

**\*There were no adverse test results for the Elgin Area Primary Water Supply System during this quarter.**

**Analytical Test Results:** (All values are reported in mg/L unless otherwise noted)

**Microbiological Parameters (Required Testing Under O.Reg. 170/03)**

Microbiological Parameters	MAC or IMAC	No. of Samples	No. of Detectable Results	No. of Adverse Results	Method	Sampling Date	Results		Comments
							Min.	Max.	
Total Coliform (counts/100ml) *	Not Detectable	64	0	0	Membrane Filtration	Jul-Sep	0	0	Parameter sampled is used to test for the possible presence of fecal matter. Zero detectable test results indicate that Total Coliforms were not detected.
<i>E. Coli</i> (counts/100ml) *	Not Detectable	64	0	0	Membrane Filtration	Jul-Sep	0	0	Parameter sampled is used to test for the possible presence of fecal matter. Zero detectable test results indicate that E.Coli was not detected.
Heterotrophic Plate Count (counts/1ml)	N/A	64	14	0	Spread Plate Count	Jul-Sep	<10	150	Test parameter is used as an indicator of possible deterioration of water quality. Increases in HPC concentrations above baseline levels are considered undesirable.

## Operational Parameters:

Operational Parameters	MAC or IMAC	Objective AO/OG	No. of Samples	Sampling Date	Results			Comments
					Min.	Max.	Avg.	
Chlorine Residual <sup>1</sup> , Free (mg/L)			Continuous monitoring plus 6 grab samples per day	Jul-Sep	0.82	1.74	1.27	The maintenance of an adequate free chlorine residual is essential to the protection of public health. Values reported are an average of the 6 daily grab samples. The regulated minimum for free chlorine residual concentration in a water distribution system is 0.05mg/L; however the contractual obligation of the water system is to achieve 0.5mg/L at the point of supply to the municipalities.
Chlorine Residual <sup>1</sup> , Total (mg/L)			Continuous monitoring plus 2 grab samples per day	Jul-Sep	1.01	1.79	1.43	The maintenance of an adequate free chlorine residual in essential to the protection of public health. Values reported are an average of the 2 daily grab samples.
Colour (TCU)		5	2 grab samples per day	Jul-Sep	<3	5	0.5	Values reported are an average of the 2 daily grab samples.
Conductivity (µS/cm)			Continuous monitoring plus 2 grab samples per day	Jul-Sep	210.5	296.8	269.2	Values reported based on daily minimum, maximum and average that have been recorded electronically.
pH		6.5 – 8.5	Continuous monitoring plus 6 grab samples per day	Jul-Sep	6.80	7.81	7.50	Values reported are an average of the 6 daily grab samples.
Turbidity <sup>1,2</sup> (NTU)			Continuous monitoring plus 6 grab samples per day	Jul-Sep	0.016	0.477	0.068	Turbidity (cloudiness) of water is an indication of the presence of particles in the water. If excessive, it may interfere with proper disinfection. Values reported are an average of the 6 daily grab samples.
Fluoride <sup>1</sup> (mg/L)	1.5	0.6 – 0.8	Continuous monitoring plus 2 grab samples per day	Jul-Sep	0.28	0.80	0.65	Naturally occurring fluoride levels are supplemented during treatment to achieve the optimum level of 0.7mg/L recommended by Health Canada. The Ministry of Health and Long Term Care's document "Protocol for the Monitoring of Community Water Fluoride Levels" recommends a therapeutic range of 0.6 - 0.8 mg/L for fluoride. Values reported are an average of the 2 daily grab samples.
Aluminum (mg/L)		0.1	2 grab samples per day	Jul-Sep	0.001	0.090	0.019	Aluminum levels are slightly elevated during treatment as a result of the use of alum to help in the removal of particulates.
Temperature (Celsius)		15	Continuous monitoring plus 6 grab samples per day	Jul-Sep	13.8	27.8	21.9	Raw Water Temperature. Values reported are an average of the 6 daily grab samples.

