



# 2022 ANNUAL REPORT

## Pickle Lake Drinking Water System

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# Introduction

The **Pickle Lake Drinking Water System** (DWS# 210001157) is obligated to meet the requirements of Ontario's *Safe Drinking Water Act (the Act)* and the regulations therein, in addition to requirements associated with system approvals. Specifically, this system must meet extensive treatment and testing requirements in order to ensure that human health is protected.

This Annual Report has been prepared in accordance with both Schedule 22 and section 11 of Ontario Regulation 170/03. In this manner, the Summary Reports for Municipalities required by Schedule 22 and the Annual Reports required by section 11 have been consolidated into a single document. This report is intended to brief the ownership and users of the Pickle Lake Drinking Water System on the system's performance over the past calendar year (January 1, 2022 to December 31, 2022).

A summary of this drinking water system is difficult to produce without the use of technical terms, some of which the reader may not be familiar with. It is recommended that the reader refer to the *Technical Support Document for Ontario Drinking Water Standards, Objectives, and Guidelines*. Within this document the reader will find information on provincial water quality standards, objectives and guidelines, rationale for monitoring, and a brief description of water quality parameters. This document can be found at the following website address:

<https://www.ontario.ca/document/technical-support-document-ontario-drinking-water-standardsobjectives-and-guidelines>

Users of this drinking water system are also encouraged to contact a representative of the Township of Pickle Lake for assistance in interpreting this Annual Report.

## Report Availability

In accordance with section 11 of O. Reg. 170/03 this Annual Report must be given, without charge, to every person who requests a copy. Effective steps must also be taken to advise users of water from the system that copies of the report are available, without charge, and of how a copy may be obtained. This Annual Report shall be made available for inspection by the public at the following locations:

- (1) Town Office, 2 Anne Street, Pickle Lake
- (2) Township of Pickle Lake Website ([www.picklelake.org](http://www.picklelake.org))

In accordance with Schedule 22 of O. Reg. 170/03, this Annual Report must be given to the members of the municipal council. Section 19 (Standard of Care, Municipal Drinking-Water System) of *the Act* also places certain responsibilities upon those municipal officials who oversee an accredited operating authority or exercise decision-making authority over a system. Such municipal officials would be exercising diligence by reviewing this Annual Report.

# System Overview

Classified as a large municipal residential system, this drinking water system (DWS) provides a potable water supply to the community of Pickle Lake. This DWS is composed of two (2) active groundwater wells (Wells 1 & 2), the Pickle Lake Water Tower and the Pickle Lake distribution system. As an operational subsystem, the Pickle Lake distribution system is owned and operated by the Corporation of the Township of Pickle Lake. The active wells and water tower comprise the Pickle Lake Well Supply System (treatment subsystem), which is also owned and operated by the Township of Pickle Lake. As a groundwater source, aquifer overburden and soil act as an effective filter that removes micro-organisms and other particles by straining and antagonistic effect, to a level where the water supply may already be potable, but disinfection is required as an additional health risk barrier. All active wells utilize free chlorine residual disinfection to achieve primary disinfection.

Wells 1 and 2 are located within 15 meters of each other, on a hill above the community and obtain groundwater from the same aquifer. A single multi-stage vertical turbine pump at each active well is used to draw water from the aquifer. Each well also contains a disinfectant chemical feed system, such that disinfectant is injected as raw groundwater is pumped from the well and directed to a common (shared) discharge into the chlorine contact loop. The chlorine contact loop is designed to provide the necessary amount of time required to achieve primary disinfection and is the last treatment step prior to water entering the distribution system. The wells include electrical equipment to allow the use of a standby power system during prolonged power interruptions, consisting of a portable diesel generator.

The wells typically operate on a timer, and begin filling the water tower at 8:45 am daily, and continue filling until the water level in the tower reaches the full set point. Alternately, if the water level in the tower reaches the start set point before 8:45 am, this too would initiate a fill cycle. The water tower provides stable system pressure and provides water during power outages and periods of high-water demand, such as fire flows. The water tower has a capacity of 888 m<sup>3</sup> and is filled using timers in conjunction with programmable set points. A recirculation pump at the facility is used to prevent damage in the winter caused by water freezing.

The Pickle Lake distribution system is comprised of various sized diameter water mains consisting of cast iron, ductile iron, high density polyethylene and PVC, totalling approximately 6.6 km in length and including 31 fire hydrants. Secondary disinfection requirements in the distribution system are achieved by the maintenance of a residual as free chlorine.

