



2018 ANNUAL REPORT

Sioux Lookout Urban Drinking Water System



Prepared by Northern Waterworks Inc. on behalf of the Municipality of Sioux Lookout

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1 INTRODUCTION

1.1 Annual Reporting Requirements

This consolidated Annual Report (the Report) has been prepared in accordance with both section 11 (Annual Reports) and Schedule 22 (Summary Reports for Municipalities) of Ontario Regulation 170/03 (Drinking Water Systems Regulation). This Report is intended to inform both the public and Municipal Council on the operation of the system over the previous calendar year (January 1 to December 31, 2018).

Section 11 of O. Reg. 170/03 requires the development and adequate distribution to the public of an annual report summarizing water quality monitoring results, adverse water quality incidents, system expenses, and chemicals used in the water treatment process.

Schedule 22 of O. Reg. 170/03 requires the development and distribution to Council of an annual report summarizing incidents of regulatory non-compliance and associated corrective actions, in addition to providing flow monitoring results for the purpose of enabling the Owner to assess the capability of the system to meet existing and planned demand.

1.2 Report Availability

In accordance with section 11 of O. Reg. 170/03 this Report must be given, without charge, to every person who requests a copy. Effective steps must also be taken to advise users of water from the system that copies of the report are available, without charge, and of how a copy may be obtained. This Annual Report shall be made available for inspection by the public at the Municipal Office in Sioux Lookout, at the Lost Lake Seniors Drop-In Centre in Hudson, on the Municipality's website, and on NWI's website (nwi.ca/publications).

In accordance with Schedule 22 of O. Reg. 170/03, this Annual Report must be given to the members of Municipal Council. Section 19 (Standard of care, municipal drinking-water system) of Ontario's *Safe Drinking Water Act* also places certain responsibilities upon those municipal officials who oversee an accredited operating authority or exercise decision-making authority over a system. The examination of this Report is one of the methods by which municipal officials may fulfil the obligations required by section 19 of O. Reg. 170/03.

System users and members of Council are strongly encouraged to contact a representative of NWI for assistance in interpreting this Report. Questions and comments may be directed to the local NWI Operations Manager or by email to compliance@nwi.ca.

2 SYSTEM OVERVIEW

2.1 System Description

The Sioux Lookout Urban Drinking Water System (DWS No. 220001405) must meet extensive treatment and testing requirements in order to ensure that human health is protected. The operation and maintenance of the system is governed by Ontario's *Safe Drinking Water Act* and the regulations therein, in addition to requirements within system-specific approvals.

The Sioux Lookout Urban DWS is classified as a large municipal residential system and is composed of a raw water pumping station, the Sioux Lookout Water Treatment Plant (WTP), and the Sioux Lookout water distribution system. The system is owned by the Corporation of the Municipality of Sioux Lookout and is operated, maintained and managed by Northern Waterworks Inc.. Potential pathogenic organisms are removed and inactivated by chemical coagulation, flocculation, membrane ultrafiltration, and disinfection using both free chlorine and ultraviolet (UV) irradiation processes.

Raw water flows by gravity from the intake structure located in Pelican Lake to an underground wet well located at the raw water pumping station. Pumps transfer water from the wet well and through a transmission line to the flocculation tanks at the WTP. At the Sioux Lookout WTP, aluminum sulphate (coagulant) and sodium hydroxide (pH/alkalinity adjustment) are injected and rapidly mixed into the raw water immediately upstream from the flocculation tanks. In the tanks water is gently mixed to promote floc formation, which will in turn facilitate membrane filtration.

Flocculated water is directed to underground process reservoirs containing submerged membrane ultrafilters. Permeate (filtered water) is drawn through the membrane filters using a vacuum generated by pumps, effectively filtering impurities from the water. Permeate is then passed through one of two available UV reactors for disinfection and is injected with sodium hypochlorite (disinfectant), fluorosilicic acid (fluoridation), and sodium hydroxide (pH/alkalinity adjustment) as it is directed to the chlorine contact chamber and reservoir. The chlorine contact chamber uses a baffling system to allow chlorine to mix adequately with the water. The disinfected water is then held in the reservoir for a sufficient amount of time to achieve free chlorine primary disinfection.

