Century Heights Drinking Water System
2023 Operation and Maintenance
Annual Report

WW # 220008499
MDWL # 080-105 issue #5 exp. Dec. 18/24
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1.0 INTRODUCTION AND BACKGROUND

The purpose of the 2023 Annual Report is to document the operation and maintenance data for the Century Heights Drinking Water System for review by the Ministry of Environment, Conservation and Parks (MECP) in accordance with O. Reg. 170/03. This report covers January 1, 2023 to December 31, 20223. 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 Century Heights Drinking Water System (DWS **#220008499**), is classified as a small municipal residential system. Studies to establish the security of these wells from surrounding water proved inconclusive in 2007 and they are now considered to be GUDI (Ground Under the Direct Influence of surface water) sources. The system consists of two wells with a rated capacity of (#1 at 4.2 L/s and #2 at 4.3 L/s) 734 m3/day, with ultraviolet and sodium hypochlorite disinfection treatment.

The entire system is located on Concession 1, Lot 1, Western Division, of Ashfield-Colborne-Wawanosh Township. The distribution system serves the community of Century Heights, Maitland View Subdivision, and parts of the Community of Saltford, with a population approximately 250 residents, with approximately 85 customer services.

The system consists of a Class 1 Distribution and Supply, and Class 1 Treatment which is owned by the Township of Ashfield-Colborne-Wawanosh and operated by Veolia Water Canada, the Operating Authority.

Well # 1 is a 150 mm diameter drilled well, 66 metres deep, equipped with a submersible pump with a rated capacity of 4.2 Litres /second, with instrumentation and control equipment, and 50 mm diameter discharge line connected to the pump house.
Well # 2 is a 150 mm diameter drilled well, 66 metres deep equipped with a submersible pump with a rated capacity of 4.3 Litres /second, with instrumentation and control equipment and 100 mm diameter discharge line connected to the pump house. Well # 1 was constructed in 1979, located within the well house and # 2 was constructed in 2005, approximately 10 meters north of the well house.

The well house is equipped with well pumps, back-up diesel generator, chlorination system, a chlorine contact main, cartridge filter trains, UV disinfection system, hydropneumatic pressure vessels, on-line monitoring and alarm generation. The system is controlled by an onsite control.

The well house and its equipment have a daily maximum capacity to deliver 734 cubic metres of potable water per day to the Century Heights community. The current water sources are two deep bedrock wells. Both wells are located on the well house site with dedicated raw water mains feeding the well house.

The water from each well is pumped to a common chlorine contact pipeline consisting of 4 m x 100 mm diameter, 37.9 m x 150 mm diameter, and 12.2 m x 600 mm diameter sections) to provide adequate chlorine contact time at maximum flow and before the first consumer, complete with a sampling / service water connection feed back to the pump house.

The well house and equipment are monitored and controlled by an alarm dialer and data recorder.

The attached distribution system is constructed with a combination of polyethylene and PVC piping with polyethylene services. There is no elevated storage to maintain pressure and the system pressure is maintained using pressure tanks and the well pumps.

The system has 3 fire hydrants but lacks the capacity to provide fire flows. Hydrants and blow-offs are used for flushing purposes.

Primary Disinfection is achieved with a UV Disinfection System consisting of two (2) disinfection reactors, one duty and one standby, rated at 40 mJ/cm2 throughout the lamp lifetime, complete with a UV intensity monitor.

Disinfection is also achieved on the Century Heights well supply through chemical treatment with the use of 12% sodium hypochlorite. In the well house, this chemical is added prior to the water entering the chlorine contact reservoir at dosages high enough to achieve both primary and secondary disinfection objectives. The system consists of two (2) sodium hypochlorite feed pumps (duty and standby) rated at 0.8 L/hr complete with auto switchover controls, piping, valves and associated monitoring equipment and 12.2 meters of 600 mm diameter water main as a contact reservoir.

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.

Additional treatment consists of a filtration system consisting of 2 streams of 2 cartridge filter trains one duty and one standby for the removal of particles 5 micron and larger, rated at 8.5 L/s.

The limiting factor regarding flow is chlorine contact time in the chlorine contact main. In order to meet the regulatory CT requirements (CT value > 3.0) increased flows beyond 8.5 litres per second must have an adequate free chlorine residual to counter the decreased retention time in the chlorine contact main. BM Ross and Associates have updated this calculation to meet MECP standards.

The treated water is monitored by an on-line chlorine analyzer.

Distribution piping typically ranges in size from 50 mm to 100 mm diameter, and consists of a combination of polyethylene and PVC piping, with polyethylene service connections.

