



# Collingwood Public Utilities



## Raymond A. Barker Ultrafiltration Plant And Collingwood Distribution System 2006 Annual Compliance Report



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### Definitions

Collingwood Public Utilities	CPU
Ministry of the Environment	MOE
Flow	(m <sup>3</sup> /d) cubic metres per day
Weight	(kg) kilograms
Chlorine Residuals	(mg/l) milligrams/litre
Chlorine dosages	(mg/l) milligrams/litre
Temperature	(°C) degree Celsius
Turbidity	(NTU) nephelometric turbidity unit
Conditions	Visual checks
Bacteriological Sample	Sample count / Safe or adverse
Organic Sample	(mg/l) milligrams/litre (unless expressed otherwise)
Pesticides & PCB	(mg/l) milligrams/litre (unless expressed otherwise)
Inorganic	(mg/l) milligrams/litre (unless expressed otherwise)
Physical	(mg/l) milligrams/litre (unless expressed otherwise)
Maximum Allowable Concentration	MAC
American Water Works Association.	(AWWA)

## **Section 1 Drinking Water System General Information**

This report has been prepared in accordance with the reporting requirements of the Safe Drinking Water Act 2002 O.Reg. 170/03, s 11 (1), (6), (7), (8), (9.1) & (10)

Collingwood Public Utilities have presented this report to Council and placed a notice in local newspapers notifying the public and any interested authority that the Raymond A. Barker Ultrafiltration Plant and Collingwood Distribution System 2006 Annual Compliance Report can be viewed on the websites shown below, or viewed in the Public Information Books at the locations listed below or on request a copy will be made available free of charge.

The following are locations at which hard copies can be viewed or a request placed for a hard copy free of charge:

<b>Location</b>	<b>Address</b>
Raymond A. Barker Ultra-filtration Plant	2 Raglan St.
Collingwood Public Utilities	43 Stewart Road
Collingwood Town Hall (Clerks Office)	97 Hurontario St.

2006 Drinking Water System Annual Report can also be viewed and down loaded in PDF format from the following websites:

[www.collus.com](http://www.collus.com) & [www.town.collingwood.on.ca/](http://www.town.collingwood.on.ca/)

<b>Certificate of Approval (C of A) No.</b>	0844-6SVHJ3 issued September 18, 2006
<b>Permit to Take Water No.</b>	91-P-3037
<b>Maximum Rated Capacity</b>	31,140 m <sup>3</sup> /d
<b>Drinking Water System Number</b>	220001165
<b>Drinking Water System Name</b>	Raymond A. Barker Ultrafiltration Plant and Collingwood Distribution System
<b>Drinking Water System Owner</b>	Collingwood Public Utilities
<b>Drinking Water System Category</b>	Large Municipal Residential
<b>Water Treatment Subsystem Class</b>	Class 2 Certificate No. 277 issued November 15, 2005
<b>Water Distribution Subsystem Class</b>	Class 2 Certificate No. 3009 issued November 15, 2005
<b>Period being Reported</b>	January 1, 2006 to December 31, 2006

### **Other Drinking Water Systems that receive drinking water from Raymond A. Barker Ultrafiltration Plant**

<b>Drinking Water System Owner</b>	Town Of New Tecumseth
<b>Drinking Water System Number</b>	220001174
<b>Drinking Water System Owner</b>	Town Of The Blue Mountains
<b>Drinking Water System Number</b>	220001762

## **1.1 Description of the Drinking Water System**

The Raymond A Barker Ultrafiltration Plant (RAB) is a direct filtration membrane surface water treatment plant. The RAB supplies safe drinking water to the Collingwood distribution system, which is comprised of approximately 130km of various diameter water mains, ranging from 100mm to 600mm diameter, one (1) 2250m<sup>3</sup> multi legged elevated storage tank, one (1) 6800m<sup>3</sup> in-ground reservoir and booster pumping station (A.R. (Ted) Carmichael West End Reservoir), and one (1) in line booster station (Osler Bluff Road). Currently RAB also supplies safe drinking water to two (2) other municipalities, the Town of the Blue Mountain through a connection to Collingwood's distribution system at the boundary of the two municipalities and the Town of New Tecumseth through the 58km Regional Pipeline.

