



2021 Annual Water Report

East Selkirk Public Water System



Operating Licence PWS-12-523-01

RM of St. Clements East Selkirk Public Water System

2021 Annual Water Report

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1.0 Introduction

The 2021 Annual Water Report for the East Selkirk Public Water System is provided to inform residents of the steps taken to ensure ongoing safety, reliability, and quality of the water supplied by the RM of St. Clements. The *Manitoba Drinking Water Safety Act* and the *Guidelines for Canadian Drinking Water Quality* regulate water suppliers in the Province of Manitoba. The Rural Municipality of St. Clements East Selkirk Public Water System Operating Licence requires regular monitoring of water quality and reporting of the monitoring program as per the *Drinking Water Safety Act Regulation*.

2.0 Description of the Water System

The St. Clements East Selkirk Water Treatment Plant (ESWTP) provides high quality potable drinking water to the community of East Selkirk since commissioned in October 2012. The population served is approximately 700 persons plus two public schools with the current capacity to serve a population of 1,350 persons. Treated water produced from the East Selkirk Water Treatment Plant located in the village of East Selkirk is monitored by certified water operators and meets or exceeds all health and aesthetic objectives set out in the Guidelines for Canadian Drinking Water Quality.

2.1 Water Supply Source

The East Selkirk Water Treatment Plant (ESWTP) sources its groundwater supply from the lower carbonate aquifer at the northeast corner of the community. Two 200mm diameter groundwater wells approximately 67 meters deep contain pumps that are setup to draw groundwater at 12.5 liters per second at 30.5 meters TDH (Total Dynamic Head).

2.2 Water Treatment Process

The St. Clements ESWTP distributes high quality and safe drinking water by primarily treating the raw water with ultraviolet light followed by an injection of 12% sodium hypochlorite from two parallel dosing pumps before entering the reservoir. The water storage on site, also known as the reservoir, ensures adequate chlorine contact time with the water for microbiological inactivation prior to distribution to residents.

As per the *Drinking Water Safety Act* the East Selkirk Public 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 at any point in the distribution network.

2.3 Distribution System

Treated water from the reservoir is pumped throughout the community of East Selkirk via four pumps capable of providing pumping capacity to achieve a Class 3 fire protection rating for the core of the community and a Class 2 fire protection rating for the outer limits at 60 and 30 litres per second respectively. The plant is serviced by a 85kW diesel backup generator which is

automatically switched over to in the event of power interruption. The distribution system is comprised of high-density polyethylene, a thermoplastic known as HDPE, at approximately 11.5 kilometers long. Water main diameters range between 150mm to 250mm.

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)



2.4 Storage Reservoir

The WTP has a reinforced concrete reservoir, 1.0 meter above ground, and 3.6 meters below ground with a current capacity of 600 cubic meters. The Water Treatment Structure sits atop of the reservoir. All water that enters the distribution system meets or exceeds the minimum 20-minute chlorine contact time required for adequate and assured disinfection. An additional reservoir is currently under construction adjacent to the existing to increase the storage capacity of the plant to accommodate development within the community.

2.5 Water Use

The ESWTP distributed 45,564 cubic meters of treated potable water to the community of East Selkirk in 2021 which is an average of 125 cubic meters daily.

Table 1 Monthly Distribution Report	
Month	Amount (m3)
January	3,621
February	3,296
March	3,610
April	3,446
May	3,913
June	4,158
July	4,714
August	4,241
September	3,509
October	3,672
November	3,692
December	3,692
Average m3 per month	3,797

*Supporting data can be made available upon request.

2.6 Classification and Certifications

In accordance with the *Water & Wastewater Facility Operators Regulation* under the *Environment Act* this facility has been classified by the Province of Manitoba as a Class 2 Water Treatment and Class 1 Water Distribution. St. Clements has four certified water operators and an additional two water operators in training.

3.0 Drinking Water Quality Standards and Testing

Under the *Drinking Water Safety Act* and the *Drinking Water Quality Standards Regulation*, the East Selkirk Public Water Treatment System is monitored for microbiological, chemical, radiological, and physical parameters at frequencies set forth in Operating Licence PWS-12-523-01 as part of a multi-barrier approach to ensure safe drinking water. Raw water from the source, treated water leaving the plant, and distributed water in the community are all tested to ensure the safety of drinking water.

3.1 Water Quality Standards

For 2021, East Selkirk Public Water System met all health and regulatory requirements regarding monitoring and reporting of the various water quality parameters. The parameters express the maximum acceptable concentration for a water supply.

