



**Ontario Clean Water Agency**  
**Agence Ontarienne Des Eaux**

Charlton Drinking Water System

# 2013 ANNUAL/SUMMARY REPORT

Prepared by the Ontario Clean Water Agency  
on behalf of the Municipality of Charlton and Dack



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## INTRODUCTION

Municipalities throughout Ontario have been required to comply with Ontario Regulation 170/03 made under the Safe Drinking Water Act (SDWA) since June 2003. The Act was enacted following recommendations made by Commissioner O'Conner after the Walkerton Inquiry. The Act's purpose is to protect human health through the control and regulation of drinking water systems. O. Reg. 170/03 regulates drinking water testing, use of licensed laboratories, treatment requirements and reporting requirements.

Section 11 of Regulation 170/03 requires the owner to produce an Annual Report. This report must include the following:

1. Description of system & chemical(s) used
2. Summary of any adverse water quality reports and corrective actions
3. Summary of all required testing
4. Description of any major expenses incurred to install, repair or replace equipment

This annual report must be completed by February 28th of each year.

Section 22 of the regulation also requires a Summary Report which must be presented & accepted by Council by March 31<sup>st</sup> of each year for the preceding calendar year.

The report must list the requirements of the Act, its regulations, the system's Drinking Water Works Permit (DWWP), Municipal Drinking Water Licence (MDWL), Certificate of Approval (if applicable), and any Provincial Officer Order the system failed to meet during the reporting period. The report must also specify the duration of the failure, and for each failure referred to, describe the measures that were taken to correct the failure.

The Safe Drinking Water Act (2002) and the drinking water regulations can be viewed at the following website: <http://www.e-laws.gov.on.ca>.

To enable the Owner to assess the rated capacity of their system to meet existing and future planned water uses, the following information is also required in the report.

1. A summary of the quantities and flow rates of water supplied during the reporting period, including the monthly average and the maximum daily flows.
2. A comparison of the summary to the rated capacity and flow rates approved in the systems approval, drinking water works permit or municipal drinking water licence or a written agreement if the system is receiving all its water from another system under an agreement.

The report also includes a review of inspection and audit findings, operational highlights and plans for 2014.

The reports have been prepared by the Ontario Clean Water Agency (OCWA) on behalf of the Owner and presented to council as the 2013 Annual/Summary Report. The report is accessible



on-line at <http://www.charltonanddack.com/> and at the municipal office located at #287237 Spruce Grove Road, Englehart. The availability of the Annual/Summary Report is communicated to the consumers via notice on Charlton and Dack's radio bulletin (CJBB) and during public council meetings.



## REVIEW AND HIGHLIGHTS OF 2013

The Charlton drinking water system (DWS) provided safe and reliable drinking water to the community of Charlton while meeting, exceeding, and continually improving on legal, operational, and quality management system requirements.

The Ontario Clean Water Agency is the accredited operating authority for the Charlton DWS having met the quality management system requirements of the SDWA. OCWA operators, certified by the Province of Ontario through the Ministry of the Environment (MOE) operate and maintain the system to ensure compliance with regulatory requirements and ensure the production and delivery of high quality drinking water to consumers.

### Inspections and Audits

The MOE performed a focused inspection on June 11 and 12 of 2013. The inspection included a physical assessment of the water treatment plant, audit sampling and a document review for the period of May 23, 2012 to June 11, 2013. The system scored an inspection rating of 100 per cent having no non-compliance issues or best practice recommendations identified in the report.

A Quality and Environmental Management System (QEMS) has been implemented for the Charlton drinking water system. The provincially mandated Drinking Water Quality Management Standard (DWQMS) requires municipalities to develop and maintain a quality management system to ensure consistent water quality now and into the future. The process for full scope accreditation was completed and achieved in 2013. The system and processes associated with the QEMS were evaluated on June 3, 2013 by SAI Global to ensure implementation of the Operational Plan and procedures and conformance to the standard. One minor non-conformance was identified during the audit.

1. There was no record of the Portable Flow Meter and the Pressure Gauge / Pressure Sensor being calibrated and the method of calibration was not defined or documented. This issue was resolved on June 11<sup>th</sup> after procedures were developed and a work order was created to perform the calibrations on an annual basis.

Full scope accreditation was achieved on August 7, 2013 with the issuance of a Certificate of Accreditation for Full Scope, Entire DWQMS.

