



2014 Summary Report

for the

Town of Minto

**MINTO PINES SUBDIVISION
DRINKING WATER SYSTEM**

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1.0 INTRODUCTION

1.1 Background

In December 2002, the Safe Drinking Water Act (SDWA) was enacted. Subsequently, on June 1, 2003, under the SDWA, a new '*Drinking-Water Systems Regulation*', Ontario Regulation 170/03 (O. Reg. 170/03), was enacted. In addition, several supporting regulations and procedures were also enacted to assist with the administration of O. Reg 170/03. The list of relevant drinking-water legislation is presented in Appendix A.

The SDWA identifies the responsibilities of owners and operating authorities of municipal drinking water systems (SDWA, Sections 11 and 19). Their duties include ensuring that:

- All water provided by the drinking-water system meets prescribed drinking-water quality standards;
- The drinking-water system is operated in accordance with the Act and regulations and is kept in a good state of repair;
- All facilities are appropriately staffed and supervised;
- All sampling, testing and monitoring requirements are complied with;
- All reporting requirements are complied with; and
- Only persons holding valid operator's certificates operate the drinking-water-system.

O. Reg. 170/03 establishes the standard for protection of drinking water. It includes sets of schedules, specific to municipal residential systems that define requirements for:

- Minimum treatment levels;
- Operational checks;
- Chemical and microbiological sampling and testing;
- Adverse results reporting;
- Corrective procedures; and
- Report documentation and retention.

The system's Municipal Drinking Water Licence (MDWL), Drinking Water Works Permit (DWWP) and Permit To Take Water (PTTW) imposes system specific rules and conditions applicable to the standards set out in O. Reg. 170/03.

1.2 Objective

This Summary Report for the Minto Pines Drinking Water System is being prepared in fulfillment of Schedule 22 of O. Reg. 170/03, and will be given to members of the Municipal Council. It covers the period from January 1, 2014 to December 31, 2014.

This Summary Report lists any requirements of the Act, the regulations, the PTTW, the MDWL, the DWWP and any order that the system failed to meet, during the period of this report. For any such failure, the measures that were taken to correct the failure are detailed. The report also includes relevant information that will assist the Town of Minto to assess the water work's capability to meet existing and future planned uses of the system.

1.3 Description of Drinking Water System

Minto Pines is a subdivision located within the Town of Minto at the northwest corner of Wellington County. The subdivision consists of 35 single-family estate residence lots. It was a private subdivision until December 2003, when the Town of Minto took it over.

Minto Pines subdivision is serviced by a single primary production well that is located within a wellhouse. The well is equipped with a submersible well pump, which is capable of supplying water at a rate of 3.78 L/s at a total dynamic head of 90 m. The well has a 200 mm diameter casing that extends to a depth of 23.9 m. The total depth of the well is 41.5 m.

Raw ground water is discharged into the wellhouse for flow measurement and treatment. In the wellhouse, the raw water supply is injected with 12% sodium hypochlorite for disinfection.

The wellhouse is equipped with alarms for chlorination system failure (*and corresponding lockout of the well pump*), low distribution water pressure and intrusion. The wellhouse has continuous monitoring analyzers for chlorine. In the event of a power outage, the wellhouse is equipped with an automatic back-up power supply.

The treated water leaves the wellhouse and enters an underground contact pipe and is discharged into the distribution system after adequate contact time is achieved.

A SCADA System provides monitoring and data capabilities. The SCADA System continuously monitors pre and post contact pipe free chlorine residuals and flows. The data is transmitted to the Harriston Shop where "off site" information is available for monitoring purposes.

The Minto Pines Drinking Water System operates under MDWL 106-104, DWWP 106-204, and PTTW #6114-8QKKLE.

2.0 SUMMARY OF UPGRADES

2.1 Upgrades Completed in 2014

The disinfection treatment system in the Minto Pines Drinking Water System meets all of the standards imposed by O. Reg. 170/03 and the MOE's "*Procedures for Disinfection of Drinking Water in Ontario*".

