Goderich Annual Report 2024

WW #210000238
MDWL # 084-101 issue #2 **exp. *Aug. 2025***
PTTW #5204C5JGSY exp. Aug. 2031
DWWP #084-201 issue #5 - issued August 2020

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1.0 Executive Summary

The purpose of the 2024 Annual Report is to document the operation and maintenance data for the Goderich 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, 2024 to December 31, 2024. A copy of this report will be submitted to the owner to be uploaded to the Town's website and can be provided to interested parties upon request.

This report is a collection of information that demonstrates the production of safe and high-quality drinking water for the residents of the Town of Goderich. The Goderich Drinking Water System met all regulatory compliance requirements of the Safe Drinking Water Act.

In order to prevent equipment failures from occurring, Veolia implements a preventative maintenance program that is managed using a CMMS (Computerized Maintenance Management System). These records can be requested for viewing at any time. As part of the DWQMS (Drinking Water Quality Management System), Veolia has developed a contingency plan that includes procedures that can be followed for a number of emergency situations. These procedures are reviewed by staff annually as a part of our Emergency Exercise in order to continually improve our emergency responses. In addition to the above, the Goderich Drinking Water System has a number of redundancies in the event of equipment failure, i.e. multiple stand-by pumps, backup generators, multiple chlorine injection points, equipment lockouts, etc. As well, a large storage reservoir and elevated tank ensure that Town residents are always supplied with safe drinking water.

The Town's Council Members have responsibilities to ensure safe drinking water is supplied to the community. Under Section 19 of the Safe Drinking Water Act, "the owners of a drinking water system shall exercise the level of care, diligence and skill in respect of a municipal drinking water system that a reasonably prudent person would be expected to exercise in a similar situation and act honestly, competently and with integrity, with a view to ensuring the protection and safety of the users of the municipal drinking water system." Council Members can learn more about their role and responsibilities in ensuring safe drinking water by reading "Taking Care of Your Drinking Water: a guide for municipal Councilors", a publication written by the MECP. A copy of the document can be provided upon request. Additionally, the Walkerton Clean Water Centre offers a course called "Standard of Care: Safe Drinking Water Act" where council members and officials can learn more about their oversight responsibilities under Section 19 of the Safe Drinking Water Act.

2.0 DESCRIPTION OF WATER SYSTEM

The Goderich Drinking Water System (DWS # 210000238), located at 100 Cove Road, Goderich, Ontario is classified as a large municipal residential system. The system is operated by Veolia Water Canada, the Operating Authority, and provides a potable water supply to the residents and businesses of the Corporation of the Town of Goderich. The facilities, consisting of a Class III conventional design Water Treatment Plant having an approved rated capacity of 12,000 m^3/d,(cubic meters per day) and a Class III water distribution system consisting of a Booster station with a capacity of 5000 $m3$, the Water Tower with a capacity of 941 $m3$, which are owned by the Town of Goderich and operated by Veolia Water Canada, the Operating Authority.

The raw water for the treatment process is drawn from a surface water source (Lake Huron) located directly west of the town. The raw water is treated by the following processes:

- Pre-chlorination
- Flash Mixing, Flocculation, Coagulation, and Sedimentation
- Filtration and Backwash
- Post-chlorination
- Fluoridation
- Distribution system chlorination

Water is drawn from Lake Huron, from a depth of approximately 5.5 m, approximately 518 m west of the Water Treatment Plant, and is fed by gravity through a 750 mm pipeline to a high traveling raw water screen in the Water Treatment Plant. The water then flows into a two celled concrete low lift pump well.

The major influences on raw water quality are rough lake conditions which can increase turbidity levels rapidly, and weather conditions which can cause a plume of turbid discharge from the Maitland River, which empties into the lake north of the Water Treatment Plant intake, to be directed over the intake.

Additional potential impacts on raw water could come from operations at the Goderich Harbour located north of the intake, and the outfall from the Goderich Sewage Treatment Plant located south of the intake.

