

2022 Annual Drinking Water Report

For:

Hamilton Drive Drinking Water System

Rockwood Drinking Water System

-And-

Gazer Mooney Subdivision Distribution System

Prepared by:

Guelph-Eramosa Township



February 28, 2023

I. Introduction

Purpose

The purpose of this report is to provide information to stakeholders and to satisfy the regulatory requirements of the Safe Drinking Water Act (SDWA) including the Drinking Water Quality Management Standard (DWQMS), and regulatory reporting required under Ontario Regulation (O. Reg.) 170/03 (Section 11 and Schedule 22). The report is a compilation of information that helps to demonstrate the ongoing provision of safe, consistent supply of high-quality drinking water to customers located within Rockwood, the Hamlets of Hamilton Drive and Promenade Park (Gazer Mooney Subdivision).

Scope

This Annual & Summary Water Services Report includes information for Rockwood, Hamilton Drive for the period of Jan.1 to Dec. 31, 2022. Gazer Mooney Subdivision Distribution System information for this same time period is provided in Appendix A.

This report satisfies the requirements of both the Safe Drinking Water Act (SDWA) and Ontario Regulation 170/03:

- Section 11, Annual Reports which includes:
 - a brief description of the drinking water systems;
 - a list of water treatment chemicals used;
 - a summary of the most recent water test results required under O. Reg. 170/03 or an approval, Municipal Drinking Water Licence (MDWL) or order;
 - a summary of adverse test results and other issues reported to the Ministry including corrective actions taken;
 - a description of major expenses incurred to install, repair, or replace required equipment;
 - the locations where this report is available for inspection.

And;

- Schedule 22, Summary Report which includes:
 - list the requirements of the Safe Drinking Water Act, the regulations, the system's approval, Drinking Water Works Permit (DWWP), Municipal Drinking Water Licence (MDWL), and any orders applicable to the system that were not met at any time during the period covered by the report;
 - for each requirement that was not met, the duration of the failure and the measures that were taken to correct the failure;

- a summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows; and
- a comparison of this information to the rated capacity and flow rates approved in the system's approval, DWWP and/or MDWL.

A copy of this report is available for viewing at the Township of Guelph/Eramosa, 8348 Wellington Rd. 124, Rockwood and Online at www.get.on.ca

As per the Accessibility for Ontarians with Disabilities Act (AODA), this document is available in an alternate format by e-mailing the Township cfraresso@get.on.ca or by calling 519-856-9596

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1.0 Systems Overview

1.1 Rockwood Drinking Water System

The Rockwood (RWD) Water Supply System is a Class I Water Treatment Subsystem and a Class II Water Distribution Subsystem consisting of four municipal groundwater wells, a booster pumping station/standpipe and distribution system. Wells #1 and #2 are located at the Station Street Pumphouse and supply water directly to Zone 1 distribution system. Well #3 at the Bernardi Pumphouse and Well #4 Milne Pumphouse supplies water to Zone 1 of the distribution system and to the in-distribution standpipe. When the well pumps are running, they deliver water to meet the demand in Zone 1 of the distribution system and any excess water produced is directed to the standpipe and stored there. The water level in the standpipe maintains pressure in Zone 1. A Supervisory Control and Data Acquisition / Programmable Logic Controller (SCADA/PLC) system monitors and controls the operation of the Station Street well pumps and the Bernardin and Milne high lift pumps (HLPs) based on the water level in the standpipe.

The booster pumping station draws water from the standpipe and pumps to Zone 2 of the distribution system. The station uses variable frequency drive booster pumps that allow each pump to provide a range of flow rates depending on the system demand. The booster pumps are controlled by the SCADA/PLC to maintain constant pressures in this zone. When the demand for water in Zone 2 rises, the system immediately senses the associated drop in pressure and calls the pump(s) to ramp up to meet the demand. Likewise, when the demand falls, the system senses the associated rise in pressure and calls the pumps to ramp down. At least one pump must run at all times to ensure pressures are maintained in Zone 2. Any excess pressure sensed at the booster pumping station is re-circulated back into the standpipe.

Station Street Pumphouse primary disinfection is achieved using a UV disinfection unit. Secondary disinfection is provided by the addition of sodium hypochlorite solution. The UV disinfection unit and the chemical feed pump that injects sodium hypochlorite solution are activated whenever a well pump is running.

Bernard (Well 3) and Milne (Well 4) Pumphouse(s) primary disinfections are achieved by the addition of sodium hypochlorite and provision of chlorine contact time in a grade-level reservoir. Sodium hypochlorite is injected after the flow control valve and prior to the water meter. Chlorine residual concentrations are maintained in the water leaving the pumphouse, providing secondary disinfection. The facility has duty and standby chemical feed pumps for chlorine dosing. The chemical pump is energized when well pumps are activated.

Milne pumphouse primary disinfection is achieved by the addition of sodium hypochlorite and provision of chlorine contact time in a below grade reservoir where contact time is provided for primary disinfection. A high lift pump draws water from the reservoir and pumps to the distribution

system as well as the in-distribution standpipe. Chlorine residual concentrations are maintained in the distributed water to provide secondary disinfection.

1.2 Hamilton Drive Drinking Water System

The Hamilton Drive Water Supply System is a Class II Water Distribution and Supply Subsystem located in the Township of Guelph/Eramosa. The system services the Hamilton Drive Hamlet bounded by Victoria Road to the east, Conservation Road to the north, Highway 6 to the west and the Speed River to the south. The Hamilton Drive (HD) system obtains its entire water supply from two groundwater wells (Huntington and Cross Creek) each with its own Pumphouse and grade-level reservoir.

The raw water from each well is chlorinated to protect against microbial contaminants prior to discharge into the reservoir. The raw water is disinfected with a sodium hypochlorite solution (chlorine) for primary and secondary disinfection requirements. The water level in the reservoir starts and stops the well pumps.

