Tara Water Works
13-028

2019 Operation and Maintenance Annual Report
January 2020

Prepared for:
Municipality of Arran-Elderslie
PO Box 70, 1925 Bruce Road 10
Chesley, ON N0G 1L0

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1.0 INTRODUCTION AND BACKGROUND

The purpose of the 2019 Annual Compliance Report is to document the operation and maintenance data for the Tara Water Works for review by the Ministry of the Environment in accordance with O. Reg 170/03.

Currently, 476 homes, businesses and institutions are connected to the existing water system servicing a population of approximately 1,032.

The plant was operated by municipal operators namely Mr. Mark O'Leary, Water/Sewer Foreman, the back-up Overall Responsible Operator (ORO) and has a Class II Water Treatment and Class III Water Distribution Certificates; Trevor Sweiger, who holds a Class I Water Distribution and a Class I Water Treatment Certificate; Mr. Chris Legge, who has a Class I Water Treatment Certificate and a Class II Water Distribution Certificate and Mr. Ted Knapp, who has WTII, WDII licenses. Rakesh Sharma, P. Eng., who has a Class IV Certificate for Water Treatment and Class IV Certificate for Water Distribution and is the Overall Responsible Operator (ORO) and Scott McLeod, who has a Class II Certificate for Water Treatment and Class IV Certificate for Water Distribution is the backup ORO. The Tara water system is classified as a Class I Water Treatment system and a Class I Water Distribution system.

The operating authority for the plant is:

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Water works Permit # 079-201 Issue 4	Issued May 19, 2017
Waterworks License # 079-101 Issue 3	Issued May 19, 2017
Permit to take Water #3285-7HUKFE	Issued August 25, 2008

2.0 DESCRIPTION OF WATER SYSTEM

The majority of the water distribution system is comprised of cast iron and ductile iron mains that are approximately 40 to 50 years old. There are also numerous small diameter polyethylene watermains throughout the former Village which are being replaced gradually with properly sized watermains.

Pumping Station No. 2 – 59 Market St.

- Pump House building with the approximate dimensions of 4.89 m x 5.6 m, equipped with:
- One (1) cartridge filter with a treatment capacity of 11.37 L/s, equipped with 14 - one (1) micron size filter cartridges used to reduce turbidity spikes on the Well No. 2 pump start up, complete with a differential pressure monitoring system;
- One (1) turbidity sampling point located downstream of the cartridge filter provided with the existing on-line turbidity analyzer;
- Two (2) chemical metering pumps: one (1) duty and one (1) standby with automatic switch over, complete with associated piping appurtenances and controls;
- One (1) sodium hypochlorite solution tank and one (1) secondary containment tank;
- Well pump rated at 4.9 L/s at a total dynamic head (TDH) of 161 m, approximately;
- One (1) flow meter and associated mechanical, electrical and structural work;
- 150 mm diameter x 360 m watermain along River Street, dedicated to provide chlorine contact time necessary for well water discharge from PH No. 2, complete with treated water sample line.

Pumping Station No. 3 – 217 River Street

- Pump House building with approximate dimensions of 6.1 m x 7.3 m, equipped with:
- One (1) cartridge filter with a treatment capacity of 11.3 L/s, equipped with 14 - one (1) micron size filter cartridges, certified for cyst removal in accordance with procedures specified in NSF 53 or equivalent, and used on line with the Well No. 3 pump, complete with a differential pressure monitoring system;
- One (1) turbidity sampling point located on the downstream of the cartridge filter for on-line turbidity monitoring;
- A primary disinfection system using, Ultra Violet (UV) disinfection system consisting of two (2) UV disinfection reactors, one (1) duty, one (1) standby, located after the cartridge filter unit, each unit rated at 11.37 L/s, capable of providing minimum dose of 40 mJ/cm^2 at the end of the lamp life, together with automatic cleaning system, on-line UV intensity monitor with alarm, complete with a portable UV transmittance monitor;
- A secondary disinfection system using sodium hypochlorite disinfection, consisting of two (2) chemical metering pumps, one (1) duty, one (1) standby with automatic switch over, dosing sodium hypochlorite solution at the downstream of the UV units, complete with associated piping, appurtenances and controls;
- One (1) sodium hypochlorite solution tank and one (1) secondary containment tank;
- A submersible deep well pump rated at 5.3 L/s at a total dynamic head (TDH) of 164 m, approximately;
- One (1) flow meter and associated mechanical, electrical and structural work;
- One (1) 60 kW natural gas generator set capable of providing power to both Pump Houses No. 2 and No. 3 during power failure.

Pumping Station No. 4 – 158 Yonge Street North

- A 250 mm diameter 25.91 m deep drilled ground water well, located within the Pump House equipped with:
- A submersible deep well pump rated at 9.8 L/s with an operating head varying between approximately 42.06 m and 71.08 m complete with variable frequency drive and well level transducer;
- One (1) cartridge filter with a treatment capacity of 9.8 L/s, equipped with three (3) micron size filter cartridges {One (1) micron cartridges also acceptable} to be used on the well startup to reduce initial turbidity spikes;
- One (1) magnetic flow meter;
- A sodium hypochlorite disinfection system consisting of two (2) chemical metering pumps, one (1) duty, one (1) standby with automatic switch over and a 200 L sodium hypochlorite solution tank with a secondary containment tank and associated piping, appurtenances and controls;
- 12 m of 600 mm diameter watermain buried (chlorine contact chamber) outside the Pump House to provide chlorine contact time necessary for well water discharge from Pump House No. 4.
- One (1) online free chlorine residual analyzer to monitor free chlorine residual after the chlorine contact chamber;
- One (1) treated water turbidity analyzer; and
- Associated SCADA, PLC and controls.

Miscellaneous

- A Supervisory Control and Data Acquisition (SCADA) system for automation of Pump Houses No. 2, No. 3 and No. 4, complete with associated Program Logic Controllers (PLC) and alarm dialers; and
- All associated electrical, mechanical, structural and appurtenances necessary for an operable system.

Water Storage Tank

- An elevated water storage tank (standpipe), constructed in 2010 is located at Pump House No. 4 site on the northern outskirts of Tara (NAD83, UTM Zone 17, 488250 E, 4925627N). It has an operating capacity of 852 m^3 and a total capacity of 3,952 m^3. The standpipe is 12.8 m in diameter and is 30.7 m high.

3.0 SUMMARY OF WATER QUALITY MONITORING

3.1. WATER TREATMENT EQUIPMENT OPERATION MONITORING

3.1.1. POINT OF ENTRY CHLORINE RESIDUAL

In 2019 a total of 365 samples were collected and analyzed for Free Chlorine Residual at the Point of Entry (POE) from each Pump House. The sample results were collected by way of continuous on-line monitoring. **Table 1** shows the monthly minimum and average free Chlorine residual values. All free chlorine residuals were greater than 0.2 mg/L.

3.1.2. CHLORINE RESIDUAL DISTRIBUTION

In 2019, a total of 365 samples were collected in the distribution system. **Table 1** shows that all free chlorine residual distribution samples were greater than 0.2 mg/L and less than 4.00 mg/L.

3.1.3. TURBIDITY

The treated water turbidity was measured by both an on-line turbidity analyzer and a portable turbidity analyzer.

Each time a microbiological sample was collected for raw water or from the distribution system a grab sample was also collected and analyzed for turbidity. It can be seen on **Table 2** that no raw water samples from Well No. 2, Well No. 3 and Well No. 4 exceeded the maximum acceptable concentration (MAC) of 2 NTU or the aesthetic objective (AO) of 5 NTU. None of the POE turbidity samples collected at Pumphouses No. 2, 3, or 4 exceeded 1 NTU. 1 NTU turbidity criteria does not apply to Well No. 2 and Well No. 4 as they are groundwater supplies.

3.2. MICROBIOLOGICAL SAMPLING AS PER SCHEDULE 10, O.REG. 10, O. REG. 170/03

3.2.1. DISTRIBUTION SYSTEM

Schedule 10 of Ontario Regulation 170/03 requires that at least nine (9) distribution samples be collected monthly and tested for E. coli, Total Coliform and 25% of samples analyzed for Heteotrophic Plate Count (HPC). A total of 113 distribution samples were analyzed for E. coli and Total Coliform and 62 were tested for HPC. One sample collected on May 13, 2019 tested positive for TC count of 1. Resampling was undertaken on May 16th and 17th with acceptable lab results. None of the samples had HPC count of 10 or more. All distribution samples results were within compliance. Refer to **Table 3 (Appendix B).**

Table 1
Summary of Water Quality – Free Chlorine Residuals in POE & Distribution
Municipality of Arran-Elderslie – Tara
2019

Month	Treated									Distribution		
	# of Samples	Well No.2 Pump House		# of Samples	Well No. 3 Pump House		# of Samples	Well No. 4 Pump House		# of Samples	Min.	Max.
		Min.	Avg.		Min.	Avg.		Min.	Avg.			
January	31	0.54	1.01	31	0.76	1.02	31	0.82	1.02	31	0.61	1.10
February	28	0.72	1.01	28	0.80	1.02	28	0.77	1.03	28	0.67	0.96
March	31	0.58	1.01	31	0.82	1.02	31	0.76	1.06	31	0.83	0.98
April	30	0.70	0.98	30	0.74	0.99	30	0.69	1.08	30	0.64	0.94
May	31	0.62	1.03	31	0.76	1.05	31	0.50	1.05	31	0.73	0.95
June	30	0.18	0.97	30	0.68	1.02	30	0.05	1.06	30	0.60	0.94
July	31	0.34	1.02	31	0.68	1.05	31	0.66	1.01	31	0.70	0.99
August	31	0.52	0.91	31	0.60	0.90	31	0.80	1.07	31	0.66	1.24
September	30	0.32	0.91	30	0.62	0.93	30	0.71	1.00	30	0.37	1.27
October	31	0.52	1.00	31	0.64	1.00	31	0.77	1.00	31	0.67	1.23
November	30	0.60	1.09	30	0.82	1.10	30	0.74	1.04	30	0.70	1.00
December	31	0.56	1.04	31	0.86	1.06	31	0.90	1.10	31	0.43	1.26
Total	**365**			**365**			**365**			**365**		

Table 2
Summary of Water Quality – Turbidity Sampling of Raw and POE Samples
Municipality of Arran-Elderslie – Tara

2019

Month	Raw								POE at Pumphouse #2	POE at Pumphouse #3	POE at Pumphouse #4
	# of Samples	Well No.2		# of Samples	Well No. 3		# of Samples	Well No. 4				
		Max.	Avg.		Max.	Avg.		Max.	Avg.	Max.	Max.	Max.
January	5	0.31	0.24	5	0.25	0.23	6	0.21	0.17	0.27	0.16	0.16
February	4	0.28	0.13	4	0.26	0.22	4	0.21	0.18	0.27	0.1	0.09
March	4	0.25	0.23	4	0.46	0.33	4	0.23	0.18	0.22	0.14	0.15
April	4	0.33	0.26	4	0.54	0.36	4	0.21	0.17	0.23	0.18	0.10
May	4	0.29	0.25	4	0.37	0.27	4	0.37	0.25	0.30	0.22	0.18
June	4	0.37	0.27	4	0.45	0.28	4	0.21	0.19	0.25	0.13	0.24
July	5	0.35	0.24	5	0.31	0.24	5	0.23	0.20	0.27	2.04*	0.21
August	3	0.41	0.32	3	0.63	0.50	3	0.28	0.26	1.41	0.19	0.16
September	5	0.38	0.29	5	0.33	0.29	5	0.29	0.25	0.25	0.12	0.18
October	4	0.29	0.26	4	0.32	0.29	4	0.26	0.25	0.19	0.18	0.17
November	3	0.45	0.39	4	0.26	0.23	3	0.26	0.24	0.24	0.21	0.14
December	5	0.49	0.34	5	0.36	0.25	5	0.23	0.17	0.25	0.21	0.11
Annual	**50**			**51**			**51**					

3.2.2. RAW WATER SAMPLES

Schedule 10 of Ontario Regulation 170/03 requires that at least one (1) raw water sample be collected weekly from each well and tested for E. Coli and Total Coliforms.

In 2019, total of 156 raw samples were collected from Well No. 2, Well No. 3 and Well No. 4 and analyzed for E. Coli and Total Coliforms. Refer to **Table 3 (Appendix B).** Well No. 3 samples frequently tested positive for Total Coliforms during spring and fall months, confirming the well to be a GUDI well.

3.2.3. TREATED WATER (POINT OF ENTRY) SAMPLES

Schedule 10 of Ontario Regulation 170/03 requires that at least one (1) treated water sample be collected weekly from the Point of Entry (POE). A total of 105 POE samples were collected and analyzed for Total Coliform, E. Coli and HPC. All analysis results were found to be acceptable. Refer to **Table 3 (Appendix B).** None of the samples had high HPC count unlike in previous years.

All microbiological samples were analyzed by SGS Canada Inc., which is an accredited lab.

3.3. CHEMICAL SAMPLING & TESTING AS PER SCHEDULED 13, O. REG. 170/03

3.3.1. INORGANICS

Schedule 13-2 of Ontario Regulation 170/03 requires that at least one (1) water sample is taken every 12 months if the system obtains water from a groundwater supply that has been deemed GUDI. The combined Well No. 2 and Well No. 3 required sampling annually as Well No. 3 is a GUDI well. The samples were collected on November 18, 2019. All parameters were found to be within compliance. Inorganics are required to be sampled and analyzed again before November, 2020 at combined discharge of Well No 2 and Well No. 3. Well No. 4 requires sampling every 36 months. The sample was last collected on November 19, 2018 and all results were within compliance limits. Sampling at Well No. 4 is not required until November 2021. Refer to **Appendix C** for test results.

3.3.2. LEAD

Schedule 15.1 of Ontario Regulation 170/03 requires that 13 samples (11 samples from plumbing plus 2 distribution samples) are taken at various sample points, twice a year: once between December 15 and April 15 and once between June 15 and October. Tara Water System is on reduced sampling requirements. Lead samples were collected in 2018 and received by lab on

March 19, 2018 and October 5, 2018. All lead samples results were well within MAC of 10 µg/L. In 2019, sampling for alkalinity was undertaken and concentration was found to be 379 mg/L on February 4, 2019 and 261 mg/L on October 1, 2019. Refer to **Appendix C** for lab reports.

3.3.3. ORGANICS

Schedule 13-4 of Ontario Regulation 170/03 requires that at least one (1) water sample is taken every 12 months and tested for organic parameters, as per Schedule 24, if the system obtains water from a groundwater supply that has been deemed as GUDI.

The combined Well No. 2 and Well No. 3 required POE sampling annually as Well No. 3 is a GUDI well. These samples were collected and received by lab on November 19, 2019 and were all found to be within compliance. Organics are required to be sampled again before November 2020 at Well No. 2 and Well No.3. Well No. 4 only requires sampling every 36 months. The samples were last collected and received by lab on November 19, 2018 and all results were in compliance. Sampling is not required at Well No. 4 until November 2021. Refer to **Appendix C** for lab reports.

3.3.4. TRIHALOMETHANES AND HAA

Scheduled 13-6 of Ontario Regulation 170/03 requires that at least one (1) distribution sample is taken every three (3) months from a point in the distribution system and tested for Trihalomethanes (THMs & HAA). In 2019 samples were collected during the months of February, May, August and November. The Ontario Drinking Water Quality Standard (ODWQS) have set a Maximum Allowable Concentration (MAC) of 100 µg/L for THM and 80 (µg/L) for HAA. All test results were within compliance. Please refer to the **Table 4** for test results.

In 2020, THMs and HAA should be sampled in February, May, August and November.

Table 4 - Summary of Water Quality – Trihalomethanes (THMs) & Haloacetic Acid Tara Water Works – 2019

Sample Location		Sample received by Lab Date	TTHM (µg/L)	HAA (µg/L)
TTHM	**HAA**			
OC Long Subdivision	Mill St. Pumping Station	February 04, 2019	9.4	5.3
OC Long Subdivision	Community Centre	May 13, 2019	10.0	5.3
OC Long Subdivision	Barry's Apartment	August 12, 2019	15.0	5.3
OC Long Subdivision	Mill St. Pumping Station	November 19, 2019	13.0	5.3
Annual Average			**11.9**	

3.3.5. NITRATE & NITRATE

Schedule 13-7 of Ontario Regulation 170/03 requires that at least one (1) water sample is taken every three (3) months and tested for nitrate and nitrite. In 2019 samples were collected during the months of February, May, August and November. The analytical results were found to be within compliance. Refer to **Appendix C**. During 2020, samples should be collected during February, May, August and November.

3.3.6. SODIUM

Schedule 13-8 of Ontario Regulation 170/03 requires that at least one (1) water sample is collected every 60 months and tested for Sodium. The Ontario Drinking Water Quality Standards (ODWQS) have set a Maximum Acceptable Concentration (MAC) of 200 mg/L for sodium and requires the Medical Officer of Health be notified if the concentration exceeds 20 mg/l. Sodium samples were collected on November 17, 2019, from Wells No. 2 and No. 3 POE and from the Well No. 4 POE. The sodium concentrations reported were 16.8 mg/L (Well#2 and #3) and 15.7mg/L (Well#4). Sodium analysis must be completed again prior to November 17, 2024. Refer to **Appendix C** for lab report.

3.3.7. FLUORIDE

Schedule 13-9 of Ontario Regulation 170/03 requires that a water sample be collected at least once in every 60 months and tested for Fluoride. The Ontario Drinking Water Quality Standards (ODWQS) have set a MAC of 1.5 mg/L. On November 17, 2019, POE samples were collected from Well No. 2 and 3 and Well No. 4 Pump House and found to have a concentration 1.32 mg/L and 0.57 mg/L respectively, which is within compliance. This parameter is required to be sampled and analyzed again before November 17, 2024. Refer to **Appendix C** for lab report.

4.0 WATER USAGE

The treated water quality supplied to the distribution system in 2019 is provided in **Table 5** as follows. A breakdown of the monthly flow (Refer to **Tables A-1, A-2 & A-3)** provided to the distribution system can be found in **Appendix A.**

Table 6 provides a summary of capacity utilization of Tara Water Works. In 2019, capacity utilization was 43.7% of rated capacity of 1736 m^3/day. In 2018, capacity utilization was 46.4%, in 2017 it was 45.7% and in 2016 it was 59.9%. It would appear that water usage is on a decline due to sustained effort by Municipality to replace old CI watermain that are prone to watermain breaks.

For the volume of water supplied to the distribution system, the Tara Water Works as a whole required 2,372.6 L of NaOCI with an average dosage of 2.59 mg/L approximately. Refer to **Table 7.**

The water meters for Well No. 2, Well No. 3, and Well No. 4 were calibrated in April 2019 and were found to be acceptable. Refer to **Appendix G.** The water meters for Tara Water Works should be calibrated again by April 2020.

Table 5

Treated Water Quality

Municipality of Arran-Elderslie

Tara Water Works

2019

Items	Well No. 2	Well No. 3	Well No. 4	Total
Annual Treated Water Supplied to the Distribution System (m^3)	21,366	33,006	56,030	110,492
Average Day Treated Water Supplied by well from Pump House (m^3/day)	72**	90.4**	153.5**	302.7*
Maximum Day Treated Water Supplied from Pump Houses (m^3/day)	194	323	605	758

*** Sum of total water supplied from three (3) Pump Houses ÷ No. of days pump(s) operated.**

**** Sum of total water supplied from Pump House(s) ÷ 365 days**

Table 6
Summary of Water System's Capacity Utilization
Municipality of Arran-Elderslie
Tara Water Works
2019

Year	Annual Average Day Flow (m^3/day)	Annual Max Day Flow (m^3/day)	% Capacity Utilization
2019	303	788	43.70%
2018	320	806	46.40%
2017	314	793	45.70%
2016	388	1039	59.9%
2015	369	882	50.8%
2014	334	1018	58.6%
2013	333	947	54.6%
2012	369	900	51.8%
Rated Capacity of Water Works		**1736 m^3/day**	

Table 7
Summary of Disinfectant chemicals used and water supply from Wells
Municipality of Arran-Elderslie
Tara Water Works
2019

Month	Volume of Sodium Hypochlorite (L) Used	Average Chlorine Dosage (mg/L)	Water Used (m^3) including waste flow
January	190	2.67	8,412
February	186.3	2.66	8,620
March	199	2.52	9,591
April	176	2.32	9,188
May	191	2.43	9,426
June	235	2.57	11,502
July	262	2.84	11,098
August	224.1	2.64	10,164
September	211.3	3.00	8,333
October	177.9	2.50	8,408
November	171	2.50	8,088
December	149	2.38	7,622
Total	**2372.6**	**31.03**	**110,452**

5.0 NON-COMPLIANCE DURING THE REPORTING PERIOD

There was one (1) incidence of non-compliance on May 13, 2019, when the TC distribution sample tested positive, with a TC count of 1. Corrective action(s) were taken and resampling on May 16th and May 17th was acceptable.

6.0 IMPROVEMENTS TO SYSTEM AND ROUTINE AND PREVENTATIVE MAINTENANCE

January:

- Replaced filter cartridge at Well No. 3 Pump House. Hour Meter reading was 26632.1.
- Annual Service on the diesel generator at Well No. 3 Pump House was completed.
- Desiccant packs were replaced on well transducers at Well No. 2 and No. 4.

February:

- Internal fan on TMS 561 turbidimeter at Well No. 2 Pump House was replaced.
- Outdoor water station was installed at Well No. 4 Pump House to provide potable water for Burgoyne residents.
- All three (3) chlorine analyzers were cleaned, and electrolyte and grit was replaced in the units.
- UV #1 air filters were cleaned at 4700.55 hrs.

March:

- Gal-Power serviced standby gas powered generator at Well No. 3 Pump House.
- Repairs were made to distributor cap and rotors on generator. At the same time, spark plug #2 and spark plug boot #5 also were replaced.
- All chemical chlorine pumps were calibrated at each Pump House site.

April:

- IWS completed step test on Well No. 2. The well has been running inefficiently and step test was completed to determine the problem.
- Flowmetrix calibrated all flow meters at all three well site locations.
- Troy's Plumbing and Heating tested all backflow preventer devices.
- 32 mm water main was repaired at 68 White's Avenue.
- Repairs were made to 100 mm water main just NE of hydrant #11 on Union Street.
- The filter cartridges were replaced at Well No. 2 Pump House at 41415.7 hrs.
- Battery was replaced on the standby power generator at 372.2 hrs, located at Well No. 3 Pump House.
- Batteries were also replaced in the UPS at this Pump House.

May:

- Union Gas and Nickason upgraded the gas regulator and the meter at Well No. 3 Pump House.

June:

- Cleaned UV #1 reactor sleeves and sensors at 5384.19 hrs.
- Replaced filter cartridge at Well No. 3 Pump House. Hour reading was 27450.3 hrs.
- Nickason replaced the gas line on the standby gas generator at Well No. 3.
- The batteries for the Emergency Lightning at Well No. 4 Pump House were replaced.

August:

- UPS was replaced at Well No. 3 Pump House.
- Cleaned UV #1 reactor sensor at 5692.51 hrs.
- Nickason replaced the backflow preventor at Well No. 4 Pump House.

September:

- Water main leak at #66 Hamilton Street was repaired.
- New de-gassing valve was installed on H/C pump #1 at Well No. 2.

October:

- Replaced filter cartridge at Well No. 2 Pump House. Hour reading was 42442.6 hrs.
- IWS installed new pump wet-end with old motor at Well No. 2. The well pump set up height was also shortened by 20 feet.
- Well No. 3 was provided with a well tile over top of the well casing to protect well.
- House #78 on Elgin Street and #26 on Mill Street were provided with new water lines from the property line to the home.

November:

- Roofs were checked at Pump Houses. Eavestroughs were also cleaned.
- Filter cartridges at Well No. 3 Pump House were changed. Hour reading was 28294.0 hrs.
- A complete rebuild of SCADA system was completed at all four locations. Selog Norteck Inc. installed new software, new hardware and cards at each site location. Most of the cards replaced were original from 2006-2009 construction.

December:

- Cleaned UV #1 reactor sensor at 6244.36 hrs.
- Replaced solenoid degassing valve on chlorine pump #1 at Well No. 2 Pump House.

7.0 MINISTRY OF THE ENVIRONMENT INSPECTION AND REGULATORY ISSUES

In 2019, the Ministry of the Environment performed an inspection of the Tara water system on April 5, 2019. The inspection Report is located in **Appendix D.**

There were no non-compliance issues.

MECP awarded a Final Inspection Rating of 100% and 0% Inspection Risk Rating for Tara Water Systems.

8.0 SUMMARY OF 2018 REQUIREMENTS & OTHER CONSIDERATIONS

1. During 2020, nine (9) distribution samples should be collected monthly from the Tara distribution system. Each sample should be analyzed for Total Coliform, E. Coli and 50% samples analyzed for HPC.

2. During 2020, a raw water sample should be collected each week from all of the three (3) production wells and analyzed for Total Coliform and E. coli.

3. During 2020, a Point of Entry sample should be collected and analyzed for Total Coliform, E. Coli and HPC weekly.

4. By November 2020, a POE sample for inorganics should be collected for Well No. 2 and Well No. 3. Well No. 4 is not required to be sampled until November 2021.

5. Lead samples are to be collected twice between December 15, 2021 and April 15, 2022 and again between June 15 and October 15, 2022.

6. By November 2020, a sample should be collected from POE for Well No. 2 and Well No. 3 and analyzed for all organic parameters as listed in Schedule 25. Well No. 4 is not be sampled again until November 2021.

7. In 2020, starting in February a sample should be collected quarterly from an appropriate location within the Tara distribution system and analyzed for Trihalomethanes and Halo Acetic Acid (HAA). Samples should be collected every three (3) months.

8. Nitrite and Nitrate samples are to be collected quarterly from the point of entry starting in February and once every three (3) months.

9. A sample is to be collected and analyzed for sodium by November 2024.

10. A sample is to be collected and analyzed for Fluoride by November 2024.

11. The Permit to Take Water should be renewed by August 31, 2028.

12. All water meters and flowmeters are to be calibrated by April 2020.

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13. The diesel generator is recommended to be tested under full load on a monthly basis and documented.

Respectfully submitted:

GSS Engineering Consultants Ltd.

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ORO, Class IV WT, Class IV WD

Municipality of Arran-Elderslie

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APPENDIX A

FLOW DATA

(TABLE A-1, A-2 & A-3)

TABLE A-1

ANNUAL SUMMARY – TREATED WATER FLOWS, TURBIDITY, AND DISINFECTANT RESIDUAL

WATER WORKS NAME & NUMBER:	Arran-Elderslie - Tara - Well 2
YEAR:	2019
SERVICED POPULATION:	1032
DESIGN CAPACITY:	426 m³/day
LABORATORIES WHICH PERFORMED ANALYZES:	SGS Canada Inc

MONTH	TREATED WATER FLOW				TREATED WATER TURBIDITY			TREATED DISINFECTANT		DISTRIBUTION DISINFECTANT	
	AVERAGE DAY (m3)	MAXIMUM DAY (m3)	NO. OF DAYS WELL OPERATED	MONTHLY TOTAL (m3)	NO. OF SAMPLES COLLECTED	NO. OF SAMPLES >1 NTU	AVERAGE TURBIDITY NTU	NO. OF TREAT. SAMPLES COLLECTED	AVERAGE RESIDUAL (mg/L)	NO. OF DIST. SAMPLES COLELCTED	NO. OF SAMPLES WITH DETECTABLE RES.
JAN.	75	154	26	1948	31	0	0.14	31	1.01	31	31
FEB.	76	143	23	1752	28	0	0.13	28	1.01	28	28
MAR.	92	149	22	2030	31	0	0.13	31	1.01	31	31
APR.	77	174	25	1921	30	0	0.15	30	0.98	30	30
MAY	80	154	25	1993	31	0	0.20	31	1.03	31	31
JUN.	76	180	22	1676	30	0	0.15	30	0.97	30	30
JUL.	79	150	30	2366	31	0	0.16	31	1.02	31	31
AUG.	71	194	24	1700	31	1	0.22	31	0.91	31	31
SEP.	67	162	23	1533	30	0	0.2	30	0.91	30	30
OCT.	62	127	22	1368	31	0	0.1	31	1.00	31	31
NOV.	48	171	17	1305	30	0	0.15	30	1.10	30	30
DEC.	61	165	25	1774	31	0	0.16	31	1.04	31	31
TOTAL			284	21366	365	0		365		365	365
AVERAGE*	72.00						0.16		1.00		
MAXIMUM		194									

DISINFECTANT COMPOUND USED:	Sodium Hypochlorite
FORM OF RESIDUAL DISPLAYED ON ABOVE TABLE:	Free
QUANTITY OF DISINFECTANT USED DURING YEAR (l):	2,372.6 L at all three (3) pump houses
DISTRIBUTION SYSTEM TARGET RESIDUAL (mg/L):	0.2 mg/L

Notes:

In Tara there are three (3) pumping stations: Pumping Station No. 2, Pumping Station No. 3 and Pumping Station No.4. The three (3) stations alternate the role of lead and lag pump.

Monthly and annual average based on number of days in operations.

TABLE A-2

ANNUAL SUMMARY – TREATED WATER FLOWS, TURBIDITY, AND DISINFECTANT RESIDUAL

WATER WORKS NAME & NUMBER:	Arran-Elderslie - Tara - Well 3
YEAR:	2019
SERVICED POPULATION:	1032
DESIGN CAPACITY:	458 m³/day
LABORATORIES WHICH PERFORMED ANALYZES:	SGS Canada Inc.