The intake of the Plant is situated upstream (north) from the outfall of the Goderich sewage treatment plant and is not influenced by it. The characterization of the raw water from the lake is very good and chemical contamination is not a factor. A complete list of the contents of the source water is available in the First Engineer's Report which was completed by BM Ross and Associates.

Chlorine gas is used from two on-line gas cylinders, with auto switch-over, to treat the water intake (for zebra mussel control if needed) and to provide primary and secondary disinfection. The addition of chlorine gas to the raw water supply is referred to as pre-chlorination, and serves primarily as a measure to prevent microbiological growth within the raw water pipeline and the two celled low lift pump well. Pre-chlorine residual is measured continuously in the water leaving the filters.

A coagulant is added to the incoming raw water in the flash mixing tank which is mixed and then flows to two flocculation tanks equipped with walking beam flocculation mechanisms. Detention time allows the formation of floc masses which attract and gather debris present in the influent raw water.

The suspension then flows to two settling tanks equipped with chain and flight sludge collectors. The detention time here allows large particles to settle by gravity in the settling tanks. Supernatant (the clear liquid above the settled floc) overflows from the settling tanks to the top of the dual media filters.

Most of the particulate matter that was present in the raw water is captured by the floc particles and is removed by gravity in the settling tanks, however, during normal operations, some floc passes from the settling tanks to the top of the filters.

The water treatment plant has two parallel dual media filters. The top layer of the filter is granular anthracite, while the filter media below the anthracite layer is sand. As debris accumulates in the filters and limits flow, the filters must be cleaned by reversing the flow (referred to as backwashing) and directing the backwash to a waste holding tank (settling tank and two sludge lagoons).

Turbidity, a measure of the cloudiness of water, is measured continuously in the effluent from each filter to monitor the effectiveness of the filtration process. If the turbidity rises above a set point value, an alarm warns staff that corrective actions are needed.

Filtered water passes through the filter under-drain into the treated water clearwells. The clearwells are tanks located beneath the filters and are used to store filtered water prior to entering the chlorine contact reservoir.

Primary disinfection (pre-chlorination) occurs before filtration, immediately upstream from the filtered water. Primary chlorination disinfects the water, ensuring that no potentially pathogenic organisms remain after sedimentation and filtration and are rendered harmless prior to distribution to consumers. Consistent disinfection is ensured by continuous monitoring of the chlorine residual at three points in the process of the treated water leaving the facility. If the residual drops below a safe level, pumping to the distribution system is automatically interrupted and an operator is notified to correct the problem.

Secondary disinfection is accomplished during post-chlorination by adding sufficient chlorine at the water treatment plant to maintain a residual throughout the entire distribution system. Secondary disinfection prevents regrowth of microorganisms within the distribution system. Chlorine residual analyzers allow continuous monitoring of chlorine residual in the treatment plant effluent, and in the water upstream of the flash mixer (seasonally, in conjunction with zebra mussel control operation). A provision is available to top up residual chlorine levels using sodium hypochlorite injection at the booster station when required.

A two celled in-ground reservoir containing inlet and outlet diffusers and a baffle wall in each cell is also designed into the system to provide adequate CT (Concentration, mg/L x Time, min) to ensure pathogen removal and disinfection requirements have been met. When calculating CT, the baffle factor is 0.6.

The raw water source is low in naturally occurring fluoride, and hydrofluosilicic acid is able to be added at the post-chlorination point. Equipment is also available to provide continuous monitoring of fluoride concentrations in the treatment plant effluent, and includes a high level alarm.

Taste and odour control facilities are installed (if needed) consisting of a powdered activated carbon feed system at the flash mixing tank.

Standby power is provided by a 425 kW diesel generator and automatic transfer switch.

Filter backwash water and accumulated floc from the sedimentation tanks is directed to a waste settling tank from where they are pumped to the settling beds (lagoons).

