



**Ontario Clean Water Agency**  
**Agence Ontarienne Des Eaux**

Elk Lake Drinking Water System

# 2018 ANNUAL/SUMMARY REPORT



Prepared by the Ontario Clean Water Agency  
on behalf of the Township of James

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## INTRODUCTION

Municipalities throughout Ontario have been required to comply with Ontario Regulation 170/03 made under the *Safe Drinking Water Act* (SDWA) since June 2003. The Act was enacted following recommendations made by Commissioner O'Conner after the Walkerton Inquiry. The Act's purpose is to protect human health through the control and regulation of drinking water systems. O. Reg. 170/03 regulates drinking water testing, use of licensed laboratories, treatment requirements and reporting requirements.

Section 11 of Regulation 170/03 requires the owner to produce an Annual Report. This report must include the following:

1. Description of system & chemical(s) used
2. Summary of any adverse water quality reports and corrective actions
3. Summary of all required testing
4. Description of any major expenses incurred to install, repair or replace equipment

This annual report must be completed by February 28th of each year.

Schedule 22 of the regulation also requires a Summary Report which must be presented & accepted by Council by March 31<sup>st</sup> of each year for the preceding calendar year.

The report must list the requirements of the Act, its regulations, the system's Drinking Water Works Permit (DWWP), Municipal Drinking Water Licence (MDWL), Certificate of Approval (if applicable), and any regulatory requirements the system failed to meet during the reporting period. The report must also specify the duration of the failure, and for each failure referred to, describe the measures that were taken to correct the failure.

The *Safe Drinking Water Act* (2002) and the drinking water regulations can be viewed at the following website: <http://www.e-laws.gov.on.ca>.

To enable the Owner to assess the rated capacity of their system to meet existing and future planned water uses, the following information is also required in the report.

1. A summary of the quantities and flow rates of water supplied during the reporting period, including the monthly average and the maximum daily flows,
2. A comparison of the summary to the rated capacity and flow rates approved in the systems approval, drinking water works permit or municipal drinking water licence or a written agreement if the system is receiving all its water from another system under an agreement.

The reports have been prepared by the Ontario Clean Water Agency (OCWA) on behalf of the Owner and presented to council as the 2018 Annual/Summary Report.



Elk Lake Drinking Water System

Section 11

# 2018 ANNUAL REPORT



## Section 11 - ANNUAL REPORT

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### 1.0 INTRODUCTION

<b>Drinking-Water System Name:</b>	Elk Lake Drinking Water System
<b>Drinking-Water System No.:</b>	220007329
<b>Drinking-Water System Owner:</b>	The Corporation of the Township of James
<b>Drinking-Water System Category:</b>	Large Municipal, Residential System
<b>Period being reported:</b>	January 1, 2018 to December 31, 2018

**Does your Drinking Water System serve more than 10,000 people?** No

**Is your annual report available to the public at no charge on a web site on the Internet?** Yes  
at <http://www.elklake.ca/>

**Location where the report required under O. Reg. 170/03 Schedule 22 will be available for inspection.**

Elk Lake Municipal Office  
33 Third Street  
Elk Lake, Ontario P0J 1G0

#### ***Drinking Water Systems that receive drinking water from the Elk Lake Drinking Water System***

The Elk Lake Drinking Water System provides all drinking water to the community of Elk Lake.

#### ***The Annual Report was not provided to any other Drinking Water System Owners.***

The Ontario Clean Water Agency prepared the 2018 Annual/Summary Report for the Elk Lake Drinking Water System and provided a copy to the system owner; the Township of James. The Elk Lake Drinking Water System is a stand-alone system that does not receive water from or send water to another system.

#### ***Notification to system users that the Annual Report is available for viewing is accomplished through:***

- A notice in the local newspaper



## **2.0 ELK LAKE DRINKING WATER SYSTEM (DWS No. 220007329)**

The Elk Lake Drinking Water System is owned by the Corporation of the Township of James and consists of a Class 1 water treatment subsystem and a Class 1 water distribution subsystem. The system is a communal ground water well supply that services the Town of Elk Lake. The Ontario Clean Water Agency is the accredited operating authority and is designated as the Overall Responsible Operator for both the water treatment and water distribution facilities.

### ***Raw Water Supply***

The water treatment facility is located on Lot 83 First Street in the Township of James and is supplied by one 65 m deep, double steel casing production well. The well is located in water treatment plant and is equipped with a vertical turbine pump, rated at 63 L/s with a 250 mm diameter magnetic flow meter installed on the discharge line.