MONTH	TREATED WATER FLOW				TREATED WATER TURBIDITY			TREATED DISINFECTANT		DISTRIBUTION DISINFECTANT	
	AVERAGE DAY (m3)	MAXIMUM DAY (m3)	No. OF DAYS WELL OPERATED	MONTHLY TOTAL (m3)	NO. OF SAMPLES COLLECTED	NO. OF SAMPLES >1 NTU	AVERAGE TURBIDITY NTU	NO. OF TREAT. SAMPLES COLLECTED	AVERAGE RESIDUAL (mg/L)	NO. OF DIST. SAMPLES COLELCTED	NO. OF SAMPLES WITH DETECTABLE RES.
JAN.	98	194	26	2,556	31	0	0.08	31	1.02	31	31
FEB.	107	198	23	2,450	28	0	0.06	28	1.02	28	28
MAR.	128	200	22	2,824	31	0	0.13	31	1.01	31	31
APR.	116	323	25	2,902	30	0	0.10	30	0.99	30	30
MAY	122	248	25	3,050	31	0	0.14	31	1.05	31	31
JUN.	120	260	22	2,650	30	0	0.15	30	0.97	30	30
JUL.	130	257	30	3,890	31	0	0.24	31	1.05	31	31
AUG.	121	328	24	2,893	31	0	0.07	31	0.73	31	31
SEP.	120	280	24	2,870	30	0	0.07	30	0.72	30	30
OCT.	109	237	23	2,510	31	0	0.1	31	1.0	31	31
NOV.	80	278	21	2,238	30	0	0.1	30	0.97	30	30
DEC.	75	230	25	2,173	31	0	0.07	31	1.06	31	31
TOTAL			290	33,006	365	0		365		365	365
AVERAGE*	110.50						0.11		0.97		
MAXIMUM		328									

DISINFECTANT COMPOUND USED:	Sodium Hypochlorite
FORM OF RESIDUAL DISPLAYED ON ABOVE TABLE:	Free
QUANTITY OF DISINFECTANT USED DURING YEAR (l):	2,372.6L at all three (3) pump houses
DISTRIBUTION SYSTEM TARGET RESIDUAL (mg/L):	0.2 mg/L

Notes:

In Tara there are three (3) pumping stations: Pumping Station No. 2, Pumping Station No. 3 and Pumping Station No.4. The three (3) stations alternate the role of lead and lag pump.

Monthly and annual average based on number of days in operations.

TABLE A-3

ANNUAL SUMMARY – TREATED WATER FLOWS, TURBIDITY, AND DISINFECTANT RESIDUAL

WATER WORKS NAME & NUMBER: Arran-Elderslie - Tara - Well 4

YEAR: 2019

SERVICED POPULATION: 1032

DESIGN CAPACITY: 852 m³/day

LABORATORIES WHICH PERFORMED ANALYZES: SGS Canada Inc

MONTH	TREATED WATER FLOW				TREATED WATER TURBIDITY			TREATED DISINFECTANT		DISTRIBUTION DISINFECTANT	
	AVERAGE DAY (m3)	MAXIMUM DAY (m3)	No. OF DAYS WELL OPERATED	MONTHLY TOTAL (m3)	NO. OF SAMPLES COLLECTED	NO. OF SAMPLES >1 NTU	AVERAGE TURBIDITY NTU	NO. OF TREAT. SAMPLES COLLECTED	AVERAGE RESIDUAL (mg/L)	NO. OF DIST. SAMPLES COLELCTED	NO. OF SAMPLES WITH DETECTABLE RES.
JAN.	163	360	24	3,908	31	0	0.08	31	1.02	31	31
FEB.	201	342	22	4,418	28	0	0.04	28	1.03	28	28
MAR.	211	391	22	4,646	31	0	0.09	31	1.06	31	31
APR.	198	423	22	4,366	30	0	0.15	30	0.98	30	30
MAY	209	381	21	4,383	31	0	0.11	31	1.05	31	31
JUN.	276	605	26	7,176	30	0	0.15	30	0.97	30	30
JUL.	167	430	29	4,842	31	0	0.09	31	1.01	31	31
AUG.	232	422	24	5,571	31	0	0.07	31	0.91	31	31
SEP.	171	324	23	3,930	30	0	0.11	30	0.93	30	30
OCT.	168	408	27	4,530	31	0	0.05	31	1.00	31	31
NOV.	157	415	24	4,545	30	0	0.1	30	1.04	30	30
DEC.	138	381	23	7,662	31	0	0.04	31	1.11	31	31
TOTAL			287		365	0		365		365	365
AVERAGE*	190.92						0.09		1.01		
MAXIMUM		605									

DISINFECTANT COMPOUND USED: Sodium Hypochlorite

FORM OF RESIDUAL DISPLAYED ON ABOVE TABLE: Free

QUANTITY OF DISINFECTANT USED DURING YEAR (l): 2,372.6 L at all three (3) pump houses

DISTRIBUTION SYSTEM TARGET RESIDUAL (mg/L): 0.2 mg/L

Notes:

In Tara there are three (3) pumping stations: Pumping Station No. 2, Pumping Station No. 3 and Pumping Station No.4. The three (3) stations alternate

Monthly and annual average based on number of days in operations.

APPENDIX B

MICROBIOLOGICAL SAMPLING AND ANALYSIS

(Table 3)

Table 3

SUMMARY OF WATER QUALITY - MICROBIOLOGICAL

MUNICIPALITY OF ARRAN-ELDERSLIE

TARA WATER SUPPLY

JANUARY 1, 2019 to DECEMBER 31, 2019

Date Rec	Well #	Raw		Point of Entry (POE)			Distribution		
		E.Coli	Total Coliform	E. Coli	Total Coliform	HPC	E. Coli	Total Coliform	HPC
JAN 3	Well #2	0	0				0	0	<10
	Well #3	0	0	0	0	<10	0	0	<10
	Well #4	0	0	0	0	<10	0	0	<10
JAN 7	Well #2	0	0						
	Well #3	0	0	0	0	<10	0	0	<10
	Well #4	0	0	0	0	<10	0	0	<10
JAN 16	Well #2	0	0				0	0	
	Well #3	0	0	0	0	<10	0	0	
	Well #4	0	0	0	0	<10			
JAN 21	Well #2	0	0						
	Well #3	0	0	0	0	<10	0	0	
	Well #4	0	0	0	0	<10	0	0	
JAN 29	Well #2	0	0						
	Well #3	0	0	0	0	<10			
	Well #4	0	0	0	0	<10	0	0	
FEB 4	Well #2	0	0				0	0	10
	Well #3	0	0	0	0	<10	0	0	<10
	Well #4	0	0	0	0	<10	0	0	<10
FEB 11	Well #2	0	0						
	Well #3	0	1	0	0	<10	0	0	<10
	Well #4	0	0	0	0	<10	0	0	<10
FEB 20	Well #2	0	0						
	Well #3	0	0	0	0	<10	0	0	<10
	Well #4	0	0	0	0	<10	0	0	<10
FEB 27	Well #2	0	0						
	Well #3	0	0	0	0	<10	0	0	
	Well #4	0	0	0	0	<10	0	0	
MAR 05	Well #2	0	0				0	0	<10
	Well #3	0	0	0	0	<10	0	0	<10
	Well #4	0	0	0	0	20	0	0	<10
MAR 11	Well #2	0	0						
	Well #3	0	0	0	0	<10	0	0	<10
	Well #4	0	0	0	0	<10	0	0	<10
MAR 18	Well #2	0	0						
	Well #3	0	1	0	0	<10	0	0	
	Well #4	0	0	0	0	<10	0	0	
MAR 25	Well #2	0	0						
	Well #3	0	0	0	0	<10	0	0	
	Well #4	0	0	0	0	<10	0	0	
APR 01	Well #2	0	0						
	Well #3	0	0	0	0	<10	0	0	10
	Well #4	0	0	0	0	<10	0	0	<10
APR 08	Well #2	0	0						
	Well #3	0	0	0	0	<10	0	0	<10
	Well #4	0	0	0	0	<10	0	0	<10
APR 15	Well #2	0	0						
	Well #3	0	0	0	0	<10	0	0	
	Well #4	0	0	0	0	<10	0	0	
APR 24	Well #2	0	0						
	Well #3	0	2	0	0	<10	0	0	
	Well #4	0	0	0	0	<10	0	0	
APR 29	Well #2	0	0						
	Well #3	0	2	0	0	<10	0	0	
	Well #4	0	0	0	0	<10			
MAY 06	Well #2	0	0				0	0	<10
	Well #3	0	0	0	0	<10	0	0	<10
	Well #4	0	0	0	0	<10	0	0	<10
MAY 13	Well #2	0	0						
	Well #3	0	0	0	0	<10	1	0	<10
	Well #4	0	0	0	0	<10	0	0	<10
MAY 16 (resample)							0	0	
							0	0	
MAY 17 (resample)							0	0	
							0	0	
							0	0	
MAY 22	Well #2	0	0						
	Well #3	0	0	0	0	<10	0	0	
	Well #4	0	0	0	0	<10	0	0	
MAY 27	Well #2	0	0						
	Well #3	0	3	0	0	<10	0	0	
	Well #4	0	0	0	0	<10	0	0	
JUN 03	Well #2	0	0				0	0	<10
	Well #3	0	0	0	0	<10	0	0	<10
	Well #4	0	0	0	0	<10	0	0	<10
JUN 10	Well #2	0	0						
	Well #3	0	0	0	0	<10	0	0	<10
	Well #4	0	0	0	0	<10	0	0	<10
JUN 17	Well #2	0	0						
	Well #3	0	11	0	0	<10	0	0	
	Well #4	0	0	0	0	<10	0	0	
JUN 24	Well #2	0	0						
	Well #3	0	4	0	0	<10	0	0	
	Well #4	0	0	0	0	<10	0	0	
JUL 03	Well #2	0	0						
	Well #3	0	1	0	0	<10	0	0	<10
	Well #4	0	0	0	0	<10	0	0	<10
JUL 09	Well #2	0	0						
	Well #3	0	0	0	0	<10	0	0	<10
	Well #4	0	0	0	0	<10	0	0	<10

Table 3

SUMMARY OF WATER QUALITY - MICROBIOLOGICAL

MUNICIPALITY OF ARRAN-ELDERSLIE

TARA WATER SUPPLY

JANUARY 1, 2019 to DECEMBER 31, 2019

Date Rec	Well #	Raw		Point of Entry (POE)			Distribution		
		E.Coli	Total Coliform	E. Coli	Total Coliform	HPC	E. Coli	Total Coliform	HPC
JUL 15	Well #2	0	0						
	Well #3	0	0	0	0	<10	0	0	
	Well #4	0	0	0	0	<10	0	0	
JUL 22	Well #2	0	0						
	Well #3	0	0	0	0	<10	0	0	
	Well #4	0	0	0	0	<10	0	0	
JUL 29	Well #2	0	0						
	Well #3	0	1	0	0	<10	0	0	
	Well #4	0	0	0	0	<10			
AUG 07	Well #2	0	0				0	0	<10
	Well #3	0	1	0	0	<10	0	0	<10
	Well #4	0	0	0	0	<10	0	0	<10
AUG 12	Well #2	0	0						
	Well #3	0	1	0	0	<10	0	0	<10
	Well #4	0	0	0	0	<10	0	0	<10
AUG 19	Well #2	0	0						
	Well #3	0	2	0	0	<10	0	0	
	Well #4	0	0	0	0	<10	0	0	
AUG 26	Well #2	0	0						
	Well #3	0	1	0	0	<10	0	0	
	Well #4	0	0	0	0	<10	0	0	
SEPT 04	Well #2	0	0				0	0	10
	Well #3	0	0	0	0	<10	0	0	<10
	Well #4	0	0	0	0	10			
SEPT 09	Well #2	0	0						
	Well #3	0	0	0	0	<10	0	0	<10
	Well #4	0	0	0	0	<10	0	0	10
SEPT 16	Well #2	0	0						
	Well #3	0	0	0	0	<10	0	0	
	Well #4	0	0	0	0	<10	0	0	
SEPT 23	Well #2	0	0						
	Well #3	0	0	0	0	<10	0	0	
	Well #4	0	0	0	0	<10	0	0	
OCT 03	Well #2	0	0	0	0	10	0	0	
	Well #3	4	0						
	Well #4	0	0	0	0	<10			
OCT 07	Well #2	0	0				0	0	<10
	Well #3	0	0	0	0	<10	0	0	<10
	Well #4	0	0	0	0	<10	0	0	<10
OCT 16	Well #2	0	0						
	Well #3	0	0	0	0	10	0	0	10
	Well #4	0	0	0	0	10	0	0	10
OCT 21	Well #2	0	0						
	Well #3	0	1	0	0	<10	0	0	
	Well #4	0	0	0	0	<10	0	0	
OCT 28	Well #2	0	0						
	Well #3	0	2	0	0	<10	0	0	
	Well #4	0	0	0	0	<10	0	0	
NOV 04	Well #2	0	0				0	0	<10
	Well #3	0	2	0	0	<10	0	0	<10
	Well #4	0	0	0	0	<10	0	0	<10
NOV 11	Well #2	0	1						
	Well #3	0	0	0	0	<10	0	0	<10
	Well #4	0	0	0	0	<10	0	0	<10
NOV 18	Well #2	0	0						
	Well #3	0	0	0	0	<10	0	0	
	Well #4	0	0	0	0	<10	0	0	
NOV 26	Well #2	0	2	0	0	10	0	0	
	Well #3	0	3						
	Well #4	0	0	0	0	<10	0	0	
DEC 02	Well #2	0	0						
	Well #3	0	0	0	0	<10	0	0	<10
	Well #4	0	0	0	0	<10	0	0	<10
DEC 09	Well #2	0	0						
	Well #3	0	0	0	0	<10	0	0	<10
	Well #4	0	0	0	0	<10	0	0	<10
DEC 16	Well #2	0	0						
	Well #3	0	0	0	0	<10	0	0	<10
	Well #4	0	0	0	0	<10	0	0	<10
DEC 30	Well #2	0	0						
	Well #3	0	0	0	0	<10	0	0	
	Well #4	0	0	0	0	<10			
Total of Samples		156	156	104	104	104	112	112	60

USF: Unreliable: Sample Frozen in Transit Samples Processed as Per Client Request

NDSF - No Data: Sample Frozen in Transit

Note: Well #2 & #3 has a common POE sample location

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Mun of Arran Elderslie (Tara)
Attn : Mark O'Leary

1925-10 Bruce Rd., PO Box 70
Chesley, ON
N0G 1L0, Canada

Phone: 519-363-3039 ext:122
Fax:519-363-9337

Works #: 220002627

12-February-2019

Date Rec. : 04 February 2019
LR Report: **CA30011-FEB19**

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: MAC	6: MDL	7: TW Tara Well # 2 & 3 POE	8: TW Tara Well #4 POE	9: DW Distribution OC Long Sobdivision	10: DW Distribution Mill Street SS
Sample Date & Time							04-Feb-19 10:25	04-Feb-19 09:10	04-Feb-19 10:10	04-Feb-19 09:40
Temperature Upon Receipt [°C]	---	---	---	---	---	---	8.0	8.0	8.0	8.0
Field Total Chlorine [mg/L]	---	---	---	---	---	---	1.31	1.30	1.00	1.12
Field Free Chlorine [mg/L]	---	---	---	---	---	---	1.08	1.17	0.78	0.99
Nitrite (as N) [mg/L]	07-Feb-19	19:05	08-Feb-19	13:33	1.0	0.003	0.003 <MDL	0.003 <MDL	---	---
Nitrate (as N) [mg/L]	07-Feb-19	19:05	08-Feb-19	13:33	10	0.006	0.050	1.09	---	---
Nitrate + Nitrite (as N) [mg/L]	07-Feb-19	19:05	08-Feb-19	13:33	---	0.006	0.050	1.09	---	---
Trihalomethanes (total) [ug/L]	07-Feb-19	16:57	11-Feb-19	13:09	100 (RAA)	0.37	---	---	9.4	---
Bromodichloromethane [ug/L]	07-Feb-19	16:57	11-Feb-19	13:09	--	0.26	---	---	2.9	---
Bromoform [ug/L]	07-Feb-19	16:57	11-Feb-19	13:09	--	0.34	---	---	1.3	---
Chloroform [ug/L]	07-Feb-19	16:57	11-Feb-19	13:09	--	0.29	---	---	1.5	---
Dibromochloromethane [ug/L]	07-Feb-19	16:57	11-Feb-19	13:09	--	0.37	---	---	3.7	---
Total Haloacetic Acids (HAA5) [ug/L]	08-Feb-19	08:07	12-Feb-19	15:14	---	5.3	---	---	---	5.3 <MDL
Chloroacetic Acid [ug/L]	08-Feb-19	08:07	12-Feb-19	15:14	---	4.7	---	---	---	4.7 <MDL
Bromoacetic Acid [ug/L]	08-Feb-19	08:07	12-Feb-19	15:14	---	2.9	---	---	---	2.9 <MDL
Dichloroacetic Acid [ug/L]	08-Feb-19	08:07	12-Feb-19	15:14	---	2.6	---	---	---	2.6 <MDL
Dibromoacetic Acid [ug/L]	08-Feb-19	08:07	12-Feb-19	15:14	---	2.0	---	---	---	2.0 <MDL
Trichloroacetic Acid [ug/L]	08-Feb-19	08:07	12-Feb-19	15:14	---	5.3	---	---	---	5.3 <MDL

MAC - Maximum Acceptable Concentration
MDL - SGS Method Detection Limit

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Mun of Arran Elderslie (Tara)
Attn : Mark O'Leary

1925-10 Bruce Rd., PO Box 70
Chesley, ON
N0G 1L0, Canada

Phone: 519-363-3039 ext:122
Fax:519-363-9337

Works #: 220002627

24-May-2019

Date Rec. : 13 May 2019
LR Report: **CA30103-MAY19**

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CERTIFICATE OF ANALYSIS
Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: MAC	6: MDL	7: TW Tara Well #2 & 3 POE	8: TW Tara Well #4 POE	9: DW Distribution OC Long Subdivision	10: DW Distribution Community Center
Sample Date & Time							13-May-19 10:30	13-May-19 09:30	13-May-19 10:15	13-May-19 09:50
Temperature Upon Receipt [°C]	---	---	---	---	---	---	8	8	8	8
Field Total Chlorine [mg/L]	---	---	---	---	---	---	1.34	1.39	1.02	1.03
Field Free Chlorine [mg/L]	---	---	---	---	---	---	1.05	1.25	0.91	0.87
Nitrite (as N) [mg/L]	15-May-19	19:45	21-May-19	12:03	1.0	0.003	0.004	0.003 <MDL	---	---
Nitrate (as N) [mg/L]	15-May-19	19:45	21-May-19	12:03	10	0.006	1.29	0.078	---	---
Nitrate + Nitrite (as N) [mg/L]	15-May-19	19:45	21-May-19	12:03	---	0.006	1.29	0.078	---	---
Trihalomethanes (total) [ug/L]	16-May-19	16:46	21-May-19	11:04	100 (RAA)	0.37	---	---	10	---
Bromodichloromethane [ug/L]	16-May-19	16:46	21-May-19	11:04	--	0.26	---	---	3.2	---
Bromoform [ug/L]	16-May-19	16:46	21-May-19	11:04	--	0.34	---	---	1.2	---
Chloroform [ug/L]	16-May-19	16:46	21-May-19	11:04	--	0.29	---	---	1.6	---
Dibromochloromethane [ug/L]	16-May-19	16:46	21-May-19	11:04	--	0.37	---	---	4.0	---
Total Haloacetic Acids (HAA5) [ug/L]	18-May-19	06:53	24-May-19	14:44	---	5.3	---	---	---	5.3 <MDL
Chloroacetic Acid [ug/L]	18-May-19	06:53	24-May-19	14:44	---	4.7	---	---	---	4.7 <MDL
Bromoacetic Acid [ug/L]	18-May-19	06:53	24-May-19	14:44	---	2.9	---	---	---	2.9 <MDL
Dichloroacetic Acid [ug/L]	18-May-19	06:53	24-May-19	14:44	---	2.6	---	---	---	2.6 <MDL
Dibromoacetic Acid [ug/L]	18-May-19	06:53	24-May-19	14:44	---	2.0	---	---	---	2.0 <MDL
Trichloroacetic Acid [ug/L]	18-May-19	06:53	24-May-19	14:44	---	5.3	---	---	---	5.3 <MDL

MAC - Maximum Acceptable Concentration
MDL - SGS Method Detection Limit

OnLine LIMS

0001758810

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Mun of Arran Elderslie (Tara)
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Works #: 220002627

22-August-2019

Date Rec. : 12 August 2019
LR Report: **CA30102-AUG19**

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: MAC	6: MDL	7: TW Tara Well #2 & 3 POE	8: TW Tara Well #4 POE	9: DW Distribution OC Long Subdivision	10: DW Distribution Barrys Apts
Sample Date & Time							12-Aug-19 10:10	12-Aug-19 09:00	12-Aug-19 09:50	12-Aug-19 09:30
Temperature Upon Receipt [°C]	---	---	---	---	---	---	14.0	14.0	14.0	14.0
Field Total Chlorine [mg/L]	---	---	---	---	---	---	1.19	1.43	0.80	1.41
Field Free Chlorine [mg/L]	---	---	---	---	---	---	0.96	1.35	0.68	1.28
Nitrite (as N) [mg/L]	14-Aug-19	17:29	15-Aug-19	14:09	1.0	0.003	0.003 <MDL	0.003 <MDL	---	---
Nitrate (as N) [mg/L]	14-Aug-19	17:29	15-Aug-19	14:09	10	0.006	0.089	1.21	---	---
Nitrate + Nitrite (as N) [mg/L]	14-Aug-19	17:29	15-Aug-19	14:09	---	0.006	0.089	1.21	---	---
Trihalomethanes (total) [ug/L]	14-Aug-19	16:43	15-Aug-19	13:12	100 (RAA)	0.37	---	---	15	---
Bromodichloromethane [ug/L]	14-Aug-19	16:43	15-Aug-19	13:12	--	0.26	---	---	5.0	---
Bromoform [ug/L]	14-Aug-19	16:43	15-Aug-19	13:12	--	0.34	---	---	2.0	---
Chloroform [ug/L]	14-Aug-19	16:43	15-Aug-19	13:12	--	0.29	---	---	2.5	---
Dibromochloromethane [ug/L]	14-Aug-19	16:43	15-Aug-19	13:12	--	0.37	---	---	5.7	---
Total Haloacetic Acids (HAA5) [ug/L]	15-Aug-19	17:07	22-Aug-19	11:54	---	5.3	---	---	---	5.3 <MDL
Chloroacetic Acid [ug/L]	15-Aug-19	17:07	22-Aug-19	11:54	---	4.7	---	---	---	4.7 <MDL
Bromoacetic Acid [ug/L]	15-Aug-19	17:07	22-Aug-19	11:54	---	2.9	---	---	---	2.9 <MDL
Dichloroacetic Acid [ug/L]	15-Aug-19	17:07	22-Aug-19	11:54	---	2.6	---	---	---	2.6 <MDL
Dibromoacetic Acid [ug/L]	15-Aug-19	17:07	22-Aug-19	11:54	---	2.0	---	---	---	2.0 <MDL
Trichloroacetic Acid [ug/L]	15-Aug-19	17:07	22-Aug-19	11:54	---	5.3	---	---	---	5.3 <MDL

MAC - Maximum Acceptable Concentration
MDL - SGS Method Detection Limit

OnLine LIMS

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Works #: 220002627

28-November-2019

Date Rec. : 19 November 2019
LR Report: CA30158-NOV19

Copy: #2

CERTIFICATE OF ANALYSIS
Final Report - Revised

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: MAC	6: Half MAC	7: AO/OG	8: MDL	9: TW Tara Well #2 & #3 POE	10: TW Tara Well #4	11: DW Distribution OC Long Subdivision	12: DW Distribution Mill Street S.S.
Sample Date & Time									18-Nov-19 10:45	18-Nov-19 09:40	18-Nov-19 10:25	18-Nov-19 10:05
Temperature upon Delivery [@ London Lab °C]	---	---	---	---	---	---	---	---	13.3	13.3	13.3	13.3
Nitrite (as N) [mg/L]	20-Nov-19	17:20	21-Nov-19	11:49	1	---	---	0.003	0.003 <MDL	0.003 <MDL	---	---
Nitrate (as N) [mg/L]	20-Nov-19	17:20	21-Nov-19	11:49	10	---	---	0.006	0.060	0.865	---	---
Nitrate + Nitrite (as N) [mg/L]	20-Nov-19	17:20	21-Nov-19	11:49	---	---	---	0.006	0.060	0.865	---	---
Fluoride [mg/L]	20-Nov-19	20:21	21-Nov-19	10:52	1.5	---	---	0.06	1.32	0.57	---	---
Trihalomethanes (total) [ug/L]	22-Nov-19	16:47	26-Nov-19	10:24	100 (RAA)	---	---	0.37	---	---	13	---
Bromodichloromethane [ug/L]	22-Nov-19	16:47	26-Nov-19	10:24	---	---	---	0.26	---	---	4.1	---
Bromoform [ug/L]	22-Nov-19	16:47	26-Nov-19	10:24	---	---	---	0.34	---	---	1.8	---
Chloroform [ug/L]	22-Nov-19	16:47	26-Nov-19	10:24	---	---	---	0.29	---	---	2.0	---
Dibromochloromethane [ug/L]	22-Nov-19	16:47	26-Nov-19	10:24	---	---	---	0.37	---	---	4.7	---
Total Haloacetic Acids (HAA5) [ug/L]	23-Nov-19	06:51	27-Nov-19	12:04	---	---	---	5.3	---	---	---	5.3 <MDL
Chloroacetic Acid [ug/L]	23-Nov-19	06:51	27-Nov-19	12:04	---	---	---	4.7	---	---	---	4.7 <MDL
Bromoacetic Acid [ug/L]	23-Nov-19	06:51	27-Nov-19	12:04	---	---	---	2.9	---	---	---	2.9 <MDL
Dichloroacetic Acid [ug/L]	23-Nov-19	06:51	27-Nov-19	12:04	---	---	---	2.6	---	---	---	2.6 <MDL
Dibromoacetic Acid [ug/L]	23-Nov-19	06:51	27-Nov-19	12:04	---	---	---	2	---	---	---	2.0 <MDL
Trichloroacetic Acid [ug/L]	23-Nov-19	06:51	27-Nov-19	12:04	---	---	---	5.3	---	---	---	5.3 <MDL
Antimony [ug/L]	23-Nov-19	16:51	25-Nov-19	12:55	6	3	---	0.09	0.09 <MDL	---	---	---
Arsenic [ug/L]	23-Nov-19	16:51	25-Nov-19	12:55	10	5	---	0.2	0.2 <MDL	---	---	---
Barium [ug/L]	23-Nov-19	16:51	25-Nov-19	12:55	1000	500	---	0.02	29.4	---	---	---
Boron [ug/L]	23-Nov-19	16:51	25-Nov-19	12:55	5000	2500	---	2	204	---	---	---
Cadmium [ug/L]	23-Nov-19	16:51	25-Nov-19	12:55	5	2.5	---	0.003	0.004	---	---	---
Chromium [ug/L]	23-Nov-19	16:51	25-Nov-19	12:55	50	25	---	0.08	0.16	---	---	---
Sodium [mg/L]	23-Nov-19	16:51	28-Nov-19	13:56	20	---	200	0.01	16.8	---	---	---
Mercury [ug/L]	22-Nov-19	11:04	22-Nov-19	11:08	1	0.5	---	0.01	0.01 <MDL	---	---	---
Selenium [ug/L]	23-Nov-19	16:51	25-Nov-19	12:55	50	25	---	0.04	0.04 <MDL	---	---	---