Typically, maintaining the system includes repairs and/or replacement of individual components as necessary. In 2014 no capital projects were necessary.

The following purchases were made on equipment that is shared between all of Minto's water systems. \$13,890.00 on a truck to share with the roads and wastewater departments, \$24,425.00 on new generators, \$225.00 on emergency lights, \$1,115.00 on computer equipment, \$500,000.00 on the water meter installation program and \$3,715.00 on the Water and Wastewater rate study and Financial Plan.

Preventative maintenance measures are being followed to ensure proper operation of the Drinking Water System.

2.2 Upgrades Scheduled to be Completed in 2015

There are no upgrades scheduled for the Minto Pines Drinking Water System in 2015.

In 2015 the following will be purchased to be shared within the water department.

One vehicle replacement for approximately \$45,000.00, upgrades to the SCADA system at an estimated cost of \$100,000.00, \$30,000.00 on the water meter installation program, \$26,000.00 on a rate study, \$25,000.00 on a vacuum trailer and \$3,500.00 on hydrants.

3.0 OPERATION OF THE DRINKING WATER SYSTEM

3.1 Summary of the Quantities and Flow Rates of Water Supplied

O. Reg. 170/03 stipulates that a summary of the quantities and flow rates of the water supplied from the Minto Pines Well must be included in the Summary Report. Table 3.1 provides a summary of quantities and flow rates supplied during 2014, on a monthly basis.

Table 3.1
Minto Pines Drinking Water System
Treated Water Flow, Turbidity, and Disinfectant Residual
January 1, 2014 – December 31, 2014

Month	Raw Water Flow (Max Flow Rate = 3.8 L/s)			Chlorine	Monthly Averages				Distribution System Disinfectant	
	Instantaneous Peak Flow (L/s)	Maximum Day Flow (m ³ /day)	Monthly Total (m ³)		Treated Water Turbidity		Treated Water Disinfectant		No. of Dis. Samples Collected	No. of Samples with Detectable Residual
					No. of Samples Collected	Daily Average Turbidity	No. of Treated Samples Collected	Average Residual (mg/L)		
January	3.3	20.0	540	8	2	0.46	22	1.23	22	22
February	3.3	18.0	472	7	0		20	1.28	20	20
March	3.3	23.0	559	7.75	0		22	1.13	21	21
April	3.3	23.0	665	11.5	4	0.23	21	1.18	21	21
May	3.3	33.0	639	4	3	0.52	22	1.11	22	22
June	3.3	27.0	728	8.5	3	0.56	21	1.14	21	21
July	3.3	23.0	633	8	4	0.43	22	1.19	22	22
August	3.3	21.0	601	17.1	7	0.25	22	1.12	22	22
September	3.4	21.0	547	7	5	0.20	21	1.19	21	21
October	3.4	27.0	534	9.75	2	0.31	23	1.25	23	23
November	3.4	19.0	468	6.75	2	0.28	19	1.32	19	19
December	3.4	18.4	554	13	5	0.24	22	1.27	22	22
Total			6,940	108.1	37		257		256	256
Average	3.3		578			0.35		1.20		
Maximum		33								

* monitored continuously

Disinfectant Compound Used: 12% Sodium Hypochlorite
 Form of Residual Displayed: Free
 Quantity of Disinfectant Used During 2014: 108.1 L
 Distribution System Target Residual: 0.2 mg/L

3.2 Comparison of Actual Rates and Maximum Allowable Rates

O. Reg. 170/03 stipulates that a summary of the quantities and flow rates of the water supplied from the Minto Pines well be included in the Summary Report and compared against the rated capacity and flow rate for the system.