### Water Usage

The Charlton water treatment plant is rated to produce 561 cubic meters of water per day as specified in the system’s Municipal Drinking Water Licence 271-101. The following information is presented to quickly assess the capability of the system to meet existing and future water usage needs:

<b>Rated Capacity of the Plant (MDWL)</b>	<b>561 m<sup>3</sup>/day</b>	
<b>Average Daily Flow for 2013</b>	<b>67.8 m<sup>3</sup>/day</b>	<b>12.1 % of the rated capacity</b>
<b>Maximum Daily Flow for 2013</b>	<b>130 m<sup>3</sup>/day</b>	<b>23.2 % of the rated capacity</b>
<b>Total Treated Water Produced in 2013</b>	<b>24,746 m<sup>3</sup></b>	



Operational Highlights

1. The floors of the Charlton water treatment plant were painted in February of 2013.
2. On an annual basis, a review of the drinking water system's infrastructure is conducted to assess its adequacy for the operation and maintenance of the system. In 2013, the following capital projects were approved and completed.
  - The installation of a new chemical metering pump for post sodium hypochlorite injection, with spare parts kit.



**New Prominent (Gals 1601) Chemical Metering Pump**

- The installation of a new peristaltic pump head for the chlorine analyzer feed water supply in clear well #1.
- The installation of a new on-line turbidity analyzer with display.
- The replacement of a Program Logical Controller (PLC) output card.

Plans for 2014

1. The installation of a new chemical pump for pre-soda.
2. The purchase of a new flash mixer
3. The purchase of a back-up air compressor for valve control

Charlton Drinking Water System

Section 11

# 2013 ANNUAL REPORT





Section 11

**ANNUAL REPORT**

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**1.0 INTRODUCTION**

**Drinking-Water System Name:** CHARLTON DRINKING WATER SYSTEM  
**Drinking-Water System No.:** 220005768  
**Drinking-Water System Owner:** The Corporation of the Municipality of Charlton and Dack  
**Drinking-Water System Category:** Large Municipal, Residential System  
**Period being reported:** January 1, 2013 to December 31, 2013

**Does your Drinking Water System serve more than 10,000 people?** No

**Is your annual report available to the public at no charge on a web site on the Internet?** No

**Location where Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.**

Municipality of Charlton & Dack  
#287237 Spruce Grove Road  
Englehart ON P0J 1H0

***Drinking Water Systems that receive drinking water from the Charlton Drinking Water System:***

The Charlton Drinking Water System provides all drinking water to the Community of Charlton.

***The Annual Report was not provided to any other Drinking Water System owners.***

The Ontario Clean Water Agency prepared the 2013 Annual/Summary Report for the Charlton Drinking Water System and provided a copy to the system owner; the Municipality of Charlton & Dack. The Charlton Drinking Water System is a stand-alone system that does not receive water from or send water to another system.

***Notification to system users that the Annual Report is available for viewing is accomplished through:***

- A notice which will be posted on Charlton and Dack’s Community Bulletin (CJBB radio)
- Discussions during a public council meeting.





## 2.0 DESCRIPTION OF THE DRINKING WATER SYSTEM

The Charlton Drinking Water System is owned by the Corporation of the Municipality of Charlton and Dack and consists of a Class 3 water treatment subsystem and a Class 1 water distribution subsystem. The Ontario Clean Water Agency is designated as the Overall Responsible Operator for both the water treatment and water distribution facilities. It is a standalone system that is not connected to any other drinking water system.

### Description of the Charlton Drinking Water System (DWS# 220005768)

#### ***Raw Water Supply***

The water treatment plant is located on the on the west bank of the Englehart River on Bay Street in the Town of Charlton. The raw water intake system consists of an 83 m long, 200 mm diameter pipe that extends approximately 70 meters into the Englehart River. The pipe is equipped with a vertical intake riser, with manual height adjustment and perforated with 150 mm diameter holes which are covered with 20 mm diameter high density polyethylene mesh. A sand bag weighted drum secures the pipe to the river bed. The intake pipe supplies a 13.6 cubic meter low lift pumping station equipped with three submersible pumps each rated at 3.25 litres per second (L/s). The maximum rated capacity of the plant is 561 m<sup>3</sup>/day.