OnLine LIMS

0001972762

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Works #: 220002627

LR Report : CA30158-NOV19

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: MAC	6: Half MAC	7: AO/OG	8: MDL	9: TW Tara Well #2 & #3 POE	10: TW Tara Well #4	11: DW Distribution OC Long Subdivision	12: DW Distribution Mill Street S.S.
Uranium [ug/L]	23-Nov-19	16:51	25-Nov-19	12:55	20	10	---	0.002	0.152	---	---	---
Benzene [ug/L]	22-Nov-19	16:47	26-Nov-19	10:25	1	0.5	---	0.32	0.32 <MDL	---	---	---
Carbon tetrachloride [ug/L]	22-Nov-19	16:47	26-Nov-19	10:25	2	1	---	0.17	0.17 <MDL	---	---	---
1,2-Dichlorobenzene [ug/L]	22-Nov-19	16:47	26-Nov-19	10:25	200	100	3	0.41	0.41 <MDL	---	---	---
1,4-Dichlorobenzene [ug/L]	22-Nov-19	16:47	26-Nov-19	10:25	5	2.5	1	0.36	0.36 <MDL	---	---	---
1,1-Dichloroethylene (vinylidene chloride) [ug/L]	22-Nov-19	16:47	26-Nov-19	10:25	14	7	---	0.33	0.33 <MDL	---	---	---
1,2-Dichloroethane [ug/L]	22-Nov-19	16:47	26-Nov-19	10:25	5	2.5	---	0.35	0.35 <MDL	---	---	---
Dichloromethane [ug/L]	22-Nov-19	16:47	26-Nov-19	10:25	50	25	---	0.35	0.35 <MDL	---	---	---
Monochlorobenzene [ug/L]	22-Nov-19	16:47	26-Nov-19	10:25	80	40	30	0.30	0.3 <MDL	---	---	---
Tetrachloroethylene (perchloroethylene) [ug/L]	22-Nov-19	16:47	26-Nov-19	10:25	10	5	---	0.35	0.35 <MDL	---	---	---
Trichloroethylene [ug/L]	22-Nov-19	16:47	26-Nov-19	10:25	5	2.5	---	0.44	0.44 <MDL	---	---	---
Vinyl Chloride [ug/L]	22-Nov-19	16:47	26-Nov-19	10:25	1	0.5	---	0.17	0.17 <MDL	---	---	---
Diquat [ug/L]	22-Nov-19	09:16	26-Nov-19	09:33	70	35	---	1	1 <MDL	---	---	---
Paraquat [ug/L]	22-Nov-19	09:16	26-Nov-19	09:33	10	5	---	1	1 <MDL	---	---	---
Glyphosate [ug/L]	25-Nov-19	10:30	26-Nov-19	09:40	280	140	---	1	1 <MDL	---	---	---
Polychlorinated Biphenyls (PCBs) - Total [ug/L]	21-Nov-19	06:13	22-Nov-19	15:21	3	1.5	---	0.04	0.04 <MDL	---	---	---
Benzo(a)pyrene [ug/L]	21-Nov-19	12:14	27-Nov-19	12:11	0.01	0.005	---	0.004	0.004 <MDL	---	---	---
Alachlor [ug/L]	21-Nov-19	12:14	27-Nov-19	12:11	5	2.5	---	0.02	0.02 <MDL	---	---	---
Atrazine + N-dealkylated metabolites [ug/L]	21-Nov-19	12:14	27-Nov-19	12:11	5	2.5	---	0.01	0.01 <MDL	---	---	---
Atrazine [ug/L]	21-Nov-19	12:14	27-Nov-19	12:11	--	--	---	0.01	0.01 <MDL	---	---	---
Desethyl atrazine [ug/L]	21-Nov-19	12:14	27-Nov-19	12:11	--	--	---	0.01	0.01 <MDL	---	---	---
Azinphos-methyl [ug/L]	21-Nov-19	12:14	27-Nov-19	12:11	20	10	---	0.05	0.05 <MDL	---	---	---
Carbaryl [ug/L]	21-Nov-19	12:14	27-Nov-19	12:11	90	45	---	0.05	0.05 <MDL	---	---	---
Carbofuran [ug/L]	21-Nov-19	12:14	27-Nov-19	12:11	90	45	---	0.01	0.01 <MDL	---	---	---
Chlorpyrifos [ug/L]	21-Nov-19	12:14	27-Nov-19	12:11	90	45	---	0.02	0.02 <MDL	---	---	---
Diazinon [ug/L]	21-Nov-19	12:14	27-Nov-19	12:11	20	10	---	0.02	0.02 <MDL	---	---	---
Dimethoate [ug/L]	21-Nov-19	12:14	27-Nov-19	12:11	20	10	---	0.06	0.06 <MDL	---	---	---
Diuron [ug/L]	21-Nov-19	12:14	27-Nov-19	12:11	150	75	---	0.03	0.03 <MDL	---	---	---
Malathion [ug/L]	21-Nov-19	12:14	27-Nov-19	12:11	190	95	---	0.02	0.02 <MDL	---	---	---
Metolachlor [ug/L]	21-Nov-19	12:14	27-Nov-19	12:11	50	25	---	0.01	0.01 <MDL	---	---	---
Metribuzin [ug/L]	21-Nov-19	12:14	27-Nov-19	12:11	80	40	---	0.02	0.02 <MDL	---	---	---
Phorate [ug/L]	21-Nov-19	12:14	27-Nov-19	12:11	2	1	---	0.01	0.01 <MDL	---	---	---
Prometryne [ug/L]	21-Nov-19	12:14	27-Nov-19	12:11	1	0.5	---	0.03	0.03 <MDL	---	---	---
Simazine [ug/L]	21-Nov-19	12:14	27-Nov-19	12:11	10	5	---	0.01	0.01 <MDL	---	---	---
Terbufos [ug/L]	21-Nov-19	12:14	27-Nov-19	12:11	1	0.5	---	0.01	0.01 <MDL	---	---	---
Triallate [ug/L]	21-Nov-19	12:14	27-Nov-19	12:11	230	115	---	0.01	0.01 <MDL	---	---	---
Trifluralin [ug/L]	21-Nov-19	12:14	27-Nov-19	12:11	45	22.5	---	0.02	0.02 <MDL	---	---	---
2,4-dichlorophenoxyacetic acid (2,4-D) [ug/L]	22-Nov-19	12:13	27-Nov-19	12:46	100	50	---	0.19	0.19 <MDL	---	---	---
Bromoxynil [ug/L]	22-Nov-19	12:13	27-Nov-19	12:46	5	2.5	---	0.33	0.33 <MDL	---	---	---
Dicamba [ug/L]	22-Nov-19	12:13	27-Nov-19	12:46	120	60	---	0.20	0.20 <MDL	---	---	---
Diclofop-methyl [ug/L]	22-Nov-19	12:13	27-Nov-19	12:46	9	4.5	---	0.40	0.40 <MDL	---	---	---
MCPA [mg/L]	22-Nov-19	12:13	27-Nov-19	12:46	0.1	0.05	---	0.00012	0.00012 <MDL	---	---	---
Picloram [ug/L]	22-Nov-19	12:13	27-Nov-19	12:46	190	95	---	1	1 <MDL	---	---	---

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Works #: 220002627

LR Report : CA30158-NOV19

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: MAC	6: Half MAC	7: AO/OG	8: MDL	9: TW Tara Well #2 & #3 POE	10: TW Tara Well #4	11: DW Distribution OC Long Subdivision	12: DW Distribution Mill Street S.S.
2,4-dichlorophenol [ug/L]	22-Nov-19	12:13	27-Nov-19	12:46	900	450	0.3	0.15	0.15 <MDL	---	---	---
2,4,6-trichlorophenol [ug/L]	22-Nov-19	12:13	27-Nov-19	12:46	5	2.5	2	0.25	0.25 <MDL	---	---	---
2,3,4,6-tetrachlorophenol [ug/L]	22-Nov-19	12:13	27-Nov-19	12:46	100	50	1	0.2	0.20 <MDL	---	---	---
Pentachlorophenol [ug/L]	22-Nov-19	12:13	27-Nov-19	12:46	60	30	30	0.15	0.15 <MDL	---	---	---

MAC - Maximum Acceptable Concentration
Half MAC - Half of the Maximum Acceptable Concentration
AO/OG - Aesthetic Objective / Operational Guideline
MDL - SGS Method Detection Limit

*Report revised to include Sodium result for the "TW Tara Well #2 & #3 POE" sample as requested.

Method Descriptions

Units	Description	SGS Method Code
ug/L	VOC wtr	ME-CA-[ENV]GC-LAK-AN-004
ug/L	VOC wtr	ME-CA-[ENV]GC-LAK-AN-004
ug/L	VOC wtr	ME-CA-[ENV]GC-LAK-AN-004
ug/L	VOC wtr	ME-CA-[ENV]GC-LAK-AN-004
ug/L	PACP wtr	ME-CA-[ENV]GC-LAK-AN-003
ug/L	PACP wtr	ME-CA-[ENV]GC-LAK-AN-003
ug/L	PACP wtr	ME-CA-[ENV]GC-LAK-AN-003
ug/L	PACP wtr	ME-CA-[ENV]GC-LAK-AN-003
ug/L	Pest wtr	ME-CA-[ENV]GC-LAK-AN-018
ug/L	Antimony by ICP-MS Drinking Water	ME-CA-[ENV]SPE-LAK-AN-006
ug/L	Arsenic by ICP-MS Drinking Water	ME-CA-[ENV]SPE-LAK-AN-006
ug/L	Pest wtr	ME-CA-[ENV]GC-LAK-AN-018
ug/L	Pest wtr	ME-CA-[ENV]GC-LAK-AN-018
ug/L	Pest wtr	ME-CA-[ENV]GC-LAK-AN-018
ug/L	Barium by ICP-MS Drinking Water	ME-CA-[ENV]SPE-LAK-AN-006
ug/L	VOC wtr - BTEX	ME-CA-[ENV]GC-LAK-AN-004
ug/L	Pest wtr - B(a)P	ME-CA-[ENV]GC-LAK-AN-005
ug/L	Boron by ICP-MS Drinking Water	ME-CA-[ENV]SPE-LAK-AN-006
ug/L	HAA wtr - DW	ME-CA-[ENV]GC-LAK-AN-013
ug/L	VOC wtr - THM	ME-CA-[ENV]GC-LAK-AN-004
ug/L	VOC wtr - THM	ME-CA-[ENV]GC-LAK-AN-004
ug/L	PACP wtr	ME-CA-[ENV]GC-LAK-AN-003
ug/L	Cadmium by ICP-MS Drinking Water	ME-CA-[ENV]SPE-LAK-AN-006
ug/L	Pest wtr	ME-CA-[ENV]GC-LAK-AN-018
ug/L	Pest wtr	ME-CA-[ENV]GC-LAK-AN-018
ug/L	VOC wtr	ME-CA-[ENV]GC-LAK-AN-004

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LR Report : CA30158-NOV19

Units	Description	SGS Method Code
ug/L	HAA wtr - DW	ME-CA-[ENV]GC-LAK-AN-013
ug/L	VOC wtr - THM	ME-CA-[ENV]GC-LAK-AN-004
ug/L	Pest wtr	ME-CA-[ENV]GC-LAK-AN-018
ug/L	Chromium by ICP-MS Drinking Water	ME-CA-[ENV]SPE-LAK-AN-006
ug/L	Pest wtr	ME-CA-[ENV]GC-LAK-AN-018
ug/L	Pest wtr	ME-CA-[ENV]GC-LAK-AN-018
ug/L	HAA wtr - DW	ME-CA-[ENV]GC-LAK-AN-013
ug/L	VOC wtr - THM	ME-CA-[ENV]GC-LAK-AN-004
ug/L	PACP wtr	ME-CA-[ENV]GC-LAK-AN-003
ug/L	HAA wtr - DW	ME-CA-[ENV]GC-LAK-AN-013
ug/L	VOC wtr	ME-CA-[ENV]GC-LAK-AN-004
ug/L	PACP wtr	ME-CA-[ENV]GC-LAK-AN-003
ug/L	Pest wtr	ME-CA-[ENV]GC-LAK-AN-018
ug/L	Diquat by Dionex	ME-CA-[ENV]IC-LAK-AN-005
ug/L	Pest wtr	ME-CA-[ENV]GC-LAK-AN-018
mg/L	Fluoride by specific ion electrode	ME-CA-[ENV]EWL-LAK-AN-014
ug/L	Glyphosate by Dionex	ME-CA-[ENV]IC-LAK-AN-003
ug/L	Pest wtr	ME-CA-[ENV]GC-LAK-AN-018
mg/L	PACP wtr	ME-CA-[ENV]GC-LAK-AN-003
ug/L	Hg drinking water by CVAAS	ME-CA-[ENV]SPE-LAK-AN-004
ug/L	Pest wtr	ME-CA-[ENV]GC-LAK-AN-018
ug/L	Pest wtr	ME-CA-[ENV]GC-LAK-AN-018
ug/L	VOC wtr	ME-CA-[ENV]GC-LAK-AN-004
mg/L	Nitrate by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
mg/L	Total Nitrate/Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
mg/L	Nitrite by Ion Chromatography	ME-CA-[ENV]IC-LAK-AN-001
ug/L	Paraquat by Dionex	ME-CA-[ENV]IC-LAK-AN-005
ug/L	PACP wtr	ME-CA-[ENV]GC-LAK-AN-003
ug/L	Pest wtr	ME-CA-[ENV]GC-LAK-AN-018
ug/L	PACP wtr	ME-CA-[ENV]GC-LAK-AN-003
ug/L	PCB wtr	ME-CA-[ENV]GC-LAK-AN-001
ug/L	Pest wtr	ME-CA-[ENV]GC-LAK-AN-018
ug/L	Selenium by ICP-MS Drinking Water	ME-CA-[ENV]SPE-LAK-AN-006
ug/L	Pest wtr	ME-CA-[ENV]GC-LAK-AN-018
mg/L	Sodium by ICP-MS drinking water	ME-CA-[ENV]SPE-LAK-AN-006
ug/L	Pest wtr	ME-CA-[ENV]GC-LAK-AN-018
ug/L	VOC wtr	ME-CA-[ENV]GC-LAK-AN-004
ug/L	HAA wtr - DW	ME-CA-[ENV]GC-LAK-AN-013
ug/L	Pest wtr	ME-CA-[ENV]GC-LAK-AN-018
ug/L	HAA wtr - DW	ME-CA-[ENV]GC-LAK-AN-013
ug/L	VOC wtr	ME-CA-[ENV]GC-LAK-AN-004
ug/L	Pest wtr	ME-CA-[ENV]GC-LAK-AN-018
ug/L	VOC wtr - THM	ME-CA-[ENV]GC-LAK-AN-004
ug/L	Uranium by ICP-MS Drinking Water	ME-CA-[ENV]SPE-LAK-AN-006
ug/L	VOC wtr	ME-CA-[ENV]GC-LAK-AN-004

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 220002627

LR Report : CA30158-NOV19

Carrie Greenlaw
Project Specialist,
Environment, Health & Safety

OnLine LIMS

0001972762

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 220002627

07-February-2019

Mun of Arran Elderslie (Tara)
Attn : Mark O'Leary

1925-10 Bruce Rd., PO Box 70
Chesley, ON
N0G 1L0, Canada

Phone: 519-363-3039 ext:122
Fax:519-363-9337

Date Rec. : 04 February 2019
LR Report: **CA30012-FEB19**

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Sample ID	Sample Date & Time	Temperature upon Delivery @ London Lab °C	Field pH	Alkalinity mg/L as CaCO3
1: Analysis Start Date		---	---	06-Feb-19
2: Analysis Start Time		---	---	18:08
3: Analysis Completed Date		---	---	07-Feb-19
4: Analysis Completed Time		---	---	13:24
6: AO/OG		---	---	30-500
7: MDL		---	---	2
8: DW Sample Tap Mill Street Sample Station	04-Feb-19 09:40	7.0	7.03	319

AO/OG - Aesthetic Objective / Operational Guideline
MDL - SGS Method Detection Limit

Method Descriptions

Units	Description	SGS Method Code
mg/L as CaCO3	Alkalinity by Titration	ME-CA-[ENV]EWL-LAK-AN-006

Carrie Greenlaw
Project Specialist,
Environment, Health & Safety

OnLin.

00016526967

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 220002627

04-October-2019

Mun of Arran Elderslie (Tara)
Attn : Mark O'Leary

1925-10 Bruce Rd., PO Box 70
Chesley, ON
N0G 1L0, Canada

Phone: 519-363-3039 ext:122
Fax:519-363-9337

Date Rec. : 01 October 2019
LR Report: **CA30004-OCT19**

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Sample ID	Sample Date & Time	Temperature upon Delivery @ London Lab °C	Field pH	Alkalinity mg/L as CaCO3
1: Analysis Start Date		---	---	02-Oct-19
2: Analysis Start Time		---	---	16:02
3: Analysis Completed Date		---	---	04-Oct-19
4: Analysis Completed Time		---	---	08:59
6: AO/OG		---	---	30-500
7: MDL		---	---	2
8: DW Sample Stn Brook Street East	30-Sep-19 12:40	16.3	7.03	261

AO/OG - Aesthetic Objective / Operational Guideline
MDL - SGS Method Detection Limit

Method Descriptions

Units	Description	SGS Method Code
mg/L as CaCO3	Alkalinity by Titration	ME-CA-[ENV]EWL-LAK-AN-006

Carrie Greenlaw
Project Specialist,
Environment, Health & Safety

OnLine SHS

0001914672

APPENDIX D

MOECC INSPECTION REPORT

Ministry of the Environment, Conservation and Parks

Drinking Water and Environmental Compliance Division

Owen Sound District Office
101 17th St. E., 3rd Floor
Owen Sound ON N4K 0A5

Ministère de l'Environnement, de la Protection de la nature et des Parcs

Division de la conformité en matière d'eau potable et d'environnement

Bureau du district de Owen Sound
101, 17e rue Est, 3e étage
Owen Sound ON N4K 0A5

Ontario

July 10, 2018

Sent by Email: clerk@arran-elderslie.ca

The Corporation of the Municipality of Arran Elderslie
1925 Bruce County Rd 10,
Chesley, ON N0G 1L0
Attention: Peggy Rouse
Clerk

Dear Ms. Rouse:

Re: 2018/2019 Inspection Report 1-I398Y
Tara Drinking Water System
Drinking Water Licence **No. 079-101**
Drinking Water Works Permit **No. 079-201**

The enclosed report documents findings of the inspection that was performed on April 25, 2018.

Two sections of the report, namely "Actions Required" and "Recommended Actions", specify due dates for the submission of information or plans to my attention (if applicable).

Please note that "Actions Required" are linked to incidents of non-compliance with regulatory requirements contained within an Act, a Regulation, or site-specific approvals, orders or instructions; "Recommended Actions" convey information that the owner or operating authority should consider implementing in order to conform with existing and emerging industry standards.

The report includes an Inspection Summary Rating Record as an appendix. This record forms part of the ministry's comprehensive, risk-based inspection process. The rating provides a quantitative measure of the inspection results for this specific drinking water system for the reporting year. An inspection rating that is less than 100 per cent does not mean that the drinking water from the system is unsafe. The primary goals of this assessment are to encourage ongoing improvement of drinking water systems and to measure this progress from year to year.

I would like to remind you that Section 19 of the Safe Drinking Water Act, 2002 (Standard of Care) creates a number of obligations for individuals who exercise decision-making authority over municipal drinking water systems, including members of municipal councils. "Taking Care

of Your Drinking Water: A guide for members of municipal council", a publication found on the Drinking Water Ontario website (http://www.ontario.ca/environment-and-energy/municipal-drinking-water-systems-licencing-registration-and-permits), provides further information about these obligations.

Should you have any questions regarding the content of the enclosed report, please do not hesitate to contact me.

Yours truly,

Ron Burrell
Provincial Officer
Phone: 519-371-5617
e-mail: ron.burrell@ontario.ca

Enclosure

ec: - Dr. Hazel Lynn, Medical Officer of Health, Grey-Bruce Health Unit
- Nancy Guest, Source Water Protection AA, Saugeen Valley Conservation Authority
- Mark O'Leary, Water/Sewer Foreman, Mun. of Arran-Elderslie
- Scott McLeod, Public Works Manager, Mun. of Arran-Elderslie
- Rakesh Sharma, Overall Responsible Operator, GSS Engineering Consultants Ltd.
- John Ritchie, Drinking Water Inspections Program Supervisor, MOECC

c: File SI-BR-AE-RI-540A (2018)

Ontario

Ministry of the Environment and Climate Change

TARA DRINKING WATER SYSTEM

Inspection Report

Site Number:	220002627
Inspection Number:	1-I398Y
Date of Inspection:	Apr 25, 2018
Inspected By:	Ron Burrell

OWNER INFORMATION:

Company Name: ARRAN-ELDERSLIE, THE CORPORATION OF THE MUNICIPALITY OF
Street Number: 1925 **Unit Identifier:**
Street Name: BRUCE COUNTY ROAD 10 Rd
City: CHESLEY
Province: ON **Postal Code:** N0G 1L0

CONTACT INFORMATION

Type: Owner **Name:** Mark O'Leary
Phone: (519) 363-3039 **Fax:** (519) 363-2203
Email: water@arran-elderslie.ca
Title: Water/Sewer Foreman

Type: Clerk **Name:** Peggy Rouse
Phone: (519) 363-3039 **Fax:** (519) 363-2203
Email: clerk@arran-elderslie.ca
Title: Clerk

Type: Operator **Name:** Trevor Sweiger
Phone: (519) 363-3039 **Fax:** (519) 363-2203
Email: water@arran-elderslie.ca
Title: Municipal Operator - Water Treatment and Water Distribution Subsystem/Water Distribution and Supply Subsystem Class 1 Certificates.

INSPECTION DETAILS:

Site Name: TARA DRINKING WATER SYSTEM
Site Address: 217 RIVER ST TARA N0H 2N0
County/District: Arran-Elderslie
MOECC District/Area Office: Owen Sound Area Office
Health Unit: GREY BRUCE HEALTH UNIT
Conservation Authority: Grey Sauble Conservation Authority
MNR Office: Owen Sound Field Office
Category: Large Municipal Residential
Site Number: 220002627
Inspection Type: Unannounced
Inspection Number: 1-I398Y
Date of Inspection: Apr 25, 2018
Date of Previous Inspection: Apr 28, 2017

COMPONENTS DESCRIPTION

Site (Name): MOE DWS Mapping
Type: DWS Mapping Point **Sub Type:**

Site (Name): Well 2
Type: Source **Sub Type:** Ground Water
Comments:
Well #2 was drilled in 1958 with the well casing extending into the pumphouse. The well is a 254 mm diameter, 118.6 meter deep drilled groundwater well and is equipped with a submersible pump rated at a capacity of 4.09 liters per second at a total dynamic head of 161 meters. A 63 mm diameter discharge header is connected to the well casing and conveys the raw water through the treatment processes.
The well was equipped with a 150 mm diameter liner in June of 2002 and was further upgraded in October of 2002 in an attempt to reduce turbidity exceedances and protect the well from surface water influences.

Site (Name): Well 3
Type: Source **Sub Type:** GUDI w/o Effective Insitu
Comments:
Well #3 was drilled in 1978 and is located approximately two (2) meters southwest of the pumphouse. The well is a 156 mm diameter, 119 meter deep drilled groundwater well equipped with a submersible pump rated at a capacity of 5.3 liters per second at a total dynamic head of 164 meters. The raw water is conveyed to the pumphouse through a pitless adapter. The well cap consists of a vented watertight galvanized enclosure. The wellhead extends approximately 0.5 m above the adjacent ground.
The well was overdrilled to an 8 inch casing and lined in 2004. This was done as an attempt to achieve a secure groundwater source. This attempt failed and Well #3 is currently classified as GUDI.

Site (Name): Well 4
Type: Source **Sub Type:** Ground Water
Comments:
Well 4 was originally drilled in 2005 as a test well and was upgraded in early 2007 to a full production well.
A nominal 10" diameter casing was set to 65' depth and the annular space was pressure grouted from 65' to 16', with a hole plug placed at 16' depth to surface. An 8" diameter hole was then drilled from 65' to a 75' depth.
A groundwater assessment was performed and determined Well 4 to be non-GUDI.
A submersible well pump, rated at 9.8 L/s, was installed.

Site (Name): Well 2 Treated
Type: Treated Water POE **Sub Type:** Pumphouse
Comments:
Well #2 pumphouse is equipped with a chlorination system comprised of a sodium hypochlorite solution tank complete with secondary containment, 2 chemical metering pumps (one duty and one standby) complete with automatic switchover capabilities, and continuous on-line analyzers for turbidity and chlorine. The chemical metering pumps utilized at Well #2 pumphouse are rated at two (2) liters per hour.

After chlorination, water is directed through cartridge filters having a treatment capacity of 11.37 L/s, equipped with one micron size filter cartridges (14 in total). The cartridge filtration is used on the Well #2 pump start up to reduce initial turbidity spikes. The flow restrictor and a differential pressure monitoring system have been installed. There is one turbidity sampling point located downstream of the cartridge filter used with the existing on-line turbidity analyzer.

There is one flow meter installed at the entry point to the contact water main. The 150mm diameter x 360 meter watermain along River Street provides chlorine contact time necessary for well water discharged from PH No. 2, complete with treated water sample line located within PH No. 3.

Site (Name): Well 3 Treated
Type: Treated Water POE **Sub Type:** Pumphouse

Comments:
Raw water enters the pumphouse and is directed through a cartridge filter with one micron size filter cartridges (14 in total) complete with a differential pressure monitoring system and flow restrictor.
A primary disinfection system contains an Ultra Violet (UV) disinfection system consisting of two disinfection reactors (duty and standby), each unit rated at 11.37 L/s and capable of providing a minimum dose of 40 mJ/cm2 at the end of the lamp life together with an automatic cleaning system, on-line UV intensity monitor with alarm, complete with a portable UV transmittance monitor.
After UV treatment water is chlorinated via a chlorination system comprised of a sodium hypochlorite solution tank complete with secondary containment, 2 chemical metering pumps (one duty and one standby), with automatic switchover, and continuous on-line analyzers for turbidity and chlorine. The chemical metering pumps utilized at Well #3 pumphouse are rated at 1.26 liters per hour. PH No. 3 is equipped with a 600 mm diameter by 16.5 meter long oversized chlorine contact main which provides the minimum required contact time for the water entering the distribution system.
One 60 kW natural gas generator set capable of providing power to both pump houses No. 2 and No. 3 when power failure occurs. There is one flow meter installed at the entry point to the distribution system. A Supervisory Control and Data Acquistion (SCADA) system for automation of both pump houses No. 2 and No. 3, complete with associated Program Logic Controllers (PLC) and alarm dialers has been installed.

Site (Name): Well 4 Treated
Type: Treated Water POE **Sub Type:** Pumphouse
Comments:
The pumphouse for Well 4 consists of a cartridge filter, used during well startup to reduce initial turbidity spikes, a sodium hypochlorite disinfection system, consisting of two chemical metering pumps and a 200 L sodium hypochlorite solution tank, and a chlorine contact chamber (12 meters of 600 mm diamter watermain buried outside).
Instrumentation includes one magnetic flow meter, one online free chlorine residual analyzer sampling after the chlorine contact chamber, one raw water online turbidity analyzer and associated SCADA.

Site (Name): Standpipe
Type: Other **Sub Type:** Reservoir
Comments:
An elevated water storage tank (standpipe) was constructed in 2010 and is located at Pumphouse #4 site on the northern outskirts of Tara. It has an operating capacity of 851 m3 and a total capacity of 3,952 m3. The standpipe is 12.8m in diameter and is 30.7 m high.

Site (Name): DISTRIBUTION (WATER INSPECTIONS)
Type: Other **Sub Type:** Other
Comments:
A Tara Watermain Inventory (Sept 2011) indicates the distribution system is comprised of approximately one third (1/3) cast iron and ductile iron watermains that are approximately 40 to 50 years old. Approximately two thirds (2/3) of the distribution is comprised of newer watermains that have been constructed with PVC. The watermains range in size from 20 mm diameter to 300 mm diameter.
System pressure is provided by a standpipe which was constructed in 2010.
As of 2017, there are 483 homes, businesses and institutions connected to the Tara distribution system, serving a population of approximately 1000 plus.
The distribution system also contains approximately 49 fire hydrants, 139 valves and 8 blow offs located at the end of Heather Lynn Boulevard, Park Road,Young Street and Hamilton Street to allow for dead-end flushing. The distribution system is also equipped with nine sampling stations. The sampling stations are located at the south end of Heather Lynn Boulevard, at the south end of Young Street, two mid Young Street, dead end at Whites Street, and one on the south end of Park Road, plus 3 other locations.

INSPECTION SUMMARY:

Introduction

- **The primary focus of this inspection is to confirm compliance with Ministry of the Environment and Climate Change (MOECC) legislation as well as evaluating conformance with ministry drinking water policies and guidelines during the inspection period. The ministry utilizes a comprehensive, multi-barrier approach in the inspection of water systems that focuses on the source, treatment, and distribution components as well as management practices.**

  This drinking water system is subject to the legislative requirements of the Safe Drinking Water Act, 2002 (SDWA) and regulations made therein, including Ontario Regulation 170/03, "Drinking Water Systems" (O.Reg. 170/03). This inspection has been conducted pursuant to Section 81 of the SDWA.

  This inspection report does not suggest that all applicable legislation and regulations were evaluated. It remains the responsibility of the owner to ensure compliance with all applicable legislative and regulatory requirements.

  On April 25, 2018 Provincial Officer Ron Burrell from the Owen Sound MOECC inspected the Tara Well Supply which is located in the Municipality of Arran-Elderslie. The inspection was conducted in conjunction with Water Operator, Trevor Sweiger from the municipality. The system is classed as a Large Municipal Residential Drinking Water System. The inspection review period is from the date of the previous inspection of April 28, 2017 to April 25, 2018.

Source

- **The owner was maintaining the production well(s) in a manner sufficient to prevent entry into the well of surface water and other foreign materials.**

  Two of the three production wells (Well No. 4, Well No. 2) are located within separate pumphouses. Well No. 3 is located within 10m SW of the third pumphouse and is classified as GUDI. All three wells are maintained in a manner sufficient to prevent entry of surface water or foreign materials.

- **Measures were in place to protect the groundwater and/or GUDI source in accordance with any the Municipal Drinking Water Licence and Drinking Water Works Permit issued under Part V of the SDWA.**

- **Trends in source water quality were being monitored.**

  The owner is aware of static well level fluctuations that can occur with the production wells and monitors static well levels regularly.

Permit To Take Water

- **The owner was in compliance with all conditions of the PTTW.**

Capacity Assessment

- **There was sufficient monitoring of flow as required by the Municipal Drinking Water Licence or Drinking Water Works Permit issued under Part V of the SDWA.**

- **The flow measuring devices were calibrated or verified in accordance with the requirements of the Municipal Drinking Water Licence issued under Part V of the SDWA.**

Capacity Assessment

- **The owner was in compliance with the conditions associated with maximum flow rate or the rated capacity conditions in the Municipal Drinking Water Licence issued under Part V of the SDWA.**

- **Appropriate records of flows and any capacity exceedances were made in accordance with the Municipal Drinking Water Licence issued under Part V of the SDWA.**

Treatment Processes

- **The owner had ensured that all equipment was installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit.**

- **The owner/operating authority was in compliance with the requirement to prepare Form 1 documents as required by their Drinking Water Works Permit during the inspection period.**

  One (1) Form 1 was provided during the review period for watermain replacement on Mary Ann Street.