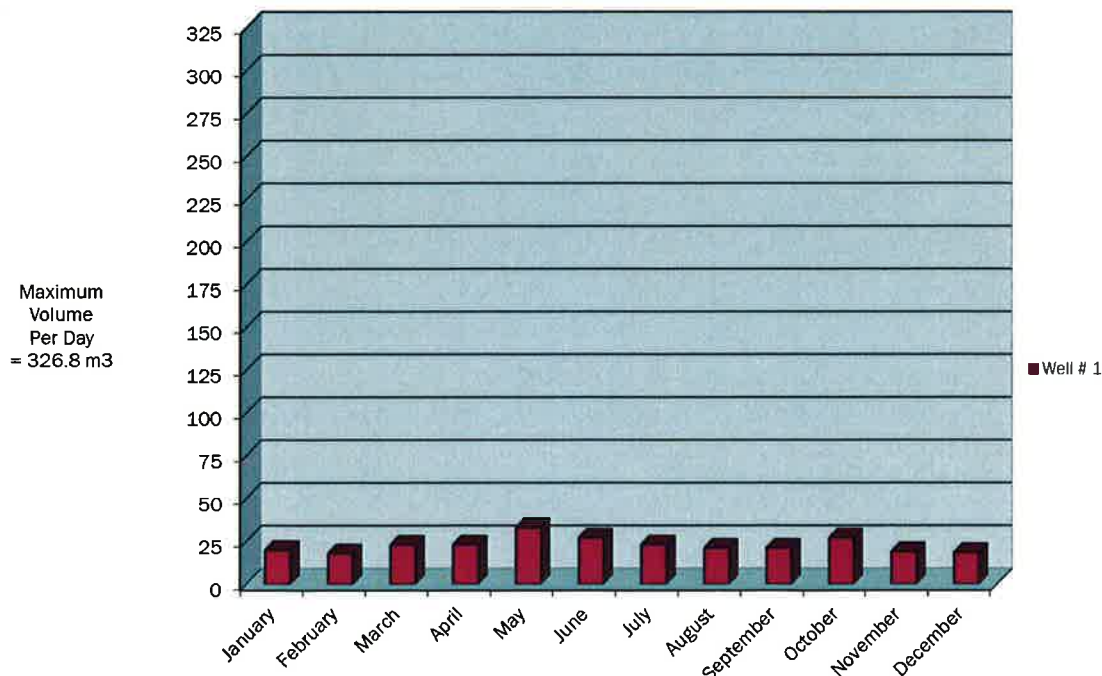
The SCADA system continuously monitors the flow rate of the water being pumped. As such, a comparison of the instantaneous peak flow to the PTTW's rated capacity is included and a comparison of the maximum daily flow to the MDWL's rated capacity is included in Table 3.2.

Table 3.2
Comparison of Flow Rates and Flow Capacities
TO
Rated Flow Rate (PTTW) and Rated Capacity (MDWL)

Well Supply	PTTW Max. Flow Rate	Maximum Instantaneous Peak Flow	Percent of Maximum Allowable	MDWL Schedule C Maximum Daily Quantity	PTTW Maximum Daily Flow	Percent of Maximum Allowable
	L/s	L/s	%	m ³ /day	m ³ /day	%
Well #1	3.8	3.4	88	326.8	33	10

The MDWL stipulates, "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 Schedule C Table 1."

Table 3.3
Maximum Water Usage Per Day by Month



Short-term peaks, in excess of permitted values, may occur at pump start up, while doing specific maintenance procedures or during emergency demand situations. An occurrence of this nature is not considered an exceedance.

The time and duration of any flow exceedance is recorded for each event along with the reason for the occurrence. There were no exceedances of the allowable flow rates in the Minto Pines Drinking Water System.

3.3 Raw Water Quality and Required Treatment

The Minto Pines Drinking Water System has no naturally occurring chemical parameters that exceed MAC or IMAC limits.

The Minto Pines wellhouse utilizes continuous monitoring analyzers for free chlorine residual. The chlorine analyzer is equipped with an alarm to a call centre who contacts the Town of Minto. The average monthly turbidity and free chlorine residual measurement for treated water are presented in Table 3.1.

