily flows are easily found on the SCADA system.
- A detailed Operations Manual and Contingency Plan has been completed and implemented.
- As far as OCWA can ascertain we have not exceeded the maximum flow rate of 6,540 m³/day.

NON - COMPLIANCE WITH TERMS & CONDITIONS OF THE DRINKING WATER WORKS PERMIT:

Non-Compliance	OCWA discovered that the monthly well turbidities were not taken within the 20-40 day period required by O. Reg. 170. January 2, 2018 to February 15, 2018 = 45 days. June 4, 2018 to July 18, 2018 = 45 days. September 14, 2018 to October 2, 2018 = 19 days. October 2, 2018 to November 13, 2018 = 43 days. November 13, 2018 to December 31, 2018 = 49 days.
Measures taken to comply	The Town of Mattawa will make best efforts to sample well turbidities during the first week of month.
Non-Compliance	Flow rates exceeded instantaneous L/min flow rate in Permit To Take Water (PTTW) for Well 2. Also, Well #1 experiences false peaks on startup and switch over due to combined flow meter between both wells.
Measures taken to comply	The Town of Mattawa is currently reviewing the issue. The Town of Mattawa is so far below the totalized flow limit in the PTTW that the issue regarding instantaneous flow has never been raised, see tables below.

SUMMARY & DISCUSSION OF WATER PRODUCTION:

- From January 1, 2018 to December 31, 2018 the waterworks produced and supplied 563,939 cubic meters of drinking water to the distribution system. This represents a 17.5% **increase** in production over 2017.
- The flows from Well 1 and Well 2, as well as combined flows can be found in tables below.

Table A - Raw Water Usage

2018 - Monthly Summary of Water Takings from the Source (Well #1)

Regulated by Permit to Take Water (PTTW) #1546-9GHPLM, issued February 27, 2014

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m ³)	38504	36820	41701	40472	40832	42207	45024	42030	39958	26164	35910	41056	470678
Average Volume (m ³ /d)	1242	1315	1345	1349	1317	1407	1452	1356	1332	818	1197	1324	1288
Maximum Volume (m ³ /d)	1441	1491	1552	1566	1502	1855	1855	1667	1600	1403	1498	1606	1855
PTTW - Maximum Allowable Volume (m ³ /day)	4582	4582	4582	4582	4582	4582	4582	4582	4582	4582	4582	4582	4582
Maximum Flow Rate (L/min)	5023	4975	4992	5029	5006	4987	5086	5071	4894	5614	5614	5011	5614
PTTW - Maximum Allowable Flow Rate (L/min)	3183	3183	3183	3183	3183	3183	3183	3183	3183	3183	3183	3183	3183

2018 - Monthly Summary of Water Takings from the Source (Well #2)

Regulated by Permit to Take Water (PTTW) #1546-9GHPLM, issued February 27, 2014

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m ³)	5586	5656	9607	6324	4354	5102	5184	5833	7880	17085	11718	8931	93260
Average Volume (m ³ /d)	180	202	310	211	140	170	167	188	263	534	391	288	254
Maximum Volume (m ³ /d)	545	381	505	385	542	545	508	539	544	1958	1948	588	1958
PTTW - Maximum Allowable Volume (m ³ /day)	1964	1964	1964	1964	1964	1964	1964	1964	1964	1964	1964	1964	1964
Maximum Flow Rate (L/min)	1596	1605	1575	1570	1594	1607	1593	1723	1595	1743	1743	1743	1743
PTTW - Maximum Allowable Flow Rate (L/min)	1364	1364	1364	1364	1364	1364	1364	1364	1364	1364	1364	1364	1364

Table A - Raw Water Usage

2018 - Monthly Summary of Combined Water Takings from the Source (Well#1 and Well #2)

Regulated by Permit to Take Water (PTTW) #1546-9GHPLM, issued February 27, 2014

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m ³)	44090	42476	51307	46796	45186	47309	50209	47863	47838	43249	47629	49987	563939
Average Volume (m ³ /d)	1422	1517	1655	1560	1458	1577	1620	1544	1592	1352	1588	1613	1542
Maximum Volume (m ³ /d)	1535	1616	1812	1807	1653	2005	1971	1880	1958	1958	2611	1870	2611
PTTW - Maximum Allowable Volume (m ³ /day)	6546	6546	6546	6546	6546	6546	6546	6546	6546	6546	6546	6546	6546

