

February 24, 2022

CAO Francine Desormeau and Council
The Corporation of the Town of Mattawa
160 Water Street, P.O. Box 390,
Mattawa, ON P0H 1V0

Re: 2021 Annual/Summary Report for the Mattawa Drinking Water System

Dear Francine Desormeau and Council:

Ontario's Drinking-Water Systems Regulation (O. Reg. 170/03), made under the *Safe Drinking Water Act in 2002*, requires that the owner of a drinking water system prepare an Annual Report and an Annual Summary Report of the operation of the system and the quality of its water.

Annual Report

The annual report must cover the period of January 1st to December 31st in a year and must be prepared not later than February 28th of the following year. Pursuant to the legislative requirements, enclosed for your records is the 2021 Annual Report for the Mattawa Drinking Water System.

In accordance with Section 11 (6), the annual report must:

- (a) contain a brief description of the drinking-water system, including a list of water treatment chemicals used by the system during the period covered by the report;
- (b) summarize any reports made to the Ministry under subsection 18 (1) of the Act or section 16-4 of Schedule 16 during the period covered by the report;
- (c) summarize the results of tests required under the Regulation, or an approval or order, including an OWRA order, during the period covered by the report and, if tests required under this Regulation in respect of a parameter were not required during that period, summarize the most recent results of tests of that parameter;
- (d) describe any corrective actions taken under Schedule 17 or 18 during the period covered by the report;
- (e) describe any major expenses incurred during the period covered by the report to install, repair or replace required equipment; and
- (f) if the case of a large municipal residential system or a small municipal residential system, include a statement of where a report prepared under Schedule 22 will be available for inspection under subsection 12 (4) O. Reg. 170/03, s. 11 (6).

In addition, Section 11 (7) gives the direction that a copy of an annual report for the system is given, without charge, to every person who requests a copy and be made available for inspection by any member of the public during normal business hours. The reports should be made available at the office of the Town, or at a location that is accessible to the users of the water system.

Summary Report

The annual summary report must cover the period of January 1st to December 31st in a year and must be prepared not later than March 31st of the following year. Pursuant to the legislative requirements, enclosed for your records is the 2021 Annual Summary for the Mattawa Drinking Water System.

As required in *Schedule 22, Summary Reports for Municipalities*, the annual summary must:

- (2) (a) list the requirements of the Act, the regulations, the system's approval, drinking water works permit, municipal drinking water licence, and any orders applicable to the system that were not met at any time during the period covered by the report; and

(b) for each requirement referred to in clause (a) that was not met, specify the duration of the failure and the measures that were taken to correct the failure.
- (3) The report must also include the following information for the purpose of enabling the owner of the system to assess the capability of the system to meet existing and planned uses of the system:
 1. A summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows.
 2. A comparison of the summary referred to in paragraph 1 to the rated capacity and flow rates approved in the system's approval, drinking water works permit or municipal drinking water licence, or if the system is receiving all of its water from another system under an agreement pursuant to subsection 5 (4), to the flow rates specified in the written agreement.

In addition, Section 12 (1) – 4 – gives the direction that a copy of the annual summary for the system is given, without charge, to every person who requests a copy and be made available for inspection by any member of the public during normal business hours. The reports should be made available at the office of the Town, or at a location that is accessible to the users of the water system.

These reports were prepared by the Ontario Clean Water Agency on behalf of the Town of Mattawa and are based on information kept on record by OCWA at the Mattawa WTP. The reports cover the period January 1st to December 31st 2021.

Please note that any Provincial Officers Orders or non-compliance issues that you have received directly from the MOE should be reviewed. Where non-compliance with the Order or Issue is evident and it is not included in the attached 2021 Annual/Summary Report, then we recommend that this information be added to the report.

After your review and inclusion of any additional information, this report is to be provided to the Council members representing the Town of Mattawa before March 31, 2022. Please ensure this distribution.

Yours truly,
Ontario Clean Water Agency

Joshua Gravelle
Process and Compliance Technician

Copy to: Vesna Alimpic, Drinking Water Inspector, Ministry of the Environment, Conservation and Parks.



Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Mattawa Drinking Water System

2021 ANNUAL/SUMMARY REPORT

Prepared by the Ontario Clean Water Agency
on behalf of the Corporation of the Town of Mattawa

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INTRODUCTION

Municipalities throughout Ontario have been required to comply with Ontario Regulation 170/03 made under the Safe Drinking Water Act (SDWA) since June 2003. The Act was enacted following recommendations made by Commissioner O'Conner after the Walkerton Inquiry. The Act's purpose is to protect human health through the control and regulation of drinking water systems. O. Reg. 170/03 regulates drinking water testing, use of licensed laboratories, treatment requirements and reporting requirements.

Section 11 of Regulation 170/03 requires the owner to produce an Annual Report. This report must include the following:

1. Description of system & chemical(s) used
2. Summary of any adverse water quality reports and corrective actions
3. Summary of all required testing
4. Description of any major expenses incurred to install, repair or replace equipment

This annual report must be completed by February 28th of each year.

Section 22 of the regulation also requires a Summary Report which must be presented & accepted by Council by March 31st of each year for the preceding calendar year.

The report must list the requirements of the Act, its regulations, the system's Drinking Water Works Permit (DWWP), Municipal Drinking Water Licence (MDWL), Certificate of Approval (if applicable), and any Provincial Officer Order the system failed to meet during the reporting period. The report must also specify the duration of the failure, and for each failure referred to, describe the measures that were taken to correct the failure.

The Safe Drinking Water Act (2002) and the drinking water regulations can be viewed at the following website: <http://www.e-laws.gov.on.ca>.

To enable the Owner to assess the rated capacity of their system to meet existing and future planned water uses, the following information is also required in the report.

1. A summary of the quantities and flow rates of water supplied during the reporting period, including the monthly average and the maximum daily flows,
2. A comparison of the summary to the rated capacity and flow rates approved in the systems approval, drinking water works permit or municipal drinking water licence or a written agreement if the system is receiving all its water from another system under an agreement.

The reports have been prepared by the Ontario Clean Water Agency (OCWA) on behalf of the Owner and presented to council as the 2021 Annual/Summary Report.