# System Overview (cont.)

## System Expenses

In accordance with section 11 of O. Reg. 170/03, this Report must describe any major expenses incurred during the reporting period to install, repair or replace required equipment. Such major expenses for the Pickle Lake DWS are summarized in **Table 1**. Other expenses have also been provided within the table, including those expenses related to equipment inspections and acquiring spare equipment or parts.

**Table 1: Pickle Lake DWS 2022 Expenses**

Dept	Name	Expenses \$
	3300 Water	
01-33-00-50001	Wages	235941.46
01-33-00-50003	Cleaning Wages	91.44
01-33-00-50031	CPP - Employer Expense	8499.12
01-33-00-50032	Employment Insurance - Employer Cost	3355.06
01-33-00-50096	Travel Expenses/Conferences	5908.65
01-33-00-50100	Employer Health Tax (EHT) - Employer Contribution	2597.91
01-33-00-50103	Manulife Group Plan	6863.16
01-33-00-50104	Other Benefits - Employer Contribution	720.42
01-33-00-50109	Internet	1220.54
01-33-00-50110	Hydro	12007.53
01-33-00-50112	Fuel - Building	11535.76
01-33-00-50113	Fuel - Vehicle	6792.39
01-33-00-50120	Telephone	4009.31
01-33-00-50123	Postage & Express Freight	8026.3
01-33-00-50124	Office Supplies	1687.03
01-33-00-50155	Penalty / Interest Charges	71.55
01-33-00-50161	Training	3441.92
01-33-00-50165	Publications, Subscriptions & Sundry	224.23
01-33-00-50181	Equipment Purchase - Non-Office	75.11
01-33-00-50183	Equipment Maintenance & Repair Non-Office	2484.87
01-33-00-50185	Equipment Lease/Rent - Non-Office - Contracts	300
01-33-00-50192	Maintenance Supplies	6764.22
01-33-00-50196	Chemicals	16693.18
01-33-00-50197	Laboratory Services - Testing	13155.61
01-33-00-50203	Service & Rents - Other	10585.36
01-33-00-50221	Vehicle Maintenance & Repair	1391.45
	7300 Water	
01-73-0070030	Water Tower Repair Grant	21133.18
<b>Dept</b>	<b>Totals</b>	<b>385576.76</b>

# Water Quality

In accordance with section 11 (Annual Reports) of O.Reg. 170/03, this Annual Report must summarize the results of tests required by regulations, approvals, and orders. The results of such water quality analyses are provided within the following sections.

## Operational Parameters

The Pickle Lake DWS employs an in-house operational parameter testing program which includes analyses of water quality indicators beyond that required by *the Act*. Such analyses are conducted on source and treated water and include testing for turbidity and residual free chlorine. Approximately 1,000 routine in-house water quality tests were conducted with respect to this system in 2022. In accordance with Schedules 6 & 7 of O. Reg. 170/03, the free chlorine residual required to achieve primary disinfection is continuously monitored at the active wells. Additionally, raw and treated water turbidity are analyzed on a weekly basis at each well. The results of continuous monitoring and in-house analyses are provided in Table 2 for the 2022 calendar year.

**Table 2: Pickle Lake DWS 2022 operational Parameters**

Parameters	Units	Low	Max	Avg
Turbidity Well 1	NTU	0.10	2.16	0.36
Turbidity Well 2	NTU	0.10	0.20	0.16
Free-Chlorine-Residual-Pre-Contact	Mg/L	1.08	1.50	1.30
Free-Chlorine-Residual-Post-Contact	Mg/L	0.69	0.87	0.79
Free-Chlorine-Residual-Distribution	Mg/L	0.58	0.85	0.64

1. FCR = Free Chlorine Residual
2. Minimum, maximum, and average values for the parameter turbidity (raw) are derived from the results of in-house analyses (i.e. bench tests). Minimum and maximum values are expressed as the minimum and maximum monthly averages of these results.  
Average values for free chlorine residual are derived from daily instantaneous readings of continuous monitoring equipment. Minimum and maximum values are expressed as minimum and maximum monthly averages, and results greater than the maximum value and less than the minimum value do occur within a given year. Refer to the Compliance section for more information concerning instances of low free chlorine residual and inadequate primary disinfection.
- 3.

## Water Quality (cont.)

### Microbiological Parameters

Microbiological analyses are performed on raw, treated, and distribution system water. A total of 283 routine water samples were collected for bacteriological analysis by a Testmark laboratory in 2022, as required by Schedule 10 of O. Reg. 170/03. These water samples were collected on a weekly basis, and included tests for E. coli, total coliforms, and heterotrophic plate counts. Results from both routine and non-routine microbiological analyses are provided in **Table 3**. All results were below the associated Ontario Drinking Water Quality Standards.