#### ***Water Treatment***

The treatment process consists of chemically assisted filtration using a single train “*Ecodyne Monoplant*” package treatment system housed in a 15 m by 16 m building. The process involves pH adjustment with soda ash, flash mixing/coagulation with alum, flocculation with the assistance of polymer, upflow clarification using settling tubes, pre-chlorination using sodium hypochlorite and dual media filtration through two sand and anthracite filters. As the water exits the common filter underdrain the water is post-chlorinated using sodium hypochlorite.

#### ***Water Storage and Pumping Capabilities***

The filtered water enters a 133 m<sup>3</sup> chlorine contact chamber then flows to a 227 m<sup>3</sup> clearwell. Ammonium sulphate is added at the discharge of the chlorine contact tank to produce a combined chlorine residual before entering the distribution system.

There are three high lift pumps each rated at 4.85 L/s that can direct water to the distribution system. High lift pump #1 is not in service because it is located in the chlorine contact tank. Water pumped from this location does not meet chlorine contact time (CT) requirements. A hydro-pneumatic tank having a volume of 1500 L provides pressure to the distribution system. The treated water is monitored for total and free chlorine residual using continuous on-line analyzers. An on-line turbidimeter is used to monitor the turbidity off the filters.

#### ***Waste Management***

Residue management consists of one 50 cubic meter wastewater/backwash surge tank, equipped with a sludge pump rated at 5.1 L/s and a 29.7 cubic meter settling tank with a sludge pump that transfers sludge to a tanker truck for disposal. The supernatant is discharged by an



effluent weir to the Englehart River. Composite samples of the effluent are collected using an autosampler.

### ***Emergency Power***

An 80 kW standby diesel generator set is available on-site to provide power to the water treatment facility during power failures.

### ***Distribution System***

The Charlton Water Supply System is classified as a Large Municipal Residential Drinking Water System which serves a population of approximately 250 residents through an estimated 110 service connections. The distribution system is comprised of 6" PVC-constructed ("Blue Brute") lines which were approved for installation in 1988. Other than the clearwell in the water plant, there is no off-site water storage facility associated with the system.

## **3.0 LIST OF WATER TREATMENT CHEMICALS USED OVER THE REPORTING PERIOD**

The following chemicals were used in the treatment process at the Charlton Water Treatment Plant.

- Sodium Hypochlorite – Disinfection
- Ammonium Sulphate – Chloramination
- Sodium Carbonate (Soda Ash) - pH Adjustment
- Alum (Aluminum Sulphate) - Coagulation/Flocculation
- Poly Electrolyte - Coagulant Aid

## **4.0 SIGNIFICANT EXPENSES INCURRED IN THE DRINKING WATER SYSTEM**

Refer to the section titled "Operational Highlights" for details on significant expenses incurred in the drinking water system in 2013.

OCWA is committed to maintaining the assets of the drinking water system and maintains a program of scheduled inspection and maintenance activities using a computerized Work Management System (WMS). All routine maintenance activities conducted at the water treatment plant were accomplished in 2013.

## **5.0 DETAILS ON NOTICES OF ADVERSE TEST RESULTS AND OTHER PROBLEMS REPORTED TO & SUBMITTED TO THE SPILLS ACTION CENTER**

Based on information kept on record by OCWA, the Charlton Drinking Water System was in full compliance in 2013 with no adverse water quality incidents reported to the MOE's Spills Action Centre.



## 6.0 MICROBIOLOGICAL TESTING PERFORMED DURING THE REPORTING PERIOD

### Summary of Microbiological Data

Sample Type	# of Samples	Range of <i>E. coli</i> Results (min to max)	Range of Total Coliform Results (min to max)	# of HPC Samples	Range of HPC Results (min to max)
Raw (River)	52	<1 to 42	<1 to >300	0	N/A
Treated	52	<1 to <1	<1 to <1	52	<10 to 120
Distribution	104	<1 to <1	<1 to <1	52	<10 to 10

Maximum Allowable Concentration (MAC) for *E. coli* = 0 Counts/100 mL

MAC for Total Coliforms = 0 Counts/100 mL

Refer to *Appendix A* for a monthly summary of microbiological test results.