Mattawa Drinking Water System

Section 11

2021 ANNUAL REPORT

Section 11 - ANNUAL REPORT

1.0 Introduction

Drinking-Water System Name: MATTAWA DRINKING WATER SYSTEM
Drinking-Water System No.: 210001905
Drinking-Water System Owner: The Corporation of the Town of Mattawa
Drinking-Water System Category: Large Municipal, Residential System
Period being reported: January 1, 2021 to December 31, 2021

Does your Drinking Water System serve more than 10,000 people? No

Is your annual report available to the public at no charge on a web site on the Internet? Yes

Location where Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.

Town Hall at 160 Water Street and on the Municipal website at www.mattawa.ca

Drinking Water Systems that receive drinking water from the Mattawa Drinking Water System

The Mattawa Drinking Water System (DWS) provides all drinking water to the community of Mattawa.

The Annual Report was not provided to any other Drinking Water System Owners.

The Ontario Clean Water Agency prepared the 2021 Annual/Summary Report for the Mattawa DWS and provided a copy to the system owner; the Town of Mattawa. The Mattawa DWS is a stand-alone system that does not receive water from or send water to another system.

Notification to system users that the Annual Report is available for viewing is accomplished through:

- A public access notice via the web and a public access notice via Town Office.
- System analysis and reports available in the water System Information Binder available for the public to review at the Town Office.

2.0 Mattawa Drinking Water System (DWS No. 210001905)

The Mattawa DWS is owned by the Corporation of the Town of Mattawa and consists of a Class II Distribution and Supply System. The Ontario Clean Water Agency (OCWA) is designated the Overall Responsible Operator for both the water supply and water distribution facilities.

Raw Water Supply

The water supply system for the Town of Mattawa consists of Well No. 1, Well No. 2, and an in-ground water storage reservoir that floats on the distribution system. These two groundwater supply wells, as well as the reservoir, provide drinking water to the residents of Mattawa. In accordance with the Municipal Drinking Water Licence, the drinking water system shall not be operated to exceed 6,540 cubic meters per day (m³/d).

Wells No. 1 and No. 2 are located inside a single structure situated at 400 Bissett Street in the Town of Mattawa. This facility houses two well pumps, an ultraviolet (UV) disinfection system, a sodium hypochlorite disinfection system, all control, monitoring, and alarm systems, as well as a standby diesel generator.

The wells are operated by OCWA and are utilized on a duty/standby basis. Well No. 1 is operated as the duty well from 6 am to midnight. Well No. 2 is used as the duty well from midnight to 6 am, for energy conservation purposes. The switchover of duty wells is automatically done via a timer within the plant programmable logic controller (PLC).

Well No. 1 is equipped with a vertical turbine pump capable of delivering 53.0 L/s at 105.8 m of total dynamic head. Well No. 2 has a vertical turbine pump rated at 22.7 L/s with a total dynamic head of 91.5 m. Recently variable frequency drive (VFD) installed for Well #2.

Water Treatment

Primary disinfection equipment includes two UV disinfection systems, each designed to deliver the required UV dosage at the rated capacity of the facility. Chlorination equipment includes a 200 L sodium hypochlorite (NaOCl) storage tank and dual chemical feed pumps that inject liquid chlorine into the system. Output from Well No. 1 and No. 2 is governed by system demand (water level in the reservoir). As the water level in the reservoir drops to the low water level (LWL), the selected duty well pump automatically starts.

The well pumps, UV disinfection system, sodium hypochlorite injection system, and analyzers are all supervised locally via the PLC. All alarms are instantly transmitted from the PLC to the alarm panel, which dials a security company and pages the Operator-on-call. Refer to the Treatment System Process Flow Chart for more facility detail.

In 2012, a supervisory control and data acquisition (SCADA) system installed to allow for continuous monitoring and recording. It includes alarming, enhanced operator control of the waterworks, and increased security features.

Water Storage and Pumping Capabilities

There is a 795 m³ (175,000 IMPG) in-ground storage reservoir within the distribution system located approximately 700 meters (m) northwest of the Pump-house.

Emergency Power

Stand-by power is provided by an on-site diesel generator with an automatic transfer switch. In the event of a power outage in the area, the diesel generator automatically starts, providing continuous power to the Pump-house.

Distribution System

The Mattawa DWS is categorized as a Large Municipal Residential Drinking Water System and serves an estimated population of 2150 residents. The system has approximately 1,050 service connections to residential and commercial consumers. There is approximately 20,000 m of various sized cast iron, ductile iron and polyvinyl chloride piping. There are 117 fire hydrants in the distribution system.

3.0 List of Water Treatment Chemicals Used Over the Reporting Period

The following chemicals used in the treatment process at the Mattawa Water Treatment Plant.

- Sodium hypochlorite – Secondary Disinfection

4.0 Significant Expenses Incurred in the Drinking Water System

OCWA is committed to maintaining the assets of the drinking water system and maintains a program of scheduled inspection and maintenance activities using a computerized Work Management System (WMS). OCWA implemented a new Workplace Management System (Maximo) in 2021, which better maintains and optimizes facility assets. All routine maintenance activities conducted at the water treatment plant accomplished in 2021.

Significant expenses incurred in the drinking water system include:

- Pressure switch on pump #1 failed and replaced.
- Lightning storm hit the reservoir and destroyed the isolator cards. Spares used and new spares ordered.
- Electrical storm damaged equipment at the reservoir. Replacement level sensor and two loop isolator cards ordered.
- UV #1 system failure. Refurbished PLC ordered.
- Problematic SCADA PLC exchanged in effort to resolve PLC issues.
- Problematic UV system PLC #1 exchanged in effort to resolve PLC issues.
- Changed SCADA and UV connectors on the PLCs.
- Main plant PLC changed out again. Outputs for pump starts were blown.

5.0 Drinking Water System Highlights

- The Ministry of the Environment, Conservation and Parks (MECP) performed an annual inspection on January 19, 2022. The inspection included a physical assessment of the Mattawa Water Treatment Plant and a document review. The inspection report is pending at the time of this report.
- SAI Global conducted an off-site external 12-month surveillance audit of the Mattawa Drinking Water System's Quality and Environmental Management System (QEMS). The system and processes associated with the QEMS evaluated on June 15, 2021 to ensure implementation of the Operational Plan and procedures and conformance to the Drinking Water Quality Management Standard version 2.0. No findings identified. Re-accreditation achieved on July 9, 2020.