**Table 3: Pickle Lake DWS 2022 Microbiological Parameters**

Sample Type	Number of Samples	EC2 Results (CFU/100ml)	Total Coliform Results (CFU/100ml)	HPC results (CFU/ml)
Raw Well1	52	Absent	Absent	Absent
Raw Well2	52	Absent	Absent	Absent
Treated Well 1+2	52	Absent	Absent	10 (April 11 <sup>th</sup> )
Distribution-Routine	112	Absent	Absent	20 (April 11 <sup>th</sup> ) 40 (June 21 <sup>st</sup> ) 120 & 40 (July 19 <sup>th</sup> ) >2000 (December 29 <sup>th</sup> )

1. The Ontario Drinking Water Quality Standard for E. Coli and Total Coliforms in a treated or distribution sample is 'not detectable'. The presence of either parameters in a treated or distribution sample is an exceedance.
2. EC = E. Coli; TC = Total Coliforms; HPC = Heterotrophic Plate Count.
3. The Ontario Drinking Water Quality Standard for E. Coli and Total Coliforms in a treated or distribution sample is 'not detectable'. The presence of either parameters in a treated or distribution sample is an exceedance.
4. EC = E. Coli; TC = Total Coliforms; HPC = Heterotrophic Plate Count.

# Water Quality (cont.)

## Nitrate and Nitrite

Treated water is tested for nitrate and nitrite concentrations on a quarterly basis in accordance with Schedule 13 of O. Reg. 170/03. Nitrate and nitrite results are provided in **Table 4**. All results were below the associated Ontario Drinking Water Quality Standards (ODWQS). All results are provided in mg/L.

**Table 4: Pickle Lake DWS 2022 Nitrate and Nitrite**

Sample Date	Parameter	ODWQS (mg/L)	Treated Water
Jan. 18 <sup>th</sup> 2022	Nitrate	10	0.22
	Nitrite	1	<0.01
	Nitrate + Nitrite	10.0	0.23
April 21 <sup>st</sup> 2022	Nitrate	10	<0.02
	Nitrite	1	<0.01
	Nitrate + Nitrite	10.0	0.03
Aug. 18 <sup>th</sup> 2022	Nitrate	10	0.17
	Nitrite	1	<0.01
	Nitrate + Nitrite	10.0	0.18
Dec. 1 <sup>st</sup> , 2022	Nitrate	10	0.22
	Nitrite	1	<0.01
	Nitrate + Nitrite	10.0	0.23

## Inorganic Parameters

Inorganic parameters are sampled every three (3) years in treated water from each well in accordance with Schedules 13 and 23 of O. Reg. 170/03. With respect to the Pickle Lake DWS, required sampling for inorganic parameters was previously conducted on January 25, 2022. All inorganic parameter sampling results are provided in **Table 5**; since the two wells share a common discharge, there is only one treated water sample point. All results were below the associated Ontario Drinking Water Quality Standards (ODWQS).

**Table 5: Pickle Lake DWS Inorganic Parameters**

Parameter Treated Water	Units	Result	ODWQS
Antimony	µg/L	<0.5	0.60
Arsenic	µg/L	<1	1.0
Barium	µg/L	18	10
Boron	µg/L	3	50
Cadmium	µg/L	<0.1	0.10
Chromium	µg/L	<1	1.0
Mercury	µg/L	<0.1	0.10
Selenium	µg/L	<0.2	1.0
Uranium	µg/L	<1	2.0

# Water Quality (cont.)

## Sodium and Fluoride

Sodium and fluoride are sampled every five (5) years in treated water in accordance with Schedules 13 and 23 of O. Reg. 170/03. With respect to the Pickle Lake DWS, required sampling for sodium and fluoride was previously conducted on June 06, 2021 and next due is on June 2026. All sodium and fluoride sampling results are provided in **Table 6**. All results were below the associated Ontario Drinking Water Quality Standards.

**Table 6: Pickle Lake DWS Sodium & Fluoride**

Parameter (Treated Water)	Units	Result	ODWQS
Fluoride	mg/L	<0.05	N/A
Sodium	ug/L	2720	20mg/L

This value for the parameter sodium is not a water quality standard as prescribed in O. Reg. 169/03, although an exceedance of this value is associated with reporting requirements and corrective actions.

## Lead Sampling

The Pickle Lake DWS previously qualified for reduced lead sampling and ultimately became exempt from sampling at plumbing locations, in accordance with Schedule 15.1 of O.Reg. 170/03. Two (2) distribution system hydrant samples must now be collected every year and analyzed for pH and alkalinity. Additionally, these distribution system samples must be analyzed for lead in every third 12-month period after the plumbing sample exemption was activated. **Table 7** summarizes the results of community lead sampling and related required tests.