- **Records indicated that the treatment equipment was operated in a manner that achieved the design capabilities required under Ontario Regulation 170/03 or a Drinking Water Works Permit and/or Municipal Drinking Water Licence issued under Part V of the SDWA at all times that water was being supplied to consumers.**

- **Records confirmed that the water treatment equipment which provides chlorination or chloramination for secondary disinfection purposes was operated so that at all times and all locations in the distribution system the chlorine residual was never less than 0.05 mg/l free or 0.25 mg/l combined.**

- **The primary disinfection equipment was equipped with alarms or shut-off mechanisms that satisfied the standards described in Section 1-6 (1) of Schedule 1 of Ontario Regulation 170/03.**

- **The owner had evidence indicating that all chemicals and materials that come in contact with water within the drinking water system met the AWWA and ANSI standards in accordance with the Municipal Drinking Water Licence and Drinking Water Works Permit issued under Part V of the SDWA.**

- **Up-to-date plans for the drinking-water system were kept in a place, or made available in such a manner, that they could be readily viewed by all persons responsible for all or part of the operation of the drinking water system in accordance with the Drinking Water Works Permit and Municipal Drinking Water Licence issued under Part V of the SDWA.**

Treatment Process Monitoring

- **Primary disinfection chlorine monitoring was conducted at a location approved by Municipal Drinking Water Licence and/or Drinking Water Works Permit issued under Part V of the SDWA, or at/near a location where the intended CT has just been achieved.**

- **Operators were aware of the operational criteria necessary to achieve primary disinfection within the drinking water system.**

- **Continuous monitoring of each filter effluent line was being performed for turbidity.**

- **The secondary disinfectant residual was measured as required for the distribution system.**

Treatment Process Monitoring

- **Operators were examining continuous monitoring test results and they were examining the results within 72 hours of the test.**
- **Samples for chlorine residual analysis were tested using an acceptable portable device.**
- **All continuous monitoring equipment utilized for sampling and testing required by O. Reg.170/03, or Municipal Drinking Water Licence or Drinking Water Works Permit or order, were equipped with alarms or shut-off mechanisms that satisfy the standards described in Schedule 6.**
- **Continuous monitoring equipment that was being utilized to fulfill O. Reg. 170/03 requirements was performing tests for the parameters with at least the minimum frequency specified in the Table in Schedule 6 of O. Reg. 170/03 and recording data with the prescribed format.**
- **The owner and operating authority ensured that the primary disinfection equipment had a recording device that continuously recorded the performance of the disinfection equipment.**
- **All continuous analysers were calibrated, maintained, and operated, in accordance with the manufacturer's instructions or the regulation.**

  Records reviewed indicate chlorine and turbidity analyzers are consistently calibrated in house on a weekly or as needed basis. In addition, the municipality has Flowmetrix Technical Services Inc. come in annually for calibration of handheld chlorine and turbidity analyzers and the flow meters at all of their municipal systems. the most recent calibrations were in March and April, 2018.

Distribution System

- **The owner had up-to-date documents describing the distribution components as required.**
- **There is a backflow prevention program, policy and/or bylaw in place.**
- **The owner had a program or maintained a schedule for routine cleanout, inspection and maintenance of reservoirs and elevated storage tanks within the distribution system.**
- **Existing parts of the distribution system that are taken out of service for inspection, repair or other activities that may lead to contamination, and all new parts of the distribution system that come in contact with drinking water, were disinfected in accordance with Schedule B, Condition 2.3 of the Drinking Water Works Permit, or an equivalent procedure (i.e. the Watermain Disinfection Procedure).**
- **The owner had implemented a program for the flushing of watermains as per industry standards.**
- **Records confirmed that disinfectant residuals were routinely checked at the extremities and "dead ends" of the distribution system.**
- **A program was in place for inspecting and exercising valves.**
- **There was a program in place for inspecting and operating hydrants.**

Distribution System

- **There was a by-law or policy in place limiting access to hydrants.**

  By-Law No. 30-05 limits access to all fire hydrants within the municipality of Arran-Elderslie.

- **The owner was able to maintain proper pressures in the distribution system and pressure was monitored to alert the operator of conditions which may lead to loss of pressure below the value under which the system is designed to operate.**

Operations Manuals

- **Operators and maintenance personnel had ready access to operations and maintenance manuals.**

- **The operations and maintenance manuals contained plans, drawings and process descriptions sufficient for the safe and efficient operation of the system.**

- **The operations and maintenance manuals met the requirements of the Drinking Water Works Permit and Municipal Drinking Water Licence issued under Part V of the SDWA.**

Logbooks

- **Logbooks were properly maintained and contained the required information.**

- **Records or other record keeping mechanisms confirmed that operational testing not performed by continuous monitoring equipment was being done by a certified operator, water quality analyst, or person who suffices the requirements of O. Reg. 170/03 7-5.**

- **For every required operational test and every required sample, a record was made of the date, time, location, name of the person conducting the test and result of the test.**

- **The operator-in-charge ensured that records were maintained of all adjustments made to the processes within his or her responsibility.**

- **Logs or other record keeping mechanisms were available for at least five (5) years.**

Contingency/Emergency Planning

- **Spill containment was provided for process chemicals and/or standby power generator fuel.**

- **Clean-up equipment and materials were in place for the clean up of spills.**

- **Standby power generators were tested under normal load conditions.**

Security

- **All storage facilities were completely covered and secure.**

- **Air vents and overflows associated with reservoirs and elevated storage structures were equipped with screens.**

Security

- **The owner had provided security measures to protect components of the drinking water system.**

  Each of the three pumphouses are equipped with intruder alarms, keyed entry, and emergency contact numbers posted on the door.

Consumer Relations

- **The owner and/or operating authority undertook efforts to promote water conservation and reduce water losses in their system.**

  The municipality has a Water Restrictions By-Law in place and is host to the Children's Clean Water Festival annually which helps to promote water conservation, and monitors pressures and demands in house to aid in water loss reduction.

Certification and Training

- **The overall responsible operator had been designated for each subsystem.**

  The ORO used by the municipality for its municipal drinking water systems is Mr. Rakesh Sharma from GSS Engineering Consultants Ltd.

- **Operators in charge had been designated for all subsystems which comprised the drinking-water system.**

  The municipality currently designates the Operator on Call as the Operator In Charge (OIC) for both municipal residential drinking water systems within the municipality.

- **All operators possessed the required certification.**

  Review has indicated that the following certificates expire in 2018: Mark O'Leary Water Treatment Class 2 - June 30, 2018; Rakesh Sharma Water Treatment Class 4 and Water Distribution Class 4 - Both December 31, 2018; Scott McLeod Water Distribution Class 4 - December 31, 2018; and Christopher Legge Water Treatment Class 1 - July 31, 2018.
  The municipality is reminded to ensure all certifications are renewed or updated well in advance of the expiry dates.

- **Only certified operators made adjustments to the treatment equipment.**

- **An adequately licenced operator was designated to act in place of the overall responsible operator when the overall responsible operator was unable to act.**

Water Quality Monitoring

- **All microbiological water quality monitoring requirements for raw water samples were being met.**

  The Tara Well Supply is classified as a Large Municipal Residential Drinking Water System under Ontario Regulation 170/03. Review indicated that all microbiological water quality monitoring requirements prescribed by legislation for raw samples collection for the source wells was being met.

- **All microbiological water quality monitoring requirements for distribution samples were being met.**

  Review indicated that all microbiological water quality monitoring requirements prescribed by legislation for distribution samples were being met.

- **All microbiological water quality monitoring requirements for treated samples were being met.**

  Review indicated that all microbiological water quality monitoring requirements prescribed by legislation for treated

Water Quality Monitoring

samples were being met.

- **All inorganic water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

  The owners completed Schedule 23 and 24 (inorganic and organic) sampling on November 27, 2017 for Well 2 & 3 (blended) and November 14, 2016, for Well #4. The owner is required to sample Wells 2 & 3 as one set of samples on an annual basis as both sources are blended prior to point of entry into the distribution and Well #3 is considered a GUDI source. Well #4 is required to be sampled every 36 months for Schedule 23 and 24 parameters.

- **All organic water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

  See previous question.

- **All haloacetic acid water quality monitoring requirements prescribed by legislation are being conducted within the required frequency and at the required location.**

  As of January 1, 2017, drinking water system owners/operating authorities are required to take samples quarterly and have them tested for HAAs as outlined in O. Reg. 170/03 (subsection 13-6.1 of Schedule 13).
  Guidance has indicated that HAAs will generally form at the beginning of the distribution system, usually just after the chlorination process. If there is rechlorination, high HAAs may be found just past the rechlorination point if the right humic acids are present.
  HAA samples were taken during the inspection review period on the following dates: May 1st - 5.3 ug/L at Park Road, August 14th - 5.3 ug/L at North St., November 27, 2017 - 5.3 ug/L at Brook St. W., and February 26, 2018 - 5.3 ug/L at Tara Motors. It is noted that the method detection limit for HAA's is 5.3 ug/L and therefore all sampling results taken during the inspection review period were less than the laboratory detection limit.
  In May 2018 the MOECC provided all Municipal Drinking Water System Owners with updated guidance regarding Haloacetic Acids (HAAs) Sampling Concerns. Any questions may by directed to drinking.water@ontario.ca

- **All trihalomethane water quality monitoring requirements prescribed by legislation were conducted within the required frequency and at the required location.**

  THM sampling during the inspection review period occurred May 15 (12ug/L), August 14 (20ug/L), November 27, 2017 (10ug/L) and February 26, 2018 (8.7ug/L). The Running Annual Average (RAA) during the review period was 12.675ug/L.

- **All nitrate/nitrite water quality monitoring requirements prescribed by legislation were conducted within the required frequency for the DWS.**

  Nitrate/Nitrite sampling during the inspection review period occurred quarterly as required. Sampling was conducted on May 15, August 14, November 27, 2017 and February 26, 2018.

- **All sodium water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

  Sodium, required to be sampled once every sixty (60) months was sampled from Wells 2 and 3 (blended) and Well 4 on November 17, 2014. Results of 15.9 mg/L and 14.1 mg/L were obtained. It is noted that a previous sample taken from a blended Well 2-3 resulted in an AWQI in 2012. Two re-samples taken at that time using each well source separately, both returned results less than 20 mg/L.

- **All fluoride water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

  Fluoride, required to be sampled once every sixty (60) months was last sampled on November 17, 2014 with a result of 0.6 mg/L for Well No. 4 and 1.3 mg/L for the blended Well No. 2 and 3. Both results were below the

Water Quality Monitoring

Maximum Acceptable Concentration (MAC) of 1.5 mg/L. Fluoride was sampled previous to that in November 2012.

- **The owner ensured that water samples were taken at the prescribed location.**

- **All water quality monitoring requirements imposed by the Municipal Drinking Water Licence and Drinking Water Works Permit were being met.**

  Static water levels are taken from the production wells daily as required under Section 4.2 of Permit to Take Water No. 3285-7HUKRE. It is a trended fact that draw down levels in two of the three production wells fluctuate up to ten (10) metres on occasion. The owner is aware of this and continues to monitor the fluctuations which were determined not to be an issue by the municipality.

- **All sampling requirements for lead prescribed by schedule 15.1 of O. Reg. 170/03 were being met.**

- **Records confirmed that chlorine residual tests were being conducted at the same time and at the same location that microbiological samples were obtained.**

- **Turbidity was being tested at least once every month from each well that is supplying water to the system.**

- **The drinking water system owner submitted written notices to the Director that identified the laboratories that were conducting tests for parameters required by legislation, Order, Drinking Water Works Permit or Municipal Drinking Water Licence.**

- **The owner indicated that the required records are kept and will be kept for the required time period.**

Water Quality Assessment

- **Records did not show that all water sample results taken during the inspection review period did not exceed the values of tables 1, 2 and 3 of the Ontario Drinking Water Quality Standards (O.Reg. 169/03).**

  Adverse Water Quality Incident (AWQI) #135185 was a result of a Total Coliform of 1.0 CFU/100mL. on August 8, 2017. A second AWQI # 133343 was reported in June upon MOE direction, however it was later confirmed that this Turbidity was not an adverse as it came from a True Groundwater source well and not one of the GUDI (Groundwater under the Influence of Surface water) wells.

Reporting & Corrective Actions

- **Corrective actions (as per Schedule 17) had been taken to address adverse conditions, including any other steps that were directed by the Medical Officer of Health.**

- **All required notifications of adverse water quality incidents were immediately provided as per O. Reg. 170/03 16-6.**

- **All required written notices of adverse water quality incidents were provided as per O. Reg. 170/03 16-7.**

- **In instances where written notice of issue resolution was required by regulation, the notice was provided as per O. Reg. 170/03 16-9.**

- **Where required continuous monitoring equipment used for the monitoring of chlorine residual and/or turbidity triggered an alarm or an automatic shut-off, a qualified person responded in a timely manner and**

Reporting & Corrective Actions

took appropriate actions.

- **When the primary disinfection equipment, other than that used for chlorination or chloramination, has failed causing an alarm to sound or an automatic shut-off to occur, a certified operator responded in a timely manner and took appropriate actions.**

- **The Annual Report containing the required information was prepared by February 28th of the following year.**

- **Summary Reports for municipal council were completed on time, included the required content, and were distributed in accordance with the regulatory requirements.**

Other Inspection Findings

- **The following issues were also noted during the inspection:**

  A slightly complacent and somewhat unsure handling of a few recent Adverse Water Quality Incidents (AWQI's) has been observed in multiple municipalities. This, in part can be attributed to the treatment equipment in place and the excellent job operators have been performing at these facilities and within the associated distribution systems. This has resulted in AWQI's sometimes not occurring for multiple years.
  Due to the above factors, and though most municipalities/operating authorities are already practicing certain aspects of the recommendations below, the following blanket recommendation is being provided to all municipalities inspected by the Provincial Officer authoring this report as a due diligence reminder:
  It is highly recommended that all Operators, Designated Overall Responsible Operators, or those having any involvement with the operation or the regulatory compliance for this Municipal Drinking Water System (including any Compliance Technicians, Environmental Technicians, or Engineering Consultants with operating status) have on-site training in the following;
  1) An annual ON-SITE tour of the treatment facility and distribution components in relation to the MOECC License and Permit for the system.
  2) An annual or bi-annual training exercise running through on-site start to finish (hands on) mock exercises (including all paperwork) for individual parameters listed in Schedule 17 or Schedule 18 (Corrective Actions) of O.Reg 170/03.
  3) For all essential and regulatory required equipment necessary to achieve proper disinfection; An annual on-site, hands on alarm triggering/lock out and testing for all treatment component online alarms and paging systems; including response duties, follow up requirements for documentation such as SCADA verification print outs and alarm point re-sets.

NON-COMPLIANCE WITH REGULATORY REQUIREMENTS AND ACTIONS REQUIRED

This section provides a summary of all non-compliance with regulatory requirements identified during the inspection period, as well as actions required to address these issues. Further details pertaining to these items can be found in the body of the inspection report.

Not Applicable

SUMMARY OF RECOMMENDATIONS AND BEST PRACTICE ISSUES

This section provides a summary of all recommendations and best practice issues identified during the inspection period. Details pertaining to these items can be found in the body of the inspection report. In the interest of continuous improvement in the interim, it is recommended that owners and operators develop an awareness of the following issues and consider measures to address them.

1. The following issues were also noted during the inspection:

Recommendation:

A slightly complacent and somewhat unsure handling of a few recent Adverse Water Quality Incidents (AWQI's) has been observed in multiple municipalities. This, in part can be attributed to the treatment equipment in place and the excellent job operators have been performing at these facilities and within the associated distribution systems. This has resulted in AWQI's sometimes not occurring for multiple years.
Due to the above factors, and though most municipalities/operating authorities are already practicing certain aspects of the recommendations below, the following blanket recommendation is being provided to all municipalities inspected by the Provincial Officer authoring this report as a due diligence reminder:
It is highly recommended that all Operators, Designated Overall Responsible Operators, or those having any involvement with the operation or the regulatory compliance for this Municipal Drinking Water System (including any Compliance Technicians, Environmental Technicians, or Engineering Consultants with operating status) have on-site training in the following;
1) An annual ON-SITE tour of the treatment facility and distribution components in relation to the MOECC License and Permit for the system.
2) An annual or bi-annual training exercise running through on-site start to finish (hands on) mock exercises (including all paperwork) for individual parameters listed in Schedule 17 or Schedule 18 (Corrective Actions) of O.Reg 170/03.
3) For all essential and regulatory required equipment necessary to achieve proper disinfection; An annual on-site, hands on alarm triggering/lock out and testing for all treatment component online alarms and paging systems; including response duties, follow up requirements for documentation such as SCADA verification print outs and alarm point re-sets.

SIGNATURES

Inspected By:

Ron Burrell

Signature: (Provincial Officer)

Reviewed & Approved By:

John Ritchie

Signature: (Supervisor)

Review & Approval Date: 10/07/2018

Note: This inspection does not in any way suggest that there is or has been compliance with applicable legislation and regulations as they apply or may apply to this facility. It is, and remains, the responsibility of the owner and/or operating authority to ensure compliance with all applicable legislative and regulatory requirements.

APPENDIX A

INSPECTION SUMMARY RATING RECORD

Ministry of the Environment - Inspection Summary Rating Record (Reporting Year - 2018-2019)

DWS Name:	TARA DRINKING WATER SYSTEM
DWS Number:	220002627
DWS Owner:	Arran-Elderslie, The Corporation Of The Municipality Of
Municipal Location:	Arran-Elderslie
Regulation:	O.REG 170/03
Category:	Large Municipal Residential System
Type Of Inspection:	Detailed
Inspection Date:	April 25, 2018
Ministry Office:	Owen Sound District Office

Maximum Question Rating: 739

Inspection Module	Non-Compliance Rating
Source	0 / 28
Permit To Take Water	0 / 12
Capacity Assessment	0 / 42
Treatment Processes	0 / 93
Distribution System	0 / 25
Operations Manuals	0 / 42
Logbooks	0 / 30
Certification and Training	0 / 49
Water Quality Monitoring	0 / 160
Reporting & Corrective Actions	0 / 113
Treatment Process Monitoring	0 / 145
TOTAL	**0 / 739**

Inspection Risk Rating	**0.00%**

FINAL INSPECTION RATING:	**100.00%**

Inspection Rating Record Generated On 10-JUL-18 (Inspection ID: 1-I398Y).

Ministry of the Environment - Detailed Inspection Rating Record (Reporting Year - 2018-2019)

DWS Name:	TARA DRINKING WATER SYSTEM
DWS Number:	220002627
DWS Owner:	Arran-Elderslie, The Corporation Of The Municipality Of
Municipal Location:	Arran-Elderslie
Regulation:	O.REG 170/03
Category:	Large Municipal Residential System
Type Of Inspection:	Detailed
Inspection Date:	April 25, 2018
Ministry Office:	Owen Sound District Office

Maximum Question Rating: 739

Inspection Risk Rating	**0.00%**

FINAL INSPECTION RATING:	**100.00%**

Inspection Rating Record Generated On 10-JUL-18 (Inspection ID: 1-I398Y).

APPENDIX B

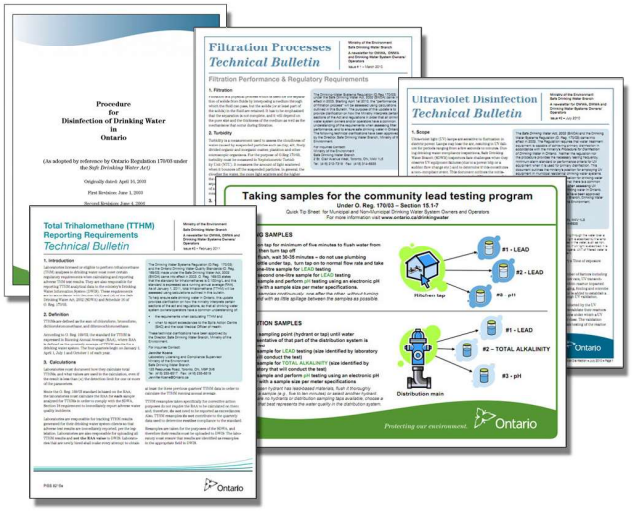
REFERENCE GUIDE FOR STAKEHOLDERS

Key Reference and Guidance Material for Municipal Residential Drinking Water Systems

Many useful materials are available to help you operate your drinking water system. Below is a list of key materials owners and operators of municipal residential drinking water systems frequently use.

To access these materials online click on their titles in the table below or use your web browser to search for their titles. Contact the Public Information Centre if you need assistance or have questions at 1-800-565-4923/416-325-4000 or **picemail.moe@ontario.ca**.

For more information on Ontario's drinking water visit **www.ontario.ca/drinkingwater** and email **drinking.water@ontario.ca** to subscribe to drinking water news.



PUBLICATION TITLE	PUBLICATION NUMBER
Taking Care of Your Drinking Water: A Guide for Members of Municipal Councils	7889e01
FORMS: Drinking Water System Profile Information, Laboratory Services Notification, Adverse Test Result Notification Form	7419e, 5387e, 4444e
Procedure for Disinfection of Drinking Water in Ontario	4448e01
Strategies for Minimizing the Disinfection Products Trihalomethanes and Haloacetic Acids	7152e
Total Trihalomethane (TTHM) Reporting Requirements Technical Bulletin (February 2011)	8215e
Filtration Processes Technical Bulletin	7467
Ultraviolet Disinfection Technical Bulletin	7685
Guide for Applying for Drinking Water Works Permit Amendments, Licence Amendments, Licence Renewals and New System Applications	7014e01
Certification Guide for Operators and Water Quality Analysts	
Guide to Drinking Water Operator Training Requirements	9802e
Taking Samples for the Community Lead Testing Program	6560e01
Community Sampling and Testing for Lead: Standard and Reduced Sampling and Eligibility for Exemption	7423e
Guide: Requesting Regulatory Relief from Lead Sampling Requirements	6610
Drinking Water System Contact List	7128e
Technical Support Document for Ontario Drinking Water Quality Standards	4449e01

PIBS 8990b01

Ontario

Principaux guides et documents de référence sur les réseaux résidentiels municipaux d'eau potable

De nombreux documents utiles peuvent vous aider à exploiter votre réseau d'eau potable. Vous trouverez ci-après une liste de documents que les propriétaires et exploitants de réseaux résidentiels municipaux d'eau potable utilisent fréquemment.

Pour accéder à ces documents en ligne, cliquez sur leur titre dans le tableau ci-dessous ou faites une recherche à l'aide de votre navigateur Web. Communiquez avec le Centre d'information au public au 1 800 565-4923 ou au 416 325-4000, ou encore à **picemail.moe@ontario.ca** si vous avez des questions ou besoin d'aide.

Pour plus de renseignements sur l'eau potable en Ontario, consultez le site **www.ontario.ca/eaupotable** ou envoyez un courriel à **drinking.water@ontario.ca** pour suivre l'information sur l'eau potable.

TITRE DE LA PUBLICATION	NUMÉRO DE PUBLICATION
Prendre soin de votre eau potable – Un guide destiné aux membres des conseils municipaux	7889f01
Renseignements sur le profil du réseau d'eau potable, Avis de demande de services de laboratoire, Formulaire de communication de résultats d'analyse insatisfaisants et du règlement des problèmes	7419f, 5387f, 4444f
Marche à suivre pour désinfecter l'eau potable en Ontario	4448f01
Strategies for Minimizing the Disinfection Products Thrihalomethanes and Haloacetic Acids (en anglais seulement)	7152e
Total Trihalomethane (TTHM) Reporting Requirements: Technical Bulletin (février 2011) (en anglais seulement)	8215e
Filtration Processes Technical Bulletin (en anglais seulement)	7467
Ultraviolet Disinfection Technical Bulletin (en anglais seulement)	7685
Guide de présentation d'une demande de modification du permis d'aménagement de station de production d'eau potable, de modification du permis de réseau municipal d'eau potable, de renouvellement du permis de réseau municipal d'eau potable et de permis pour un nouveau réseau	7014f01
Guide sur l'accréditation des exploitants de réseaux d'eau potable et des analystes de la qualité de l'eau de réseaux d'eau potable	
Guide sur les exigences relatives à la formation des exploitants de réseaux d'eau potable	9802f
Prélèvement d'échantillons dans le cadre du programme d'analyse de la teneur en plomb de l'eau dans les collectivités	6560f01
Échantillonnage et analyse du plomb dans les collectivités : échantillonnage normalisé ou réduit et admissibilité à l'exemption	7423f
Guide: Requesting Regulatory Relief from Lead Sampling Requirements (en anglais seulement)	6610
Liste des personnes-ressources du réseau d'eau potable	7128f
Document d'aide technique pour les normes, directives et objectifs associés à la qualité de l'eau potable en Ontario	4449f01

PIBS 8990b01

Ontario

APPENDIX E

MUNICIPAL DRINKING WATER LICENSE AND DRINKING WATER WORKS PERMITS

Ontario

MUNICIPAL DRINKING WATER LICENCE

Licence Number: 079-101
Issue Number: 2

Pursuant to the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32, and the regulations made thereunder and subject to the limitations thereof, this municipal drinking water licence is issued under Part V of the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32 to:

The Corporation of the Municipality of Arran-Elderslie

PO Box 70
1925 Bruce Road #10
Chesley ON N0G 1L0

For the following municipal residential drinking water system:

Tara Drinking Water System

This municipal drinking water licence includes the following:

Schedule	Description
Schedule A	Drinking Water System Information
Schedule B	General Conditions
Schedule C	System-Specific Conditions
Schedule D	Conditions for Relief from Regulatory Requirements
Schedule E	Pathogen Log Removal/Inactivation Credits

DATED at TORONTO this 14th day of January, 2016

Signature

Aziz Ahmed, P.Eng.
Director
Part V, *Safe Drinking Water Act*, 2002

Schedule A: Drinking Water System Information

System Owner	**The Corporation of the Municipality of Arran-Elderslie**
Licence Number	**079-101**
Drinking Water System Name	**Tara Drinking Water System**
Schedule A Issue Date	**January 14th, 2016**

The following information is applicable to the above drinking water system and forms part of this licence:

Licence

Licence Issue Date	2016-01-14
Licence Expiry Date	2021-01-12
Application for Licence Renewal Date	2020-07-13

Drinking Water Works Permit

Drinking Water System Name	Permit Number	Issue Date
Tara Drinking Water System	079-201	January 14th, 2016

Permits to Take Water

Water Taking Location	Permit Number	Issue Date
Well 2, Well 3, Well 4	3285-7HUKRE	August 25, 2008

Financial Plans

The Financial Plan Number for the Financial Plan required to be developed for this drinking water system in accordance with O. Reg. 453/07 shall be:	079-301
Alternately, if one Financial Plan is developed for all drinking water systems owned by the owner, the Financial Plan Number shall be:	079-301A

Accredited Operating Authority

Drinking Water System or Operational Subsystems	Accredited Operating Authority	Operational Plan No.	Operating Authority No.
Tara Drinking Water system	Municipality of Arran-Elderslie	079-401	079-OA1

Schedule B: General Conditions

System Owner	**The Corporation of the Municipality of Arran-Elderslie**
Licence Number	**079-101**
Drinking Water System Name	**Tara Drinking Water System**
Schedule B Issue Date	**January 14th, 2016**

1.0 Definitions

1.1 Words and phrases not defined in this licence and the associated drinking water works permit shall be given the same meaning as those set out in the SDWA and any regulations made in accordance with that act, unless the context requires otherwise.

1.2 In this licence and the associated drinking water works permit:

"**adverse effect**", "**contaminant**" and "**natural environment**" shall have the same meanings as in the EPA;

"**alteration**" may include the following in respect of this drinking water system:

(a) An addition to the system,
(b) A modification of the system,
(c) A replacement of part of the system, and
(d) An extension of the system;

"**compound of concern**" means a contaminant that, based on generally available information, may be emitted from a component of the drinking water system to the atmosphere in a quantity that is significant either in comparison to the relevant point of impingement limit or if a point of impingement limit is not available for the compound, then based on generally available toxicological information, the compound has the potential to cause an adverse effect as defined by the EPA at a point of impingement;

"**Director**" means a Director appointed pursuant to section 6 of the SDWA for the purposes of Part V of the SDWA;

"**drinking water works permit**" means the drinking water works permit for the drinking water system, as identified in Schedule A of this licence and as amended from time to time;

"emission summary table" means the table that was prepared by a Professional Engineer in accordance with O. Reg. 419/05 and the procedure document listing the appropriate point of impingement concentrations of each compound of concern emitted from a component of the drinking water system and providing comparison to the corresponding point of impingement limit;

"EPA" means the *Environmental Protection Act*, R.S.O. 1990, c. E.19;

"**financial plan**" means the financial plan required by O. Reg. 453/07;

"**licence**" means this municipal drinking water licence for the municipal drinking water system identified in Schedule A of this licence;

"**operational plan**" means an operational plan developed in accordance with the Director's Directions – Minimum Requirements for Operational Plans made under the authority of subsection 15(1) of the SDWA;

"**owner**" means the owner of the drinking water system as identified in Schedule A of this licence;

"**permit to take water**" means the permit to take water that is associated with the taking of water for purposes of the operation of the drinking water system, as identified in Schedule A of this licence and as amended from time to time;

"**point of impingement**" means any point in the natural environment that is not on the same property as the source of the contaminant and as defined by section 2 of O. Reg. 419/05;

"**point of impingement limit**" means the appropriate standard from Schedule 1, 2 or 3 of O. Reg. 419/05 and if a standard is not provided for a compound of concern, the appropriate criteria listed in the Ministry of the Environment and Climate Change publication titled "Summary of Standards and Guidelines to support Ontario Regulation 419: Air Pollution – Local Air Quality (including Schedule 6 of O. Reg. 419 on Upper Risk Thresholds)", dated February 2008, as amended;

"**procedure document**" means the Ministry of the Environment and Climate Change procedure titled "Procedure for Preparing an Emission Summary and Dispersion Modelling Report" dated July 2005, as amended;

"**Professional Engineer**" means a Professional Engineer who has been licenced to practice in the Province of Ontario;

"**provincial officer**" means a provincial officer appointed pursuant to section 8 of the SDWA;

"**publication NPC-300**" means the Ministry of the Environment and Climate Change publication titled "Environmental Noise Guideline: Stationary and Transportation Sources – Approval and Planning" dated August 2013, as amended;

"**SDWA**" means the *Safe Drinking Water* Act, 2002, S.O. 2002, c. 32;

"**sensitive populations**" means any one or a combination of the following locations where the health effects of nitrogen oxides emissions from emergency generators shall be considered using the point of impingement limit instead of the Ministry of the Environment and Climate Change screening level for emergency generators:

(a) health care units (e.g., hospitals and nursing homes),
(b) primary/junior public schools,
(c) day-care facilities, and
(d) playgrounds;

"**subsystem**" has the same meaning as in Ontario Regulation 128/04 (Certification of Drinking Water System Operators and Water Quality Analysts);

"**surface water**" means water bodies (lakes, wetlands, ponds - including dug-outs), water courses (rivers, streams, water-filled drainage ditches), infiltration trenches, and areas of seasonal wetlands;

2.0 Applicability

2.1 In addition to any other requirements, the drinking water system identified above shall be established, altered and operated in accordance with the conditions of the drinking water works permit and this licence.