The Huntington and Cross Creek Pumphouses supply treated water directly to the distribution system and to the in-distribution standpipe. As the water level in the standpipe drops, the system calls the pumps at the Huntington or Cross Creek Pumphouse to start pumping water into the distribution system. The system alternates successive pump starts between the Huntington and Cross Creek facilities. When the water demand exceeds the capacity being supplied by the Pumphouse, the supply is supplemented with water from the standpipe. When the demand is less than the amount being supplied from the Pumphouse, the excess flow is used to replenish the depleted standpipe reserves.

Water pressures are maintained throughout the distribution system by the water level in the standpipe. This system is a demand/storage system; once the standpipe is full, the high lift pumps shut down until the water level drops in the tower and the pumps are required again.

1.3 Gazer Mooney Subdivision Distribution System

The Gazer Mooney Subdivision Distribution System is a Class 1 Distribution Subsystem serving the Promenade Park Hamlet located in the Township of Guelph/Eramosa. It has approximately 72 metered water service connections, 1.5 kilometers of underground watermains, six fire hydrants and an approximate population of 216 residents.

All the water for the Gazer Mooney Subdivision Distribution System is supplied from the Guelph Drinking Water System. All water is treated to provincial standards in the Guelph Drinking Water System and no further treatment chemicals are added to the Gazer Mooney Subdivision Distribution System.

The system is operated by the City of Guelph Water Services by a legal agreement that was last signed by representatives of the City of Guelph and the Township of Guelph/Eramosa on March 1,

2022. The terms of the agreement apply until February 29, 2024, with an automatic renewal extended to February 28, 2029.

For reporting purposes, regulatory water quality monitoring collected in the Gazer Mooney Subdivision Distribution System for the 2022 reporting year is available in Appendix A.

2.0 Summary Water Services Report

a) Incidents of Regulatory Non-Compliance

This section describes all incidents of non-compliance (excluding those defined as “Adverse Water Quality Incidents” (AWQI) reported in Section b) of this report). AWQI’s are required to be reported to the Ministry of the Environment and Climate Change (MECP) with respect to the following Acts and related regulations: Ontario Water Resources Act (OWRA), Safe Drinking Water Act (SDWA), the Environmental Protection Act (EPA), and the Municipal Drinking Water Licences (MDWL) and Drinking Water Works Permits (DWWP).

Hamilton Drive

On December 12, 2022, the Ministry of the Environment, Conservation and Parks commenced an unannounced inspection of the Hamilton Drive drinking water system. The inspection period covered the period from February 1, 2022 to November 30, 2022 resulting in no instances of non-compliance.

Rockwood

On October 6, 2022, the Ministry of the Environment, Conservation and Parks commenced an announced inspection of the Rockwood drinking water system. The inspection period covered the period from December 1, 2021, to September 30, 2022 resulting in no instances of non-compliance.

Gazer Mooney Subdivision Distribution System

The Gazer Mooney Water System announced focused Inspection was performed by the Ministry of the Environment, Conservation and Parks and covered the period from October 1, 2021 to October 31, 2022 resulting in no instances of non-compliance.

b) Adverse Water Quality Incidents

This section describes all “Adverse Water Quality Incidents” (AWQI). This term refers to any unusual test result from treated water that does not meet a provincial water quality standard, or situation where disinfection of the water may be compromised. An adverse water quality incident indicates that on at least one occasion, a water quality standard was not met.

The process of water quality sampling and testing can result in false positive results for contaminants; these results can be caused by contaminated sampling containers and equipment, sampling technique, sample handling and transportation, and sample analysis. In almost all cases, mandatory follow-up sampling and analysis confirms that contaminants are not present in the water provided to customers.

Rockwood & Hamilton Drive Drinking Water Systems (Jan. 01 to Dec. 31, 2022)

Table 1: Summary of Rockwood and Hamilton Drive Water System Adverse Water Quality Incidents

Incident Date	AWQI #	Location	Parameter / Unit of measure	Corrective Action
There were no incidents of non-compliance associated with the Rockwood and Hamilton Drive Drinking Water System in 2022				

c) Deviations from Critical Control Point (CCP) Limits and Response Actions

This section describes any deviation from essential steps or points in the drinking water system at which control can be applied to prevent or eliminate a drinking water hazard or to reduce it to an acceptable level. These essential steps or points in the system are known as critical control points (CCP). The CCPs are used to identify control measures that are in place to address hazards and hazardous events. Critical Control Limits (CCLs) are self-imposed limits and are typically more stringent than Ministry of Environment Conservation and Parks Drinking Water Standards or Municipal Drinking Water licence requirements.

Critical control limit deviation at the Hamilton Drive Drinking Water System.

On April 15th, for approximately 25 minutes, 12 m³ of water from the Huntington pumphouse reservoir did not meet the required design minimum free chlorine residual (contact time) of 0.5 mg/L. The Low, and Low-Low Operational Chlorine Alarm did not activate at the Huntington Pumphouse. The pumphouse was immediately shut down and all other alarms checked to ensure they were all working properly.

Huntington pumphouse chlorine residual did not drop below regulatory requirements. The pumphouse reservoir was spiked, flushed, and left off-line until the next day. Distribution free chlorine residuals were taken. Notification was provided to both the Ministry of Environment Conservation and Parks

(MECP) and the Wellington, Dufferin Public Health (MHLTC). Huntington pumphouse was brought back on-line the next day following more chlorine checks to reservoir.

A root cause analysis was performed, and appropriate action was taken to eliminate risk from this happening again.

d) The Effectiveness of the Risk Assessment Process

A risk assessment must be conducted for all municipal residential drinking water systems, as part of the operational plans for those systems. These operational plans form the basis upon which third party auditors assess conformance to the Drinking Water Quality Management Standard.