A second well located in Lot 5, Concession 5 in the Township of James acts as a monitoring/observation well. It is drilled to a depth of 79 meters and consists of a steel casing. This well is not equipped with a well pump and is not connected to the water treatment plant.

### ***Water Treatment***

The production well feeds the water treatment plant that has a maximum rated capacity of 2790 cubic meters per day (m<sup>3</sup>/d).

The raw water is directed to an iron and manganese removal system consisting of two reaction vessels fed with sodium hypochlorite, three pressure filters each having a rated capacity of 646 L/min, three flow meters dedicated to each filter and continuous monitoring of chlorine residual and filter operation. The filter backwash recycling system is equipped with a 40 m<sup>3</sup> underground holding tank, a submersible pump rated at 3.8 L/s with a discharge line that re-circulates the supernatant with raw water at the well pump header and a sludge pump for residual disposal to a tanker truck.

The disinfection system consists of a 450 L sodium hypochlorite solution tank equipped with spill containment and duplicate pace-to-flow chemical feed injection pumps (one duty and one standby). Chemical injection is accomplished at the raw water pipe header, prior to entering the reaction vessels.

### ***Water Storage and Pumping Capabilities***

The treated water discharges into twin cell storage clearwells, connected in series and having a total volume of 540 m<sup>3</sup>. Curtain baffling was installed in Cell #2 of the clearwell to provide sufficient chlorine contact time during scheduled cleaning of the cells.

Three vertical turbine pumps (one duty, one standby draw from clearwell #1, and one fire pump installed over clearwell #2) with variable frequency drives each rated at 37.5 L/s. A magnetic



finished flow meter, chlorine residual analyzer, and a surge anticipator are installed on the discharge main prior to exiting the pump house and entering the distribution system. The water treatment process is controlled by a dedicated Program Logic Controller (PLC) and monitored through the SCADA computer system.

### ***Emergency Power***

A 160 kW emergency stand-by power generator is available at the plant and is capable of supplying power to the entire facility during power failures.

### ***Distribution System***

The Elk Lake Drinking Water System is classified as a Large Municipal Residential Drinking Water System and provides water to a population of approximately 460 residents through an estimated 160 service connections. The distribution system was constructed in 1992 and consists of mainly of PVC constructed pipe. Approximately 60 fire hydrants are connected to the system to aid in fire protection. There are no off-site water storage facilities in the distribution system, as storage is incorporated within the treatment plant.

## **3.0 LIST OF WATER CHEMICALS USED OVER THE REPORTING PERIOD**

Sodium Hypochlorite, used as a disinfectant, was the only chemical used at the Elk Lake Water Treatment Plant.

This chemical meets AWWA and NSF/ANSI standards.

## **4.0 SIGNIFICANT EXPENSES INCURRED IN THE DRINKING WATER SYSTEM**

OCWA is committed to maintaining the assets of the drinking water system and sustains a program of scheduled inspection and maintenance activities using a computerized Work Management System (WMS).

Significant expenses incurred in the drinking water system include:

- Treated water instrument feed lines and valves were replaced and a calibration port was installed on the high lift header.
- Spill containment units for the sodium hypochlorite day tank and supply drums were installed.
- A locking mechanism was installed on the raw water feed valve to limit flows to filter during water treatment.
- New motor installed on compressor.



## 5.0 DETAILS ON NOTICES OF ADVERSE TEST RESULTS AND OTHER PROBLEMS REPORTED TO & SUBMITTED TO THE SPILLS ACTION CENTER

Based on information kept on record by OCWA, the Elk Lake Drinking Water System was in full compliance in 2018 with no adverse water quality incidents reported to the Ministry’s Spills Action Centre.

## 6.0 MICROBIOLOGICAL TESTING PERFORMED DURING THE REPORTING PERIOD

### Summary of Microbiological Data

Sample Type	# of Samples	Range of <i>E. coli</i> Results (min to max)	Range of Total Coliform Results (min to max)	# of HPC Samples	Range of HPC Results (min to max)
Raw (Production Well)	52	0 to 0 (NDGON)	0 to 0 (NDGON)	0	N/A
Treated	52	0 to 0	0 to 0	52	< 10 to 250
Distribution	104	0 to 0	0 to 0	51	< 10 to 60

Maximum Allowable Concentration (MAC) for *E. coli* = 0 Counts/100 mL

MAC for Total Coliforms = 0 Counts/100 mL

NDGON = No Data, Overgrown with Non-Target

“<” denotes less than the laboratory’s method detection limit.