Inorganic Parameters (Required Testing Under O.Reg. 170/03 – Schedule 23):

Schedule 23 - Inorganic Parameters		MAC or IMAC (mg/L)	Objective AO/OG	O.Reg. 170/03 Required Frequency of Testing (months)	2015	2016			Reportable Detection Limit (mg/L)	Comments
					Q4	Q1	Q2	Q3		
1.	Antimony	0.006		12	NT	0.00011	NT	0.00031	0.00002	
2.	Arsenic	0.025		12	NT	ND	NT	0.0003	0.0002	
3.	Barium	1.0		12	NT	0.0218	NT	0.0247	0.00001	
4.	Boron	5.0		12	NT	0.0239	NT	0.018	0.0002	
5.	Cadmium	0.005		12	NT	0.000009	NT	0.000012	0.000003	
6.	Chromium	0.05		12	NT	0.00004	NT	0.00044	0.0005	
7.	Mercury	0.001		12	NT	ND	NT	ND	0.00002	
8.	Selenium	0.01		12	NT	0.00014	NT	0.00020	0.001	
9.	Uranium	0.02		12	NT	0.000027	NT	0.000051	0.000001	

Organic Parameters (Required Testing Under O.Reg. 170/03 – Schedule 24):

Schedule 24 – Organic Parameters		MAC or IMAC (mg/L)	Objective AO/OG	O.Reg. 170/03 Required Frequency of Testing (months)	2015	2016			Reportable Detection Limit (mg/L)	Comments
					Q4	Q1	Q2	Q3		
1.	Alachlor	0.005		12	NT	ND	NT	ND	0.00002	Herbicide
2.	Atrazine + N-dealkylated metabolites	0.005		12	NT	0.00011	NT	0.00005	0.00001	Herbicide
3.	Azinphos-methyl	0.02		12	NT	ND	NT	ND	0.00002	Insecticide
4.	Benzene	0.005		12	NT	ND	NT	ND	0.00032	An aromatic hydrocarbon present in gasoline
5.	Benzo(a)pyrene	0.00001		12	NT	ND	NT	ND	0.000004	A polycyclic aromatic hydrocarbon (PAH) that forms during the combustion of organic matter (eg. emissions from burning fossil fuels)
6.	Bromoxynil	0.005		12	NT	ND	NT	ND	0.00033	Herbicide
7.	Carbaryl	0.09		12	NT	ND	NT	ND	0.00001	Insecticide
8.	Carbofuran	0.09		12	NT	ND	NT	ND	0.00001	Insecticide
9.	Carbon Tetrachloride	0.005		12	NT	ND	NT	ND	0.00016	An organic liquid that is primarily released from man-made sources; used in industrial and agricultural process
10.	Chlorpyrifos	0.09		12	NT	ND	NT	ND	0.00002	Pesticide
11.	Diazinon	0.02		12	NT	ND	NT	ND	0.00002	Insecticide
12.	Dicamba	0.12		12	NT	ND	NT	ND	0.0002	Herbicide
13.	1,2-Dichlorobenzene	0.2	0.003	12	NT	ND	NT	ND	0.00041	An organic compound used in both industrial and commercial products (coolant, degreaser, solvent)
14.	1,4-Dichlorobenzene	0.005	0.001	12	NT	ND	NT	ND	0.00036	An organic compound used in both industrial and commercial products (deodorizer, fungicide, lubricant)
15.	1,2-Dichloroethane	0.005		12	NT	ND	NT	ND	0.00035	An organic chemical with many industrial and commercial applications (solvent, fumigant, ingredient in plastics etc.)
16.	1,1-Dichloroethylene (vinylidene chloride)	0.014		12	NT	ND	NT	ND	0.00033	Volatile organic compound; imported for use in the food packaging and textile industries

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					Q4	Q1	Q2	Q3		
17.	Dichloromethane	0.05		12	NT	ND	NT	ND	0.00035	Volatile organic compound used in a variety of industries (electronics, textiles, pharmaceuticals, plastics etc.)
18.	2,4-Dichlorophenol	0.9	0.0003	12	NT	ND	NT	ND	0.00015	An organic compound used in industry and chemical manufacturing
19.	2,4-Dichlorophenoxy acetic acid (2,4-D)	0.1		12	NT	ND	NT	ND	0.00019	Herbicide
20.	Diclofop-methyl	0.009		12	NT	ND	NT	ND	0.0004	Herbicide
21.	Dimethoate	0.02		12	NT	ND	NT	ND	0.00003	Insecticide
22.	Diquat	0.07		12	NT	ND	NT	ND	0.001	Herbicide
23.	Diuron	0.15		12	NT	ND	NT	ND	0.00003	Herbicide
24.	Glyphosate	0.28		12	NT	ND	NT	ND	0.006	Herbicide
25.	Malathion	0.19		12	NT	ND	NT	ND	0.00002	Insecticide
26.	Metolachlor	0.05		12	NT	0.00002	NT	ND	0.00001	Herbicide
27.	Metribuzin	0.08		12	NT	ND	NT	ND	0.00002	Herbicide
28.	Monochlorobenzene	0.08	0.03	12	NT	ND	NT	ND	0.0003	A man-made organic compound; primarily used as a solvent
29.	Paraquat	0.01		12	NT	ND	NT	ND	0.001	Herbicide
30.	Pentachlorophenol	0.06		12	NT	ND	NT	ND	0.00015	An organic compound; used as a pesticide and wood preservative (manufacture and use banned since the 1980's)
31.	Phorate	0.002		12	NT	ND	NT	ND	0.00001	Insecticide
32.	Picloram	0.19		12	NT	ND	NT	ND	0.001	Herbicide
33.	Polychlorinated Biphenyls (PCB)	0.003		12	NT	ND	NT	ND	0.00004	An organic compound; used in electrical equipment and as a fire retardant (use has been banned since the 1980's)
34.	Prometryne	0.001		12	NT	ND	NT	ND	0.00003	Herbicide