This section confirms the occurrence of reviews and re-assessments of the risk assessment process to determine the effectiveness of the process in identifying and appropriately assessing the risk of hazardous events and hazards, and in identifying the appropriate control measures, critical control points (CCPs) and related critical control limits (CCLs).

In July 2022, Guelph/Eramosa water department conducted a review of risks associated with our Municipal Drinking Water Systems. The updated risk assessment outcomes were provided at a Management Review Meeting on October 5, 2022. The results of the Risk Assessment are not made available to the public but are made available to Drinking Water System Owners (Council).

There were several program aspects increased relating to the likelihood of risk. It is likely to happen, however the consequence is low given control measures in place.

Guelph/Eramosa Township has been tracking sodium and chloride levels in both Hamilton Drive and Rockwood Drinking Water Systems since 2018. Monthly sodium and chloride levels are provided on an annual basis to the Wellington Source Water Protection Official. We are waiting for updated rules to be posted to the Environmental Registry of Ontario. This ongoing "Action Item" and will be reviewed in detail with the Risk Management Official at our next "Risk Assessment Redo" in 2023.

Emergency and Standard Operating Procedures (SOPs) were considered during the 2022 risk assessment process. Staff considered the operational procedure relationship to the associated risk and the applicability to emergency or nonemergency processes.

No new risk assessment processes were added during this reporting period; however, several existing procedures were updated through the review process.

e) Internal and Third-Party Audit Results

This section describes any of the audit outcomes identified to date that require follow-up actions.

Internal auditing and third-party auditing are performed to fulfill the mandatory requirements of the Drinking Water Quality Management Standard (DWQMS). The internal audit is completed using trained

auditors. The purpose of audits is to evaluate the level of conformance to the DWQMS. Audits identify both conformance and non-conformance with the Standard as well as opportunities for improvement.

2022 Internal Audit

Acclains Environmental Inc. was retained to conduct this years' internal audit of the Guelph/Eramosa Township's quality management system (QMS) on August 15 & 16, 2022 to determine whether it conforms to the requirements of the Drinking Water Quality Management Standard (DWQMS 2.0); and to assess whether the QMS is effectively implemented.

The review period focused on the period between August 13, 2021 and August 16, 2022.

No nonconformities were identified during the audit. Various opportunities for improvement (OFI) noted during the internal audit were discussed at the internal audit closing meeting and are tracked as "action items" to be addressed throughout the year. Guelph/Eramosa Township staff strive to address action items by the next scheduled internal audit.

2022 External Audit

Third party audit off-site system audit was performed on November 3rd, 2022 by NSF International Inc. Accreditation to the Drinking Water Quality Management Standard Version 2.0 was maintained.

The audit results are summarized as follows; zero major non-conformities, zero minor non-conformity and four opportunities for improvement.

There were no corrective action findings during the audit period. Various opportunities for improvement (OFI) were noted at the closing audit meeting. The auditor noted evidence of continued commitment to the DWQMS, improvement processes, maintenance tracking records and the internal audit process.

f) Results of Emergency Response Testing

Emergency Response testing, training and review of potential emergencies are conducted regularly as part of the Drinking Water Quality Management System to ensure that Water Department and related staff maintains a reasonable readiness to deal with emergencies and abnormal events.

On July 8, 2022 a real emergency occurred. Canadian carrier Rogers Communications experienced a massive nationwide outage lasting over 16 hours on Friday, July 8, 2022. Due to the downtime, Roger's customers were unable to make phone calls, use cellular data, and Roger's internet and TV were also down. The Guelph/Eramosa Drinking Water System(s) communications were also affected. Facilities were either temporarily shut down or transferred to a different cell provider. Alarm status was temporarily reprogramed to a personal bell cell phone. All in all, our continuous monitoring equipment was recording data for the parameters required and remained in compliance with O. Reg. 170/03 Drinking Water Systems under Safe Drinking Water Act 2002.

Several opportunities for improvement were identified from this emergency.

- Secondary communication HUB (set up during the emergency) remains and will default from the primary location within the compliance driven timeline.
- Ability to set-up and use redundant RF communications in dire emergency circumstances, which would enable at least one water facility to produce safe drinking water.
- Cellular testing is underway for future upgrades using digital communications at locations that still use radio frequency (RF) technology. This is part of our ongoing Supervisory Control and Data Acquisition (SCADA) upgrades.

g) Operational Performance and Statistics

This section describes the various pieces of information that are used to gauge the performance of the Drinking Water System, including reasoning for changes or observations.

A 100 % rating for microbiological quality indicates that the treatment process effectively removed pathogens at all times. Chemical water quality test results indicate that all water quality meet with the provincial and federal standards for safe drinking water with the exception of Sodium levels which remain outside of the provincial standard.

Assessment of Flow Rates and Quantities of Water Supplied

The following six (6) tables list the quantities and flow rates of the water supplied during the reporting period covered by this report (Jan. 01 to Dec. 31, 2022) including monthly average and maximum daily flows and a comparison to the rated capacity and flow rates specified in the system approval.

Table 2: Summary of Raw Water Flows – Rockwood Well # 1 Station St. (TW# 1-67)

Station St. Well TW# 1- 67 (Rated Capacity 1,964 m³/day) (Rated Daily Peak 1,360 L/min)

MONTH	Avg. Daily Volume m ³	% Of Approved Volume	MAX Daily Volume m ³ /day	% Of Approved Volume	Peak Flow Rate L/min	% Of Approved Flow Rate
JANUARY	1.98	0%	28.72	1%	1233.88	90%
FEBRUARY		0%		0%		0%
MARCH	6.58	0%	124.13	6%	1274.91	93%
APRIL		0%		0%		0%
MAY	110.05	6%	464.82	24%	1267.58	93%
JUNE	237.72	12%	889.31	45%	1208.97	89%
JULY	331.79	17%	917.52	47%	1194.14	88%
AUGUST	246.70	13%	663.15	34%	1177.11	86%
SEPTEMBER	181.04	9%	653.78	33%	1177.47	86%
OCTOBER	190.29	10%	494.57	25%	1186.81	87%
NOVEMBER	137.69	7%	494.32	25%	1219.23	89%
DECEMBER	165.60	8%	458.40	23%	1172.34	86%