**Note:** One microbiological sample is collected and tested each week from the raw and treated water supply. A total of two microbiological samples are collected and tested each week from the Elk Lake distribution system. At least 25% of the distribution samples must be tested for HPC bacteria

Refer to *Appendix A* for a monthly summary of microbiological test results.

## 7.0 OPERATIONAL TESTING PERFORMED DURING THE REPORTING PERIOD

### Summary of Raw Water Turbidity Data

Parameter	# of Samples	Range of Results (min to max)	Unit of Measure
Turbidity (Well)	13	0.11 to 1.94	NTU

**Note:** Turbidity samples required once every month.

### Continuous Monitoring in the Treatment Process

Parameter	# of Samples	Range of Results (min to max)	Unit of Measure	Standard
Free Chlorine Residual	8760	0.28 to 2.04	mg/L	CT*

**Notes:**

1. For continuous monitors 8760 is used as the number of samples for one year





- CT is the concentration of chlorine in the water times the time of contact that the chlorine has with the water. It is used to demonstrate the level of disinfection treatment in the water. CT calculations are performed for the Elk Lake water plant if the free chlorine residual level drops below 0.330 mg/L to ensure primary disinfection is achieved. CT was met during a low chlorine event in May (0.28 mg/L).

**Summary of Chlorine Residual Data in the Distribution System**

Parameter	No. of Samples	Range of Results (min to max)	Unit of Measure	Standard
Free Chlorine Residual	364	0.46 to 1.72	mg/L	≥ 0.05

**Note:** A total of seven operational checks for chlorine residual in the distribution system are collected each week. Four (4) samples are tested one day and three (3) on a second day. The sample sets are collected at least 48-hours apart and samples collected on the same day are from different locations.

Refer to *Appendix B* for a monthly summary of the above operational data.

**Summary of Nitrate & Nitrite Data** (sampled at the water treatment plant every quarter)

Date of Sample	Nitrate Result	Nitrite Result	Unit of Measure	Exceedance
January 15	< 0.1	< 0.03	mg/L	No
April 3	< 0.1	< 0.03	mg/L	No
July 3	< 0.1	< 0.03	mg/L	No
October 12	< 0.02	< 0.008	mg/L	No

Maximum Allowable Concentration (MAC) for Nitrate = 10 mg/L  
 MAC for Nitrite = 1 mg/L

**Summary of Total Trihalomethane Data** (sampled in the distribution system every quarter)

Date of Sample	Result Value	Unit of Measure	Running Average	Exceedance
January 15	38.2	ug/L		
April 3	27.5	ug/L		
July 3	31.3	ug/L	32.3	No
October 12	32.2	ug/L		

Maximum Allowable Concentration (MAC) for Total Trihalomethanes = 100 ug/L (Running Annual Average)

**Haloacetic Acid (HAAs) Sampling and Testing Required under Schedule 13-6.1**

New sampling requirements for Haloacetic Acids (HAAs) came into effect on January 1<sup>st</sup>, 2017. At least one distribution must sample taken in each calendar quarter, from a point in the drinking water system’s distribution system, or plumbing that is likely to have an elevated potential for the formation of HAAs.

The maximum allowable concentration (MAC) of 80 ug/L is effective January 1<sup>st</sup>, 2020 and is based on a running annual average of quarterly results (similar to THMs). Results that exceed



the MAC must be reported as an adverse water quality incident (AWQI) starting January 1<sup>st</sup>, 2020. HAA results for 2018 are summarized below.

**Summary of Total Haloacetic Acid Data** (sampled in the distribution system every quarter)

Date of Sample	Result Value	Unit of Measure	Running Average	Exceedance
January 15	8.7	ug/L		
April 3	25.8	ug/L		
July 3	14.8	ug/L	16.8	N/A
October 12	18	ug/L		

**Summary of Most Recent Lead Data under Schedule 15.1**

(applicable to the following drinking water systems; large municipal residential systems, small, municipal residential systems, and non-municipal year-round residential systems)

The Elk Lake Drinking Water System was eligible to follow the “Exemption from Plumbing Sampling” as described in section 15.1-5(9) and 15.1-5(10) of Schedule 15.1 of Ontario Regulation 170/03. The exemption applies to a drinking water system if, in two consecutive periods at reduced sampling, not more than 10% of all samples from plumbing exceed the maximum allowable concentration (MAC) of 10 ug/L for lead. As such, the system was required to test for total alkalinity and pH in one distribution sample collected during the periods of December 15 to April 15 (winter period) and June 15 to October 15 (summer period). This testing is required in every 12-month period with lead testing in every third 12-month period.

Two rounds of alkalinity and pH testing were carried out on April 5<sup>th</sup> and October 12<sup>th</sup> of 2018. Results are summarized in the table below.