3.0 Licence Expiry

3.1 This licence expires on the date identified as the licence expiry date in Schedule A of this licence.

4.0 Licence Renewal

4.1 Any application to renew this licence shall be made on or before the date identified as the application for licence renewal date set out in Schedule A of this licence.

5.0 Compliance

5.1 The owner and operating authority shall ensure that any person authorized to carry out work on or to operate any aspect of the drinking water system has been informed of the SDWA, all applicable regulations made in accordance with that act, the drinking water works permit and this licence and shall take all reasonable measures to ensure any such person complies with the same.

6.0 Licence and Drinking Water Works Permit Availability

6.1 At least one copy of this licence and the drinking water works permit shall be stored in such a manner that they are readily viewable by all persons involved in the operation of the drinking water system.

7.0 Permit to Take Water and Drinking Water Works Permit

7.1 A permit to take water identified in Schedule A of this licence is the applicable permit on the date identified as the Schedule A Issue Date.

7.2 A drinking water works permit identified in Schedule A of this licence is the applicable permit on the date identified as the Schedule A Issue Date.

8.0 Financial Plan

8.1 For every financial plan prepared in accordance with subsections 2(1) and 3(1) of O. Reg. 453/07, the owner of the drinking water system shall:

8.1.1 Ensure that the financial plan contains on the front page of the financial plan, the appropriate financial plan number as set out in Schedule A of this licence; and

8.1.2 Submit a copy of the financial plan to the Ministry of Municipal Affairs and Housing within three (3) months of receiving approval by a resolution of municipal council or the governing body of the owner.

9.0 Interpretation

9.1 Where there is a conflict between the provisions of this licence and any other document, the following hierarchy shall be used to determine the provision that takes precedence:

9.1.1 The SDWA*;*

9.1.2 A condition imposed in this licence that explicitly overrides a prescribed regulatory requirement;

9.1.3 A condition imposed in the drinking water works permit that explicitly overrides a prescribed regulatory requirement;

9.1.4 Any regulation made under the SDWA;

9.1.5 Any provision of this licence that does not explicitly override a prescribed regulatory requirement;

9.1.6 Any provision of the drinking water works permit that does not explicitly override a prescribed regulatory requirement;

9.1.7 Any application documents listed in this licence, or the drinking water works permit from the most recent to the earliest; and

9.1.8 All other documents listed in this licence, or the drinking water works permit from the most recent to the earliest.

9.2 If any requirement of this licence or the drinking water works permit is found to be invalid by a court of competent jurisdiction, the remaining requirements of this licence and the drinking water works permit shall continue to apply.

9.3 The issuance of and compliance with the conditions of this licence and the drinking water works permit does not:

9.3.1 Relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement, including the *Environmental Assessment Act*, R.S.O. 1990, c. E.18; and

9.3.2 Limit in any way the authority of the appointed Directors and provincial officers of the Ministry of the Environment and Climate Change to require certain steps be taken or to require the owner to furnish any further information related to compliance with the conditions of this licence or the drinking water works permit.

9.4 For greater certainty, nothing in this licence or the drinking water works permit shall be read to provide relief from regulatory requirements in accordance with section 46 of the SDWA, except as expressly provided in the licence or the drinking water works permit.

10.0 Adverse Effects

10.1 Nothing in this licence or the drinking water works permit shall be read as to permit:

10.1.1 The discharge of a contaminant into the natural environment that causes or is likely to cause an adverse effect; or

10.1.2 The discharge of any material of any kind into or in any waters or on any shore or bank thereof or into or in any place that may impair the quality of the water of any waters.

10.2 All reasonable steps shall be taken to minimize and ameliorate any adverse effect on the natural environment or impairment of the quality of water of any waters resulting from the operation of the drinking water system including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the effect or impairment.

10.3 Fulfillment of one or more conditions imposed by this licence or the drinking water works permit does not eliminate the requirement to fulfill any other condition of this licence or the drinking water works permit.

11.0 Change of Owner or Operating Authority

11.1 This licence is not transferable without the prior written consent of the Director.

11.2 The owner shall notify the Director in writing at least 30 days prior to a change of any operating authority identified in Schedule A of this licence.

11.2.1 Where the change of operating authority is the result of an emergency situation, the owner shall notify the Director in writing of the change as soon as practicable.

12.0 Information to be Provided

12.1 Any information requested by a Director or a provincial officer concerning the drinking water system and its operation, including but not limited to any records required to be kept by this licence or the drinking water works permit, shall be provided upon request.

13.0 Records Retention

13.1 Except as otherwise required in this licence or the drinking water works permit, any records required by or created in accordance with this licence or the drinking water works permit, other than the records specifically referenced in section 12 of O. Reg. 170/03, shall be retained for at least 5 years and made available for inspection by a provincial officer, upon request.

14.0 Chemicals and Materials

14.1 All chemicals and materials used in the alteration or operation of the drinking water system that come into contact with water within the system shall meet all applicable standards set by both the American Water Works Association ("AWWA") and the American National Standards Institute ("ANSI") safety criteria standards NSF/60, NSF/61 and NSF/372.

14.1.1 In the event that the standards are updated, the owner may request authorization from the Director to use any on hand chemicals and materials that previously met the applicable standards.

14.1.2 The requirement for the owner to comply with NSF/372 shall come into force no later than January 14th, 2018.

14.2 The most current chemical and material product registration documentation from a testing institution accredited by either the Standards Council of Canada or by the American National Standards Institution ("ANSI") shall be available at all times for each chemical and material used in the operation of the drinking water system that comes into contact with water within the system.

14.3 Conditions 14.1 and 14.2 do not apply in the case of the following:

14.3.1 Water pipe and pipe fittings meeting AWWA specifications made from ductile iron, cast iron, PVC, fibre and/or steel wire reinforced cement pipe or high density polyethylene (HDPE);

14.3.2 Articles made from stainless steel, glass, HDPE or Teflon®;

14.3.3 Cement mortar for watermain lining and for water contacting surfaces of concrete structures made from washed aggregates and Portland cement;

14.3.4 Gaskets that are made from NSF approved materials;

14.3.5 Food grade oils and lubricants, food grade anti-freeze, and other food grade chemicals and materials that are compatible for drinking water use; or

14.3.6 Any particular chemical or material where the owner has written documentation signed by the Director that indicates that the Ministry of the Environment and Climate Change is satisfied that the chemical or material is acceptable for use within the drinking water system and the chemical or material is only used as permitted by the documentation.

15.0 Drawings

15.1 All drawings and diagrams in the possession of the owner that show any treatment subsystem as constructed shall be retained by the owner unless the drawings and diagrams are replaced by a revised or updated version showing the subsystem as constructed subsequent to the alteration.

15.2 Any alteration to any treatment subsystem shall be incorporated into process flow diagrams, process and instrumentation diagrams, and record drawings and diagrams within one year of the substantial completion of the alteration.

15.3 Process flow diagrams and process and instrumentation diagrams for any treatment subsystem shall be kept in a place, or made available in such a manner, that they may be readily viewed by all persons responsible for all or part of the operation of the drinking water system.

16.0 Operations and Maintenance Manual

16.1 An up-to-date operations and maintenance manual or manuals shall be maintained and applicable parts of the manual or manuals shall be made available for reference by all persons responsible for all or part of the operation or maintenance of the drinking water system.

16.2 The operations and maintenance manual or manuals, shall include at a minimum:

16.2.1 The requirements of this licence and associated procedures;

16.2.2 The requirements of the drinking water works permit for the drinking water system;

16.2.3 A description of the processes used to achieve primary and secondary disinfection within the drinking water system, including where applicable:

a) A copy of the CT calculations that were used as the basis for primary disinfection under worst case operating conditions; and

b) The validated operating conditions for UV disinfection equipment, including a copy of the validation certificate;

16.2.4 Procedures for monitoring and recording the in-process parameters necessary for the control of any treatment subsystem and for assessing the performance of the drinking water system;

16.2.5 Procedures for the operation and maintenance of monitoring equipment;

16.2.6 Contingency plans and procedures for the provision of adequate equipment and material to deal with emergencies, upset conditions and equipment breakdown;

16.2.7 Procedures for dealing with complaints related to the drinking water system, including the recording of the nature of the complaint and any investigation and corrective action taken in respect of the complaint;

16.2.8 An inspection schedule for all wells associated with the drinking water system, including all production wells, standby wells, test wells and monitoring wells;

16.2.9 Well inspection and maintenance procedures for the entire well structure of each well including all above and below grade well components; and

16.2.10 Remedial action plans for situations where an inspection indicates non-compliance with respect to regulatory requirements and/or risk to raw well water quality.

16.3 Procedures necessary for the operation and maintenance of any alterations to the drinking water system shall be incorporated into the operations and maintenance manual or manuals prior to those alterations coming into operation.

16.4 The requirement for the owner to comply with condition 16.2.3 shall come into force on July 14th, 2016.

Schedule C: System-Specific Conditions

System Owner	**The Corporation of the Municipality of Arran-Elderslie,**
Licence Number	**079-101**
Drinking Water System Name	**Tara Drinking Water System**
Schedule C Issue Date	**January 14th, 2016**

1.0 System Performance

Rated Capacity

1.1 For each treatment subsystem listed in column 1 of Table 1, the maximum daily volume of treated water that flows from the treatment subsystem to the distribution system shall not exceed the value identified as the rated capacity in column 2 of the same row.

Table 1: Rated Capacity

Column 1 Treatment Subsystem Name	Column 2 Rated Capacity (m^3/day)
Pumphouse No. 2	426
Pumphouse No. 3	458
Pumphouse No. 4	852

Maximum Flow Rates

1.2 For each treatment subsystem listed in column 1 of Table 2, the maximum flow rate of water that flows into a treatment subsystem component listed in column 2 shall not exceed the value listed in column 3 of the same row.

Table 2: Maximum Flow Rates

Column 1 Treatment Subsystem Name	Column 2 Treatment Subsystem Component	Column 3 Maximum Flow Rate (L/s)
Not Applicable	Not Applicable	Not Applicable

1.3 Despite conditions 1.1 and 1.2, a treatment subsystem may be operated temporarily at a maximum daily volume and/or a maximum flow rate above the values set out in column 2 of Table 1 and column 3 of Table 2 respectively for the purposes of fighting a large fire or for the maintenance of the drinking water system.

1.4 Condition 1.3 does not authorize the discharge into the distribution system of any water that does not meet all of the requirements of this licence and all other regulatory requirements, including compliance with the Ontario Drinking Water Quality Standards.

Residue Management

1.5 In respect of an effluent discharged into the natural environment from a treatment subsystem or treatment subsystem component listed in column 1 of Table 3:

1.5.1 The annual average concentration of a test parameter identified in column 2 shall not exceed the value in column 3 of the same row; and

1.5.2 The maximum concentration of a test parameter identified in column 2 shall not exceed the value in column 4 of the same row.

Table 3: Residue Management

Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Test Parameter	Column 3 Annual Average Concentration (mg/L)	Column 4 Maximum Concentration (mg/L)
Not Applicable	Not Applicable	Not Applicable	Not Applicable

UV Disinfection Equipment Performance

1.6 For each treatment subsystem or treatment subsystem component listed in column 1 of Table 4, and while directing water to the distribution system:

1.6.1 The UV disinfection equipment shall be operated such that a continuous pass-through UV dose is maintained throughout the life time of the UV lamp(s) that is at least the minimum continuous pass-through UV dose set out in column 2 of the same row at the maximum design flow rate for the equipment;

1.6.2 In addition to any other sampling, analysis and recording that may be required, the ultraviolet light disinfection equipment shall test for the test parameters set out in column 4 of the same row at a testing frequency of once every five (5) minutes or less and record the test data at a recording frequency of once every four (4) hours or less;

1.6.3 If there is a UV disinfection equipment alarm, the test parameters set out in column 4 of the same row shall be recorded at a recording frequency of once every five minutes or less until the alarm condition has been corrected;

1.6.4 UV Transmittance shall be tested manually at a testing frequency of once every week or less and the test data shall be recorded at a frequency of once every week or less;

1.6.5 UV lamp status shall be continuously monitored and if a UV lamp in a UV reactor fails, the affected UV reactor shall be automatically shut down.

1.6.6 A monthly summary report shall be prepared at the end of each calendar month which sets out the time, date and duration of each UV equipment alarm, the volume of water treated during each alarm period and the actions taken by the operating authority to correct the alarm situation;

Table 4: UV Disinfection Equipment			
Column 1 Treatment Subsystem or Treatment Subsystem Component Name	**Column 2 Minimum Continuous Pass-Through UV Dose (mJ/cm²)**	**Column 3 Control Strategy**	**Column 4 Test Parameter**
Pumphouse No. 3	40	UVT and UV Intensity Set Point	Flow Rate UV Intensity

2.0 Flow Measurement and Recording Requirements

2.1 For each treatment subsystem identified in column 1 of Table 1 and in addition to any other flow measurement and recording that may be required, continuous flow measurement and recording shall be undertaken for:

2.1.1 The flow rate and daily volume of treated water that flows from the treatment subsystem to the distribution system.

2.1.2 The flow rate and daily volume of water that flows into the treatment subsystem.

2.2 For each treatment subsystem component identified in column 2 of Table 2 and in addition to any other flow measurement and recording that may be required, continuous flow measurement and recording shall be undertaken for the flow rate and daily volume of water that flows into the treatment subsystem component.

2.3 Where a rated capacity from Table 1 or a maximum flow rate from Table 2 is exceeded, the following shall be recorded:

2.3.1 The difference between the measured amount and the applicable rated capacity or maximum flow rate specified in Table 1 or Table 2;

2.3.2 The time and date of the measurement;

2.3.3 The reason for the exceedance; and

2.3.4 The duration of time that lapses between the applicable rated capacity or maximum flow rate first being exceeded and the next measurement where the applicable rated capacity or maximum flow rate is no longer exceeded.

3.0 Calibration of Flow Measuring Devices

3.1 All flow measuring devices that are required by regulation, by a condition in the Drinking Water Works Permit, or by a condition otherwise imposed by the Ministry of the Environment and Climate Change, shall be checked and calibrated in accordance with the manufacturer's instructions.

3.2 If the manufacturer's instructions do not indicate how often to check and calibrate a flow measuring device, the equipment shall be checked and calibrated at least once every 12 months during which the drinking water system is in operation.

3.2.1 For greater certainty, if condition 3.2 applies, the equipment shall be checked and calibrated not more than 30 days after the first anniversary of the day the equipment was checked and calibrated in the previous 12-month period.

4.0 Additional Sampling, Testing and Monitoring

Drinking Water Health and Non-Health Related Parameters

4.1 For each treatment subsystem or treatment subsystem component identified in column 1 of Tables 5 and 6 and in addition to any other sampling, testing and monitoring that may be required, sampling, testing and monitoring shall be undertaken for a test parameter listed in column 2 at the sampling frequency listed in column 3 and at the monitoring location listed in column 4 of the same row.

Table 5: Drinking Water Health Related Parameters

Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Test Parameter	Column 3 Sampling Frequency	Column 4 Monitoring Location
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Table 6: Drinking Water Non-Health Related Parameters

Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Test Parameter	Column 3 Sampling Frequency	Column 4 Monitoring Location
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Environmental Discharge Parameters

4.2 For each treatment subsystem or treatment subsystem component identified in column 1 of Table 7 and in addition to any other sampling, testing and monitoring that may be required, sampling, testing and monitoring shall be undertaken for a test parameter listed in column 2 using the sample type identified in column 3 at the sampling frequency listed in column 4 and at the monitoring location listed in column 5 of the same row.

4.3 For the purposes of Table 7:

4.3.1 Manual Composite means the mean of at least three grab samples taken during a discharge event, with one sample being taken immediately following the commencement of the discharge event, one sample being taken approximately at the mid-point of the discharge event and one sample being taken immediately before the end of the discharge event; and

4.3.2 Automated Composite means samples must be taken during a discharge event by an automated sampler at a minimum sampling frequency of once per hour.

4.4 Any sampling, testing and monitoring for the test parameter Total Suspended Solids shall be performed in accordance with the requirements set out in the publication "Standard Methods for the Examination of Water and Wastewater", 21st Edition, 2005, or as amended from time to time by more recently published editions.

Table 7: Environmental Discharge Parameters

Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Test Parameter	Column 3 Sample Type	Column 4 Sampling Frequency	Column 5 Monitoring Location
Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

4.5 Pursuant to Condition 10 of Schedule B of this licence, the owner may undertake the following environmental discharges associated with the maintenance and/or repair of the drinking water system:

4.5.1 The discharge of potable water from a watermain to a road or storm sewer;

4.5.2 The discharge of potable water from a water storage facility or pumping station:

4.5.2.1 To a road or storm sewer; or

4.5.2.2 To a watercourse where the discharge has been dechlorinated and if necessary, sediment and erosion control measures have been implemented.

4.5.3 The discharge of dechlorinated non-potable water from a watermain, water storage facility or pumping station to a road or storm sewer;

4.5.4 The discharge of raw water from a groundwater well to the environment where if necessary, sediment and erosion control measures have been implemented; and

4.5.5 The discharge of raw water, potable water or non-potable water from a treatment subsystem to the environment where if necessary, the discharge has been dechlorinated and sediment and erosion control measures have been implemented.

5.0 Studies Required

5.1 Not Applicable

6.0 Source Protection

6.1 Not Applicable

Schedule D: Conditions for Relief from Regulatory Requirements

System Owner	**The Corporation of the Municipality of Arran-Elderslie**
Licence Number	**079-101**
Drinking Water System Name	**Tara Drinking Water System**
Schedule D Issue Date	**January 14th, 2016**

1.0 Lead Regulatory Relief

1.1 Any relief from regulatory requirements previously authorized by the Director in respect of the drinking water system under section 38 of the SDWA in relation to the sampling, testing or monitoring requirements contained in Schedule 15.1 of O. Reg. 170/03 shall remain in force until such time as Schedule 15.1 of O. Reg. 170/03 is amended after June 1, 2009.

2.0 Other Regulatory Relief

2.1 Not Applicable

Schedule E: Pathogen Log Removal/Inactivation Credits

System Owner	**The Corporation of the Municipality of Arran-Elderslie**
Licence Number	**079-101**
Drinking Water System Name	**Tara Drinking Water System**
Schedule E Issue Date	**January 14th, 2016**

1.0 Primary Disinfection Pathogen Log Removal/Inactivation Credits

Well No. 2 Pumphouse

Well No. 2 [GROUNDWATER]

Minimum Log Removal/ Inactivation Required	Cryptosporidium Oocysts	Giardia Cysts	Viruses
Well No. 2 Pumphouse	0	0	2

Log Removal/Inactivation Credits Assigned [a]	Cryptosporidium Oocysts	Giardia Cysts	Viruses
Chlorination [CT: Chlorine Contact Pipe]	-	-	2+

[a] Log removal/inactivation credit assignment is based on each treatment process being fully operational and the applicable log removal/inactivation credit assignment criteria being met.

Treatment Component	Log Removal/Inactivation Credit Assignment Criteria
Chlorination	1. Sampling and testing for free chlorine residual shall be carried out by continuous monitoring equipment in the treatment process at or near a location where the intended contact time has just been completed in accordance with the Ministry's Procedure for Disinfection of Drinking Water in Ontario; and 2. At all times, CT provided shall be greater than or equal to the CT required to achieve the log removal credits assigned.
Primary Disinfection Notes	

Well No. 3 Pumphouse

Well No. 3 [GUDI]

Minimum Log Removal/ Inactivation Required	Cryptosporidium Oocysts	Giardia Cysts [a]	Viruses [b]
Well No. 3 Pumphouse	2	3	4

[a] At least 0.5 log inactivation of Giardia shall be achieved by the disinfection portion of the overall water treatment process.
[b] At least 2 log inactivation of viruses shall be achieved by disinfection.

Log Removal/Inactivation Credits Assigned [c]	Cryptosporidium Oocysts	Giardia Cysts	Viruses
Cartridge Filtration [1 micron]	0	0	0
UV Disinfection [40 mJ/cm2]	2	3	2
Chlorination [CT: Chlorine Contact Chamber]	-	-	2+

[c] Log removal/inactivation credit assignment is based on each treatment process being fully operational and the applicable log removal/inactivation credit assignment criteria being met.

Treatment Component	Log Removal/Inactivation Credit Assignment Criteria
UV Disinfection	Duty UV Sensor Checks and Calibration 1. Duty UV sensors shall be checked on at least a monthly basis against a reference UV sensor or at a frequency as otherwise recommended by the UV equipment manufacturer; 2. When comparing a duty UV sensor to a reference UV sensor, the calibration ratio (intensity measured with the duty UV sensor/intensity measured with the reference UV sensor) shall be less than or equal to 1.2; 3. If the calibration ratio is greater than 1.2, the duty UV sensor shall be replaced with a calibrated UV sensor or a UV sensor correction factor shall be applied while the problem with the UV sensor is being resolved; 4. Reference UV sensors shall be checked against a Master Reference Assembly at a minimum frequency of once every three years or on a more frequent basis depending upon the recommendations of the equipment manufacturer; Operational Requirements 5. Ultraviolet light disinfection equipment shall have a feature that ensures that no water is directed to users of water treated by the equipment or that causes an alarm to sound in the event that the equipment malfunctions, loses power or ceases to provide the appropriate level of disinfection; 6. Water shall not flow through a UV reactor when the reactor's UV lights are off or not fully energized; 7. UV lamp status shall indicate whether each UV lamp is on or off; 8. All UV sensors shall operate within their calibration range or corrective measures shall be taken; and 9. Installed or replaced UV equipment components shall be equal or better than the components used during validation testing unless the UV equipment was revalidated.
Chlorination	1. Sampling and testing for free chlorine residual shall be carried out by continuous monitoring equipment in the treatment process at or near a location where the intended contact time has just been completed in accordance with the Ministry's Procedure for Disinfection of Drinking Water in Ontario; and 2. At all times, CT provided shall be greater than or equal to the CT required to achieve the log removal credits assigned.
Primary Disinfection Notes	

Well No. 4 Pumphouse

Well No. 4 [GROUNDWATER]

Minimum Log Removal/ Inactivation Required	Cryptosporidium Oocysts	Giardia Cysts	Viruses
Well No. 4 Pumphouse	0	0	2

Log Removal/Inactivation Credits Assigned [a]	Cryptosporidium Oocysts	Giardia Cysts	Viruses
Chlorination [CT: Chlorine Contact Pipe]	-	-	2+

[a] Log removal/inactivation credit assignment is based on each treatment process being fully operational and the applicable log removal/inactivation credit assignment criteria being met.

Treatment Component	Log Removal/Inactivation Credit Assignment Criteria
Chlorination	1. Sampling and testing for free chlorine residual shall be carried out by continuous monitoring equipment in the treatment process at or near a location where the intended contact time has just been completed in accordance with the Ministry's Procedure for Disinfection of Drinking Water in Ontario; and 2. At all times, CT provided shall be greater than or equal to the CT required to achieve the log removal credits assigned.
Primary Disinfection Notes	

Ontario

DRINKING WATER WORKS PERMIT

Permit Number: 079-201
Issue Number: 3

Pursuant to the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32, and the regulations made thereunder and subject to the limitations thereof, this drinking water works permit is issued under Part V of the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32 to:

The Corporation of the Municipality of Arran-Elderslie

PO Box 70
1925 Bruce Road #10
Chesley ON N0G 1L0

For the following municipal residential drinking water system:

Tara Drinking Water System

This drinking water works permit includes the following:

Schedule	Description
Schedule A	Drinking Water System Description
Schedule B	General
Schedule C	All documents issued as Schedule C to this drinking water works permit which authorize alterations to the drinking water system
Schedule D	Process Flow Diagrams

DATED at TORONTO this 14th day of January, 2016

Signature

Aziz Ahmed, P.Eng.
Director
Part V, *Safe Drinking Water Act*, 2002

Schedule A: Drinking Water System Description

System Owner	**The Corporation of the Municipality of Arran-Elderslie**
Permit Number	**079-201**
Drinking Water System Name	**Tara Drinking Water System**
Schedule A Issue Date	**January 14th, 2016**

1.0 System Description

1.1 The following is a summary description of the works comprising the above drinking water system:

Overview

The **Tara Drinking Water System** consists of three (3) drinking water treatment plants, one (1) standpipe storage tank and approximately 11.4 kilometers of trunk watermains and distribution watermains.

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Ground Water Supplies

Well No. 2

Location	59 Market Street, Tara, Ontario
UTM Coordinates	NAD 27: UTM Zone 17: 488649 m E, 4924786 m N
WWR No.	1402117
Source	Groundwater (Non-GUDI)
Description	150 mm diameter x 118.6 m deep drilled ground water well, located within the pump house with a 70 m deep, 150 mm diameter casing surrounded by a 254 mm diameter casing with grouting provided between the casings over their entire depth
Equipment	A submersible deep well pump rated at 4.9 L/s at 161 m TDH complete with a variable frequency drive
Notes	

Well No. 3

Location	217 River Street, Tara, Ontario
UTM Coordinates	NAD 27: UTM Zone 17: 488530 m E, 4924469 m N
WWR No.	1410885
Source	GUDI
Description	A 156 mm diameter x 119 m deep drilled groundwater well (5 m west of Pumphouse No. 3) with a 70 m deep, 150 mm diameter casing with grouting provided over the entire depth, equipped with a pitless adapter
Equipment	A submersible deep well pump rated at 5.3 L/s at 164 m TDH complete with variable frequency drive
Notes	

Well No. 4

Location	158 Yonge Street North, Tara, Ontario
UTM Coordinates	NAD 83: UTM Zone 17: 488253 m E, 4925557 m N
WWR No.	7123821
Source	Groundwater (Non-GUDI)
Description	A 250 mm diameter x 25.91 m deep drilled ground water well, located within the pump house
Equipment	A submersible deep well pump rated at 9.8 L/s with an operating head varying between approximately 42.06 m to 71.08 m complete with variable frequency drive and well level transducer
Notes	

Treatment Facilities

Pumphouse No. 2

Location	59 Market Street, Tara, Ontario
UTM Coordinates	NAD 27: UTM Zone 17: 488649 m E, 4924786 m N
Description	A pumphouse housing Well No. 2 and treatment and control equipment including cartridge filtration and disinfection equipment
Cartridge Filtration	One (1) cartridge filter housing having a treatment capacity of 11.03 L/s, equipped with 14 separate 1 micron filter cartridges (2 micron minimum required) to be used on the well startup to reduce initial turbidity spikes, complete with a differential pressure monitoring system. When the raw water turbidity falls to an acceptable level the filters are by-passed
Chlorination System	Two (2) sodium hypochlorite chemical feed pumps (one duty and one standby) with automatic switch over. Feed point is the treated water header prior to the cartridge filter
	One (1) sodium hypochlorite chemical storage tank with a secondary containment tank and associated piping, appurtenances and controls
Chlorine Contact Pipe	360 m of 150 mm diameter watermain along River Street providing chlorine contact time
Monitoring Equipment	One (1) chlorine residual analyzer sampling after Well No. 2 contact chamber located at Well No. 3
	One (1) turbidity analyzer on the header leaving the plant
	One (1) flow meter on the header leaving the plant
Notes:	

Pumphouse No. 3

Location	217 River Street, Tara, Ontario
UTM Coordinates	NAD 27: UTM Zone 17: 488530 m E, 4924469 m N
Description	A pumphouse housing Well No. 3 treatment and control equipment
Cartridge Filtration	One (1) cartridge filter housing having a treatment capacity of 11.03 L/s, equipped with 14 separate 1 micron filter cartridges (2 micron minimum required) to be used online with the Well No. 3 pump, complete with a differential pressure monitoring system
UV Disinfection System	Two (2) UV disinfection reactors (one duty and one standby), located after the cartridge filter unit, each unit rated at 11.37 L/s, capable of providing a minimum dose of 40 mJ/cm^2 at the end of the lamp life, together with automatic cleaning system, on-line UV intensity monitor with alarm, and a portable UV transmittance monitor
Chlorination System	Two (2) sodium hypochlorite chemical feed pumps (one duty and one standby) with automatic switch over. Feed point is on the treated water header after filtration and UV disinfection
	One (1) sodium hypochlorite chemical solution tank with a secondary containment tank and associated piping, appurtenances and controls
Chlorine Contact Pipe	16.4 m of 600 mm diameter pipe adjacent to the pumphouse providing chlorine contact time
Standby Power	One (1) 60 kW natural gas generator set capable of providing power to both pump houses No. 2 and No. 3 when power failure occurs
Monitoring Equipment	One (1) online free chlorine residual analyzer sampling after the chlorine contact chamber
	One (1) turbidity analyzer sampling after the chlorine contact chamber
	One (1) flow meter on the header leaving the plant
Notes:	

Pumphouse No. 4

Location	158 Yonge Street North, Tara, Ontario
UTM Coordinates	NAD 83: UTM Zone 17: 488253 m E, 4925557 m N
Description	A pumphouse housing Well No. 4 treatment and control equipment
Cartridge Filtration	One (1) cartridge filter housing having a treatment capacity of 28.4 L/s, equipped with 3 separate 1 micron filter cartridges (5 micron minimum required) to be used on the well startup to reduce initial turbidity spikes, complete with a differential pressure monitoring system. When the raw water turbidity falls to an acceptable level the filters are by-passed
Chlorination System	Two (2) chemical feed pumps (one duty and one standby) with automatic switch over. Feed point is on the water header prior to filtration. The standby injection point is after the filtration equipment
	One (1) sodium hypochlorite chemical solution tank with a secondary containment tank and associated piping, appurtenances and controls;
Chlorine Contact Pipe	12 m of 600 mm diameter watermain to provide chlorine contact time
Monitoring Equipment	One (1) online free chlorine residual analyzer sampling after the chlorine contact chamber
	One (1) turbidity analyzer on the treated water header
	One (1) magnetic flow meter on the treated water header
Notes:	

Off-Site Storage Tanks

Tara Standpipe

Location	158 Yonge Street N, Tara, Ontario
UTM Coordinates	NAD 83: UTM Zone 17: 488250 m E, 4925627 m N
Description	Glass-fused-steel standpipe with a top water level of 273.5 m and equalization, fire and emergency storage provided above elevation 267.15 m
Total Volume	3,952 m^3
Controls	Water level sensing instrumentation to monitor water depth and control the cycling of the three pumphouses by means of the SCADA System located in Treatment Plant Building No. 3
Notes	

Watermains

1.2 Watermains within the distribution system comprise:

1.2.1 Watermains that have been set out in each document or file identified in column 1 of Table 1.

Table 1: Watermains

Column 1 Document or File Name	Column 2 Date
Tara Water Distribution System	July 2013

1.2.2 Watermains that have been added, modified, replaced or extended further to the provisions of Schedule C of this drinking water works permit on or after the date identified in column 2 of Table 1 for each document or file identified in column 1.