## 7.0 OPERATIONAL TESTING PERFORMED DURING THE REPORTING PERIOD

### Continuous Monitoring in the Treatment Process

Parameter	# of Samples	Range of Results (min to max)	Unit of Measure
Turbidity	8760	0.00 to 1.99	NTU
Free Chlorine	8760	0.753 to 3.02	mg/L
Total Chlorine	8760	0.43 to 3.57	mg/L

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

The Charlton water treatment process automatically shuts down if the filter effluent turbidity reaches 0.8 NTU after 72 seconds.

### Summary of Chlorine Residual Data in the Distribution System

Parameter	# of Samples	Range of Results (min to max)	Unit of Measure	Standard
Combined Chlorine	364	0.28 to 2.24	mg/L	<0.05

**Note:** A total of seven operational checks for chlorine residual in the distribution system are collected each week. Four (4) samples are tested one day and three (3) on a second day. The sample sets are collected at least 48-hours apart and samples collected on the same day are from different locations.

Refer to *Appendix B* for a monthly summary of the above operational data.

### Summary of Nitrate & Nitrite Data (sampled at the water treatment plant)

Date of Sample	Nitrate Result Value	Nitrite Result Value	Unit of Measure	Exceedance
January 14	0.13	<0.05	mg/L	No
April 2	0.72	<0.05	mg/L	No
July 8	0.10	<0.05	mg/L	No
October 10	<0.1	<0.05	mg/L	No

Maximum Allowable Concentration (MAC) for Nitrate = 10 mg/L

MAC for Nitrite = 1 mg/L



**Summary of Total Trihalomethane Data** (sampled in the distribution system)

Date of Sample	Result Value	Unit of Measure	Running Average	Exceedance
January 14	49.5	ug/L	63.3	No
April 2	52.0	ug/L		
July 8	83.2	ug/L		
October 10	68.6	ug/L		

Maximum Allowable Concentration (MAC) for Total Trihalomethanes = 100 ug/L (Four Quarter Running Average)

**Summary of Most Recent Lead Data**

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

The Charlton Drinking Water System was eligible to follow the “Exemption from Plumbing Sampling” as described in section 15.1-5(9) and 15.1-5(10) of Schedule 15.1 of Ontario Regulation 170/03. The exemption applies to a drinking water system if, in two consecutive periods at reduced sampling, not more than 10% of all samples from plumbing exceed the maximum allowable concentration (MAC) of 10 ug/L for lead. As such, the system was required to test for total alkalinity and pH in one distribution sample collected during the periods of December 15 to April 15 (winter period) and June 15 to October 15 (summer period). This testing is required in every 12-month period with lead testing in every third 12-month period.

Two rounds of alkalinity and pH testing were carried out on April 2<sup>nd</sup> and September 12<sup>th</sup> of 2013. Results are summarized in the table below.

**Summary of pH & Alkalinity Data** (sampled in the distribution system)

Date of Sample	# of Samples	Range of pH Results (min to max)	Range of Alkalinity Results (mg/L) (min to max)
April 2	1	7.02	83
September 12	1	6.85	63.2

**Most Recent Schedule 23 Inorganic Data Tested at the Water Treatment Plant**

Parameter	Result Value	Unit of Measure	Standard	Exceedance
Antimony	<0.5	ug/L	6	No
Arsenic	<1.0	ug/L	25	No
Barium	11	ug/L	1000	No
Boron	<2.0	ug/L	5000	No
Cadmium	<0.1	ug/L	5	No
Chromium	<1.0	ug/L	50	No
Mercury	<0.1	ug/L	1	No
Selenium	<1.0	ug/L	10	No
Uranium	<1.0	ug/L	20	No

Note: Sample required every 12 months (sample date = October 10, 2013)