Treated water is pumped from the high lift pump wells into the distribution sub-system. Distribution piping typically ranges in size from 100 mm to 400 mm in diameter, and may consist of cast iron, ductile iron, concrete, or PVC, depending on the location and date of installation.

One ground level, two cell storage reservoir provides reserve storage. The booster station is used to ensure adequate system pressure to zones 1 and 2.

The booster station is used to provide water to zone 2 and in addition supplies water to zone 1 when the Water Treatment Plant is not in operation. An elevated storage tank is also an integral part of the distribution system and used to provide constant pressure for zone 1.

Typical system pressure ranges from 40 P.S.I. to 80 P.S.I., depending on zone and elevation.

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 DR900 Spectrophotometer. There are **5** online analyzers monitored by SCADA (Supervisory Control and Data Acquisition).
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 regularly using a HACH pocket colorimeter. Chlorine residuals are also continuously monitored in the distribution system using a HACH CL17 online chlorine analyzer at the Booster Station and the Water Tower.

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

Date	Average Treated Chlorine Residual (mg/L)	Average Distribution Chlorine Residual (mg/L) (Booster Station)
Jan	1.64	1.07
Feb	1.62	1.14
Mar	1.59	1.08
Apr	1.76	0.83
May	1.84	0.88
Jun	1.82	0.91
Jul	1.89	0.98
Aug	1.93	0.74
Sep	1.92	0.89
Oct	1.93	1.15
Nov	2.00	1.07
Dec	2.14	1.21
Average	**1.84**	**1.00**
Min	**1.19**	**0.21**
Max	**3.60**	**1.82**
# Samples	**366**	**365**

3.1.3 Turbidity

Turbidity is measured continuously using online turbidity analyzers and daily comparisons to a TU5200 Turbidimeter. The MECP *Procedure for Disinfection of Drinking Water in Ontario* requires that the turbidity on each filter effluent line is less than or equal to 0.3 NTU at least 95% of the time each month. The Goderich WTP consistently performed at 100% in 2024. The maximum turbidity measured in the treated water was 0.304 NTU.
Table 2. provides a summary of filter and treated turbidity results.

Table 2. – Raw, Filtered and Treated Water Turbidites Grab samples

Date	Average Filter #1 Turbidity (NTU)	Average Filter #2 Turbidity (NTU)	Average Treated Turbidity (NTU)	Average Raw Turbidity (NTU)
Jan	0.078	0.061	0.09	8.13
Feb	0.082	0.074	0.09	8.18
Mar	0.079	0.069	0.10	16.45
Apr	0.066	0.063	0.08	12.39
May	0.053	0.056	0.06	5.33
Jun	0.055	0.049	0.05	4.45
Jul	0.047	0.048	0.02	2.87
Aug	0.050	0.051	0.07	6.83
Sep	0.050	0.053	0.02	5.23
Oct	0.047	0.045	0.03	10.24
Nov	0.046	0.051	0.06	19.81
Dec	0.045	0.056	0.07	30.88
Average	**0.058**	**0.056**	**0.066**	**13.41**
Min	**0.026**	**0.015**	**0.006**	**0.66**
Max	**0.250**	**0.145**	**0.304**	**123.00**
# Samples	**366**	**366**	**366**	**366**

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 53 samples were collected and analyzed for E. Coli and Total Coliforms. The range of E. Coli results obtained were 0 - <10 cfu/100 ml. The range of Total Coliform results were 0 – <9,000 cfu/100 ml.
Table 3. provides a summary of bacteriological results performed on the raw water.