6.0 Details on Notices of Adverse Test Results and Other Problems Reported to & Submitted to the Spills Action Center

Based on information kept on record by OCWA, the Mattawa Drinking Water System had no adverse water quality incidents reported to the MOE's Spills Action Centre (MOE SAC).

7.0 Microbiological Testing Performed During the Reporting Period

Summary of Microbiological Data

Sample Type	# of Samples	Range of <i>E. coli</i> Results (min to max)	Range of Total Coliform Results (min to max)	# of HPC Samples	Range of HPC Results (min to max)
Raw (Well No. 1)	53	0 to 0	0 to 0	0	N/A
Raw (Well No. 2)	53	0 to 0	0 to 0	0	N/A
Treated	53	0 to 0	0 to 0	53	0 to 13
Distribution	157	0 to 0	0 to 0	39	0 to 7

Maximum Allowable Concentration (MAC) for *E. coli* = 0 Counts/100 mL

MAC for Total Coliforms = 0 Counts/100 mL

"<" denotes less than the laboratory's method detection limit.

Notes: One microbiological sample is collected and tested each week from the raw (each well) and treated water supply. A total of three microbiological samples are collected and tested each week from the Mattawa distribution system.

Refer to *Appendix A* for a monthly summary of microbiological test results.

8.0 Operational Testing Performed During the Reporting Period

Summary of Raw Water Turbidity Data

Parameter	# of Samples	Range of Results (min to max)	Unit of Measure
Turbidity (Well No. 1)	12	0.25 to 0.33	NTU
Turbidity (Well No. 2)	12	0.25 to 0.31	

Summary of Chlorine Residual Data in the Distribution System

Parameter	No. of Samples	Range of Results (min to max)	Unit of Measure	Standard
Free Chlorine	364	0.21 to 1.91	mg/L	0.05

Note: A total of seven operational checks for chlorine residual in the distribution system are collected each week. Four (4) samples are tested one day and three (3) on a second day. The sample sets are collected at least 48-hours apart and samples collected on the same day are from different locations.

Refer to *Appendix B* for a monthly summary of the above operational data.

Summary of Nitrate & Nitrite Data (sampled at the water treatment plant)

Date of Sample	Nitrate Result Value	Nitrite Result Value	Unit of Measure	Exceedance
January 12	1.34	< 0.1	mg/L	No
April 27	1.59	< 0.1	mg/L	No
July 27	1.45	< 0.1	mg/L	No
October 13	1.45	< 0.1	mg/L	No

Maximum Allowable Concentration (MAC) for Nitrate = 10 mg/L

MAC for Nitrite = 1 mg/L

Summary of Total Trihalomethane Data (sampled in the distribution system)

Date of Sample	Result Value	Unit of Measure	Running Average	Exceedance
January 12	0.004	mg/L	0.003	No
April 27	0.004			
July 27	<0.002			
October 13	0.002			

Maximum Allowable Concentration (MAC) for Total Trihalomethanes = 0.100 mg/L (Four Quarter Running Average)

Summary of Total Haloacetic Acids Data (sampled in the distribution system)

Date of Sample	Result Value	Unit of Measure	Running Average	Exceedance
January 12	<0.002	mg/L	<0.002	No
April 27	<0.002			
July 27	<0.002			
October 13	<0.002			

Maximum Allowable Concentration (MAC) for Total Haloacetic Acids = 0.080 mg/L (Four Quarter Running Average)

Summary of Most Recent Lead Data under Schedule 15.1

(applicable to the following drinking water systems; large municipal residential systems, small, municipal residential systems, and non-municipal year-round residential systems)

The Mattawa DWS was eligible to follow the “Exemption from Plumbing Sampling” as described in section 15.1-5(9) and 15.1-5(10) of Schedule 15.1 of Ontario Regulation 170/03. The exemption applies to a drinking water system if, in two consecutive periods at reduced sampling, not more than 10% of all samples from plumbing exceed the maximum allowable concentration (MAC) of 10 ug/L or 0.01 mg/L for lead. As such, the system was required to test for total alkalinity and pH in one distribution sample collected during the periods of December 15 to April 15 (winter period) and June 15 to October 15 (summer period). This testing is required in every 12-month period with lead testing in every third 12-month period. The Town of Mattawa has been sampling lead every term.

Two rounds of lead, alkalinity and pH testing were carried out on April 14th and October 13th of 2021. Results are summarized in the table below.

Summary of Lead, pH & Alkalinity Data (sampled in the distribution system)

Date of Sample	# of Samples	Sample Location	Lead (mg/L)	Field pH	Alkalinity (mg/L)
April 14	1	Hydrant at Champlain & Ottawa St.	0.0001	7.30	44.3
April 14	1	Hydrant at 101 Bissett St.	0.0001	7.26	44.8
October 13	1	Hydrant at Gorman & Pine	0.0001	7.70	46.5
October 13	1	Hydrant at 1 st & Bissett	<0.0001	7.53	47.4

Most Recent Schedule 23 Inorganic Data Tested at the Water Treatment Plant

Parameter	Result Value	Unit of Measure	Standard	Exceedance
Antimony	<0.0005	mg/L	0.006	No
Arsenic	<0.001	mg/L	0.01	No
Barium	0.03	mg/L	1	No
Boron	0.02	mg/L	5	No
Cadmium	<0.0001	mg/L	0.005	No
Chromium	<0.001	mg/L	0.05	No
Mercury	<0.0001	mg/L	0.001	No
Selenium	<0.001	mg/L	0.01	No
Uranium	<0.001	mg/L	0.02	No

Note: Sample required every 36 months (sample date = September 8, 2021). Next sampling scheduled for September 2024.