**Table 7: Pickle Lake DWS 2022 Lead & Alkalinity Sampling**

Sample Date	Sample Location	pH	Alkalinity (mg/L as CaCO <sub>3</sub> )	Lead Result (µg/L)
<b>Jan. 18<sup>th</sup> 2022</b>	Distribution (46 Koval St.)	7.63	172	0.30
<b>September 7<sup>th</sup> 2022</b>	Distribution (Hydrant - 28)	7.18	181	0.20



## Water Quality (cont.)

### Trihalomethanes

Trihalomethanes (THMs) are required to be sampled on a quarterly basis from the farthest point in the distribution system, in accordance with Schedule 13 of O. Reg. 170/03. Compliance with the provincial standard for trihalomethane concentrations is determined by calculating a running annual average (with a Maximum Acceptable Concentration of 0.100 mg/L or 100 µg/L). In 2022, the running annual average was 23.2µg/L. Total THM (TTHM) results are summarized in **Table 8**.

**Table 8: Pickle Lake DWS 2022 Trihalomethanes**

Sample Date	TTHM Results (ug/L)	ODWQS
2013 Average	28.4	100
2014 Average	22.4	100
2015 Average	24.8	100
2016 Average	26.1	100
2017 Average	19.1	100
2018 Average	23.4	100
2019 Average	26.1	100
2020 Average	24.7	100
2021 Average	19.7	100
2022 Average	23.2	100

# Water Quality (cont.)

## Organic Parameters

Organic parameters are sampled every year in treated water from common well discharge in accordance with Schedules 13 and 24 of O. Reg. 170/03. These parameters include various acids, pesticides, herbicides, PCBs, volatile organics, and other organic chemicals. With respect to the Pickle Lake DWS, sampling for organic & inorganic parameters was conducted on January 25, 2022, provided in Table 2.1. All results were below the associated Ontario Drinking Water Quality Standards.

Parameter	Result(ug)	Parameter	Result(ug)
2,3,4,6-Tetrachlorophenol	<0.3	Desethyl atrazine	<0.325
2,4,6-Trichlorophenol	<0.2	Diazinon	<0.195
2,4-Dichlorophenol	<0.2	Dimethoate	<0.195
Pentachlorophenol	<0.3	Malathion	<0.195
Carbaryl	<2	Metolachlor	<0.13
Carbofuran	<2	Metribuzin (Sencor)	<0.13
Diuron	<8	Phorate	<0.13
Diquat	<0.2	Prometryne	<0.065
Paraquat	<0.2	Simazine	<0.195
Free Residual Chlorine	0.78	Terbufos	<0.13
Glyphosate	<20	Triallate	<0.13
Glyphosate (Dup)	<20	Trifluralin	<0.13
Antimony	<0.5	Benzo(a)pyrene	<0.01
Arsenic	<1	Decachlorobiphenyl (Surr.)	107
Barium	18	Total PCBs	<0.06
Boron	3	2,4-D	<0.392
Cadmium	<0.1	Bromoxynil	<0.105
Chromium	<1	Dicamba	<0.0916
Mercury	<0.1	Dichlorophenyl acetic acid (Surr.)	89.4
Selenium	<0.2	Diclofop-methyl	<0.131
Uranium	<1	MCPA	7.1
Alachlor	<0.26	Picloram	<0.0916
Atrazine	<0.26	Atrazine + N-dealkylated metabolites	<0.5
Azinphos-methyl (Guthion)	<0.195	1,1-Dichloroethylene	<0.3
Chlorpyrifos (Dursban)	<0.195	1,2-Dichlorobenzene	<0.3
Chlorobenzene	<0.5	1,2-Dichloroethane	<0.3
Dichloromethane	<1	1,4-Dichlorobenzene	<0.3
Tetrachloroethylene	<0.3	1-Bromo-4-fluorobenzene (Surr.)	96.5
Toluene-d8 (Surr.)	118	Benzene	<0.1
Trichloroethylene	<0.2	Carbon tetrachloride	<0.2
Vinyl chloride	<0.1		

# Flows

Throughout the reporting period, the Pickle Lake DWS supplied 206,978.8 m<sup>3</sup> of treated water to consumers. On an average day in 2022, 945 m<sup>3</sup>/ day of treated water was supplied to the community. The average daily flow in 2022 represents 38.50% of the combined rated capacity of the Pickle Lake DWS (3,931.20m<sup>3</sup>/day). The maximum daily flow in 2022 was 1512m<sup>3</sup>/day, which represents 38.50% of the combined rated capacity of the Pickle Lake DWS. For rated capacity, a new permit to take water was issued on May 24, 2018 (#8125-AZMH2U) and expires on September 30, 2025. **Table 10** provide a flow summary and capacity assessment for each relevant location. The reader is asked to consult **Appendix A: Table A1** for a complete summary of 2022 flow data and **Table A2** for the Permit to Take Water Maximum Parameters.