Surface water is taken from Nottawasaga Bay through a submerged inlet structure, approximately 765m off shore in a depth of approximately 8m (26ft). Raw water flows by gravity through a 1067mm diameter intake pipe and surge chamber into the raw water well. Chlorine is applied to the raw water at the surge chamber, to assist in the disinfection process. Within the raw water well a submersible mixer is utilised to increase the hydraulic grade line of the raw water. Pre-chlorinated raw water then flows by gravity to the membrane distribution channel in the main building.

Pre-chlorinated raw water is then distributed to six (6) membrane tanks or treatment trains. Five (5) trains are fed by gravity, these house the 500 series ZeeWeed ultra-filtration membrane modules and one (1) train is fed with a low lift vertical turbine pump and a 5 micron strainer with automatic cleaner. This tank houses the 1000 series ZeeWeed ultra-filtration membrane (Mobile Package Plant).

Each treatment train of the Zenon membrane filtration system, both 500 and 1000 series, in general consists of membrane modules, one (1) permeate/backpulse pump, one (1) backpulse tank and one (1) air blower. The membranes have a pore size 0.035 micron and as such remove all particulate matter greater than this. The permeate pump creates a slight vacuum which sucks clean (permeate) water through the membrane leaving any particulate matter in the process tank.

The permeate water is then disinfected with the addition of chlorine. The chlorinated permeate water then flows into the two (2) 413 m<sup>3</sup> chlorine contact chambers (total volume 826 m<sup>3</sup>) prior to flowing by gravity into the Clear well. The finished water is then pumped into two (2) separate systems, the Collingwood Distribution System and the Regional Pipeline, each with its own dedicated set of high lift pumps.

The fouling of the membranes is controlled by a regular cleaning cycle that consists of reversing the flow of clean water stored in the backpulse tank back through the membranes under positive pressure. This process concentrates the raw water which in turn is rejected to waste. It should be noted that this reject water can be discharged to the sewer or returned to the lake but in 2006 it was wasted to the non-potable industrial process supply. Air is also used to prevent fouling of the membranes by injecting it at the bottom of the tank thus scouring the membranes with air bubbles as they rise to the surface. This air scouring process also assists in keeping the concentrated solids in suspension, prior to reject.

RAB is continually monitored 24 hours a day 365 days a year. The treated water parameters monitored are Turbidity, Flow, Pressure, Chlorine Residual, Temperature and pH. This is achieved through the SCADA (Supervisory Control And Data Acquisition) system.

## **Section 2 Compliance Statements**

- Collingwood Public Utilities ensures compliance with the ODWS by establishing a sampling schedule based on O. Reg. 170/03. All sampling is performed in accordance with the Ministry of the Environment's "Guide to Collection and Submission of Samples for Laboratory Analysis". Compliance is also ensured by having all laboratory samples analyzed by a laboratory accredited by the Canadian Association for Environmental Analytical Laboratories (C.A.E.A.L.) of Canada.
- Collingwood Public Utilities ensures compliance is met with the requirements of the ODWS by operating the water treatment facility so that water intended for human consumption does not exceed the standards described in the ODWS. These standards are defined as Maximum Acceptable Concentration (MAC) standards, and Interim Maximum Acceptable Concentration (IMAC) standards. In the event that ODWS standards are exceeded, CPU will follow the requirements of O. Reg. 170/03 – in notifying the Medical Officer of Health, the MOE and the Town, perform corrective action as required, and if necessary, post a warning notice in a prominent location.
- Collingwood Public Utilities monitors the chemical parameters (non-health related) that may impair the taste, odour or colour of water or which may interfere with good water quality control practices which are reported as Aesthetic Objectives (AO).
- Collingwood Public Utilities ensures that the water leaving the treatment plant and entering the distribution system is disinfected to meet those requirements described in Ministry of the Environment (MOE) Procedure for Disinfecting Water in Ontario as amended from time to time.
- Collingwood Public Utilities ensures that all chemicals used in the treatment process and all materials contacting the water meet both the American Water Works Association (AWWA) quality criteria as set out in AWWA standards and the American National Standard Institute (ANSI) safety criteria as set out in ANSI standard NSF/60 or NSF/61
- Collingwood Public Utilities ensures that the Overall Responsible Operator is an operator who holds a valid license that is applicable to RAB and that this is the same or higher class than the class determined for the water treatment plant in accordance O Reg. 128/04 as amended from time to time.
- Collingwood Public Utilities exercises due diligence in ensuring that at all times, the works and related equipment and appurtenances used to achieve compliance are properly operated and maintained.

