# The Corporation of the Municipality of Port Hope

# Port Hope Drinking Water System

# DWSN 260058006

# 2012 Annual Report

The Corporation of the Municipality of Port Hope
Works and Engineering Department
Drinking Water Treatment Division
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January 31, 2013

Municipality of Port Hope
56 Queen Street
Port Hope, ON
L1A 3Z9

**Attention: Peter Angelo, P. Eng.,**
**Director of Works and Engineering**

Dear Mr. Angelo:

**RE: 2012 Annual Report – Port Hope Water Treatment Plant**
**Drinking-Water System Number – 260058006**

We are pleased to provide the *2012 Annual Report* for the Municipality of Port Hope's Drinking Water System as outlined in Ontario Regulation 170/03, Section 11 under the *Safe Drinking Water Act*.

This report covers the timeframe from January 1, 2012 to December 31, 2012 for the Drinking Water System.

Sincerely,

Rick Trumper
Water Treatment Supervisor
Municipality of Port Hope

**OPTIONAL ANNUAL REPORT TEMPLATE**

| | |
|---|---|
| **Drinking-Water System Number:** | **260058006** |
| **Drinking-Water System Name:** | Port Hope Drinking Water System |
| **Drinking-Water System Owner:** | The Corporation of the Municipality of Port Hope |
| **Drinking-Water System Category:** | Large Municipal Residential |
| **Period being reported:** | January 1, 2012 – December 31, 2012 |

***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.**

Municipal Development Team Office, Municipal Libraries, Municipal Administrative Office, Water Treatment Plant.

***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 [ ]**

**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**
**[ ] Public access/notice via a newspaper**
**[ ] Public access/notice via Public Request**
**[X] Public access/notice via a Public Library**
**[ ] Public access/notice via other method _____**

**Describe your Drinking-Water System**

**System Information**

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

**Drinking Water Quality Management System**

**Port Hope Drinking Water System is operated in accordance with the Municipal Drinking Water License # 146-101, the Drinking Water Works Permit # 146-201 and the Municipality's Drinking Water Quality Management System Operational Plan # 146-401.**

**The following describes the components of the Port Hope Drinking Water System:**

**Raw Water Source**

**The water supply for Port Hope WTP 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 temperature ranges from 0°C (winter) to approximately 22°C (summer). The raw water source is classified as surface water, 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 existing intake structure and 750 mm intake piping was retrofitted to include a 900 mm on shore addition. This intake is utilized to draw water from Lake Ontario to the low lift pumping station. The low lift pumping station is where water undergoes coarse screening.**

**Raw Water pumping**

**The raw water pumping station consists of several raw water chambers, one (1) raw water travelling screen, two (2) manually cleaned screens (i.e., for standby purposes), and 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 prior to ultrafiltration process.**
**The raw water quality is monitored by Operations staff at the Water Treatment Plant.**

**Water Treatment**
**Raw water is treated by passing through the ultrafiltration system. The 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. Following ultrafiltration, filtered water is disinfected by using a chlorine gas system (primary disinfection). The post-chlorination (secondary chlorination) is used as required to maintain a fixed chlorine residual levels in the water leaving the plant. Following the disinfection process, the water is ready for consumption by consumers within the distribution system. Five (5) high lift pumps (with provision for a sixth) lift treated water to the distribution system. The Water Treatment Plant has a rated capacity of 20,000 $M^3$/d. It is expected that this capacity will provide potable water to the Municipality of Port Hope for a period greater than the 20 year planning period.**

**Water Storage Facilities**
**At the WTP, potable water storage consists of twined reservoirs that have a total rated capacity of 5000 $M^3$. Off site storage facilities in Zone 1 include a Standpipe that can hold up to 1,205 $M^3$. Zone 2 has an underground reservoir that can hold up to 2273 $M^3$ and an elevated tank that can hold up to 3000 $M^3$.**

**Process Wastewater System**
**The WTP provides process 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 analysed and dechlorinated prior to a discharge to Lake Ontario.**

**Water Distribution System**
**Due to Port Hope'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, an elevated tank 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 highest point of Zone 1.**

**Supervisory Control and Data Acquisition (SCADA)**
**SCADA system consists of numerous computer systems that control and monitor the drinking water system and the water quality at all times. Operational staff monitors and control these systems to insure their proper operation and water quality. All**