**Summary of Lead Data** (sampled in the distribution system)

Date of Sample	# of Samples	Field pH	Field Temperature (°C)	Alkalinity (mg/L)	Lead (ug/L)
April 5	1	7.4	4.3	250	N/A
October 12	1	7.7	9.8	245	N/A

**Note:** Next lead sampling scheduled for 2020

**Most Recent Schedule 23 Inorganic Data Tested at the Water Treatment Plant**

Parameter	Result Value	Unit of Measure	MAC	MAC Exceedance	½ MAC Exceedance
Antimony	< 0.5	ug/L	6	No	No
Arsenic	1.1	ug/L	10	No	No
Barium	371	ug/L	1000	No	No
Boron	18	ug/L	5000	No	No
Cadmium	< 0.1	ug/L	5	No	No



**Most Recent Schedule 23 Inorganic Data Tested at the Water Treatment Plant**

Parameter	Result Value	Unit of Measure	MAC	MAC Exceedance	½ MAC Exceedance
Chromium	2.2	ug/L	50	No	No
Mercury	< 0.1	ug/L	1	No	No
Selenium	< 1	ug/L	50	No	No
Uranium	< 1	ug/L	20	No	No

**Note:** Sample required every 36 months (sample date = October 3, 2017). Next sampling scheduled for October 2020

**Most Recent Schedule 24 Organic Data Tested at the Water Treatment Plant**

Parameter	Result Value	Unit of Measure	MAC	MAC Exceedance	½ MAC Exceedance
Alachlor	< 0.2	ug/L	5	No	No
Atrazine + N-dealkylated metabolites	< 0.5	ug/L	5	No	No
Azinphos-methyl	< 0.2	ug/L	20	No	No
Benzene	< 0.1	ug/L	1	No	No
Benzo(a)pyrene	< 0.005	ug/L	0.01	No	No
Bromoxynil	< 0.09	ug/L	5	No	No
Carbaryl	< 1	ug/L	90	No	No
Carbofuran	< 1	ug/L	90	No	No
Carbon Tetrachloride	< 0.2	ug/L	2	No	No
Chlorpyrifos	< 0.2	ug/L	90	No	No
Diazinon	< 0.2	ug/L	20	No	No
Dicamba	< 0.08	ug/L	120	No	No
1,2-Dichlorobenzene	< 0.2	ug/L	200	No	No
1,4-Dichlorobenzene	< 0.3	ug/L	5	No	No
1,2-Dichloroethane	< 0.2	ug/L	5	No	No
1,1-Dichloroethylene (vinylidene chloride)	< 0.3	ug/L	14	No	No
Dichloromethane	< 1	ug/L	50	No	No
2-4 Dichlorophenol	< 0.2	ug/L	900	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	< 0.08	ug/L	100	No	No
Diclofop-methyl	< 0.08	ug/L	9	No	No
Dimethoate	< 0.2	ug/L	20	No	No
Diquat	< 0.7	ug/L	70	No	No
Diuron	< 6	ug/L	150	No	No
Glyphosate	< 20	ug/L	280	No	No
MCPA	< 10	ug/L	100	No	No
Malathion	< 0.2	ug/L	190	No	No
Metolachlor	< 0.1	ug/L	50	No	No
Metribuzin	< 0.1	ug/L	80	No	No
Monochlorobenzene	< 0.5	ug/L	80	No	No



**Most Recent Schedule 24 Organic Data Tested at the Water Treatment Plant**

Parameter	Result Value	Unit of Measure	MAC	MAC Exceedance	½ MAC Exceedance
Paraquat	< 0.3	ug/L	10	No	No
Pentachlorophenol	< 0.3	ug/L	60	No	No
Phorate	< 0.1	ug/L	2	No	No
Picloram	< 0.08	ug/L	190	No	No
Polychlorinated Biphenyls (PCBs)	< 0.06	ug/L	3	No	No
Prometryne	< 0.06	ug/L	1	No	No
Simazine	< 0.2	ug/L	10	No	No
Terbufos	< 0.1	ug/L	1	No	No
Tetrachloroethylene	< 0.3	ug/L	10	No	No
2,3,4,6-Tetrachlorophenol	< 0.3	ug/L	100	No	No
Triallate	< 0.1	ug/L	230	No	No
Trichloroethylene	< 0.2	ug/L	5	No	No
2,4,6-Trichlorophenol	< 0.2	ug/L	5	No	No
Trifluralin	< 0.1	ug/L	45	No	No
Vinyl Chloride	< 0.1	ug/L	1	No	No

**Note:** Sample required every 36 months (sample date = October 3, 2017). Next sampling scheduled for October 2020

**Inorganic or Organic Test Results that Exceeded Half the Standard Prescribed in Schedule 2 of the Ontario Drinking Water Quality Standards.**

No inorganic or organic parameter(s) listed in Schedule 23 and 24 of Ontario Regulation 170/03 exceeded half the standard found in Schedule 2 of the Ontario Drinking Water Standard (O. Reg. 169/03) during the reporting period.