Table B - Treated Water Usage

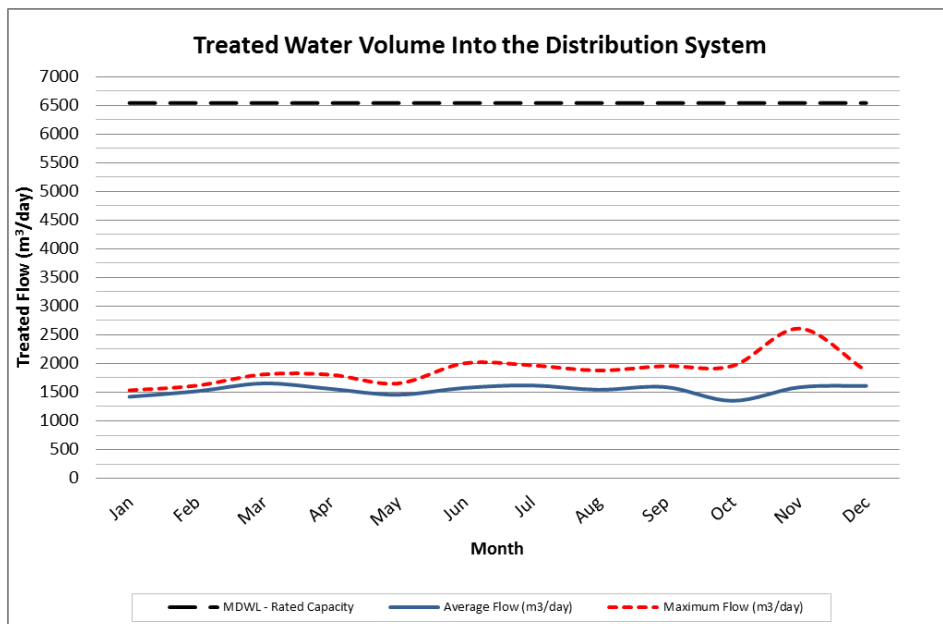
2018 - Monthly Summary of Treated Water Supplied to the Distribution System

Regulated by Municipal Drinking Water Licence (MDWL) #195-101 - Issue 2, issued July 25, 2016

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m ³)	44090	42476	51307	46796	45186	47309	50209	47863	47838	43249	47629	49987	563939
Average Volume (m ³ /d)	1422	1517	1655	1560	1458	1577	1620	1544	1592	1352	1588	1613	1542
Maximum Volume (m ³ /d)	1535	1616	1812	1807	1653	2005	1971	1880	1958	1958	2611	1870	2611
MDWL - Rated Capacity (m ³ /day)	6540	6540	6540	6540	6540	6540	6540	6540	6540	6540	6540	6540	6540

Figure 1: 2018 - Daily Volume of Treated Water into the Distribution System

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Flow (m ³ /day)	1422	1517	1655	1560	1458	1577	1620	1544	1592	1352	1588	1613
Maximum Flow (m ³ /day)	1535	1616	1812	1807	1653	2005	1971	1880	1958	1958	2611	1870
MDWL - Rated Capacity	6540	6540	6540	6540	6540	6540	6540	6540	6540	6540	6540	6540
% Max Rated Capacity	23	25	28	28	25	31	30	29	30	30	40	29



SUMMARY OF FLOW RATE EXCEEDANCES & ANALYTICAL RESULTS:

Flow Rates

During this period there were no exceedances of the rated capacity totalized flow rate. However, the PTTW instantaneous flow rates have been continuously exceeded for Well 2, with false peaks on start-up and switch over on Well 1. Over the course of the past 11 years the municipality has undertaken a comprehensive leak detection program. This program has been effective in reducing losses to the degree that our normal production range has dropped from 2,500 – 3,000 m³ per day down to within a normal production range of 1,300 to 1,600 m³ per day. In 2018, the average water consumption was 1,542 m³/day. November had a peak flow of 2,611 m³/day.