**Table 10: Pickle Lake DWS 2022 Flow Statistics**

Location	Rated Capacity <sup>1</sup> (m <sup>3</sup> /day)	Total Annual Treated Water Flow (m <sup>3</sup> /year)	Average Treated Water Daily Flow (m <sup>3</sup> /day)	Maximum Treated Water Daily Flow (m <sup>3</sup> /day)	Capacity Assessment (Average Flows)	Capacity Assessment (Maximum Flows)
Well 1	2358.78	197,953	550	1512	23.31%	64.10%
Well 2	1572.48	142,111	394	1500	25.05%	95.36%
All Wells	3931.20	340,063	945	1512	24.04%	38.50%

## Flow Comparisons

There has been a significant increase in the amount of treated water supplied in recent years when compared to historic flows. In 2013, the Pickle Lake DWS produced 81,060 m<sup>3</sup> of treated water. By comparison, in 2022 the Pickle Lake DWS produced 205,977 m<sup>3</sup> of treated water. This represents an 154% increase in the amount of water supplied compared to 2013. The reader is asked to consult **Appendix A: Table A3** for a summary of historical flow data.

## Chemical Consumptions

In accordance with section 11 of O. Reg. 170/03, this report must include a list of water treatment chemicals used by the system during the period covered by the report. **Table 11** summarizes total chemical consumptions for each treatment chemical used at the Pickle Lake DWS. All chemicals used in the treatment process are NSF/ANSI 60 certified for use in potable water, as required by system approvals.

**Table 11: Pickle Lake DWS 2022 Chemical Consumption**

Chemical Used	Liters Used
sodium hypochlorite 12%	8,447.5

# Compliance

The Township of Pickle Lake employs an operational strategy that is committed to achieving the following goals:

- 1) Providing a safe and reliable supply of drinking water to the community of Pickle Lake.
- 2) Meeting or exceeding all applicable legislative and regulatory requirements.
- 3) Maintaining and continually improving the operation and maintenance of the system; and,
- 4) Maintaining and operating the Pickle Lake Drinking Water System in a responsible manner in accordance with documented quality management system policies and procedures.

The following sections will summarize incidents of adverse water quality and noncompliance that occurred during the reporting period. The Township of Pickle Lake is committed to employing timely and effective corrective actions to prevent recurrence of all identified incidents of adverse water quality and noncompliance.

## Incidents of Adverse Water Quality

In accordance with section 11 (Annual Reports) of O. Reg. 170/03, this Annual Report must summarize any reports made to the Ministry under subsection 18(1) (Duty to report adverse test results) of *the Act* or section 16-4 (Duty to report other observations) of Schedule 16 of O. Reg. 170/03. Additionally, this Annual Report must describe any corrective actions taken under Schedule 17 of O. Reg. 170/03 during the period covered by the report.

### Reporting & Corrective Actions:

Both pre-contact chamber and end of contact chamber continuous chlorine analyzers, monitor chlorine and alarm to the PLC, which will signal to call through the Verbatim auto-dialer which calls out to an operator's pager three times, after a 120 second delay. If no one is reached at the pager number, the auto-dialer will call the operators cell phone three times. If no one responds, the alarm will call the ORO assigned. Once an alarm is received, operators can call the auto-dialer from their cell phone and determine the reason for the alarm. A review of logbook entries indicated that operator response time was approximately 20 minutes. The actions that were taken by operators were also recorded in the logbook.

## Incidents of Non-compliance

In accordance with Schedule 22 (Summary Reports for Municipalities) of O. Reg. 170/03, this Annual Report must list any 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 (i.e. an incident of non-compliance). Additionally, this Annual Report must specify the duration of the failure and the measures that were taken to correct the failure.

## **NON-COMPLIANCE WITH REGULATORY REQUIREMENTS AND ACTIONS REQUIRED:**

This section provides a summary of all non-compliance with regulatory requirements identified during the inspection on 7<sup>th</sup> July 2022, as well as actions required to address these issues. Further details pertaining to these items can be found in the body of the inspection report.