Typical system pressure ranges from 40 P.S.I to 60 P.S.I.

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 a hand-held HACH pocket colorimeter 364 handheld samples were taken.

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. A total of 364* handheld distribution chlorine residuals were recorded.

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

Date	Average Treated Chlorine Residual (mg/L)	Average Distribution Chlorine Residual (mg/L)
Jan	1.30	1.14
Feb	1.36	1.18
Mar	1.49	1.33
Apr	1.47	1.19
May	1.49	1.11
Jun	1.39	1.01
Jul	1.42	1.01
Aug	1.34	0.94
Sep	1.26	0.98
Oct	1.25	0.98
Nov	1.25	1.02
Dec	1.25	1.04
Average	**1.36**	**1.07**
Min	**0.85**	**0.55**
Max	**1.59**	**1.91**
# Samples	**364**	**364**

* Daily rounds were not completed on February 3rd

3.1.3 Turbidity

The Treated Turbidity and Raw Turbidity is recorded at least once a month using a pocket turbidimeter. The maximum turbidity measured in the treated water was 0.59 NTU and 0.60 NTU was the maximum in the raw water well #1 and 0. 71 NTU in the raw water well #2.

Table 2 provides a summary of raw and treated turbidity results.

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

Date	Average Raw Turbidity (NTU)#1	Average Raw Turbidity (NTU)#2	Average Treated Turbidity (NTU)
Jan	0.20	0.20	0.29
Feb	0.15	0.13	0.19
Mar	0.16	0.22	0.20
Apr	0.14	0.12	0.19
May	0.15	0.14	0.21
Jun	0.16	0.16	0.22
Jul	0.15	0.13	0.20
Aug	0.18	0.16	0.23
Sep	0.26	0.31	0.24
Oct	0.21	0.20	0.25
Nov	0.19	0.18	0.32
Dec	0.25	0.21	0.20
Average	**0.19**	**0.18**	**0.23**
Min	**0.10**	**0.10**	**0.12**
Max	**0.60**	**0.71**	**0.59**
# Samples	**50**	**51**	**279**

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 at wells 1 & 2 and analyzed for E. Coli and Total Coliforms. Each E. Coli result obtained was 0 cfu/100 ml and two Total Coliform samples obtained were 1 cfu/100ml .
Table 3a & 3b. provides a summary of bacteriological results performed on the raw water.

Table 3a. – Microbiological Results for Raw Water at Century Heights Drinking Water System for

Well #1

	E. Coli			Total Coliform		
Date	**# Samples**	**# Samples 0**	**# Samples ≥1**	**# Samples**	**# Samples 0**	**# Samples ≥1**
Jan	5	5	0	5	5	0
Feb	4	4	0	4	4	0
Mar	4	4	0	4	4	0
Apr	4	4	0	4	4	0
May	5	5	0	5	5	0
Jun	4	4	0	4	4	0
Jul	4	4	0	4	4	0
Aug	5	5	0	5	4	1
Sep	4	4	0	4	4	0
Oct	5	5	0	5	5	0
Nov	4	4	0	4	3	1
Dec	4	4	0	4	4	0
Total	**52**	**52**	**0**	**52**	**50**	**2**

Table 3b. – Microbiological Results for Raw Water at Century Heights Drinking Water System for

Well #2

Date	E. Coli			Total Coliform		
	# Samples	# Samples 0	# Samples ≥1	# Samples	# Samples 0	# Samples ≥1
Jan	5	5	0	5	5	0
Feb	4	4	0	4	4	0
Mar	4	4	0	4	4	0
Apr	4	4	0	4	4	0
May	5	5	0	5	5	0
Jun	4	4	0	4	4	0
Jul	4	4	0	4	4	0
Aug	5	5	0	5	5	0
Sep	4	4	0	4	4	0
Oct	5	5	0	5	5	0
Nov	4	4	0	4	4	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 E. Coli, Total Coliforms and HPCs. All samples were found to be safe. Each E. Coli and Total Coliform result from the treated water was 0 cfu/100 ml. 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 Century Heights Drinking Water System