Table 3: Summary of Raw Water Flows – Rockwood Well # 2 Station St. (TW# 1-76)**Station St. Well TW# 1-76 (Rated Capacity 1,964 m³/day) (Rated Daily Peak 1,360 L/min)**

MONTH	Avg. Daily Volume m ³	% Of Approved Volume	MAX Daily Volume m ³ /day	% Of Approved Volume	Peak Flow Rate L/min	% Of Approved Flow Rate
JANUARY	252.38	13%	660.27	34%	1267.95	93%
FEBRUARY	281.96	14%	626.14	32%	1269.05	93%
MARCH	323.28	16%	651.91	33%	1270.51	93%
APRIL	379.34	19%	673.43	34%	1252.75	92%
MAY	358.96	18%	920.20	47%	1268.86	93%
JUNE	258.82	13%	658.20	33%	1263.19	93%
JULY	276.41	14%	827.63	42%	1262.82	93%
AUGUST	213.04	11%	655.98	33%	1252.93	92%
SEPTEMBER	140.90	7%	649.69	33%	1252.93	92%
OCTOBER	179.73	9%	722.35	37%	1270.51	93%
NOVEMBER	286.48	15%	576.70	29%	1256.23	92%
DECEMBER	180.04	9%	548.93	28%	1265.75	93%

Table 4: Summary of Raw Water Flows – Rockwood Well # 3 Bernardi Pumphouse**Bernardi Well 3****(Rated Capacity 1310 m³/day)****(Rated Daily Peak 1100 L/min)**

MONTH	Avg. Daily Volume m ³	% Of Approved Volume	MAX Daily Volume m ³ /day	% Of Approved Volume	Peak Flow Rate L/min	% Of Approved Flow Rate
JANUARY	438.59	33%	922.93	70%	843.09	64%
FEBRUARY	378.97	29%	592.16	45%	848.03	65%
MARCH	346.19	26%	588.46	45%	885.57	68%
APRIL	347.21	27%	618.18	47%	823.04	63%
MAY	381.41	29%	728.39	56%	830.09	63%
JUNE	450.64	34%	955.53	73%	830.91	63%
JULY	454.29	35%	825.83	63%	841.72	64%
AUGUST	422.00	32%	569.34	43%	626.94	48%
SEPTEMBER	471.92	36%	691.27	53%	611.10	47%
OCTOBER	414.51	32%	785.00	60%	603.04	46%
NOVEMBER	285.18	22%	499.24	38%	608.63	46%
DECEMBER	350.39	27%	657.41	50%	603.04	46%

Table 5: Summary of Raw Water Flows – Rockwood Well # 4 Milne

Milne Well # 4 **(Rated Capacity 1310 m³/day)** **(Rated Daily Peak 1100 L/min)**

MONTH	Avg. Daily Volume m ³	% Of Approved Volume	MAX Daily Volume m ³ /day	% Of Approved Volume	Peak Flow Rate L/min	% Of Approved Flow Rate
JANUARY	349.61	27%	734.68	56%	1087.16	83%
FEBRUARY	360.29	28%	654.94	50%	1090.96	83%
MARCH	333.02	25%	673.99	51%	1092.16	83%
APRIL	325.78	25%	735.49	56%	1091.44	83%
MAY	474.46	36%	865.60	66%	1092.02	83%
JUNE	523.68	40%	1015.27	78%	1097.83	84%
JULY	553.33	42%	1242.30	95%	1068.75	82%
AUGUST	488.30	37%	976.35	75%	1083.00	83%
SEPTEMBER	551.15	42%	957.20	73%	1078.87	82%
OCTOBER	411.54	31%	934.40	71%	1088.22	83%
NOVEMBER	323.40	25%	598.11	46%	1085.10	83%
DECEMBER	405.07	31%	790.66	60%	1090.38	83%

Table 6: Summary of Raw Water Flows – Hamilton Drive Well # 3 Cross Creek

Cross Creek Well # 3 (Rated Capacity 812 m³/day) (Rated Daily Peak 725 L/min)

MONTH	Avg. Daily Volume m ³	% Of Approved Volume	MAX Daily Volume m ³ /day	% Of Approved Volume	Peak Flow Rate L/min	% Of Approved Flow Rate
JANUARY	97.94	12%	179.00	22%	595.33	82%
FEBRUARY	89.90	11%	193.00	24%	579.10	80%
MARCH	77.80	10%	109.00	13%	574.69	79%
APRIL	90.01	11%	139.00	17%	576.87	80%
MAY	98.93	12%	436.00	54%	566.15	78%
JUNE	141.22	17%	297.72	37%	497.87	69%
JULY	157.32	19%	332.00	41%	492.68	68%
AUGUST	131.85	16%	310.00	38%	490.64	68%
SEPTEMBER	125.97	16%	292.00	36%	490.64	68%
OCTOBER	73.16	9%	276.00	34%	477.81	66%
NOVEMBER	72.49	9%	255.00	31%	467.03	64%
DECEMBER	66.31	8%	140.00	17%	457.19	63%

Table 7: Summary of Raw Water Flows – Hamilton Drive Well # 2 Huntington

Huntington Well # 2 (Rated Capacity 916 m³/day) (Rated Daily Peak 636L/min)

MONTH	Avg. Daily Volume m ³	% Of Approved Volume	MAX Daily Volume m ³ /day	% Of Approved Volume	Peak Flow Rate L/min	% Of Approved Flow Rate
JANUARY	57.55	6%	160.04	17%	627.88	99%
FEBRUARY	71.24	8%	191.00	21%	626.32	98%
MARCH	70.99	8%	142.29	16%	636.00	100%
APRIL	67.77	7%	121.50	13%	606.49	95%
MAY	113.14	12%	331.60	36%	602.04	95%
JUNE	115.64	13%	284.00	31%	591.39	93%
JULY	166.63	18%	368.32	40%	586.07	92%
AUGUST	99.28	11%	306.00	33%	578.89	91%
SEPTEMBER	106.74	12%	338.00	37%	574.86	90%
OCTOBER	74.98	8%	242.00	26%	580.70	91%
NOVEMBER	49.92	5%	207.00	23%	575.25	90%
DECEMBER	59.85	7%	124.50	14%	572.14	90%

i. Water Production vs. Water Consumption

Water Production vs. Water Consumption for 2022 shows an overall percentage loss of 13% for Rockwood up from 9% in 2021. Hamilton Drive water loss for 2022 is 10% down from 12% in 2021.

