Zurich Drinking Water System

Waterworks # 220001469
System Category – Large Municipal Residential

Annual Drinking Water Report

Prepared For: The Municipality of Bluewater

Reporting Period of January 1st – October 31st, 2023

Issued: February 23, 2024

Revision: 0

Operating Authority:

OCWA

ONTARIO CLEAN WATER AGENCY
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Overview

This report fulfills requirements of Ontario Regulation 170/03 Section 11 and Schedule 22. The report must be made available to anyone that requests a copy of the report. By March 31st, 2024 the report must be provided to members of municipal council.

Report Availability

This system did not serve more than 10,000 residence and the annual reports will be available to residents at the Municipal Office as well as on the municipal website. Notification will be at the Municipal Office and copies provided free of charge if requested. The Municipal Office is located at 14 Mill Ave, Zurich, Ontario, N0M 2T0.

System Process Description

The Zurich Drinking Water System served the community of Zurich located in the Municipality of Bluewater. The approximate population served is 966 with a rated capacity of 1,150 m^3/ day. The system drew from two wells, one 88.4 m deep and the other 96.3 m deep. Both wells were equipped with submersible pumps with a rated capacity of 13.3 L/s. The pumphouse consisted of high lift pumps, sodium hypcholorite metering pumps and tank, iron sequestering metering pumps, a sodium silicate tank, diesel standby generator and a SCADA process and control system.

The distribution system is PVP piping ranging in size from 50 mm to 200 mm. Typical system pressure ranges from 40 to 60 psi. The distribution system also includes various appurtenances such as valves, hydrants and blow offs used to monitor and maintain the system.

In February, 2023, the Zurich Drinking Water System changed from having its water supplied by wells in Zurich to being supplied water from the Hensall Distribution System via the Lake Huron Primary Water Supply System (LHPWSS). The wells were maintained until June, 2023, as an emergency back up supply. The wells were then decomssioned September 21 and 26, 2023. The Zurich Drinking Water System and Hensall Distribution System were then combined by the Ministry of the Environment, Conservation and Parks (MECP) in November, 2023, to form the Hensall-Zurich Distribution System. Refer to the Hensall-Zurich Distribution System annual report for data from November to December, 2023.

Treatment Chemicals used during the reporting year:

Sodium Hypcholorite 12% was used to achieve primary disinfection and Sodium Silicate for iron sequestration. Refer to Table 1 below for supplier information.

Table 1: *Treatment Chemicals in the Zurich Drinking Water System*

Chemical Name	Use	Supplier
Sodium Hypochlorite 12%	Primary Treatment	Jutzi Water Technologies
Sodium Silicate	Iron Sequestration	Jutzi Water Technologies

Summary of Non-Compliance

Adverse Water Quality Incidents

Under the *Safe Drinking Water Act*, O.Reg 170/03, any adverse water quality incidents (AWQI) are required to be reported to the Ministry of the Environment, Conservation and Parks and corrective action taken. Refer to Table 2 below for a summary of AWQI incidents in 2023.

Table 2: *Adverse Water Quality Incidents*

Date	AWQI #	Location	Problem	Details	Legislation	Corrective Action Taken
There were no AWQI's reported during the reporting period.						

Non-Compliance

Under the *Safe Drinking Water Act*, O.Reg 170/03, any events where legislative requirements were not met are are required to be reported to the MECP and corrective actions taken. Refer to Table 3 below for a summary of non-compliance incidents in 2023.

Table 3: *Summary of Non-Compliance Incidents*

Legislation	Requirement(s) system failed to meet	Duration of the failure (i.e. date(s))	Corrective Action	Status
There were no non-compliance incidents reported during the reporting period.				

Non-Compliance Identified in a Ministry Inspection:

The routine MECP Inspections have an Inspection Rating Record. This record evaluates the system to provide information for the owner/operator on areas that need to be improved. The particular areas that were evaluated for the Zurich Drinking Water System were: Capacity Assessment, Source, Treatment Processes, Operations Manuals, Logbooks, Certification and Training, Water Quality Monitoring, and Reporting and Corrective Actions. This system received 0 out of 444 non-compliance ratings and as such received 100% for the Final Inspection Rating.