## **Section 3 Results of External Performance Audits**

The following section discusses performance audits conducted by external agencies.

### **3.1 Ministry of Environment Inspection**

The MOE carried out the annual inspection on November 15, 2006. The purpose of the inspection is to confirm compliance with MOE legislation and authorising documents such as Orders and Certificates of Approval (C of A), as well as evaluating conformance with Ministry drinking water policies and Guidelines during the inspection.

The inspection type was “Unannounced” and based on the MOE’s “focused” format. Collingwood’s system was chosen for a focused inspection because inspection findings over the past three years were such that the number of violations were non-existent and that no orders issued were of significance in the maintenance of water potability and there were no deficiencies as defined in O. Reg. 170/03.

In brief the inspection was once again successful no Orders were issued and in general it was noted that CPU carry out more testing than is required by Regulation and that CPU’s procedures and maintenance practices exceed the norm.

There were five (5) recommendations made by the inspector with respect to best practices all of which involved documentation. These recommendations were implemented immediately and the inspector noted that no further action was required on these matters

There were also two (2) issues of non-compliance with regulatory requirements which have both been subsequently resolved, these were as follows:

1. Not all microbiological quality monitoring was being conducted in accordance with O. Reg. 170/03. CPU was monitoring E.coli, Total Coliform and Background Colony Count on 100% of samples. The Regulation requires monitoring of E. coli, Total Coliform and Heterotrophic Plate Count (HPC), with HPC being monitored on only 25% of samples.
2. The C of A should be amended to include a free chlorine residual analyzer that has been installed at elevated water storage tank.

### **3.2 ISO 14001**

The annual ISO 14001 surveillance audit was conducted by a representative of NSF International Strategic Registrations, Ltd. on February 2, 2006. The primary purpose of the audit is to document CPU’s continuing conformity those element requirements addressed during the audit, and to verify that CPU’s Environmental Management System (EMS) is being maintained. The overall objectives being to:

- Verify action taken on any non-conformances identified during the previous audit.
- Assess the EMS to selected requirements and elements of the Standard for continued conformance.
- Carefully follow the audit trail for procedures and processes related to the Standard elements schedule to be audited.
- Document evidence of continual improvement of the EMS as well as positive practices.

In brief the audit was successful and the Auditor noted that the documentation had been upgraded to meet the requirements of the new Standard ISO 14001: 2004. The Auditor also noted that all outstanding minor non-conformities had been closed and that corrective action plans had been accepted and implemented.

At the conclusion of the surveillance audit the auditor noted one (1) new minor non-conformity and one (1) new opportunity for improvement. The minor non-conformity has subsequently been closed and the corrective action plan accepted and implemented.

## **Section 4 Treatment Chemicals Used**

The following section discusses the chemicals used in the treatment process.

The only chemical used for the treatment of water at RAB is **Chlorine Gas**. 11,681 kg were used in 2006.

The following table shows total chlorine used per month together with free chlorine residual in the raw water used for pre-treatment, average post filtration chlorine dosage and average free chlorine residual after contact time. In addition average raw water temperature, average raw water turbidity and average finished water turbidity are shown