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

	E. Coli			Total Coliform			
Date	# Samples	# Samples 0-10	# Samples <10	# Samples	# Samples 0-100	# Samples 101-9000	# Samples >9000
Jan	5	2	3	5	0	5	0
Feb	4	2	2	4	3	1	0
Mar	4	4	0	4	1	3	0
Apr	5	4	1	5	4	1	0
May	4	4	0	4	4	0	0
Jun	4	2	2	4	4	0	0
Jul	5	4	1	5	5	0	0
Aug	4	3	1	4	3	1	0
Sep	4	4	0	4	4	0	0
Oct	5	5	0	5	5	0	0
Nov	4	2	2	4	3	1	0
Dec	5	2	3	5	1	4	0
Total	**53**	**38**	**15**	**53**	**37**	**16**	**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 53 treated water samples were collected and analyzed for the above parameters. All E. Coli and Total Coliform results from the treated water were 0 cfu/100 ml. The range of HPC results were 0 - 20 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 Goderich 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	5	5	0	5	5	0	5	5	0
May	4	4	0	4	4	0	4	4	0
Jun	4	4	0	4	4	0	4	4	0
Jul	5	5	0	5	5	0	5	5	0
Aug	4	4	0	4	4	0	4	4	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	5	5	0	5	5	0	5	5	0
Total	**53**	**53**	**0**	**53**	**53**	**0**	**53**	**53**	**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 320 distribution samples were collected and analyzed for the above parameters and all but one set of samples were found to be safe. ***E. Coli and Total Coliform results from one set of samples collected were above 0 cfu/100 ml. Refer to page 22 for the AWQ***I.The range of HPC results were 0 - 1000 cfu/100 ml (two samples were also NDOG).
Table 5. provides a summary of all bacteriological samples taken in the distribution system.

Table 5. – Microbiological Results for Goderich Distribution System

Date	E. Coli			Total Coliform			HPC		
	# Samples	# Samples 0	# Samples ≥1	# Samples	# Samples 0	# Samples ≥1	# Samples	Safe	Deteriorating
Jan	28	28	0	28	28	0	10	10	0
Feb	25	25	0	25	25	0	8	8	0
Mar	23	23	0	23	23	0	8	8	0
Apr	28	28	0	28	28	0	10	8	2*
May	23	23	0	23	23	0	8	8	0
Jun	27	27	0	27	27	0	8	8	0
Jul	36	35	1	36	35	1	10	10	0
Aug	24	24	0	24	24	0	8	8	0
Sep	23	23	0	23	23	0	8	8	0
Oct	30	30	0	30	30	0	10	10	0
Nov	23	23	0	23	23	0	8	8	0
Dec	30	30	0	30	30	0	10	10	0
Total	**320**	**319**	**1**	**320**	**319**	**1**	**106**	**106**	**0**

**Samples were NDOG - Non Determined Overgrowth*

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

3.3.1 Inorganics

One treated water sample is taken every 12 months and tested for inorganics. The most recent samples for the Goderich Drinking Water System were collected on February 13, 2024 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 in ***February, 2025***.
Results from 2024 can be found in **Table 6.**

Table 6. – Schedule 23 Results for Goderich Drinking Water System

Parameter	Result (µg/L)	Maximum Allowable Concentration (µg/L)
Antimony	<0.6	6
Arsenic	<0.2	10
Barium	16.3	1000
Boron	13	5000
Cadmium	<0.003	5
Chromium	0.18	50
Mercury	<0.01	1
Selenium	0.14	50
Uranium	0.100	20

3.3.2 Lead

Schedule 15.1 of Ontario Regulation 170/03 requires that Distribution 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. pH and alkalinity samples were taken on March 28, 2024 and again on August 28, 2024. The next set of samples is scheduled for the December - January 2025 season.
2024 results can be found in **Table 7a.**

Table 7a. – Lead Sampling Program Results for Goderich Drinking Water Distribution System

	pH	Alkalinity (mg/L)	Lead µg/L)
Dec-Apr			
Elevated Tank	7.97	131	<0.01
Firehall - hydrant	8.00	110	0.52
Maitland Golf Course	7.93	123	0.04
Jun-Oct			
Elevated Tank	7.92	77	<0.01
Fire Hall - Hydrant	7.98	79	<0.01
Marina Resort Fire hydrant	7.92	79	<0.01