Considerations for non-revenue water loss are unauthorized water use, customer meter inaccuracies, distribution watermain breaks/repairs, construction, and service connection leaks. Maintenance of infrastructure; such as, street sweeping, flushing the distribution system, sewage wet well cleaning and fire fighting.

The soccer field at 120 Rockmosa Park was our highest consumer of water in 2022 at a rate of 35.24 m³/day based on a May to October (157 days) operational season and a total consumption of 5534 m³.

ii. Other Operational Performance Data

The following table provides a brief description of expenses incurred within Rockwood and Hamilton Drive Drinking Water Systems

Table 8: Rockwood and Hamilton Drive 2022 Maintenance Activity

Major Maintenance Activity / Expenditure	Location
Changes to the Supervisory Control and Data Acquisition (SCADA) system continue	RWD & HD
Rehabilitation and replacement of pump and motor for Station St Well # 1	RWD
Distribution system maintenance: equipment purchased to assist with watermain valve exercising, and inventory for use in temporary watermain installation	RWD & HD
Ultra-Violet (UV) system maintenance and parts replacement	RWD
Generator maintenance & repairs	RWD
New Generator ordered for Backup Power to Hamilton Drive Standpipe	HD
Treatment system maintenance and parts replacement	RWD & HD

h) Water Quality – Rockwood, Hamilton Drive Drinking Water System

This section describes the water quality monitoring, both regulatory and operational, that has been completed in 2022 (Jan. 01 to Dec. 31).

Under the Safe Drinking Water Act (SDWA), Municipalities are required to monitor both the raw and treated quality of the source water supplied. This monitoring is performed for both regulatory compliance and due diligence and is expected to identify any changes within the treated water as well as in raw source waters.

Both Rockwood and Hamilton Drive Drinking Water Systems use 12 per cent Sodium Hypochlorite (that is NSF 61 certified) for both primary and secondary disinfection at all facility locations with the exception of the Rockwood Station Street location. Here ultraviolet light is also applied as part of multi-barrier primary disinfection. Additionally, NSF 60-certified sodium silicate is used for aesthetic purposes to sequester dissolved iron and manganese.

Table 9: Operational testing done under Schedule 7 of O. Reg.170/03 Rockwood

(Jan. 01 to Dec. 31, 2022)

Location	Parameter	Criteria	Number of Grab Samples	Range of Results
Station St. Well 1	Turbidity	**1.0	37	0.06– 0.55 NTUs
Station St. Well 2			51	0.04 – 0.77 NTUs
Milne Well 4			51	0.02 – 0.53 NTUs
Bernardi Well 3		n/a	50	0.03 – 0.77 NTUs
Station St. Treated	Free Chlorine Residual	Alarm set points	8760	0.16 – 2.97 mg/L
Milne Treated			8760	0.40 – 2.92 mg/L
Bernardi Treated			8760	0.69 – 3.14 mg/L
Operational Distribution		*0.05 – 4.0	205	0.38-1.89 mg/L

** MDWL= Municipal Drinking Water Licence requirement

Table 10: Operational testing done under Schedule 7 of O. Reg.170/03 Hamilton Drive

(Jan. 01 to Dec. 31, 2022)

Location	Parameter	Criteria	Number of Grab Samples	Range of Results
Huntington Well 2	Turbidity	n/a	51	0.07 - 0.54 NTUs
Cross Creek Well 3			51	0.04 - 0.63 NTUs
Huntington Treated	Free Chlorine Residual	Alarm set points	8760	0.67 – 2.74 mg/L
Cross Creek Treated			8760	1.00 – 3.01 mg/L
Operational Distribution		*0.05 – 4.0	156	0.51 -1.86 mg/L

NTUs = Nephelometric Turbidity Units

*ODWQS=Ontario Municipal Drinking Water Quality Standards

Table 12 summarizes raw sampling test results required by the Guelph/Eramosa's Municipal Drinking Water Licence (MDWL) for three (3) provisional ground water wells located in Rockwood for the period of January 1, 2022, to December 31, 2022.

Table 11: Raw sampling test results F. Specific Coliphage

(Jan. 01 to Dec. 31, 2022)

Location	Parameter	Criteria	Number of Grab Samples	Range of Results
Station St Well 1	F. Specific Coliphage	one positive detection in any running year	8	0-1
Station St Well 2			8	0-2
Milne Well 4			8	0-0

Table 12: O. Reg. 170/03 Schedule 10 - Rockwood / Hamilton Drive Microbiological Testing

(Jan. 01 to Dec. 31, 2022)

Drinking Water System	Parameter	# Of Samples	E. coli (min –max)	Total Coliform (min – max)	HPC (min – max)
			Units = CFU/mL		
Rockwood	Raw	196	0-0	0-0	N/A
	Treated	156	0-0	0-0	0-2
	Distribution	208	0-0	0-0	0-34
Hamilton Drive	Raw	104	0-0	0-0	N/A
	Treated	104	0-0	0-0	0-1
	Distribution	156	0-0	0-0	0-95