**Most Recent Sodium Data Sampled at the Water Treatment Plant**

Date of Sample	# of Samples	Result Value	Unit of Measure	Standard	Exceedance
October 5, 2015	1	7.37	mg/L	20	No

**Note:** Sample required every 60 months. Next sampling scheduled for October 2020

**Most Recent Fluoride Data Sampled at the Water Treatment Plant**

Date of Sample	# of Samples	Result Value	Unit of Measure	Standard	Exceedance
October 5, 2015	1	0.17	mg/L	1.5	No

**Note:** Sample required every 60 months. Next sampling scheduled for October 2020



***Additional Testing Performed in Accordance with an Approval, Order or Legal Instrument***

No additional sampling and testing was required for the Elk Lake Drinking Water System during the 2018 reporting period.



Elk Lake Drinking Water System

Schedule 22

# 2018 SUMMARY REPORT

## FOR MUNICIPALITIES



## Schedule 22 - SUMMARY REPORTS FOR MUNICIPALITIES

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### 1.0 INTRODUCTION

<b>Drinking-Water System Name:</b>	<b>Elk Lake Drinking Water System</b>
<b>Municipal Drinking Water Licence (MDWL) No.:</b>	274-101-3 (issued March 2, 2016)
<b>Drinking Water Work Permit (DWWP) No.:</b>	274-201-2 (issued February 25, 2016)
<b>Permit to Take Water (PTTW) No.:</b>	6352-972Q3Y (issued April 24, 2013)
<b>Period being reported:</b>	January 1, 2018 to December 31, 2018

### 2.0 REQUIREMENTS THE SYSTEM FAILED TO MEET

According to information kept on record by OCWA, the Elk Lake Drinking Water System has complied with all the requirements set out in the system's MDWL, its DWWP, the Act and its Regulations.

### 3.0 SUMMARY OF FLOWS AND COMPARISON TO REGULATORY LIMITS

#### *Flow Monitoring*

MDWL No. 274-101 requires the owner to install a sufficient number of flow measuring devices to permit the continuous measurement and recording of:

- the flow rate and daily volume of treated water that flows from the treatment subsystem the distribution system, and
- the flow rate and daily volume of water that flows into the treatment subsystem.

The flow monitoring equipment identified in the MDWL is present and operating as required. These flow meters are calibrated on an annual basis as specified in the manufacturers' instructions.

#### *Water Usage*

The following water usage tables summarize the quantities and flow rates of water taken and produced during the 2018 reporting period, including total monthly volumes, average monthly volumes, maximum monthly volumes, and maximum flow rates.



## Raw Water

### 2018 - Monthly Summary of Water Takings from the Source (Well No. 1)

Regulated by by Permit to Take Water (PTTW) #6352-972Q37 issued April 24, 2013

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m <sup>3</sup> )	2808	3051	3157	2947	3363	4227	4228	3736	3028	3540	3018	2996	40099
Average Volume (m <sup>3</sup> /d)	91	109	102	98	108	141	136	121	101	114	101	97	110
Maximum Volume (m <sup>3</sup> /d)	148	154	192	351	188	554	259	178	198	544	157	191	554
PTTW - Maximum Allowable Volume (m <sup>3</sup> /day)	2162	2162	2162	2162	2162	2162	2162	2162	2162	2162	2162	2162	2162
Maximum Flow Rate (L/min)	2220	2820	2520	4740	3060	3000	3180	2880	2940	3420	3300	3300	4740
PTTW - Maximum Allowable Flow Rate (L/min)	3840	3840	3840	3840	3840	3840	3840	3840	3840	3840	3840	2840	3840

Apr 20th - The well exceeded its PTTW limit due to a fire in the Town.

