

Collingwood Public Utilities



Collingwood Drinking Water System 2008 Annual Compliance Report

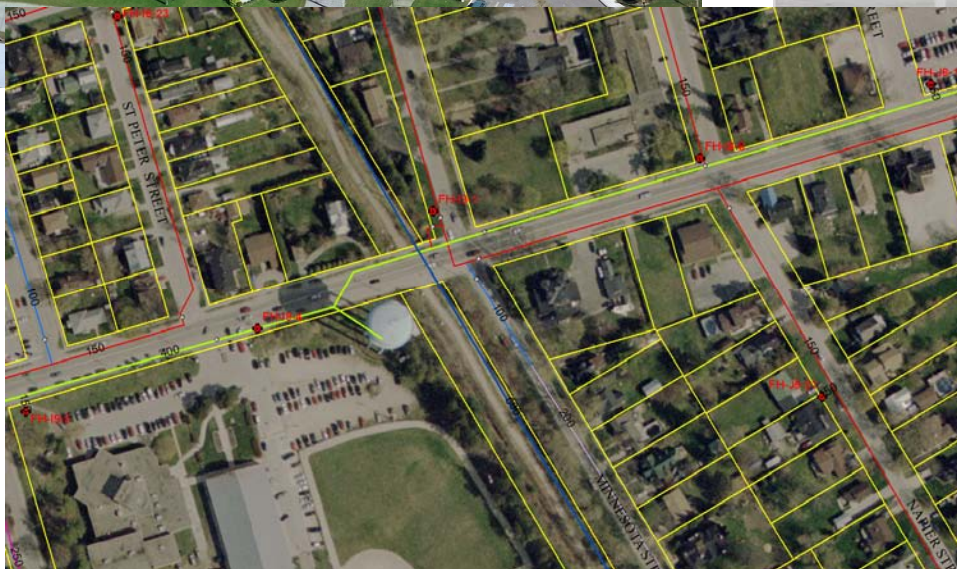


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Definitions

Collingwood Public Utilities	CPU
Ministry of the Environment	MOE
Flow	(m ³ /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 Collingwood Drinking Water System 2008 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:

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

2009 Drinking Water System Annual Report can also be viewed and down loaded in PDF format from the following websites:

www.collus.com & www.town.collingwood.on.ca/

Certificate of Approval (C of A) No.	8299-7CTKRA issued April 1, 2008
Permit to Take Water No.	91-P-3037
Maximum Rated Capacity	31,140 m ³ /d

Drinking Water System Number	220001165
Drinking Water System Name	Collingwood Drinking Water System
Drinking Water System Owner	Collingwood Public Utilities
Drinking Water System Category	Large Municipal Residential
Water Treatment Subsystem Class	Class 2 Certificate No. 277 issued November 15, 2005
Water Distribution Subsystem Class	Class 2 Certificate No. 3009 issued November 15, 2005
Period being Reported	January 1, 2008 to December 31, 2008
Other Drinking Water Systems that receive drinking water from Raymond A. Barker Ultrafiltration Plant	
Drinking Water System Owner	Town Of New Tecumseth
Drinking Water System Number	220001174
Drinking Water System Owner	Town Of The Blue Mountains
Drinking Water System Number	220001762
Drinking Water System Owner	Baxter Distribution System (Township of Essa)
Drinking Water System Number	260086866
Drinking Water System Owner	Angus Well Supply System (Township of Essa)
Drinking Water System Number	260001026

1.1 Description of the Drinking Water System

Collingwood Drinking Water System consists of The Raymond A Barker Ultrafiltration Plant (RAB) and Collingwood Distribution 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 145.5km of various diameter water mains, ranging from 100mm to 600mm diameter, 24.1km of private water mains, one (1) 2250m³ multi legged elevated storage tank, one (1) 6800m³ in-ground reservoir and booster pumping station (A.R. (Ted) Carmichael West End Reservoir), one (1) 2500m³ in-ground reservoir and booster station (R. A. (Bob) Davey South End Reservoir) and one (1) in line booster station (Osler Bluff Road). Currently RAB also supplies safe drinking water to four (4) other municipalities, the Town of the Blue Mountain through a connection to Collingwood's distribution system at the boundary and three (3) municipalities through the 58km Regional Pipeline including Village of Baxter, Town of Angus and Town of New Tecumseth.

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 pour 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 greater than 0.035 micron 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 m³ chlorine contact chambers (total volume 826 m³) 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 2008 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 in accordance with 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 Collingwood Drinking Water System 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 actions 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 Collingwood Drinking Water System 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

No MOE inspection in 2008 to report.