Table 13: O. Reg. 170/03 Schedule 13-2 13-4 Chemical testing results – Rockwood Well Supply

Rockwood Well Supply – Provisional Ground Water Annual Organic/Inorganic parameters for reporting period

(Jan. 01 to Dec. 31, 2022)

LEGEND		Project Name		ROCKWOOD WELL SUPPLY	
Bold & Red = Exceedance		Sample location		MILNE PUMPHOUSE	STATION ST. PUMPHOUSE
*DL = Laboratory Detection Limit		Sample Date		January 4, 2022	
* MAC = Maximum Acceptable Concentration as per Reg 170 & Reg 169 DW - MAC		ND = No Detection		TREATED WATER	
Parameter Name	* MAC	Units	*DL	Result	Result
2,3,4,6-Tetrachlorophenol	100	ug/L	0.5	<0.50	<0.50
2,4,6-Trichlorophenol	5	ug/L	0.5	<0.50	<0.50
2,4-D	100	ug/L	1	<1.0	<1.0
2,4-Dichlorophenol	900	ug/L	0.25	<0.25	<0.25
Alachlor	5	ug/L	0.5	<0.50	<0.50
Atrazine		ug/L	0.5	<0.50	<0.50
Des-ethyl atrazine		ug/L	0.5	<0.50	<0.50
Atrazine + Desethyl-atrazine	5	ug/L	1	<1.0	<1.0
Bromoxynil	5	ug/L	0.5	<0.50	<0.50
Carbaryl	90	ug/L	5	<5.0	<5.0

LEGEND		Project Name		ROCKWOOD WELL SUPPLY	
Bold & Red = Exceedance		Sample location		MILNE PUMPHOUSE	STATION ST. PUMPHOUSE
*DL = Laboratory Detection Limit		Sample Date		January 4, 2022	
* MAC = Maximum Acceptable Concentration as per Reg 170 & Reg 169 DW - MAC		ND = No Detection		TREATED WATER	
Parameter Name	* MAC	Units	*DL	Result	Result
Carbofuran	90	ug/L	5	<5.0	<5.0
Chlorpyrifos (Dursban)	90	ug/L	1	<1.0	<1.0
Diazinon	20	ug/L	1	<1.0	<1.0
Dicamba	120	ug/L	1	<1.0	<1.0
Diclofop-methyl	9	ug/L	0.9	<0.90	<0.90
Dimethoate	20	ug/L	2.5	<2.5	<2.5
Malathion	190	ug/L	5	<5.0	<5.0
MCPA	100	ug/L	10	<10	<10
Metolachlor	50	ug/L	0.5	<0.50	<0.50
Metribuzin (Sencor)	80	ug/L	5	<5.0	<5.0
Pentachlorophenol	60	ug/L	0.5	<0.50	<0.50
Phorate	2	ug/L	0.5	<0.50	<0.50
Picloram	190	ug/L	5	<5.0	<5.0
Prometryne	1	ug/L	0.25	<0.25	<0.25
Simazine	10	ug/L	1	<1.0	<1.0
Terbufos	1	ug/L	0.5	<0.50	<0.50
Triallate	230	ug/L	1	<1.0	<1.0
Trifluralin	45	ug/L	1	<1.0	<1.0
Benzo(a)pyrene	0.01	ug/L	0.005	<0.0050	<0.0050
Diquat	70	ug/L	7	<7.0	<7.0
Paraquat	10	ug/L	1	<1.0	<1.0
Glyphosate	280	ug/L	10	<10	<10
Diuron	150	ug/L	10	<10	<10
Guthion (Azinphos-methyl)	20	ug/L	2	<2.0	<2.0
Aroclor 1016		ug/L	0.05	<0.05	<0.05
Aroclor 1221		ug/L	0.05	<0.05	<0.05
Aroclor 1232		ug/L	0.05	<0.05	<0.05
Aroclor 1242		ug/L	0.05	<0.05	<0.05
Aroclor 1248		ug/L	0.05	<0.05	<0.05
Aroclor 1254		ug/L	0.05	<0.05	<0.05
Aroclor 1260		ug/L	0.05	<0.05	<0.05
Total PCB	3	ug/L	0.05	<0.05	<0.05
Antimony (Sb)	6	ug/L	0.5	<0.50	<0.50
Arsenic (As)	10	ug/L	1	<1.0	<1.0
Barium (Ba)	1000	ug/L	2	76	87
Boron (B)	5000	ug/L	10	12	27
Cadmium (Cd)	5	ug/L	0.09	<0.090	<0.090

LEGEND		Project Name		ROCKWOOD WELL SUPPLY	
Bold & Red = Exceedance		Sample location		MILNE PUMPHOUSE	STATION ST. PUMPHOUSE
*DL = Laboratory Detection Limit		Sample Date		January 4, 2022	
* MAC = Maximum Acceptable Concentration as per Reg 170 & Reg 169 DW - MAC		ND = No Detection		TREATED WATER	
Parameter Name	* MAC	Units	*DL	Result	Result
Chromium (Cr)	50	ug/L	5	<5.0	<5.0
Lead (Pb)	10	ug/L	0.5	<0.50	<0.50
Selenium (Se)	50	ug/L	2	<2.0	<2.0
Sodium (Na)	20000	ug/L	100	5800	160000
Uranium (U)	20	ug/L	0.1	0.11	1.1
Mercury (Hg)	0.001	mg/L	0.0001	<0.00010	<0.00010
1,1-Dichloroethylene	14	ug/L	0.1	<0.10	<0.10
1,2-Dichlorobenzene	200	ug/L	0.2	<0.20	<0.20
1,2-Dichloroethane	5	ug/L	0.2	<0.20	<0.20
1,4-Dichlorobenzene	5	ug/L	0.2	<0.20	<0.20
Benzene	1	ug/L	0.1	<0.10	<0.10
Bromodichloromethane		ug/L	0.1	0.94	0.15
Bromoform		ug/L	0.2	<0.20	<0.20
Carbon Tetrachloride	2	ug/L	0.1	<0.10	<0.10
Chlorobenzene	80	ug/L	0.1	<0.10	<0.10
Chloroform		ug/L	0.1	1.65	0.26
Dibromochloromethane		ug/L	0.2	0.58	0.21
Methylene Chloride(Dichloromethane)	50	ug/L	0.5	<0.50	<0.50
Ethylbenzene	140	ug/L	0.1	<0.10	<0.10
Tetrachloroethylene	10	ug/L	0.1	<0.10	0.11
Toluene	60	ug/L	0.2	<0.20	<0.20
Trichloroethylene	5	ug/L	0.1	<0.10	<0.10
Vinyl Chloride	1	ug/L	0.2	<0.20	<0.20
Total Xylenes	90	ug/L	0.1	<0.10	<0.10
Total Trihalomethanes		ug/L	0.2	4.3	0.79