### **1. Measures were not in place to protect the groundwater and/or GUDI source in accordance with the Municipal Drinking Water Licence (MDWL) issued under Part V of the SDWA.**

The MDWL # 295-101, Issue 3, was renewed on February 11, 2021. Schedule B of the MDWL states the following:

- 16.2: The operations and maintenance manual or manuals, shall include at a minimum:
- 16.2.8: An inspection schedule for all wells associated with the drinking water system, including all production wells, standby wells, test wells and monitoring wells;
- 16.2.9: Well inspection and maintenance procedures for the entire well structure of each well including all above and below grade well components; and
- 16.2.10: Remedial action plans for situations where an inspection indicates noncompliance with respect to regulatory requirements and/or risk to raw well water quality.

A well performance test was completed on Well #1 & 2 in 2012 by International Water Supply (IWS). The reports from these tests recommended that a well video inspection should also be conducted to determine the current condition of the wells to determine if any maintenance requirements are necessary. A brief performance check was also conducted on Well #2 in August of 2014 by IWS. Well #2 was video inspected by IWS on July 17, 2022. The DWS is still waiting for an inspection report for this, however, IWS, did complete work in response to the video inspection, which included cleaning & disinfection and installation of refurbished pump components below the existing discharge head, installation of new 25 hp. VHS motor. Well #1 is scheduled for a video inspection in Spring 2023. It is unknown as to when or if Well #1 was previously video inspected.

Although inspections of these wells have periodically taken place, a review of all inspection records, including the operations and maintenance manual, confirmed that there is no formal schedule for the two production (ground water wells) which serve the drinking water system. The importance of having an inspection and maintenance schedule in place, is to ensure that the appropriate measures are in place to proactively protect the water supply/source.

#### **ACTION(S) REQUIRED:**

By no later than Monday October 31, 2022, the DWS owner must develop and implement an inspection & maintenance schedule in accordance with the Schedule B of the MDWL. At a minimum, this schedule shall lay out the frequency in which the wells must be inspected, inspection and maintenance procedures for the entire structure of each well and remedial action plans for situations where an inspection indicates non-compliance with regulatory drinking water requirements or indicates risk to the raw well water quality.

This document must also be provided to the undersigned inspector by no later than October 15, 2022, as proof that this requirement has been met.

Leonard Wavy back as an ORO and he holds a Water Distribution and Supply Class-2 MOECC license.

**2. Continuous monitoring equipment that was being utilized to fulfill O. Reg. 170/03 requirements was not performing tests for the parameters with at least the minimum frequency specified in the Table in Schedule 6 of O. Reg. 170/03 and/or was not recording data with the prescribed format.**

It is a requirement of O. Reg. 170/03, Schedule 6(2), that treated water chlorine readings be taken and recorded at least once every 5 minutes. The intent of recording this information is to demonstrate that primary disinfection is being achieved as water is directed to users. Continuous monitoring chlorine residual analyzers are programmed to collect and recorded every minute for both pre-contact treated chlorine residuals and postcontact chlorine residuals. Specifically, a continuous Siemens chlorine analyzer (nonregulatory) is installed to monitor chlorine residuals at the beginning of the contact pipe.

This provides an additional early warning of low chlorine residuals. Treated water is then collected from the end of the contact pipe, discharging to the distribution system, and sent to the continuous (regulatory) Rosemount chlorine analyzer.

treated water chlorine residuals during the

inspection review period, on the following date, the above requirement was not met:

- On December 1, 2021, at approximately 05:30 EST, the Operator in Charge (OIC) responded to a low treated chlorine alarm, which was related to a total loss of pressure that had occurred in the distribution system. When responding to the plant, the OIC had to start the plant and restore pressure to the distribution system. Once pressure was restored, the systems continuous monitoring analyzers did not provide accurate treated chlorine readings from 07:06 EST – 07:51 EST, while water was being directed to users (i. e. there are no treated chlorine residual data recordings during this time). Although the OIC did collect handheld treated chlorine residuals and recorded these residuals into the logbook, this only occurred at the following times: 07:52, 07:57, 08:00, 08:18, 08:59 and 09:32 EST. After this time, continuous monitoring equipment began recording accurately. The DWS owner was in non-compliance with the above requirement between 07:06 - 07:51 EST, when no treated chlorine residuals were reading or recording and again between 08:05 - 09:32 EST, when chlorine residuals were collected periodically, but did not meet the specified frequency requirements of once every 5 minutes.

**ACTION(S) REQUIRED:**

The DWS Owner and operators shall ensure that treated chlorine residuals are continuously read and recorded, when water is being directed to users, in accordance with O.Reg 170/03, Schedule 6, Section 6-5(2). The recorded readings are to be of value to assess primary disinfection. If this cannot be reasonably achieved, the local MECP office is to be contacted immediately, to discuss.