Table 7b. – Lead Sampling Program Results for Goderich Child Care Centre

	pH	Lead (µg/L)
Child Care Centre	7.24	0.35
	7.24	0.07
	7.25	0.08
	7.25	0.04
	7.24	0.11
	7.24	<0.01
	7.26	0.14
	7.26	0.04
	7.26	<0.01
	7.26	<0.01
	7.25	<0.01
	7.25	<0.01

Lead sampling for Daycare Facilities

Section 5 of Reg 243/07 requires that every drinking water fountain and any tap that provides drinking water or is used to prepare food or drink for children under 18 are scheduled to be sampled. The Goderich Municipal Child Care Centre has qualified for Lead Sampling reduction. Testing will resume again in the May to Oct. 2025 Season.

3.3.3 Organics

One treated water sample is taken every 12 months and tested for schedule 24 organic parameters. The most recent samples were collected on February 13, 2024. All parameters were found to be within compliance. Organics will be sampled and analyzed again in February 2025.
2023 sample results can be found in **Table 8.**

Table 8. – Schedule 24 Results for Goderich 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	<0.15	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	0.02	5
Atrazine	0.01	0.01
Desethyl atrazine	0.01	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

Table 8 con't

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

Microcystin Testing

Harmful Algal Blooms (HABs) may contain Cyanobacteria, commonly known as Blue-Green Algae. Cyanobacteria are a group of microorganisms that are known to produce a variety of toxins that can cause a range of effects from simple skin rashes to liver and nerve damage and even mortality of fish, wildlife, pets, and rarely, humans. The onset of a bloom may be rapid and unexpected, therefore, it is important to monitor for the HABs and treat all algae blooms as potentially toxic.

As directed by the Ministry of the Environment, Conservation and Parks (MECP), monthly RAW and TREATED samples shall be collected beginning in June until October each year.

If, at ANY time, HABs are suspected, the monitoring will increase to include:

- Microscopic examination of a RAW grab sample
- Sample collection and testing of the Raw and Treated water for Microcystin

Table 9. Microcystin Results

2022	MAC	Raw Water	Treated Water
May - 25	1.5	<0.1	<0.1
June -18	1.5	<0.1	<0.1
July - 16	1.5	<0.1	<0.1
–	1.5	–	–
Sept - 17	1.5	<0.1	<0.1
Oct - 15	1.5	<0.1	<0.1

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 March, June, September and December. 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 RAA for THMs collected in 2024 is 26.50µg/L. The MAC for HAAs is 80 µg/L. All samples were found to be compliant.
Refer to **Table 10** 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. Samples were collected during the months of March, June, October and December. 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 10.**

Table 10. – Nitrate, Nitrite, THM and HAA Results at Goderich 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 12	1	2.01	1	<0.003	1	24	1	16.3
June 18	1	0.382	1	<0.003	1	29	1	6.1
October 1	1	0.257	1	<0.003	1	37	1	6.4
Dec	1	0.455	1	<0.003	1	16	1	<5.3
Total	4		4		4		4	
Average		0.776		<0.003		RAA 26.50		9.6
Maximum		2.01						

3.3.6 Sodium

One water sample is collected every 60 months and tested for Sodium. The Ontario Drinking Water Standards (ODWQS) has an aesthetic objective concentration of 200 mg/L for Sodium and requires the Medical Office of Health be notified if the concentration exceeds 20 mg/L. These samples were last collected on November 29, 2022 and were found to be 56.43 mg/L, which is in compliance. The next water sample for Sodium will be collected and analyzed on or before November 14, 2027.

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. In August, 2022, a sample was collected for this analysis. The sample was found to have a concentration of 0.09 mg/L, which is within compliance. The next water sample for Fluoride will be collected and analyzed on or before August, 2027.