**Operational Staff for Port Hope Drinking Water System are fully certified by the Ministry of the Environment.**

**List all water treatment chemicals used over this reporting period**

**Chlorine Gas**

**Were any significant expenses incurred to?**

**[ ]** Install required equipment
**[X]** Repair required equipment
**[ ]** Replace required equipment

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

**Continued repairs to Highlift Pumps (5), $500,000 estimated.**

**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 |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |

**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** | 61 | 0-12 | 0-960 | N/A | N/A |
| **Treated** | 84 | 0 | 0 | 82 | 0-84 |
| **Distribution** | 352 | 0 | 0 | 352 | 0-32 |

**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 #) | Unit of Measure |
|---|---|---|---|
| **Raw Turbidity** | 8760 | 0.0 - 99.99 | NTU |
| **Treated Turbidity** | 8760 | 0.0 – 2.00 | NTU |
| **Primary Chlorine** | 8760 | 0.01 – 2.19 | mg/L |
| **Secondary Chlorine** | 8760 | 0.80- 2.17 | mg/L |

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

| | | | |
|---|---|---|---|
| **Distribution Chlorine (Grab Samples)** | 1,709 | 0.35 – 2.20 | mg/L |
| **Distribution Chlorine (Reservoir)** | 8760 | 0.0 – 3.91 | mg/L |
| **Distribution Chlorine (Elevated Tank)** | 8760 | 0.93 – 2.57 | mg/L |
| **Fluoride** (If the DWS provides fluoridation) | N/A | N/A | N/A |

**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 |
|---|---|---|---|---|
| Sept. 16, 2010, Municipal Drinking Water License 146-101 | Process waste water, Total Chlorine Residual | Continuously | 0.00 – 2.07 | mg/L |
| Sept. 16, 2010, Municipal Drinking Water License 146-101 | Process waste water, Total suspended solids | Monthly | 11.42, 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. 8/12 | 0.19 | ug/L | No |
| **Arsenic** | Aug. 8/12 | 1.1 | ug/L | No |
| **Barium** | Aug. 8/12 | 23.3 | ug/L | No |
| **Boron** | Aug. 8/12 | 22 | ug/L | No |
| **Cadmium** | Aug. 8/12 | 0.003 | ug/L | No |
| **Chromium** | Aug. 8/12 | 0.5 <MDL | ug/L | No |
| ***Lead** | N/A | | | |
| **Mercury** | Aug. 8/12 | 0.02 <MDL | ug/L | No |
| **Selenium** | Aug. 8/12 | 1.0 <MDL | ug/L | No |
| **Sodium** | Aug. 8/12 | 13.4 | mg/L | No |
| **Uranium** | Aug. 8/12 | 0.453 | ug/L | No |
| **Fluoride** | - | - | - | - |
| **Nitrite** | Dec. 4/12 | 0.005 <MDL | mg/L | No |
| **Nitrate** | Dec. 4/12 | 0.527 | mg/L | No |

*only for drinking water systems testing under Schedule 15.2; this includes large municipal non-residential systems, small municipal non-residential systems, non-municipal seasonal residential systems, large non-municipal non-residential systems, and small non-municipal non-residential systems

## Summary of lead testing under Schedule 15.1 during this reporting period

(applicable to the following drinking water systems; large municipal residential systems**,** small municipal residential systems, and non-municipal year-round residential systems)

| Location Type | Number of Samples | Range of Lead Results (min#) – (max #) | Unit of Measure | Number of Exceedances |
|---|---|---|---|---|
| **Plumbing** | **N/A** | | | |
| **Distribution** | **8** | **0.07 – 0.38** | ug/L | **0** |

