



## Rural Municipality of St. Clements

# East Selkirk Water Treatment Plant Annual Report for 2017

February 15<sup>th</sup>, 2018



Prepared by: Rural Municipality of St. Clements  
1043 Kittson Road, East Selkirk  
Manitoba, R0E 0M0



## **Municipal Services – RM of St. Clements Annual Water Report**

### Table of Contents:

- 1.0 Description of the Water System
  - 1.1 Water Supply Source
  - 1.2 Intake Structure
  - 1.3 Water Treatment Process
  - 1.4 Distribution System
  - 1.5 Storage Reservoir
  - 1.6 Number of connections, population served, and types of users
  - 1.7 Classification and Certification
- 2.0 Disinfection System in Used
  - 2.1 Equipment redundancy and monitoring requirements
  - 2.2 Disinfectant residual overall performance/results
- 3.0 List of Water Quality Standards
- 4.0 Water System Incidents and Corrective Actions
- 5.0 Drinking Water Safety Orders on your System and Actions Taken in Response
- 6.0 Boil Water Advisories Issued and Actions Taken in Response
- 7.0 Warnings or Charges Laid on the System in Accordance with The Drinking Water Safety Act
- 8.0 2017 Monthly Chlorination Report
- 9.0 Monthly Effluent Rate Report
- 10.0 Annual Compliance Audit - Manitoba Conservation and Water Stewardship
- 11.0 Annual Compliance Report - Manitoba Conservation and Water Stewardship



## Municipal Services – RM of St. Clements Annual Water Report

### 1.0 Description of the Water System:

---

The St. Clements Water system provides potable drinking water since October 2012 to a population of approximately 675 residents plus commercial businesses and schools. Treated water produced from the East Selkirk Water Treatment Plant located in the village of East Selkirk meets all health and aesthetic objectives as stated in the Canadian Drinking Water Quality Guidelines.

### 1.1 Water Supply Source:

---

The St. Clements Water Treatment Plant (WTP) sources its supply with two pumps from the lower carbonate aquifer. These two well pumps can pump 13 liters per second at 30.5 meters TDH (Total Dynamic Head).

### 1.2 Intake Structure:

---

The intake structure consists of two 250mm dia. Well with PVC plastic casing, approximately 65 meters deep.

### 1.3 Water Treatment process:

---

The St. Clements WTP is distributing water by passing through UV system (Trojan 2000 UV Model) for primary disinfection and by a 12% sodium hypochlorite solution injected into raw water (2 alternating units), with appropriate reservoir contact time for microbiological inactivation.

### 1.4 Distribution System:

---

Treated water from the reservoir is pumped throughout the St. Clements distribution system via 4 pumps. The distribution system has an approximate pipe length of 11.4 kilometers. Piping is comprised of HDPE (high density polyethylene). Water mains range between 150mm to 250mm diameter. System includes stand-by diesel-electric generator (with 200L fuel tank) that tests bi-weekly for 15mins, testing is normally performed during weekday daylight hours. C/W a magnetic flow meter at distribution header.

Pump condition points are as follows:

Well Pump WP1 & WP2: 13 L/s at 30.5 meters TDH (5.6 kilowatts)

Jockey Pump JP1: 2.5 L/s at 56 meters TDH (2.2 kilowatts)

Domestic Pump DP1 through DP3: 10.1 L/s at 56 meters TDH (11 kilowatts)

Emergency Pump EP1: 60 l/s at 56 meters TDH (45 kilowatts)

1.5 Storage Reservoir:

---

The WTP has a reinforced concrete reservoir, 1.0 meter above ground, and 3.6 meters below ground with a capacity of 600 cubic meters (2 – 250,000 cells). The Water Treatment Structure sits atop of the reservoir.

1.6 Number of connections, population served and types of water users:

---

The St. Clements distribution system is comprised of 275 service connections serving a population approximately 675 residents. These services are almost entirely residential. There are only a small number of minor commercial establishments and no industry. Two public schools are also serviced by the Water Treatment Plant. The Water Treatment Plant can accommodate approximately 600 service connections with the infill of existing areas and new developments.

1.7 Classification and Certification:

---

-Class 1 Water Treatment Facility, Class 1 Water Distribution.

