2016 Annual Report

Sioux Lookout Urban Drinking Water System

Prepared by

NORTHERN WATERWORKS INC.

for the Corporation of the
Municipality of Sioux Lookout

Introduction

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 the Municipal Council on the operation of the system over the previous calendar year (January 1 to December 31, 2016).

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 Municipal 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.

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 following locations:

(1) Municipal Office, Customer Service Desk, Sioux Lookout
(2) Lost Lake Seniors Drop-In Centre, Hudson
(3) Municipal Website (www.siouxlookout.ca)
(4) NWI Website (www.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 Northern Waterworks Incorporated (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.

System Overview

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.

System Description

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

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 adjustment) are injected and rapidly mixed into the raw water immediately upstream from the flocculation tanks. In the tanks water is gently mixed in order to promote floc formation, which will in turn facilitate membrane filtration.

Flocculated water is then 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 passed through one of two available UV reactors for disinfection and is injected with sodium hypochlorite (disinfectant), fluorosilicic acid (fluoridation), and sodium hydroxide (pH 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 Sioux Lookout distribution system by the use of 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 the maintenance of a free chlorine residual.

The Sioux Lookout WTP also includes an independent second stage membrane ultrafiltration unit designed to recover process wastewater. Wastewater generated from the primary filtration process is collected and delivered to the unit for treatment. Permeate may then be directed to one of multiple different locations, including introduction to the raw water stream.

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 2016.

Treatment Chemical	Application[1]
aluminum sulphate	coagulant
sodium hydroxide	pH adjustment
fluorosilicic acid	fluoridation
sodium hypochlorite	disinfectant, filter cleaning agent
citric acid	filter cleaning agent

1. Filter cleaning agents are used in smaller amounts during the cleaning of the primary and secondary membrane filters. These chemicals are not injected into the normal process water stream.

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 2016 include:

- The Wellington Street and Fifth Avenue Intersection Upgrade Project, which included the replacement of 200 m of watermain, the installation of five (5) new gate valves, the installation of one (1) new hydrant set, and the installation of one (1) new water service;
- the East King Street Infrastructure Upgrade Project, which included the replacement of 471 m of watermain, the installation of seven (7) new gate valves, the installation of three (3) new hydrant sets, and the installation of thirty-five (35) new water services complete with new curb stops;
- the installation of one (1) new gate valve on the watermain trunk line from the Sioux Lookout WTP;
- the planned swabbing and cleaning of 2,700 m of watermain in the urban core of Sioux Lookout targeting cast iron mains;
- the replacement of the tank lining in both membrane filter process reservoirs;
- the replacement of three (3) 40 HP high lift pump motors and the installation of three (3) corresponding variable-frequency drive motor controllers;
- the replacement of two (2) pressure transmitters and upgrades to automation at the Curtis Street Booster Station;
- the replacement of two (2) inline pH sensors and the purchase of one (1) spare inline pH sensor for the flocculation tanks;

- the investigation by automation service providers concerning recurring communication and control issues between the raw water pumping station and the WTP;
- the purchase of one (1) spare reject water flow meter;
- the replacement of one (1) reject water submersible pump;
- the replacement of two (2) transmembrane pressure transmitters;
- the purchase of four (4) spare solenoid valves for pneumatic actuators;
- the replacement of one (1) pocket colorimeter;
- repairs to a sodium hydroxide chemical feed pump;
- the purchase of automation services related to the installation of flow-proportional dosing capability, achieving regulatory compliance, integrating the process wastewater recovery unit with existing systems, and other upgrades; and,
- the calibration verification of flow measuring devices.

Water Quality

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.

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, 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 2 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 2: Results summary for operational parameters.

Parameter (Sample Type)[1]	Sample Method (Minimum Frequency)	Units	Minimum Result	Maximum Result	Annual Average	Adverse Result[2]
Turbidity (Raw Water)	Grab (3x weekly)	NTU	0.383	1.10	0.645	n/a
Turbidity (Filter 1)	Continuous	NTU	0.028	0.156	0.038	>1.0
Turbidity (Filter 2)	Continuous	NTU	0.009	0.894	0.021	>1.0
Turbidity (Treated)	Continuous	NTU	0.02	0.74	0.06	n/a
pH (Treated)	Continuous	---	6.66	7.66	7.25	n/a
FR (Treated)	Continuous	mg/L	0.38	1.11	0.60	1.5
FRC (Treated)	Continuous	mg/L	1.31	2.59	2.20	n/a
FRC (Distribution)	Grab (Daily)	mg/L	<0.05[3]	2.20	1.56	<0.05

1. FR = fluoride residual; FRC = free residual chlorine.
2. Adverse results are prescribed within Schedule 16 of O. Reg. 170/03. There are additional factors not included in the table which are necessary to determine whether a result is adverse, such as the duration of the result and whether water is being directed to the next stage of the treatment process.
3. This result is associated with two (2) Adverse Water Quality Incidents. Refer to the *Compliance* section of this report for more information.