Treated water is delivered from the reservoir to the water distribution system using pumps located at the Sioux Lookout WTP. The Sioux Lookout distribution system consists of approximately 34 km of water mains, 250 water main gate valves, 172 hydrants, a community standpipe for regulating pressure and providing extra storage, and a booster station serving the northeast portion of the system. Secondary disinfection requirements in the distribution system are achieved by maintaining a free chlorine residual at all locations.

2.2 Water Treatment Chemicals

In accordance with section 11 of O. Reg. 170/03, this Report must include a list of all water treatment chemicals used by the system during the period covered by the report (**Table 1**). All chemicals used in the treatment process are NSF/ANSI 60 certified for use in potable water, as required by system approvals.

Table 1: Water treatment chemicals used in 2018.

Treatment Chemical	Application
aluminum sulphate	coagulant
sodium hydroxide	pH/alkalinity adjustment
fluorosilicic acid	fluoridation
sodium hypochlorite	disinfectant, filter cleaning agent
citric acid	filter cleaning agent

2.3 System Expenses

In accordance with section 11 of O. Reg. 170/03, this Report must describe any major expenses incurred during the reporting period to install, repair or replace required equipment. This Report also summarizes those expenses related to strengthening equipment inventories and to maintenance activities undertaken by subcontracted service providers. Major expenses incurred in 2018 are summarized in **Table 2**.

Table 2: Major expenses incurred in 2018.

Category	Description	Expense
Replace/New Equipment	Park Street Lane upgrade project ¹	\$120,027
Maintenance	Miscellaneous distribution system maintenance activities ²	\$29,000
Replace	UV reactor lamps (x 24)	\$11,845
New Equipment	Free chlorine residual/pH analyzer at community standpipe	\$6,593
Inventory	Process tank hydrostatic level sensor	\$5,062
New Equipment	Automation services for standpipe/WTP communication link	\$3,917
Repair	Low lift pump motor	\$3,895
Replace	Vacuum pump and motor	\$3,568
Repair	Reject wastewater pump wiring and control	\$3,368
Inventory	Online analyzer free chlorine (x 1) and pH (x 1) sensors	\$3,224
Replace	Reject wastewater submersible pump	\$2,870
Replace/Inventory	Online analyzer pH electrodes (x 3)	\$2,768
Inventory	Interchangeable flow meter transmitter	\$2,638
New Equipment	Uninterruptible power supply at community standpipe	\$2,533
Replace	Fluoride chemical metering pump	\$2,499
Maintenance	Flow meter calibration verifications	\$2,274
New Equipment	Custom brackets for 8-inch process valves	\$2,156
Replace/Inventory	Valve actuators (x 3)	\$1,897
Repair	Miscellaneous programming and automation services	\$1,848
New Equipment	Programming services for reject wastewater flow totalizer	\$1,737
New Equipment	20-ft extension ladder	\$1,627
Inventory	Pressure switch for membrane filter control	\$1,540
Inventory	Chemical metering pump parts and accessories	\$1,391
Replace/Inventory	Wastewater tank float control bulbs (x 4)	\$1,313
<p>1. This project included a) the replacement of 161 metres of 100 mm diameter cast iron watermain with 150 mm diameter PVC watermain, b) the replacement of two (2) watermain valves, c) the installation of two (2) new watermain valves, d) the replacement of one (1) hydrant set, and e) the replacement of thirteen (13) water services.</p> <p>2. Miscellaneous distribution system maintenance activities included a) repairs to six (6) water service connections (including 1 in Hudson), b) the replacement of one (1) 100 mm watermain valve, c) repairs to 50 mm diameter bypass piping located in a swing check valve chamber, d) the swabbing of 635 metres of watermain, e) the completion of a watermain valve exercising program, and f) the installation of four (4) new water services.</p>		

3 WATER QUALITY

3.1 Overview

In accordance with section 11 of O.Reg. 170/03, this Report must summarize the results of water quality tests required by regulations, approvals, and orders. The following sections use technical water quality terms, some of which the reader may not be familiar with. It is recommended that the reader refer to the *Technical Support Document for Ontario Drinking Water Standards, Objectives, and Guidelines* available at the following website:

<http://www.ontla.on.ca/library/repository/mon/14000/263450.pdf>. Within this document the reader will find information on provincial water quality standards, objectives and guidelines, rationale for monitoring, and a brief description of water quality parameters.