1.2.3 Watermains that have been added, modified, replaced or extended further to an authorization by the Director on or after the date identified in column 2 of Table 1 for each document or file identified in column 1.

Schedule B: General

System Owner	**The Corporation of the Municipality of Arran-Elderslie**
Permit Number	**079-201**
Drinking Water System Name	**Tara Drinking Water System**
Schedule B Issue Date	**January 14th, 2016**

1.0 Applicability

1.1 In addition to any other requirements, the drinking water system identified above shall be altered and operated in accordance with the conditions of this drinking water works permit and the licence.

1.2 The definitions and conditions of the licence shall also apply to this drinking water works permit.

2.0 Alterations to the Drinking Water System

2.1 Any document issued by the Director as a Schedule C to this drinking water works permit shall provide authority to alter the drinking water system in accordance, where applicable, with the conditions of this drinking water works permit and the licence.

2.2 All Schedule C documents issued by the Director for the drinking water system shall form part of this drinking water works permit.

2.3 All parts of the drinking water system in contact with drinking water which are:

2.3.1 Added, modified, replaced, extended; or

2.3.2 Taken out of service for inspection, repair or other activities that may lead to contamination,

shall be disinfected before being put into service in accordance with the provisions of the AWWA C651 – Standard for Disinfecting Water Mains; AWWA C652 – Standard for Disinfection of Water-Storage Facilities; AWWA C653 – Standard for Disinfection of Water Treatment Plants; or AWWA C654 – Standard for Disinfection of Wells; or an equivalent procedure.

2.4 The owner shall notify the Director within thirty (30) days of the placing into service or the completion of any addition, modification, replacement or extension of the drinking water system which had been authorized through:

2.4.1 Schedule B to this drinking water works permit which would require an alteration of the description of a drinking water system component described in Schedule A of this drinking water works permit;

2.4.2 Any Schedule C to this drinking water works permit respecting works other than watermains; or

2.4.3 Any approval issued prior to the issue date of the first drinking water works permit respecting works other than watermains which were not in service at the time of the issuance of the first drinking water works permit.

2.5 For greater certainty, the notification requirements set out in condition 2.4 do not apply to any addition, modification, replacement or extension in respect of the drinking water system which:

2.5.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03;

2.5.2 Constitutes maintenance or repair of the drinking water system; or

2.5.3 Is a watermain authorized by condition 3.1 of Schedule B of this drinking water works permit.

2.6 The owner shall notify the legal owner of any part of the drinking water system that is prescribed as a municipal drinking water system by section 2 of O. Reg. 172/03 of the requirements of the licence and this drinking water works permit as applicable to the prescribed system.

2.7 For greater certainty, any alteration to the drinking water system made in accordance with this drinking water works permit may only be carried out after other legal obligations have been complied with including those arising from the *Environmental Assessment Act*, *Niagara Escarpment Planning and Development Act*, *Oak Ridges Moraine Conservation Act, 2001* and *Greenbelt Act, 2005*.

3.0 Watermain Additions, Modifications, Replacements and Extensions

3.1 The drinking water system may be altered by adding, modifying, replacing or extending a watermain within the distribution system subject to the following conditions:

3.1.1 The design of the watermain addition, modification, replacement or extension:

a) Has been prepared by a Professional Engineer;

b) Has been designed only to transmit water and has not been designed to treat water;

c) Satisfies the design criteria set out in the Ministry of the Environment and Climate Change publication “Watermain Design Criteria for Future Alterations Authorized under a Drinking Water Works Permit – June 2012”, as amended from time to time; and

d) Is consistent with or otherwise addresses the design objectives contained within the Ministry of the Environment and Climate Change publication “Design Guidelines for Drinking Water Systems, 2008”, as amended from time to time.

3.1.2 The maximum demand for water exerted by consumers who are serviced by the addition, modification, replacement or extension of the watermain will not result in an exceedance of the rated capacity of a treatment subsystem or the maximum flow rate for a treatment subsystem component as specified in the licence, or the creation of adverse conditions within the drinking water system.

3.1.3 The watermain addition, modification, replacement or extension will not adversely affect the distribution system's ability to maintain a minimum pressure of 140 kPa at ground level at all points in the distribution system under maximum day demand plus fire flow conditions.

3.1.4 Secondary disinfection will be provided to water within the added, modified, replaced or extended watermain to meet the requirements of O. Reg. 170/03.

3.1.5 The watermain addition, modification, replacement or extension is wholly located within the municipal boundary over which the owner has jurisdiction.

3.1.6 The owner of the drinking water system consents in writing to the watermain addition, modification, replacement or extension.

3.1.7 A Professional Engineer has verified in writing that the watermain addition, modification, replacement or extension meets the requirements of condition 3.1.1.

3.1.8 The owner of the drinking water system has verified in writing that the watermain addition, modification, replacement or extension meets the requirements of conditions 3.1.2 to 3.1.6.

3.2 The authorization for the addition, modification, replacement or extension of a watermain provided for in condition 3.1 does not include the addition, modification, replacement or extension of a watermain that:

3.2.1 Passes under or through a body of surface water, unless trenchless construction methods are used;

3.2.2 Has a nominal diameter greater than 750 mm;

3.2.3 Results in the fragmentation of the drinking water system; or

3.2.4 Connects to another drinking water system, unless:

a) Prior to construction, the owner of the drinking water system seeking the connection obtains written consent from the owner or owner's delegate of the drinking water system being connected to; and

b) The owner of the drinking water system seeking the connection retains a copy of the written consent from the owner or owner's delegate of the drinking water system being connected to as part of the record that is recorded and retained under condition 3.3.

3.3 The verifications required in conditions 3.1.7 and 3.1.8 shall be:

3.3.1 Recorded on "Form 1 – Record of Watermains Authorized as a Future Alteration", as published by the Ministry of the Environment and Climate Change, prior to the watermain addition, modification, replacement or extension being placed into service; and

3.3.2 Retained for a period of ten (10) years by the owner.

3.4 For greater certainty, the verification requirements set out in condition 3.3 do not apply to any addition, modification, replacement or extension in respect of the drinking water system which:

3.4.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or

3.4.2 Constitutes maintenance or repair of the drinking water system.

3.5 The document or file referenced in Column 1 of Table 1 of Schedule A of this drinking water works permit that sets out watermains shall be retained by the owner and shall be updated to include watermain additions, modifications, replacements and extensions within 12 months of the addition, modification, replacement or extension.

3.6 The updates required by condition 3.5 shall include watermain location relative to named streets or easements and watermain diameter.

4.0 Minor Modifications to the Drinking Water System

4.1 The drinking water system may be altered by adding, modifying or replacing the following components in the drinking water system:

4.1.1 Raw water pumps and treatment process pumps in the treatment system;

4.1.2 Coagulant feed systems in the treatment system, including the location and number of dosing points;

4.1.3 Valves;

4.1.4 Instrumentation and controls, including SCADA systems, and software associated with these devices;

4.1.5 Filter media, backwashing equipment and under-drains in the treatment system; or,

4.1.6 Spill containment works.

4.2 The drinking water system may be altered by adding, modifying, replacing or removing the following components in the drinking water system:

4.2.1 Treated water pumps and associated equipment;

4.2.2 Re-circulation devices within distribution system storage facilities;

4.2.3 In-line mixing equipment;

4.2.4 Chemical metering pumps and chemical handling pumps;

4.2.5 Chemical storage tanks (excluding fuel storage tanks) and associated equipment; or,

4.2.6 Measuring and monitoring devices that are not required by regulation, by a condition in the Drinking Water Works Permit, or by a condition otherwise imposed by the Ministry of the Environment and Climate Change.

4.3 The drinking water system may be altered by replacing the following:

4.3.1 Raw water piping, treatment process piping or treated water piping within the treatment subsystem;

4.3.2 Fuel storage tanks and spill containment works, and associated equipment; or

4.3.3 Coagulants and pH adjustment chemicals, where the replacement chemicals perform the same function;

a) Prior to making any alteration to the drinking water system under condition 4.3.3, the owner shall undertake a review of the impacts that the alteration might have on corrosion control or other treatment processes; and

b) The owner shall notify the Director in writing within thirty (30) days of any alteration made under condition 4.3.3 and shall provide the Director with a copy of the review.

4.4 Any alteration of the drinking water system made under conditions 4.1, 4.2 or 4.3 shall not result in:

4.4.1 An exceedance of a treatment subsystem rated capacity or a treatment subsystem component maximum flow rate as specified in the licence;

4.4.2 The bypassing of any unit process within a treatment subsystem;

4.4.3 A deterioration in the quality of drinking water provided to consumers;

4.4.4 A reduction in the reliability or redundancy of any component of the drinking water system;

4.4.5 A negative impact on the ability to undertake compliance and other monitoring necessary for the operation of the drinking water system; or

4.4.6 An adverse effect on the environment.

4.5 The owner shall verify in writing that any addition, modification, replacement or removal of drinking water system components in accordance with conditions 4.1, 4.2 or 4.3 has met the requirements of the conditions listed in condition 4.4.

4.6 The verifications and documentation required in condition 4.5 shall be:

4.6.1 Recorded on "Form 2 – Record of Minor Modifications or Replacements to the Drinking Water System", as published by the Ministry of the Environment and Climate Change, prior to the modified or replaced components being placed into service; and

4.6.2 Retained for a period of ten (10) years by the owner.

4.7 For greater certainty, the verification requirements set out in conditions 4.5 and 4.6 do not apply to any addition, modification, replacement or removal in respect of the drinking water system which:

4.7.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or

4.7.2 Constitutes maintenance or repair of the drinking water system.

4.8 The owner shall update any drawings maintained for the drinking water system to reflect the modification or replacement of the works, where applicable.

5.0 Equipment with Emissions to the Air

5.1 The drinking water system may be altered by adding, modifying or replacing any of the following drinking water system components that may discharge or alter the rate or manner of a discharge of a compound of concern to the atmosphere:

5.1.1 Any equipment, apparatus, mechanism or thing that is used for the transfer of outdoor air into a building or structure that is not a cooling tower;

5.1.2 Any equipment, apparatus, mechanism or thing that is used for the transfer of indoor air out of a space used for the production, processing, repair, maintenance or storage of goods or materials, including chemical storage;

5.1.3 Laboratory fume hoods used for drinking water testing, quality control and quality assurance purposes;

5.1.4 Low temperature handling of compounds with a vapor pressure of less than 1 kilopascal;

5.1.5 Maintenance welding stations;

5.1.6 Minor painting operations used for maintenance purposes;

5.1.7 Parts washers for maintenance shops;

5.1.8 Emergency chlorine and ammonia gas scrubbers and absorbers;

5.1.9 Venting for activated carbon units for drinking water taste and odour control;

5.1.10 Venting for a stripping unit for methane removal from a groundwater supply;

5.1.11 Venting for an ozone treatment unit;

5.1.12 Natural gas or propane fired boilers, water heaters, space heaters and make-up air units with a total facility-wide heat input rating of less than 20 million kilojoules per hour, and with an individual fuel energy input of less than or equal to 10.5 gigajoules per hour; or

5.1.13 Emergency generators that fire No. 2 fuel oil (diesel fuel) with a sulphur content of 0.5 per cent or less measured by weight, natural gas, propane, gasoline or biofuel, and that are used for emergency duty only with periodic testing.

5.2 The owner shall not add, modify or replace a drinking water system component set out in condition 5.1 for an activity that is not directly related to the treatment and/or distribution of drinking water.

5.3 The emergency generators identified in condition 5.1.13 shall not be used for non-emergency purposes including the generation of electricity for sale or for peak shaving purposes.

5.4 The owner shall prepare an emission summary table for nitrogen oxide emissions only, for each addition, modification or replacement of emergency generators identified in condition 5.1.13.

Performance Limits

5.5 The owner shall ensure that a drinking water system component identified in conditions 5.1.1 to 5.1.13 is operated at all times to comply with the following limits:

5.5.1 For equipment other than emergency generators, the maximum concentration of any compound of concern at a point of impingement shall not exceed the corresponding point of impingement limit;

5.5.2 For emergency generators, the maximum concentration of nitrogen oxides at sensitive populations shall not exceed the applicable point of impingement limit, and at non-sensitive populations shall not exceed the Ministry of the Environment and Climate Change half-hourly screening level of 1880 ug/m^3 as amended; and

5.5.3 The noise emissions comply at all times with the limits set out in publication NPC-300, as applicable.

5.6 The owner shall verify in writing that any addition, modification or replacement of works in accordance with condition 5.1 has met the requirements of the conditions listed in condition 5.5.

5.7 The owner shall document how compliance with the performance limits outlined in condition 5.5.3 is being achieved, through noise abatement equipment and/or operational procedures.

5.8 The verifications and documentation required in conditions 5.6 and 5.7 shall be:

5.8.1 Recorded on “Form 3 – Record of Addition, Modification or Replacement of Equipment Discharging a Contaminant of Concern to the Atmosphere”, as published by the Ministry of the Environment and Climate Change, prior to the additional, modified or replacement equipment being placed into service; and

5.8.2 Retained for a period of ten (10) years by the owner.

5.9 For greater certainty, the verification and documentation requirements set out in conditions 5.6 and 5.8 do not apply to any addition, modification or replacement in respect of the drinking water system which:

5.9.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or

5.9.2 Constitutes maintenance or repair of the drinking water system.

5.10 The owner shall update any drawings maintained for the works to reflect the addition, modification or replacement of the works, where applicable.

6.0 Previously Approved Works

6.1 The owner may add, modify, replace or extend, and operate part of a municipal drinking water system if:

6.1.1 An approval was issued after January 1, 2004 under section 36 of the SDWA in respect of the addition, modification, replacement or extension and operation of that part of the municipal drinking water system;

6.1.2 The approval expired by virtue of subsection 36(4) of the SDWA; and

6.1.3 The addition, modification, replacement or extension commenced within five years of the date that activity was approved by the expired approval.

7.0 System-Specific Conditions

7.1 Not Applicable

8.0 Source Protection

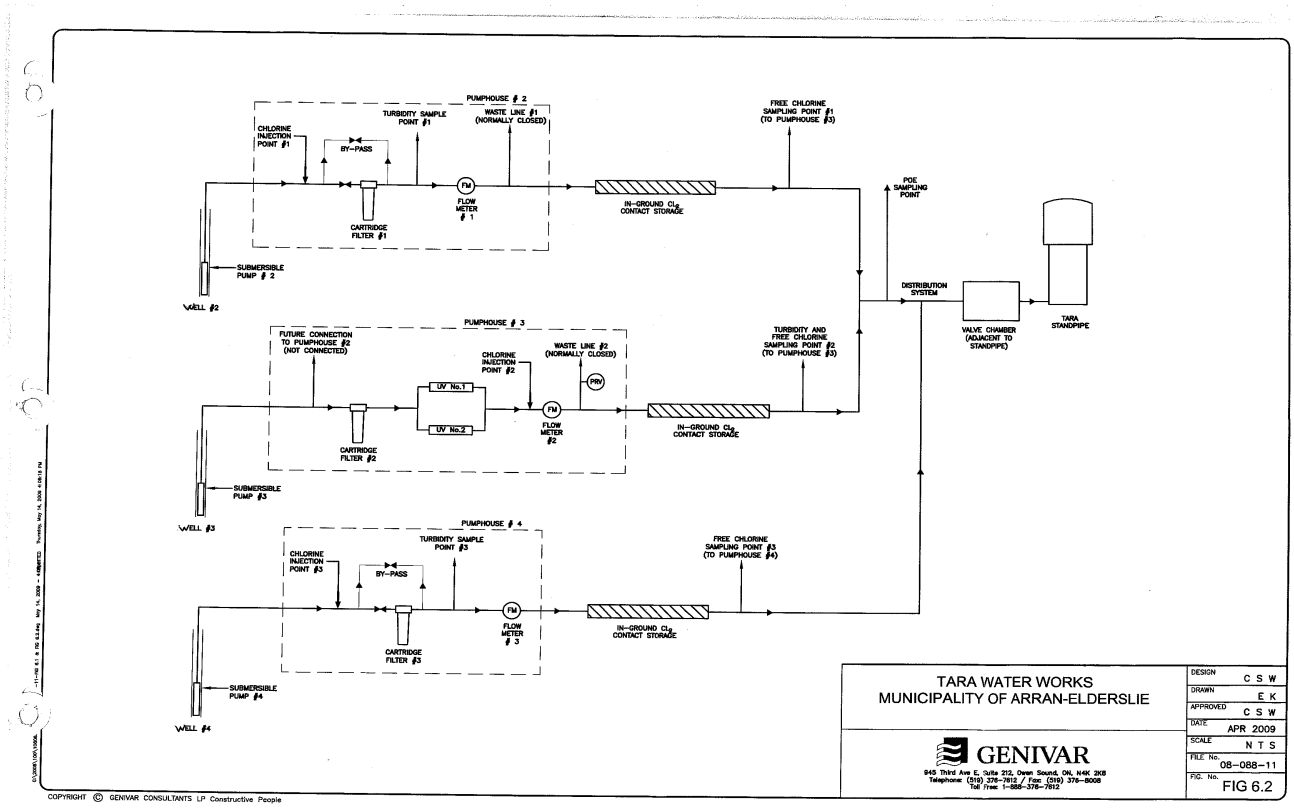
8.1 Not Applicable

Schedule D: Process Flow Diagrams

System Owner	**The Corporation of the Municipality of Arran-Elderslie**
Permit Number	**079-201**
Drinking Water System Name	**Tara Drinking Water System**
Schedule D Issue Date	**January 14th, 2016**

1.0 Process Flow Diagrams

Well No 2 Pumphouse, Well No 3 Pumphouse and Well No 4 Pumphouse



[Source: Municipality of Arran-Elderslie Operational Plans, Version 4, March 2012]

APPENDIX F

PERMIT TO TAKE WATER

Post-it™ Fax Note 7671E	Date Oct 7/08	# of pages ▸ 8
To Chris Wilson	From Scott	
Co./Dept. Hap	Co. AoE	
Phone # 376-7612	Phone # 519-363-3039	
Fax #	Fax #	

Ontario

AMENDED PERMIT TO TAKE WATER
Ground Water
NUMBER 3285-7HUKRE

Pursuant to Section 34 of the Ontario Water Resources Act, R.S.O. 1990 this Permit To Take Water is hereby issued to:

The Corporation of the Municipality of Arran-Elderslie
1925 County Road 10, P.O. Box 70
Chesley, Ontario, N0G 1L0
Canada

For the water taking from: Well 2, Well 3, Well 4

Located at: Lot 30, Concession 9 (Arran)
Arran-Elderslie, County of Bruce

217 River Street, Tara
Arran-Elderslie, County of Bruce

59 Market Street, Tara
Arran-Elderslie, County of Bruce

For the purposes of this Permit, and the terms and conditions specified below, the following definitions apply:

DEFINITIONS

(a) "Director" means any person appointed in writing as a Director pursuant to section 5 of the OWRA for the purposes of section 34, OWRA.

(b) "Provincial Officer" means any person designated in writing by the Minister as a Provincial Officer pursuant to section 5 of the OWRA.

(c) "Ministry" means Ontario Ministry of the Environment.

(d) "District Office" means the Owen Sound District Office.

(e) "Permit" means this Permit to Take Water No. 3285-7HUKRE including its Schedules, if any, issued in accordance with Section 34 of the OWRA.

(f) "Permit Holder" means The Corporation of the Municipality of Arran-Elderslie.

(g) "OWRA " means the *Ontario Water Resources Act,* R.S.O. 1990, c. O. 40, as amended.

You are hereby notified that this Permit is issued subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. Compliance with Permit

1.1 Except where modified by this Permit, the water taking shall be in accordance with the application for this Permit To Take Water, dated May 27, 2008 and signed by Joan Albright, Clerk/CAO, and all Schedules included in this Permit.

1.2 The Permit Holder shall ensure that any person authorized by the Permit Holder to take water under this Permit is provided with a copy of this Permit and shall take all reasonable measures to ensure that any such person complies with the conditions of this Permit.

1.3 Any person authorized by the Permit Holder to take water under this Permit shall comply with the conditions of this Permit.

1.4 This Permit is not transferable to another person.

1.5 This Permit provides the Permit Holder with permission to take water in accordance with the conditions of this Permit, up to the date of the expiry of this Permit. This Permit does not constitute a legal right, vested or otherwise, to a water allocation, and the issuance of this Permit does not guarantee that, upon its expiry, it will be renewed.

1.6 The Permit Holder shall keep this Permit available at all times at or near the site of the taking, and shall produce this Permit immediately for inspection by a Provincial Officer upon his or her request.

1.7 The Permit Holder shall report any changes of address to the Director within thirty days of any such change. The Permit Holder shall report any change of ownership of the property for which this Permit is issued within thirty days of any such change. A change in ownership in the property shall cause this Permit to be cancelled.

2. General Conditions and Interpretation

2.1 Inspections
The Permit Holder must forthwith, upon presentation of credentials, permit a Provincial Officer to carry out any and all inspections authorized by the OWRA, the *Environmental Protection Act* , R.S.O. 1990, the *Pesticides Act* , R.S.O. 1990, or the *Safe Drinking Water Act,* S. O. 2002.

2.2 Other Approvals

The issuance of, and compliance with this Permit, does not:

(a) relieve the Permit Holder or any other person from any obligation to comply with any other applicable legal requirements, including the provisions of the *Ontario Water Resources Act* , and the *Environmental Protection Act* , and any regulations made thereunder; or

(b) limit in any way any authority of the Ministry, a Director, or a Provincial Officer, including the authority to require certain steps be taken or to require the Permit Holder to furnish any further information related to this Permit.

2.3 Information

The receipt of any information by the Ministry, the failure of the Ministry to take any action or require any person to take any action in relation to the information, or the failure of a Provincial Officer to prosecute any person in relation to the information, shall not be construed as:

(a) an approval, waiver or justification by the Ministry of any act or omission of any person that contravenes this Permit or other legal requirement; or

(b) acceptance by the Ministry of the information's completeness or accuracy.

2.4 Rights of Action

The issuance of, and compliance with this Permit shall not be construed as precluding or limiting any legal claims or rights of action that any person, including the Crown in right of Ontario or any agency thereof, has or may have against the Permit Holder, its officers, employees, agents, and contractors.

2.5 Severability

The requirements of this Permit are severable. If any requirements of this Permit, or the application of any requirements of this Permit to any circumstance, is held invalid or unenforceable, the application of such requirements to other circumstances and the remainder of this Permit shall not be affected thereby.

2.6 Conflicts

Where there is a conflict between a provision of any submitted document referred to in this Permit, including its Schedules, and the conditions of this Permit, the conditions in this Permit shall take precedence.

3. Water Takings Authorized by This Permit

3.1 **Expiry**

This Permit expires on **August 31, 2018.** No water shall be taken under authority of this Permit after the expiry date.

3.2 Amounts of Taking Permitted

The Permit Holder shall only take water from the source, during the periods and at the rates and amounts of taking specified in Table A. Water takings are authorized only for the purposes specified in Table A.

Table A

	Source Name / Description:	Source: Type:	Taking Specific Purpose:	Taking Major Category:	Max. Taken per Minute (litres):	Max. Num. of Hrs Taken per Day:	Max. Taken per Day (litres):	Max. Num. of Days Taken per Year:	Zone/ Easting/ Northing:
1	Well 2	Well Drilled	Municipal	Water Supply	296 4.9 L/sec.	24	426,240	365	17 488649 4924786
2	Well 3	Well Drilled	Municipal	Water Supply	318 5.3 L/sec.	24	457,920	365	17 488530 4924469
3	Well 4	Well Drilled	Municipal	Water Supply	592 9.8 L/sec	24	852,480	365	17 488260 4925560
						Total Taking:	1,736,640		

4. Monitoring

4.1 The Permit Holder shall maintain a record of all water takings. This record shall include the dates and times of water takings, and the total measured amounts of water pumped per day for each day that water is taken under the authorization of this Permit. A separate record shall be maintained for each source. The Permit Holder shall keep all required records up to date and available at or near the site of the taking and shall produce the records immediately for inspection by a Provincial Officer upon his or her request. The total amounts of water pumped shall be measured using a flow meter or similar devise.

4.2 Based on the hydrogeological report entitled Municipality of Arran-Elderslie, Village of Tara, Well Construction and Testing Report, Well #4, 2007, prepared by International Water Supply Ltd., and dated 29 May 2007, the Permit Holder shall establish a monitoring program as follows:
(1) Monitor the water levels in Production Wells 2, 3 & 4 on a daily basis;
(2) The Permit Holder shall keep all required records up to date and available at or near the site of the taking and shall produce the records immediately for inspection by a Provincial Officer upon his or her request.

4.3 Any application submitted to the Ministry for renewal or amendment of this Permit shall be accompanied by all records required by the conditions of this Permit and an analysis of the impacts of the taking prepared by a qualified Hydrogeologist.

5. Impacts of the Water Taking

5.1 Notification
The Permit Holder shall immediately notify the local District Office of any complaint arising from the taking of water authorized under this Permit and shall report any action which has been

taken or is proposed with regard to such complaint. The Permit Holder shall immediately notify the local District Office if the taking of water is observed to have any significant impact on the surrounding waters. After hours, calls shall be directed to the Ministry's Spills Action Centre at 1-800-268-6060.

5.2 For Groundwater Takings

If the taking of water is observed to cause any negative impact to other water supplies obtained from any adequate sources that were in use prior to initial issuance of a Permit for this water taking, the Permit Holder shall take such action necessary to make available to those affected, a supply of water equivalent in quantity and quality to their normal takings, or shall compensate such persons for their reasonable costs of so doing, or shall reduce the rate and amount of taking to prevent or alleviate the observed negative impact. Pending permanent restoration of the affected supplies, the Permit Holder shall provide, to those affected, temporary water supplies adequate to meet their normal requirements, or shall compensate such persons for their reasonable costs of doing so.

If permanent interference is caused by the water taking, the Permit Holder shall restore the water supplies of those permanently affected.

6. Director May Amend Permit

The Director may amend this Permit by letter requiring the Permit Holder to suspend or reduce the taking to an amount or threshold specified by the Director in the letter. The suspension or reduction in taking shall be effective immediately and may be revoked at any time upon notification by the Director. This condition does not affect your right to appeal the suspension or reduction in taking to the Environmental Review Tribunal under the *Ontario Water Resources Act* , Section 100 (4).

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 is included to ensure that the conditions in this Permit are complied with and can be enforced.

2. Condition 2 is included to clarify the legal interpretation of aspects of this Permit.

3. Conditions 3 through 6 are included to protect the quality of the natural environment so as to safeguard the ecosystem and human health and foster efficient use and conservation of waters. These conditions allow for the beneficial use of waters while ensuring the fair sharing, conservation and sustainable use of the waters of Ontario. The conditions also specify the water takings that are authorized by this Permit and the scope of this Permit.

