



OPTIONAL ANNUAL REPORT TEMPLATE

Drinking-Water System Number:	220003582
Drinking-Water System Name:	Cardinal Water System
Drinking-Water System Owner:	Township of Edwardsburgh Cardinal
Drinking-Water System Category:	Large Municipal, Residential
Period being reported:	January 1, 2019 to December 31, 2019

<p><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></p> <p>Does your Drinking-Water System serve more than 10,000 people? Yes [] No [X]</p> <p>Is your annual report available to the public at no charge on a web site on the Internet? Yes [X] No []</p> <p>Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection:</p> <div>Cardinal Wastewater Treatment Plant 4000 John St Cardinal, Ontario K0E 1E0</div>	<p><u>Complete for all other Categories.</u></p> <p>Number of Designated Facilities served: <div></div></p> <p>Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [] No []</p> <p>Number of Interested Authorities you report to: <div></div></p> <p>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [] No []</p>
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Note: For the following tables below, additional rows or columns may be added or an appendix may be attached to the report

List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:

Drinking Water System Name	Drinking Water System Number

Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?
Yes [] No []



Indicate how you notified system users that your annual report is available, and is free of charge.

- ☒ Public access/notice via the web
- ☐ Public access/notice via Government Office
- ☒ Public access/notice via a newspaper
- ☐ Public access/notice via Public Request
- ☐ Public access/notice via a Public Library
- ☐ Public access/notice via other method _____

Describe your Drinking-Water System

This is a surface water treatment plant that receives its source water supply from the St. Lawrence River. Treatment consists of pre-chlorination, basket screens, chemically assisted coagulation and flocculation, 4 rapid dual media filters (anthracite coal and sand) for physical removal of turbidity, ultraviolet irradiation (primary disinfection) followed by post chlorination (secondary disinfection). Parameters such as uv intensity, chlorine residual, pH, filter and potable turbidity are continuously monitored. All process and security alarms are monitored 24/7 by Falcon Security. The distribution system includes an elevated storage tank, 6 sample stations, 82 hydrants and a mix of distribution material piping.

List all water treatment chemicals used over this reporting period:

Sodium Hypochlorite – ANSI/NSF 60
SternPAC (Aluminum chloride hydroxide sulphate) –ANSI/NSF 60

Were any significant expenses incurred to?

- ☒ Install required equipment
- ☒ Repair required equipment
- ☒ Replace required equipment

Please provide a brief description and a breakdown of monetary expenses incurred

Annual inspection of chlorine injection ring and raw intake structure.
Semi-annual servicing of Trojan UV Swift 12.
Semi-annual servicing of backup generator.
Annual backflow testing.
Annual servicing and calibration of lab equipment/portable chlorine analyzers.
Semi-annual servicing of SCADA systems.
Annual servicing of fire alarm system.
Re-installed one high lift pump after servicing.
Serviced one Golden Anderson Check Valve at water plant.
Re-installed one low lift pump after servicing.
Repaired backflow preventer at water plant.
Replaced portable pH meter probe.
Replaced lamp in UV # 1 and UV # 2
Replaced mixing system in water tower (Capital Project)



Berm installed around south side of water plant for flood mitigation control.
 Repaired two leaking water services
 Repaired two fire hydrants.
 Repaired two curb stops.

Provide details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre:

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date

Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period:

	Number of Samples	Range of E.Coli Or Fecal Results (min)-(max)	Range of Total Coliform Results (min)-(max)	Number of HPC Samples	Range of HPC Results (min)-(max)
Raw	53	0 – 14	2-86	N/A	N/A
Treated	53	0-0	0-0	53	<2- >500
Distribution	159	0-0	0-0	159	<2-14

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report:

Parameter	Number of Grab Samples	Range of Results (min #)-(max #)
Potable Turbidity		
Continuous	8760	0.06 – 0.25
Grab	365	0.04 – 0.16
Filter 1A Turbidity		
Continuous	8760	0.05 - 0.25
Grab	730	0.04 – 0.18
Filter 1B Turbidity		
Continuous	8760	0.03 - 0.23
Grab	723	0.04 – 0.16
Filter 2A Turbidity		
Continuous	8760	0.03 – 0.44
Grab	729	0.04 - 0.14
Filter 2B Turbidity		
Continuous	8760	0.06 – 0.22
Grab	726	0.04 – 0.17

NOTE: For continuous monitors use 8760 as the number of samples.