	E. Coli			Total Coliform			HPC		
Date	**# Samples**	**# Samples 0**	**# Samples ≥1**	**# Samples**	**# Samples 0**	**# Samples ≥1**	**# Samples**	**Safe**	**Deteriorating**
Jan	5	5	0	5	5	0	5	5	0
Feb	4	4	0	4	4	0	4	4	0
Mar	4	4	0	4	4	0	4	4	0
Apr	4	4	0	4	4	0	4	4	0
May	5	5	0	5	5	0	5	5	0
Jun	4	4	0	4	4	0	4	4	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	5	5	0	5	5	0	5	5	0
Nov	4	4	0	4	4	0	4	4	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 every week and tested for E.Coli, Total Coliform and for Heterotrophic Plate Count (HPC). A Total of 52 distribution samples were collected and analyzed for E. Coli, Total Coliforms and HPCs. All E. Coli and total coliform results from the treated water were 0 cfu/100 ml. 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 Century Heights Distribution System

Date	E. Coli			Total Coliform			HPC		
	# Samples	# Samples 0	# Samples ≥1	# Samples	# Samples 0	# Samples ≥1	# Samples	Safe	Deteriorating
Jan	5	5	0	5	5	0	5	5	0
Feb	4	4	0	4	4	0	4	4	0
Mar	4	4	0	4	4	0	4	4	0
Apr	4	4	0	4	4	0	4	4	0
May	5	5	0	5	5	0	5	5	0
Jun	4	4	0	4	4	0	4	4	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	5	5	0	5	5	0	5	5	0
Nov	4	4	0	4	4	0	4	4	0
Dec	4	4	0	4	4	0	4	4	0
Total	**52**	**52**	**0**	**52**	**52**	**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 60 months and tested for inorganics. The most recent samples for the Century Heights Drinking Water System were collected on December 15, 2020 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 15, 2025.

Results from 2020 can be found in **Table 6.**

Table 6. – Schedule 23 Results for Century Heights Drinking Water System

Parameter	Result (µg/L)	Maximum Allowable Concentration (µg/L)
Antimony	<0.9	6
Arsenic	4.3	10
Barium	58.1	1000
Boron	99	5000
Cadmium	0.007	5
Chromium	060	50
Mercury	<0.01	1
Selenium	0.06	10
Uranium	1.38	20

NOTE: New regulation standards for Arsenic changed in January 2018, the previous standard of 25µg/L changed to 10µg/L. Consideration and discussion of this parameter should be investigated as soon as possible.

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 10 µg/L. In the two previous lead sampling seasons, pH, lead and alkalinity samples were taken on March 13, 2023 and again onJuly 18, 2023. The next Lead sample is due in the winter of 2024.

2023 results can be found in **Table 7.**

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

	Lead (µg/L)	pH	Alkalinity (mg/L)
Dec-Apr	0.14	7.98	191
Jun-Oct	0.34	8.02	193

3.3.3 Organics

One treated water sample is taken every 60 months and tested for Schedule 24 organic parameters. The most recent samples were collected on December 15, 2020. All parameters were found to be within compliance. Organics will be sampled and analyzed again on or before December 15, 2025.

2020 sample results can be found in **Table 8.**

Table 8. – Schedule 24 Results for Century Heights 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	<0.30	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
Alachlor	<0.02	5
Atrazine+N-dealkylated metabolites	<0.01	5
Atrazine	<0.01	5
Azinphos-methyl	<0.05	20
Benzo(a)pyrene	<0.004	0.01
Carbaryl	<0.05	90
Carbofuran	<0.01	90
Chlorpyrifos	<0.02	90
Desethyl atrazine	<0.01	--

Table 8 Con't

Parameter	Result (µg/L)	Maximum Allowable Concentration (µg/L)
Diazinon	<0.02	20
Dimethoate	<0.06	20
Diuron	<0.03	150
Malathion	<0.02	190
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	0.1
Picloram	<1	190
2,4-dichlorophenol	<0.15	90
2,4,6-trichlorophenol	<0.25	50
2,3,4,6-tetrachlorophenol	<0.20	100
Pentachlorophenol	<0.15	60

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). 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. The RAA for THMs was found to be 10.55 µg/L. The MAC for HAAs is 80µg/L. All samples were within compliance.

Refer to **Table 9.** for the summary of haloacetic acid results (HAAs) and Trihalomethanes (THMs).