## 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. 8/12 | 0.02 <MDL | ug/L | No |
| **Aldicarb** | Aug. 8/12 | 0.01 <MDL | ug/L | No |
| **Aldrin + Dieldrin** | Aug. 8/12 | 0.01 <MDL | ug/L | No |
| **Atrazine + N-dealkylated metobolites** | Aug. 8/12 | 0.08 | ug/L | No |
| **Azinphos-methyl** | Aug. 8/12 | 0.02 <MDL | ug/L | No |
| **Bendiocarb** | Aug. 8/12 | 0.01 <MDL | ug/L | No |
| **Benzene** | Aug. 8/12 | 0.32 <MDL | ug/L | No |
| **Benzo(a)pyrene** | Aug. 8/12 | 0.004 <MDL | ug/L | No |
| **Bromoxynil** | Aug. 8/12 | 0.33 <MDL | ug/L | No |
| **Carbaryl** | Aug. 8/12 | 0.01 <MDL | ug/L | No |
| **Carbofuran** | Aug. 8/12 | 0.01 <MDL | ug/L | No |
| **Carbon Tetrachloride** | Aug. 8/12 | 0.16 <MDL | ug/L | No |
| **Chlordane (Total)** | Aug. 8/12 | 0.01 <MDL | ug/L | No |
| **Chlorpyrifos** | Aug. 8/12 | 0.02 <MDL | ug/L | No |
| **Cyanazine** | Aug. 8/12 | 0.03 <MDL | ug/L | No |
| **Diazinon** | Aug. 8/12 | 0.02 <MDL | ug/L | No |
| **Dicamba** | Aug. 8/12 | 0.20 <MDL | ug/L | No |
| **1,2-Dichlorobenzene** | Aug. 8/12 | 0.41 <MDL | ug/L | No |
| **1,4-Dichlorobenzene** | Aug. 8/12 | 0.36 <MDL | ug/L | No |
| **Dichlorodiphenyltrichloroethane (DDT) + metabolites** | Aug. 8/12 | 0.01 <MDL | ug/L | No |
| **1,2-Dichloroethane** | Aug. 8/12 | 0.35 <MDL | ug/L | No |
| **1,1-Dichloroethylene (vinylidene chloride)** | Aug. 8/12 | 0.33 <MDL | ug/L | No |
| **Dichloromethane** | Aug. 8/12 | 0.35 <MDL | ug/L | No |
| **2-4 Dichlorophenol** | Aug. 8/12 | 0.15 <MDL | ug/L | No |
| **2,4-Dichlorophenoxy acetic acid (2,4-D)** | Aug. 8/12 | 0.19 <MDL | ug/L | No |
| **Diclofop-methyl** | Aug. 8/12 | 0.40 <MDL | ug/L | No |
| **Dimethoate** | Aug. 8/12 | 0.03 <MDL | ug/L | No |
| **Dinoseb** | Aug. 8/12 | 0.36 <MDL | ug/L | No |
| **Diquat** | Aug. 8/12 | 1.0 <MDL | ug/L | No |
| **Diuron** | Aug. 8/12 | 0.03<MDL | ug/L | No |
| **Glyphosate** | Aug. 8/12 | 6.0 <MDL | ug/L | No |
| **Heptachlor + Heptachlor Epoxide** | Aug. 8/12 | 0.01 <MDL | ug/L | No |
| **Lindane (Total)** | Aug. 8/12 | 0.01<MDL | ug/L | No |
| **Malathion** | Aug. 8/12 | 0.02 <MDL | ug/L | No |
| **Methoxychlor** | Aug. 8/12 | 0.01 <MDL | ug/L | No |
| **Metolachlor** | Aug. 8/12 | 0.01 <MDL | ug/L | No |
| **Metribuzin** | Aug. 8/12 | 0.02 <MDL | ug/L | No |

| | | | | |
|---|---|---|---|---|
| **Monochlorobenzene** | Aug. 8/12 | 0.30 <MDL | ug/L | No |
| **Paraquat** | Aug. 8/12 | 1.0 <MDL | ug/L | No |
| **Parathion** | Aug. 8/12 | 0.02 <MDL | ug/L | No |
| **Pentachlorophenol** | Aug. 8/12 | 0.15 <MDL | ug/L | No |
| **Phorate** | Aug. 8/12 | 0.01 <MDL | ug/L | No |
| **Picloram** | Aug. 8/12 | 1 <MDL | ug/L | No |
| **Polychlorinated Biphenyls(PCB)** | Aug. 8/12 | 0.04 <MDL | ug/L | No |
| **Prometryne** | Aug. 8/12 | 0.03 <MDL | ug/L | No |
| **Simazine** | Aug. 8/12 | 0.01 <MDL | ug/L | No |
| **THM** (NOTE: show latest annual average) | 2012 | 45.67 | ug/L | No |
| **Temephos** | Aug. 8/12 | 0.01 <MDL | ug/L | No |
| **Terbufos** | Aug. 8/12 | 0.01 <MDL | ug/L | No |
| **Tetrachloroethylene** | Aug. 8/12 | 0.35 <MDL | ug/L | No |
| **2,3,4,6-Tetrachlorophenol** | Aug. 8/12 | 0.14 <MDL | ug/L | No |
| **Triallate** | Aug. 8/12 | 0.01 <MDL | ug/L | No |
| **Trichloroethylene** | Aug. 8/12 | 0.44 <MDL | ug/L | No |
| **2,4,6-Trichlorophenol** | Aug. 8/12 | 0.25 <MDL | ug/L | No |
| **2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)** | Aug. 8/12 | 0.22 <MDL | ug/L | No |
| **Trifluralin** | Aug. 8/12 | 0.02 <MDL | ug/L | No |
| **Vinyl Chloride** | Aug. 8/12 | 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** | | | |
| | | | |