3.2 Microbiological Parameters

Microbiological analyses are performed on source, treated, and distribution system water. 312 routine water samples were collected for microbiological analysis by an accredited laboratory in 2018, as required by Schedule 10 (Microbiological sampling and testing) of O. Reg. 170/03. These water samples were collected on a weekly basis and included tests for E. coli (EC), total coliforms (TC), and heterotrophic plate counts (HPC). Results from microbiological analyses are provided in **Table 3**. All results were below the associated Ontario Drinking Water Quality Standards.

Table 3: Microbiological sampling results.

Sample Type	# of Samples	EC Results Range ¹ (MPN/100mL)	TC Results Range ¹ (MPN/100mL)	# of HPC Samples	HPC Results Range (CFU/mL)
Raw Water	52	0 to 5	0 to 250	---	---
Treated Water	52	absent	absent	52	0 to 1
Distribution	208	absent	absent	99	0 to 4
Distribution (Nonroutine)	11	absent	absent	---	---

1. The Ontario Drinking Water Quality Standard for E. Coli and Total Coliforms in a treated or distribution sample is 'not detectable'. The presence of either parameter in a treated or distribution sample is considered an exceedance.

3.3 Operational Parameters

In accordance with Schedule 7 (Operational checks) of O. Reg. 170/03, regulated operational parameters that must be monitored include raw water turbidity, filtrate turbidity, the treated water fluoride residual, and the free chlorine residuals associated with primary and secondary disinfection. The Sioux Lookout Urban DWS employs a comprehensive monitoring program that extends beyond these regulated operational parameters to include additional tests conducted on source, process and treated water samples. **Table 4** summarizes water quality results for regulated and selected unregulated operational parameters. In accordance with Schedule 6 (Operational checks, sampling and testing – general) of O. Reg. 170/03, certain operational parameters are continuously monitored.

Table 4: Results summary for operational parameters.

Parameter (Sample Type) ¹	Sample Method (Minimum Frequency)	Units	Minimum Result	Maximum Result	Annual Average	Adverse Result
Turbidity (Raw Water)	Grab (4x weekly)	NTU	0.27	1.11	0.55	n/a
Turbidity (Filter 1)	Continuous	NTU	0.030	0.114	0.034	>1.0
Turbidity (Filter 2)	Continuous	NTU	0.028	0.113	0.033	>1.0
Turbidity (Treated)	Grab (Daily)	NTU	0.05	0.14	0.07	n/a
pH (Treated)	Continuous	---	6.78	8.67	7.75	n/a
FR (Treated)	Continuous	mg/L	0.56	0.91	0.73	>1.5
FCR (Treated)	Continuous	mg/L	0.61	2.97	2.25	n/a
FCR (Distribution) ²	Grab (Daily)	mg/L	0.21	2.40	n/a	<0.05
<p>1. FR = fluoride residual; FCR = free chlorine residual.</p> <p>2. Grab samples are collected and tested for free chlorine residual at various locations throughout the water distribution system. The free chlorine residual varies with water age and distribution system location, and for this reason an annual average cannot be provided. The values in the table pertain to the minimum and maximum results collected across all locations in the calendar year.</p>						

3.4 Filtration & UV Disinfection Performance

In accordance with the *Procedure for Disinfection of Drinking Water in Ontario*, membrane filtration facilities must meet certain performance criteria in order to claim log removal and inactivation credits for *Cryptosporidium* oocysts and *Giardia* cysts. In addition to continuously monitoring filtrate turbidity and other requirements, filtrate turbidity must be less than or equal to 0.1 NTU in at least 99% of the measurements each month. **Table 5** summarizes filtrate turbidity compliance against the <0.1 NTU/99% performance criterion. Minimum and maximum values in the table correspond to the proportion of time that filtered water turbidity was less than or equal to 0.1 NTU in a calendar month in 2018.

Table 5: Membrane filtration performance.

Filter	Minimum Result	Maximum Result	Adverse Result
Filter 1	99.99%	100.00%	<99%
Filter 2	100.00%	100.00%	<99%

To ensure disinfection, the UV reactors at the Sioux Lookout WTP must operate within their validated operating conditions to achieve a minimum continuous pass-through UV dose of 20 mJ/cm² (based on a *Cryptosporidium* bracket reduction equivalent dose). The dose is a function of the flow through the reactors, the applied UV intensity, and the UV transmittance (purity) of the filtrate. The reactors are considered to be operating “off-specification” any time when conditions are below a minimum calculated dosage, below a minimum UV transmittance, or above a maximum flow rate. **Table 6** summarizes UV equipment performance against the validated operating conditions. An off-specification event is classified as an Adverse Water Quality Incident if UV equipment operates outside of the validated range for a continuous period of 10 minutes.

