



OPTIONAL ANNUAL REPORT TEMPLATE

Drinking-Water System Number:	220001272
Drinking-Water System Name:	Perth Drinking Water System
Drinking-Water System Owner:	The Corporation of the Town of Perth
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1 2015 to December 31 2015

<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 style="border: 1px solid black; padding: 5px;"> <p>The 2015 Summary Report will be prepared and forwarded to the Town of Perth Municipal Council by March 2016. Paper copies will be available at the Water Treatment Plant – 15 Sunset Blvd. Electronic copies will made available on the municipalities website.</p> </div>	<p><u>Complete for all other Categories.</u></p> <p>Number of Designated Facilities served:</p> <div style="border: 1px solid black; padding: 2px; width: fit-content;"> <p>Approx 20</p> </div> <p>Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [x] No [] available on website</p> <p>Number of Interested Authorities you report to:</p> <div style="border: 1px solid black; padding: 2px; width: fit-content;"> <p>n/a</p> </div> <p>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [] No [] N/A</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
Tay Valley Township	n/a

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 [x] 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

Water Treatment Subsystem

The Water Treatment Plant is a Class III facility and was constructed in 1964 replacing the old Plant on Leslie Street, which was built in 1897. The town of Perth's water source is the Tay River, with our intake located at the Links O' Tay Golf Course. At the plant, conventional filtration practices are followed using a multiple barrier approach, including disinfection at various points in the process. The surface water, or raw water, flows by gravity from the intake area to the plant's intake wells, pretreated, and then onward to the raw water wells in the pump room. The raw water's quantity and quality is monitored in order for proper chemical dosages to occur. Raw water pretreatment consists of double screening for solids, and disinfection when needed with chlorine dioxide. If the plant is experiencing high colour, taste and odour problems, or high organics, the ability exists to add powdered activated carbon as part of the pretreatment stage.

The water is pumped to a mixing chamber where a coagulant is added to start the suspended solids removal process. During the next process step, in large flocculation tanks, the coagulant is allowed to form and develop into a gelatinous sticky "floc", also entrapping suspended solids and colour. The water then passes into settling chambers where the "floc" eventually sinks to the chambers' bottom, carrying the solids with it. After remaining in these settling chambers for a few hours (depending on demand), water is then decanted from the settling tanks and directed to two gravity filter beds.

The filter beds consist of layers of granular activated carbon and sand, with an additional gravel layer found in the older of the two filters. The filtered water's turbidity is continuously monitored and the filters are regenerated (backwashed), when predetermined process parameters have been reached. After filtering, the water proceeds to the clearwell where disinfection again occurs. Before leaving the clearwell, calcium hydroxide (lime) is added for pH adjustment (a target pH of 7.1 to 7.5 is desired). Fluoride (as recommended by the Ministry of Health and the Canadian Dental Association), is also added at this point. Reports of the level of fluoride present in the water are sent to the Health Unit on a monthly basis.

The water then flows into an underground reservoir at the plant with a storage capacity of approximately 750,000 gallons (3,000,000 liters). It remains there until demand requires it in the distribution system. Before pumping the water directly into the distribution system, post chlorination takes place to bring the free chlorine residual up to a level required to maintain a residual throughout the distribution system.

Water Distribution Subsystem

The distribution subsystem is comprised of approximately 40 km of water mains constructed primarily of cast, PVC and ductile iron pipe ranging in diameter from 100 mm to 400mm. The system serves a population of approximately 6000, supplies approximately 2300 service connections, and has approximately 245 hydrant installations.

An elevated tank, with storage capacity of 945 m³, provides system pressure and storage. In the fall of 2007 upgrades to the tank included installation of a water mixing system to ensure adequate disinfection is maintained while water is stored in the tank. In 2008 the tank interior was re-lined and the exterior was rust-proofed and re-painted. In 2014 the overflow pipe was equipped with a 4 mesh non-corrodible screen and the elevated tank had its annual inspection at the same time.



The system is checked on a weekly basis to ensure that drinking water remains safe, free of bacteria and disinfected.