Table 4: *Non-Compliances Identified in a Ministry Inspection*

Legislation	Requirement(s) system failed to meet	Duration of the failure (i.e. date(s))	Corrective Action	Status
There were no non-compliances identified in the Inspection Report.				

Flows

Raw and Treated Water Flows

The raw and treated water flows are regulated under the Permit to Take Water (PTTW #3617-9RXSNN) and Municipal Drinking Water Licencse (MDWL #045-104), respectively. The 2023 daily raw flow was submitted to the Ministry electronically under the PTTW number. A copy of the data that was submitted is attached in Appendix A.

The total volume of treated water in 2023 was 15 906 m^3. In 2022, the total volume was 131 487 m^3.

The volume for 2022 was considerably higher than 2023 due to the change in raw water supply from the Zurich wells to the Hensall Distribution System via LHPWSS that occurred in February, 2023.

Maximum and Average Daily Flow Rates (m^3/d) by Month

Two onsite wells provided water to the Zurich Drinking Water System in January and February, 2023. The wells were maintained until June, 2023, as an emergency supply source. Raw water flow was measured from the wells for the PTTW which limits the flow of each well to 1152 m^3/d. Refer to Table 5 below for a summary of maximum and average raw water flows for each well per month.

Table 5: *Average and Maximum Daily Flows per Month*

	Raw Water-Well 1		Raw Water-Well 3		
Month	**Max Flow (m^3/d)**	**Avg. Flow (m^3/day)**	**Max Flow (m^3/d)**	**Avg. Flow (m^3/day)**	**PTTW Max Flow (m^3/d)**
January	172.98	147.74	178.41	150	1152
February	161.41	75.23	158.75	72.05	1152
March	0.03	0	0.13	0.01	1152
April	0.04	0	0.11	0.01	1152
May	0.16	0.01	0.1	0.01	1152
June	0.02	0	0.11	0.02	1152

Treated water flow was measured for the MDWL which limits the flow to 1150 m^3/d. Treated water flow was recorded in January and February, when the system switched to the LHPWSS. Refer to Table 6 for the maximum and average treated water flow per month.

Table 6: *Treated Water Flows per Month*

Treated Water			
Month	**Max Flow (m^3/d)**	**Avg. Flow (m^3/day)**	**MDWL Max Flow (m^3/d)**
January	357.67	302.56	1150
February	316.26	155.69	1150

Regulatory Sample Results Summary

Microbiological Testing

To meet regulatory requirements, raw water is sampled and tested for E. coli and Total Coliform. Treated and Distribution water is sampled for E. coli, Total Coliform and Heterotrophic Plate Count (HPC). The regulatory limit for Total Coliform and E. coli is zero, HPC doesn't have a limit.
Raw water (RW) was sampled weekly until the wells were turned off in June, 2023. Treated water (TW) was sampled weekly until the supply changed from the Zurich wells to the Hensall Distribution System in mid-February, 2023. Distribution water (DW) was sampled weekly until the Zurich Drinking Water System was combined by the MECP with the Hensall Distribution System in November, 2023. Refer to the Hensall-Zurich Distribution System annual report for results from November and December, 2023. Refer to Table 7 below for a summary of testing results for raw, treated and distribution water.

Table 7: *Microbiological Testing Summary*

	No. of Samples Collected	Range of E.Coli Results (cfu/100mL)		Range of Total Coliform Results (cfu/100mL)		No. of HPC Samples Collected	Range of HPC Results (cfu/mL)	
		Min	Max	Min	Max		Min	Max
Raw Water – Well 1	23	0	0	0	0	n/a	n/a	n/a
Raw Water – Well 3	23	0	0	0	0	n/a	n/a	n/a
Treated Water	7	0	0	0	0	7	10	10
Distribution Water	149	0	0	0	0	61	10	170

Operational Testing

As per the *Safe Drinking Water Act*, O.Reg 170/03, raw water (RW) turbidity is required to be monitored monthly with an objective of turbidity less than 1 NTU. Free chlorine residuals are required to be continuously monitored with an online chlorine analyzer. Free chlorine residuals are also monitored throughout the distribution system to ensure adequate secondary disinfection is provided. The regulatory requirement for free chlorine residual is a minimum of 0.05 mg/L with an objective of 0.20 mg/L in the distribution system. Refer to Table 8 for turbidity and free chlorine residual results.

