



Collingwood Public Utilities



Devil's Glen Country Club Communal Water Treatment Plant 2008 Annual Compliance Report



**Operated By
Collingwood Public Utilities**

TABLE OF CONTENTS

Section	Contents	Page Number
1	Drinking Water System General Information	3
1.1	Description of the Drinking Water System	3
2	Compliance Statements	4
3	Results of External Performance Audits	5
4	Treatment Chemicals Used	5
5	Required Reports to the Ministry of the Environment	7
5.1	Explanation of Reports	7
5.2	Corrective Actions	8
6	Summary of Results of the Required Tests	8
7	Items of Significant Investment in the Water System in 2008	11
APPENDICIES		
Appendix 1 – Summary of Plant Flows		

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 (6,f) , (7) , (8) & 10.

Collingwood Public Utilities is pleased to provide Devil's Glen Country Club with this Communal Water Treatment Plant 2008 Annual Compliance Report. CPU's goal is to provide our clients with the cleanest, safest and most dependable supply of potable water possible. The following is general information pertaining to Devil's Glen Communal Water Treatment Plant:

MOE PLANT CLASSIFICATION	: Water Treatment System (Municipal Class III)
DRINKING-WATER SYSTEM NUMBER	: 260062972
DRINKING-WATER SYSTEM CATEGORY	: Non-Municipal Year-Round Residential
OPERATING AUTHORITY	: Collingwood Public Utilities
PLANT LOCATION	: RR#1, Glen Huron, Part of Lot 7, Concession 11, Clearview Township

Section 1.1 Description of the Drinking Water System

Devil's Glen Communal Water Treatment Plant is an enhanced coagulation membrane filtration surface water treatment plant. Surface water is taken from the Mad River through a submerged 3mm screened inlet. Raw water flows by gravity into the raw water well in the Snowmaking Building. The raw water is then pumped by two (2) 25hp vertical turbine pumps (one duty one standby) through a 1.0 micron self cleaning strainer to remove large particulate matter. The raw water pumps generate a pressure of 1300kPa in order to discharge raw water at the treatment facility located at the top of the ski resort.

Raw water entering the treatment facility is dosed with pre-treatment chemicals, namely sulphuric acid for pH adjustment and Aluminum Chloride Hydroxide Sulphate (Sternpac) for coagulation. It should be noted that pH adjustment is necessary to optimize the coagulation process. Following the addition of the above noted chemicals the influent passes through a static mixer before discharging into a flocculation tank. The influent is then retained in the flocculation tank for approximately 15 minutes and mixed slowly to facilitate flocculation. This part of the process releases the dissolved organic matter that is in solution and changes it into a particulate which can be easily removed by the membrane filtration process.

The Zenon membrane filtration system consists eight (8) 500sq/ft modules, one (1) permeate pump, one (1) backpulse pump, one (1) backpulse tank and one (1) air blower. The membranes have a pour size of 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 the particulate matter in the process tank.

The permeate water is then disinfected by the addition of sodium hypochlorite. The chlorinated permeate water then flows to the two (2) 140 m³ combination chlorine contact chambers/reservoirs. The finished water then flows into two (2) separate distribution systems. One system is fed by gravity and flows to the bottom of the hill to service the lodge and the homes within the resort. The second system is fed by high lift distribution pumps and services the condo corporations at the top of the hill.

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 is discharged to a septic tank and weeping bed. Air is also used to prevent fouling of the membranes. This is achieved by injecting air 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.

Devil's Glen Communal Water Treatment Plant 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 Ontario Drinking Water Standards (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 Owner, 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 Devil's Glen Treatment Plant in accordance with 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.

No external audits were performed during this reporting period.

Section 4 Treatment Chemicals Used

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

- Sodium Hypochlorite 12% solution
- Aluminum Chloride Hydroxide Sulphate
- Sulphuric Acid 93% solution

The following table shows total chlorine used per month, average post filtration chlorine dosage and average free chlorine residual after contact time. In addition average raw water temperature has been shown

Month	Total Chlorine Used (kg)	Ave.(Free) treatment Residual	Ave. Post Chlorine Dose (mg/l)	Ave. Water Temp. °C
January	15.2	1.25	2.25	3.3
February	19.2	1.16	2.16	3.6
March	12.9	1.04	1.99	3.5
April	10.5	1.02	2.01	7.9
May	13.0	1.07	2.66	10.5
June	8.7	0.89	3.46	13.8
July	3.8	0.90	3.50	16.0
August	5.1	0.97	4.24	17.1
September	7.6	0.93	4.78	16.0
October	6.6	1.15	3.90	12.3
November	4.9	0.95	3.70	9.0
December	5.5	1.00	2.35	5.3
Total/ Ave	113	1.03	3.08	9.8
Max	19.2	1.25	4.78	17.10
Min	3.8	0.89	1.99	3.30

The following table shows total coagulant and sulphuric acid usage per month, average coagulant dosage, average raw water turbidity and average finished water turbidity.