Table 6: UV disinfection performance.

Parameter	Sample Method (Min. Frequency)	Units	Min. Result	Max. Result	Annual Average	Adverse Result
Flow (Combined Filtrate)	Continuous	L/s	0 ¹	60.3	40.1	>65.0
UV Dosage (Reactor 1)	Continuous	mJ/cm ²	26.8	80.9	37.5	<20
UV Dosage (Reactor 2)	Continuous	mJ/cm ²	27.0	81.3	36.8	<20
UV Transmittance (Filter 1)	Grab (Daily)	%/1cm	85.3	93.3	91.3	<82.0
UV Transmittance (Filter 2)	Grab (Daily)	%/1cm	84.7	93.8	91.3	<82.0

1. A flow result of 0 L/s corresponds to periods of no water production.

3.5 Nitrate & Nitrite

Treated water is tested for nitrate and nitrite concentrations on a quarterly basis in accordance with Schedule 13 (Chemical sampling and testing) of O. Reg. 170/03. Nitrate and nitrite results are provided in **Table 7**. All results were below the Ontario Drinking Water Quality Standards.

Table 7: Nitrate and nitrite results.

Sample Date	Nitrate Result (mg/L)	Nitrite Result (mg/L)
14-Feb-2018	0.075	<0.010
15-May-2018	0.071	<0.010
14-Aug-2018	0.022	<0.010
13-Nov-2018	0.058	<0.010
ODWQS	10	1

3.6 Trihalomethanes & Haloacetic Acids

Trihalomethanes (THMs) and haloacetic acids (HAAs) are required to be sampled on a quarterly basis from a distribution system location that is likely to have an elevated potential for their formation, in accordance with Schedule 13 (Chemical sampling and testing) of O. Reg. 170/03. Total THM and HAA results are summarized in **Table 8** and **Table 9**, respectively. Compliance with the provincial standard for trihalomethane concentrations is determined by calculating a running annual average (with a Maximum Acceptable Concentration of 0.100 mg/L or 100 µg/L). In 2018, the running annual average for THMs was 71.2 µg/L. A new provincial standard for haloacetic acids, also expressed as a running annual average with a Maximum Acceptable Concentration of 0.080 mg/L or 80 µg/L, will come into effect on January 1, 2020. In 2018, additional samples were collected and analyzed for total haloacetic acids in an effort to characterize HAA formation in the water distribution system.

Table 8: Total THM results.

Sample Date	Result (µg/L)
14-Feb-2018	52.2
15-May-2018	58.8
14-Aug-2018	105
13-Nov-2018	68.8
Regulatory Average	71.2
ODWQS (RAA)	100

Table 9: Total HAA results.

No. of Distribution Sample Points	3
No. of Distribution Samples	12
Minimum Result (µg/L)	33.0
Maximum Result (µg/L)	68.6
Regulatory Average (µg/L)	55.5
Future ODWQS (RAA)	80

3.7 Lead Sampling

The Sioux Lookout Urban DWS previously qualified for reduced lead sampling and ultimately became exempt from sampling at plumbing locations, in accordance with Schedule 15.1 (Lead) of O. Reg. 170/03. Six (6) distribution system samples must now be collected every year and analyzed for pH and alkalinity. Additionally, these distribution system samples must be analyzed for lead in every third 12-month period after the plumbing sample exemption was activated. **Table 10** summarizes the results of lead sampling and related required tests.

Table 10: Distribution pH, alkalinity and lead sampling results.