Table 8: *Turbidity and Free Chlorine Residual Monitoring*

Parameter	No. of Samples Collected	Range of Results	
		Minimum	Maximum
Turbidity, grab (NTU) – RW – Well 1	6	0.16	0.97
Turbidity, grab (NTU) – RW – Well 3	6	0.22	0.49
Free Chlorine Residual, On-Line (mg/L) - TW	1080	0.70	1.16
Free Chlorine Residual, grab (mg/L) - DW	311	0.18	1.24

Inorganic Parameters

Inorganic parameters are tested as a requirement under O. Reg. 170/03. Sodium and Fluoride are required to be tested every 60 months. Nitrate and Nitrite are tested quarterly as required under O. Reg. 170/03. In the event any of the parameters (except Sodium and Fluoride) exceed half of the maximum allowable concentration, the parameter is required to be sampled quarterly. Arsenic, fluoride and sodium were all above the ½ maximum acceptable concentration (MAC) due to naturally occurring in the well water, since the source water has been switched these levels are all now below the acceptable concentrations. Refer to Table 9 below.

Table 9: *Inorganic Parameter Testing*

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
Treated Water					
Antimony: Sb (ug/L) - TW	2023/02/14	< MDL 0.6	6	No	No
Arsenic: As (ug/L) - TW	2023/01/10	7.2	10	No	Yes
Arsenic: As (ug/L) - TW	2023/02/14	7.9	10	No	Yes
Barium: Ba (ug/L) - TW	2023/02/14	33.7	1000	No	No
Boron: B (ug/L) - TW	2023/02/14	225	5000	No	No
Cadmium: Cd (ug/L) - TW	2023/02/14	0.01	5	No	No
Chromium: Cr (ug/L) - TW	2023/02/14	0.17	50	No	No
Mercury: Hg (ug/L) - TW	2023/02/14	< MDL 0.01	1	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
Selenium: Se (ug/L) - TW	2023/02/14	0.07	50	No	No
Uranium: U (ug/L) - TW	2023/02/14	0.94	20	No	No
Additional Inorganics					
Fluoride (mg/L) - TW	2021/01/19	1.64	1.5	Yes	Yes
Nitrate : (mg/L) - TW	2023/01/10	< MDL 0.006	10	No	No
Nitrite : (mg/L) - TW	2023/01/10	< MDL 0.003	1	No	No
Sodium / Na (mg/L) - TW	2022/03/01	46.1	20*	Yes	Yes
Sodium / Na (mg/L) - DW	2023/10/24	12.5	20*	No	No

MAC = Maximum Allowable Concentration as per O.Reg 169/03

*There is no "MAC" for Sodium. The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified mg/L when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.

Schedule 15.1 Sampling:

Schedule 15.1 Sampling is required under O.Reg 170/03. This includes sampling for lead, alkalinity and pH. The Zurich Drinking Water System is under reduced sampling. As such, no residential plumbing samples were required to be collected. Monitoring the pH and alkalinity in the distribution system is essential to ensure adequate buffering for corrosion control and to minimize exposure to metals such as lead. Refer to Table 10 below.

Table 10: *Schedule 15.1 Sampling Results*

Distribution System	Number of Sampling Points	Number of Samples	Range of Results		MAC (ug/L)	Number of Exceedances
			Minimum	Maximum		
Alkalinity (mg/L)	2	4	81	98	n/a	n/a
pH	2	4	7.31	7.73	n/a	n/a
Lead (ug/l)	2	2	0.22	0.68	10	0

Organic Parameters

Organic parameters are tested every 60 months as a requirement under O.Reg 170/03. In the event any of the parameters exceed half of the maximum allowable concentration the parameter is required to be sampled quarterly. Organic parameter test results for treated water are listed in Table 11 below.