3.2 Management System DWQMS and ISO 14001

DWQMS

Ont. Regulation 188/07 Licensing of Municipal Drinking Water System states that all municipal drinking water system shall be operated by an accredited operating authority.

The process for obtaining a municipal drinking water license includes the development of a drinking water quality management system (DWQMS) which will provide a preventative and proactive approach in operating and maintaining the drinking water system.

Collingwood Public Utilities is nearing completion of a Management System that enshrines both the DWQMS and ISO 14001 Standards. The Management System addresses the primary function of CPU, which is to produce and distribute safe drinking water that meets applicable legislative and regulatory requirements and provide for the continual improvement of the MS. The Management System is also designed to include all reasonable precautions for safeguarding the health and safety of the Utility's employees and to protect the environment within the concept of sustainable development.

As required by Ont. Reg 188/07 the Management System will be submitted to the Ministry of Environment for acceptance and subsequent issuance of a municipal drinking water license.

ISO 14001

No ISO 14001 audits in 2008 to report

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**. 13,252 kg were used in 2008.

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

Month	Total Chlorine Used (kg)	Ave.(Free) Pre-treatment Residual	Ave. Post Chlorine Dose (mg/l)	Ave. Free Chlorine Residual (mg/l)	Ave. Water Temp. °C	Ave. Raw Water Turbidity	Ave. Finished Water Turbidity
January	1056	0.13	1.80	1.33	1.7	2.8	0.04
February	921	0.18	1.78	1.33	0.4	1.3	0.04
March	1016	0.15	1.73	1.29	0.6	0.4	0.04
April	987	0.14	1.75	1.05	4.3	1.1	0.04
May	968	0.16	1.68	1.25	6.9	0.6	0.04
June	1132	0.13	1.78	1.05	11	0.6	0.04
July	1341	0.10	2.63	1.33	17.2	0.7	0.04
August	1485	0.13	2.07	1.39	19.9	0.7	0.04
September	1311	0.15	2.04	1.40	17.8	0.8	0.05
October	1087	0.15	1.96	1.35	12.9	1.7	0.05
November	987	0.15	1.89	1.40	7.1	1.3	0.04
December	961	0.15	1.87	1.36	2.3	3.1	0.04
Total/Ave.	13,252	0.14	1.92	1.29	8.4	1.3	0.04
Max	1,485	0.18	2.63	1.40	19.9	3.1	0.05
Min	921	0.10	1.68	1.05	0.4	0.4	0.03

The following table shows Chlorine residual testing conducted throughout the distribution system in 2008

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	40	1.18	40	0	40	1.37	40	0
February	31	1.34	31	0	31	1.49	31	0
March	32	1.24	32	0	32	1.42	32	0
April	40	0.84	40	0	40	0.95	40	0
May	32	0.83	32	0	32	0.93	32	0
June	33	0.76	33	0	33	0.85	33	0
July	28	0.62	28	0	28	0.76	28	0
August	27	0.62	27	0	27	0.70	27	0
September	34	0.57	34	0	34	0.67	34	0
October	28	0.49	28	0	28	0.59	28	0
November	37	0.49	37	0	37	0.59	37	0
December	40	0.62	40	0	40	0.70	40	0
Total	402		402	0	402		402	0
Average		0.80				0.92		

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
November 11 2008	Low system pressure due to main break West-end/Silver Creek Drive service area	n/a	Boil water advisory(BWA) was issued for West-end/ Silver Creek Drive service area	All affected water customers were notified of the BWA by hand out letter. Main break repaired disinfected, flushed and bacteriological sampled. Sample result returned as safe drinking water. All affected water customers were notified of the BWA rescind by hand out letter.	Boil water advisory rescinded by the Simcoe Muskoka District Health Unit Nov 25 th 2008

**Note: 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**

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 2008

	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) - 35 (max)	0	
Treated	52	0 (max)	0 (max)	52	<10 (max)
Distribution	402	0 (max)	0 (max)	402	<10 (min) 210 (max)*

* This result is an anomaly as sample results taken before and after showed levels of <10. However, flushing was undertaken to ensure water quality.

