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

Part III Form 2
Section 11. ANNUAL REPORT.

Drinking-Water System Number:	**220001183**
Drinking-Water System Name:	City of Orillia Water Filtration Plant
Drinking-Water System Owner:	City of Orillia
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1, 2004 – December 31, 2004

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

Does your Drinking-Water System serve more than 10,000 people? Yes [X] No [ ]

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.

City of Orillia
City Centre, 3rd Floor Reception
50 Andrew St. S.
Orillia, ON L3V 7T5

Complete for all other Categories.

Number of Designated Facilities served:

N/A

Did you provide a copy of your annual report to all Designated Facilities you serve?
Yes [ ] No [ ]

Number of Interested Authorities you report to: N/A

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
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 [ ] No [X]

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

[X] Public access/notice via the web
[X] Public access/notice via Government Office
[X] Public access/notice via a newspaper
[ ] Public access/notice via Public Request
[ ] Public access/notice via a Public Library
[X] Public access/notice via other method Radio – Public Service Announcement

Describe your Drinking-Water System

The Orillia Water Filtration Plant is designed to obtain raw water from a surface source (Lake Couchiching) and from two groundwater sources (wells). At this time, the plant is drawing from only the surface water source due to trichloroethylene (TCE) contamination problems associated with each of the two wells.

Lake Couchiching is a relatively shallow lake with a maximum depth of 12 metres and an average depth of 6 metres. The intake for the plant is located approximately 374 metres from shore and 3.3 metres below the surface.

Well #1 and Well #2 are located within 160 metres of the Lake Couchiching shore and are approximately 170 metres apart. Although the treated water showed levels not in exceedence of the Ontario Drinking Water Standards Maximum Acceptable Concentration (ODWS MAC) of 50 ug/l, levels of trichloroethylene (TCE) in the raw water of the wells ranged from 16.0 to 31.2 ug/l during 2000-2001. The withdrawal from service of these two wells was undertaken voluntarily by the City of Orillia until a treatment solution can be found. Ongoing sampling of the wells has continued with 2004 TCE results ranging from 13.7 ug/l to 17.7 ug/l. The wells will remain out of service until this issue is addressed.

The raw water intake pipe extends approximately 374 m into Lake Couchiching and begins at a concrete filled wooden cribbed structure. There is also an old 85 m long raw water intake pipe which can be used in an emergency. Raw chlorinated water (prechlorinated for zebra mussel control) flows by gravity to the wet well of the low lift pumping station in the plant which has a firm capacity of 27, 280 m^3/day and an effective storage volume of 112.3 m^3. There are three vertical dry pit low lift pumps rated at 105 L/s and one standby vertical dry pit low lift pump rated at 157.8 L/s powered by a standby diesel generator. The pump station is also equipped with two stationary screens and one traveling screen.

Flash mixing of coagulant (poly aluminum chloride) occurs prior to three parallel concrete flocculator tanks.

The filter system is comprised of four dualmedia (anthracite and sand) filters equipped with a manual backwash system, storage tanks and backwash troughs. Filters One and Two have a surface wash/underdrain system and Filters Three and Four have an air scour/underdrain system. Process water goes to a holding tank and then to sanitary sewer.

Filter effluent flows by gravity into a clearwell and the highlifts draw from the clearwell and feed the distribution system. Three horizontal centrifugal pumps discharge to Zone 1 of the distribution system and two horizontal centrifugal pumps discharge to Zone 2 of the distribution system.

Chemical disinfection consists of three gas chlorinators (two duty and one stand-by) with individual discharge lines connected to the system so that pre and post chlorination can be practiced. Two 0.909 tonne cylinders are kept on line at all times with two vacuum regulators and an automatic cylinder switchover system. The cylinders are kept within the storage area that is equipped with a scale for the measurement of chlorine gas utilized in the disinfection process.

The treatment plant and pumping facilities are equipped with back-up power from a 820 kW Diesel Engine Prime Power Generator Set and its associated equipment.

When the two wells are online, water is pumped to a reservoir located across the street from the treatment plant. The water flows by syphon to the clearwells where it is treated with chlorination. Due to the presence of trichloroethylene in both wells, they have been taken off line and there is no immediate intention of using them for supply purposes until treatment options are explored.

The City of Orillia distribution services a population of approximately 30,000 that are comprised of residential, commercial and industrial consumers.

