Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Val Gagne Drinking Water System

2022 Annual Summary Report

Prepared by the Ontario Clean Water Agency
On behalf of the Corporation of the Township of Black River-Matheson

Table of Contents

OVERVIEW

Municipalities throughout Ontario are required to comply with Ontario Regulation 170/03 made under the *Safe Drinking Water Act*, 2002. The Act was passed following recommendations made by Commissioner O'Conner after the Walkerton Inquiry. The Act's purpose is to protect human health through the control and regulation of drinking-water systems. O. Reg. 170/03 regulates drinking water testing, use of licensed laboratories, treatment requirements and reporting requirements.

Section 11 of O. Reg. 170/03 requires the owner to produce an Annual Report which must include the following:

- Description of system and chemical(s) used
- Summary of any adverse water quality reports and corrective actions
- Summary of all required testing
- 4. Description of any major expenses incurred to install, repair or replace equipment

This Annual Report must be completed by February 28 of each year.

Schedule 22 of the regulation requires that a Summary Report for Municipalities be prepared which must be presented and accepted by Council by March 31 of each year for the preceding calendar year reporting period.

The report must list the requirements of the Act, its regulations, the system's Drinking Water Works Permit (DWWP), Municipal Drinking Water Licence (MDWL), Certificate of Approval (if applicable), and any Provincial Officer Order the system failed to meet during the reporting period. The report must also specify the duration of the failure, and for each failure referred to, describe the measures that were taken to correct the failure.

The *Safe Drinking Water Act*, 2002 and the drinking water regulations can be viewed at the following website: http://www.e-laws.gov.on.ca.

To enable the Owner to assess the rated capacity of their system to meet existing and future planned water uses, the following information is also required in the report.

- A summary of the quantities and flow rates of water supplied during the reporting period, including the monthly average and the maximum daily flows.
- A comparison of the summary to the rated capacity and flow rates approved in the systems approval, drinking water works permit or municipal drinking water licence or a written agreement if the system is receiving all its water from another system under an agreement.

The Annual and Summary Reports have been combined and presented to council as the Val Gagne Drinking Water System 2022 Annual Summary Report.

1.0 INTRODUCTION

Drinking-Water System Name:	**VAL GAGNE DRINKING WATER SYSTEM**
Drinking-Water System No.:	**210001674**
Drinking-Water System Owner:	The Corporation of the Township of Black River - Val Gagne
Drinking-Water System Category:	Small Municipal, Residential System
Municipal Drinking Water Licence No.:	204-102 (Issue 6 - April 23, 2021) 204-102 (Issue 7 - January 5, 2022) 204-102 (Issue 8 - March 14, 2022)
Drinking Water Work Permit No.:	204-202 (Issue 5 - June 2, 2017) 204-202 (Issue 6 - March 14, 2012)
Permit to Take Water No:	P-300-1077256711 (Issued October 1, 2020)
Period being reported on:	January 1, 2022 to December 31, 2022

Does your Drinking Water System serve more than 10,000 people? No

Is your annual report available to the public at no charge on a web site on the Internet? No

Location where Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.

Black River - Matheson Municipal Office
429 Park Lane,
Matheson ON P0K 1N0

Drinking Water Systems that receive drinking water from the Val Gagne Drinking Water System

Drinking Water System Name	Drinking Water System Number
Val Gagne Drinking Water System	210001674

The Annual Report was provided to all connected Drinking Water System owners

The Ontario Clean Water Agency prepared the 2022 Annual Summary Report for the Val Gagne Drinking Water System and provided a copy to the system owner; the Township of Black River - Matheson. The Val Gagne Drinking Water System is a stand-alone system that does not receive water from or send water to another system.

System users are notified that the Annual Report is available through:

- Public access/notice via newspaper/website

2.0 DESCRIPTION OF THE DRINKING WATER SYSTEM

The Val Gagne water treatment plant is a Class 1 facility owned by the Corporation of the Township of Black River-Matheson and operated by the Ontario Clean Water Agency (OCWA). The facility is located west of Lessard Street in the community of Val Gagne and provides drinking water to approximately 175 residents.