<b>Month</b>	<b>Total Chlorine Used (kg)</b>	<b>Ave.(Free) Pre-treatment Residual</b>	<b>Ave. Post Chlorine Dose (mg/l)</b>	<b>Ave. Free Chlorine Residual (mg/l)</b>	<b>Ave. Water Temp. °C</b>	<b>Ave. Raw Water Turbidity</b>	<b>Ave. Finished Water Turbidity</b>
<b>January</b>	781	0.13	1.43	1.05	2.0	1.2	0.04
<b>February</b>	736	0.15	1.49	1.05	1.0	1.6	0.04
<b>March</b>	849	0.20	1.53	1.05	0.4	2.5	0.04
<b>April</b>	843	0.20	1.62	1.05	4.5	0.7	0.04
<b>May</b>	963	0.19	1.59	1.12	7.0	0.5	0.04
<b>June</b>	1119	0.17	1.72	1.13	13.8	0.6	0.04
<b>July</b>	1267	0.14	1.87	1.27	20.1	0.5	0.04
<b>August</b>	1423	0.15	1.99	1.40	21.5	0.6	0.04
<b>September</b>	1103	0.18	1.90	1.35	15.7	0.5	0.04
<b>October</b>	1015	0.17	1.88	1.33	11.2	1.5	0.04
<b>November</b>	797	0.18	2.39	1.18	7.2	1.4	0.04
<b>December</b>	785	0.20	1.59	1.15	4.6	1.2	0.04
<b>Total/Ave.</b>	<b>11,681</b>	<b>0.17</b>	<b>1.75</b>	<b>1.18</b>	<b>9.08</b>	<b>1.1</b>	<b>0.04</b>
<b>Max</b>	<b>1,423</b>	<b>0.20</b>	<b>2.39</b>	<b>1.40</b>	<b>21.50</b>	<b>2.5</b>	<b>0.04</b>
<b>Min</b>	<b>736</b>	<b>0.13</b>	<b>1.43</b>	<b>1.05</b>	<b>0.40</b>	<b>0.50</b>	<b>0.04</b>

The following table shows Chlorine residual testing conducted throughout the distribution system in 2006

Month	No. of Samples	Ave Free Chlorine Residual mg/l	No. of Samples > 0.05 mg/l	No. of Samples < 0.05 mg/l	No. of Samples	Ave Total Chlorine Residual mg/l	No. of Samples > 0.05 mg/l	No. of Samples < 0.05 mg/l
January	32	0.87	32	0	32	0.94	32	0
February	28	0.86	28	0	28	0.96	28	0
March	24	0.79	24	0	24	0.72	24	0
April	28	0.78	28	0	28	0.88	28	0
May	35	0.77	35	0	35	0.88	35	0
June	28	0.78	28	0	28	0.86	28	0
July	32	0.76	32	0	32	0.9	32	0
August	34	0.79	34	0	34	0.95	34	0
September	25	0.81	25	0	25	0.9	25	0
October	30	0.73	30	0	30	0.87	30	0
November	28	0.79	28	0	28	0.89	28	0
December	26	0.64	26	0	26	0.85	26	0
<b>Total</b>	350		350	0	350		350	0
<b>Average</b>		0.77				0.88		

## **Section 5 Required Reports to the Ministry of the Environment**

Summary of reports made to Ministry under subsection 18 (1) of the Act or 16-4 of Schedule 16 for the period covered by this report

Incident Date	Parameter	Result	Unit of Measurement	Corrective action	Corrective action date
July 26 2006	Total Coliform Elevated Tank	1	cfu /100ml	Resample upstream & downstream of the water tower	July 31/06 (2) sets of sample results returned as 0 Total Coliform AWQI # 66379
<p><b>Note:</b> Incident date is represented by the sample date : Corrective action date is represented by the date the incident was resolved by confirmation of laboratory results</p>					

## Section 6 Summary of Results of the Required Tests

Microbiological Testing done under Schedule 10, 11 or 12 of Regulation 170/03 during the period covered by this annual report for 2006

	Number Of Samples	Range of E. Coli or Fecal Result (min #)-(max#)	Range of Total Coliform Results (min #)-(max#)	Number of HPC Samples	Range of HPC Results (min #)-(max#)
Raw	52	0 (min) - 4 (max)	0 (min) - 80 (max)	0	
Treated	52	0 (max)	0 (max)	6	<10 (max)
Distribution	354	0 (max)	0 (min) - 1 (max)	14	<10 (min) 2000 (max)*

\* This result is an anomaly as sample results taken before and after showed levels of <10

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this annual report for 2006

	Number of Samples	Range of Results
Turbidity	Continuous analyzers	0.03 min 0.045max
Chlorine	Continuous analyzers	0.80 min. 1.35 max

Summary of Inorganic parameters tested during the period covered by this annual report