The distribution system has three storage facilities as described below which were designed to provide peak hour water demand equalization and fire and emergency storage:

Harvie Hill Tower is a reinforced concrete reservoir located on Harvie Settlement Road on the west side of Highway 11. This tower supplies water to Zone 2 of the distribution system and has a capacity of 9,090 m^3.

The Rosemary Road Reservoirs consist of two reinforced concrete cylindrical reservoirs located on Rosemary Road, just west of Westmount Drive North. The reservoirs are joined and have capacities of 1,363 m^3 and 9,090 m^3.

List all water treatment chemicals used over this reporting period

Chlorine
Polyaluminum Chloride
Flochem 12 (Sodium Hypochlorite)
Dechlore Pucks (Sodium Thiosulphate)

Were any significant expenses incurred to?

[ ] Install required equipment	NONE	REGULAR MAINTENANCE &
[ ] Repair required equipment	NONE	CALIBRATIONS
[X] Replace required equipment		

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

Replaced vacuum priming pumps
Approximately $15,000 equipment, $3000 installation

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
May 14/04	Coliform Count	26	CFU/100ml	Flush – increase chlorine dose - resample	May 14/04
May 15/04	Coliform Count	48	CFU/100ml	Flush – increase chlorine dose - resample	May 15/04
July 7/04	Background Colony Count	>200	CFU/100ml	Flush – increase chlorine dose - resample	July 7/04
July 21/04	Coliform Count	24	CFU/100ml	Flush – increase chlorine dose - resample	July 21/04
July 21/04	Coliform Count	2	CFU/100ml	Flush – increase chlorine dose - resample	July 21/04
July 21/04	Coliform Count	5	CFU/100ml	Flush – increase chlorine dose - resample	July 21/04
July 21/04	Coliform Count	9	CFU/100ml	Flush – increase chlorine dose - resample	July 21/04
July 21/04	Coliform Count	26	CFU/100ml	Flush – increase chlorine dose - resample	July 21/04
July 22/04	Background Colony Count	>200	CFU/100ml	Flush – increase chlorine dose - resample	July 22/04
July 22/04	Background Colony Count	>200	CFU/100ml	Flush – increase chlorine dose - resample	July 22/04
July 22/04	Coliform Count	>80	CFU/100ml	Resample & flush mains to achieve >0.2 mg/l free chlorine. Spoke to homeowners to advise per M.O.H.	July 22/04
July 22/04	Coliform Count	61	CFU/100ml	Flush – increase chlorine dose – resample Achieve 0.2 mg/l of free chlorine	July 22/04

July 24/04	**Coliform Count**	**1**	**CFU/100ml**	**Flush – increase chlorine dose - resample**	**July 24/04**
Sept 23/04	**Coliform Count**	**1**	**CFU/100ml**	**Flush – increase chlorine dose – resample**	**Sept 23/04**
Sept 24/04	**Coliform Count**	**1**	**CFU/100ml**	**Flush – increase chlorine dose – resample**	**Sept 24/04**

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	1 – 7	1 - >80	10	0 - >200
Treated	52	0 – 0	0 - 0	52	0 - 0
Distribution	621	Nil	1 - >80	621	1 - >200

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

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

	Number of Grab Samples	Range of Results (min #)-(max #)
Turbidity	**8760**	**0.03 – 0.29 NTU's**
Chlorine (Treated) **Chlorine (Distribution)**	**8760** **885**	**1.20 – 2.20 Free** **0.06Free/0.12Total-1.78Free/2.02Total**
Fluoride (If the DWS provides fluoridation)	**N/A**	**N/A**

__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	March 8/04	0.001	mg/L	
Arsenic	March 8/04	Not detected	mg/L	
Barium	March 8/04	0.034	mg/L	
Boron	March 8/04	0.018	mg/L	

Cadmium	March 8/04	Not detected	mg/L	
Chromium	March 8/04	Not detected	mg/L	
Lead – treated **Lead - distribution**	March 8/04 March 8/04	Not detected Not detected	mg/L mg/L	
Mercury	March 8/04	Not detected	mg/L	
Selenium	March 8/04	Not detected	mg/L	
Sodium	March 8/04	22.5	mg/L	Report issued to MOE & MOH Jan. 2001
Uranium	March 8/04	0.0003	mg/L	
Fluoride	Sept 15/03	0.20	mg/L	
Nitrite	March 8/04 June 7/04 Aug 25/04 Nov 22/04	Not detected Not detected Not detected Not detected	mg/L mg/L mg/L mg/L	
Nitrate	March 8/04 June 7/04 Aug 25/04 Nov 22/04	0.1 0.1 Not detected Not detected	mg/L mg/L mg/L mg/L	