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this annual report for 2008

	Number of Samples	Range of Results
Turbidity	Continuous analyzers	0.03 min 0.07max
Chlorine	Continuous analyzers	0.60 min. 1.36 max

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

	Date of Samples				MAC
	Feb	May	Aug	Dec	mg/l
Antimony	<.001	<0.001	<0.001	<0.001	0.006
Arsenic	<0.0006	<0.0006	0.00062	<0.0006	0.025
Barium	0.0117	0.0122	0.0141	0.0124	1.0
Boron	0.0131	0.0127	0.0234	0.0131	5.0
Cadmium	<0.0005	<0.0005	<0.0005	0.0005	0.005
Chromium	<0.0006	<0.0006	0.00202	<0.0006	0.05
Fluoride	0.02	0.07	0.05	0.06	1.5
Mercury	<0.0001	<0.0001	<0.0001	<0.0001	0.001
Nitrate + Nitrite (as N)	0.3	0.027	0.22	0.25	10.0
Nitrite	<0.05	<0.05	<0.05	<0.05	1.0
Nitrate	0.3	0.27	0.22	0.25	10.0
Selenium	<0.0008	<0.0008	0.001	0.0008	0.01
Sodium	4	4.63	4.12	3.94	greater than 20 to be reported
Total Dissolved Solids	112				500
Uranium	<0.0002	<0.0002	0.00023	0.0002	0.02

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

	Date of Samples				MAC
	Mar	Jun	Sept	Dec	mg/l
Alachlor	<0.0005	<0.0005	<0.0005	<0.0005	0.005
Aldicarb	<0.00015	<0.00015	<0.00015	<0.00015	0.009
Aldrin +Dieldrin	<0.00007	<0.00007	<0.00007	<0.00007	0.0007
Atrazine	<0.0005	<0.0005	<0.0005	<0.0005	0.005
Azinphos-methyl	<0.002	<0.002	<0.002	<0.002	0.02
Bendiocarb	<0.002	<0.002	<0.002	<0.002	0.04
Bromoxynil	<0.0005	<0.0005	<0.0005	<0.0005	0.005
Carbaryl	<0.005	<0.005	<0.005	<0.005	0.09
Carbofuran	<0.005	<0.005	<0.005	<0.005	0.09
Chlordane(Total)	<0.0007	<0.0007	<0.0007	<0.0007	0.007
Chlorpyrifos	<0.001	<0.001	<0.001	<0.001	0.09
Cyanazine	<0.001	<0.001	<0.001	<0.001	0.01
Diazinon	<0.001	<0.001	<0.001	<0.001	0.02
Dicamba	<0.001	<0.001	<0.001	<0.001	0.12
2,4-Dichlorophenol	<0.0005	<0.0005	<0.0005	<0.0005	0.9
DDT	0.003	<0.003	<0.003	0.003	0.03
24-D	<0.001	<0.001	<0.001	<0.001	0.1
Dicoflp-methyl	<0.0009	<0.0009	<0.0009	<0.0009	0.009
Dimethoate	<0.0025	<0.0025	<0.0025	<0.0025	0.02
Dinoseb	0.001	0.001	0.001	0.001	0.01
Diquat	<0.005	<0.005	<0.005	<0.005	0.07
Diuron	<0.01	<0.01	<0.01	<0.010	0.15
Glyphosate	<0.06	<0.06	<0.06	<0.01	0.28
Heptachlor + heptachlor epoxide	<0.0003	<0.0003	<0.0003	<0.0003	0.003
Lindane (Total)	<0.0004	<0.0004	<0.0004	<0.0004	0.004
Malathion	<0.005	<0.005	<0.005	<0.005	0.19
Methoxychlor	<0.09	<0.09	<0.09	<0.09	0.9
Metolachlor	<0.00011	<0.00011	<0.00011	<0.00011	0.05
Metribuzin	<0.00025	<0.00025	<0.00025	<0.00025	0.08
Paraquat	<0.001	<0.001	<0.001	<0.001	0.01
Parathion	<0.001	<0.001	<0.001	<0.001	0.05
Pentachlorophenol	<0.0005	<0.0005	<0.0005	<0.0005	0.06
Phorate	<0.0005	<0.0005	<0.0005	<0.0005	0.002
Picloram	<0.05	<0.05	<0.05	<0.05	0.19
PCB	<0.0002	<0.0002	<0.0002	<0.0002	0.003
Prometryne	<0.00025	<0.00025	<0.00025	<0.00025	0.001
Simazine	<0.001	<0.001	<0.001	<0.001	0.01
Temephos	<0.01	<0.01	<0.01	<0.01	0.28
Terbufos	<0.0007	<0.0007	<0.0007	<0.0007	0.001
2,3,4,6-Terachlorophenol	<0.0005	<0.0005	<0.0005	<0.0005	0.1
Triallate	<0.001	<0.001	<0.001	<0.001	0.23

