

Dungannon Drinking Water System 2021 Operation and Maintenance Annual Report

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1.0 INTRODUCTION AND BACKGROUND

The purpose of the 2021 Annual Report is to document the operation and maintenance data for the Dungannon Drinking Water System for review by the Ministry of the Environment, Conservation and Parks (MECP) in accordance with O. Reg. 170/03. This report covers January 1, 2021 to December 31, 2021. A copy of this report will be submitted to the owner to be uploaded to the township's website and can be provided to interested parties upon request.

2.0 DESCRIPTION OF WATER SYSTEM

The Dungannon Drinking Water System (DWS #260007842), consists of one drilled well, Well # 2-02 was constructed in December 2002 in accordance with construction standards as identified in the Ontario Regulation 903/03 made under the Ontario Water Resources Act. Well # 2 is a 203 mm diameter, 87 m deep drilled groundwater well (Water well record number 3007430) located south of the Well House.

Well # 1 was removed from service to the drinking water system and abandoned on April 3, 2017.

Well # 2 water quality monitoring results confirm this well meets the Ontario Drinking Water Quality Standards. (O Reg 169/03). Only Well # 2 provides water supply to the system. Arsenic regulation change from 25µg/L to 10µg/L on January 1, 2018 has caused Well #2 to be at or above the limit. The MECP is aware of this.

The Dungannon Well Supply is designated as a Large Municipal Residential drinking-water system that obtains water from a raw water source that is groundwater. The treatment and distribution system was commissioned in 2003 and provides potable water to an estimated population of 250 residents in the village of Dungannon.

The treatment process consists of a disinfection system using 12% sodium hypochlorite and an iron sequestering system using diluted sodium silicate.

The rated capacity of the treatment system is 657 m³/day as identified in the facility's Municipal drinking water license.

The water treatment equipment is designed to be capable of achieving, at all times, primary disinfection in accordance with the Ministry's Procedure for Disinfection of Drinking Water in Ontario, including at least 99 per cent removal or inactivation of viruses by the time the water enters the distribution system. Secondary disinfection is provided by residual chlorine from the primary disinfection process.

The distribution system does not include any storage facilities and has no fire hydrants. There are 7 blow off valves in the distribution system to accommodate flushing.

The chlorine dosages range varies with the chlorine demand of the raw water. The free chlorine residual is monitored at the point of entry to the distribution system, by an on-line chlorine analyzer, with a target residual of > 1.00 mg/L and < 1.30 mg/L.

The systems pressure ranges from 44- 65psi.

3.0 SUMMARY OF WATER QUALITY MONITORING

3.1 Water Treatment Equipment Operation and Monitoring as per Schedule 7, O. Reg. 170/03

3.1.1 Point of Entry Chlorine Residual

Chlorine residuals are continuously measured using a HACH CL17 online chlorine analyzer and verified for accuracy using hand-held HACH pocket colorimeter. **Table 1** shows the monthly average of free chlorine residual values on the treated water at the point of entry.

3.1.2 Distribution Chlorine Residual

Chlorine residuals in the distribution system are checked daily using a HACH pocket colorimeter, 365 distribution chlorine residuals were recorded.

Table 1. – Treated and Distribution Chlorine Residuals for Dungannon Drinking Water System

Date	Average Treated Chlorine Residual (mg/L)	Average Distribution Chlorine Residual (mg/L)
Jan	1.41	1.25
Feb	1.40	1.26
Mar	1.39	1.25
Apr	1.39	1.22
May	1.35	1.23
Jun	1.28	1.17
Jul	1.34	1.17
Aug	1.31	1.15
Sep	1.25	1.10
Oct	1.23	1.10
Nov	1.26	1.11
Dec	1.29	1.13
Average	1.33	1.18
Min	1.23	1.10
Max	1.41	1.26
# Samples	365	365

3.1.3 Turbidity

Turbidity is measured using a pocket turbidimeter. **Table 2** provides a summary of raw and treated turbidity results.