Table 2 Water Quality Standards & Results		
Parameter	Quality Standard Requirements	Treated Water Results (Max. Detected since 2012)
Total coliform	Less than one total coliform bacteria detectable per 100 mL in all treated and distributed water	0 MPN/100 mL

E. coli	Less than one E. coli bacteria detectable per 100 mL in all treated and distributed water	0 MPN/100 mL
Chlorine Residual	A free chlorine residual of at least 0.5 mg/L in water entering the distribution system following a minimum contact time of 20 minutes A free chlorine residual of at least 0.1 mg/L at all times at any point in the distribution system	See Table 4
Arsenic	Less than or equal to 0.01 mg/L	0.0025 mg/L
Benzene	Less than or equal to 0.005 mg/L	<0.0005 mg/L *
Ethylbenzene	Less than or equal to 0.14 mg/L	<0.0005 mg/L *
Fluoride	Less than or equal to 1.5 mg/L	0.254 mg/L
Lead	Less than or equal to 0.005 mg/L	0.001 mg/L
Nitrate	Less than or equal to 45 mg/L measure as nitrate (10mg/L measured as nitrogen)	9.970 mg/L
Nitrite	Less than or equal to 3 mg/L measures as nitrite (1 mg/L measured as nitrogen)	0.0172 mg/L
Trichloroethylene	Less than or equal to 0.005 mg/L	<0.0005 mg/L *
Tetrachlorethylene	Less than or equal to 0.01 mg/L	<0.0005 mg/L *
Toluene	Less than or equal to 0.06 mg/L	<0.0005 mg/L *
Total Xylenes	Less than or equal to 0.09 mg/L	<0.0015 mg/L *
Uranium	Less than or equal to 0.02 mg/L	0.01220 mg/L

* Raw water is sampled and analyzed for VOCs

Table 3 Monitoring Requirements	
Parameter	Frequency
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.

3.2 Disinfection Residuals

The average chlorine residuals in the water treatment plant and in the distribution system have been maintained above regulated minimums for the year 2021. The monthly averages and distributed minimums have been summarized in the following Table:

Table 4 Disinfection Residuals			
Month	Average of Chlorine Residuals in Treated Water (mg/L)		Lowest Free Chlorine Residuals in Distribution- Various Locations (mg/L)
	Free Chlorine	Total Chlorine	
January	1.28	1.71	0.68
February	1.18	1.60	1.00
March	1.05	1.50	0.87
April	1.08	1.60	0.84
May	1.05	1.57	0.66
June	1.12	1.69	0.78
July	1.10	1.65	0.23
August	1.08	1.63	0.96
September	1.10	1.58	0.89
October	1.11	1.64	0.85
November	1.12	1.66	0.53
December	1.13	1.72	0.69

*Supporting data can be made available upon request

4.0 Compliance and Corrective Actions

The East Selkirk Public Water System is monitored for water quality from source to tap. St. Clements submits monthly reports to the provincial government including chlorination, consumption, and UV monitoring. Bacteriological test result and reports with chlorine residuals are provided to the Office of Drinking Water by the analytical laboratory that performs the testing. All/any Incidents and Corrective action reports are filed with Manitoba Water Stewardship as per the *Guidelines for Canadian Drinking Water Quality*.

4.1 Drinking Water Safety Orders

No Drinking Water Safety Orders were issued for the East Selkirk Public Water System in 2021.

4.2 Boil Water Advisories Issued and Actions Taken

No Boil Water Advisories were issued for the East Selkirk Public Water System in 2021.

4.3 Warnings Issued or Charges Laid on the Public Water Supply System

No warning or charges were laid on the East Selkirk Public Water System in 2021.

5.0 Water System Supply Upgrades

The Rural Municipality of St. Clements jointly with Manitoba Water Services Board retained WSP Canada Inc to provide preliminary studies, detailed design, and construction administration services for the expansion the East Selkirk Water Treatment Plant. The scope of the water treatment plant upgrades and expansion include an increase in storage capacity for the projected growth of the community of East Selkirk, the softening of finished water quality via high pressure membrane filtration, addition of a potable water truck fill station, an office space, a washroom for operators, and associated ancillary components. In addition to these items, the design and construction includes considerations and provisions to further expand the distribution of potable water to the community of Lockport as part of a contemplated regional water system. Construction on the water treatment plant expansion commenced in August 2021 and is on schedule to be substantially complete in the fall 2022.

Softened water refers to the reduction of calcium and magnesium (carbonate hardness) which will allow for decommissioning of in-home softeners, reduce calcium buildups on plumbing and fixtures, and improve the taste of the water for residents.

Appendix A: Office of Drinking Water Annual Compliance Audit



February 9, 2022

2021 Annual Compliance Audit

Water System: EAST SELKIRK - PWS	Code: 57.25
Water System Owner: Rural Municipality of St. Clements	Address: Box 2 Group 35 RR 1, East Selkirk, MB R0E 0M0
Operating Licence: PWS-13-523-01	Expiry Date: November 30, 2022
Water System Assessment Due Date: March 1, 2024	
Public Water System Annual Report Due Date: N/A	Advisory Notification Plan Due Date: N/A

- 1) This report documents compliance of the East Selkirk Public Water System for the period from January 1 to December 31, 2021.
- 2) This report provides specific information on the non-compliance incidents identified in the summary below.
- 3) Other than the information provided in this report, 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.
- 5) 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.

Non-compliance with Treatment Standards:

Water system was compliant in the audited time period.

Non-compliance Incidents:

Water system was compliant in the audited time period.

If you have any questions, please do not hesitate to contact me at (204) 794-1435.

Sincerely,

Anjanie Gorcharan
Regional Drinking Water Officer