	Date of Samples				MAC
	Feb	May	August	October	mg/l
<b>Antimony</b>	<.001	<.001	<.001	<0.001	<b>0.006</b>
<b>Arsenic</b>	<0.0006	<0.0006	<0.0006	<0.0006	<b>0.025</b>
<b>Barium</b>	0.0124	0.0125	0.0116	0.0124	<b>1.0</b>
<b>Boron</b>	0.0136	0.0115	0.00852	0.0131	<b>5.0</b>
<b>Cadmium</b>	0.00067	0.0005	0.0005	0.0005	<b>0.005</b>
<b>Chromium</b>	<0.0006	<0.0006	0.0091	<0.0006	<b>0.05</b>
<b>Fluoride</b>	0.02	0.07	0.05	0.06	<b>1.5</b>
<b>Lead</b>	0.0005	0.0005	0.0005	0.0005	<b>0.1</b> at a point with most residence time in the distribution system
<b>Mercury</b>	<0.0001	<0.0001	<0.0001	<0.0001	<b>0.001</b>
<b>Nitrate + Nitrite (as N)</b>	0.29	0.028	0.24	0.25	<b>10.0</b>
<b>Nitrite</b>	<0.05	<0.05	<0.05	<0.05	<b>1.0</b>
<b>Nitrate</b>	0.29	0.28	0.24	0.25	<b>10.0</b>
<b>Selenium</b>	0.00081	0.0008	0.0008	0.0008	<b>0.01</b>
<b>Sodium</b>	3.66	4.11	4.12	3.94	greater than <b>20</b> to be reported

<b>Total Dissolved Solids</b>	80		120		<b>500</b>
<b>Uranium</b>	0.0002	0.0002	0.0002	0.0002	<b>0.02</b>

**Summary of Organic parameters tested during the period covered by this annual report**

	<b>Date of Samples</b>				<b>MAC</b>
	<b>Feb</b>	<b>May</b>	<b>August</b>	<b>October</b>	<b>mg/l</b>
<b>Alachlor</b>	<0.0005	<0.0005	<0.0005	<0.0005	<b>0.005</b>
<b>Aldicarb</b>	<0.00015	<0.00015	<0.00015	<0.00015	<b>0.009</b>
<b>Aldrin +Dieldrin</b>	<0.00007	<0.00007	<0.00007	<0.00007	<b>0.0007</b>
<b>Atrazine</b>	<0.0005	<0.0005	<0.0005	<0.0005	<b>0.005</b>
<b>Azinphos-methyl</b>	<0.002	<0.002	<0.002	<0.002	<b>0.02</b>
<b>Bendiocarb</b>	<0.002	<0.002	<0.002	<0.002	<b>0.04</b>
<b>Bromoxynil</b>	<0.0005	<0.0005	<0.0005	<0.0005	<b>0.005</b>
<b>Carbaryl</b>	<0.005	<0.005	<0.005	<0.005	<b>0.09</b>
<b>Carbofuran</b>	<0.005	<0.005	<0.005	<0.005	<b>0.09</b>
<b>Chlordane(Total)</b>	<0.0007	<0.0007	<0.0007	<0.0007	<b>0.007</b>
<b>Chlorpyrifos</b>	<0.001	<0.001	<0.001	<0.001	<b>0.09</b>
<b>Cyanazine</b>	<0.001	<0.001	<0.001	<0.001	<b>0.01</b>
<b>Diazinon</b>	<0.001	<0.001	<0.001	<0.001	<b>0.02</b>
<b>Dicamba</b>	<0.001	<0.001	<0.001	<0.001	<b>0.12</b>
<b>2,4-Dichlorophenol</b>	<0.0005	<0.0005	<0.0005	<0.0005	<b>0.9</b>
<b>DDT</b>	0.003	0.003	0.003	0.003	<b>0.03</b>
<b>24-D</b>	<0.001	<0.001	<0.001	<0.001	<b>0.1</b>
<b>Dicoflp-methyl</b>	<0.0009	<0.0009	<0.0009	<0.0009	<b>0.009</b>
<b>Dimethoate</b>	<0.0025	<0.0025	<0.0025	<0.0025	<b>0.02</b>
<b>Dinoseb</b>	0.001	0.001	0.001	0.001	<b>0.01</b>
<b>Diquat</b>	<0.005	<0.005	<0.005	<0.005	<b>0.07</b>
<b>Diuron</b>	<0.01	<0.01	<0.01	<0.010	<b>0.15</b>
<b>Glyphosate</b>	<0.01	<0.01	<0.01	<0.01	<b>0.28</b>
<b>Heptachlor + heptachlor epoxide</b>	<0.0003	<0.0003	<0.0003	<0.0003	<b>0.003</b>
<b>Lindane (Total)</b>	<0.0004	<0.0004	<0.0004	<0.0004	<b>0.004</b>
<b>Malathion</b>	<0.005	<0.005	<0.005	<0.005	<b>0.19</b>
<b>Methoxychlor</b>	<0.09	<0.09	<0.09	<0.09	<b>0.9</b>
<b>Metolachlor</b>	<0.00011	<0.00011	<0.00011	<0.00011	<b>0.05</b>
<b>Metribuzin</b>	<0.00025	<0.00025	<0.00025	<0.00025	<b>0.08</b>
<b>Paraquat</b>	<0.001	<0.001	<0.001	<0.001	<b>0.01</b>
<b>Parathion</b>	<0.001	<0.001	<0.001	<0.001	<b>0.05</b>
<b>Pentachlorophenol</b>	<0.0005	<0.0005	<0.0005	<0.0005	<b>0.06</b>
<b>Phorate</b>	<0.0005	<0.0005	<0.0005	<0.0005	<b>0.002</b>
<b>Picloram</b>	<0.05	<0.05	<0.05	<0.05	<b>0.19</b>
<b>PCB</b>	<0.0002	<0.0002	<0.0002	<0.0002	<b>0.003</b>
<b>Prometryne</b>	<0.00025	<0.00025	<0.00025	<0.00025	<b>0.001</b>
<b>Simazine</b>	<0.001	<0.001	<0.001	<0.001	<b>0.01</b>
<b>Temephos</b>	<0.01	<0.01	<0.01	<0.01	<b>0.28</b>
<b>Terbufos</b>	<0.0007	<0.0007	<0.0007	<0.0007	<b>0.001</b>

