

The Corporation of the Municipality of Port Hope



Port Hope Water Treatment Plant

**Treatment Plant
DWSN 260058006**

2007 Annual Report



The Corporation of the Municipality of Port Hope
Department of Public Works
Water Treatment Division
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February 14, 2007
Municipality of Port Hope
P.O. Box 117
56 Queen Street
Port Hope, ON
L1A 3V9

Attention: Mr. Peter Angelo, P. Eng., Director of Municipal Engineering Services

Dear Mr. Angelo:

**RE: 2007 Annual Report – Port Hope Water Treatment Plant
Drinking-Water System Number - 260058006**

We are pleased to provide the *2007 Annual Report for Port Hope Water Treatment Plant* as outlined in Ontario Regulation 170/03, Section 11 made under the Safe Drinking Water Act.

This report covers the time frame from January 1, 2007 to December 31, 2007 for the Drinking Water Treatment facility.

Sincerely,

Rick Trumper
Water Treatment Supervisor
Municipality of Port Hope

OPTIONAL ANNUAL REPORT TEMPLATE

Drinking-Water System Number:	260058006
Drinking-Water System Name:	Municipality of Port Hope Water Treatment Plant
Drinking-Water System Owner:	The Corporation Of the Municipality of Port Hope
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1, 2007 – December 31, 2007

<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 [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]</p> <p>Is your annual report available to the public at no charge on a web site on the Internet? Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]</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; margin-top: 10px;"> Municipal Public Works Office, Municipalities Libraries, Municipal Administrative Office and the Water Treatment Plant. </div>	<p><u>Complete for all other Categories.</u></p> <p>Number of Designated Facilities served: <input style="width: 100px; height: 20px;" type="text"/></p> <p>Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [<input type="checkbox"/>] No [<input type="checkbox"/>]</p> <p>Number of Interested Authorities you report to: <input style="width: 100px; height: 20px;" type="text"/></p> <p>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [<input type="checkbox"/>] No [<input type="checkbox"/>]</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
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 []

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

System Information

The Port Hope Water Treatment Plant (WTP) provides ultrafiltration water treatment for the Municipality of Port Hope. The WTP is located at 35 Marsh St, Municipality of Port Hope, County of Northumberland, Ontario. The Municipality is the Owner and Operator of the Water System that serves the Community of Port Hope with a population of 12,500. It is classed as a Large Municipal Residential system.

The following is a description of the components that in part makeup the Communities Water System.

Certificate of Approval

The water treatment plant is operated in accordance with Ontario Ministry of the Environment Certificate of Approval for Municipal Drinking Water Systems Number 5488-6DNHC4.

Raw Water Source

The water supply for the Port Hope Water Treatment plant is obtained from Lake Ontario. Lake Ontario water is of good quality and can be described as a large body of clear-coloured water of low turbidity. The Lake water (raw water) temperature ranges from 0°C (winter) to approximately 24°C (summer). The raw water is classified as a surface water supply, which means that it is considered to be an unprotected source. Raw Water requires full treatment at Port Hope's Water Treatment Plant to make it drinkable or potable.

Intake Structure

Raw water is taken into a 750-mm diameter intake pipe through the intake structure. The intake discharges to a raw water pumping station where it is coarse screened. The existing intake structure and 750 mm intake piping was retrofitted to include a 900 mm on shore addition. This will be utilized to draw water from Lake Ontario to the low lift pumping station.

Raw Water pumping

The raw water pumping station consists of several raw water chambers, one (1) raw water travelling screen and two (2) manually cleaned screens (i.e., for standby

purposes), three (3) low lift pumps (with provision for a fourth). During the Zebra Mussel season the raw water is dosed with chlorine for Zebra Mussel control. The raw water quality is monitored by Operations staff at the Treatment Plant.

Water Treatment

Raw water is treated by an ultrafiltration system this ultrafiltration process removes organics and solids, as well as safeguards against *giardia* and *cryptosporidium* contamination. The water treatment facilities consist of a Zenon ZeeWeed 1000 membrane ultrafiltration system which includes four (4) membrane tanks (each tank contains two (2) filtration cassettes with a total capacity for four cassettes) and associated cleaning and backwashing equipment. Disinfection at the plant is achieved through gas chlorination. Following ultrafiltration, filtered water is disinfected via a chlorine gas system (primary disinfection). Following disinfection the water is ready for consumption by consumers within the distribution and five (5) high lift pumps (with provision for a sixth) lift treated water to the distribution system. The Post-chlorination is used as required to maintain a fixed chlorine residual level leaving the plant. The current water treatment plant has a rated capacity of 20,000 m³/d. It is expected that this capacity will provide potable water servicing to the Municipality of Port Hope for a period greater than the 20 year planning period.