Chlorine byproducts including Trihalomethane and Halocetic Acid are tested quarterly in the distribution system. Results are listed in Table 11 below.

Table 11: *Organic Parameter Testing*

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Treated Water					
1,1-Dichloroethylene (ug/L)-TW	2023/02/14	< MDL 0.33	14	No	No
1,2-Dichlorobenzene (ug/L)-TW	2023/02/14	< MDL 0.41	200	No	No
1,2-Dichloroethane (ug/L)-TW	2023/02/14	< MDL 0.35	5	No	No
1,4-Dichlorobenzene (ug/L)-TW	2023/02/14	< MDL 0.36	5	No	No
2,3,4,6-Tetrachlorophenol (ug/L)-TW	2023/02/14	< MDL 0.2	100	No	No
2,4,6-Trichlorophenol (ug/L)-TW	2023/02/14	< MDL 0.25	5	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
2,4-Dichlorophenol (ug/L)-TW	2023/02/14	< MDL 0.15	900	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L)-TW	2023/02/14	< MDL 0.19	100	No	No
Alachlor (ug/L) -TW	2023/02/14	< MDL 0.02	5	No	No
Atrazine + N-dealkylated metabolites (ug/L)-TW	2023/02/14	< MDL 0.01	5	No	No
Azinphos-methyl (ug/L)-TW	2023/02/14	< MDL 0.05	20	No	No
Benzene (ug/L)-TW	2023/02/14	< MDL 0.32	1	No	No
Benzo(a)pyrene (ug/L)-TW	2023/02/14	< MDL 0.004	0.01	No	No
Bromoxynil (ug/L)-TW	2023/02/14	< MDL 0.33	5	No	No
Carbaryl (ug/L)-TW	2023/02/14	< MDL 0.05	90	No	No
Carbofuran (ug/L) -TW	2023/02/14	< MDL 0.01	90	No	No
Carbon Tetrachloride (ug/L) -TW	2023/02/14	< MDL 0.17	2	No	No
Chlorpyrifos (ug/L) -TW	2023/02/14	< MDL 0.02	90	No	No
Diazinon (ug/L)-TW	2023/02/14	< MDL 0.02	20	No	No
Dicamba (ug/L)-TW	2023/02/14	< MDL 0.2	120	No	No
Dichloromethane (Methylene Chloride) (ug/L)-TW	2023/02/14	< MDL 0.35	50	No	No
Diclofop-methyl (ug/L)-TW	2023/02/14	< MDL 0.4	9	No	No
Dimethoate (ug/L)-TW	2023/02/14	< MDL 0.06	20	No	No
Diquat (ug/L)-TW	2023/02/14	< MDL 1	70	No	No
Diuron (ug/L)-TW	2023/02/14	< MDL 0.03	150	No	No
Glyphosate (ug/L)-TW	2023/02/14	< MDL 1	280	No	No
Malathion (ug/L)-TW	2023/02/14	< MDL 0.02	190	No	No
Metolachlor (ug/L)-TW	2023/02/14	< MDL 0.01	50	No	No
Metribuzin (ug/L)-TW	2023/02/14	< MDL 0.02	80	No	No
Monochlorobenzene (Chlorobenzene) (ug/L)-TW	2023/02/14	< MDL 0.3	80	No	No
Paraquat (ug/L)-TW	2023/02/14	< MDL 1	10	No	No
PCB (ug/L)-TW	2023/02/14	< MDL 0.04	3	No	No
Pentachlorophenol (ug/L)-TW	2023/02/14	< MDL 0.15	60	No	No
Phorate (ug/L)-TW	2023/02/14	< MDL 0.01	2	No	No
Picloram (ug/L)-TW	2023/02/14	< MDL 1	190	No	No
Prometryne (ug/L)-TW	2023/02/14	< MDL 0.03	1	No	No
Simazine (ug/L)-TW	2023/02/14	< MDL 0.01	10	No	No
Terbufos (ug/L)-TW	2023/02/14	< MDL 0.01	1	No	No
Tetrachloroethylene (ug/L)-TW	2023/02/14	< MDL 0.35	10	No	No
Triallate (ug/L) -TW	2023/02/14	< MDL 0.01	230	No	No
Trichloroethylene (ug/L)-TW	2023/02/14	< MDL 0.44	5	No	No
Trifluralin (ug/L)-TW	2023/02/14	< MDL 0.02	45	No	No
Vinyl Chloride (ug/L)-TW	2023/02/14	< MDL 0.17	1	No	No
Distribution Water					
HAA Total (ug/L) Annual Average - DW	2023/01/01	14.15	80	No	No
Trihalomethane: Total (ug/L) Annual Average - DW	2023/01/01	46.75	100	No	No