<b>2,3,4,6-Tetrachlorophenol</b>	<0.0005	<0.0005	<0.0005	<0.0005	<b>0.1</b>
<b>Triallate</b>	<0.001	<0.001	<0.001	<0.001	<b>0.23</b>
<b>2,4,6,-Trichlorophenol</b>	<0.0005	<0.0005	<0.0005	<0.0005	<b>0.005</b>
<b>Trifluralin</b>	<0.001	<0.001	<0.001	<0.001	<b>0.045</b>
<b>2,4,5-T</b>	<0.005	<0.005	<0.005	<0.005	<b>0.28</b>
<b>Trichlorophenoxy acetic Acid</b>	<0.0002	<0.0002	<0.0002	<0.0002	<b>0.28</b>
<b>Benzo(a)pyrene</b>	<0.00001	<0.00001	<0.00001	<0.00001	<b>0.00001</b>
<b>Benzene</b>	<0.0002	<0.0002	<0.0002	<0.0002	<b>0.005</b>
<b>Carbon Tetrachloride</b>	<0.0002	<0.0002	<0.0002	<0.0002	<b>0.005</b>
<b>1,2-Dichlorobenzene</b>	<0.0001	<0.0001	<0.0001	<0.0002	<b>00.05</b>
<b>1,4-Dichlorobenzene</b>	<0.0001	<0.0001	<0.0001	<0.0001	<b>00.001</b>
<b>1,2-Dichloroethane</b>	<0.0005	<0.0005	<0.0005	<0.0002	<b>00.005</b>
<b>1,4-Dichloroethane</b>	<0.0002	<0.0002	<0.0002	<0.0002	<b>0</b>
<b>1,1-Dichloromethylene</b>	<0.0002	<0.0002	<0.0002	<0.0002	<b>00.014</b>
<b>Dichchloromethane</b>	<0.0003	<0.0003	<0.0003	<0.0003	<b>00.05</b>
<b>Monochlorobezene</b>	<0.0001	<0.0001	<0.0001	<0.0001	<b>0.08</b>
<b>Tetrachloroethlene</b>	<0.0001	<0.0001	<0.0001	<0.0001	<b>0.03</b>
<b>Total Trihalomethanes</b> * Note:	0.015	0.037	0.039	0.031	<b>0.100<sup>a</sup></b>
<b>Trichloroethylene</b>	<0.0002	<0.0002	<0.0002	<0.0002	<b>0.005</b>
<b>Vinyl chloride</b>	<0.00017	<0.00017	<0.00017	<0.00017	<b>0.002</b>
<b>Xylene</b>	<0.001	<0.001	<0.001	<0.001	<b>0.05</b>