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	March 8/04	Not detected	ug/L	
Aldicarb	March 8/04	Not detected	ug/L	
Aldrin + Dieldrin	March 8/04	Not detected	ug/L	
Atrazine + N-dealkylated metobolites	March 8/04	Not detected	ug/L	
Azinphos-methyl	March 8/04	Not detected	ug/L	
Bendiocarb	March 8/04	Not detected	ug/L	
Benzene	March 8/04	Not detected	ug/L	
Benzo(a)pyrene	March 8/04	Not detected	ug/L	
Bromoxynil	March 8/04	Not detected	ug/L	
Carbaryl	March 8/04	Not detected	ug/L	
Carbofuran	March 8/04	Not detected	ug/L	
Carbon Tetrachloride	March 8/04	Not detected	ug/L	
Chlordane (Total)	March 8/04	Not detected	ug/L	
Chlorpyrifos	March 8/04	Not detected	ug/L	
Cyanazine	March 8/04	Not detected	ug/L	
Diazinon	March 8/04	Not detected	ug/L	
Dicamba	March 8/04	Not detected	ug/L	
1,2-Dichlorobenzene	March 8/04	Not detected	ug/L	
1,4-Dichlorobenzene	March 8/04	Not detected	ug/L	
Dichlorodiphenyltrichloroethane (DDT) + metabolites	March 8/04	Not detected	ug/L	
1,2-Dichloroethane	March 8/04	Not detected	ug/L	

1,1-Dichloroethylene (vinylidene chloride)	March 8/04	Not detected	ug/L	
Dichloromethane	March 8/04	Not detected	ug/L	
2-4 Dichlorophenol	March 8/04	Not detected	ug/L	
2,4-Dichlorophenoxy acetic acid (2,4-D)	March 8/04	Not detected	ug/L	
Diclofop-methyl	March 8/04	Not detected	ug/L	
Dimethoate	March 8/04	Not detected	ug/L	
Dinoseb	March 8/04	Not detected	ug/L	
Diquat	March 8/04	Not detected	ug/L	
Diuron	March 8/04	Not detected	ug/L	
Glyphosate	March 8/04	Not detected	ug/L	
Heptachlor + Heptachlor Epoxide	March 8/04	Not detected	ug/L	
Lindane (Total)	March 8/04	Not detected	ug/L	
Malathion	March 8/04	Not detected	ug/L	
Methoxychlor	March 8/04	Not detected	ug/L	
Metolachlor	March 8/04	Not detected	ug/L	
Metribuzin	March 8/04	Not detected	ug/L	
Monochlorobenzene	March 8/04	Not detected	ug/L	
Paraquat	March 8/04	Not detected	ug/L	
Parathion	March 8/04	Not detected	ug/L	
Pentachlorophenol	March 8/04	Not detected	ug/L	
Phorate	March 8/04	Not detected	ug/L	
Picloram	March 8/04	Not detected	ug/L	
Polychlorinated Biphenyls(PCB)	March 8/04	Not detected	ug/L	
Prometryne	March 8/04	Not detected	ug/L	
Simazine	March 8/04	Not detected	ug/L	
THM - Treated **THM - Distribution** (NOTE: show latest annual average)	Mar8/04/June7/Aug25/ Nov 22 Mar8/04/June7/Aug25/ Nov 22	32.40 54.80	ug/L ug/L	
Temephos	March 8/04	Not detected	ug/L	
Terbufos	March 8/04	Not detected	ug/L	
Tetrachloroethylene	March 8/04 June 7/04 Nov 22/04	Not detected Not detected Not detected	ug/L ug/L ug/L	
2,3,4,6-Tetrachlorophenol	March 8/04	Not detected	ug/L	
Triallate	March 8/04	Not detected	ug/L	
Trichloroethylene	March 8/04 June 7/04 Nov 22/04	0.2 Not detected Not detected	ug/L ug/L ug/L	
2,4,6-Trichlorophenol	March 8/04	Not detected	ug/L	
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	March 8/04	Not detected	ug/L	
Trifluralin	March 8/04	Not detected	ug/L	
Vinyl Chloride	March 8/04	Not detected	ug/L	

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

(Only if DWS category is large municipal residential, small municipal residential, large municipal non residential, non municipal year round residential, large non municipal non residential)