Sample Date	Sample Location	pH	Alkalinity (mg/L)	Lead Result (µg/L)
10-Apr-2018	Hydrant, Atwood Street and 3 rd Avenue	7.31	25	<1.0
10-Apr-2018	Hydrant, Queen Street and 2 nd Avenue	7.27	25	<1.0
10-Apr-2018	Hydrant, Wellington Street and 3 rd Avenue	7.48	20	<1.0
05-Oct-2018	Hydrant, Queen Street and 2 nd Avenue	7.82	20	<1.0
05-Oct-2018	Hydrant, Lake Street	7.42	20	<1.0
05-Oct-2018	Hydrant, 3 rd Avenue Ball Diamond	7.75	25	<1.0

3.8 Inorganic Parameters

Most inorganic parameters are sampled on an annual basis in treated water in accordance with Schedules 13 (Chemical sampling and testing) and 23 (Inorganic parameters) of O. Reg. 170/03. The most recent inorganic parameter sampling results are provided in **Table 11**. All results were below the associated Ontario Drinking Water Quality Standards.

Sodium is sampled every five (5) years in treated water in accordance with Schedules 13 and 23 of O. Reg. 170/03. Although grab samples may be analyzed, regulatory testing for fluoride is achieved using continuous monitoring equipment, in accordance with Schedule 6 of O. Reg. 170/03. The most recent sodium and fluoride sample results are also summarized in **Table 11**. All results were below the associated Ontario Drinking Water Quality Standards.

Table 11: Inorganic parameter sampling results.

Parameter	Sample Date	Units	Result	ODWQS
Antimony	13-Feb-2018	µg/L	<0.60	6
Arsenic	13-Feb-2018	µg/L	<1.0	10
Barium	13-Feb-2018	µg/L	<10	1000
Boron	13-Feb-2018	µg/L	<50	5000
Cadmium	13-Feb-2018	µg/L	<0.10	5
Chromium	13-Feb-2018	µg/L	<1.0	50
Fluoride	17-Feb-2015	mg/L	0.520	1.5
Mercury	13-Feb-2018	µg/L	<0.10	1
Selenium	13-Feb-2018	µg/L	<1.0	50
Sodium	17-Feb-2015	mg/L	11.8	20
Uranium	13-Feb-2018	µg/L	<2.0	20

3.9 Organic Parameters

Organic parameters are sampled on an annual basis in treated water in accordance with Schedules 13 (Chemical sampling and testing) and 24 (Organic parameters) of O. Reg. 170/03. These parameters include various acids, pesticides, herbicides, PCBs, volatile organics, and other organic chemicals. Organic parameter sampling results are provided in **Table 12**. Sampling for all organic parameters was conducted on February 13, 2018. All results were below the associated Ontario Drinking Water Quality Standards.

Table 12: Organic parameter sampling results.

Parameter	Result (µg/L)	ODWQS (µg/L)	Parameter	Result (µg/L)	ODWQS (µg/L)
Alachlor	<0.10	5	Diuron	<1.0	150
Atrazine & Metabolites	<0.20	5	Glyphosate	<5.0	280
Azinphos-methyl	<0.10	20	Malathion	<0.10	190
Benzene	<0.50	1	MCPA	<0.20	100
Benzo(a)pyrene	<0.010	0.01	Metolachlor	<0.10	50
Bromoxynil	<0.20	5	Metribuzin	<0.10	80
Carbaryl	<0.20	90	Monochlorobenzene	<0.50	80
Carbofuran	<0.20	90	Paraquat	<1.0	10
Carbon Tetrachloride	<0.20	2	Pentachlorophenol	<0.50	60
Chlorpyrifos	<0.10	90	Phorate	<0.10	2
Diazinon	<0.10	20	Picloram	<0.40	190
Dicamba	<0.20	120	Total PCBs ¹	<35	3
1,2-Dichlorobenzene	<0.50	200	Prometryne	<0.10	1
1,4-Dichlorobenzene	<0.50	5	Simazine	<0.10	10
1,2-Dichloroethane	<0.50	5	Terbufos	<0.20	1
1,1-Dichloroethylene	<0.50	14	Tetrachloroethylene	<0.50	10
Dichloromethane	<5.0	50	2,3,4,6-Tetrachlorophenol	<0.50	100
2,4 -Dichlorophenol	<0.30	900	Triallate	<0.10	230
2,4-D	<0.20	100	Trichloroethylene	<0.50	5
Diclofop-methyl	<0.20	9	2,4,6-Trichlorophenol	<0.50	5
Dimethoate	<0.10	20	Trifluralin	<0.10	45
Diquat	<1.0	70	Vinyl Chloride	<0.20	1

1. Where an organic parameter is not detected in a water sample, a result is expressed as being less than the analytical detection limit for that parameter. Due to a laboratory error, the apparent result and lower detection limit (35 µg/L) for the parameter Total PCBs was greater than the Ontario Drinking Water Quality Standard (3 µg/L). For this reason an assessment against the ODWQS cannot be made, and the result should not be interpreted as exceeding the ODWQS. Historically, the result is less than the usual 0.035 µg/L detection limit for the parameter Total PCBs - a value that is significantly less than the ODWQS. PCBs have never been detected in drinking-water in Sioux Lookout.