Table 14 summarizes treated and distribution samples taken at the Rockwood and Hamilton Drive Drinking Water Systems for the period of Jan. 01 to Dec. 31, 2022.

Table 14: O. Reg. 170/03 Schedule 13-6, 13-7 Rockwood and Hamilton Drive quarterly results

(Based on 4 sample results)

Location Type	Test Parameter	MAC mg/L	Rockwood mg/L	Hamilton Drive mg/L
Distribution (Expressed as running average)	Trihalomethanes	0.100	0.017	0.012
	Haloacetic Acids	0.08	0.005	0.005
Treated	Nitrate (N03)	10.0	<0.10 – <0.10	<0.10 – <0.10
	Nitrite (N02)	1.0	<0.010 - <0.010	<0.010 - <0.010
	N03 +N02 (as nitrogen)	-	<0.10 - <0.10	<0.10 - <0.10

MAC: Maximum Acceptable Concentration

Summary results for schedule 15.1 of Ontario Regulation 170/03.

Rockwood and Hamilton Drive Drinking Water Systems are required to sample from the distribution systems as follows:

- Sample for pH and alkalinity every “winter” and “summer” period each year.
- Sample for lead once every three years, both “winter” and “summer” periods.

2022 was a **NO Lead** sampling year, therefore pH and alkalinity are the only parameters provided for the period of Jan. 1 to Dec. 31, 2022

Table 15: O. Reg. 170/03 Schedule 15.1 Rockwood/Hamilton Testing Summary 2022

Location	Location Type	Number of Samples	Lead Range (mg/L)	pH Range	Alkalinity Range (mg/L)
Rockwood	Distribution	6	n/a	7.48 – 7.77	220 - 320
Hamilton Drive	Distribution	4	n/a	7.67 – 7.76	210- 230

i) Follow up on Action Items from previous management reviews.

Management review was held on October 5, 2022 and covers the period between November 16, 2021 to September 30, 2022. Below is a summary of action items discussed.

Action Item

- Update Municipal Bylaw 21-2000 to include enforcement of significant drinking water threats identified within the Municipal Wellhead protection zones. Specifically,
 - Well abandonment
 - Discharging of saltwater pool water into our storm systems

- In the next risk assessment activity, list cybersecurity as a hazardous event (now required by Ministry’s updated “Potential Hazardous Events...” document and identify control measures and response procedures that can be implemented in case of a cybersecurity threat.

j) Status of Management action items identified between reviews

Water staff are committed to improving the drinking water system including improving on existing programs and processes. Throughout the year, continual improvement items (action items) may be generated throughout many different activities, such as: audits, debrief sessions, root-cause analysis meetings, etc. An ongoing list of action items are available to staff. Tracking action items are generally a group effort but are sometimes assigned. Once an action item is completed it is acknowledged through a review and sign off process then closed in the system.

2022 OFI – Element 21 Continual Improvement; progress was made in addressing outstanding action items.

- Review and updates of critical SOPs (such as adverse water quality response that occurs infrequently) are carried out annually.
- Implementation of primary and secondary (backup) communications hub
- Completed standard operating procedure (SOP) for installation of temporary watermain.
- GIS Watermain valves for use in infrastructure mapping is currently in process as part of the Asset Management Plan.
- Education on protecting our source water and water quality have not yet implemented but a plan is under development to provide an educational booth at our Annual Rockwood “Party in the Park”.

Source Water Protection Plan Reporting

For reporting purposes, Guelph / Eramosa Township is subject to one Source Protection Plan (based on watershed or Conservation Authority boundaries): Grand River Plan. In 2022, all Source Protection Plans were in effect. Please see Appendix A for the full 2022 Risk Management Official and Municipal Annual Report.

k) Expected Future Changes That Could Affect the DWS or the QMS

- Implementation of the Municipal asset management plan for core municipal infrastructure assets.

The Township currently uses the Citywide asset management and maintenance management software to track and manage tangible capital asset and infrastructure data. This will be highly beneficial for quality information, and availability by staff in managing the drinking water systems.

- Railway Watermain Crossing - Catherine to Rockmosa

A new watermain connection for north Rockwood as no storage or wells is located north of the tracks. A second connection will provide redundancy for the provision of water for all the current and future development north of the tracks.

- Moving to electronic logbooks.
- Updates to Supervisory Control and Data Acquisition (SCADA)

l) Consumer Feedback

There has been little consumer feedback directed through our email or phone system. Facebook sometimes has water quality or brown water comments just before flushing.

m) The Resources Needed to Maintain the QMS

Resources required to support the implementation of the continual improvement process under the DWQMS involve training time for our two new hires.