MAC = Maximum Allowable Concentration as per O.Reg 169/03

MDL = Below the laboratory method detection level

Additional Legislated Samples

There are no additional sampling requirements within the Zurich Drinking Water System.

Major Maintenance and Capital Summary

The Zurich Drinking Water System completed repairs, installations, replacements and well decommissioning as listed below. These represent the major expenses incurred in 2023.

Table 12: *Major Maintenance in 2023*

Item	Description
1	Pressure Relief Valve Replacement
2	Blow Off Installation and Repair
3	Fire Hydrant Installation
4	Decomissioning of Wells 1 and 3
5	Chlorine Analyzer Replacement

Revision History

Date	Revision #	Revision Notes
February 23, 2024	0	Issued Report

Appendix A

Permit to Take Water (PTTW) Data-Well 1

Date Measured	Value (m^3/d)	Value (Litres)
01/01/2023	144.3900	144390.0000
02/01/2023	155.1500	155150.0000
03/01/2023	153.3500	153350.0000
04/01/2023	130.2100	130210.0000
05/01/2023	147.6700	147670.0000
06/01/2023	138.2300	138230.0000
07/01/2023	165.6800	165680.0000
08/01/2023	138.1200	138120.0000
09/01/2023	135.2900	135290.0000
10/01/2023	141.4800	141480.0000
11/01/2023	122.0200	122020.0000
12/01/2023	149.5600	149560.0000
13/01/2023	125.5900	125590.0000
14/01/2023	159.1700	159170.0000
15/01/2023	150.9600	150960.0000
16/01/2023	151.4000	151400.0000
17/01/2023	165.8000	165800.0000
18/01/2023	131.6600	131660.0000
19/01/2023	162.0400	162040.0000
20/01/2023	166.7600	166760.0000
21/01/2023	172.9800	172980.0000
22/01/2023	165.3600	165360.0000
23/01/2023	166.4100	166410.0000
24/01/2023	134.2100	134210.0000
25/01/2023	150.9200	150920.0000
26/01/2023	132.2300	132230.0000
27/01/2023	149.1000	149100.0000
28/01/2023	135.2500	135250.0000
29/01/2023	148.6600	148660.0000
30/01/2023	153.9300	153930.0000
31/01/2023	136.3300	136330.0000

Date Measured	Value (m^3/d)	Value (Litres)
01/02/2023	143.8500	143850.0000
02/02/2023	136.1000	136100.0000
03/02/2023	161.4100	161410.0000
04/02/2023	153.6800	153680.0000
05/02/2023	156.7400	156740.0000
06/02/2023	150.0900	150090.0000
07/02/2023	146.5000	146500.0000
08/02/2023	151.1000	151100.0000
09/02/2023	146.8100	146810.0000
10/02/2023	123.1000	123100.0000
11/02/2023	156.1900	156190.0000
12/02/2023	128.3900	128390.0000
13/02/2023	145.2500	145250.0000
14/02/2023	136.3800	136380.0000
15/02/2023	70.9200	70920.0000
16/02/2023	0.0000	0.0000
17/02/2023	0.0000	0.0000
18/02/2023	0.0000	0.0000
19/02/2023	0.0000	0.0000
20/02/2023	0.0000	0.0000
21/02/2023	0.0000	0.0000
22/02/2023	0.0300	30.0000
23/02/2023	0.0000	0.0000
24/02/2023	0.0000	0.0000
25/02/2023	0.0000	0.0000
26/02/2023	0.0000	0.0000
27/02/2023	0.0000	0.0000
28/02/2023	0.0200	20.0000