Membrane Filtration 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 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 3 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 2016.

Table 3: Membrane filtration performance.

Filter	Monthly Min.	Monthly Max.	Adverse Result
Filter 1	99.99% (October)	100%	<99%
Filter 2	99.99% (August)	100%	<99%

Microbiological Parameters

Microbiological analyses are performed on source, treated, and distribution system water. 313 routine water samples were collected for microbiological analysis by an accredited laboratory in 2016, 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 4. All results were below the associated Ontario Drinking Water Quality Standards.

Table 4: 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	<1 to 6	<1 to 166	---	---
Treated Water	53	absent	absent	51	0 to 31
Distribution	208	absent	absent	50	0 to 33
Distribution (Non-Routine)	82	absent	absent/present[2]	1	0

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.
2. One (1) non-routine distribution sample collected on June 27, 2016, tested present for TC (Adverse Water Quality Incident No. 129995). Refer to the *Compliance* section of this report for more information.

Nitrate and 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 5. All results were below the Ontario Drinking Water Quality Standards.

Table 5: Nitrate and nitrite results.

Sample Date	Nitrate Result (mg/L)	Nitrite Result (mg/L)	Nitrate + Nitrite (mg/L)
16-Feb-2016	0.069	<0.010	0.069
9-May-2016	0.066	<0.010	0.066
9-Aug-2016	<0.020	<0.010	<0.040
8-Nov-2016	0.052	<0.010	0.052
ODWQS	10	1	10

Trihalomethanes

Trihalomethanes (THMs) are required to be sampled on a quarterly basis from a distribution system location that is likely to have an elevated potential for THM formation, in accordance with Schedule 13 (Chemical sampling and testing) of O. Reg. 170/03. Compliance with the provincial standard for trihalomethane concentrations is determined by calculating a running annual average (with a Maximum Acceptable Concentration of 100 µg/L). In 2016, the running annual average was 76.7 µg/L. Total THM results are summarized in Table 6.

Table 6: Total THM results.

Sample Date	Result (µg/L)
16-Feb-2016	67.0
9-May-2016	57.0
9-Aug-2016	102.0
8-Nov-2016	80.8
Average	76.7
ODWQS (RAA)	100

Lead Sampling

The Sioux Lookout 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 7 on the following page summarizes the results of community lead sampling and related required tests.

Inorganic & Organic Parameters

With the exception of sodium and fluoride, inorganic and organic parameters are sampled on an annual basis in treated water in accordance with Schedules 13 (Chemical sampling and testing), 23 (Inorganic parameters) and 24 (Organic parameters) of O. Reg. 170/03. The most recent inorganic parameter sampling results are provided in Table 8 on the following page. All results were below the associated Ontario Drinking Water Quality Standards.

Table 7: Distribution lead sampling results.

Sample Date	Sample Location	pH	Alkalinity (mg/L as $CaCO_3$)	Lead Result (µg/L)
31-Mar-2016	Hydrant, 1st Ave. & Front St.	6.96	25	Lead analyses not required in 2016[1]
31-Mar-2016	Hydrant, 2nd Ave. & Fuller St.	6.99	25	
31-Mar-2016	Hydrant, Pelican Marina	6.96	25	
5-Oct-2016	Hydrant, West Queen Street	7.18	20	
6-Oct-2016	Hydrant, 7th Ave. & Moran Subdivision	7.18	20	
12-Oct-2016	Hydrant, 193 Airport Road	7.21	20	

1. Lead will be tested in distribution samples during the period corresponding to December 15, 2017 to April 15, 2018, and again during the period corresponding to June 15, 2018 to October 15, 2018.