4 FLOW MONITORING

4.1 Overview

In accordance with Schedule 22 (Summary Reports for Municipalities) of O. Reg. 170/03, this Annual Report must include certain information for the purpose of enabling the Owner to assess the capability of the system to meet existing and planned uses. Specifically, this Report must include a summary of the quantities and flow rates of the water supplied during the reporting period, including monthly average and maximum daily flows. The Report must also include a comparison of flow monitoring results to the rated capacity and flow rates approved in the system's Municipal Drinking Water Licence.

4.2 2018 Flow Monitoring Results

Throughout the reporting period, the Sioux Lookout Urban DWS operated within its rated capacity and supplied a total of 652,723 m³ of treated water. On an average day in 2018, 1,788 m³ of treated water was supplied to the community, which represents 34% of the rated capacity of the Sioux Lookout WTP (5,200 m³/day). The maximum daily flow in 2018 was 2,446 m³/day, which represents 47% of the rated capacity of the facility. Flow monitoring results are summarized in **Figure 1** and **Table 13**.

Figure 1: 2018 average and maximum daily treated water flows.

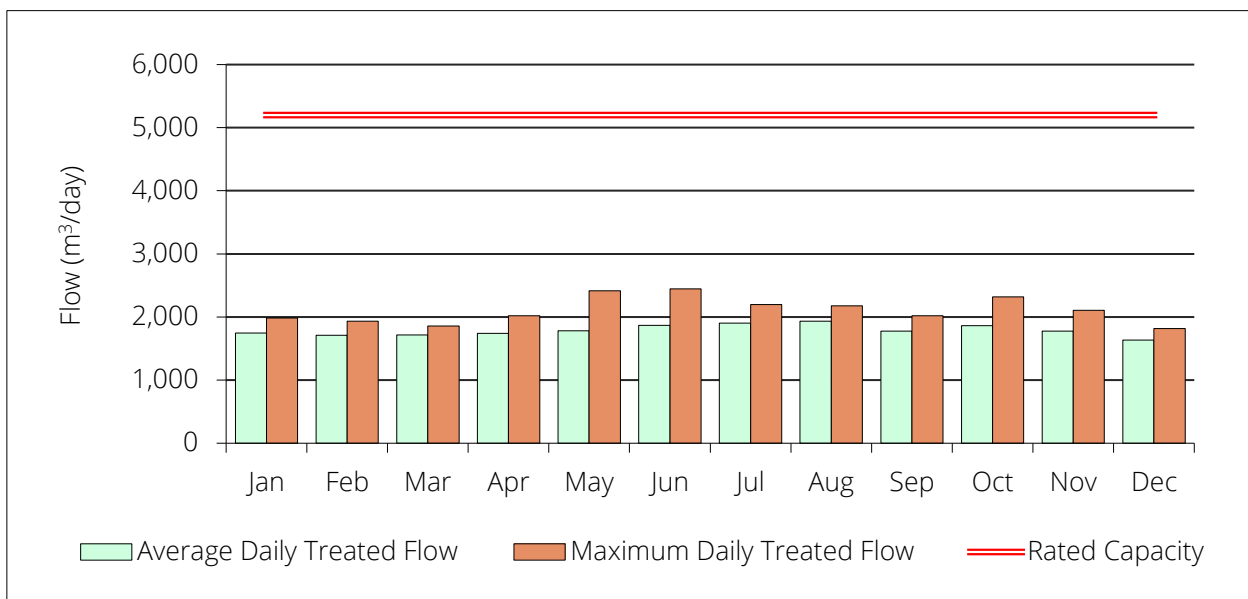


Table 13: 2018 total volumes, daily flows and capacity assessments.