Chlorine (Primary)		
Continuous	8760	0.28 – 3.12
Grab	730	0.10 - 3.40
Chlorine(Point of Entry)		
Continuous	8760	1.33 – 3.18
Grab	730	1.3 – 3.3
Chlorine(Distribution)		
Grab: Free:	842	0.27 – 2.20
Total:	728	0.47 – 2.6
UV Disinfection	8760	47.05 -78.32
Fluoride	N/A	N/A

NOTE: Units of measures include:

Chlorine – mg/L

Turbidity – NTU

UV – mj/cm²

Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument.

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure
N/A	N/A	N/A	N/A	N/A

Summary of Inorganic parameters tested during this reporting period or the most recent sample results:

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	09-Oct-19	0.0001	mg/L	No
Arsenic	09-Oct-19	0.0006	mg/L	No
Barium	15-Oct-19	0.020	mg/L	No
Boron	15-Oct-19	0.019	mg/L	No
Cadmium	09-Oct-19	<0.000015	mg/L	No
Chromium	15-Oct-19	<0.002	mg/L	No
*Lead	07-Jan-19	<0.00002	mg/L	No
Mercury	11-Oct-19	<0.00002	mg/L	No
Selenium	09-Oct-19	<0.001	mg/L	No
Sodium	02-Dec-19	18.2	mg/L	No
Uranium	09-Oct-19	0.00025	mg/L	No
Fluoride	05-Dec-19	<0.1	mg/L	No
Nitrite	05-Dec-19	<0.1	mg/L	No
Nitrate	05-Dec-19	<0.1	mg/L	No

*only for drinking water systems testing under Schedule 15.2; this includes large municipal non-residential systems, small municipal non-residential systems, non-municipal seasonal residential systems, large non-municipal non-residential systems, and small non-municipal non-residential systems



Summary of lead testing under Schedule 15.1 during this reporting period
(applicable to the following drinking water systems; large municipal residential systems, small municipal residential systems, and non-municipal year-round residential systems)

Location Type	Number of Samples	Range of Lead Results (min) – (max)	Number of Exceedances
Plumbing	N/A	N/A	N/A
Distribution	4	0.00008-0.00047	0

Summary of Organic parameters sampled during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	21-Oct-19	<0.3	ug/L	No
Atrazine + N-dealkylated metabolites	21-Oct-19	<0.5	ug/L	No
Azinphos-methyl	21-Oct-19	<1	ug/L	No
Benzene	15-Oct-19	<0.5	ug/L	No
Benzo(a)pyrene	21-Oct-19	<0.005	ug/L	No
Bromoxynil	21-Oct-19	<0.5	ug/L	No
Carbaryl	21-Oct-19	<3	ug/L	No
Carbofuran	21-Oct-19	<1	ug/L	No
Carbon Tetrachloride	15-Oct-19	<0.2	ug/L	No
Chlorpyrifos	21-Oct-19	<0.5	ug/L	No
Diazinon	21-Oct-19	<1	ug/L	No
Dicamba	21-Oct-19	<10	ug/L	No
1,2-Dichlorobenzene	15-Oct-19	<0.5	ug/L	No
1,4-Dichlorobenzene	15-Oct-19	<0.5	ug/L	No
1,2-Dichloroethane	15-Oct-19	<0.5	ug/L	No
1,1-Dichloroethylene (vinylidene chloride)	15-Oct-19	<0.5	ug/L	No
Dichloromethane	15-Oct-19	<5	ug/L	No
2,4-Dichlorophenol	21-Oct-19	<0.1	ug/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	21-Oct-19	<10	ug/L	No
Diclofop-methyl	21-Oct-19	<0.9	ug/L	No
Dimethoate	21-Oct-19	<1	ug/L	No
Diquat	11-Oct-19	<5	ug/L	No
Diuron	21-Oct-19	<5	ug/L	No
Glyphosate	17-Oct-19	<25	ug/L	No
Malathion	21-Oct-19	<5	ug/L	No
MCPA	25-Oct-19	<10	Ug/L	No
Metolachlor	21-Oct-19	<3	ug/L	No
Metribuzin	21-Oct-19	<3	ug/L	No
Monochlorobenzene	15-Oct-19	<0.5	ug/L	No
Paraquat	11-Oct-19	<1	ug/L	No