Most Recent Schedule 24 Organic Data Tested at the Water Treatment Plant

TREATED WATER	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Alachlor (ug/L) - TW	2021/09/08	< 0.5	5.0	No	No
Atrazine + N-dealkylated metabolites (ug/L) -	2021/09/08	< 1.0	5.0	No	No
Azinphos-methyl (ug/L) - TW	2021/09/08	< 2.0	20.0	No	No
Benzene (ug/L) - TW	2021/09/08	< 0.5	1.0	No	No
Benzo(a)pyrene (ug/L) - TW	2021/09/08	< 0.01	0.01	No	Yes
Bromoxynil (ug/L) - TW	2021/09/08	< 0.5	5.0	No	No
Carbaryl (ug/L) - TW	2021/09/08	< 5.0	90.0	No	No
Carbofuran (ug/L) - TW	2021/09/08	< 5.0	90.0	No	No
Carbon Tetrachloride (ug/L) - TW	2021/09/08	< 0.2	2.0	No	No
Chlorpyrifos (ug/L) - TW	2021/09/08	< 1.0	90.0	No	No
Diazinon (ug/L) - TW	2021/09/08	< 1.0	20.0	No	No
Dicamba (ug/L) - TW	2021/09/08	< 1.0	120.0	No	No
1,2-Dichlorobenzene (ug/L) - TW	2021/09/08	< 0.4	200.0	No	No
1,4-Dichlorobenzene (ug/L) - TW	2021/09/08	< 0.4	5.0	No	No
1,2-Dichloroethane (ug/L) - TW	2021/09/08	< 0.2	5.0	No	No
1,1-Dichloroethylene (ug/L) - TW	2021/09/08	< 0.5	14.0	No	No
Dichloromethane (Methylene Chloride) (ug/L)	2021/09/08	< 4.0	50.0	No	No
2,4-Dichlorophenol (ug/L) - TW	2021/09/08	< 1.0	900.0	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L)	2021/09/08	< 1.0	100.0	No	No
Diclofop-methyl (ug/L) - TW	2021/09/08	< 0.9	9.0	No	No
Dimethoate (ug/L) - TW	2021/09/08	< 2.5	20.0	No	No
Diquat (ug/L) - TW	2021/09/08	< 5.0	70.0	No	No
Diuron (ug/L) - TW	2021/09/08	< 10.0	150.0	No	No
Glyphosate (ug/L) - TW	2021/09/08	< 10.0	280.0	No	No
Malathion (ug/L) - TW	2021/09/08	< 0.5	190.0	No	No
Metolachlor (ug/L) - TW	2021/09/08	< 1.0	50.0	No	No
Metribuzin (ug/L) - TW	2021/09/08	< 5.0	80.0	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) -	2021/09/08	< 0.5	80.0	No	No
Paraquat (ug/L) - TW	2021/09/08	< 1.0	10.0	No	No
PCB (ug/L) - TW	2021/09/08	< 0.1	3.0	No	No
Pentachlorophenol (ug/L) - TW	2021/09/08	< 1.0	60.0	No	No
Phorate (ug/L) - TW	2021/09/08	< 0.5	2.0	No	No
Picloram (ug/L) - TW	2021/09/08	< 5.0	190.0	No	No
Prometryne (ug/L) - TW	2021/09/08	< 0.25	1.0	No	No
Simazine (ug/L) - TW	2021/09/08	< 1.0	10.0	No	No
Terbufos (ug/L) - TW	2021/09/08	< 0.4	1.0	No	No
Tetrachloroethylene (ug/L) - TW	2021/09/08	< 0.3	10.0	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2021/09/08	< 1.0	100.0	No	No
Triallate (ug/L) - TW	2021/09/08	< 1.0	230.0	No	No
Trichloroethylene (ug/L) - TW	2021/09/08	< 0.3	5.0	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2021/09/08	< 0.7	5.0	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA) (	2021/09/08	< 10.0	100.0	No	No
Trifluralin (ug/L) - TW	2021/09/08	< 1.0	45.0	No	No
Vinyl Chloride (ug/L) - TW	2021/09/08	< 0.2	1.0	No	No

Note: Sample required every 36 months (sample date = September 8, 2021). Next sampling scheduled for September 2024.

Inorganic or Organic Test Results that Exceeded Half the Standard Prescribed in Schedule 2 of the Ontario Drinking Water Quality Standards.

No inorganic or organic parameter(s) listed in Schedule 23 and 24 of Ontario Regulation 170/03 exceeded half the standard found in Schedule 2 of the Ontario Drinking Water Standard (O. Reg. 169/03) during the reporting period.

Most Recent Sodium Data Sampled at the Water Treatment Plant

Date of Sample	# of Samples	Result Value	Unit of Measure	Standard	Exceedance
January 16, 2018	1	13	mg/L	20	No

Note: Sample required every 60 months. Next sampling scheduled for January 2023.

Most Recent Fluoride Data Sampled at the Water Treatment Plant

Date of Sample	# of Samples	Result Value	Unit of Measure	Standard	Exceedance
January 16, 2018	1	<0.15	mg/L	1.5	No

Note: Sample required every 60 months. Next sampling scheduled for January 2023.

Summary of Additional Testing Performed in Accordance with a Legal Instrument.

1. Schedule C, Section 1.6 of Municipal Drinking Water Licence #195-101 requires the UV disinfection system to maintain a continuous pass-through UV dose of at least 40 millijoules per square centimeter (mJ/cm²) throughout the life span of the UV lamps.

A primary disinfection system consisting of two (2) parallel UV reactors (duty and standby), each rated to provide dosage of 40 mJ/cm² at a peak flow of 76 L/s, equipped with automatic switchover controls. Ultra-Violet Light Transmittance (UVT) is continuously monitored. If the duty reactor fails the following would occur:

- the low lift pump would shut off
- the (failed) duty UV reactor's water inlet valve would close
- an alarm would be generated and sent through the emergency call-out system to alert operators of the failure of the duty reactor
- the standby UV reactor would switchover and begin producing water

Table 4 of the licence also requires the following parameters related to the UV disinfection system to be continuously monitored and recorded every four (4) hours:

UV Intensity(Calculated UV Dose) Measured continuously by the UV system. UV intensity is monitored by each individual unit's control module and should the light intensity of the unit fall outside the specified range, the unit will automatically shut down and a standby unit will be activated. Such an event will be recorded by the UV control system.

Flow Rate The maximum flow rate through each of the units is 76 L/s (see Schedule A of DWWP 195-201) which is continuously measured by the raw/treated water flow meters. One flow meter measures flow from both wells, while the other flow meter only measures Well 2 flows. Each UV unit is equipped with a flow control valve and an electronically activated water shut-off valve which will automatically close in the event of a UV equipment malfunction, loss of power or ceases to provide an appropriate level of disinfection.

UV Transmittance UVT is continuously monitored.

Lamp Status Monitored by each unit's control module. Should the lamp status fail, the unit will automatically shut down and a standby unit will be activated. Such an event will be recorded by the UV control system.