**3. Where required continuous monitoring equipment, used for the monitoring of chlorine residual and/or turbidity triggered an alarm or an automatic shut-off, a qualified person did not respond in a timely manner and/or did not take appropriate actions.**

On December 1, 2021, the Pickle Lake Water Treatment Plant (WTP) experienced a total loss of pressure to the distribution system, whereby all drinking water system users were without water for a short period of time. Through a review of alarm call out records, it was identified that approximately 43 missed after hour call outs had occurred, which included low treated chlorine alarms, that had not been acknowledged by the on-call operator between the approximate period of 22:47 EST, on November 30, 2021 to December 1, 2021, at 06:45 EST.

**ACTION(S) REQUIRED:**

The individual operator involved with this matter is no longer employed with the drinking water system. This matter has been referred the ministry's EIEB, as RFI # 1-109573901. No further action is required at this time, as part of this inspection.

**4. Operators-in-charge (OIC) had not been designated for all subsystems which comprise the drinking water system.**

It is a requirement of O. Reg. 128/04, Section 25(1) that the DWS owner shall designate one or more operators as OIC of the subsystem. During the inspection review period, there was one certified operator who acted as OIC and one operator who provided back up OIC coverage from March 24, 2022 - April 28, 2022. A review of logbook records indicated that there was no designated OIC for the following dates:

- May 9 -15, 2022 (7 days)
- May 30, 2022
- June 1 - 6, 2022 (6 days)
- June 8 - 17, 2022 (10 days)

The operator was unable to provide alternate records which would verify that an OIC was designated on these dates.

**ACTION(S) REQUIRED:**

Effective immediately and as required by O.Reg 128/04, Section 25 (1)(2), the DWS shall designate one or more certified operators as OIC of all subsystems which comprise the DWS. The DWS owner or a person authorized by the owner shall ensure that records are maintained of the amount of time each operator works as an OIC (i.e. daily logbook records).

This issue of non-compliance also occurred during the previous 2021-22 drinking water inspection. Any future violations under O.Reg 128/04, s.25 (1), may result in the issuance of mandatory abatement instruments, such as a referral to the ministry's EIEB.

**5. Persons other than certified operators made adjustments to the treatment system.**

Section 12 (1) of the SDWA requires that only persons holding a valid operator's certificate can operate a municipal system. On November 27, 2021, a township staff member identified in the log book that they "started well pump # 1" (i.e. plant was started), however, this staff member is not a certified operator. A person must be certified as an operator in order to perform "operating functions", which includes controlling flow or pressure of drinking water in drinking water subsystems.

**ACTION(S) REQUIRED:**

Moving forward, the DWS owner shall ensure that only persons holding a valid operator's certificate are performing "Operating" functions, as required by O.Reg 128/04, Section 12 (1). See Appendix B: " Certification Guide for Operators & Water Quality Analysts of Drinking Water Systems". Any future violations under O.Reg 128/04, s.23, may result in the issuance of mandatory abatement instruments including Orders, or referrals to the ministry's EIEB.

**6. All changes to the system registration information were not provided within ten (10) days of the change.**

A record review indicated that the Pickle Lake Drinking Water System Profile Information is out of date. Specifically, the contact information reflected in the profile appears to be for

multiple employees who are no longer employed by the Township of Pickle Lake. It is a requirement of O. Reg. 170/03, subsection 10.1(3) that any required changes to this profile information are submitted to the ministry within 10 days of the changes having taken place.

information are submitted to the ministry within 10 days of the changes having taken place.