Month	Total Volumes (m ³)		Daily Flows (m ³ /day)		Capacity Assessments ¹	
	Raw Water	Treated Water	Average - Treated Water	Maximum - Treated Water	Average - Treated Water	Maximum - Treated Water
Jan	64,240	54,133	1,746	1,986	34%	38%
Feb	55,638	47,864	1,709	1,936	33%	37%
Mar	61,739	53,234	1,717	1,856	33%	36%
Apr	60,243	52,246	1,742	2,020	33%	39%
May	63,452	55,200	1,781	2,415	34%	46%
Jun	64,498	56,079	1,869	2,446	36%	47%
Jul	67,826	58,931	1,901	2,198	37%	42%
Aug	69,963	59,999	1,935	2,179	37%	42%
Sep	61,719	53,272	1,776	2,018	34%	39%
Oct	67,410	57,788	1,864	2,320	36%	45%
Nov	62,261	53,363	1,779	2,104	34%	40%
Dec	61,153	50,613	1,633	1,818	31%	35%
Total	760,142	652,723	---	---	---	---
Average	63,345	54,394	1,788	---	34%	---
1. Capacity assessments compare average and maximum daily treated water flows to the rated capacity of the treatment facility, as provided within the Municipal Drinking Water Licence.						

4.3 Recent Historical Flows

Table 14 summarizes recent historical flow monitoring results for the Sioux Lookout Urban DWS. There were no significant changes in the amounts of source water withdrawn and treated water supplied in 2018 when compared to 2017, and system flows have been notably stable. Total annual volumes of treated water supplied in the near future may be expected to be between 600,000 m³ and 800,000 m³, which represents approximately 32% to 42% of the rated capacity of the Sioux Lookout Water Treatment Plant.

Table 14: Recent historical flow monitoring results.

Year	Total Volumes (m ³)		Daily Flows (m ³ /day)		Annual % Change	
	Raw Water	Treated Water	Average – Treated Water	Maximum – Treated Water	Raw Water	Treated Water
2011	888,430	729,341	1,998	3,008	-3.8%	+6.1%
2012	979,670	785,457	2,146	2,837	+10.3%	+7.7%
2013	846,566	697,954	1,912	3,411	-13.6%	-11.1%
2014	710,645	606,465	1,662	2,385	-16.1%	-13.1%
2015	819,063	663,813	1,819	2,495	+15.3%	+9.5%
2016	804,401	679,025	1,855	2,522	-1.8%	+2.3%
2017	782,201	680,914	1,866	3,111	-2.8%	+0.3%
2018	760,142	652,723	1,788	2,446	-2.8%	-4.1%

5 COMPLIANCE

5.1 Overview

Northern Waterworks Incorporated and the Municipality of Sioux Lookout employ an operational strategy that is committed to achieving the following goals:

- 1) Providing a safe and reliable supply of drinking water to the community of Sioux Lookout;
- 2) Meeting or exceeding all applicable legislative and regulatory requirements; and,
- 3) Maintaining and continually improving the operation and maintenance of the system.

The following sections will summarize incidents of regulatory noncompliance and adverse water quality that occurred during the reporting period. NWI is committed to employing timely and effective corrective actions to prevent recurrence of all identified incidents of noncompliance and adverse water quality.

5.2 Regulatory Compliance

In accordance with Schedule 22 (Summary Reports for Municipalities) of O. Reg. 170/03, this Report must list any requirements of the *Act*, the regulations, the system's approval, drinking water works permit, municipal drinking water licence, and any orders applicable to the system that were not met at any time during the period covered by the report (i.e. an incident of regulatory noncompliance). Additionally, this Report must specify the duration of the failure and the measures that were taken to correct the failure.

No incidents of regulatory noncompliance were identified during the most recent inspection initiated on October 1, 2018 by Ontario's Ministry of the Environment, Conservation and Parks.

5.3 Adverse Water Quality Incidents

In accordance with section 11 (Annual Reports) of O. Reg. 170/03, this Report must summarize any reports made to the Ministry under subsection 18(1) (Duty to report adverse test results) of *the Act* or section 16-4 (Duty to report other observations) of Schedule 16 of O. Reg. 170/03. Additionally, this Report must describe any corrective actions taken under Schedule 17 of O. Reg. 170/03 during the period covered by the report.

There were no adverse water quality incidents during the reporting period for the Sioux Lookout Urban Drinking Water System.