Well 1 is the main production well and is located near Highway 11 on the south side of Country Lane Road. It is a deep drilled groundwater well that is 150 mm in diameter and 22.9 m deep. The well is pumped at the rate of 158.9 L/min by a 2.23 kW submersible deep well pump. The water is pumped to the Val Gagne water treatment via a 1027 meter long watermain. The sodium levels in the well have been increasing over the last 15 to 20 years; the cause of this is being investigated.

Well 6 is a backup well located within the water treatment plant building. It is a drilled groundwater well that is 200 mm in diameter and 56.4 m deep. It is equipped with a submersible pump, rated at 46 L/min at a TDH of 62 m, with a 50 mm diameter discharge line connected to a common well pump header. This well is for emergency use only but it is run at least monthly for testing and sampling.

The main plant houses the disinfection system. Sodium hypochlorite is injected directly into the well pump discharge header by two pace-to-flow metering pumps (one duty and one standby). The sodium hypochlorite is stored in a 275 L double-walled tank equipped with secondary spill containment. An in-ground reservoir with a storage capacity of 550 m^3 serves as the chlorine contact chamber and provides water storage for the distribution system. Water is pumped into the distribution system by 3hp submersible high lift pumps with VFD's, each rated at 2.5 L/s with a TDH of 62 m. A diesel driven high flow pump is also available to deliver water at the rate of 2270 L/min during emergencies. Also, a 60 kW (208 V) 3-phase generator will start automatically if the power fails.

A baffled contact tank is used during scheduled cleaning of the reservoir. The chlorinated water is directed to the tank to provide sufficient contact time before entering the distribution system.

3.0 LIST OF ALL WATER TREATMENT CHEMICALS USED

- Sodium Hypochlorite - disinfection

4.0 SIGNIFICANT EXPENSES INCURRED

- Engineering services to investigate high sodium levels in Well #1
- Operations and maintenance costs

5.0 DETAILS OF NOTICES REPORTED & SUBMITTED TO THE SPILLS ACTION CENTER

Loss of Pressure / Boil Water Advisory

AWQI #	**159128**
Date	July 13, 2022
Details	Major watermain break on Church street could not be isolated (could not find valve) and the water treatment plant was having a hard time keeping up with the demand so the pumps had to be throttled down to avoid emptying the reservoir. This resulted in very low flows and a significant loss of pressure to the entire town. BWA issued for entire system.

Corrective Action	Boil Water Advisory issued by the Owner and Operating Authority and confirmed by the Porcupine Health Unit. Notices distributed dorr to door by owner. The watermain break repair was completed July 14, 2022 at approximately 1:00 am in the morning and then the system was flushed thoroughly. First set of samples were taken at four locations on July 14, 2022 and then the second set was collected at the same four locations, 24 to 48 hrs apart, on July 15, 2022. All results came back clear. The Porcupine Health Unit was notified and provided with results on July 16, 2022 and then they lifted the Boil Water Advisory.

6.0 MICROBIOLOGICAL TESTING

	Range of Results *(min to max)*				
Sample Type	**No. of Samples**	***E. coli***	**Total Coliform**	**# of HPC Samples**	**HPC Results**
Raw - Well 1	13	0 to 0	0 to 0	N/A	N/A
Raw - Well 6	13	0 to 0	0 to 0	N/A	N/A
Distribution	30	0 to 0	0 to 0	30	<10 to 40

Maximum Allowable Concentration (MAC) for distribution samples: *E. coli* = 0 Counts/100 mL and Total Coliforms = 0 Counts/100 mL
"<" denotes less than the laboratory's method detection limit.
Note: One microbiological sample is collected and tested each month from the raw water supply and one every two weeks from the distribution system.

7.0 OPERATIONAL TESTING

Raw Water Turbidity

Location	**No. of Samples**	**Range of Results** *(min to max)*	**Unit of Measure**
Well 1	12	0.11 to 0.62	NTU
Well 6	12	0.86 to 1.61	

Continuous Monitoring in the Treatment Process

Parameter	**No. of Samples**	**Range of Results** *(min to max)*	**Unit of Measure**	**Standard**
Free Chlorine	8760	0.45 to 2.00	mg/L	N/A

Notes**:** For continuous monitors 8760 is used as the number of samples.