-Certification level of Operators:

- Darren Otto; Licensed Operator Class 1
- Peter Danchuk; Licensed Operator Class 1
- Greg Elson; Licensed Operator Class 2

2.0 Disinfection System in Use:

---

The final step in the treatment of safe water is disinfection. Disinfection is the selective destruction or inactivation of potential disease causing organisms in water. As per the Drinking Water Safety Act the St. Clements water system must ensure that a disinfectant residual of at least:

0.5mg of free chlorine per liter of water is detectable at the point where water enters the distribution system, after a minimum contact time of 20 minutes.

0.1mg of free chlorine per liter of water is detectable at all times at any point in the distribution network.

2.1 Equipment redundancy and monitoring requirements:

---

As required by the Drinking Water Safety Act the St. Clements WTP ensures continuous disinfection is maintained at the plant by keeping in stock all spare parts required for the chlorinator. As additional backup, a complete spare chlorinator system is also kept at the plant.

2.2 Disinfectant residual overall performance/results:

---

For 2017, the St. Clements Water System has met all regulatory requirements in regard to monitoring and reporting disinfection residuals leaving the water treatment plant and in the distribution system.

3.0 List of Water Quality Standards:

The Province of Manitoba had adopted a number of water quality standards from the Guidelines for Canadian Drinking Water Quality, developed by Health Canada. The Parameters are health-based and they express the maximum acceptable concentration for a groundwater supply source. Concentration values in excess constitute a health-related issue and require corrective actions. The 2017 results for the St. Clements Water System are summarized in the following table:

Parameter	Monitoring Requirements
Bacteriological (total coliform and E. coli)	Bi-weekly sampling program with each set of samples consisting of one raw, one treated and a minimum of one distribution sample. Consecutive sample sets to be separated by at least 12 days.
Free chlorine (treated water)	One sample per day of water entering the distribution system following at least 20 minutes of contact time.
Free chlorine (distribution system)	At the same time and location(s) as bacteriological distribution system sampling.
Total chlorine (treated water)	One sample per day of water entering the distribution system following at least 20 minutes of contact time.
Total chlorine (distribution system)	At the same times and location(s) as bacteriological distribution system sampling.
Ultraviolet Disinfection	Continuous monitoring of UV intensity level for each operating UV unit.
General chemistry	One raw and one treated water sample once every three years.
Nitrite and nitrate (treated water)	At a frequency specified by the Drinking Water Officer.
Lead	As per the instructions of the Drinking Water Officer.

\*All lab testing done by ALS Environmental, summation available upon request.

4.0 Water System Incidents and Corrective Actions:

All/any Incidents and Corrective action reports were filed with Manitoba Water Stewardship as per the Guidelines for Canadian Drinking Water Quality.

5.0 Drinking Water Safety Orders on your System and Actions Taken in Response:

In 2017 no Drinking Water Safety Orders were issued for the RM of St. Clements Water System.

6.0 Boil Water Advisories Issued and Actions Taken in Response:

In 2017 no Boil Water Advisories were issued for the RM of St. Clements Water System.

7.0 Warnings or Charges Laid on the System in Accordance with The Drinking Water Safety Act:

In Accordance with the Drinking Water Safety Act, no warnings or charges were issued for the St. Clements Water System in 2017. See attached Annual Compliance Audit from Manitoba Conservation and Water Stewardship.

## 8.0 Monthly Chlorination Report

Month	Average per month of Chlorine Residual in mg/L		Lowest Free Chlorine during month (mg/L)
	Free Chlorine	Total Chlorine	
January	0.91	1.25	0.65
February	0.82	1.07	0.53
March	0.92	1.17	0.59
April	0.97	1.25	0.59
May	0.87	1.08	0.65
June	1.16	1.36	0.54
July	0.89	1.08	0.58
August	1.12	1.33	0.83
September	1.09	1.31	0.74
October	0.97	1.13	0.74
November	0.85	1.09	0.71
December	0.83	0.99	0.67

\*Supporting data can be made available upon request.

## 9.0 Monthly Effluent Rate Report

Month	Amount (m3)
January	3,651
February	3,467
March	3,750
April	3,578
May	3,854
June	4,340
July	3,565
August	3,547
September	3,571
October	3,827
November	3,496
December	3,710
<b>Average m3 per month</b>	<b><u>3,696</u></b>

\*Supporting data can be made available upon request.