Mattawa Drinking Water System

Schedule 22

2021 SUMMARY REPORT

FOR MUNICIPALITIES

Schedule 22 - SUMMARY REPORTS FOR MUNICIPALITIES

1.0 Introduction

Drinking-Water System Name:	MATTAWA DRINKING WATER SYSTEM
Municipal Drinking Water Licence (MDWL) No.:	195-101-4 (issued December 3, 2021)
Drinking Water Work Permit (DWWP) No.:	195-201-3 (issued December 3, 2021)
Permit to Take Water (PTTW) No.:	1546-9GHPLM (issued February 27, 2014)
Period being reported:	January 1, 2021 to December 31, 2021

2.0 Requirements the System Failed to Meet

The last MECP inspection report dated January 19, 2022 is pending at the time of this report. Additional (if any) non-compliance findings will be included in next year's annual report.

According to information kept on record by OCWA; there was one non-compliance issue that occurred during 2021.

Loss of historical UV Transmittance (UVT) trending:

The in plant SCADA computer has never had the five minute UVT data trended. In recent years, OCWA took over operations of the Mattawa WTP and installed a remote monitoring system "Wonderware" shortly after. Wonderware has the capability to capture and store five minute readings for UVT; however, due to PLC malfunction at plant, Wonderware was down from November 11, 2021 to December 1, 2021. Therefore, there was not a historical record of five minute readings for UVT for the time period mentioned above. Wonderware data was not recoverable, contacted OCWA Service Desk. Due to COVID and global supply chain issues, ordering parts is becoming increasingly more difficult. As soon as replacement part arrived issue was repaired. The in plant SCADA did record the min/max/avg UVTs for the day from the Optiview unit onsite; however, the data was not stored in five minute trends on SCADA. February 18, 2022 programming updates made to SCADA to now include the five minute (min) trends with the UV intensity. Wonderware continues to function as back-up to SCADA.

3.0 Summary of Quantities and Flow Rates

Flow Monitoring

MDWL No. 195-101 requires the owner to install a sufficient number of flow measuring devices to permit the continuous measurement and recording of:

- the flow rate and daily volume of treated water that flows from the treatment subsystem the distribution system, and
- the flow rate and daily volume of water that flows into the treatment subsystem.

The flow monitoring equipment identified in the MDWL is present and operating as required. The flow meter is calibrated on an annual basis as specified in the manufacturers' instructions.

Mattawa Drinking Water System – 2021 Annual/Summary Report

Water Usage

The following water usage tables summarize the quantities and flow rates of water taken and produced during the 2021 reporting period, including total monthly volumes, average monthly volumes, maximum monthly volumes, and maximum flow rates.

Raw Water

2021 - 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)	37760	32493	35149	33075	37572	45986	41180	40656	32225	33314	37329	43771	450509
Average Volume (m ³ /d)	1218	1160	1134	1103	1212	1533	1328	1311	1074	1075	1244	1412	1234
Maximum Volume (m ³ /d)	1590	1397	1426	1378	1534	2012	1614	1696	1500	1337	1709	1749	2012
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)	4768	4825	5927	4413	4738	4279	5132	5617	4264	4066	4941	4429	5927
PTTW - Maximum Allowable Flow Rate (L/min)	3183	3183	3183	3183	3183	3183	3183	3183	3183	3183	3183	3183	3183

Well #1 experiences false peaks.

2021 - 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)	4917	4737	5684	5459	4767	2505	2898	4942	4693	3810	3641	5965	54019
Average Volume (m ³ /d)	159	169	183	182	154	83	93	159	156	123	121	192	148
Maximum Volume (m ³ /d)	437	449	461	434	431	427	385	445	420	438	590	429	590
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)	1349	1241	1328	1315	1336	1332	1742	1742	1335	1296	1351	1316	1742
PTTW - Maximum Allowable Flow Rate (L/min)	1364	1364	1364	1364	1364	1364	1364	1364	1364	1364	1364	1364	1364

Well #2 only had a few potentially false peaks on start up.

2021 - 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)	42678	37229	40833	38534	42339	48490	44078	45598	36918	37124	40970	49736	504528
Average Volume (m ³ /d)	1377	1330	1317	1284	1366	1616	1422	1471	1231	1198	1366	1604	1382
Maximum Volume (m ³ /d)	1693	1548	1655	1601	1664	2057	1681	1827	1912	1441	1829	2006	2057
PTTW - Maximum Allowable Volume (m ³ /day)	6546	6546	6546	6546	6546	6546	6546	6546	6546	6546	6546	6546	6546

The system's Permit to Take Water #1546-9GHPLM, allows the Municipality to withdraw water at the following rates:

Well No. 1: 4582.08 m³/day / 3183 L/minute

Well No. 2: 1964.16 m³/day / 1364 L/minute

Total Combined Daily Volume: 6546.24 m³/day

The system's Permit to Take Water #1546-9GHPLM allows the municipality to withdraw a maximum volume of 4582.08 m³ from Well No. 1 and 1964.16 m³ from Well No. 2 each day with a maximum of 6456.24 m³/d combined. A review of the raw water flow data indicates that the system never exceeded this allowable limit having a maximum volume of 2057 m³ in June 2021. The Permit also allows a maximum flow rate of 3183 L/minute for Well No. 1 and 1364 L/minute for Well No. 2. Since VFD installed, Well 2 only has the odd potentially false peak on start up. Well 1 experiences false peaks on start-up and switch over, having a maximum recorded flow of 5927 L/minute in March 2021 for Well 1 and 1742 L/minute in July/August 2021 for Well 2.