Chlorine Residuals from the Distribution System

Parameter	No. of Samples	Range of Results *(min to max)*	Unit of Measure	Standard
Free Chlorine	115	0.56 to 1.33	mg/L	0.05

Note: in the distribution system, at least two samples for free chlorine residual testing must be taken at least 48-hours apart and taken during the same week, each week.

Nitrate & Nitrite Results from the Water Treatment Plant

Date of Sample	Nitrate Result Value (mg/L)	Nitrite Result Value (mg/L)	Exceedance
January 4	0.77	<0.05	No
April 11	0.83	<0.05	No
July 5	0.9	<0.01	No
October 11	0.75	<0.05	No

Maximum Acceptable Concentration (MAC) for Nitrate = 10 mg/L MAC for Nitrite = 1.0 mg/L

Total Trihalomethane (THM's) Results from the Distribution System

Date of Sample	Result Value (ug/L)	Four Quarter Running Average	Exceedance
January 4	8.7	14.1	No
April 11	8.2	11.2	No
July 6	14.4	13.3	No
October 11	32.8	16.0	No

Maximum Acceptable Concentration (MAC) = 100 ug/L (Four Quarter Running Average)

Total Haleoacetic Acid (HAA's) Results from the Distribution System

Date of Sample	Result Value (ug/L)	Four Quarter Running Average	Exceedance
January 4	<8	9.2	No
April 11	<8	8.25	No
July 5	<8	8.86	No
October 11	<9	8.25	No

Maximum Acceptable Concentration (MAC) = 80 ug/L (Four Quarter Running Average)

Lead (most recent), pH & Alkalinity Results from the Distribution System

Date of Sample	# of Samples	Range of Results (min to max)		
		pH Results	Alkalinity Results (mg/L)	Lead Results (ug/L)
April 14, 2022	1	7.0	308	0.3 (April 7, 2020)
September 20, 2022	1	7.6	306	0.2 (Oct 15, 2020)

MAC for Lead -10 ug/L

Note: *The system is required to test for total alkalinity and pH in one distribution sample collected during the period of December 15 to April 15 and one distribution sample during the period of June 15 to October 15. This testing is required in every 12-month period with lead testing in every third 12-month period. The next round of lead sampling will be completed in April and October of 2023.*

Lead (most recent), pH & Alkalinity Results from Non - Residential Plumbing

Date of Sample	# of Samples	pH Result	Temp (°C)	Lead Results (ug/L)
April 7, 2020	1	7.3	13.4	0.5
September 21, 2020	1	7.8	16.5	0.5

Sampling required every third 12-month period. Sampling Periods: December 15 to April 15; and June 15 to October 15

Note: The Val Gagne Drinking Water System was required to complete Reduced Lead Sampling in both sampling periods in 2020. As such the system was required to test for lead in five residential plumbing samples, one non-residential plumbing sample and one distribution sample. If not more than 10% of plumbing samples were less than 10 ug/L each period the system would be exempt for plumbing requirements but the system was granted relief from collecting any residential samples in 2020 due to the on-going pandemic. Lead sampling for residential plumbing will resume in 2023.

Summary of Most Recent Schedule 23 Inorganic Results from the Water Treatment Plant

Sample Date: September 21, 2020

Parameter (ug/L)	Result Value	Maximum Acceptable Concentration	Exceedance
Antimony	<0.5	6	No
Arsenic	1	10	No
Barium	60	1000	No
Boron	9	5000	No
Cadmium	<0.1	5	No
Chromium	<1	50	No
Mercury	<0.1	0.001	No
Selenium	0.3	10	No
Uranium	5	20	No

Note: Sampling required once every 60 months (next sample scheduled for October 2025)

Summary of Most Recent Schedule 24 Organic Results from the Water Treatment Plant