**Most Recent Schedule 24 Organic Data Tested at the Water Treatment Plant**

Parameter	Result Value	Unit of Measure	Standard	Exceedance
Alachlor	<0.40	ug/L	5	No
Aldicarb	<0.80	ug/L	9	No
Aldrin + Dieldrin	<0.004	ug/L	0.7	No
Atrazine + N-dealkylated metabolites	<0.9	ug/L	5	No
Azinphos-methyl	<0.30	ug/L	20	No
Bendiocarb	<2	ug/L	40	No
Benzene	<0.20	ug/L	5	No
Benzo(a)pyrene	<0.009	ug/L	0.01	No
Bromoxynil	<0.50	ug/L	5	No
Carbaryl	<2	ug/L	90	No
Carbofuran	<2	ug/L	90	No
Carbon Tetrachloride	<0.20	ug/L	5	No
Chlordane (Total)	<0.004	ug/L	7	No
Chlorpyrifos	<0.30	ug/L	90	No
Cyaznifluor	<0.30	ug/L	10	No
Diazinon	<0.30	ug/L	20	No
Dicamba	<0.20	ug/L	120	No
1,2-Dichlorobenzene	<0.20	ug/L	200	No
1,4-Dichlorobenzene	<0.20	ug/L	5	No
Dichlorodiphenyl trichloroethane (DDT) + metabolites	<0.005	ug/L	30	No
1,2-Dichloroethane	<0.20	ug/L	5	No
1,1-Dichloroethylene (vinylidene chloride)	<0.20	ug/L	14	No
Dichloromethane	6.4	ug/L	50	No
2,4-Dichlorophenol	<0.50	ug/L	900	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	<0.20	ug/L	100	No
Diclofop-methyl	<0.20	ug/L	9	No
Dimethoate	<0.30	ug/L	20	No
Dinoseb	<0.05	ug/L	10	No
Diquat	<7	ug/L	70	No
Diuron	<8	ug/L	150	No
Glyphosate	<20	ug/L	280	No
Heptachlor + Heptachlor Epoxide	<0.004	ug/L	3	No
Lindane (Total)	<0.0003	ug/L	4	No
Malathion	<0.30	ug/L	190	No
Methoxychlor	<0.0008	ug/L	900	No
Metolachlor	<0.20	ug/L	50	No
Metribuzin	<0.20	ug/L	80	No
Monochlorobenzene	<0.20	ug/L	80	No
Paraquat	<1	ug/L	10	No



**Most Recent Schedule 24 Organic Data Tested at the Water Treatment Plant**

Parameter	Result Value	Unit of Measure	Standard	Exceedance
Parathion	<0.20	ug/L	50	No
Pentachlorophenol	<0.50	ug/L	60	No
Phorate	<0.30	ug/L	2	No
Picloram	<0.05	ug/L	190	No
Polychlorinated Biphenyls (PCB)	<0.004	ug/L	3	No
Prometryne	<0.20	ug/L	1	No
Simazine	<0.30	ug/L	10	No
Temephos	<20	ug/L	280	No
Terbufos	<0.20	ug/L	1	No
Tetrachloroethylene	<0.20	ug/L	30	No
2,3,4,6-Tetrachlorophenol	<0.5	ug/L	100	No
Triallate	<0.20	ug/L	230	No
Trichloroethylene	<0.20	ug/L	50	No
2,4,6-Trichlorophenol	<0.50	ug/L	5	No
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	<0.05	ug/L	280	No
Trifluralin	<0.20	ug/L	45	No
Vinyl Chloride	<0.30	ug/L	2	No

**Note:** Sample required every 12 months (sample date = October 10, 2013).

**Inorganic or Organic Test Results that Exceeded Half the Standard Prescribed in Schedule 2 of the Ontario Drinking Water Quality Standards.**

No inorganic or organic parameter(s) listed in Schedule 23 and 24 of Ontario Regulation 170/03 exceeded half the standard found in Schedule 2 of the Ontario Drinking Water Standard (O. Reg. 169/03) during the reporting period.

**Most Recent Sodium Data Sampled at the Water Treatment Plant**

Date of Sample	# of Samples	Result Value	Unit of Measure	Standard	Exceedance
October 18, 2010	1	21.6	mg/L	20	Yes
October 26, 2010 (re-sample)	1	16.5			

**Note:** Sample required every 60 months. Next sampling scheduled for October 2015

The aesthetic objective for sodium in drinking water is 200 mg/L at which it can be detected by a salty taste. It is required that the local Medical Officer of Health be notified when the concentration exceeds 20 mg/L so that persons on sodium restricted diets can be notified by their physicians. The adverse sodium result was reported to MOE SAC and the Timiskaming Health Unit on October 25, 2010 as required under Schedule 16 of O. Reg. 170/03 (AWQI# 98813).