Hydrofluosilicic acid is added to the finished water. Fluoride dosages are continually monitored with online equipment. See **Table 12**. for fluoride usage and dosages. Below, **Table 11.** summarizes the fluoride residuals measured in-house with a table-top spectrophotometer.

Table 11. – Treated Water Fluoride Concentration for Goderich Drinking Water System

Date	Average Treated Water Fluoride Concentration (mg/L)
Jan	0.47
Feb	0.51
Mar	0.59
Apr	0.62
May	0.60
Jun	0.45
Jul	0.42
Aug	0.47
Sep	0.53
Oct	0.55
Nov	0.54
Dec	0.54
Average	**0.52**
Min	**0.19**
Max	**0.72**
# samples	**366**

4.0 WATER AND CHEMICAL USAGE

4.1 Chemical Usage

Refer to **Table 12.**
3548.10 kg of chlorine gas was used to ensure proper disinfection in the distribution system with an average dosage of 2.88 mg/L.

Table 12. – Chemical Usage at Goderich Drinking Water System

Date	SternPac		Chlorine Gas		Fluoride		Sodium Hypochlorite
	Usage (kg)	Average Dosage (mg/L)	Usage (kg)	Average Dosage (mg/L)	Usage (kg)	Average Dosage (mg/L)	Usage (kg)
Jan	987.60	11.86	207.30	2.49	44.91	0.44	7.73
Feb	1275.50	15.74	196.22	2.43	44.42	0.55	7.18
Mar	1320.40	15.13	222.10	2.58	46.67	0.54	5.18
Apr	1361.80	16.08	261.59	3.06	40.50	0.47	0.14
May	1017.10	16.58	278.03	2.72	47.25	0.46	0.14
Jun	950.30	7.22	407.33	2.75	71.61	0.45	0.14
Jul	1064.70	7.16	416.41	2.81	95.09	0.64	0.08
Aug	1104.90	7.90	409.37	3.88	74.46	0.55	0.18
Sep	876.30	7.56	347.67	3.00	76.90	0.67	0.40
Oct	783.30	7.68	312.85	3.07	69.94	0.69	0
Nov	724.80	8.66	235.99	2.83	55.47	0.66	0
Dec	1100.20	12.74	253.24	2.93	58.70	0.68	0
Total	**12566.90**	**–**	**3548.10**	**–**	**725.92**	**–**	**1.76**
Average	**–**	**1047.24**	**–**	**2.88**	**–**	**0.57**	**–**

4.2 Annual Flows

A summary of the water supplied to the distribution system in 2024 is provided in **Table 13.** This Table provides a breakdown of the monthly flow provided to the distribution system.

Flow meters were calibrated in July and August 2024.

Table 13. – Treated Water Flows for Goderich Drinking Water System

Date	Average Daily Flow (m^3)	Maximum Daily Flow (m^3)	Total Monthly Flow (m^3)
Jan	2,714	3,615	84,133
Feb	2,691	3,204	78,043
Mar	2,724	3,366	84,452
Apr	2,959	3,995	88,765
May	3,343	5,106	103,618
Jun	4,487	6,529	134,616
Jul	4,892	7,384	151,643
Aug	4,716	6,740	146,192
Sep	3,984	5,194	119,515
Oct	3,297	4,747	102,211
Nov	2,790	4,086	83,704
Dec	2,793	4,908	86,576
Average	**3,449**	**–**	**–**
Max	**–**	**7,384**	**–**
Total	**–**	**–**	**1,263,468**

5.0 IMPROVEMENTS TO SYSTEM AND ROUTINE AND PREVENTATIVE MAINTENANCE

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

January

- Post Cl2 line was repaired

February

- Yearly generator servicing
- ESA 9 (Electrical Safety Authority) Inspected the new disconnect for the generator
- Roof drainage was inspected by Smith Peat - It was leaking in the Lab during the heavy rain
- Brame Electric installed 600 amp disconnect to replace breaker

March

- Caldecott was onsite to install a raw water inlet valve stem extension
- Wetwell was cleaned out
- Booster pump #4 is having the Impeller looked at
- Max performance filter testing started