Sample Date: September 21, 2020

Parameter	Result Value	Unit of Measure	Standard	Exceedance
1,1-Dichloroethylene	<0.3	ug/L	14	No
1,2-Dichlorobenzene	<0.3	ug/L	200	No
1,2-Dichloroethane	<0.3	ug/L	5	No
1,4-Dichlorobenzene	<0.3	ug/L	5	No
2,3,4,6-Tetrachlorophenol	<0.3	ug/L	100	No
2,4,6-Trichlorophenol	<0.2	ug/L	100	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	<0.342	ug/L	100	No
2-4 Dichlorophenol	<0.2	ug/L	900	No
Alachlor	<0.226	ug/L	5	No
Atrazine + N-dealkylated metobolites	<0.5	ug/L	5	No
Azinphos-methyl	<0.169	ug/L	20	No
Benzene	<0.1	ug/L	1	No
Benzo(a)pyrene	<0.01	ug/L	0	No
Bromoxynil	<0.0911	ug/L	5	No

Parameter	Result Value	Unit of Measure	Standard	Exceedance
Carbaryl	<2	ug/L	90	No
Carbofuran	<4	ug/L	90	No
Carbon Tetrachloride	<0.2	ug/L	2	No
Chlorobenzene	<0.5	ug/L	80	No
Chlorpyrifos	<0.169	ug/L	90	No
Diazinon	<0.169	ug/L	20	No
Dicamba	<0.0797	ug/L	120	No
Dichloromethane	<1	ug/L	50	No
Diclofop-methyl	<0.114	ug/L	9	No
Dimethoate	<0.169	ug/L	20	No
Diquat	<0.2	ug/L	70	No
Diuron	<10	ug/L	150	No
Glyphosate	<20	ug/L	280	No
Malathion	<0.169	ug/L	190	No
MCPA	<5.69	ug/L	230	N/A
Metolachlor	<0.113	ug/L	50	No
Metribuzin	<0.113	ug/L	80	No
Paraquat	<0.1	ug/L	10	No
Pentachlorophenol	<0.3	ug/L	3	No
Phorate	<0.113	ug/L	60	No
Picloram	<0.0797	ug/L	2	No
Prometryne	<0.0564	ug/L	1	No
Simazine	<0.169	ug/L	10	No
Terbufos	<0.113	ug/L	1	No
Tetrachloroethylene	<0.3	ug/L	10	No
Total PCB's	<0.07	ug/L	190	No
Triallate	<0.113	ug/L	5	No
Trichloroethylene	<0.2	ug/L	5	No
Trifluralin	<0.113	ug/L	45	No
Vinyl Chloride	<0.1	ug/L	1	No

Note: Sampling required once every 60 months (next sample scheduled for October 2025)

Sodium Results (Most Recent) from the Water Treatment Plant

Date of Sample	# of Samples	Result Value	Unit of Measure	Standard	Exceedance
September 21, 2020	1	26.4	mg/L	20	Yes (AWQI #152285)
October 2, 2020	1	22.8	mg/L	20	Yes

Note: Sample required every 60 months. Next sampling scheduled for October 2025

Note: The sodium levels in Well 1have been increasing over the last 15 to 20 years; the cause of this is being investigated.

Fluoride Results (Most Recent) from the Water Treatment Plant

Date of Sample	No. of Samples	Result Value	Unit of Measure	Standard	Exceedance
September 21, 2020	1	0.06	mg/L	1.5	No

Note: Sample required every 60 months. Next sampling scheduled for October 2025

Inorganic or Organic Test Results that Exceeded Half the Standard

No inorganic or organic parameter(s) listed in Schedule 23 and 24 of Ontario Regulation 170/03 exceeded half the standard found in Schedule 2 of the Ontario Drinking Water Standard (O. Reg. 169/03) during the reporting period.

Additional Testing Performed in Accordance with a Legal Instrument.

No additional sampling or testing was required in 2022.

8.0 REQUIREMENTS THE SYSTEM FAILED TO MEET

The Val Gagne Drinking Water system met all requirements in 2022

9.0 SUMMARY OF FLOW RATES AND QUANTITIES

The following tables indicate the quantities and flow rates of water taken and produced during the reporting period, including monthly average flows, maximum daily flows and the total monthly volumes. A comparison of the water data is made to the rated capacity and flow rates specified in the system's Permit to Take Water and the Municipal Drinking Water License.

Any raw water flow rate exceedances in 2022 were checked and determined to be inflated numbers due to momentary spikes on pump start up/shutdown that were momentary and are not representative. The actual maximum flow rates have been depicted in the tables below.