Date Measured	Value (m^3/d)	Value (Litres)
01/03/2023	0.0000	0.0000
02/03/2023	0.0000	0.0000
03/03/2023	0.0000	0.0000
04/03/2023	0.0000	0.0000
05/03/2023	0.0000	0.0000
06/03/2023	0.0000	0.0000
07/03/2023	0.0100	10.0000
08/03/2023	0.0000	0.0000
09/03/2023	0.0000	0.0000
10/03/2023	0.0000	0.0000
11/03/2023	0.0000	0.0000
12/03/2023	0.0000	0.0000
13/03/2023	0.0000	0.0000
14/03/2023	0.0300	30.0000
15/03/2023	0.0000	0.0000
16/03/2023	0.0000	0.0000
17/03/2023	0.0000	0.0000
18/03/2023	0.0000	0.0000
19/03/2023	0.0000	0.0000
20/03/2023	0.0000	0.0000
21/03/2023	0.0100	10.0000
22/03/2023	0.0000	0.0000
23/03/2023	0.0000	0.0000
24/03/2023	0.0000	0.0000
25/03/2023	0.0000	0.0000
26/03/2023	0.0000	0.0000
27/03/2023	0.0000	0.0000
28/03/2023	0.0200	20.0000
29/03/2023	0.0000	0.0000
30/03/2023	0.0000	0.0000
31/03/2023	0.0000	0.0000

Date Measured	Value (m^3/d)	Value (Litres)
01/04/2023	0.0000	0.0000
02/04/2023	0.0000	0.0000
03/04/2023	0.0300	30.0000
04/04/2023	0.0000	0.0000
05/04/2023	0.0000	0.0000
06/04/2023	0.0000	0.0000
07/04/2023	0.0000	0.0000
08/04/2023	0.0000	0.0000
09/04/2023	0.0000	0.0000
10/04/2023	0.0000	0.0000
11/04/2023	0.0300	30.0000
12/04/2023	0.0000	0.0000
13/04/2023	0.0000	0.0000
14/04/2023	0.0000	0.0000
15/04/2023	0.0000	0.0000
16/04/2023	0.0000	0.0000
17/04/2023	0.0000	0.0000
18/04/2023	0.0100	10.0000
19/04/2023	0.0000	0.0000
20/04/2023	0.0000	0.0000
21/04/2023	0.0000	0.0000
22/04/2023	0.0000	0.0000
23/04/2023	0.0000	0.0000
24/04/2023	0.0000	0.0000
25/04/2023	0.0400	40.0000
26/04/2023	0.0000	0.0000
27/04/2023	0.0000	0.0000
28/04/2023	0.0000	0.0000
29/04/2023	0.0000	0.0000
30/04/2023	0.0000	0.0000

Date Measured	Value (m^3/d)	Value (Litres)
01/05/2023	0.0000	0.0000
02/05/2023	0.0300	30.0000
03/05/2023	0.0000	0.0000
04/05/2023	0.0000	0.0000
05/05/2023	0.0000	0.0000
06/05/2023	0.0000	0.0000
07/05/2023	0.0000	0.0000
08/05/2023	0.0300	30.0000
09/05/2023	0.0000	0.0000
10/05/2023	0.0000	0.0000
11/05/2023	0.0000	0.0000
12/05/2023	0.0000	0.0000
13/05/2023	0.0000	0.0000
14/05/2023	0.0000	0.0000
15/05/2023	0.0000	0.0000
16/05/2023	0.1600	160.0000
17/05/2023	0.0000	0.0000
18/05/2023	0.0000	0.0000
19/05/2023	0.0000	0.0000
20/05/2023	0.0000	0.0000
21/05/2023	0.0000	0.0000
22/05/2023	0.0000	0.0000
23/05/2023	0.0800	80.0000
24/05/2023	0.0000	0.0000
25/05/2023	0.0000	0.0000
26/05/2023	0.0000	0.0000
27/05/2023	0.0000	0.0000
28/05/2023	0.0000	0.0000
29/05/2023	0.0000	0.0000
30/05/2023	0.0100	10.0000
31/05/2023	0.0000	0.0000