Table 2. – Raw and Treated Water Turbidities for Dungannon Drinking Water System

Date	Average Raw Turbidity (NTU)	Average Treated Turbidity (NTU)
Jan	0.35	0.18
Feb	0.44	0.18
Mar	0.37	0.20
Apr	0.35	0.17
May	0.37	0.17
Jun	0.37	0.20
Jul	0.52	0.30
Aug	0.50	0.26
Sep	0.48	0.23
Oct	0.45	0.21
Nov	0.42	0.20
Dec	0.39	0.22
Average	0.42	0.22
Min	0.35	0.17
Max	0.52	0.31
# Samples	50	224

3.2 Microbiological Sampling as per Schedule 10, O. Reg. 170/03

3.2.1 Raw Water Samples

Raw water samples are taken every week. A total of 52 samples were collected and analyzed for E. Coli and Total Coliforms. Each E. Coli and Total Coliform results obtained were 0 cfu/100 ml in the raw water.

Table 3 provides a summary of bacteriological results performed on the raw water.

Table 3. – Microbiological Results for Raw Water at Dungannon Drinking Water System

Date	E. Coli			Total Coliform		
	# Samples	# Samples 0	# Samples ≥1	# Samples	# Samples 0	# Samples ≥1
Jan	4	4	0	4	4	0
Feb	4	4	0	4	4	0
Mar	5	5	0	5	5	0
Apr	4	4	0	4	4	0
May	4	4	0	4	4	0
Jun	5	5	0	5	5	0
Jul	4	4	0	4	4	0
Aug	5	5	0	5	5	0
Sep	4	4	0	4	4	0
Oct	4	4	0	4	4	0
Nov	5	5	0	5	5	0
Dec	4	4	0	4	4	0
Total	52	52	0	52	52	0

3.2.2 Treated Water (Point of Entry) Samples

One treated water sample from the point of entry is taken every week and analyzed for E.Coli, Total Coliforms and for Heterotrophic Plate Count (HPC). A total of 52 treated water samples were collected and analyzed for the above parameters. Each E. Coli and Total Coliform samples were found to be safe. The range of HPC results were 0 - <10 cfu/100 ml.

Table 4. provides a summary of all bacteriological results performed on treated water.

Table 4. – Microbiological Results for Point of Entry at Dungannon Drinking Water System

Date	E. Coli			Total Coliform			HPC		
	# Samples	# Samples 0	# Samples ≥1	# Samples	# Samples 0	# Samples ≥1	# Samples	Safe	Deteriorating
Jan	4	4	0	4	4	0	4	4	0
Feb	4	4	0	4	4	0	4	4	0
Mar	5	5	0	5	5	0	5	5	0
Apr	4	4	0	4	4	0	3	3	0
May	4	4	0	4	4	0	4	4	0
Jun	5	5	0	5	5	0	5	5	0
Jul	4	4	0	4	4	0	4	4	0
Aug	5	5	0	5	5	0	5	5	0
Sep	4	4	0	4	4	0	4	4	0
Oct	4	4	0	4	4	0	4	4	0
Nov	5	5	0	5	5	0	5	5	0
Dec	4	4	0	4	4	0	4	4	0
Total	52	52	0	52	52	0	52	52	0

3.2.3 Distribution Samples

Distribution samples are collected weekly and tested for E.Coli, Total Coliform and for Heterotrophic Plate Count (HPC). A total of 104 distribution samples were collected and analyzed for the above parameters. The range of HPC results were 0 - <10 cfu/100 ml.

Table 5 provides a summary of all bacteriological samples taken in the distribution system.