April

- Wet wells 1, 2 & 3 were all cleaned out - many low level alarms due to cleaning
- high and low lift pumps were serviced

May

- Hetek onsite to calibrate Chlorine gas alarm

June

- Daycare Center Lead samples completed
- Analyzers were Calibrated by ClearTech (4th)
- Sommers onsite for Generator maintenance

July

- Treated, Raw and backwash meters were calibrated by Clearteck
- Backflow Preventers Certified by Ferguson Plumbing
- Wetwell was inspected and repaired by ASI
- RM Electrical and Sommers Generator Service onsite to fix back-up generator issues (replaced the UPS, rental generator was returned)

August

- Generator continued to be an issue after repairs - R and M Electrical back to trouble shoot
- Greased flocculator bearings
- Lead samples taken
- Streaming Current Detector (SCD) was replaced with a new one by VA Millwrights - currently offline, Cleartech to set up Sept 4th
- Flow meters were calibrated by Advanced Meter Solutions
- Datasoft was onsite to change programming for Booster Pump #3
- VA Millwright was onsite to repair the base on Booster Pump #1

September

- Dead end fire hydrants were flushed

- Datasoft onsite for SCADA system upgrades for the booster pump
- Desiccant was replaced in the TW turbidimeter

October

- The travelling screen chamber was cleaned out and measurements taken for the new travelling screen
- New railing and hatch were installed/repaired for the desludge chamber
- Trash pump has been repaired
- BP#1 has been installed by VA Millwright
- Datasoft has reprogrammed the controls for BP#1
- RM Electrical removed the old Singer controls
- The travelling screen installation was completed

November

- Lifting devices were certified at the WTP and the Booster station
- Cl2 sensor was tested by Hetech
- The Low lift wet well was cleaned out
- Singer valve was repaired at the Tower
- Lighting project was completed at the Booster station

December

- Booster Pump #4 was pulled for repairs
- A heating audit was conducted at the Water Plant by Ferguson plumbing
- Annual fire extinguisher inspections was completed

Ongoing maintenance needed:

- Chlorine feed lines need to be replaced - they are very brittle and need full replacement
- Lake pipe intake and the Storm outlet to be ROV' d (remote operated vehicle - inspection).
- Pipe Gallery lights need to be replaced

There were 8 water main breaks, 6 lead service lines at curbstop replacements and 1 watermain replacement (Anglesea/Albert) in 2024.

6.0 MINISTRY OF THE ENVIRONMENT INSPECTIONS AND REGULATORY ISSUES

The most recent Ministry of Environment, Conservation and Parks (MECP) Inspection was completed by Rhonda Shannon on April 14, 2024. There were no non-compliances noted. The rating was 96.7%.

There were no instances of noncompliance:

An External Audit was conducted by SAI Global (Paul Cartlidge) on May 3, 2024
There were 2 Major nonconformance:

- Risk Assessment Outcomes did not receive an annual review in 2022 or 2023 and do not address Cyber Security as required by the MECP document "Potential Hazardous events for Municipal Residential Drinking Water Systems" as updated in April 2022. Previous corrective action was not effective from Minor NCR finding #1326758-1 identified at the 2023 Surveillance Audit

- There was no objective evidence available that Corrective Actions and Preventive Actions are being addressed within the Quality Management System. Minor non-conformances and Opportunities for Improvement from 2023 Internal Audit were not actioned through any mechanism and previous OFIs as noted

on the OFI Tracker Sheet were noted to be dated/incomplete.

There was 1 instance of adverse water quality:

- AWQI #165548 - July 11, A distribution sample taken from a private business came back with 6 Total coliform and 1 E.coli. resamples came back safe.

There were 2 Precautionary Boil Water Notices issued for 2024.

- June 21, Tie-in for new watermain at Albert to Bruce St
- August 2, Watermain break on Cayley St

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.