Date Measured	Value (m^3/d)	Value (Litres)
01/06/2023	0.0000	0.0000
02/06/2023	0.0000	0.0000
03/06/2023	0.0000	0.0000
04/06/2023	0.0000	0.0000
05/06/2023	0.0000	0.0000
06/06/2023	0.0200	20.0000

Permit to Take Water (PTTW) Data-Well 3

Date Measured	Value (m^3/d)	Value (Litres)
01/01/2023	162.1000	162100.0000
02/01/2023	163.5400	163540.0000
03/01/2023	126.1700	126170.0000
04/01/2023	170.5600	170560.0000
05/01/2023	141.2200	141220.0000
06/01/2023	149.3500	149350.0000
07/01/2023	135.8500	135850.0000
08/01/2023	152.0800	152080.0000
09/01/2023	158.7600	158760.0000
10/01/2023	140.4200	140420.0000
11/01/2023	150.2400	150240.0000
12/01/2023	142.1400	142140.0000
13/01/2023	141.3000	141300.0000
14/01/2023	131.3500	131350.0000
15/01/2023	172.3300	172330.0000
16/01/2023	155.5900	155590.0000
17/01/2023	139.2200	139220.0000
18/01/2023	166.8800	166880.0000
19/01/2023	152.0500	152050.0000
20/01/2023	138.4600	138460.0000
21/01/2023	175.6000	175600.0000
22/01/2023	178.4100	178410.0000
23/01/2023	133.9400	133940.0000
24/01/2023	156.3600	156360.0000
25/01/2023	139.2600	139260.0000
26/01/2023	156.7500	156750.0000
27/01/2023	134.3900	134390.0000
28/01/2023	165.0000	165000.0000
29/01/2023	137.1500	137150.0000
30/01/2023	143.3600	143360.0000
31/01/2023	140.1800	140180.0000

Date Measured	Value (m^3/d)	Value (Litres)
01/02/2023	158.7500	158750.0000
02/02/2023	150.0500	150050.0000
03/02/2023	133.0700	133070.0000
04/02/2023	129.5900	129590.0000
05/02/2023	157.7100	157710.0000
06/02/2023	138.9900	138990.0000
07/02/2023	130.3400	130340.0000
08/02/2023	145.2000	145200.0000
09/02/2023	150.1400	150140.0000
10/02/2023	126.3800	126380.0000
11/02/2023	134.1900	134190.0000
12/02/2023	144.8500	144850.0000
13/02/2023	131.0400	131040.0000
14/02/2023	140.3700	140370.0000
15/02/2023	46.1800	46180.0000
16/02/2023	0.0000	0.0000
17/02/2023	0.0000	0.0000
18/02/2023	0.0000	0.0000
19/02/2023	0.0000	0.0000
20/02/2023	0.0000	0.0000
21/02/2023	0.0000	0.0000
22/02/2023	0.5100	510.0000
23/02/2023	0.0000	0.0000
24/02/2023	0.0000	0.0000
25/02/2023	0.0000	0.0000
26/02/2023	0.0000	0.0000
27/02/2023	0.0000	0.0000
28/02/2023	0.0700	70.0000