List all water treatment chemicals used over this reporting period

Sodium Hypochlorite
Chlorine Dioxide (made by mixing HCL, Sodium Chlorite and Sodium Hypochlorite
Calcium Hydroxide
Sodium Silicofluoride (Fluoride)
Activated Carbon (GAC)
Poly-Aluminum Chloride (PAX XL-6)

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

- 1. Installation of Process Waste Treatment System (Geotube) – approx. \$ 1,000,000**
- 2. Raw Water Pump 3 – check valve replacement - \$ 5,500**
- 3. Filter 1 Drain Valve – replacement (including actuator) - \$ 20,000**
- 4. Lime Room Exhaust Fan - \$ 1,500**
- 5. Raw Intake Well Valve – replacement (including actuator) - \$ 30,000**
- 6. Service Water Pumps 1 and 2 – Air relief valves installed - \$ 1,500**
- 7. Continued electrical upgrades to support RW Automation initiative - \$ 36,000**

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
Jan 19 2015	WTP Discharge chlorine free residual >4.0 mg/L	4.45	mg/L	SCADA setpoints caused pump shutdown and interlock to prevent further discharge of	Jan 19 2015



				<p>Service water. Discontinued use of post chlorine dosing pump and resumed service water discharge to maintain system pressure and supply. Residuals fell back below 4.0 mg/L within 7 minutes. Calls to SAC and MOH made. Pump malfunction addressed – no further action required. Subsequent discussion with local MOECC Inspector determined that situation was actually NOT an Adverse Water Situation.</p>	



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	52	0 - 500	0 - 5000	n/a	n/a
Treated	52	Absent in all samples	Absent in all samples	52	0-100
Distribution	208	Absent in all samples	Absent in all samples	208	<10-420

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 #)	Unit of Measure
Turbidity- Filter 1	8760	0.03 – 0.150	NTU
Turbidity- Filter 2	8760	0.03 – 0.160	NTU
Turbidity- Discharge	8760	0.09 – 1.60	NTU
Chlorine- Reservoir	8760	0.84 – 1.76	mg/L (free)
Chlorine - Discharge	365	1.42 – 2.07	mg/L (free)
Chlorine - Distribution	366	0.07 – 2.00	mg/L (free)
Fluoride (If the DWS provides fluoridation)	365	0.23 – 0.88	mg/L

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

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
MDWL 160-101 Oct 31 2014	Sched C Residue Mgmt TSS Annual Avg Concentration	One sample per month Mar – Dec 2015	Ann. Avg 6.63	mg/L
MDWL 160-101 Oct 31 2014	Sched C Residue Mgmt T Cl Residual	One sample per month Mar – Dec 2015	Range 0.01 to 0.04	mg/L

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	06 July 2015	<0.0001	mg/L	No
Arsenic	06 July 2015	0.0005	mg/L	No
Barium	06 July 2015	0.033	mg/L	No
Boron	06 July 2015	0.007	mg/L	No
Cadmium	06 July 2015	<0.00002	mg/L	No
Chromium	06 July 2015	<0.002	mg/L	No
*Lead				
Mercury	06 July 2015	<0.00002	mg/L	No
Selenium	06 July 2015	<0.001	mg/L	No
Sodium	13 April 2015	12.4	mg/L	No
Uranium	06 July 2015	<0.00005	mg/L	No
Fluoride	14 October 2015	0.60	mg/L	No
Nitrite	12 January 2015 13 April 2015 06 July 2015 13 October 2015	<0.1 <0.1 <0.1 <0.1	mg/L mg/L mg/L mg/L	No
Nitrate	12 January 2015 13 April 2015 06 July 2015 13 October 2015	0.1 0.2 <0.1 <0.1	mg/L mg/L mg/L 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 #)	Unit of Measure	Number of Exceedances
Plumbing				
Distribution				

The Municipality was not required to conduct lead sampling in the 2015 calendar year, however Distribution staff did record pH and Alkalinity of two separate samples (winter and summer). A distribution lead sample taken in July 2015 showed a result of 0.00236 mg/L

Period	Number of Distribution Samples	Range of pH results (min#) – (max #)	Range of Alkalinity Results (min#) – (max #)	Temperature Range (min#) – (max #)
Dec 15, 2014-Apr 15, 2015	3	7.39-7.46	80-82	7.0-11.0
June 15, 2015-Oct 15, 2015	3	7.96-8.10	72-78	18.3-19.3