Treated Water

2021 - Monthly Summary of Treated Water Supplied to the Distribution System

Regulated by Municipal Drinking Water Licence (MDWL) #195-101 - Issue 4, issued December 3, 2021

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m ³)	42678	37229	40833	38534	42339	48490	44078	45598	36918	37124	40970	49736	504528
Average Volume (m ³ /d)	1377	1330	1317	1284	1366	1616	1422	1471	1231	1198	1366	1604	1382
Maximum Volume (m ³ /d)	1693	1548	1655	1601	1664	2057	1681	1827	1912	1441	1829	2006	2057
MDWL - Rated Capacity (m ³ /day)	6540	6540	6540	6540	6540	6540	6540	6540	6540	6540	6540	6540	6540

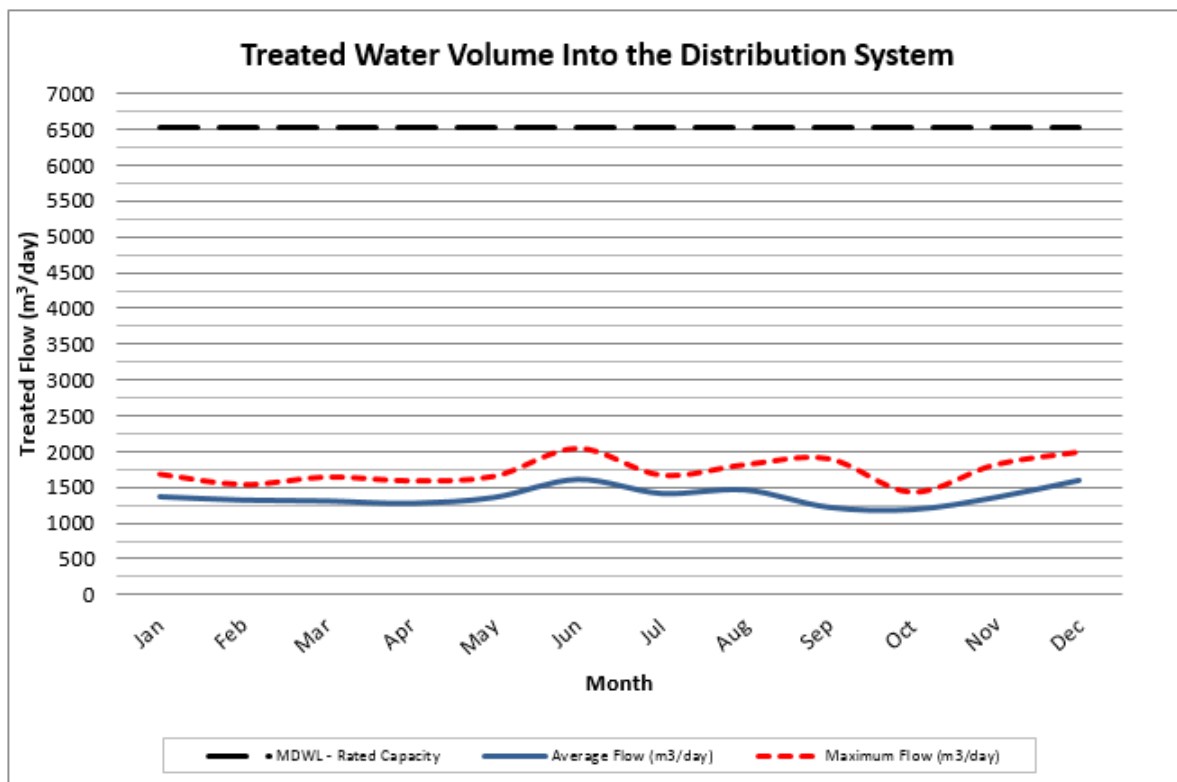
Schedule C, Section 1.1 of MDWL No. 195-101 states that the maximum daily volume of treated water that flows from the treatment subsystem to the distribution system shall not exceed a maximum flow rate of 6540 m³/day. The Mattawa DWS complied with this limit having a recorded maximum volume of 2057 m³ in June 2021, which is 31.5% of the rated capacity.

Figure 1 compares the average and maximum flow rates into the distribution system to the rated capacity of the system identified in the MDWL. This information enables the Owner to assess the system's existing and future planned water usage needs.

Comparison of the Flow Summary to the Systems Licence & Permit

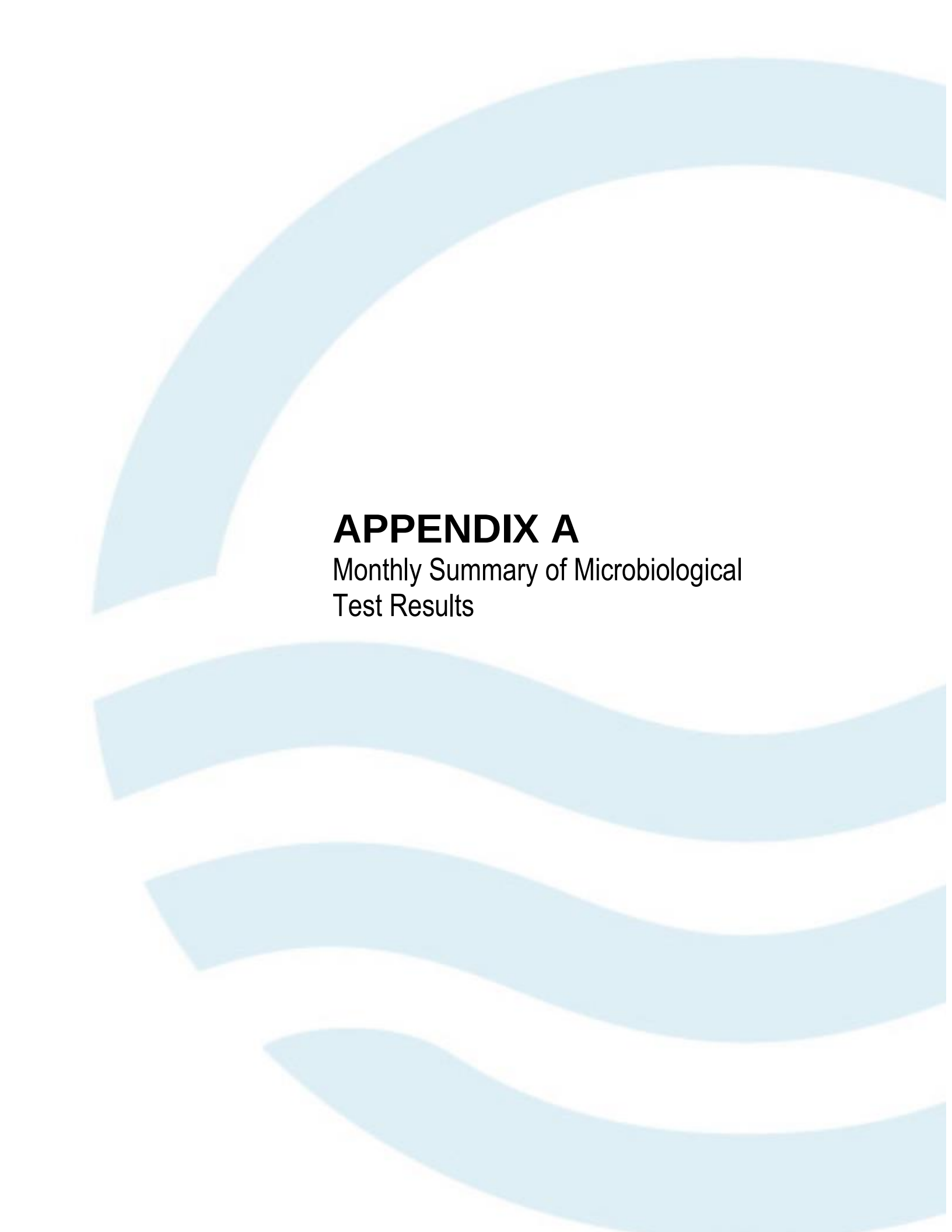
Rated Capacity of the Plant (MDWL)	6540 m ³ /day	
Average Daily Flow for 2021	1382 m ³ /day	21.1% of the rated capacity
Maximum Daily Flow for 2021	2057 m ³ /day	31.5% of the rated capacity
Total Treated Water Produced in 2021	504,528 m ³	