Pentachlorophenol	21-Oct-19	<0.1	ug/L	No
Phorate	21-Oct-19	<0.3	ug/L	No
Picloram	21-Oct-19	<5	ug/L	No
Polychlorinated Biphenyls(PCB)	11-Oct-19	<0.05	ug/L	No
Prometryne	21-Oct-19	<0.1	ug/L	No
Simazine	21-Oct-19	<0.5	ug/L	No
THM (Running Annual average)	2019	51.3	ug/L	No
HAA (Running annual average)	2019	35.4	ug/L	No
Terbufos	21-Oct-19	<0.3	ug/L	No
Tetrachloroethylene	15-Oct-19	<0.5	ug/L	No
2,3,4,6-Tetrachlorophenol	21-Oct-19	<0.1	ug/L	No
Triallate	21-Oct-19	<10	ug/L	No
Trichloroethylene	15-Oct-19	<0.5	ug/L	No
2,4,6-Trichlorophenol	21-Oct-19	<0.1	ug/L	No
Trifluralin	21-Oct-19	<0.5	ug/L	No
Vinyl Chloride	15-Oct-19	<0.2	ug/L	No

List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.

Parameter	Result Value	Unit of Measure	Date of Sample



OPTIONAL ANNUAL REPORT TEMPLATE

Drinking-Water System Number:	260005112
Drinking-Water System Name:	Edwardsburgh Industrial Park Distribution System
Drinking-Water System Owner:	Township of Edwardsburgh Cardinal
Drinking-Water System Category:	Small Municipal Residential
Period being reported:	January 1, 2019 to December 31, 2019

**Complete if your Category is Large
Municipal Residential or Small
Municipal Residential**

Does your Drinking-Water System serve more than 10,000 people?

Yes [] No [X]

Is your annual report available to the public at no charge on a web site on the Internet?

Yes [X] No []

Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection:

Cardinal Wastewater Treatment Plant
4000 John St
Cardinal, Ontario
K0E 1E0

Complete for all other Categories.

Number of Designated Facilities served:

Did you provide a copy of your annual report to all Designated Facilities you serve?

Yes [] No []

Number of Interested Authorities you report to:

Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility?

Yes [] No []

Note: For the following tables below, additional rows or columns may be added or an appendix may be attached to the report

List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:

Drinking Water System Name	Drinking Water System Number

Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?

Yes [] No []



Ontario Drinking-Water Systems Regulation O. Reg. 170/03

Indicate how you notified system users that your annual report is available, and is free of charge.

- ☒ **Public access/notice via the web**
☐ Public access/notice via Government Office
☒ **Public access/notice via a newspaper**
☐ Public access/notice via Public Request
☐ Public access/notice via a Public Library
☐ Public access/notice via other method: _____

Describe your Drinking-Water System

The Edwardsburgh Industrial Park distribution system receives all its treated water from the Prescott WTP. The system serves approximately 27 residences and 12 industrial/commercial establishments. The system does not provide re-chlorination and does not have a booster station. The system is comprised of approximately 3 km of Cast Iron, PVC and HDPE materials. Continuous monitoring of chlorine residual currently takes place at Prysmian Cables and hand samples are taken within every 72 hours. There are 2 isokinetic sample stations located at the north and south end of Reilly Street.