Table 5. – Microbiological Results for Dungannon Distribution System

Date	E. Coli			Total Coliform			HPC		
	# Samples	# Samples 0	# Samples ≥1	# Samples	# Samples 0	# Samples ≥1	# Samples	Safe	Deteriorating
Jan	8	8	0	8	8	0	4	4	0
Feb	8	8	0	8	8	0	4	4	0
Mar	10	10	0	8	8	0	4	4	0
Apr	8	9	0	10	10	0	5	5	0
May	8	8	0	8	8	0	4	4	0
Jun	10	10	0	10	10	0	5	5	0
Jul	7	7	0	7	7	0	4	4	0
Aug	10	10	0	10	10	0	5	5	0
Sep	8	8	0	8	8	0	5	5	0
Oct	8	8	0	8	8	0	4	4	0
Nov	10	10	0	10	10	0	4	4	0
Dec	8	8	0	8	8	0	4	4	0
Total	104	104	0	104	104	0	52	52	0

3.3 Chemical Sampling & Testing as per Schedule 13, O. Reg. 170/03

3.3.1 Inorganics

One treated water sample is taken every 36 months and tested for inorganics. The most recent samples for the Dungannon Drinking Water System were collected on December 16, 2019 and submitted to the laboratory for analysis of inorganics as listed in Schedule 23. All parameters were found to be within compliance. Inorganics will be sampled and analyzed again on or before *December 16, 2022*.

Results from 2019 can be found in **Table 6a**.

Dungannon has been given relief for Arsenic testing at present which expires December 31, 2022. Arsenic for Treated Water is tested once every quarter and must be reported if it exceeds 25 µg/L

Results for the Treated Water arsenic testing can be found in **Table 6b**.

Table 6a. – Schedule 23 Results for Dungannon Drinking Water System

Parameter	Result (µg/L)	Maximum Allowable Concentration (µg/L)
Antimony	<0.09	6
Barium	159	1000
Boron	64	5000
Cadmium	0.004	5
Chromium	0.11	50
Mercury	<0.01	1
Selenium	<0.04	10
Uranium	1.08	20

Table 6b. – Arsenic Results for Dungannon Drinking Water System

Date	TW Arsenic µg/L
Feb 16	13.1
May 13	12.5
Aug 10	12.2
Nov 16	12.2

3.3.2 Lead

Schedule 15.1 of Ontario Regulation 170/03 requires that samples be taken during two seasons: once between December 15 and April 15 and once between June 15 and October 15. The Maximum Allowable Concentration for Lead is 0.01 mg/L. Dungannon has been approved for reduced lead sampling. In the two previous lead sampling seasons, pH and alkalinity samples were taken on January 13, 2021 and July 27, 2021. The next lead samples are due in the 2022 schedule.

Results for pH and alkalinity can be found in **Table 7**.

Table 7. – Lead Sampling Program Results for Dungannon Drinking Water System

	Lead (mg/L)	pH	Alkalinity (mg/L)
Dec-Apr	--	8.08	223
Jun-Oct	--	8.02	208

3.3.3 Organics

One treated water sample is taken every 36 months and tested for schedule 24 organic parameters. The most recent samples were collected on December 16, 2019. All parameters were found to be within compliance. Organics will be sampled and analyzed again on or before *December 16, 2022*.

The 2019 sample results can be found in **Table 8**.