Water Storage Facilities

On site potable water storage consists of twined reservoirs that have a total rated capacity of 5000 m³. Off site storage facilities include a Standpipe that can hold up to 1,205 M³ and an underground reservoir that can hold up to 111 M³.

Process Wastewater System

In addition, the WTP provides residue management consisting of equalization storage and solids separation. Two (2) equalization tanks precede two (2) parallel tube settling units. Settled solids at the base of each wastewater clarifier are pumped via a sewage pumping station (located outside the WTP) to the sanitary sewer, while wastewater supernatant is dechlorinated prior to discharge to Lake Ontario.

Water Distribution System

Because of the Community's hilly terrain the Community has been divided into two pressure zones, Zone 1 is located in the lower parts of the Community while Zone 2 controls the higher area. A booster pumping station and an in-ground reservoir/pumping station are located in Zone 2 to maintain adequate pressures and flows in Zone 2. Zone 1 pressures are maintained via the Pumping Station at the Water Treatment Plant and the Standpipe located at the top of Zone 1.

Supervisory Control and Data Acquisition (SCADA)

This system consists of numerous computer systems that control and monitor the drinking water system and the water quality at all times. Operational staff controls these systems to insure their proper operation and water quality. All Operational Staff

for the Municipalities Water System are fully certified and Licensed by the Ministry of the Environment.

List all water treatment chemicals used over this reporting period

Chlorine

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

Ongoing maintenance as per manufactures recommendations, \$800,000/year

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
November 7, 2007	Turbidity	> 1.00	NTU	Cycle pump into more frequent use.	November 7, 2007

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	0-4	0-240	N/A	N/A
Treated	52	0	0	51	0-1
Distribution	364	0	0	364	0-42

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 #)
Raw Turbidity	8760	0.0 99.98 NTU
Treated Turbidity	8760	0.0 – 2.0 NTU
Primary Chlorine	8760	0.0 – 0.70 mg/L
Secondary Chlorine	8760	0.045- 5.18 mg/L
Fluoride (If the DWS provides fluoridation)	N/A	N/A

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

*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
C of A, August 25, 2005	Raw Turbidity	Continuous	0.0 – 99.98	NTU
C of A, August 25, 2005	Raw pH	Continuous	7.93 – 14.00	pH
C of A, August 25, 2005	Raw Sodium	618, twice daily	10.52 – 12.25	mg/L
C of A, August 25, 2005	Raw Temperature	Continuous	0.0 – 24.1	Celsius
C of A, August 25, 2005	Treated Turbidity	Continuous	0.0 – 2.0	NTU
C of A, August 25, 2005	Treated pH	Continuous	0.12 – 14.51	pH
C of A, August 25, 2005	Treated Sodium	618, twice daily	11.12 – 12.99	mg/L
C of A, August 25, 2005	Treated Temperature	730, twice daily	4.86 – 24.0	Celsius
C of A, August 25, 2005	Treated Arsenic	52 weeks	0.80 – 1.60	ug/L
C of A, August 25, 2005	Treated Uranium	52 weeks	0.21 – 0.67	ug/L
C of A, August 25, 2005	Treated Trihalomethanes	12 months	15.0 – 37.0	mg/L
C of A, August 25, 2005	Process waste water, Total suspended solids	12, monthly	21.0, Annual Average	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	Aug. 7/07	0.2 <MDL	ug/L	No
Arsenic	Dec. 27/07	1.4	ug/L	No
Barium	Aug. 7/07	21.3	ug/L	No
Boron	Aug. 7/07	23	ug/L	No
Cadmium	Aug. 7/07	0.06 <MDL	ug/L	No
Chromium	Aug. 7/07	0.6	ug/L	No
Lead	Aug. 7/07	0.23	ug/L	No
Mercury	Aug. 7/07	0.02	ug/L	No
Selenium	Aug. 7/07	1.0 <MDL	ug/L	No
Sodium	Aug. 7/07	12.7	mg/L	No
Uranium	Dec. 27/07	0.555	ug/L	No
Fluoride	Aug. 7/07	0.16	mg/L	No
Nitrite	Oct. 9/07	0.005 <MDL	mg/L	No
Nitrate	Oct. 9/07	0.217	mg/L	No