Month	Aluminum Chloride Hydroxide Sulphate (litres)	Coagulant dosage mg/l	Ave. Raw Water Turbidity	Ave. Finished Water Turbidity	Sulphuric Acid 93% (litres)
January	1110	73.3	4.1	0.07	292
February	1164	87.7	1.4	0.05	275
March	1844	112.0	1.3	0.06	387
April	1412	112.7	1.9	0.05	265
May	1116	80.4	1.7	0.06	312
June	206	73.9	2.8	0.07	66
July	332	87.9	3.3	0.08	109
August	335	75.0	4.3	0.06	188
September	426	84.8	3.6	0.05	215
October	378	72.8	2.1	0.04	181
November	274	73.3	1.8	0.07	136
December	544	74.1	2.4	0.06	277
Total/ Ave	9,141	1,008	2.5	0.06	2,703
Max	1,844	113	4.3	0.08	387
Min	206	73	1.3	0.04	66

Section 5 Required Reports to the Ministry of the Environment

In general the number of samples collected for analysis exceeded the minimum quantities set out by O. Reg. 170/03 of the Safe Drinking Water Act. The following is a summary of reports made to the MOE under subsection 18 (1) of the Act or 16-4 of Schedule 16 for the period covered by this report.

Samples collected from the Water Treatment Plant and reported by CPU

Incident Date	Parameter	Result	Unit of Measurement	Corrective action	Corrective action date
None to report					
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					

Samples collected from the distribution system and reported by Devils Glen Staff

Incident Date	Parameter	Result	Unit of Measurement	Corrective action	Corrective action date
Aug 10/08	THM	0.140	mg/l	Flushing/resample	Sept 17/08
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 5.1 Explanation of Treatment Reports

Nothing to report

Section 5.2 Distribution System Corrective Actions

Reported by Devils Glen Staff

Flushed this section of line, installed an automatic flush valve at the end of the line. Resample taken result 0.079 mg/l

Section 6 Summary of Results of the Required Tests

Microbiological Testing carried out 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#)	Range Of Background Counts (min #)-(max#)	Range of HPC Results (min #)-(max#)
Raw	52	25 (min) – >80(max)	2 (min) - >60(max)		
Treated	52	0 (max)	0 (max)	0 (max)	250 (max)
Distribution	156	0 (max)	0 (max)	0 min- >23max	<10 (min) 440 (max)

Distribution system microbiological samples are collected by Devil's Glen staff and results of analysis are also reported by Devil's Glen staff

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 0.10max
Chlorine	Continuous analyzers	0.65 min. 1.25 max

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

	Date Of Samples	MAC
	March 2007	mg/l
Antimony	<0.001	0.006
Arsenic	<0.0006	0.025
Barium	<0.01	1.0
Boron	<0.008	5.0
Cadmium	<0.0005	0.005
Chromium	<0.0006	0.05
Fluoride	<0.05	1.5
Mercury	<0.0001	0.001
Selenium	<0.0008	0.01
Sodium	8.01	greater than 20
Uranium	0.0002	0.02

	Date Of Samples				MAC
	Feb 2008	May 2008	August 2008	Dec 2008	mg/l
Nitrate + Nitrite (as N)	1.72	1.22	0.47	1.10	10.0
Nitrite	<0.05	<0.05	<0.05	<0.05	1.0
Nitrate	1.72	1.22	0.47	1.10	10.0

Operational testing carried out under Schedule 24(Organics) of Regulation 170/03 during the period covered by this annual report for 2008.

Note: non-municipal year round residential systems are only required to ensure at least one water sample is taken every 60 months and tested for every parameter set out in Schedule 24 listed in the table below.