Date Measured	Value (m^3/d)	Value (Litres)
01/03/2023	0.0000	0.0000
02/03/2023	0.0000	0.0000
03/03/2023	0.0000	0.0000
04/03/2023	0.0000	0.0000
05/03/2023	0.0000	0.0000
06/03/2023	0.0000	0.0000
07/03/2023	0.1300	130.0000
08/03/2023	0.0000	0.0000
09/03/2023	0.0000	0.0000
10/03/2023	0.0000	0.0000
11/03/2023	0.0000	0.0000
12/03/2023	0.0000	0.0000
13/03/2023	0.0000	0.0000
14/03/2023	0.0800	80.0000
15/03/2023	0.0000	0.0000
16/03/2023	0.0000	0.0000
17/03/2023	0.0000	0.0000
18/03/2023	0.0000	0.0000
19/03/2023	0.0000	0.0000
20/03/2023	0.0000	0.0000
21/03/2023	0.1100	110.0000
22/03/2023	0.0000	0.0000
23/03/2023	0.0000	0.0000
24/03/2023	0.0000	0.0000
25/03/2023	0.0000	0.0000
26/03/2023	0.0000	0.0000
27/03/2023	0.0000	0.0000
28/03/2023	0.0900	90.0000
29/03/2023	0.0000	0.0000
30/03/2023	0.0000	0.0000
31/03/2023	0.0000	0.0000

Date Measured	Value (m^3/d)	Value (Litres)
01/04/2023	0.0000	0.0000
02/04/2023	0.0000	0.0000
03/04/2023	0.0900	90.0000
04/04/2023	0.0000	0.0000
05/04/2023	0.0000	0.0000
06/04/2023	0.0000	0.0000
07/04/2023	0.0000	0.0000
08/04/2023	0.0000	0.0000
09/04/2023	0.0000	0.0000
10/04/2023	0.0000	0.0000
11/04/2023	0.1100	110.0000
12/04/2023	0.0000	0.0000
13/04/2023	0.0000	0.0000
14/04/2023	0.0000	0.0000
15/04/2023	0.0000	0.0000
16/04/2023	0.0000	0.0000
17/04/2023	0.0000	0.0000
18/04/2023	0.1000	100.0000
19/04/2023	0.0000	0.0000
20/04/2023	0.0000	0.0000
21/04/2023	0.0000	0.0000
22/04/2023	0.0000	0.0000
23/04/2023	0.0000	0.0000
24/04/2023	0.0000	0.0000
25/04/2023	0.1000	100.0000
26/04/2023	0.0000	0.0000
27/04/2023	0.0000	0.0000
28/04/2023	0.0000	0.0000
29/04/2023	0.0000	0.0000
30/04/2023	0.0000	0.0000

Date Measured	Value (m^3/d)	Value (Litres)
01/05/2023	0.0000	0.0000
02/05/2023	0.1000	100.0000
03/05/2023	0.0000	0.0000
04/05/2023	0.0000	0.0000
05/05/2023	0.0000	0.0000
06/05/2023	0.0000	0.0000
07/05/2023	0.0000	0.0000
08/05/2023	0.0900	90.0000
09/05/2023	0.0000	0.0000
10/05/2023	0.0000	0.0000
11/05/2023	0.0000	0.0000
12/05/2023	0.0000	0.0000
13/05/2023	0.0000	0.0000
14/05/2023	0.0000	0.0000
15/05/2023	0.0000	0.0000
16/05/2023	0.0900	90.0000
17/05/2023	0.0000	0.0000
18/05/2023	0.0000	0.0000
19/05/2023	0.0000	0.0000
20/05/2023	0.0000	0.0000
21/05/2023	0.0000	0.0000
22/05/2023	0.0000	0.0000
23/05/2023	0.1000	100.0000
24/05/2023	0.0000	0.0000
25/05/2023	0.0000	0.0000
26/05/2023	0.0000	0.0000
27/05/2023	0.0000	0.0000
28/05/2023	0.0000	0.0000
29/05/2023	0.0000	0.0000
30/05/2023	0.0800	80.0000
31/05/2023	0.0000	0.0000

Date Measured	Value (m^3/d)	Value (Litres)
01/06/2023	0.0000	0.0000
02/06/2023	0.0000	0.0000
03/06/2023	0.0000	0.0000
04/06/2023	0.0000	0.0000
05/06/2023	0.0000	0.0000
06/06/2023	0.1100	110.0000