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					Q4	Q1	Q2	Q3		
35.	Simazine	0.01		12	NT	ND	NT	ND	0.00001	Herbicide
36.	Terbufos	0.001		12	NT	ND	NT	ND	0.00001	Insecticide
37.	Tetrachloroethylene (perchloroethylene)	0.030		12	NT	ND	NT	ND	0.00035	An organic compound; used as a solvent in dry cleaning and metal cleaning industries
38.	2,3,4,6-Tetrachlorophenol	0.10	0.001	12	NT	ND	NT	ND	0.00014	An organic compound; currently used mainly as a wood preservative
39.	Triallate	0.23		12	NT	ND	NT	ND	0.00001	Herbicide
40.	Trichloroethylene	0.05		12	NT	ND	NT	ND	0.00044	Volatile organic compound; used in metal degreasing operations and chemical manufacturing
41.	2,4,6-Trichlorophenol	0.005	0.002	12	NT	ND	NT	ND	0.00025	Volatile organic compound; used in the manufacture of pesticides
42.	Trifluralin	0.045		12	NT	ND	NT	ND	0.00002	Herbicide
43.	Vinyl Chloride	0.002		12	NT	ND	NT	ND	0.00017	Volatile organic compound; Used in making PVC (polyvinyl chloride) plastic items
44.	2 methyl-4-chlorophenoxyacetic acid (MCPA)	0.1 *		12	NT	ND	NT	ND	0.00012	Herbicide *The MAC takes effect on January 1, 2017.

Additional Organic Parameters (Removed from Schedule 24 as of January 1, 2016)		MAC or IMAC (mg/L)	Objective AO/OG	Required Frequency of Testing (months)	2015	2016			Reportable Detection Limit (mg/L)	Comments
					Q4	Q1	Q2	Q3		
1.	Aldicarb			NR	NT	NT	NT	ND	0.00001	Insecticide
2.	Aldrin + Dieldrin			NR	NT	NT	NT	ND	0.00001	Insecticide
3.	Bendiocarb			NR	NT	NT	NT	ND	0.00001	Insecticide
4.	Chlordane (total)			NR	NT	NT	NT	ND	0.00001	Pesticide
5.	Cyanazine			NR	NT	NT	NT	ND	0.00003	Herbicide
6.	Dichlorodiphenyltrichloroethane (DDT) + metabolites			NR	NT	NT	NT	ND	0.00001	Insecticide
7.	Dinoseb			NR	NT	NT	NT	ND	0.00036	Insecticide, Herbicide
8.	Heptachlor + Heptachlor Epoxide			NR	NT	NT	NT	ND	0.00001	Insecticide
9.	Lindane (Total)			NR	NT	NT	NT	ND	0.00001	Pesticide
10.	Methoxychlor			NR	NT	NT	NT	ND	0.00001	Insecticide
11.	Parathion			NR	NT	NT	NT	ND	0.00002	Insecticide
12.	Temephos			NR	NT	NT	NT	ND	0.00001	Insecticide
13.	2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)			NR	NT	NT	NT	ND	0.00022	Herbicide