In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 101 of the Ontario Water Resources Act, R.S.O. 1990, as amended, provides that the Notice requiring the hearing shall state:

1. The portions of the Permit or each term or condition in the Permit in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

In addition to these legal requirements, the Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Permit to Take Water number;
6. The date of the Permit to Take Water;
7. The name of the Director;
8. The municipality within which the works are located;

This notice must be served upon:

The Secretary
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto ON
M5G 1E5

AND

The Director, Section 34
Ministry of the Environment
733 Exeter Rd
London ON N6E 1L3
Fax: (519)873-5020

Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal:

by telephone at (416) 314-4600 ***by fax at (416) 314-4506*** ***by e-mail at www.ert.gov.on.ca***

This Permit cancels and replaces Permit Number 00-P-1355, issued on 2001/11/15.

Dated at London this 25th day of August, 2008.

Ian Kerr
Director, Section 34
Ontario Water Resources Act , R.S.O. 1990

Schedule A

This Schedule "A" forms part of Permit To Take Water 3285-7HUKRE, dated August 25, 2008.

Ministry of the Environment

733 Exeter Road
London ON N6E 1L3
Tel': 519 873-5000
Fax: 519 873-5020

Ministère de l'Environnement

733, rue Exeter
London ON N6E 1L3
Tél.: 519 873-5000
Téléc.: 519 873-5020

Ontario

8 October 2008

Mr. Scott McLeod
Water / Sewer Foreman
Municipality of Arran-Elderslie

Dear Mr. McLeod

Re: Permit To Take Water # 3285-7HUKRE, Village of Tara, Bruce County.

In response to your concern regarding monitoring condition 4.2 of Tara's PTTW which requires daily monitoring of water levels we offer the following.

It is understood that water level monitoring will be done using pressure transducers and data loggers. This type of equipment is preferred because it provides continuous monitoring data without having to gain access to the well each time a measurement is taken. This reduces the risk of introducing foreign material into the well bore. The downside of data loggers is that from time to time they fail and need to be serviced or replaced. When this happens there will obviously be periods of time with no data. Since well water levels are monitored to indicate long term trends, small gaps in the data due to transducer problems are considered insignificant. If transducers are going to be out of a well for an extended period of time it is recommended that manual measurements be performed weekly.

If you have any additional questions concerning this issue please give me a call.

Yours truly,

Greg Powers, P.Geo.
Hydrogeologist

Scott McLeod

To: Ahmed, Aziz (ENE)
Subject: RE: MOE Inspection

Aziz
Thanks, I will just keep this e-mail on file for when we receive our 2013 MOE inspection.
Merry Xmas, Scott

From: Ahmed, Aziz (ENE) [mailto:Aziz.Ahmed@ontario.ca]
Sent: December 11, 2012 12:18 PM
To: Scott McLeod
Subject: RE: MOE Inspection

Scott,

We will review this and update our records. We may not send out a revised DWWP right away, but wait for a future amendment application to roll this into.

Aziz

From: Scott McLeod [mailto:aewater@bmts.com]
Sent: December-11-12 10:30 AM
To: Ahmed, Aziz (ENE)
Subject: MOE Inspection

Hi Aziz
I was in contact with you in early October 2012 regarding discrepancies discovered in Schedule A of our Tara DWWP during our annual MOE inspection. From your e-mail dated October 3/12 you suggested an e-mail listing the discrepancies be sent to your office so that an amendment could be made to the DWWP.

I have finally reviewed the combined Tara DWWP permit number 079-201 Schedule A and the Tara Well Supply 2012 MOE Inspection Report. The discrepancies seem to only be in the Filtration section for all the wells listed in the permit. I have attached to this e-mail copies of the original Filtration sections requiring changes and an attachment with the new changes we would like to see adhered too.

Could you please forward these changes to corresponding department in your office. I can be contacted from the various numbers and e-mail listed below if you have any concerns.

Thanks, Scott

Scott McLeod
Arran-Elderslie Water Operations
Water/Sewer Foreman
aewater@bmts.com
Office: 519-363-3039
Fax: 519-363-9337
Cell: 519-270-1929

079-201 Schedule A

Well No.2

Filtration

Description	a cartridge filtration system
Equipment	One cartridge filter housing having a treatment capacity of 11.03 L/s, equipped with 14 separate 1 micron filter cartridges (2 micron minimum required) to be used on the well startup to reduce initial turbidity spikes, complete with a differential pressure monitoring system.
Notes:	The cartridge filter is provided to reduce turbidity encountered during initial start up of the pumps. When the raw water turbidity falls to an acceptable level the filters are by-passed.

079-201 Schedule A

Well No.3

Filtration

Description	a cartridge filtration system
Equipment	One cartridge filter housing having a treatment capacity of 11.03 L/s, equipped with 14 separate 1 micron filter cartridges (2 micron minimum required) to be used online with the Well No. 3 pump, complete with a differential pressure monitoring system.
Notes:	

079-201 Schedule A

Well No.4

Filtration

Description	a cartridge filtration system
Equipment	One cartridge filter housing having a treatment capacity of 28.4 L/s, equipped with 3 separate 1 micron filter cartridges (5 micron minimum required) to be used on the well startup to reduce initial turbidity spikes, complete with a differential pressure monitoring system.
Notes:	The cartridge filter is provided to reduce turbidity encountered during initial start up of the pumps. When the raw water turbidity falls to an acceptable level the filters are by-passed.

Ground Water Supply Well No. 2

Treatment Plant Building

Location	A pumphouse located at 59 Market Street housing Well No. 2 and treatment and control equipment including cartridge filtration and disinfection equipment
UTM Coordinates	NAD 27: UTM Zone 17: 488649.00 m E, 4924786.00 m N
Notes	

Chemical Treatment

Sodium Hypochlorite

Description	a sodium hypochlorite disinfection system
Feed Point	treated water header prior to the filter
Equipment	two (2) chemical metering pumps (one duty and one standby with automatic switch over) and a 200 L sodium hypochlorite solution tank with a secondary containment tank and associated piping, appurtenances and controls
Chlorine Contact Facility	360 m of 150 mm diameter watermain along River Street, dedicated to provide chlorine contact time necessary for well water discharged from Pumphouse No.2;
Notes	

Filtration

Description	a cartridge filtration system
Equipment	one (1) cartridge filter having a treatment capacity of 11.03 L/s, equipped with 1 micron size filter cartridges (2 micron minimum required) to be used on the well startup to reduce initial turbidity spikes, complete with a differential pressure monitoring system
Notes:	The cartridge filter is provided to reduce turbidity encountered during initial start up of the pumps. When the raw water turbidity falls to an acceptable level the filters are by-passed.

Change Needed

Control and Monitoring

Description	
chlorine residual analyzer	a chlorine residual analyzer sampling after Well No. 2 contact chamber located at Well No. 3
turbidity analyzer	a turbidity analyzer on the header leaving the plant
flow meters	a flow meter on the header leaving the plant
Notes	

Well No. 3

Name	Well No. 3
UTM Coordinates	NAD 27: UTM Zone 17: 488530.00 m E, 4924469.00 m N
Category	GUDI
Description	a 156 mm diameter, 119 m deep drilled groundwater well (5 m west of Pumphouse No. 3) with a 70 m deep, 150 mm diameter casing with grouting provided over the entire depth, equipped with a pitless adapter
Pump	a submersible deep well pump rated at 5.3 L/s at a TDH of 164 m complete with variable frequency drive
Notes	

Treatment Plant Building

Location	A pumphouse located at 217 River Street housing Well No. 3 treatment and control equipment
UTM Coordinates	NAD 27: UTM Zone 17: 488530.00 m E, 4924469.00 m N
Notes	

Primary Disinfection

Ultraviolet Disinfection

Description	UV Disinfection System
Equipment	an Ultra Violet (UV) disinfection system consisting of two (2) UV disinfection reactors, one duty, one standby, located after the cartridge filter unit, each unit rated at 11.37 L/s, capable of providing minimum dose of 40 mJ/cm^2 at the end of the lamp life, together with automatic cleaning system, on-line UV intensity monitor with alarm, complete with a portable UV transmittance monitor;
Notes	

Filtration

Description	a cartridge filtration system
Equipment	one (1) cartridge filter, having a treatment capacity of 11.03 L/s, equipped with 1 micron size filter cartridges (2 micron minimum required) to be used online with the Well No. 3 pump, complete with a differential pressure monitoring system;
Notes:	

Change Needed

Pg 4

Well No. 4

Treatment Plant Building

Location	A pumphouse located at 158 Yonge Street North housing Well No. 4 treatment and control equipment
UTM Coordinates	NAD 83: UTM Zone 17: 488253.00 m E, 4925557.00 m N
Notes	

Chemical Treatment

Sodium Hypochlorite

Description	a sodium hypochlorite disinfection system
Feed Point	on the water header prior to filtration
Equipment	two (2) chemical metering pumps (one duty and one standby with automatic switch over) and a 200 L sodium hypochlorite solution tank with a secondary containment tank and associated piping, appurtenances and controls;
Contact Facility	12 m of 600 mm diameter watermain buried (chlorine contact chamber) outside the pumphouse to provide chlorine contact time necessary for well water discharged from Pumphouse No.4;
Notes	

Filtration

Description	a cartridge filtration system
Equipment	one (1) cartridge filter to be used on the well startup to reduce initial turbidity spikes;
Notes:	The cartridge filter is provided to reduce turbidity encountered during initial start up of the pumps. When the raw water turbidity falls to an acceptable level the filters are by-passed.

Change Needed

Control and Monitoring

Description	associated SCADA, PLC, and controls
turbidity analyzer	one (1) turbidity analyzer on the treated water header;
flow meters	one (1) magnetic flow meter on the treated water header
Notes	

Copy

THE CORPORATION OF THE MUNICIPALITY OF ARRAN-ELDERSLIE
1925 Bruce Road 10, Box 70, Chesley, ON N0G 1L0
519-363-3039 Fax: 519-363-9337 aewater@bmts.com

March 11, 2011

Aziz Ahmed, P. Eng.
Ministry of the Environment
Safe Drinking Water Branch
Floor 19
2 St. Clair Ave W
Toronto, On.
M4V 1L5

Attn: David Filman, M.A.Sc., P Eng.

Re: Municipal Drinking Water Licence
License Number: 079-101
Issue Number: 1

From the Tara Drinking Water Licence in Schedule C, Section 5.0 Studies Required. A report is to be sent to the Director that reviews the raw and treated water quality of Well No. 4 during the first six months of operation.

Please find enclosed a Water Quality Summary Report, along with Chemical Parameter sample results from the initial six months of operation at Well #4 in Tara. All of the water test results seem to be well within compliance of the Ontario Drinking Water Standards. Any concerns please contact me from the listing above.

Thank you,

Scott McLeod
Water/Sewer Foreman
Municipality of Arran Elderslie

Encl:

Well #4 Water Quality Report

Timeline: November 2009 to May 2010

Date	Raw Turbidity	Raw Total Coliform	Raw E.Coli	Chlorine Dosage	POE Turbidity	POE Total Coliform	POE E.Coli	POE HPC
Nov. 16/09	0.18	0	0					
Nov. 23/09	0.15	0	0					
Nov. 30/09	0.19	0	0	1.49	0.28	0	0	<10
Dec. 7/09	0.25	0	0	1.56	0.19	0	0	10
Dec.14/09	0.17	0	0	2.91	0.15	0	0	<10
Dec.21/09	0.15	0	0	0.15	0.17	0	0	<10
Dec.29/09	0.17	0	0	1.37	0.18	0	0	10
Jan.4/10	0.15	0	0	1.66	0.18	0	0	10
Jan.11/10	0.13	0	0	1.60	0.14	0	0	<10
Jan.18/10	0.13	0	0	0.61	0.15	0	0	10
Jan.25/10	0.32	0	0	0.70	0.23	0	0	20
Feb.1/10	0.14	0	0	0.34	0.15	0	0	<10
Feb.8/10	0.26	0	0	1.55	0.44	0	0	<10
Feb.16/10	0.15	0	0	0.43	0.17	0	0	10
Feb.22/10	0.36	0	0	1.53	0.64	0	0	<10
Mar.1/10	0.16	0	0	1.36	0.35	0	0	<10
Mar.8/10	0.16	0	0	0.77	0.30	0	0	60
Mar.15/10	0.15	0	0	1.21	0.15	0	0	<10
Mar.22/10	0.12	0	0	0.38	0.12	0	0	20
Mar.29/10	0.14	0	0	1.21	0.14	0	0	<10
April 6/10	0.13	0	0	1.22	0.13	0	0	<10
April 12/10	0.12	0	0	1.21	0.14	0	0	<10
April 19/10	0.15	0	0	1.35	0.16	0	0	70
April 26/10	0.35	0	0	1.62	0.41	0	0	<10
May 3/10	0.26	0	0	1.72	0.17	0	0	<10
May 10/10	0.21	0	0	0.41	0.25	0	0	10
May 17/10	0.23	0	0	1.61	0.26	0	0	10
May 25/10	0.23	0	0	1.46	0.22	0	0	<10
May 31/10	0.15	0	0	1.13	0.15	0	0	<10
Total		0	0			0	0	
Average	0.19			1.21	0.22			22

POE - Point Of Entry
HPC - Heterotrophic Plate Count

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: DW 12314

REPORT No. B10-12314

Report To:

Arran Elderslie, Mun. of
1925 Bruce Road, #10
Chesley, Ontario, N0G 1L0
Attention: Scott McLeod

Caduceon Environmental Laboratories
2378 Holly Lane
Ottawa, Ontario, K1V 7P1
Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 11-May-10
DATE REPORTED: 14-May-10
SAMPLE MATRIX: Drinking Water

JOB/PROJECT NO.: Tara Well Supply
P.O. NUMBER:
WATERWORKS NO. 220002627

			Client I.D.:		Tara Well # 2 & 3 - POE	Tara Well # 4 - POE	Distribution	
			Sample I.D.:		B10-12314-1	B10-12314-2	B10-12314-3	
			Date Collected:		10-May-10	10-May-10	10-May-10	
Parameter	**Units**	**M.D.L.**	**Reference Method**	**Date/Site Analyzed**				
Nitrite (N)	mg/L	0.1	EPA 300.0	11-May-10/O	< 0.1	< 0.1	--	
Nitrate (N)	mg/L	0.1	EPA 300.0	11-May-10/O	0.3	0.4	--	
Chloroform	µg/L	0.3	EPA 8260	12-May-10/O	--	--	3.0	
Bromodichloromethane	µg/L	0.1	EPA 8260	12-May-10/O	--	--	4.2	
Dibromochloromethane	µg/L	0.1	EPA 8260	12-May-10/O	--	--	4.9	
Bromoform	µg/L	0.1	EPA 8260	12-May-10/O	--	--	1.4	
Total Trihalomethanes	µg/L	0.3	EPA 8260	12-May-10/O	--	--	13.4	

Gord Murphy
Lab Supervisor

M.D.L. = Method Detection Limit
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,P-Peterborough,M-Moncton

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: DW 03391

REPORT No. B10-03391

Rev. 1

Report To:

Arran Elderslie, Mun. of
1925 Bruce Road, #10
Chesley, Ontario, N0G 1L0
Attention: Scott McLeod

Caduceon Environmental Laboratories
2378 Holly Lane
Ottawa, Ontario, K1V 7P1
Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 09-Feb-10
DATE REPORTED: 11-Feb-10
SAMPLE MATRIX: Drinking Water

JOB/PROJECT NO.: Tara Well Supply
P.O. NUMBER:
WATERWORKS NO. 220002627

			Client I.D.:		Tara Well #2 & 3 - POE	Tara Well #4 - POE	Dist. Sensient Flavors	
			Sample I.D.:		B10-03391-1	B10-03391-2	B10-03391-3	
			Date Collected:		08-Feb-10	08-Feb-10	08-Feb-10	
Parameter	**Units**	**M.D.L.**	**Reference Method**	**Date/Site Analyzed**				
Nitrite (N)	mg/L	0.1	EPA 300.0	09-Feb-10/O	< 0.1	< 0.1	--	
Nitrate (N)	mg/L	0.1	EPA 300.0	09-Feb-10/O	0.2	0.8	--	
Chloroform	µg/L	0.3	EPA 8260	09-Feb-10/O	--	--	< 0.3	
Bromodichloromethane	µg/L	0.1	EPA 8260	09-Feb-10/O	--	--	0.1	
Dibromochloromethane	µg/L	0.1	EPA 8260	09-Feb-10/O	--	--	1.1	
Bromoform	µg/L	0.1	EPA 8260	09-Feb-10/O	--	--	0.6	
Total Trihalomethanes	µg/L	0.3	EPA 8260	09-Feb-10/O	--	--	1.8	

Note: Revision created to correct Sample ID.

Gord Murphy
Lab Supervisor

M.D.L. = Method Detection Limit
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,P-Peterborough,M-Moncton

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: DW 35888

REPORT No. B09-35888

Report To:

Arran Elderslie, Mun. of
1925 Bruce Road, #10
Chesley, Ontario, N0G 1L0
Attention: Scott McLeod

Caduceon Environmental Laboratories
2378 Holly Lane
Ottawa, Ontario, K1V 7P1
Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 17-Nov-09
DATE REPORTED: 07-Dec-09
SAMPLE MATRIX: Drinking Water Raw

JOB/PROJECT NO.: Tara Well Supply
P.O. NUMBER:
WATERWORKS NO. 220002627

			Client I.D.:		Tara Well #4			
			Sample I.D.:		B09-35888-1			
			Date Collected:		16-Nov-09			
Parameter	**Units**	**M.D.L.**	**Reference Method**	**Date/Site Analyzed**				
Fluoride	mg/L	0.1	EPA 300.0	18-Nov-09/O	0.5			
Nitrite (N)	mg/L	0.1	EPA 300.0	18-Nov-09/O	< 0.1			
Nitrate (N)	mg/L	0.1	EPA 300.0	18-Nov-09/O	2.2			
Nitrate + Nitrite (N)	mg/L	0.1	EPA 300.0	18-Nov-09/O	2.2			
Antimony	mg/L	0.0001	EPA 200.8	24-Nov-09/O	< 0.0001			
Arsenic	mg/L	0.0001	EPA 200.8	24-Nov-09/O	0.0003			
Barium	mg/L	0.001	SM 3120	18-Nov-09/O	0.032			
Boron	mg/L	0.01	N/A	23-Nov-09	0.03			
Cadmium	mg/L	0.00002	EPA 200.8	24-Nov-09/O	< 0.00002			
Chromium	mg/L	0.002	SM 3120	18-Nov-09/O	< 0.002			
Lead	mg/L	0.00002	EPA 200.8	24-Nov-09/O	< 0.00002			
Mercury	mg/L	0.00002	SM 3112	18-Nov-09/O	< 0.00002			
Selenium	mg/L	0.0002	EPA 200.8	24-Nov-09/O	0.0023			
Sodium	mg/L	0.2	SM 3120	18-Nov-09/O	9.1			
Uranium	mg/L	0.00005	EPA 200.8	24-Nov-09/O	0.00063			
Benzene	µg/L	0.5	EPA 8260	19-Nov-09/O	< 0.5			
Carbon Tetrachloride	µg/L	0.2	EPA 8260	19-Nov-09/O	< 0.2			
Dichlorobenzene,1,2-	µg/L	0.1	EPA 8260	19-Nov-09/O	< 0.1			
Dichlorobenzene,1,4-	µg/L	0.2	EPA 8260	19-Nov-09/O	< 0.2			
Dichloroethane,1,2-	µg/L	0.1	EPA 8260	19-Nov-09/O	< 0.1			
Dichloroethene, 1,1-	µg/L	0.1	EPA 8260	19-Nov-09/O	< 0.1			
Dichloromethane (Methylene Chloride)	µg/L	0.3	EPA 8260	19-Nov-09/O	< 0.3			
Monochlorobenzene (Chlorobenzene)	µg/L	0.2	EPA 8260	19-Nov-09/O	< 0.2			
Tetrachloroethylene	µg/L	0.2	EPA 8260	19-Nov-09/O	< 0.2			
Trichloroethylene	µg/L	0.1	EPA 8260	19-Nov-09/O	< 0.1			
Vinyl Chloride	µg/L	0.2	EPA 8260	19-Nov-09/O	< 0.2			
Alachlor	µg/L	0.3	EPA 8270	01-Dec-09/K	< 0.3			

M.D.L. = Method Detection Limit
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,P-Peterborough,M-Moncton

Greg Clarkin , BSc., C. Chem
Lab Manager - Ottawa District

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: DW 35888

REPORT No. B09-3588

Report To:

Arran Elderslie, Mun. of
1925 Bruce Road, #10
Chesley, Ontario, N0G 1L0
Attention: Scott McLeod

Caduceon Environmental Laboratories
2378 Holly Lane
Ottawa, Ontario, K1V 7P1
Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 17-Nov-09
DATE REPORTED: 07-Dec-09
SAMPLE MATRIX: Drinking Water Raw

JOB/PROJECT NO.: Tara Well Supply
P.O. NUMBER:
WATERWORKS NO. 220002627

			Client I.D.:		Tara Well #4			
			Sample I.D.:		B09-35888-1			
			Date Collected:		16-Nov-09			
Parameter	Units	M.D.L.	Reference Method	Date/Site Analyzed				
Malathion	µg/L	5	EPA 8270	01-Dec-09/K	< 5			
Methoxychlor	µg/L	0.1	EPA 8080	26-Nov-09/K	< 0.1			
Metolachlor	µg/L	3	EPA 8270	01-Dec-09/K	< 3			
Metribuzin	µg/L	3	EPA 8270	01-Dec-09/K	< 3			
Paraquat	µg/L	1	EPA 549.1	03-Dec-09/K	< 1			
Parathion	µg/L	3	EPA 8270	01-Dec-09/K	< 3			
Pentachlorophenol	µg/L	0.1	EPA 8270	01-Dec-09/K	< 0.1			
Phorate	µg/L	0.3	EPA 8270	01-Dec-09/K	< 0.3			
Picloram	µg/L	5	EPA 8270	01-Dec-09/K	< 5			
Poly-Chlorinated Biphenyls (PCB's)	µg/L	0.05	EPA 8080	26-Nov-09/K	< 0.05			
Prometryne	µg/L	0.1	EPA 8270	01-Dec-09/K	< 0.1			
Simazine	µg/L	0.5	EPA 8270	01-Dec-09/K	< 0.5			
Temephos	µg/L	10	EPA 8270	01-Dec-09/K	< 10			
Terbufos	µg/L	0.3	EPA 8270	01-Dec-09/K	< 0.3			
Tetrachlorophenol, 2,3,4,6-	µg/L	0.1	EPA 8270	01-Dec-09/K	< 0.1			
Triallate	µg/L	10	EPA 8270	01-Dec-09/K	< 10			
Trichlorophenol 2,4,6-	µg/L	0.1	EPA 8270	01-Dec-09/K	< 0.1			
Trichlorophenoxy acetic acid, 2,4,5-	µg/L	10	EPA 8270	01-Dec-09/K	< 10			
Trifluralin	µg/L	0.5	EPA 8270	01-Dec-09/K	< 0.5			

1. Subcontracted to Exova Accutest Labs

M.D.L. = Method Detection Limit
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,P-Peterborough,M-Moncton

Greg Clarkin , BSc., C. Chem.
Lab Manager - Ottawa District

Ministry of the Environment
Safe Drinking Water Branch
Floor 19
2 St Clair Ave W
Toronto ON M4V 1L5
Fax: (416)314-1037
Telephone: (416) 314-4625

Ministère de l'Environnement
Direction du contrôle de la qualité de l'eau potable
Étage 19
2 av St Clair Ouest
Toronto ON M4V 1L5
Télécopieur: (416)314-1037
Téléphone : (416) 314-4625

Ontario

September 3, 2009

A.P. Crawford, CAO/Clerk
The Corporation of the Municipality of Arran-Elderslie
1925 Bruce Rd 10, Chesley
Post Office Box, No. 70
Arran-Elderslie, Ontario
N0G 1L0

Dear Ms. Crawford:

Re: Application for Approval of Municipal Drinking Water Systems
Amend C of A 7848-7K8PYY ; Replacement of existing water standpipe
Arran-Elderslie Municipality, County of Bruce
MOE Reference Number 7939-7SPPWM

Please find enclosed an amended Certificate of Approval. This Certificate revokes and replaces Certificate of Approval No. 7848-7K8PYY issued on November 10, 2008.

If you have any questions regarding the above, please contact David Filman, M.A.Sc., P. Eng. at 416-212-3707.

Yours truly,

A. Ahmed

Aziz Ahmed, P. Eng.
Director, Part V, Safe Drinking Water Act

c: District Manager, MOE Owen Sound
Rakesh Sharma, GENIVAR Consultants

Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDED CERTIFICATE OF APPROVAL
MUNICIPAL DRINKING WATER SYSTEMS
NUMBER 6161-7VGQY9
Issue Date: September 4, 2009

The Corporation of the Municipality of Arran-Elderslie
1925 Bruce Rd 10, Chesley
Post Office Box, No. 70
Arran-Elderslie, Ontario
N0G 1L0

Site Location: Tara Water Tower
North End of Tara on Bruce County Road #10
Lot 30, Concession 9
Arran-Elderslie Municipality, County of Bruce

Pursuant to the Safe Drinking Water Act, 2002, S.O. 2002, c. 32, and the regulations made thereunder and subject to the limitations thereof, this approval is issued under Part V of the Safe Drinking Water Act, 2002, S.O. 2002, c. 32 to:

The Corporation of the Municipality of Arran-Elderslie
1925 County Road 10
Post Office Box, No. 70
Chesley, Ontario
N0G 1L0

PART 1 - DRINKING-WATER SYSTEM DESCRIPTION

1.1 for a drinking-water system serving the Village of Tara in the Corporation of the Municipality of Arran-Elderslie, rated as set out in Part 4, consisting of the following:

Proposed Water Works
(as per Application for Approval dated May 26, 2009)

Construction of a new standpipe as follows:

Standpipe

Tara Water Tower

Location	North end of Tara on Bruce County Road 10
UTM Coordinates	NAD 83: UTM Zone 17: 488250 m E, 4925627 m N
Description	Glass-fused-steel standpipe with a top water level of 273.5 m and equalization, fire and emergency storage provided above elevation 267.15 m
Total Volume	3952 m^3 Confirm with Rakesh Feb/11
Useable Volume	849 m^3
Controls	water tower provided with water level sensing instrumentation to monitor water depth and control the cycling of the three pumphouses by means of the SCADA System located in Treatment Plant Building No. 3
Notes	

Other Related Activities

The existing stanpipe is to be demolished upon commissioning of the new standpipe.

Proposed Water Works
(as per Application for Approval dated May 28, 2008)

Pumphouse No. 4 (Well No. 4)

A pumphouse located at 158 Yonge Street North housing Well No. 4 treatment and control equipment as follows:

- a 250 mm diameter 25.91 m deep drilled ground water well, located within the pump house (NAD 83: UTM Zone 17: 488253.00 m E, 4925557.00 m N) equipped with a submersible deep well pump rated at 9.8 L/s with an operating head varying between approximately 42.06 m to 71.08 m complete with variable frequency drive and well level transducer;

- one (1) cartridge filters having a treatment capacity of 28.4 L/s (12.6 L/s, equipped with 5 micron size filter cartridges (1 micron cartridges also acceptable) to be used on the well startup to reduce initial turbidity spikes; confirm with Rakesh Feb/11

- one (1) magnetic flow meter;

- a sodium hypochlorite disinfection system consisting of two (2) chemical metering pumps (one duty and one standby with automatic switch over) and a 200 L sodium hypochlorite solution tank with a secondary containment tank and associated piping, appurtenances and controls;

- 12 m of 600 mm diameter watermain buried (chlorine contact chamber) outside the pumphouse to provide chlorine contact time necessary for well water discharged from Pumphouse No.4;

- one (1) online free chlorine residual analyzer sampling after the chlorine contact chamber;
- one (1) online turbidity analyzer;
- associated SCADA, PLC, and controls.

Existing Water Works

Pumphouse No. 2 (Well No. 2)

A pumphouse located at 59 Market Street housing Well No. 2 treatment and control equipment as follows:

- a 254 mm diameter 118.6 m deep drilled ground water well, located within the pump house (NAD 27: UTM Zone 17: 488649.00 m E, 4924786.00 m N) with a 70 m deep 150 mm diameter casing surrounded by 254 mm diameter casing with grouting provided between the casings over their entire depth equipped with a submersible deep well pump rated at 4.9 L/s at a TDH of 161 m complete with variable frequency drive;
- one (1) cartridge filter having a treatment capacity of 11.03 L/s, equipped with 1 micron size filter cartridges (2 micron minimum required) to be used on the well startup to reduce initial turbidity spikes, complete with a differential pressure monitoring system;
- a sodium hypochlorite disinfection system consisting of two (2) chemical metering pumps (one duty and one standby with automatic switch over) and a 200 L sodium hypochlorite solution tank with a secondary containment tank and associated piping, appurtenances and controls;
- 360 m of 150 mm diameter watermain along River Street, dedicated to provide chlorine contact time necessary for well water discharged from Pumphouse No.2;
- one (1) flow meter and a turbidity analyser.

Pumphouse No. 3 (Well No. 3)

- a 156 mm diameter, 119 m deep drilled groundwater well (5 m west of Pumphouse No. 3, NAD 27: UTM Zone 17: 488530.00 m E, 4924469.00 m N) with a 70 m deep, 150 mm diameter casing with grouting provided over the entire depth, equipped with a pitless adapter, and a submersible deep well pump rated at 5.3 L/s at a TDH of 164 m complete with variable frequency drive.