The Mattawa Water Treatment Plant is rated to produce 6540 cubic meters of water per day as specified in the system's Municipal Drinking Water Licence. The average daily flow was 1382 m³ per day, which is 21.1% of the rated capacity. This information clearly shows that the plant is well within its rated capacity and is able to meet current demands of consumers.



CONCLUSION

In 2021, according to information kept on record by OCWA, the Mattawa DWS provided safe and reliable drinking water to the community of Mattawa. The system complied with the regulatory requirements of the Safe Drinking Water Act and its Regulations and met the terms and conditions outlined in its site specific drinking water works permit and municipal drinking water licence. With the exception of one non-compliance issue noted above in Section 2.0. However, the annual MECP inspection took place on January 19, 2022 and the inspection report is pending at the time of this report. Furthermore, the Mattawa DWS did not have any adverse water quality incidents reported to the MOE's Spills Action Centre.



APPENDIX A

Monthly Summary of Microbiological Test Results

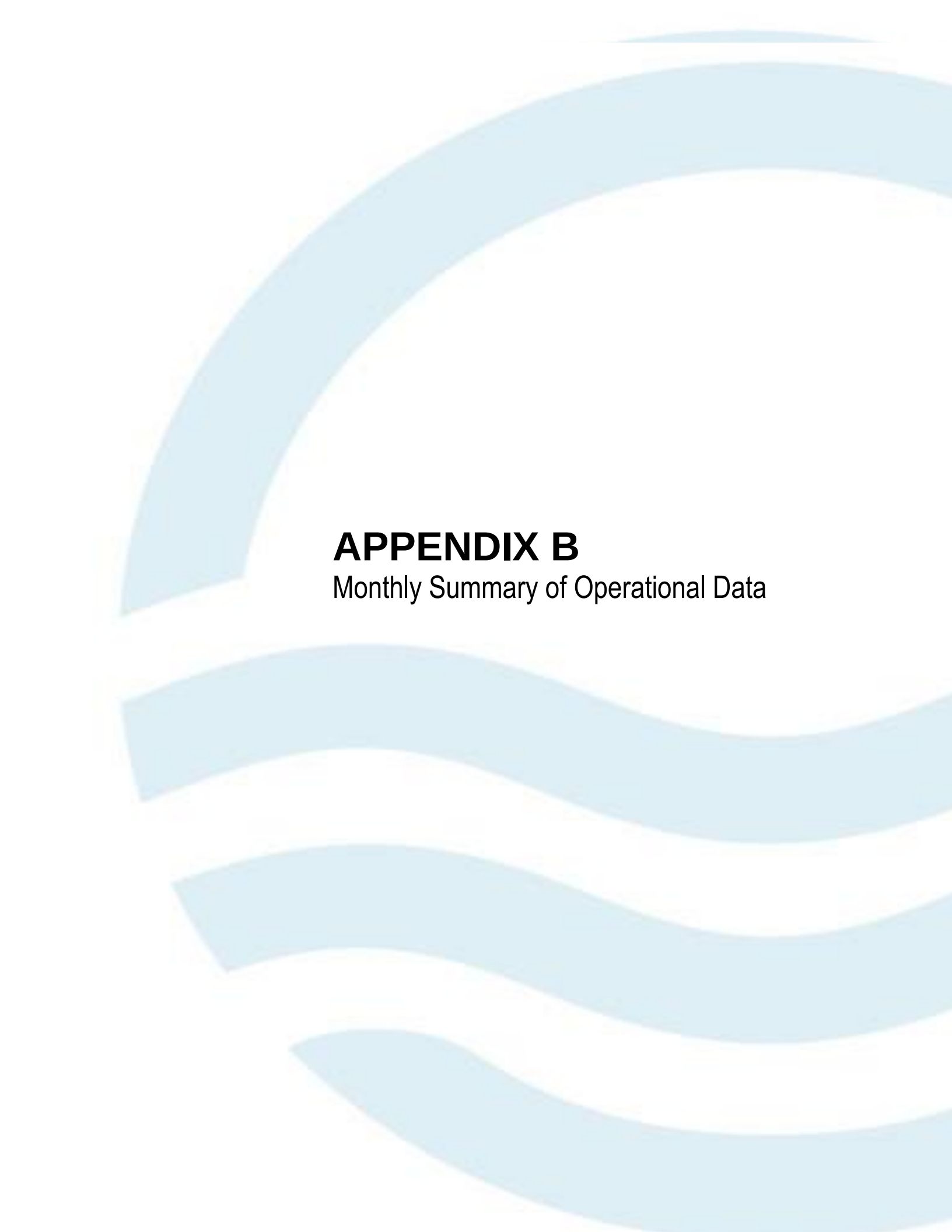
Mattawa Drinking Water System
Monthly Summary of Microbiological Test Results

From: 01/01/2021 to 31/12/2021

Report extracted 01/19/2022 12:18

Facility Org Number: 1517
Facility Works Number: 210001905
Facility Name: MATTAWA DRINKING WATER SYSTEM
Service Population: 2150.0
Total Design Capacity: 6540.0 m3/day