List all water treatment chemicals used over this reporting period

N/A

Were any significant expenses incurred to?

- ☐ Install required equipment
☐ Repair required equipment
☐ Replace required equipment

N/A

Please provide a brief description and a breakdown of monetary expenses incurred

Provide details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
July 4/19	Total Coliform	4	cfu/100mL	Re-sampled at Greenfield and upstream.	July 8 th /19
Aug 9/19	System Pressure Loss	< 20	psi	Restore system pressure, Flush, resample	Aug 9/19 Through Aug 11/19



Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period:

	Number of Samples	Range of E.Coli Or Fecal Results (min-max)	Range of Total Coliform Results (min-max)	Number of HPC Samples	Range of HPC Results (min-max)
Raw	N/A	N/A	N/A	N/A	N/A
Treated	N/A	N/A	N/A	N/A	N/A
Distribution	60	0-0	0-4	59	0-6

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.

	Number of Grab Samples	Range of Results (min)-(max)
Chlorine (Continuous)	8760	0.46 – 1.38
Chlorine (Grab)	Free: 324 Total: 320	0.30 - 1.46 0.40 – 1.77
Fluoride	NA	NA

NOTE: For continuous monitors use 8760 as the number of samples.

*NOTE: Record the unit of measure if it is **not** milligrams per litre.*

Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument.

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure

Summary of Inorganic parameters tested during this reporting period or the most recent sample results:

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony				
Arsenic				
Barium				
Boron				



Cadmium				
Chromium				
*Lead				
Mercury				
Selenium				
Sodium				
Uranium				
Fluoride				
Nitrite				
Nitrate				

Summary of lead testing under Schedule 15.1 during this reporting period

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

Location Type	Number of Samples	Range of Lead Results (min) – (max)	Number of Exceedances
Plumbing	N/A	N/A	N/A
Distribution	2	0.00081-0.00090	0

Summary of Organic parameters sampled during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor				
Aldicarb				
Aldrin + Dieldrin				
Atrazine + N-dealkylated metabolites				
Azinphos-methyl				
Bendiocarb				
Benzene				
Benzo(a)pyrene				
Bromoxynil				
Carbaryl				
Carbofuran				
Carbon Tetrachloride				
Chlordane (Total)				
Chlorpyrifos				
Cyanazine				
Diazinon				
Dicamba				
1,2-Dichlorobenzene				
1,4-Dichlorobenzene				



Dichlorodiphenyltrichloroethane (DDT) + metabolites				
1,2-Dichloroethane				
1,1-Dichloroethylene (vinylidene chloride)				
Dichloromethane				
2,4-Dichlorophenol				
2,4-Dichlorophenoxy acetic acid (2,4-D)				
Diclofop-methyl				
Dimethoate				
Dinoseb				
Diquat				
Diuron				
Glyphosate				
Heptachlor + Heptachlor Epoxide				
Lindane (Total)				
Malathion				
Methoxychlor				
Metolachlor				
Metribuzin				
Monochlorobenzene				
Paraquat				
Parathion				
Pentachlorophenol				
Phorate				
Picloram				
Polychlorinated Biphenyls(PCB)				
Prometryne				
Simazine				
THM (NOTE: show latest annual average)	2019	46.9		
HAA (Annual Average)	2019	26		
Temephos				
Terbufos				
Tetrachloroethylene				
2,3,4,6-Tetrachlorophenol				
Triallate				
Trichloroethylene				
2,4,6-Trichlorophenol				
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)				
Trifluralin				
Vinyl Chloride				

List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards:

Parameter	Result Value	Unit of Measure	Date of Sample
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