2,4,6,-Trichlorphenol	<0.0005	<0.0005	<0.0005	<0.0005	0.005
Trifluralin	<0.001	<0.001	<0.001	<0.001	0.045
2,4,5-T	<0.005	<0.005	<0.005	<0.005	0.28
Trichlorophenoxyacetic Acid	<0.0002	<0.0002	<0.0002	<0.0002	0.28
Benzo(a)pyrene	<0.00001	<0.00001	<0.00001	<0.00001	0.00001
Benzene	<0.0002	<0.0002	<0.0002	<0.0002	0.005
Carbon Tetrachloride	<0.0002	<0.0002	<0.0002	<0.0002	0.005
1,2-Dichlorobenzene	<0.0001	<0.0001	<0.0001	<0.0002	00.05
1,4-Dichlorobenzene	<0.0001	<0.0001	<0.0001	<0.0001	00.001
1,2-Dichloroethane	<0.0002	<0.0002	<0.0002	<0.0002	00.005
1,4-Dichloroethane	<0.0002	<0.0002	<0.0002	<0.0002	0
1,1-Dichloromethylene	<0.0002	<0.0002	<0.0002	<0.0002	00.014
Dichchloromethane	<0.0003	<0.0003	<0.0003	<0.0003	00.05
Monochlorobezene	<0.0001	<0.0001	<0.0001	<0.0001	0.08
Tetrachloroethylene	<0.0001	<0.0001	<0.0001	<0.0001	0.03
Total Trihalomethanes					
* Note:	0.014	0.017	0.043	0.065	0.100^a
Trichloroethylene	<0.0002	<0.0002	<0.0002	<0.0002	0.005
Vinyl chloride	<0.00017	<0.00017	<0.00017	<0.00017	0.002
Xylene	<0.0001	<0.0001	<0.0001	<0.001	0.05

^a **Note:** The MAC for Total Trihalomethanes is based on a four (4) quarter running average. The current running average for the Collingwood system is **0.035 mg/l**

Summary of lead testing programme covered by this annual report

The MOE require that lead is sampled in plumbing systems throughout the drinking water system. In 2008 two (2) sets of samples taken and the following summarises the results.

Samples taken between December 2007 - April 2008 and June 2008 - October 2008

A total of 144 samples were taken in the distribution system, residential properties and commercial establishments results showed an average lead concentration of <1.0 ug/L. Only two houses exceeded 10 ug/L on each occasion and were notified.

Section 7 Items of Significant Investment in the Water System in 2008

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

Description	Investment
Water service upgrades	\$48,000
South End Reservoir Construction	\$2,000,000
Design Engineering for RAB expansion	\$460,000

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 ³)	Daily Ave (m ³)	Max Day (m ³)	Min Day (m ³)	Monthly Total (m ³)	Daily Ave (m ³)	Max Day (m ³)	Min Day (m ³)
January	666,006	21,484	23,854	18,939	587,650	18,956	21,230	16,894
February	577,688	19,920	23,179	14,761	519,443	17,911	21,012	14,116
March	633,154	20,424	23,013	16,523	588,233	18,975	21,400	15,526
April	605,049	20,168	21,613	18,098	557,881	18,596	19,832	16,763
May	669,059	21,583	24,568	18,285	609,836	19,672	22,459	17,047
June	730,260	24,342	27,416	20,542	636,871	21,229	23,507	18,946
July	864,440	27,885	30,865	23,864	750,781	24,217	26,599	21,200
August	844,417	27,239	30,638	23,217	741,545	23,921	26,373	20,457
September	724,494	24,150	31,586	16,727	641,371	21,379	27,307	15,803
October	627,358	20,237	23,825	16,495	555,417	17,917	20,938	14,953
November	585,236	19,508	22,932	15,827	523,054	17,435	20,386	14,593
December	588,192	18,974	23,355	15,712	530,352	17,108	20,283	14,699
Total	8,115,353	21,417			7,242,434	19,776		
Max	864,440		31,586		741,545		27,307	
Min	577,688			14,761	519,443			14,116

Total Plant Production	7,242,434	m³	Design Capacity	31,140	m³/d
Maximum Production Day	27,307	m³			
Yearly Daily Production Average	19,184	m³			

The Collingwood Public Utilities operates the Raymond A Barker Ultra-Filtration Plant such that the maximum flow rate into the treatment system does not exceed 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.