## General Chemistry and Physical Parameters (Additional Regulatory and Contractual Testing)

General Chemistry and Physical Parameters	MAC or IMAC (mg/L)	Objective AO/OG (mg/L)	O.Reg. 170/03 Required Frequency of Testing (months)	Contractual Required Frequency of Testing (months)	2015	2016			Reportable Detection Limit (mg/L)	Comments
					Q4	Q1	Q2	Q3		
Alkalinity (Total as CaCO <sub>3</sub> )		30 – 500	NR	6	91	92	98	90	2	Q3 value is an average of 4 sample results
Chloride		250	NR	12	NT	16.6	NT	NT		
Copper		1	NR	12	NT	0.005	NT	NT	0.001	
Dissolved Organic Carbon (mg/L as C)		5	NR	12	1.1	1.5	1.5	1.75	0.1	Q3 value is an average of 4 sample results
Dissolved Inorganic Carbon (mg/L as C)			NR	6	NT	22.0	NT	22.2		
Ethylbenzene		0.0024	NR	12	NT	ND	NT	NT		
Geosmin (ng/L)		4.0	NR	Weekly as Required	ND	NT	NT	ND	3.0 ng/L	Geosmin is tested weekly from July 1-Oct 31. Results are expressed as the average per quarter when testing is required.
Haloacetic Acids	0.080 *	0.060	NR	3	0.008	ND	ND	ND	0.0053	The standard is expressed as a running annual average of quarterly samples measured at a point reflecting the maximum residence time in the distribution system. Running annual average: 0.002mg/L *The MAC takes effect January 1, 2020.
Hardness (mg/L as CaCO <sub>3</sub> )		80 – 100	NR	12	NT	122	NT	NT	1	
Iron		0.3	NR	12	NT	ND	NT	ND		Q3 value is an average of 2 samples
Lead	0.01		NR	6	NT	ND	NT	0.00003	0.00002	
Manganese		0.05	NR	12	NT	ND	NT	0.00042		Q3 value is an average of 2 samples
Methane (L/m <sup>3</sup> )		3L/m <sup>3</sup>	NR	12	NT	ND	NT	NT		
2-Methylisoborneol (MIB) (ng/L)		8.5	NR	Weekly as Required	ND	NT	NT	ND	3.0 ng/L	MIB is tested weekly from July 1-Oct 31. Results are expressed as the average per quarter when testing is required.
Nitrate	10.0		3	3	0.112	0.303	0.218	0.116	0.013	Where both nitrate and nitrite are present, the total of the two should not exceed 10 mg/L (as nitrogen)



General Chemistry and Physical Parameters	MAC or IMAC (mg/L)	Objective AO/OG (mg/L)	O.Reg. 170/03 Required Frequency of Testing (months)	Contractual Required Frequency of Testing (months)	2015	2016			Reportable Detection Limit (mg/L)	Comments
					Q4	Q1	Q2	Q3		
Nitrite	1.0		3	3	ND	ND	ND	ND	0.005	Where both nitrate and nitrite are present, the total of the two should not exceed 10 mg/L (as nitrogen)
Organic Nitrogen		0.15	NR	12	NT	ND	NT	NT	0.1	Organic nitrogen is calculated by subtracting Total Ammonia from Total Kjeldahl Nitrogen
Sodium		200	60	12	19.1	15.5	NT	NT	0.5	The local Medical Officer of Health must be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets. 2015 results based on the average of 3 distribution samples per quarter Q1 value is based on one treated water sample
Sulphate		500	NR	12	NT	33.0	NT	NT	1	
Sulphide		0.05	NR	12	NT	ND	NT	NT		
Toluene		0.024	NR	12	NT	ND	NT	NT	0.0002	
Total Dissolved Solids		500	NR	12	NT	176.3	NT	NT		
Trihalomethanes	0.100		3	3	0.014	0.0092	0.011	0.015	0.00037	The standard is expressed as a running annual average of quarterly samples measured at a point reflecting the maximum residence time in the distribution system. Running annual average: 0.0123 mg/L
Xylenes		0.3	NR	12	NT	ND	NT	NT		
Zinc		5.0	NR	12	NT	ND	NT	NT	0.005	

## Discussion of Analytical Results:

\* Indicator of adverse water quality

- <sup>1</sup> In addition to the analytical samples noted above, chlorine residual, fluoride residual, and turbidity are measured on a continuous basis at the treatment facility using on-line instrumentation.
- <sup>2</sup> Turbidity is both regulated by the Province of Ontario, and specified in accordance with the operating agreement with the Contracted Operating Authority. The turbidity reported (6 daily grab samples) is taken from the plant treated water discharge, which is not explicitly regulated in Provincial Regulations. Provincial Standards recommend an aesthetic objective of 5 NTU within a distribution system, and Provincial Regulation specifies a maximum of 1 NTU on individual filter effluent. The contract with the Operating Authority specifies a maximum turbidity of 0.2 NTU on treated water discharge from the water treatment plant and 0.1 NTU on individual filter effluent. There is currently no standard for combined filter effluent.

MAC or IMAC – Maximum Acceptable Concentration or Interim Maximum Acceptable Concentration; as identified in O.Reg. 169 (Ontario Drinking-Water Quality Standards) and the Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines

AO/OG – Aesthetic Objective/Operational Guideline; as identified in the Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines

NT – Not Tested during this quarter

NR – Not Required

ND – Not Detected