Well 1 - Summary of Water Taking

Regulated by Permit to Take Water (PTTW) #P-300-1077256711, Issued October 1, 2020

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m^3)	2920	2360	2564	2343	2127	2125	2455	2036	1928	1846	1783	1881	26368
Average Volume (m^3/d)	94.2	84.3	82.7	78.1	68.6	70.8	79.2	65.7	64.3	59.6	59.4	60.7	72.2
Maximum Volume (m^3/d)	137	102	103	95	139	98	204	89	95	84	74	79	204
PTTW - Maximum Allowable Volume (m^3/day)	229	229	229	229	229	229	229	229	229	229	229	229	229
Maximum Flow Rate (L/min)	142	142	142	143	145	148	151	156	143	139	139	145	156
PTTW - Maximum Allowable Flow Rate (L/min)	159	159	159	159	159	159	159	159	159	159	159	159	159

The system's Permit to Take Water *allows* the municipality to withdraw a maximum volume of 229 cubic meters from Well 1 each day. A review of the raw water flow data indicates that the system never exceeded this allowable limit having a maximum volume of 204 m^3.

The Permit also allows a maximum flow rate of 159 L/minute which was not exceeded either as the maximum flow rate was 156 L/minute.

Well 6 - Summary of Water Taking

Regulated by Permit to Take Water (PTTW) #P-300-1077256711, Issued October 1, 2020

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m^3)	2	1	1	1	1	1	1	1	1	1	1	1	13
Average Volume (m^3/d)	0.06	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04
Maximum Volume (m^3/d)	1	1	1	1	1	1	1	1	1	1	1	1	1
PTTW - Maximum Allowable Volume (m^3/day)	66.24	66.24	66.24	66.24	66.24	66.24	66.24	66.24	66.24	66.24	66.24	66.24	66.24
Maximum Flow Rate (L/min)	42	35	38	36	46	46	40	44	38	37	40	41	46
PTTW - Maximum Allowable Flow Rate (L/min)	46	46	46	46	46	46	46	46	46	46	46	46	46

The system's Permit to Take Water *allows* the municipality to withdraw a maximum volume of 66.24 cubic meters from Well 6 each day. A review of the raw water flow data indicates that the system never exceeded this allowable limit having a maximum volume of 1 m^3.

The Permit also allows a maximum flow rate of 46 L/minute which was not exceeded either as the maximum flow rate was 46 L/minute.

Treated Water Supplied to the Distribution System

Regulated by Municipal Drinking Water Licence (MDWL) #204-102 - Issue 6 (Issued April 23, 2021), #204-102 - Issue 7 (Issued January 5, 2022), and #204-102 - Issue 8 (Issued March 14, 2022)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m^3)	2118	1530	1687	1526	1812	1848	2169	1734	1616	1744	1655	1753	21192
Average Volume (m^3/d)	68	55	54	51	58	62	70	56	54	56	55	57	58
Maximum Volume (m^3/d)	108	73	84	70	113	88	449	69	81	80	63	67	449
MDWL - Rated Capacity (m^3/day)	233	233	233	233	233	233	233	233	233	233	233	233	233
% Rated Capacity	46	31	36	30	48	38	193	30	35	34	27	29	193

Schedule C, Section 1.1 of MDWL No. 204-102 states that the maximum daily volume of treated water that flows from the treatment subsystem to the distribution system shall not exceed a maximum flow rate of 233 m^3 on any calendar day. The Val Gagne DWS was under the limit all year except on July 13 when the total volume of water supplied to the distribution system was 449 m^3 due to a large watermain break.