The system's Permit to Take Water #6352-972Q3Y, allows the Township to withdraw water at the following rates:

Well No. 1 (Production Well): 2162 m<sup>3</sup>/day / 3,840 L/minute

Well No. 2 (Observation Well): 217 m<sup>3</sup>/day / 227 L/minute

Total Combined Daily Volume: 2489 m<sup>3</sup>/day

A review of the raw water flow data indicates that the system did not exceed the maximum allowable volume during the reporting period, but it did exceed the maximum allowable flow rate once in 2018 during a fire in the Town. The maximum volume withdrawn from Well No. 1 was 544 m<sup>3</sup>/day and the maximum recorded flow rate was 4740 L/minute on April 20<sup>th</sup>.

Well No. 2 is a stand-alone observation well that is not equipped with a well pump. No water was taken from this well in 2018.

## Treated Water

### 2018 - Monthly Summary of Treated Water Supplied to the Distribution System

Regulated Municipal Drinking Water Licence (MDWL) #274-101 - Issue 3, dated March 2, 2016

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m <sup>3</sup> )	2371	2592	2597	2635	2980	3941	3944	3259	2552	3121	2388	2517	34897
Average Volume (m <sup>3</sup> /d)	76	93	84	88	96	131	127	105	85	101	80	81	96
Maximum Volume (m <sup>3</sup> /d)	97	126	103	308	134	642	175	131	106	533	101	127	642
MDWL/C of A - Rated Capacity (m <sup>3</sup> /day)	2790	2790	2790	2790	2790	2790	2790	2790	2790	2790	2790	2790	2790



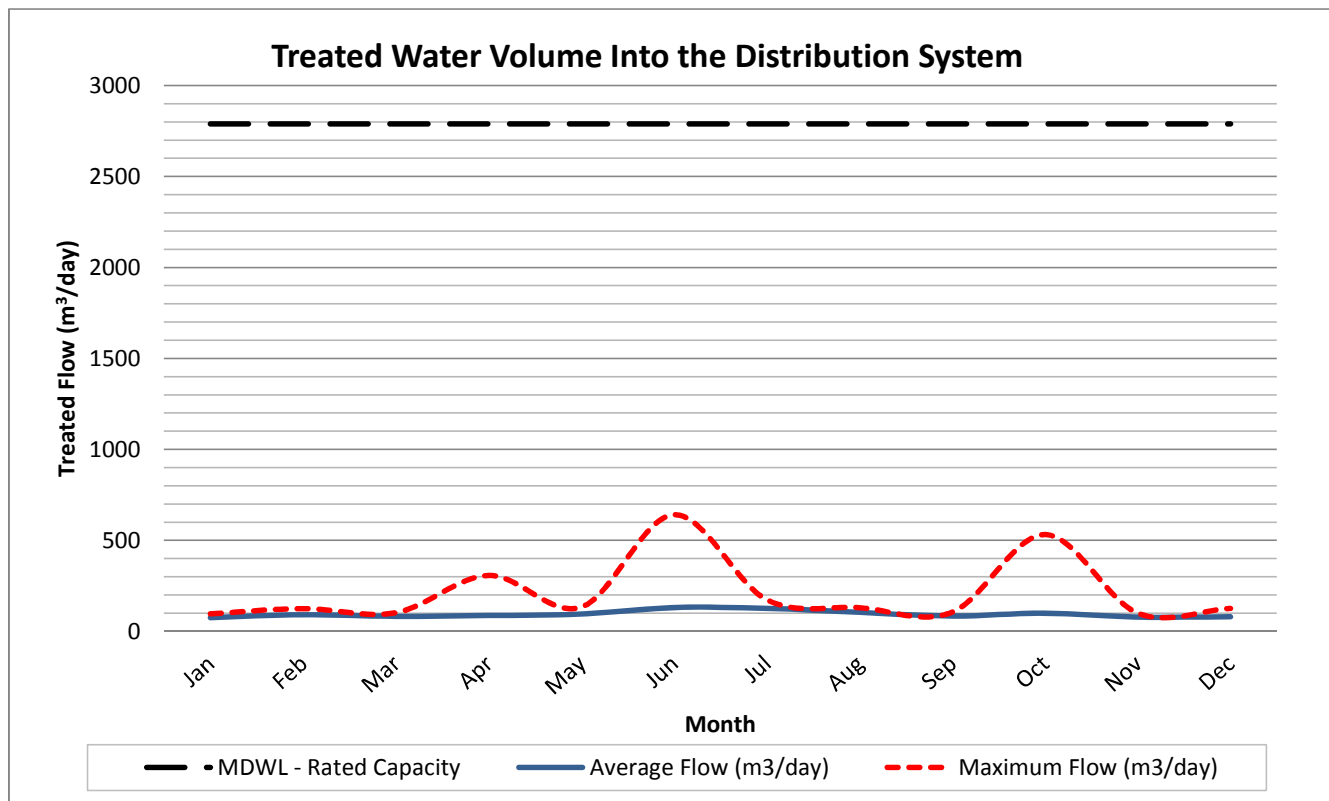


Schedule C, Section 1.0 (1.1) of MDWL No. 274-101 states that the maximum daily volume of treated water that flows from the treatment subsystem to the distribution system shall not exceed 2790 m<sup>3</sup>/day. The Elk Lake DWS complied with this limit having a recorded maximum volume of 642 m<sup>3</sup>/day during the reporting period, which represents 23.0% of the rated capacity.