Organic parameters include various acids, pesticides, herbicides, PCBs, volatile organics, and other organic chemicals. Organic parameter sampling results are provided in Table 9 on the following page. Sampling for all organic parameters was conducted on February 16, 2016. All results were below the associated Ontario Drinking Water Quality Standards.

Table 8: Inorganic sampling results.

Parameter	Sample Date	Units	Result	ODWQS
Antimony	16-Feb-2016	µg/L	<0.60	6
Arsenic	16-Feb-2016	µg/L	<1.0	25
Barium	16-Feb-2016	µg/L	<10	1000
Boron	16-Feb-2016	µg/L	<50	5000
Cadmium	16-Feb-2016	µg/L	<0.10	5
Chromium	16-Feb-2016	µg/L	<1.0	50
Fluoride[1]	17-Feb-2015	mg/L	0.52	1.5
Mercury	16-Feb-2016	µg/L	<0.10	1
Selenium	16-Feb-2016	µg/L	<1.0	10
Sodium[2]	17-Feb-2015	mg/L	11.8	20
Uranium	16-Feb-2016	µg/L	<2.0	20

1. Although grab samples may be analyzed every five (5) years, regulatory testing for fluoride is achieved through the use of continuous monitoring equipment, in accordance with Schedule 6 of O. Reg. 170/03.
2. Sodium is sampled every five (5) years in treated water in accordance with Schedules 13 and 23 of O. Reg. 170/03.

Table 9: 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 + N-dealkylated metabolites	<0.20	5	Glyphosate	<5.0	280
Azinphos-methyl	<0.10	20	Malathion	<0.10	190
Benzene	<0.50	1	2-Methyl-4-Chlorophenoxy-acetic acid (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	<0.50	2	Pentachlorophenol	<0.50	60
Chlorpyrifos	<0.10	90	Phorate	<0.10	2
Diazinon	<0.10	20	Picloram	<0.20	190
Dicamba	<0.20	120	Polychlorinated Biphenyls (PCBs)	<0.035	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	30
Dichloromethane	<5.0	50	2,3,4,6-Tetrachlorophenol	<0.50	100
2,4 -Dichlorophenol	<0.30	900	Triallate	<0.10	230
2,4-Dichlorophenoxy acetic acid	<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

Flow Monitoring

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.

Throughout the reporting period, the Sioux Lookout Urban DWS operated within its rated capacity and supplied a total of 679,025 m^3 of treated water. On an average day in 2016, 1,855 m^3 of treated water was supplied to the community. The average daily flow in 2016 represents 36% of the rated capacity of the Sioux Lookout WTP (5,200 m^3/day). The maximum daily flow in 2016 was 2,522 m^3/day, which represents 49% of the rated capacity of the Sioux Lookout WTP. 2016 flow monitoring results are summarized in Table 10 and Figure 1.

Table 10: 2016 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	66,209	56,169	1,812	2,138	35%	41%
Feb	62,737	53,666	1,851	2,141	36%	41%
Mar	61,587	51,510	1,662	1,846	32%	36%
Apr	63,679	51,959	1,732	1,884	33%	36%
May	71,938	59,176	1,909	2,394	37%	46%
Jun	74,381	62,097	2,070	2,522	40%	49%
Jul	78,713	64,143	2,069	2,335	40%	45%
Aug	72,644	60,902	1,965	2,318	38%	45%
Sep	61,631	52,061	1,735	2,158	33%	42%
Oct	62,773	54,095	1,745	2,275	34%	44%
Nov	62,220	56,230	1,874	2,092	36%	40%
Dec	65,889	57,017	1,839	2,094	35%	40%
Total	804,401	679,025	---	---	---	---
Avg.	67,033	56,585	1,855	---	36%	---

1. Capacity assessments compare average and maximum daily treated water flows to the rated capacity of the treatment facility (5,200 m^3/day), as provided within the Municipal Drinking Water Licence for the Sioux Lookout Urban DWS.

Figure 1: 2016 average and maximum daily treated water flows.