**ACTION(S) REQUIRED:**

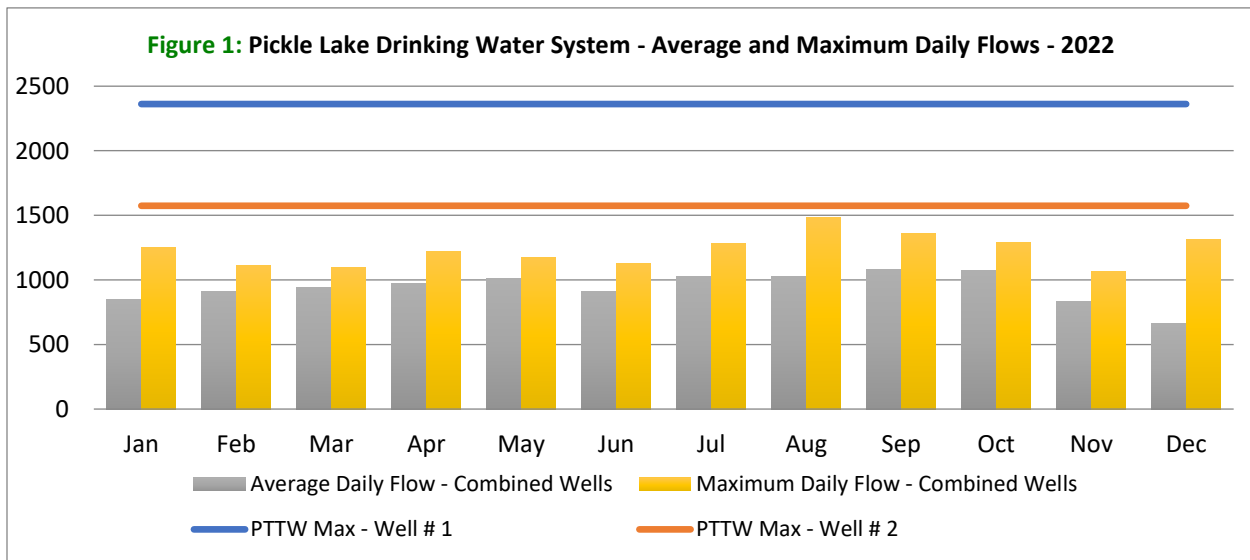
By no later than Monday October 6, 2022, the DWS Owner shall submit an updated Drinking Water System Profile Form to the ministry, which provides up to date contact information for township employees. This form shall be submitted to the ministry by email, at: [waterforms@ontario.ca](mailto:waterforms@ontario.ca). and a copy of at email provided to the undersigned Water Inspector as confirmation of submission.



# Appendix A

**Table 1: Flow statistics for the Pickle Lake DWS 2022**

Well # 1 Monthly Flow (m <sup>3</sup> )	Well # 2 Monthly Flow (m <sup>3</sup> )	Combined Wells Total Monthly Flow (m <sup>3</sup> )	Combined Wells Average Daily Flow (m <sup>3</sup> /day)	Average Daily Flow (Imp. Gal/Day)	Maximum Daily Flow (m <sup>3</sup> /day)
Month					
January	17,678	8,816	26,494	850	186,974
February	10,304	15,227	25,530	912	200,640
March	15,611	13,479	29,090	938	206,331
April	14,173	15,071	29,244	975	214,500
May	7,442	22,891	30,333	1,011	222,420
June	<b>17,498</b>	9,772	27,270	909	199,980
July	25,967	4,752	30,719	1,024	225,280
August	8,472	23,319	31,791	1,026	225,720
September	23,539	8,914	32,453	1,082	238,040
October	33,085	56	33,141	1,069	235,180
November	23,999	187	24,186	834	183,480
December	<b>185</b>	<b>19,627</b>	<b>19,812</b>	<b>660</b>	<b>145,200</b>
<b>Total</b>	<b>197,953</b>	<b>142,111</b>	<b>340,063</b>	<b>11,290</b>	<b>2,483,745</b>
<b>Average</b>	<b>16,496.1</b>	<b>11,842.6</b>	<b>28,338.6</b>	<b>940.8</b>	<b>206,978.8</b>



**Table A2: Permit to Take Water Maximum Parameters**

PTTW # 8125-AZ3K57		
Location	Max. Rate (L/min)	Max Rate (L/day)
Well 1	1,638	2,358,720
Well 2	1,092	1,572,480
Combined	----	3,931,200

**Table A3: Historical Flows**

Year	Historical Average Flow Records (m <sup>3</sup> )	
	Total Annual Flow (m <sup>3</sup> )	Average Daily Flow (m <sup>3</sup> )
2022	340,063	941
2021	205,977	572
2020	149,545	417
2019	139,283	382
2018	132,623	365
2017	144,200	396
2016	164,135	450
2015	157,597	432
2014	129,035	354
2013	81,060	222
2012	72,484	199
2011	93,665	257
2010	86,704	238

**Staff Changes in the Class 2 Water Distribution & Supply System Crew:**

1. Divya Pandya started working as OIT Water Wastewater Operator on 7<sup>th</sup> February 2022.
2. Megh Chauhan left on May 1<sup>st</sup> 2022.
3. Leaha Kane onsite as back up OIC for 1<sup>st</sup> – 7<sup>th</sup> November.
4. Aidan Klose started working as OIT Water Wastewater Operator on 28<sup>th</sup> November 2022.
5. Leonard Wavy left on 31<sup>st</sup> December 2022.