	01/2021	02/2021	03/2021	04/2021	05/2021	06/2021	07/2021	08/2021	09/2021	10/2021	11/2021	12/2021	Total	Avg	Max	Min
DW / E. Coli - cfu/100mL																
Count Lab	12	13	15	12	12	15	12	12	15	12	12	15	157			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
DW / HPC - cfu/mL																
Count Lab	3	3	6	3	3	3	3	3	3	3	3	3	39			
Max Lab	1	1	0	4	1	5	0	0	0	0	7	0			7	
Mean Lab	0.333	0.333	0	1.333	0.333	3	0	0	0	0	2.667	0		0.615		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
DW / Total Coliform: TC - cfu/100mL																
Count Lab	12	13	15	12	12	15	12	12	15	12	12	15	157			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
TW / E. Coli: EC - cfu/100mL																
Count Lab	4	4	5	4	4	5	4	4	5	5	4	5	53			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
TW / HPC - cfu/mL																
Count Lab	4	4	5	4	4	5	4	4	5	5	4	5	53			
Max Lab	4	2	6	1	0	2	1	1	2	13	5	1			13	
Mean Lab	1	0.5	1.8	0.25	0	0.8	0.25	0.25	0.4	3.6	1.5	0.4		0.943		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
TW / Total Coliform: TC - cfu/100mL																
Count Lab	4	4	5	4	4	5	4	4	5	5	4	5	53			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Well #1 / E. Coli: EC - cfu/100mL																
Count Lab	4	4	5	4	4	5	4	4	5	5	4	5	53			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Well #1 / Total Coliform: TC - cfu/100mL																
Count Lab	4	4	5	4	4	5	4	4	5	5	4	5	53			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Well #2 / E. Coli: EC - cfu/100mL																
Count Lab	4	4	5	4	4	5	4	4	5	5	4	5	53			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Well #2 / Total Coliform: TC - cfu/100mL																
Count Lab	4	4	5	4	4	5	4	4	5	5	4	5	53			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0



APPENDIX B

Monthly Summary of Operational Data

Mattawa Drinking Water System
Monthly Operational Data

Report extracted 02/15/2022 15:41

From: 01/01/2021 to 31/12/2021

Facility Org Number: 1517
Facility Works Number: 210001905
Facility Name: MATTAWA DRINKING WATER SYSTEM
Total Design Capacity: 6540.0 m3/day

	01/2021	02/2021	03/2021	04/2021	05/2021	06/2021	07/2021	08/2021	09/2021	10/2021	11/2021	12/2021	Total	Avg	Max	Min
DW / CI Residual: Free DW1 - mg/L																
Count IH	8	8	9	9	8	9	9	8	9	9	8	10	104			
Total IH	4.98	4.27	5.97	6.16	4.91	5.2	4.18	3.59	4.78	5.32	7.42	9.69	66.47			
Max IH	0.78	0.6	1.22	0.79	1.14	1.04	0.71	0.67	1.08	0.79	1.76	1.91			1.91	
Mean IH	0.622	0.534	0.663	0.684	0.614	0.578	0.464	0.449	0.531	0.591	0.928	0.969		0.639		
Min IH	0.42	0.4	0.23	0.58	0.31	0.44	0.29	0.25	0.26	0.35	0.5	0.46				0.23
DW / CI Residual: Free DW2 - mg/L																
Count IH	8	8	9	9	8	9	9	8	9	9	8	10	104			
Total IH	5.44	4.56	6.23	7.09	5.32	5.58	4.49	3.88	5.97	6.22	7.38	9.75	71.91			
Max IH	1.11	0.73	1.19	1.06	1.03	1.02	0.61	0.64	1.2	1.11	1.61	1.78			1.78	
Mean IH	0.68	0.57	0.692	0.788	0.665	0.62	0.499	0.485	0.663	0.691	0.923	0.975		0.691		
Min IH	0.39	0.38	0.41	0.65	0.3	0.34	0.35	0.35	0.21	0.39	0.4	0.54				0.21
DW / CI Residual: Free DW3 - mg/L																
Count IH	8	8	9	9	8	9	9	8	9	9	8	10	104			
Total IH	5.18	4.25	5.59	6.48	4.65	5.26	5.07	3.89	5.43	6.05	7.29	9.53	68.67			
Max IH	0.81	0.82	0.91	1.19	0.72	0.99	0.79	0.65	1.03	0.95	1.46	1.63			1.63	
Mean IH	0.648	0.531	0.621	0.72	0.581	0.584	0.563	0.486	0.603	0.672	0.911	0.953		0.66		
Min IH	0.41	0.38	0.3	0.42	0.4	0.38	0.39	0.31	0.31	0.4	0.61	0.57				0.3
DW / CI Residual: Free DW4 - mg/L																
Count IH	4	4	5	4	4	5	4	4	5	4	4	5	52			
Total IH	2.58	2.57	3.06	2.72	2.32	2.79	2.05	1.93	2.58	2.49	3.81	4.98	33.88			
Max IH	0.85	0.77	0.91	0.91	0.69	0.95	0.71	0.6	0.59	0.93	1.58	1.67			1.67	
Mean IH	0.645	0.643	0.612	0.68	0.58	0.558	0.513	0.482	0.516	0.623	0.953	0.996		0.652		
Min IH	0.51	0.54	0.35	0.5	0.45	0.39	0.4	0.41	0.44	0.48	0.48	0.6				0.35
Well #1 / Turbidity - NTU																
Count IH	1	1	1	1	1	1	1	1	1	1	1	1	12			
Max IH	0.28	0.3	0.3	0.33	0.32	0.29	0.3	0.28	0.28	0.27	0.28	0.25			0.33	
Mean IH	0.28	0.3	0.3	0.33	0.32	0.29	0.3	0.28	0.28	0.27	0.28	0.25		0.29		
Min IH	0.28	0.3	0.3	0.33	0.32	0.29	0.3	0.28	0.28	0.27	0.28	0.25				0.25
Well #2 / Turbidity - NTU																
Count IH	1	1	1	1	1	1	1	1	1	1	1	1	12			
Max IH	0.25	0.28	0.31	0.29	0.3	0.31	0.31	0.31	0.3	0.27	0.26	0.31			0.31	
Mean IH	0.25	0.28	0.31	0.29	0.3	0.31	0.31	0.31	0.3	0.27	0.26	0.31		0.29		
Min IH	0.25	0.28	0.31	0.29	0.3	0.31	0.31	0.31	0.3	0.27	0.26	0.31				0.25