The following table and graph (Figure 1) compares the average and maximum flow rates into the distribution system to the rated capacity of the system identified in the MDWL.

**Figure 1: 2018 - Monthly Volume of Treated Water into the Distribution System**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Flow (m <sup>3</sup> /day)	76	93	84	88	96	131	127	105	85	101	80	81
Maximum Flow (m <sup>3</sup> /day)	97	126	103	308	134	642	175	131	106	533	101	127
MDWL - Rated Capacity	2790	2790	2790	2790	2790	2790	2790	2790	2790	2790	2790	2790
% Rated Capacity	3	5	4	11	5	23	6	5	4	19	4	5





### ***Summary of System Performance***

The following information is provided to enable the Owner to assess the capability of the system to meet existing and future water usage needs.

Rated Capacity of the Plant (MDWL)	2,790 m <sup>3</sup> /day	
Average Daily Flow for 2018	96 m <sup>3</sup> /day	3.4 % of the rated capacity
Maximum Daily Flow for 2018	642 m <sup>3</sup> /day	23.0 % of the rated capacity
Total Treated Water Produced in 2018	34897 m <sup>3</sup>	

### **CONCLUSION**

The Elk Lake Drinking Water System operated well in 2018 complying with the regulatory requirements of the Safe Drinking Water Act and its Regulations and meeting the terms and conditions outlined in its site specific drinking water works permit and municipal drinking water licence having no incidents of non-compliance during the reporting period.

The system exceeded the maximum flow rate allowed in its Permit to Take Water due to a fire in the Town, but was able to meet the maximum allowable daily volume of the permit.



# **APPENDIX A**

Monthly Summary of Microbiological  
Test Results

**ELK LAKE DRINKING WATER SYSTEM  
SUMMARY OF MICROBIOLOGICAL TEST RESULTS**

Facility Works Number: 220007329  
 Facility Owner: Municipality: Township of James  
 Facility Classification: Class 1 Water Treatment

RAW WATER	01/2018	02/2018	03/2018	04/2018	05/2018	06/2018	07/2018	08/2018	09/2018	10/2018	11/2018	12/2018	Total	Avg	Max	Min
Well 1 (Production) / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0/NDOGN	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Well 1 (Production) / E. Coli: EC - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0/NDOGN	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
TREATED WATER																
Treated Water (POE) / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Treated Water (POE) / E. Coli: EC - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Treated Water (POE) / HPC - cfu/mL																
Count Lab	5	4	4	5	4	4	5	4	4	5	4	4	52			
Max Lab	< 10	< 10	< 10	< 10	< 30	< 10	< 60	< 10	< 20	< 10	< 10	< 10		< 11.731	< 60	
Mean Lab	< 10	< 10	< 10	< 10	< 15	< 10	< 22	< 10	< 12.5	< 10	< 10	< 10				
Min Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10				< 10
DISTRIBUTION WATER																
EL-3 (Bacti) / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
EL-3 (Bacti) / E. Coli - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
EL-3 (Bacti) / HPC - cfu/mL																
Count Lab	2	2	2	3	2	2	2	2	2	2	2	2	25			
Max Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10		< 10		
Mean Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10		< 10		
Min Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10				< 10
EL-4 (Bacti) / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
EL-4 (Bacti) / E. Coli - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
EL-4 (Bacti) / HPC - cfu/mL																
Count Lab	3	2	2	2	2	2	3	2	2	2	2	2	26			
Max Lab	< 30	< 20	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10		< 11.154	< 30	
Mean Lab	< 16.667	< 15	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10				
Min Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10				< 10

Note: Well No. 1 samples collected on July 9th were overgrown with bacteria and given the result of NDOGN - No Data, Overgrown with Non-Target



# **APPENDIX B**

Monthly Summary of Operational Data

**ELK LAKE DRINKING WATER SYSTEM  
SUMMARY OF OPERATIONAL TEST RESULTS**

Facility Works Number: **220007329**  
 Facility Owner: **Municipality: Township of James**  
 Facility Classification: **Class 1 Water Treatment**