A pumphouse located at 217 River Street housing Well No. 3 treatment and control equipment as follows:

- one (1) cartridge filter, having a treatment capacity of 11.03 L/s, equipped with 1 micron size filter cartridges (2 micron minimum required) to be used online with the Well No. 3 pump, complete with a differential pressure monitoring system;

- a primary disinfection system using, Ultra Violet (UV) disinfection system consisting of two (2) UV disinfection reactors, one duty, one standby, located after the cartridge filter unit, each unit rated at 11.37 L/s, capable of providing minimum dose of 40 mJ/cm^2 at the end of the lamp life, together with automatic cleaning system, on-line UV intensity monitor with alarm, complete with a portable UV transmittance monitor;

- a sodium hypochlorite disinfection system consisting of two (2) chemical metering pumps (one duty and one standby with automatic switch over) dosing sodium hypochlorite solution at the down stream of the UV units, complete and a 200 L sodium hypochlorite solution tank with a secondary containment tank and associated piping, appurtenances and controls;

- one (1) flow meter and a turbidity analyser;

- a 16.5 m, 600 mm diameter chlorine contact storage chamber located adjacent to the pumphouse;

- one (1) 60 kW natural gas generator set capable of providing power to both pump houses No.2 and No.3 when power failure occurs.

Elevated Water Storage Tank

- an elevated water storage tank located on the northern outskirts of Tara (NAD 27: UTM Zone 17: 488235.00 m E, 4925380.00 m N), having an operating capacity of 284 m^3 and a total capacity of 568 m^3.

1.2 all in accordance with the applications and plans and other supporting documents listed in Schedule "A", and all other Schedules, which are attached to, and form part of this approval, except as specified in the conditions contained herein.

PART 2 - DEFINITIONS AND INFORMATION

2.1 Words and phrases not defined in this approval shall be given the same meaning as those set out in the *Safe Drinking Water Act, 2002* , S.O. 2002, c. 32 and any regulations made in accordance with that act, unless the context requires otherwise.

2.2 In this approval

"adverse effect", "contaminant", "impairment" and "natural environment" shall have the same meanings as in the *Environmental Protection Act* , R.S.O.1990, c. E.19 and the *Ontario Water*

Resources Act, R.S.O.1990, c. O.40;

"approval" means this entire approval document, issued in accordance with section 36 of the *SDWA,* and includes any schedules to it;

Director means a Director appointed pursuant to s. 6 of the *SDWA* for the purposes of Part V of the *SDWA* ;

"drinking-water system" includes the works set out in Part 1;

"provincial officer" means a provincial officer appointed pursuant to s. 8 of the *SDWA* ;

"rated capacity" means the maximum flow rate of water which can be treated when operating the drinking-water system under design conditions;

"SDWA" means the *Safe Drinking Water Act, 2002, S.O. 2002, c. 32,* as amended.

2.3 The following information is applicable to this approval

"owner" is the Corporation of the Municipality of Arran-Elderslie, its successors and assignees

"operating authority" is Oweson Water Services - A division of Oweson Ltd., its successors and assignees.

PART 3 - GENERAL

Compliance

3.1 The owner and operating authority shall operate the drinking-water system in accordance with the *SDWA* , any applicable regulations made thereunder, and this approval.

3.2 Despite any condition of this approval to the contrary, the owner and operating authority set out in Part 2 are jointly and severally liable to comply with all conditions of this approval.

3.3 The owner and operating authority shall ensure that any person authorized to carry out work on or operate any aspect of the drinking-water system has been informed of the *SDWA* , all applicable regulations made in accordance with that act, and this approval and shall take all reasonable measures to ensure any such person complies with the same.

3.4 A copy of this approval shall be kept in a conspicuous place so that it is available for reference by all persons responsible for all or part of the operation of the drinking-water system.

Build, etc. in Accordance

3.5 Except as otherwise provided by this approval, the drinking-water system shall be designed, developed, built, operated and maintained in accordance with Part 1 above and the documentation listed in Schedule "A".

Interpretation

3.6 Where there is a conflict between the provisions of this approval and any other document, the following hierarchy shall be used to determine the provision that takes precedence:

i. The *SDWA* ;

ii. a condition imposed in this approval in accordance with s. 38 of the *SDWA* ;

iii. any regulation made under the *SDWA* ;

iv. this approval;

v. any application documents listed in Schedule "A" from most recent to earliest; and

vi. all other documents listed in Schedule "A" from most recent to earliest.

3.7 The requirements of this approval are severable. If any requirement of this approval, or the application of any requirement of this approval to any circumstance, is held invalid or unenforceable, the application of such requirement to other circumstances and the remainder of this approval shall not be affected thereby.

3.8 Nothing in this approval shall be read to provide relief from the need for strict compliance with the *Environmental Assessment Act,* R.S.O. 1990, c E.18.

Other Legal Obligations

3.9 The issuance of, and compliance with the conditions of, this approval does not:

i. relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement; or

ii. limit in any way the authority of the Ministry to require certain steps be taken or to require the owner to furnish any further information related to compliance with this approval.

3.10 For greater clarity, nothing in this approval shall be read to provide relief from regulatory requirements in accordance with section 38 of the *SDWA* , except as provided in Part 9.

Adverse Effects

3.11 Nothing in this approval shall be read as to permit: i) the discharge of a contaminant into the natural environment that causes or is likely to cause an adverse effect; or ii) the discharge of any material of any kind into or in any waters or on any shore or bank thereof or into or in any place that may impair the quality of the water of any waters.

3.12 All reasonable steps shall be taken to minimize and ameliorate any adverse effect on the natural environment or impairment of the quality of water of any waters resulting from the operation of the drinking-water system including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the effect or impairment.

3.13 Fulfillment of one or more conditions imposed by this approval does not eliminate the requirement to fulfill any other condition of this approval or the requirements of any applicable statute, regulation, or other legal requirement resulting from any act or omission that causes or is likely to cause an adverse effect on the natural environment or the impairment of water quality.

Change of Owner

3.14 The owner or the operating authority, as the case may be, shall notify the Director, in writing, of any of the following changes within 30 days of the change occurring:

i. change of owner or operating authority;

ii. change of address;

iii. change of partners where the owner is or at any time becomes a partnership, and a copy of the most recent declaration filed under the *Business Names Act* , R.S.O. 1990, c. B17; or

iv. change of name of the corporation where the owner or operating authority is or at any time becomes a corporation, and a copy of the most current information filed under the *Corporations Information Act* , R.S.O. 1990, c. C.39.

3.15 In the event of any change in ownership of the drinking-water system, other than change to a successor municipality, the owner shall notify the successor of and provide the successor with a copy of this approval, and the owner shall provide a copy of the notification to the district manager of the local office of the Ministry and the Director.

Inspections

3.16 No person shall hinder or obstruct a provincial officer in the performance of his or her duties, including any and all inspections authorized by the *SDWA* .

Information

3.17 Any information requested, by the Ministry, concerning the drinking-water system and its operation under this approval, including but not limited to any records required to be kept by this

approval shall be provided to the Ministry, upon request.

3.18 Records required by or created in accordance with this approval, unless specifically referenced in s. 12 of O. Reg. 170/03, shall be retained for at least 5 years in a location where a provincial officer who is inspecting the treatment system can conveniently view them.

PART 4 - PERFORMANCE

Rated Capacity

4.1 The drinking-water systems shall not be operated to exceed the rated capacities for the maximum total flows into the distribution system as set out below:

Treatment System	Maximum Flow Rate (m^3/day)
Well Pumphouse No.2	423
Well Pumphouse No.3	458
Well Pumphouse No. 4	852

Increase to Rated Capacity

4.2 Despite condition 4.1, the drinking water systems may be operated at rates above the rated capacities set out in condition 4.1 where necessary for:

i. fighting a large fire; or

ii. the maintenance of the drinking-water system.

4.3 Condition 4.2 shall not be construed to allow drinking-water to be supplied that does not meet all other applicable standards and legal requirements.

Performance of UV Disinfection Equipment

4.4 The UV disinfection equipment shall be installed and operated such that a continuous pass-through UV dose of at least 40 mJ/cm^2 is maintained throughout the life time of the UV lamp(s).

PART 5 - MONITORING AND RECORDING

Flow measuring devices

5.1 Install a sufficient number of flow-measuring devices within the drinking-water system to permit continuous measurement and recording of:

i. the flow rates of water conveyed into the individual treatment systems identified in Part 4, and the daily volumes of water conveyed into the individual treatment systems identified in Part 4; and

ii. the flow rates and daily volumes of water conveyed to the distribution system from each treatment system that has a separate line feeding the distribution system.

5.2 Records shall be maintained that set out the parameters recorded in accordance with condition 5.1, and where a measured flow rate into the distribution system for a calendar day exceeds the flow rates set out in Part 4, the amount and date of the exceedence shall also be recorded.

Calibration of flow measuring devices

5.3 All flow measuring devices must be checked and calibrated in accordance with the manufacturer' s instructions.

5.4 If the manufacturer's instructions do not indicate how often to check and calibrate the flow measuring devices, the equipment must be checked and calibrated at least once every year during which the drinking-water system is in operation.

UV Disinfection Equipment

5.5 In addition to any other sampling, analysis and recording that may be required, continuous monitoring and recording (unless otherwise stated below) shall be carried out for the following parameters related to the performance of the UV disinfection equipment:

- UV intensity (continuous monitoring, recorded at every incidence of the UV units generating an alarm condition)
- Flow rate
- UV transmittance for Well No. 3 (to be monitored and recorded once every month using a portable measuring device or tested by an accredited laboratory)
- UV lamp status (continuous monitoring, recorded at every incidence of the UV units generating an alarm condition)

PART 6 - OPERATIONS AND MAINTENANCE

Chemical standards

6.1 All chemicals and materials used in the operation of the drinking-water system that come into contact with water within the system shall meet all applicable standards set by both the American Water Works Association ("AWWA") and the American National Standards Institute ("ANSI") safety criteria standards NSF/60 and NSF/61.

6.2 The most current chemical and material product registration documentation from a testing institution accredited by either the Standards Council of Canada or by the American National Standards Institution shall be available at all times for each chemical and material used in the operation of the drinking-water system that comes into contact with water within the system.

6.3 Conditions 6.1 and 6.2 do not apply in the context of any particular chemical or material where the Owner has written documentation signed by the Director that indicates that the Ministry is satisfied that the chemical or material is acceptable for use within the drinking-water system and that chemical or material is only used as permitted by the documentation.

Operations manual

6.4 An up-to-date operations manual shall be maintained and available for reference by all persons responsible for all or part of the operation of the drinking-water system.

6.5 The operations manual shall include at a minimum:

i. the requirements of this approval and associated procedures;

ii. the operation and maintenance recommendations from the most recent engineers' report;

iii. procedures for the monitoring and recording of in-process parameters necessary for the control of the treatment system and assessing the performance of the drinking-water system;

iv. procedures for the operation and maintenance of monitoring equipment;

v. contingency plans and procedures for the provision of adequate equipment and material to deal with emergencies, upset and equipment breakdown;

vi. procedures for the dealing with complaints related to the drinking-water system, including the recording of the nature of the complaint and any investigation and corrective action taken in respect of the complaint;

vii. an inspection schedule for all wells associated with the water treatment system(s), including all production wells, standby wells, test wells and monitoring wells;

viii. defined well inspection and maintenance procedures for the entire well structure of each well, including all above and below grade well components;

ix. remedial action plans for situations where an inspection indicates non-compliance with respect to regulatory requirements and/or risk to raw well water quality.

6.6 Procedures necessary to the operation of any physical alterations of the drinking-water system shall be incorporated into the operations manual prior to the alterations coming into operation.

Drawings

6.7 Up-to-date Process Flow Diagrams (PFD) and Process and Instrumentation Diagrams (P&ID) for the treatment system shall be kept on site at the drinking water system.

6.8 All drawings and diagrams in the possession of the owner or operating authority that show the treatment system as constructed shall be retained.

6.9 An alteration to the treatment system shall be incorporated into Process Flow Diagrams (PFD), Process and Instrumentation Diagrams (P&ID), and record drawings and diagrams within one year of the substantial completion of the alteration and shall be retained and shall be made readily available for inspection by Ministry staff.

PART 7 - FUTURE ALTERATIONS

Approved future alterations

7.1 *Not Applicable*

Certificate of compliance

7.2 *Not Applicable*

PART 8 - STUDIES AND UPGRADES REQUIRED

8.1 Submit a report to the Director that reviews the raw and treated water quality of Well No. 4 during the first six (6) months that the well was in operation (i.e. supplying treated water to the distribution system) including, but not limited to, the following:

- all collected raw and treated water sample data
- an analysis of the data noting any significant changes in both raw and treated water quality and reasons for any changes

8.2 The report noted in Condition 8.1 above is to be submitted to the Director no later than nine (9) months from the date that Well No. 4 is put into production (i.e. supplying treated water to the distribution system).

Requirement not an approval

8.3 The owner shall not construct any works required by this part until all associated approvals, licenses and permits have been obtained from the Ministry.

PART 9 - RELIEF FROM REGULATORY REQUIREMENTS

Relief from regulatory requirements

9.1 *Not Applicable*

Conditions in exchange for relief from regulatory requirements

9.2 *Not Applicable*

SCHEDULE - A

The following supporting documents form part of this approval.

1. Application dated May 26, 2009
   - Design Report dated May, 2009, prepared by Genivar Consultants
   - Plans and Specifications dated July, 2009, prepared by Genivar Consultants
   - Geotechnical Report dated July 2009, prepared by Golder Associates

2. Application dated April 30, 2003
   - Correspondence from Henderson, Paddon & Associates Ltd., dated April 30, 2003
   - Henderson, Paddon & Associates Well No. 3 schematic dated Dec. 2002
   - Henderson, Paddon & Associates Well No. 2 and Well No. 3 process flow diagrams dated Feb. 2003
   - Correspondence from HP & A, dated May 14, 2000 including modified Well No.3 schematic dated May 2003.
   - Correspondence from The Corporation of the Municipality of Arran-Elderslie to MOE dated December 19, 2002

3. Application dated December 4, 2003
   - Correspondence dated December 8, 2003, signed by Rakesh Sharma, P.Eng., Henderson, Paddon and Associates Limited
   - Correspondence dated July 9, 2003, signed by Rakesh Sharma, P.Eng., Henderson, Paddon and Associates Limited
   - Correspondence dated March 3, 2004, signed by Rakesh Sharma, P.Eng., Henderson, Paddon and Associates Limited

4. Application dated March 30, 2005
   - Correspondence dated March 31, 2005, from Henderson Paddon & Associates Limited
   - Final Plans and Specifications dated March 2005
   - "Design Brief Upgrades to Tara Water Works Pumphouses No.2 and 3 Municipality of Arran-Elderslie" dated March 2005, prepared by Henderson Paddon & Associates Limited

- Correspondence dated May 5, 2005, from Henderson Paddon & Associates Limited together with:
  - Report entitled "Hydrogeological Study Report Tara Water Works Well #2 Municipality of Arran-Elderslie" dated January 2004, prepared by Henderson Paddon & Associates Limited
  - Report entitled "Hydrogeological Study Report Tara Water Works Well #3 Municipality of Arran-Elderslie" dated June 2004, prepared by Henderson Paddon & Associates Limited
- Correspondence dated May 10, 2005, from Henderson Paddon & Associates Limited
- Correspondence dated July 2, 2005, from Henderson Paddon & Associates Limited
- Correspondence dated July 15, 2005, from Henderson Paddon & Associates Limited together with:
  - "Design Brief Upgrades to Tara Water Works Pumphouses No.2 and 3 Municipality of Arran-Elderslie" revised July 2005, prepared by Henderson Paddon & Associates Limited
  - Final plans dated July 2005
- Correspondence dated July 15, 2005, from Henderson Paddon & Associates Limited together with:
  - Report entitled "Application for Approval Under the Safe Drinking Water Act (Air and Noise) Upgrades to Tara Water Works Standby Natural Gas Generator Set Municipality of Arran-Elderslie" dated July 2005, prepared by Henderson Paddon & Associates
- Correspondence dated November 8, 2005, from Henderson Paddon & Associates Limited
- Correspondence dated December 1, 2005, from Henderson Paddon & Associates Limited

5. Application dated January 16, 2008
   - Emails dated March 3, 18 2008 from MOE to Henderson Paddon
   - Emails dated March 18, 26 2008 from Henderson Paddon to MOE

6. Application dated May 28, 2008
   - Design brief dated May 2008 prepared by Henderson Paddon and Associates Ltd.
   - Permit To Take Water 3285-7HUKRE dated August 25, 2008

7. The original applications for approval, including design calculations, engineering drawings and reports, and other supporting documents prepared in support of any previous certificate(s) of approval issued for any works now approved and replaced by this approval, unless this approval states otherwise.

This Certificate of Approval revokes and replaces Certificate(s) of Approval No. 7848-7K8PYY issued on November 10, 2008

All or part of this decision may be reviewable in accordance with the provisions of Part X of the SDWA. In accordance with Section 129(1) of the Safe Drinking Water Act, Chapter 32 Statutes of Ontario, 2002, as amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this notice, require a hearing by the Tribunal. Section 129(2) sets out a procedure upon which

the 15 days may be extended by the Tribunal. Section 129(3) of the Safe Drinking Water Act, Chapter 32 Statutes of Ontario, 2002, provides that the Notice requiring the hearing shall state:

1. The aspect of the decision, including the portion of the permit, licence, approval, order or notice of administrative penalty in respect of which the hearing is required; and
2. The grounds for review to be relied on by the person at the hearing

Except with leave of the Tribunal, a person requiring a hearing in relation to a reviewable decision is not entitled to,
(a) a review of an aspect of the decision other than that stated in the notice requiring the hearing or
(b) a review of the decision other than on the grounds stated in the notice

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the works are located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto, Ontario
M5G 1E5

AND

The Director
Part V, *Safe Drinking Water Act, 2002*
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted water works are approved under Part V of the Safe Drinking Water Act.

DATED AT TORONTO this 4th day of September, 2009

A. Ahmed

Aziz Ahmed, P.Eng.
Director
Part V *of the Safe Drinking Water Act,*

DF/

c: District Manager, MOE Owen Sound
Rakesh Sharma, GENIVAR Consultants

APPENDIX G

WATER METER CALIBRATION

Endress Hauser ProMag Series
Verification Report

AS FOUND CERTIFICATION

FORWARD FLOW DIRECTION

PASS

CLIENT DETAIL

CUSTOMER	Municipality of Arran-Elderslie
CONTACT	Mark O'leary
	Water Foreman
	T: 519-363-3039
	C: 519-270-1929
	E: water@arran-elderslie.ca

VER. BY - FM *Paris Machuk*

Quality Management Standards Information - Reference equipment and instrumentation used to conduct this verification test is found in our AC-QMS document at the time this test was

EQUIPMENT DETAIL

[MUT] MANUFACTURER	ENDRESS & HAUSER
MODEL	Promag 53W
CONVERTER S/N:	83037416000
FUSE	On board Pull Plug
PLANT ID	Tara Well #2
METER ID	Treated Water Flow
FIT ID	N/A
CLIENT TAG	N/A
OTHER	N/A
GPS COORDINATES	N44 28.705 W081 8.551
VERIFICATION DATE	April 23, 2019
CAL. FREQUENCY	Annual
CAL. DUE DATE	April, 2020

PROGRAMMING PARAMETERS

DIAMETER (DN)	mm	80
F.S. FLOW - MAG	LPS	50.264
F.S. RANGE - O/P	LPS	12.618
TUBE k-FACTOR		1.00840
TUBE zero		0

FORWARD TOTALIZER INFORMATION

AS FOUND	565505.5	M3
AS LEFT	565509.3	M3
DIFFERENCE	3.8	M3

TEST CRITERIA

AS FOUND CERTIFICATION TEST	Yes
FORWARD FLOW DIRECTION	Yes
ALLOWABLE [%] ERROR	5

COMPONENTS TESTED

CONVERTER DISPLAY	Yes
mA OUTPUT	Yes
TOTALIZER	Yes
ACCURACY BASED ON [% o.r.]	Yes

ERROR DOCUMENTED IN THIS REPORT; BASED ON % o.r.

FLOW TUBE SIMULATION

				0.0	3.2	6.3	9.5	12.6	LPS
				0.0	6.3	12.6	18.8	25.1	% F.S. Flow
				0.0	25.0	50.0	75.0	100.0	% F.S. Range
REF. FLOW RATE				**0.0000**	**3.1545**	**6.3090**	**9.4635**	**12.6180**	LPS
MUT [Reading]				0.0000	3.1550	6.3082	9.4646	12.6210	LPS
MUT [Difference]				0.0000	0.0005	-0.0008	0.0011	0.0030	LPS
MUT [% Error]				n/a	0.02	-0.01	0.00	0.02	%
mA OUTPUT				**4.000**	**8.000**	**12.000**	**16.000**	**20.000**	mA
MUT [Reading]	min.	4	mA	3.997	7.997	11.993	15.995	19.998	mA
MUT [Difference]	max.	20	mA	-0.003	-0.003	-0.007	-0.005	-0.002	mA
MUT [% Error]				-0.08	-0.04	-0.06	-0.03	-0.01	%

TOTALIZER			
REF. FLOW RATE	**12.618**	LPS
TOTALIZER [MUT]	1.3	M3
TEST TIME	106.63	SECONDS
TOTALIZER [REF]	1.345	M3
ERROR	-3.50	%

COMMENTS

QUALITY MANAGEMENT STANDARDS INFO.

[QMS] INFORMATION	IDENT.	ID #
[REFERENCE] FTS	E&H-FC	3
PROCESS METER	DMM	11
ANALOG METER	AM	N/A
STOP WATCH	SW	Yes

RESULTS

TEST	AVG % o.r.	PASS FAIL
DISPLAY	0.01	PASS
mA OUTPUT	-0.04	PASS
TOTALIZER	-3.50	PASS

This report reflects the test results of the overall accuracy for the above flow converter using the specified manufacturers flow tube simulator to within the specified tolerance as identified within this report.

Endress Hauser ProMag Series
Verification Report

AS FOUND CERTIFICATION

FORWARD FLOW DIRECTION

PASS

CLIENT DETAIL

CUSTOMER	Municipality of Arran-Elderslie
CONTACT	Mark O'leary
	Water Foreman
	T: 519-363-3039
	C: 519-270-1929
	E: water@arran-elderslie.ca

VER. BY - FM *Paris Machuk*

Quality Management Standards Information - Reference equipment and instrumentation used to conduct this verification test is found in our AC-QMS document at the time this test was

EQUIPMENT DETAIL

[MUT] MANUFACTURER	ENDRESS & HAUSER
MODEL	Promag 53W
CONVERTER S/N:	H603A516000
FUSE	On board Pull Plug
PLANT ID	Tara Well #3
METER ID	Treated Water Flow
FIT ID	N/A
CLIENT TAG	N/A
OTHER	N/A
GPS COORDINATES	N44 28.524 W081 8.638
VERIFICATION DATE	April 23, 2019
CAL. FREQUENCY	Annual
CAL. DUE DATE	April, 2020

PROGRAMMING PARAMETERS

DIAMETER (DN)	mm	80
F.S. FLOW - MAG	LPS	50.264
F.S. RANGE - O/P	LPS	10.000
TUBE k-FACTOR		1.03910
TUBE zero		4

FORWARD TOTALIZER INFORMATION

AS FOUND	212816.4	M3
AS LEFT	212818.9	M3
DIFFERENCE	2.5	M3

TEST CRITERIA

AS FOUND CERTIFICATION TEST	Yes
FORWARD FLOW DIRECTION	Yes
ALLOWABLE [%] ERROR	5

COMPONENTS TESTED

CONVERTER DISPLAY	Yes
mA OUTPUT	Yes
TOTALIZER	Yes
ACCURACY BASED ON [% o.r.]	Yes

ERROR DOCUMENTED IN THIS REPORT; BASED ON % o.r.

FLOW TUBE SIMULATION

				0.0	2.5	5.0	7.5	10.0	LPS
				0.0	5.0	9.9	14.9	19.9	% F.S. Flow
				0.0	25.0	50.0	75.0	100.0	% F.S. Range
REF. FLOW RATE				**0.0000**	**2.5000**	**5.0000**	**7.5000**	**10.0000**	LPS
MUT [Reading]				0.0000	2.5004	5.0060	7.5011	10.0020	LPS
MUT [Difference]				0.0000	0.0004	0.0060	0.0011	0.0020	LPS
MUT [% Error]				n/a	0.02	0.12	0.00	0.02	%
mA OUTPUT				**4.000**	**8.000**	**12.000**	**16.000**	**20.000**	mA
MUT [Reading]	min.	4	mA	3.997	7.994	11.996	15.993	19.991	mA
MUT [Difference]	max.	20	mA	-0.003	-0.006	-0.004	-0.007	-0.009	mA
MUT [% Error]				-0.08	-0.08	-0.03	-0.04	-0.05	%

TOTALIZER			
REF. FLOW RATE	**10.000**	LPS
TOTALIZER [MUT]	0.8	M3
TEST TIME	81.56	SECONDS
TOTALIZER [REF]	0.816	M3
ERROR	-1.95	%

COMMENTS

QUALITY MANAGEMENT STANDARDS INFO.

[QMS] INFORMATION	IDENT.	ID #
[REFERENCE] FTS	E&H-FC	3
PROCESS METER	DMM	11
ANALOG METER	AM	N/A
STOP WATCH	SW	Yes

RESULTS

TEST	AVG % o.r.	PASS FAIL
DISPLAY	0.04	PASS
mA OUTPUT	-0.05	PASS
TOTALIZER	-1.95	PASS

This report reflects the test results of the overall accuracy for the above flow converter using the specified manufacturers flow tube simulator to within the specified tolerance as identified within this report.

Endress Hauser ProMag Series
Verification Report

AS FOUND CERTIFICATION

FORWARD FLOW DIRECTION

PASS

CLIENT DETAIL

CUSTOMER	Municipality of Arran-Elderslie
CONTACT	Mark O'leary
	Water Foreman
	T: 519-363-3039
	C: 519-270-1929
	E: water@arran-elderslie.ca

VER. BY - FM *Paris Machuk*

Quality Management Standards Information - Reference equipment and instrumentation used to conduct this verification test is found in our AC-QMS document at the time this test was

EQUIPMENT DETAIL

[MUT] MANUFACTURER	ENDRESS & HAUSER
MODEL	Promag 50W
CONVERTER S/N:	C5026216000
FUSE	On board Pull Plug
PLANT ID	Tara Well #4
METER ID	Treated Water Flow
FIT ID	N/A
CLIENT TAG	N/A
OTHER	N/A
GPS COORDINATES	N44 28.986 W081 8.850
VERIFICATION DATE	April 23, 2019
CAL. FREQUENCY	Annual
CAL. DUE DATE	April, 2020

PROGRAMMING PARAMETERS

DIAMETER (DN)	mm	80
F.S. FLOW - MAG	LPS	50.264
F.S. RANGE - O/P	LPS	15.000
TUBE k-FACTOR		1.05410
TUBE zero		7

FORWARD TOTALIZER INFORMATION

AS FOUND	627242	M3
AS LEFT	627248	M3
DIFFERENCE	6	M3

TEST CRITERIA

AS FOUND CERTIFICATION TEST	Yes
FORWARD FLOW DIRECTION	Yes
ALLOWABLE [%] ERROR	5

COMPONENTS TESTED

CONVERTER DISPLAY	Yes
mA OUTPUT	Yes
TOTALIZER	Yes
ACCURACY BASED ON [% o.r.]	Yes

ERROR DOCUMENTED IN THIS REPORT; BASED ON % o.r.

FLOW TUBE SIMULATION

				0.0	3.8	7.5	11.3	15.0	LPS
				0.0	7.5	14.9	22.4	29.8	% F.S. Flow
				0.0	25.0	50.0	75.0	100.0	% F.S. Range
REF. FLOW RATE				**0.0000**	**3.7500**	**7.5000**	**11.2500**	**15.0000**	LPS
MUT [Reading]				0.0000	3.7449	7.4944	11.2380	14.9900	LPS
MUT [Difference]				0.0000	-0.0051	-0.0056	-0.0120	-0.0100	LPS
MUT [% Error]				n/a	-0.14	-0.07	0.00	-0.07	%
mA OUTPUT				**4.000**	**8.000**	**12.000**	**16.000**	**20.000**	mA
MUT [Reading]	min.	4	mA	3.998	7.991	11.988	15.982	19.983	mA
MUT [Difference]	max.	20	mA	-0.002	-0.009	-0.012	-0.018	-0.017	mA
MUT [% Error]				-0.05	-0.11	-0.10	-0.11	-0.08	%

TOTALIZER	**REF. FLOW RATE**	**15.000**	LPS
	TOTALIZER [MUT]	2.0	M3
	TEST TIME	137.11	SECONDS
	TOTALIZER [REF]	2.057	M3
	ERROR	-2.83	%

COMMENTS

QUALITY MANAGEMENT STANDARDS INFO.

[QMS] INFORMATION	IDENT.	ID #
[REFERENCE] FTS	E&H-FC	3
PROCESS METER	DMM	11
ANALOG METER	AM	N/A
STOP WATCH	SW	Yes

RESULTS

TEST	AVG % o.r.	PASS FAIL
DISPLAY	-0.07	PASS
mA OUTPUT	-0.09	PASS
TOTALIZER	-2.83	PASS

This report reflects the test results of the overall accuracy for the above flow converter using the specified manufacturers flow tube simulator to within the specified tolerance as identified within this report.