There were no high turbidity readings (>1.0 NTU) experienced in 2014. Turbidity readings for raw water ranged from a minimum monthly value of 0.10 NTU to a maximum monthly value of 0.60 NTU. The average turbidity reading for the year was 0.29 NTU.

12% Sodium Hypochlorite is the disinfectant used. The monthly average free chlorine residual in water leaving the wellhouse, ranged between 0.91 mg/L and 1.47 mg/L. The annual average free chlorine residual leaving the wellhouse was 1.20 mg/L. The free chlorine residual in the distribution system ranged between 0.62 mg/L and 1.64 mg/L.

O. Reg. 170/03, Schedule 1-2 stipulates that the free chlorine residual can never be less than 0.05 mg/L. In addition, O. Reg. 170-03, Schedule 1-4 stipulates that the water treatment equipment must be “...capable of achieving, at all locations with the distribution system, a free chlorine residual of 0.2 mg/L ...”. The Minto Pines Drinking Water System meets both of these requirements.

3.4 Summary of Treatment Chemicals Used

The disinfectant chemical used in the Minto Pines Drinking Water System is 12% Sodium Hypochlorite. Measurements of free chlorine residuals are recorded on a continuous basis. In 2014, a total of 108.1 L of Sodium Hypochlorite was used; the average dosage rate was 1.87 mg/L.

**Table 3.4
 2014 Annual Summary of
 Treatment Chemical Used
 for Minto Pines Drinking Water System**

Treatment Chemical	Well	Volume Used	Mass Used	Annual Flow	Dosage Rate
		L	kg	m ³	mg/L
12 % Sodium Hypochlorite	Well #1	108.1	13.0	6940	1.87

4.0 COMPLIANCE

4.1 Assessment of Compliance

The objective of the Summary Report is to list any requirements of the Act, the regulations, the PTTW, the MDWL, the DWWP and any MOE order that the system failed to meet from January 1, 2014 to December 31, 2014, and the corresponding corrective measure(s) taken. Compliance was assessed as follows:

- There were no **MOE Orders** issued to the Minto Pines Drinking Water System in 2014.
- The MDWL imposes the specific rules and conditions governing the standards set out in O. Reg. 170/03. It is an important instrument in defining the requirements of compliance of a Drinking Water System.
- O. Reg. 170/03 establishes the standard for protection of drinking water; specifically, through 12 schedules that municipal residential drinking systems must follow to meet the requirements of the regulation.
- The SDWA clearly identifies the responsibilities of owners and operating authorities of municipal drinking water systems. It places a recommended statutory standard of care on those who have oversight of municipal drinking-water systems. In essence, the standard of care has two themes: be informed and exercise diligent oversight.

4.2 Summary of Compliance

To the best of our knowledge and ability we are in, or diligently working towards, compliance with all of the requirements of the SDWA, O. Reg. 170/03, as well as the Minto Pines Water Work's MDWL 106-104, DWWP 106-204 and PTTW #6114-8QKKLE. Every attempt has been made to ensure this document is an accurate representation of how the Drinking Water System are operated.

To the best of our knowledge, Table 4.1 identifies all of the requirements of the SDWA, the regulations, and the MDWL, the DWWP and the PTTW's.

Table 4.1
Minto Pines Drinking Water System
Requirements the System Failed to Meet

Compliance With	Description of Item the System Failed to Meet	Correction of This Situation How/When
MDWL # 106-104	<i>Minto Pines Drinking Water System is in compliance with all of the requirements of the MDWL</i>	
DWWP # 106-204	<i>Minto Pines Drinking Water System is in compliance with all of the requirements of the DWWP</i>	
O. Reg. 170/03	<i>Minto Pines Drinking Water System is in compliance with all of the requirements of O. Reg 170/03</i>	
SDWA	<i>Minto Pines Drinking Water System is in compliance with all of the requirements of the SDWA.</i>	

Dated this 12th day of March 2015.



Brian Hansen
Public Works Director