3.3.5 Nitrate & Nitrite

One treated water sample is taken every three months and tested for nitrate and nitrite. 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 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 Century Heights Drinking Water System

	Nitrate		Nitrite		THMs		HAAs	
Date	**# Samples**	**Result (mg/L)**	**# Samples**	**Result (mg/L)**	**# Samples**	**Result (µg/L)**	**# Samples**	**Result (µg/L)**
March 13	1	<0.006	1	< 0.003	1		1	<5.3
June 7	1	<0.006	1	<0.003	1		1	<5.3
Sept 19	1	<0.006	1	<0.003	1		1	<5.3
Dec 12	1	<0.006	1	<0.003	1		1	<5.3
Total	4		4		4		4	
Average		<0.006		<0.003		RAA 10.55		<5.3
Maximum		<0.006		<0.003				<5.3

3.3.6 Sodium

One 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 June 30, 2021 and were found to be 21.6 mg/L and 22.2 mg/L respectively, which is *over the MAC* and requires notice to the Health Unit. Huron Perth Public Health has prepared a notice regarding high sodium levels in drinking water.
For more information see: http://www.acwtownship.ca/wordpress/wp-content/uploads/2013/09/Century-Heights.pdf.
The next water sample for Sodium will be collected and analyzed on or before June 30, 2026.

3.3.7 Fluoride

One water sample is collected at least once every 60 months and tested for Fluoride. The Ontario Drinking Water Quality Standards (ODWQS) have set a MAC of 1.5 mg/L. On August 23, 2022 and August 30, 2022 a sample was collected for this analysis. The first sample was found to have a concentration of 2.21 mg/L, which is greater than the MAC. The second sample again came back higher than the MAC at 2.10 mg/L. This is due to high levels of naturally occurring fluoride in the aquifer.
For more information see: http://www.acwtownship.ca/wordpress/wp-content/uploads/2013/09/CenturyHeights.pdf.
The next water sample for Fluoride will be collected and analyzed in August 2027.

4.0 WATER AND CHEMICAL USAGE

4.1 Chemical Usage

A total of 170.97 kg sodium hypochlorite was used to ensure proper disinfection in the distribution system with an average dosage of 3.80 mg/L.

Refer to **Table 10.**

Table 10. – Chemical Usage at Century Heights Drinking Water System

Date	Sodium Hypochlorite	
	Usage (kg)	Average Dosage (mg/L)
Jan	11.18	3.79
Feb	9.52	3.64
Mar	11.18	3.71
Apr	11.59	3.78
May	14.35	3.70
Jun	19.39	3.79
Jul	22.63	3.84
Aug	12.08	3.69
Sep	9.11	3.70
Oct	8.90	3.42
Nov	7.87	3.62
Dec	9.25	3.60
Total	**135.87**	
Average		**3.69**

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 flow provided to the distribution system.

Flow meters were calibrated onAugust 2, 2023

Table 11. – Treated Water Flows for Century Heights Drinking Water System

Date	Average Daily Flow (m^3)	Maximum Daily Flow (m^3)	Total Monthly Flow (m^3)
Jan	96	131	2967
Feb	94	145	2618
Mar	94	167	2906
Apr	103	155	3100
May	127	219	3925
Jun	171	146	5117
Jul	191	294	5931
Aug	107	234	3319
Sep	82	111	2458
Oct	77	126	2399
Nov	72	100	2171
Dec	82	102	2538
Average	**108**		
Max		**294**	
Total			**39449**

5.0 IMPROVEMENTS TO SYSTEM AND ROUTINE AND PREVENTATIVE MAINTENANCE

- Annual generator checks completed by Sommers Generator Systems
- Phone Line was repaired and the UPS was replaced
- Well level sensor was repaired by Hoppers Well Drilling
- Cl17 analyzer was calibrated by ClearTeck (July 26th)
- Annual Flow meters were calibrated by Advanced Meter Services
- Backflow preventers were Certified by Ferguson Plumbing (August 4th)
- Flushing was completed in September
- Fibre Optics were installed (Dec 11th)

6.0 MINISTRY OF THE ENVIRONMENT INSPECTIONS AND REGULATORY ISSUES

The Century Heights Drinking Water System was inspected by The Ministry of Environment , Conservation and Parks (June 29, 2023) and received a 93.49% rating.

Two non-compliances were noted and corrective actions were taken:
The following summarizes water system improvements and routine and preventative maintenance for the Century Heights Drinking Water System:
All UV sensors were not checked and calibrated as required .It is noted that the MDWL 080-105 issue #5,Schedule E requirements for monthly Duty UVsensor reference checks were not met between September 22, 2022 and May 24, 2023. UV intensity levels were maintained above required levels during the review period, however staffing shortage and operating authority oversight contributed to the monthly in-house calibration verification outlined in Schedule E of the MDWL being missed during this time period.Veolia has since completed on site training and calibration review for all operational staff.By no later than November 1, 2023 provide written documentation to the Provincial Officer authoring this report, that all requirements of any MECP issued control documents including but not limited to MDWL's and PTTW's, for drinking water systems operated by Veolia from the "Goderich Hub" are double checked for accuracy by both the operator performing the duties and a compliance technician or overall responsible operator for the drinking water system.
All microbiological water quality monitoring requirements prescribed by legislation for distribution samples in a small municipal residential system were not being met.
No Required Actions resulted from this one set of routine (raw, treated and distribution) bacteriological samples that was missed on November 22, 2022 at three (3) separate drinking water systems as the operating authority has taken effective steps to ensure there is no recurrence.