<sup>a</sup> **Note:** The MAC for Total Trihalomethanes is based on a four (4) quarter running average. The current running average for the Collingwood system is 0.031 mg/l

## **Section 7 Items of Significant Investment in the Water System in 2006**

### **Description of items of significant system investment during the period covered by this annual report**

<b>Description</b>	<b>Investment</b>
Birch Street water main upgrade from 100mm C.I. to 150mm D.I.	\$180,000
South End Servicing new water mains	\$2,000,000
Osler Booster station upgrades	\$250,000
Old service replacement (30 services replaced)	\$40,000
Design Engineering for RAB expansion	\$340,000

In addition Collingwood Public Utilities ensures that drawings accurately showing the works constructed (record drawings) are kept up to date, including timely incorporation of all modifications made throughout the works. Copies of the drawings are stored at the Raymond A Barker Ultra-Filtration Plant and at the Utilities Offices, and are available for inspection by Ministry personnel upon request.

## Appendix 1 Summary of Plant Flows

Month	Raw Water Taking				Total Plant Finished Water Supplied			
	Monthly Total (m <sup>3</sup> )	Daily Ave (m <sup>3</sup> )	Max Day (m <sup>3</sup> )	Min Day (m <sup>3</sup> )	Monthly Total (m <sup>3</sup> )	Daily Ave (m <sup>3</sup> )	Max Day (m <sup>3</sup> )	Min Day (m <sup>3</sup> )
January	601,281	19,396	21,239	15,227	545,838	17,608	19,146	14,446
February	545,155	19,470	21,930	15,971	494,849	17,673	19,780	14,594
March	557,218	17,975	22,116	14,189	553,348	17,850	19,707	14,189
April	602,675	20,089	23,226	15,451	520,005	17,334	20,055	14,180
May	698,919	22,546	26,598	16,658	606,731	19,572	22,949	14,888
June	757,865	25,262	28,390	18,875	654,393	21,813	25,047	17,080
July	713,467	23,015	26,010	20,157	677,940	21,869	23,960	19,258
August	791,810	25,542	29,454	19,318	715,560	23,083	27,242	16,616
September	655,950	21,865	26,222	16,903	583,700	19,457	23,772	15,770
October	595,882	19,222	21,875	15,690	539,456	17,402	19,624	14,550
November	562,733	18,758	21,567	15,314	509,640	16,988	19,391	14,228
December	530,736	17,121	20,617	11,426	492,670	15,893	18,537	11,205
<b>Total</b>	<b>7,613,691</b>	<b>20,855</b>			<b>6,894,130</b>	<b>19,366</b>		
<b>Max</b>	<b>791,810</b>		<b>29,454</b>		<b>715,560</b>		<b>27,242</b>	
<b>Min</b>	<b>545,155</b>			<b>11,426</b>	<b>494,849</b>			<b>11,205</b>

<b>Total Plant Production</b>	<b>6,894,130</b>	<b>m<sup>3</sup></b>	<b>Design Capacity</b>	<b>31,140</b>	<b>m<sup>3</sup>/d</b>
<b>Maximum Production Day</b>	<b>27,242</b>	<b>m<sup>3</sup></b>			
<b>Yearly Daily Production Average</b>	<b>19,366</b>	<b>m<sup>3</sup></b>			

The Collingwood Public Utilities operates the Raymond A Barker Ultra-Filtration Plant to treat water at a rate not exceeding the maximum flow rate of 414.5L/s **except:**

- (a) where necessary to meet an unusual water demand for fighting a large fire, or
- (b) where necessary for the purpose of maintenance of the works and essential to its efficient operation and provide that the treatment water quality satisfies the requirements set out in the Ministry Procedure B13-13 entitled "Chlorination of Potable Water Supplies in Ontario", as amended from time to time.