- Learning about our Quality Management System (QMS) and associated procedures
- working towards licencing upgrades and experience for new staff for future performance as acting Overall Responsible Operators.

n) Infrastructure Review

To satisfy the current and pending requirements of the Drinking Water Quality Management Standard, the Director of Public Works and Operations Manager conduct an annual review of its water treatment, pumping, storage and watermain infrastructure. Taken into consideration is long term forecasting of major infrastructure renewal. The program is communicated verbally identifying needs on an on-going basis (e.g., maintenance inspections) or periodic (e.g., site-specific risk assessments). Based on the information collected, needs are assessed, prioritized, and is communicated to the owner through the annual budget process. Copies of budget presentations are available through the Municipal Website.

o) Operational Plan currency, content, and updates

Guelph/Eramosa's Operational Plan was updated to Version 2 as described below in March of 2022.

- AODA compliance with the MECP requirements.
- Records Management
- Drinking water system description
- Authorities (description of OIT responsibilities and Authorities)
- Personal coverage – references to O.Reg. 128/04 and O.Reg. 129/04 provisions regarding staff coverage in out of ordinary conditions (such as pandemics).

- Electronic standardization for the Quality Management System

Our licence application renewal date is June 17, 2025, with expiry on December 17, 2025.

p) Staff suggestions

- Consider scheduling sampling procedure courses for team members responsible for drinking water sample programs.
 - Would benefit from a laboratory facility tour to see the other side of things.
 - Consider writing a standard operating procedure (SOP) on GETs sampling preparations.

3.0 Appendix A The Gazer Mooney Subdivision Distribution System Annual Report

The Gazer Mooney Subdivision Distribution System ANNUAL REPORT

Drinking Water System Number:	260057967
Drinking Water System Name:	Gazer Mooney Subdivision Distribution System
Drinking Water System Owner:	The Corporation of the Township of Guelph/Eramosa
Drinking Water System Category:	Small Municipal Residential
Period being reported:	January 1, 2022 through December 31, 2022

<p><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></p> <p>Does your Drinking Water System serve more than 10,000 people? Yes [] No [x]</p> <p>Is your annual report available to the public at no charge on a web site on the Internet? Yes [x] No []</p> <p>Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>An electronic copy of the Summary Report will be provided to MECP upon request.</p> </div>	<p><u>Complete for all other Categories</u></p> <p>Number of Designated Facilities served: <input style="width: 100px;" type="text" value="n/a"/></p> <p>Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [] No []</p> <p>Number of Interested Authorities you report to: <input style="width: 100px;" type="text" value="n/a"/></p> <p>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [] No []</p>
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Note: For the following tables below, additional rows or columns may be added, or an appendix may be attached to the report

List all Drinking Water Systems (if any), which receive all their drinking water from your system:

Drinking Water System Name	Drinking Water System Number
n/a	n/a

Did you provide a copy of your annual report to all Drinking Water System owners that are connected to you and to whom you provide all drinking water?
 Yes [x] No []

Indicate how you notified system users that your annual report is available and is free of charge.

- Public access/notice via the web
- Public access/notice via Government Office
- Public access/notice via a newspaper
- Public access/notice via Public Request
- Public access/notice via a Public Library
- Public access/notice via other method _____

Gazer-Mooney Subdivision Drinking Water System

The Gazer Mooney Subdivision has approximately 72 fully metered water service connections; 2 kilometres of underground watermains, and an approximate population of 209 people.

All water provided to the Gazer Mooney Subdivision Distribution System is supplied by the Guelph Drinking Water System.

List all water treatment chemicals used over this reporting period

Treated drinking water was supplied in its entirety from the Guelph Drinking Water System. Please refer to the Guelph Drinking Water System Annual Report for a list of water treatment chemicals used in the drinking water treatment process.

Were any significant expenses incurred to?

- Install required equipment
- Repair required equipment
- Replace required equipment

Please provide a brief description and a breakdown of monetary expenses incurred:

No significant expenses were incurred in 2022 to maintain the Gazer Mooney Subdivision Distribution System.

Provide details on the notices submitted in accordance with subsection 18 (1) of the Safe Drinking Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre:

In 2022, there were no Adverse Water Quality Incidents (AWQIs) in the Gazer Mooney Subdivision Distribution System.

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
n/a	n/a	n/a	n/a	n/a	n/a

Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period:

	Number of Samples	Range of E. Coli Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Raw	n/a	n/a	n/a	n/a	n/a
Treated	n/a	n/a	n/a	n/a	n/a
Distribution	52	0 - 0	0 - 0	52	0 - 1

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report:

	Number of Grab Samples	Range of Results (min #)-(max #)	Unit of Measure
Turbidity	n/a	n/a	n/a
Chlorine	106	0.90 – 1.31	mg/L
Fluoride (If the DWS provides fluoridation)	n/a	n/a	n/a

Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument:

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure
n/a	n/a	n/a	n/a	n/a

Summary of Inorganic parameters tested during this reporting period or the most recent sample results:

Please refer to the Guelph Drinking Water System Annual Report for treated drinking water summary inorganic water quality results.

Summary of lead testing under “Approved Relief” during this reporting period:

NOTE: A result of zero indicates that the result obtained was below the method detection/reporting limit.

Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Unit of Measure	Number of Exceedances
Distribution	2	0 - 0	mg/L	0

Summary of Organic parameters sampled during this reporting period or the most recent sample results:

NOTE: A result of zero indicates that the result obtained was below the method detection/reporting limit.

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
HAAs (Note: show latest running annual average)	Jan - Dec 2022	0	mg/L	0
THMs (Note: show latest running annual average)	Jan - Dec 2022	0.02	mg/L	0

The above table are sample results from the Gazer Mooney Subdivision Distribution System. For organic water quality results from the Guelph Drinking Water System, please refer to the Guelph Drinking Water System Annual Report; in 2022, there were no exceedances related to organic parameters in the Guelph Drinking Water System.

List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards:

There were no instances of organic parameter sample results exceeding half the standard in 2022 in the Gazer Mooney Subdivision System or the Guelph Drinking Water System.

Wellington Source Water Protection



4.0 Appendix B Source Water Protection Report

Appendix B available pending March 20th Council Report