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	Aug. 7/07	0.11 <MDL	ug/L	No
Aldicarb	Aug. 7/07	0.30 <MDL	ug/L	No
Aldrin + Dieldrin	Aug. 7/07	0.067 <MDL	ug/L	No
Atrazine + N-dealkylated metabolites	Aug. 7/07	0.12 <MDL	ug/L	No
Azinphos-methyl	Aug. 7/07	0.21 <MDL	ug/L	No
Bendiocarb	Aug. 7/07	0.13 <MDL	ug/L	No
Benzene	Aug. 7/07	.37 <MDL	ug/L	No
Benzo(a)pyrene	Aug. 7/07	0.004 <MDL	ug/L	No
Bromoxynil	Aug. 7/07	0.33 <MDL	ug/L	No
Carbaryl	Aug. 7/07	0.16 <MDL	ug/L	No
Carbofuran	Aug. 7/07	0.37 <MDL	ug/L	No
Carbon Tetrachloride	Aug. 7/07	0.41 <MDL	ug/L	No
Chlordane (Total)	Aug. 7/07	0.11 <MDL	ug/L	No
Chlorpyrifos	Aug. 7/07	0.18 <MDL	ug/L	No
Cyanazine	Aug. 7/07	0.18 <MDL	ug/L	No
Diazinon	Aug. 7/07	0.081 <MDL	ug/L	No
Dicamba	Aug. 7/07	0.20 <MDL	ug/L	No
1,2-Dichlorobenzene	Aug. 7/07	0.50 <MDL	ug/L	No
1,4-Dichlorobenzene	Aug. 7/07	0.21 <MDL	ug/L	No
Dichlorodiphenyltrichloroethane (DDT) + metabolites	Aug. 7/07	0.14 <MDL	ug/L	No
1,2-Dichloroethane	Aug. 7/07	0.43 <MDL	ug/L	No
1,1-Dichloroethylene (vinylidene chloride)	Aug. 7/07	0.41 <MDL	ug/L	No

Dichloromethane	Aug.7/07	0.34 <MDL	ug/L	No
2-4 Dichlorophenol	Aug.7/07	0.15 <MDL	ug/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	Aug.7/07	0.19 <MDL	ug/L	No
Diclofop-methyl	Aug.7/07	0.40 <MDL	ug/L	No
Dimethoate	Aug.7/07	0.12 <MDL	ug/L	No
Dinoseb	Aug.7/07	0.36 <MDL	ug/L	No
Diquat	Aug.7/07	1.0 <MDL	ug/L	No
Diuron	Aug.7/07	0.087 <MDL	ug/L	No
Glyphosate	Aug.7/07	6.0 <MDL	ug/L	No
Heptachlor + Heptachlor Epoxide	Aug.7/07	0.11 <MDL	ug/L	No
Lindane (Total)	Aug.7/07	0.056 <MDL	ug/L	No
Malathion	Aug.7/07	0.091 <MDL	ug/L	No
Methoxychlor	Aug.7/07	0.14 <MDL	ug/L	No
Metolachlor	Aug.7/07	0.092 <MDL	ug/L	No
Metribuzin	Aug.7/07	0.12 <MDL	ug/L	No
Monochlorobenzene	Aug.7/07	0.58 <MDL	ug/L	No
Paraquat	Aug.7/07	1.0 <MDL	ug/L	No
Parathion	Aug.7/07	0.18 <MDL	ug/L	No
Pentachlorophenol	Aug.7/07	0.15 <MDL	ug/L	No
Phorate	Aug.7/07	0.11 <MDL	ug/L	No
Picloram	Aug.7/07	0.25 <MDL	ug/L	No
Polychlorinated Biphenyls(PCB)	Aug.7/07	0.04 <MDL	ug/L	No
Prometryne	Aug.7/07	0.23 <MDL	ug/L	No
Simazine	Aug.7/07	0.15 <MDL	ug/L	No
THM (NOTE: show latest annual average)				
Temephos	Aug.7/07	0.31 <MDL	ug/L	No
Terbufos	Aug.7/07	0.12 <MDL	ug/L	No
Tetrachloroethylene	Aug.7/07	0.45 <MDL	ug/L	No
2,3,4,6-Tetrachlorophenol	Aug.7/07	0.14 <MDL	ug/L	No
Triallate	Aug.7/07	0.10 <MDL	ug/L	No
Trichloroethylene	Aug.7/07	0.38 <MDL	ug/L	No
2,4,6-Trichlorophenol	Aug.7/07	0.25 <MDL	ug/L	No
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	Aug.7/07	0.22 <MDL	ug/L	No
Trifluralin	Aug.7/07	0.12 <MDL	ug/L	No
Vinyl Chloride	Aug.7/07	0.17 <MDL	ug/L	No

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
N/A			
N/A			