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	06-Jul-15	<0.3	ug/L	No
Aldicarb	06-Jul-15	<3	ug/L	No
Aldrin + Dieldrin	06-Jul-15	<0.02	ug/L	No
Atrazine + N-dealkylated metabolites	06-Jul-15	<0.5	ug/L	No
Azinphos-methyl	06-Jul-15	<1	ug/L	No
Bendiocarb	06-Jul-15	<3	ug/L	No



Benzene	06-Jul-15	<0.5	ug/L	No
Benzo(a)pyrene	06-Jul-15	<0.005	ug/L	No
Bromoxynil	06-Jul-15	<0.3	ug/L	No
Carbaryl	06-Jul-15	<3	ug/L	No
Carbofuran	06-Jul-15	<1	ug/L	No
Carbon Tetrachloride	06-Jul-15	<0.2	ug/L	No
Chlordane (Total)	06-Jul-15	<0.04	ug/L	No
Chlorpyrifos	06-Jul-15	<0.5	ug/L	No
Cyanazine	06-Jul-15	<0.5	ug/L	No
Diazinon	06-Jul-15	<1	ug/L	No
Dicamba	06-Jul-15	<5	ug/L	No
1,2-Dichlorobenzene	06-Jul-15	<0.1	ug/L	No
1,4-Dichlorobenzene	06-Jul-15	<0.2	ug/L	No
Dichlorodiphenyltrichloroethane (DDT) + metabolites	06-Jul-15	<0.01	ug/L	No
1,2-Dichloroethane	06-Jul-15	<0.1	ug/L	No
1,1-Dichloroethylene (vinylidene chloride)	06-Jul-15	<0.1	ug/L	No
Dichloromethane	06-Jul-15	<0.3	ug/L	No
2-4 Dichlorophenol	06-Jul-15	<0.1	ug/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	06-Jul-15	<5	ug/L	No
Diclofop-methyl	06-Jul-15	<0.5	ug/L	No
Dimethoate	06-Jul-15	<1	ug/L	No
Dinoseb	06-Jul-15	<0.5	ug/L	No
Diquat	06-Jul-15	<5	ug/L	No
Diuron	06-Jul-15	<5	ug/L	No
Glyphosate	06-Jul-15	<25	ug/L	No
Heptachlor + Heptachlor Epoxide	06-Jul-15	<0.1	ug/L	No
Lindane (Total)	06-Jul-15	<0.1	ug/L	No
Malathion	06-Jul-15	<5	ug/L	No
Methoxychlor	06-Jul-15	<0.1	ug/L	No
Metolachlor	06-Jul-15	<3	ug/L	No
Metribuzin	06-Jul-15	<3	ug/L	No
Monochlorobenzene	06-Jul-15	<0.2	ug/L	No
Paraquat	06-Jul-15	<1	ug/L	No
Parathion	06-Jul-15	<3	ug/L	No
Pentachlorophenol	06-Jul-15	<0.1	ug/L	No
Phorate	06-Jul-15	<0.3	ug/L	No
Picloram	06-Jul-15	<5	ug/L	No
Polychlorinated Biphenyls(PCB)	06-Jul-15	<0.05	ug/L	No
Prometryne	06-Jul-15	<0.1	ug/L	No
Simazine	06-Jul-15	<0.5	ug/L	No
THM (NOTE: show latest annual average)	13-Oct-15	64.4	ug/L	No
Temephos	06-Jul-15	<10	ug/L	No
Terbufos	06-Jul-15	<0.3	ug/L	No
Tetrachloroethylene	06-Jul-15	<0.2	ug/L	No
2,3,4,6-Tetrachlorophenol	06-Jul-15	<0.1	ug/L	No
Triallate	06-Jul-15	<10	ug/L	No
Trichloroethylene	06-Jul-15	<0.1	ug/L	No
2,4,6-Trichlorophenol	06-Jul-15	<0.1	ug/L	No
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	06-Jul-15	<10	ug/L	No
Trifluralin	06-Jul-15	<0.5	ug/L	No



Vinyl Chloride	06-Jul-15	<0.2	ug/L	No
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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