Table 8. – Schedule 24 Results for Dungannon Drinking Water System

Parameter	Result (µg/L)	Maximum Allowable Concentration (µg/L)
Benzene	<0.32	1
Carbon Tetrachloride	<0.17	2
1,2-Dichlorobenzene	<0.41	200
1,4-Dichlorobenzene	<0.36	5
1,1-Dichloroethylene	<0.33	14
1,2-Dichloroethane	<0.35	5
Dichloromethane	<0.35	50
Monochlorobenzene	<0.3	80
Tetrachloroethylene	<0.35	30
Trichloroethylene	<0.44	50
Vinyl Chloride	<0.17	1
Diquat	<1	70
Paraquat	<1	10
Glyphosate	<1	280
Polychlorinated Biphenyls	<0.04	3
Benzo(a)pyrene	<0.004	0.01
2,4-dichlorophenol	<0.19	900
2,4,6-trichlorophenol	<0.25	5
2,3,4,6-tetrachlorophenol	<0.20	100
Pentachlorophenol	<0.15	60
Alachlor	<0.02	5
Atrazine+N-dealkylated metabolites	<0.01	5
Atrazine	<0.01	-
De-ethylated atrazine	<0.01	-
Azinphos-methyl	<0.05	20
Carbaryl	<0.05	90
Carbofuran	<0.01	90
Chlorpyrifos	<0.02	90
Diazinon	<0.02	20
Dimethoate	<0.06	20
Diuron	<0.03	150
Malathion	<0.02	190
Methoxychlor	<0.01	900

Table 8 Continued

Parameter	Result (µg/L)	Maximum Allowable Concentration (µg/L)
Metolachlor	<0.01	50
Metribuzin	<0.02	80
Phorate	<0.01	2
Prometryne	<0.03	1
Simazine	<0.01	10
Terbufos	<0.01	1
Triallate	<0.01	230
Trifluralin	<0.02	45
2,4-dichlorophenoxyacetic acid	<0.19	100
Bromoxynil	<0.33	5
Dicamba	<0.20	120
Diclofop-methyl	<0.40	9
MCPA	<0.00012	0.00012
Picloram	<1	190

3.3.4 Trihalomethanes and Haloacetic Acids

One distribution sample is taken every three months from a point in the distribution system and tested for Trihalomethanes (THMs) and Haloacetic Acids (HAAs). In 2021 samples were collected during the months of February, May, August and November. The Ontario Drinking Water Quality Standard (ODWQS) has set a Maximum Allowable Concentration (MAC) of 100 µg/L for THMs and it is expressed as a running annual average (RAA). The HAA MAC is 80µg/L. In 2021, the average THM was found to be 11.15 µg/L, which is within compliance. Refer to **Table 9** for the summary of trihalomethane and haloacetic acid results.

3.3.5 Nitrate & Nitrite

One treated water sample is taken every three months and tested for nitrate and nitrite. In 2021, samples were collected during the months of February, May and August and November. The Ontario Drinking Water Quality Standard (ODWQS) has set a Maximum Allowable Concentration (MAC) of 1 mg/L for nitrites and 10 mg/L for nitrates. The results were found to be within compliance. Refer to **Table 9**.

Table 9. – Nitrate, Nitrite, THM and HAA Results at Dungannon Drinking Water System

Date	Nitrate		Nitrite		THMs		HAAs	
	# Samples	Result (mg/L)	# Samples	Result (mg/L)	# Samples	Result (µg/L)	# Samples	Result (µg/L)
Feb	1	<0.006	1	<0.003	1	13	1	<5.3
May	1	<0.006	1	<0.003	1	8.3	1	<5.3
Aug	1	<0.006	1	<0.003	1	14	1	<5.3
Nov	1	<0.006	1	<0.003	1	9.3	1	7.5
Total	4		4		4		4	
Average		<0.006		<0.003		11.15		4.5
Maximum		<0.006		<0.003				

3.3.6 Sodium

One treated water sample is collected every 60 months and tested for Sodium. O. Reg 170/03 has set a Maximum Acceptable concentration (MAC) of 20 mg/L for Sodium which requires the Medical Office of Health be notified if the concentration exceeds the MAC. These samples were last collected on June 15, 2021 and were found to be 15.6 mg/L, which is within compliance. The next water sample for Sodium will be collected and analyzed on or before June 21, 2026.

3.3.7 Fluoride

One treated water sample is collected at least once in every 60 months and tested for Fluoride. The Ontario Drinking Water Quality Standards (ODWQS) have set a MAC of 1.5 mg/L. On November 6, 2018 a sample was collected for this analysis. The first sample was found to have a concentration of 1.5 mg/L, which is greater than the MAC. This is due to high levels of naturally occurring fluoride in the aquifer. The second sample came back under the MAC at 1.45 mg/L. The next water sample for Fluoride will be collected and analyzed *on or before November 6, 2023*.