There were 0 instances of adverse water quality:

There was 1 Precautionary Boil Water Notice.

- due to equipment malfunction (pressure valve value)

There were 0 instances of nonconformance.

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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 ever 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 4, 2024

Century Heights Subdivision Drinking Water System – 2023 Compliance Summary

This document is a compliance summary for the Century Heights water supply for the year 2023 as per O Reg. 170/03 Schedule 22. A full summary of the water system's test results, flows and significant activities was submitted in the Annual report.

System Description

The Century Heights water system is characterized as a "GUDI" (ground water under the direct influence of surface water) system and is classified as a small municipally owned water system. The well house and its equipment have a daily maximum capacity to deliver ***734.4*** cubic meters of potable water per day to Century Heights subdivision, Maitlandview subdivision and parts of the Saltford community.

The current water sources are two deep bedrock wells. Studies to establish the security of these wells from surrounding surface water proved inconclusive in 2007 and they are now considered to be GUDI sources. BM Ross is currently investigating the new well designations established by the Ministry of the Environment.

Well #1, constructed in 1979, is located within the well house and Well #2, constructed in 2005, is located approximately 10 meters north of the well house.

A third monitoring well, drilled on the south side of Saltford Rd. was used in studies to establish the security of the two production wells. This well was abandoned and sealed in 2008.

The well house is equipped with well pumps, backup diesel generator set, chlorinators, a chlorine contact main, UV disinfection, online monitoring and alarm generation to an Autodialer.

The attached distribution system is constructed of a combination of polyethylene and PVC piping with polyethylene services.

There is no elevated storage to maintain pressure and the system pressure is maintained by using pressure tanks and the two well pumps.

The system has hydrants, but lacks the capacity to provide fire flows.

Chemicals Fed

Disinfectant

Disinfection was achieved on the Century Heights well supply through the use of 12% 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 dosages average ranged from 3.42 mg/L to 3.84 mg/L, this varies with the chlorine demand of the raw water.

The free chlorine residual was monitored at the point of entry to the distribution system with an average residual of 1.36 mg/L.

Flows

The Century Heights well supply has 1 PTTW (permit to take water) #8807-98EQ6C which permits 734.4 cubic metres of water per day to be pumped from the wells. This limit was not exceeded in 2022, the average flows were 120.99 m^3 per day. This permit was issued on July 25, 2013 and the PTTW expires on November 30, 2023. A full summary of the 2022 flows can be found in the Annual Report.

The Drinking Water Works Permit (DWWP) #080-205 Issue #4 for the Century Heights Subdivision Drinking Water System was issued on June 19, 2020. The maximum total daily flow is ***734.4*** cubic meters per day and the maximum instantaneous flow is 8.5 litres per second.

The limiting factor regarding flow is the chlorine contact time in the chlorine contact main. In order to meet the regulatory CT requirements, increased flows beyond 8.5 litres per second must have an adequate free chlorine residual of 0.64 mg/L 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 go below the limitations in 2023 as recorded by the flow meter and online chlorine analyzer.

The maximum daily flow in 2023 was 294 cubic meters or 40.03% of capacity.

The 2023 average daily flow was 108 cubic meters or 14.71%

Precautionary Boil Water Notices

There was one Precautionary Boil Water Notice in 2023, due to equipment malfunction.

Boil Water Advisory

There were no Boil Water Advisories issued by the Huron Perth Public Health (HPPH) on the Century Heights water system in 2023.

Annual Ontario Ministry of the Environment Inspection

The Century Heights Drinking Water System was inspected by The Ministry of the Environment, Conservation and Parks on June 29, 2023 and received a rating of 93.49%. There were two (2) non compliances noted.

Non conformance:

There were (0) non conformances

Adverse Water Quality Indicators

There were no instances of adverse water quality.

Exceedances

There were no exceedances for 2023

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 2023 was forwarded to ACW's representative in 2022 and updated in February 2023.

The annual Management Review was conducted by the operating authority on October 16, 2023 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 September 27, 2023 (Kyllie Bruce), there several non conformances noted. The last Risk Assessment was completed in 2023. An Emergency Response Exercise was conducted by the Municipality in 2023, and Veolia was asked to participate.

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