<b>RAW WATER</b>	01/2018	02/2018	03/2018	04/2018	05/2018	06/2018	07/2018	08/2018	09/2018	10/2018	11/2018	12/2018	Total	Avg	Max	Min
Well 1 (Production) / Turbidity - NTU																
Count IH	1	1	1	1	1	1	1	1	1	1	1	2	13			
Total IH	1.94	0.43	0.65	0.55	0.59	0.39	1.21	1.45	1.22	1.25	1.46	0.24	11.38			
Max IH	1.94	0.43	0.65	0.55	0.59	0.39	1.21	1.45	1.22	1.25	1.46	0.13			1.94	
Mean IH	1.94	0.43	0.65	0.55	0.59	0.39	1.21	1.45	1.22	1.25	1.46	0.12		0.875		
Min IH	1.94	0.43	0.65	0.55	0.59	0.39	1.21	1.45	1.22	1.25	1.46	0.11				0.11
<b>TREATED WATER</b>	01/2018	02/2018	03/2018	04/2018	05/2018	06/2018	07/2018	08/2018	09/2018	10/2018	11/2018	12/2018	Total	Avg	Max	Min
Treated Water (POE) / Cl Residual: Free (0.33 mg/L) - mg/L																
Max OL	1.63	1.44	1.87	1.77	2.04	1.59	1.16	1.06	0.95	1.28	1.53	1.57			2.04	
Mean OL	1.414	1.333	1.154	1.365	1.084	1.026	1.04	0.941	0.77	1.026	1.21	1.351		1.143		
Min OL	1.24	1.24	0.56	0.91	0.28	0.69	0.93	0.69	0.44	0.56	0.97	1.12				0.28
<b>DISTRIBUTION WATER</b>	01/2018	02/2018	03/2018	04/2018	05/2018	06/2018	07/2018	08/2018	09/2018	10/2018	11/2018	12/2018	Total	Avg	Max	Min
Residual No. 1 / Cl Residual: Free - mg/L																
Count IH	9	8	9	9	9	8	9	9	8	10	8	8	104			
Max IH	1.65	1.19	1.17	1.49	1.37	0.96	1.11	0.84	0.76	1	1.12	1.31			1.65	
Mean IH	1.276	1.096	1.003	1.064	1.008	0.828	0.874	0.711	0.656	0.865	1.043	1.138		0.963		
Min IH	1.14	0.94	0.83	0.68	0.59	0.75	0.7	0.56	0.56	0.51	0.76	1.05				0.51
Residual No. 2 / Cl Residual: Free - mg/L																
Count IH	9	8	9	9	9	8	9	9	8	10	8	8	104			
Max IH	1.52	1.26	1.2	1.62	1.35	1.11	1.07	0.94	0.72	1.06	1.24	1.36			1.62	
Mean IH	1.289	1.191	1.067	1.302	1.109	0.899	0.924	0.77	0.654	0.834	1.125	1.198		1.029		
Min IH	1.13	1.06	0.91	1.06	0.82	0.78	0.73	0.57	0.56	0.46	0.89	0.94				0.46
Residual No. 3 / Cl Residual: Free - mg/L																
Count IH	9	8	9	9	9	8	9	9	8	10	8	8	104			
Max IH	1.56	1.24	1.12	1.65	1.35	1.05	1.03	0.83	0.85	1.08	1.2	1.35			1.65	
Mean IH	1.281	1.126	1.03	1.321	0.974	0.944	0.88	0.714	0.732	0.974	1.143	1.204		1.026		
Min IH	1.01	1.03	0.88	1	0.61	0.88	0.72	0.55	0.63	0.86	1.06	1.04				0.55
Residual No. 4 / Cl Residual: Free - mg/L																
Count IH	5	4	4	5	4	4	5	4	4	5	4	4	52			
Max IH	1.72	1.11	1.1	1.54	1.21	1.08	0.97	0.85	0.76	1.03	1.13	1.38			1.72	
Mean IH	1.286	1.09	1.03	1.158	0.93	0.88	0.828	0.778	0.695	0.916	1.05	1.128		0.986		
Min IH	1.06	1.04	0.9	0.94	0.72	0.72	0.7	0.74	0.62	0.76	0.98	1.03				0.62

Note: CT is the concentration of chlorine in the water times the time of contact that the chlorine has with the water. It is used to demonstrate the level of disinfection treatment in the water. CT calculations are performed for the Elk Lake water plant if the free chlorine residual level drops below 0.330 mg/L to ensure primary disinfection is achieved. CT was met during a low chlorine event in May (0.28 mg/L).