For more information see:

<http://www.acwtownship.ca/wordpress/wp-content/uploads/2013/09/DungannonWaterQualityInformation.pdf>

4.0 WATER AND CHEMICAL USAGE

4.1 Chemical Usage

From January 1, to December 31, 85.24 kg of 12% Sodium Hypochlorite was used to ensure proper disinfection in the distribution system with an average dosage of 3.51 mg/L. 71.88 kg of Sodium Silicate was used to reduce the concentration of dissolved iron with an average dose of 3.01 mg/L for the 2021 year.

Refer to **Table 10**.

Table 10. – Chemical Usage at Dungannon Drinking Water System

Date	Sodium Hypochlorite		Sodium Silicate	
	Usage (kg)	Average Dosage (mg/L)	Usage (kg)	Average Dose (mg/L)
Jan	8.20	3.51	6.71	2.90
Feb	7.87	3.46	6.58	2.90
Mar	9.24	3.45	7.76	2.93
Apr	7.61	3.43	6.45	2.98
May	6.21	3.46	5.26	3.03
Jun	7.14	3.58	5.53	2.91
Jul	7.11	3.48	6.32	3.12
Aug	6.21	3.56	5.26	3.05
Sep	5.20	3.47	4.47	3.01
Oct	6.11	3.69	5.26	3.22
Nov	4.94	3.48	4.12	2.95
Dec	9.40	3.55	8.16	3.11
Total	85.24		71.88	
Average		3.51		3.01

4.2 Annual Flows

A summary of the water supplied to the distribution system is provided in **Table 11**. This Table provides a breakdown of the monthly flows provided to the distribution system.

Flow meters were calibrated on June 8, 2021 by Iconix and were found to be acceptable.

Table 11. – Treated Water Flows for Dungannon Drinking Water System

Date	Average Daily Flow (m ³)	Maximum Daily Flow (m ³)	Total Monthly Flow (m ³)
Jan	75.03	89	2326
Feb	81.36	100	2278
Mar	86.32	114	2676
Apr	73.67	99	2210
May	57.55	92	1784
Jun	67.50	111	2025
Jul	65.19	87	2021
Aug	56.32	92	1746
Sep	49.73	65	1492
Oct	53.97	94	1673
Nov	47.00	68	1410
Dec	84.94	105	2633
Average	66.55		
Max		114	
Total			24274

5.0 IMPROVEMENTS TO SYSTEM AND ROUTINE AND PREVENTATIVE MAINTENANCE

The following summarizes water system improvements and routine and preventative maintenance for the Dungannon Drinking Water System:

- Approval to stop Raw water Arsenic testing received from the HPPH in 2020.
- 2 Pressure tanks were replaced
- Annual generator service completed in February by Sommers
- MDWL was renewed and expires December 18, 2024.
- Service line leak repaired on Albert St in April.
- Drillers were on site investigating Boreholes
- Backflow preventer was Certified in July
- Distribution system was flushed in October.
- Service leak at 56 Southampton St
- Service leak on Joseph St

6.0 MINISTRY OF THE ENVIRONMENT INSPECTIONS AND REGULATORY ISSUES

This section provides a summary of all non-compliance with regulatory requirements identified during the inspection period, as well as actions required to address these issues.

The Dungannon Drinking Water System was inspected in 2021 by The Ministry of Environment, Conservation and Parks. The inspection was completed by Ron Burrell on October 28, 2021 and was given 100%.

There was 1 instances of adverse water quality in 2021:

February 12- AWQI #153562, The system did not meet the CT for 31 min. Corrective actions were taken.