Flow measuring devices were calibrated on April 27, 2018.

Quarterly Sampling

All tests required from our Nitrates/Nitrites, THMs and HAAs quarterly sampling program yielded results below Ontario Drinking Water Standards (ODWS) Maximum Acceptable Concentration (M.A.C.). THM's were taken at the far end of the distribution system, while the Nitrates, Nitrites were taken at the plant exit (treated water sample tap). HAAs were collected at various points in the distribution system. THMs were far below the M.A.C., with a 4 quarter running average of 0.0028 mg/L. The current M.A.C. is 0.100 mg/L. HAAs were far below the proposed M.A.C, with a 4 quarter running average of 0.0021 mg/L. The proposed M.A.C. is 0.08 mg/L.

Schedule 23 of O. Reg. 170/03 - Inorganics

These parameters were tested for in July of 2018 & all results were well below the M.A.C. They are due to be sampled and tested next in July of 2021.

Schedule 24 of O. Reg. 170/03 – Organics

These parameters were tested for in July of 2018 & all results were well below the M.A.C. or below detectable limits. They are due to be sampled and this year in July of 2021.

Bacteriological

Approximately eight times during the year a coliform result came back as positive in the raw water supply, although each time was several months apart from the last. Regular testing did not indicate a negative trend forming. All treated water samples were clear of any adverse indicators, as were all distribution samples.

Free Chlorine Residual

During 2018, chlorine residual was conducted using an in-line analyzer in the water works station and handheld meters in the distribution system. Chlorine residual tests in the distribution system were carried out at various locations and various times through the day, every day of 2018. The free chlorine residual values in the distribution system ranged from 0.11 to 1.18 mg/L. Chlorine tests were conducted at least 365 times during this year.

There were no incidences to report where the maximum free chlorine residual exceeded 4.0 mg/L in either the distribution system or at the point where the water enters the distribution system.

There were no incidents to report where the free chlorine residual was less than 0.05 mg/L.

Turbidity

O. Reg 170/03 requires testing each production well on a monthly basis for turbidity. Turbidity levels of the raw water at the plant ranged between 0.07 and 0.44 NTUs. Raw water turbidity is being tested with a portable turbidimeter. OCWA did notice an issue regarding the 20-40 day between samples requirement. See page 3 for details.

TREATMENT CHEMICALS AND DOSAGE:

Sodium Hypochlorite is the only treatment/disinfection chemical used at this water production facility. The metering pumps are set to provide treated water free chlorine residuals between 0.50 mg/L and 0.70 mg/L. Municipal employees monitor free chlorine residual values in the distribution system so as to work towards maintaining sufficient free chlorine levels in the distribution system to keep the water safe and aesthetically pleasing while on its way to end users. At different times throughout the year we adjust dosage to reflect the needs of the system.

ROUTINE MAINTENANCE AND UPGRADES:

- Jp2g Consultants attended the water reservoir site on October 24, 2018, to conduct a building condition assessment specifically with regard to the existing structure condition of the Town of Mattawa water reservoir as part of Ontario's Clean Water and Wastewater Fund Program. The reservoir was drained in accordance with the Ministry of the Environment, Conservation and Parks (MECP) as well as American Water Works Association (AWWA) protocols. A visual review of the interior of the reservoir was conducted by Jp2g Consultants Inc. structural Engineer and senior project manager. On completion of review, retrofit improvements were conducted within the reservoir; i.e. the decommissioning of the 10" drain valve and the installation of a 6" drain valve, as well as the installation of a new davit arm support base. An assessment of the concrete reservoir shows that it is in good condition overall.
- A complete replacement of Pump #2 and an air-scouring of Well #2 has been completed by International Water Supply (IWS). The well was inspected with CCTV, disinfected as per MECP instructions and Pump #2 was inserted, set and connected. A brief pumping test was performed to confirm proper operation.
- Valve Exerciser: A new Wachs valve exerciser was purchased in the spring of 2017 to assist in the distribution valve exercising and hydrant flushing program.
- Upgrades were completed to UV Reactor #1. This included the installation of a new programmable logic controller (PLC) and power supply (H₂Flow Equipment Inc.). As well as programming from Stroma Service Consulting Inc.

Prepared by:

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