	March 2007	MAC mg/l
Alachlor	<0.0005	0.005
Aldicarb	<0.00015	0.009
Aldrin +Dieldrin	<0.00007	0.0007
Atrazine	<0.0005	0.005
Azinphos-methyl	<0.002	0.02
Bendiocarb	<0.002	0.04
Bromoxynil	<0.0005	0.005
Carbaryl	<0.005	0.09
Carbofuran	<0.005	0.09
Chlordane(Total)	<0.0007	0.007
Chlorpyrifos	<0.001	0.09
Cyanazine	<0.001	0.01
Diazinon	<0.001	0.02
Dicamba	<0.001	0.12
2,4-Dichlorophenol	<0.0005	0.9
DDT	<0.003	0.03
24-D	<0.001	0.1
Dicoflp-methyl	<0.0009	0.009
Dimethoate	<0.0025	0.02
Dinoseb	0.001	0.01
Diquat	<0.005	0.07
Diuron	<0.01	0.15
Glyphosate	<0.01	0.28
Heptachlor + heptachlor epoxide	<0.0003	0.003
Lindane (Total)	<0.0004	0.004
Malathion	<0.005	0.19
Methoxychlor	<0.09	0.9
Metolachlor	<0.00011	0.05

Metribuzin	<0.00025	0.08
Paraquat	<0.001	0.01
Parathion	<0.001	0.05
Pentachlorophenol	<0.0005	0.06
Phorate	<0.0005	0.002
Picloram	<0.05	0.19
PCB	<0.0002	0.003
Prometryne	<0.00025	0.001
Simazine	<0.001	0.01
Temephos	<0.007	0.28
Terbufos	<0.0007	0.001
2,3,4,6-Terachlorophenol	<0.0005	0.1
Triallate	<0.001	0.23
2,4,6,-Trichlorphenol	<0.0005	0.005
Trifluralin	<0.001	0.045
2,4,5-T	<0.001	0.28
Trichlorophenoxy acetic Acid	<0.0002	0.28
Benzo(a)pyrene	<0.00001	0.00001

Trihalomethanes quarterly sample results

	Date Of Samples				MAC	
	March	May	August		Dec	mg/l
Chloroform	0.020	0.041	0.130	0.073	0.027	
Bromodichloromethane	0.0017	0.0033	0.0091	0.0060	0.0023	
Dibromochloromethane	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	
Bromoform	<0.0001	<0.0003	<0.0003	<0.0003	<0.0003	
Total Trihalomethanes * Note:	0.022	0.044	0.140	0.079	0.029	0.100^a
Haloacetic Acids	0.033	0.062	0.159		0.055	

^a **Note:** The MAC for Total Trihalomethanes is based on a four (4) sample running average. The current running average for the Devil's Glen system is 0.073 mg/l

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

The following is a brief description of items of significant expenses and system investment incurred during the period covered by this annual report.

Description	Monetary Expenses Incurred Investment
Spare filter permeate/backpulse pumps	\$9800.00
Spare blower	
Chlorine residual analyzer	\$5000.00

This completes the Devil's Glen Communal Water Treatment Plant 2008 Annual Compliance Report. It gives CPU great pleasure to provide this report and to reaffirm CPU's commitment to provide the resort with the cleanest, safest, most dependable supply of portable water for this year and for years to come. If you have any questions or comments about this report please do not hesitate to contact any of the following personnel.

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Appendix 1 Summary of Plant Flows

Month	Raw Water Taking				Month	Total Plant Finished Water Supplied			
	Monthly Total (m ³)	Ave Day (m ³)	Max Day (m ³)	Min Day (m ³)		Monthly Total (m ³)	Ave Day (m ³)	Max Day (m ³)	Min Day (m ³)
January	7222	254	451	112	January	5814	188	263	133
February	6460	223	319	147	February	5301	183	242	143
March	8156	263	368	192	March	6581	212	295	121
April	6084	203	240	168	April	5074	169	198	156
May	6453	208	396	42	May	5197	168	306	11
June	1444	48	93	23	June	741	25	53	5
July	2021	65	205	31	July	1109	36	122	17
August	2187	71	163	38	August	1196	39	97	23
September	2522	87	192	40	September	1717	57	131	24
October	2567	83	148	28	October	1751	56	104	39
November	1875	63	87	33	November	1340	45	68	32
December	3731	120	389	43	December	2352	76	169	46
Total/ Ave	50,722	141			Total/ Ave	38,173	105		
Max	8156		451		Max	6,581		306	
Min	1,444			23	Min	741			5