## 10.0 Annual Compliance Audit - Manitoba Conservation and Water Stewardship



January 22, 2018

Rural Municipality of St. Clements  
c/o Greg Elson, Public Works Manager  
Box 2 Group 35 RR1  
East Selkirk, MB R0E 1M0

### 2017 Annual Compliance Audit

Dear Mr. Elson:

Please find enclosed the 2017 Annual Compliance Audit for the East Selkirk public water system (PWS). The report compares water system compliance to *The Drinking Water Safety Act* and its supporting regulations, and the terms and conditions of the water system's current operating licence (PWS-12-511).

Where non-compliance items are identified, the issues do not necessarily translate into increased public health risk. The Office of Drinking Water uses processes, including boil water advisories, to notify water users of a public health risk.

Please review the following terms and conditions of your operating licence to ensure ongoing compliance:

- Water quality sampling frequencies identified in *Table 2*.
- Water System Assessment (due date: October 31, 2017)
- 2017 Public Water System Annual Report (due date: March 31, 2018)
- Advisory Notification Plan (due date: May 1, 2018)

An Advisory Notification Plan is now required for any PWS with population over 1000; the intent of the document is to have a set protocol in place for system to use should the need arise to notify the public of any Boil Water Advisories or Water Quality Advisories.

Health Canada has completed their review on National Guidelines, including algae (total microcystin toxins) manganese and lead. The new guidelines are expected to be finalized and posted in 2018 with minor changes following the public consultation stage. Owners and operators are encouraged to review Health Canada's guidelines and related chemistry results to determine what impact they may have on your water supply. You will receive notification of any changes to Health Canada's Guidelines for Canadian Drinking Water Quality and Manitoba Standards should they affect your water supply.

Water suppliers are reminded to immediately notify the Office of Drinking Water of any condition(s) that may affect the ability of the water system to produce or deliver safe drinking water. These conditions include:

- treatment upsets, bypass conditions, operation outside of licence conditions
- contamination of source or treated water
- a disinfection, filtration, or distribution system failure

Earlier this past year, water suppliers received notification on changes to the water system assessment process and how those changes affect your water system. Please contact me if you need additional information.

The 2017 Annual Compliance Audit is based on information submitted to this office. If you have questions regarding non-compliance items identified in this audit, review your records prior to contacting this office. If your records conflict with the audit information, please call me at (204) 641-3530.

Sincerely,



---

Nancy Fitzgerald  
Regional Drinking Water Officer



## 11.0 Annual Compliance Audit - Manitoba Conservation and Water Stewardship

### Sustainable Development

#### 2017 Annual Compliance Audit

Water System: EAST SELKIRK - PWS

Code: 57.25

Water System Owner: Rural Municipality of St. Clements

Water System Operating Licence: PWS-13-523

Expiry Date: November 30, 2017

- 1) This report documents the East Selkirk Public Water System compliance for the period from January 1 to December 31, 2017.
- 2) Addendum A to this report provides specific information on the non-compliance incidents identified in the summary below.
- 3) Other than the information provided in attached Addendum A, the water supplier has complied with *The Drinking Water Safety Act*, its supporting regulations, and the terms and conditions of the water system's current operating licence
- 4) This report is based on information submitted by the water supplier, agents of the water supplier, and / or the Province of Manitoba.

#### Summary of Non-Compliance Incidents:

- Failure to Meet Operational Requirements

**Sustainable Development**

**Addendum A: Record of Non-Compliance**

Water System: EAST SELKIRK - PWS

Report period: January 1, 2017 to December 31, 2017.

***Enforcement Action Taken***

Date	Incident	Outcome
	None reported	

***Disinfection Requirements***

Date	Incident	Outcome
	None reported	

***Bacteriological Requirements***

Date	Incident	Outcome
	None reported	

***Microbial Requirements***

Date	Incident	Outcome
	None reported	

***Turbidity Requirements***

Date	Incident	Outcome
	None reported	

***Chemical Requirements***

Date	Incident	Outcome
	None reported	

***Operational Requirements***

Date	Incident	Outcome
2017	Failure to submit the re-assessment of the water system infrastructure and water supply sources report	Non-compliant