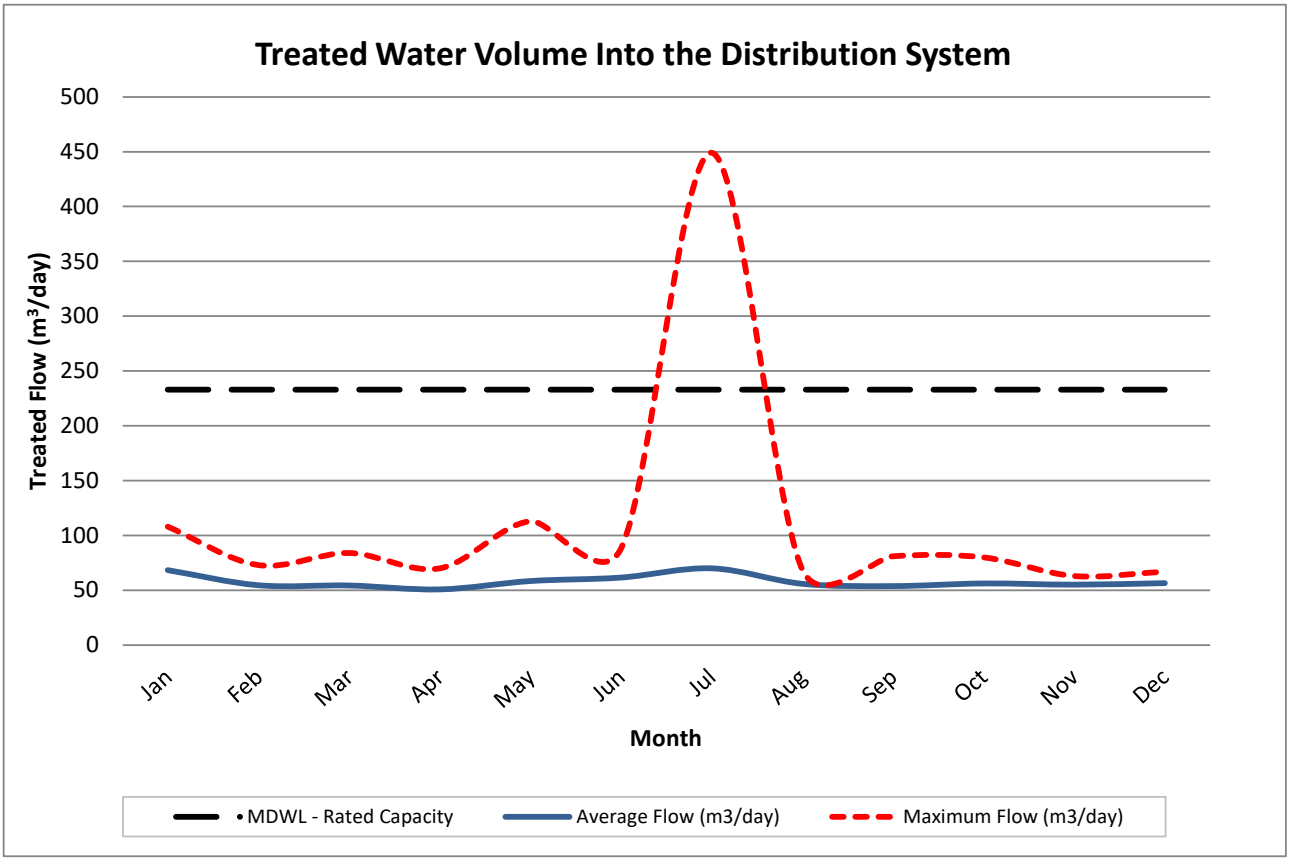

Figure: Volume of Treated Water Supplied to the Distribution System - *A comparison of the rate specified in the system's Municipal Drinking Water Licence to the average and maximum volumes entering the distribution system.*

Comparison of the Flow Summary to Systems Licence & Permit

Rated Capacity of the Plant (MDWL)	233 m^3/day	
Average Daily Flow for 2022	58 m^3/day	25 % of the rated capacity
Maximum Daily Flow for 2022	449 m^3/day	193 % of the rated capacity
Total Treated Water Produced in 2022	21,192 m^3	

The Val Gagne water treatment plant is rated to 233 cubic meters of water per day as specified in the system's Municipal Drinking Water Licence. The average daily flow was 58 m^3 per day, which is 25% of the rated capacity. This information clearly shows that the plant is well within its rated capacity and is able to meet current demands of consumers.

10.0 CONCLUSION

The Val Gagne Drinking Water System completed all required sampling and monitoring in 2022 and was able to meet the communities demand for drinking water while complying with the terms and conditions outlined in its Drinking Water Works Permit and Municipal Drinking Water Licence. The system also complied with the regulatory requirements of the Safe Drinking Water Act and its Regulations.