7.0 MECP Regulatory Changes

- Proposed amendments to drinking water operator and water quality analyst certification regulations have been issued to address the impacts of emergencies. These include:
 - allowing the Ministry to act quickly to ensure the Province’s drinking water is protected during an emergency
 - extending Operator certificates and allowing certain qualified but non-certified staff to temporarily maintain system operations, and would only be enacted during an emergency
 - allowing temporary relief from training and certification requirements

This proposal has been registered with the Environmental Registry of Ontario and the consultation process was closed on July 2, 2021. The outcome of this proposal is expected to be published in 2022.

- Proposed updates to the Director’s Directions - Minimum Requirements for Operational Plans - May 2021. The Director’s Directions have updated the following:
 - Content Requirements - all referenced documents will be considered part of the Operational Plan.
 - Procedures for version control - version number and revision date is to be embedded in every electronic copy, and recorded on every page of any physical copy
 - Completed copy of Subject System Description Form in Schedule “C” of the Director’s Directions
 - Operational Plans are to be submitted to the Director electronically
 - Retention of Operational Plans - Operational Plans that were the subject of an audit by an auditor for the accreditation body shall be retained for a minimum of 10 years
 - Public Disclosure of Operational Plans - shall be made available for viewing by the public either electronically (website) or at the principal place of business, but not in a manner that would threaten the safety, health or quality of the drinking water, or create significant prejudice with the contractual obligations of the Operating Authority or other organization.
 - Operational Plans shall be updated to meet the requirements of the Director’s Directions no later than April 1, 2022.



Report Date: March 15, 2022

Dungannon Drinking Water System – 2021 Compliance Summary

This document is a compliance summary for the Dungannon water supply for the year 2021 as per Reg. 170/03 Schedule 22. A full summary of the water system's test results, flows and significant activities are attached.

System Description

The Dungannon water system is characterized as a "secure ground water" system and is classified as a large municipally owned water system. The well house and its equipment have a daily maximum capacity to deliver 657 cubic meters of potable water per day to the Dungannon community.

The water source is a secure deep bedrock well. The production Well # 2 is located approximately 30 meters due south of the well house.

Well #2 was drilled in 2003. The well pump and associated piping in the Well #2 was installed in August of 2005.

The well house is equipped with a well pump, backup diesel generator set, chlorinators, a chlorine contact main, online monitoring and alarm generator to an Autodialer. The system is controlled and monitored by an on-site PLC.

The distribution system was constructed in 2005 and is constructed of PVC with polyethylene services. There is no elevated storage to maintain pressure therefore the system pressure is maintained using pressure tanks and the well pump. The system has no hydrants and lacks the capacity to provide fire flows.

Chemicals Fed

Disinfectant

Disinfection was achieved on the Dungannon well supply through the use of 6% sodium hypochlorite.

In the well house, this chemical was added prior to the water entering the chlorine contact main at dosages high enough to achieve both primary and secondary disinfection objectives.

The chlorine average dosages ranged from 3.43 mg/L to 3.69 mg/L. The chlorine demand of the water is high on the Dungannon water due to naturally occurring raw water characteristics. This creates a noticeable chlorine odour on the treated water. The free chlorine residual was monitored at the point of entry to the distribution system with an average target residual of 1.00 mg/L which is typical of the treated water in other municipal water systems. The average for Dungannon was 1.18 mg/L.



Iron Sequestering

The well water at Dungannon has iron levels higher than what is considered aesthetically acceptable. The well house provides chemically assisted iron sequestering. The chemical used in 2021 was sodium silicate. This chemical was fed prior to the chlorine contact main.

A full summary of dosages and chemicals used can be found in **Table 10** of the Annual Report.

Flows

The Drinking Water Works Permit (DWWP) #080-203 issue #5 for the Dungannon Drinking Water System was issued on June 19, 2021. Limits of the Permit to Take Water (PTTW) were not exceeded on Well #2 in 2021. The PTTW was issued for this system on July 25, 2013 and expires on July 19, 2023. A full summary of the flows are included in the 2021 in the Annual Report.