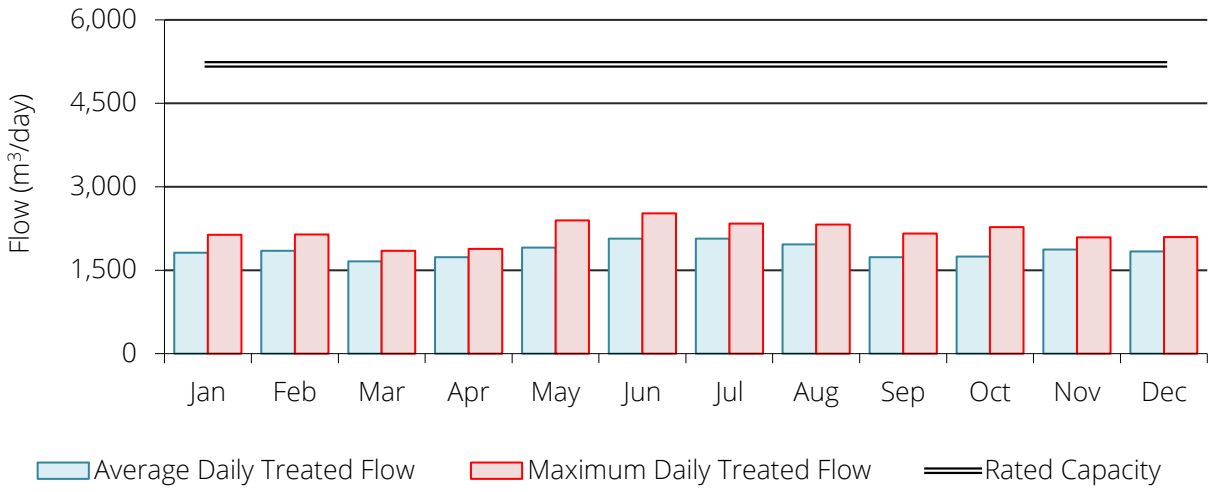

Table 11 summarizes annual flow monitoring results for the Sioux Lookout Urban DWS. There were no significant changes in the amounts of source water withdrawn and treated water supplied in 2016 when compared to 2015. Total annual volumes of treated water supplied in the near future may be expected to be between 600,000 m^3 and 725,000 m^3, which represents approximately 32% to 38% of the rated capacity of the Sioux Lookout WTP.

Table 11: 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%

Compliance

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;
3) Maintaining and continually improving the operation and maintenance of the system; and,
4) Maintaining and operating the Sioux Lookout Urban Drinking Water System in a responsible manner in accordance with documented quality management system policies and procedures.

The following sections will summarize incidents of 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.

Regulatory Noncompliance

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 by Ontario's Ministry of the Environment and Climate Change (MOECC) initiated on April 19, 2016.

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 three (3) adverse water quality incidents during the report period for the Sioux Lookout Urban DWS, as summarized below:

- AWQI No. 129948 (June 27, 2016)

  An adverse result occurred such that the free chlorine residual in a distribution sample collected from a location on Alcona Drive was less than 0.05 mg/L. The sample was collected from a distribution location that was under a localized Boil Water Advisory due to planned watermain replacement on nearby King Street. The issue was reported to the MOECC Spills Action Centre and the Northwestern Health Unit.

  Corrective action was performed in accordance with Schedule 17 of O. Reg. 170/03, and included flushing mains, increasing the disinfectant dosage and residual at the treatment facility, restoring the disinfectant residual in the affected location, and continuing to monitor secondary disinfection in the area. The Notice of Issue Resolution was provided on July 5, 2016.

- AWQI No. 129995 (June 29, 2016)

  NWI received notice from the licensed laboratory that a distribution water sample collected on June 27, 2016, tested present for the parameter of total coliforms. The sample was collected from a new watermain that had not yet been placed into service. The issue was reported to the MOECC Spills Action Centre and the Northwestern Health Unit.

  Corrective action was performed in accordance with Schedule 17 of O. Reg. 170/03, and included flushing and collecting two sets of resamples. All resamples tested absent for E. coli and total coliform parameters. The Notice of Issue Resolution was provided on July 4, 2016.

- AWQI No. 130934 (August 25, 2016)

  An adverse result occurred such that the free chlorine residual in a distribution sample collected from a location on King Street was less than 0.05 mg/L. The issue was reported to the MOECC Spills Action Centre and the Northwestern Health Unit.

  Corrective action was performed in accordance with Schedule 17 of O. Reg. 170/03, and included flushing mains, installing a bleeder on a nearby hydrant, restoring the disinfectant residual in the affected location, collecting microbiological samples and continuing to monitor secondary disinfection in the area. All samples tested absent for E. coli and total coliform parameters. The Notice of Issue Resolution was provided on September 9, 2016.