The limiting factor regarding flow is chlorine contact time (CT) in the chlorine contact main. In order to meet the regulatory CT requirements, increased flows beyond 11.36 liters per second must have an increased free chlorine residual to counter the decreased retention time in the chlorine contact main.

The combination of maximum flows through the chlorine contact main and minimum free chlorine residuals exiting the contact main did not exceed limitations in 2021 as recorded by the flow meters and the on-line chlorine analyzer.

The maximum daily flow from the Dungannon well house in 2021 was 114 cubic meters or 17.35% of capacity. The average daily flow was 66.55 cubic meters or 10.13% of the capacity from the PTTW for Well #2.

Precautionary Boil Water Notices

There were no precautionary boil water notices issued on the Dungannon system in 2021.

Boil Water Advisory

There were no Boil Water Advisories issued by the Huron Perth Public Health (HPPH) on the Dungannon water system in 2021.

Annual Ontario Ministry of Environment, Conservation and Parks Inspection

The Dungannon Drinking Water System was inspected in 2021 by The Ministry of Environment, Conservation and Parks. The inspection was completed by Ron Burrell on October 28, 2021 and was given 100%.



Adverse Water Quality Incidents

There was one instance of adverse water quality in Dungannon in 2021, AWQI #153562 which can be found on page 17 of the Annual Report.

Exceedances

Fluoride

O. Reg. 169/03 (the Ontario Drinking Water Standard) has a MAC (maximum allowable concentration) of 1.50 mg/L for fluoride.

The water from the Dungannon well is monitored every 5 years for fluoride. They have naturally occurring levels that can exceed 1.5 mg/L.

As required by O. Reg. 170/03 Schedule 13 Section 13.9 an AWQI (adverse water quality indicator) is filed every 60 months if required. The last sample was taken on November 6, 2018 and was found to be acceptable at 1.50 mg/L. The next sample is scheduled for 2025.

Parameters over 50% of MAC

Arsenic

O. Reg. 169/03 had a MAC of 25 µg/L for arsenic, which was lowered to 10 µg/L as of January 1, 2018.

The water from the Dungannon well can have naturally occurring levels that exceed the arsenic MAC. As a result, the Dungannon Drinking Water System has been granted regulatory relief for Arsenic as per Schedule D, Section 2.0 of the MDWL #080-103 Issue #8. This regulatory relief expires on Dec. 31, 2022. As required by O. Reg. 170/03 Schedule 13 Section 13.5, the treated water is monitored quarterly for Arsenic..

The results for 2021 were as follows:

Date	TW Arsenic µg/L
Feb. 16	13.1
May 13	12.5
Aug. 10	12.2
Nov. 16	12.2

NOTE: HPPH agreed with Veolia to stop the RW sampling on Dec. 2, 2020.



Infrastructure Assessment

Regular contact is maintained with ACW's representative. The JobsPlus program is continually updated with preventative and corrective maintenance issues. A complete summary can be forwarded to the client upon their request. Through regular communication between the operating authority and the client, capital items are discussed. A list of capital items and concerns for 2021 was forwarded to ACW's representative in October 2020. Arsenic concentrations remain a major concern. The upgrade on the system for treatment of arsenic will be implemented in 2022.

The annual Management Review was conducted by the operating authority on November 8, 2021 as per the DWQMS requirement in Element 14. Regular discussions between the client and the operating authority for this water system are continued throughout the year by emails, phone calls, and meetings as per the requirements of Element 15 of the DWQMS.

The Internal Audit was last completed on November 16, 2021 and the last Risk Assessment was completed December 30, 2021. An external surveillance Audit was conducted by SAI Global on August 16, 2021. An Emergency Response Exercise was conducted by the Municipality in September 2021, but Veolia was not asked to participate. Veolia utilized a break-in and theft event to conduct a tabletop After Action Report in November 2021.

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