***Most Recent Fluoride Data Sampled at the Water Treatment Plant***

Date of Sample	# of Samples	Result Value	Unit of Measure	Standard	Exceedance
October 18, 2010	1	<0.1	mg/L	1.5	No

**Note:** Sample required every 60 months. Next sampling scheduled for October 2015

***Summary of Additional Testing Performed in Accordance with a Legal Instrument.***

Condition 1.5 of Schedule C to Municipal Drinking Water Licence (MDWL) #271-101 requires that the annual average concentration of total suspended solids (TSS) from the effluent discharged to the Englehart River not exceed 25 mg/L. Further, Condition 4.4 of Schedule C to the MDWL requires that composite samples are collected every month.

The Charlton water treatment plant did not exceed this limit in 2013.

***Summary of Total Suspended Solids Data from the Effluent Discharge***

Date of Sample	# of Samples	Result Value	Unit of Measure	Annual Average	Limit
January 7	1	1.0	mg/L	14.5	25
February 4	1	2.5			
March 5	1	18			
April 2	1	36			
May 7	1	<1			
June 4	1	5			
July 3	1	22.5			
August 7	1	36.5			
September 4	1	3.5			
October 1	1	2.5			
November 5	1	15			
December 3	1	31			

Charlton Drinking Water System

Schedule 22

# 2013 SUMMARY REPORT

## FOR MUNICIPALITIES







Schedule 22

## SUMMARY REPORTS FOR MUNICIPALITIES

### 1.0 INTRODUCTION

**Drinking-Water System Name:** CHARLTON DRINKING WATER SYSTEM  
**Municipal Drinking Water Licence (MDWL) No.:** 271-101 (issued March 11, 2011)  
**Drinking Water Work Permit (DWWP) No.:** 271-201 (issued March 3, 2011)  
**Permit to Take Water (PTTW) No.:** 5485-6UJNT7 (issued October 13, 2006)  
**Period being reported:** January 1, 2013 to December 31, 2013

### 2.0 REQUIREMENTS THE SYSTEM FAILED TO MEET

According to information kept on record by OCWA, the Charlton Drinking Water System has complied with all the requirements set out in the system’s MDWL, its DWWP, the Act and its Regulations.

### 3.0 SUMMARY OF QUANTITIES & FLOW RATES

The following water usage tables summarize the quantities and flow rates of water taken and produced during the 2013 reporting period, including total monthly volumes, average monthly volumes, maximum monthly volumes, and maximum flow rates.

#### Raw Water Usage

##### 2013 - Monthly Summary of Water Takings from the Source (Englehart River)

Governed by Permit to Take Water (PTTW) #5485-6UJNT7, issued October 13, 2006

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m <sup>3</sup> )	2305	2079	1961	1788	2225	2648	3304	2662	2600	2385	1911	2085	27953
Average Volume (m <sup>3</sup> /d)	74	74	63	60	72	88	107	86	87	77	64	67	77
Maximum Volume (m <sup>3</sup> /d)	86	123	80	102	96	154	159	110	121	110	107	221	221
PTTW - Maximum Allowable Volume (m <sup>3</sup> /day)	842	842	842	842	842	842	842	842	842	842	842	842	842
Maximum Flow Rate (L/min)	247	390	173	231	191	256	235	188	238	253	251	294	390
PTTW - Maximum Allowable Flow Rate (L/min)	585	585	585	585	585	585	585	585	585	585	585	585	585



### Treated Water Usage

#### 2013 - Monthly Summary of Treated Water Supplied to the Distribution System

Governed by Municipal Drinking Water Licence (MDWL) #271-101, issued March 11, 2011

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m <sup>3</sup> )	2132	1912	1679	1632	1993	2334	2862	2412	2323	2150	1679	1638	24746
Average Volume (m <sup>3</sup> /d)	69	68	54	54	64	78	92	78	77	69	56	53	68
Maximum Volume (m <sup>3</sup> /d)	77	100	66	65	90	116	130	101	99	104	86	66	130
MDWL - Rated Capacity (m <sup>3</sup> /day)	561	561	561	561	561	561	561	561	561	561	561	561	561

### Flow Monitoring

MDWL No. 271-101 requires the owner to install a sufficient number of flow measuring devices to permit the continuous measurement and recording of:

- the flow rate and daily volume of treated water that flows from the treatment subsystem to the distribution system, and
- the flow rate and daily volume of water that flows into the treatment subsystem.

The flow monitoring equipment identified in the MDWL is present and operating as required. These flow meters are calibrated on an annual basis as specified in the manufacturers' instructions.

### Comparison of the Flow Summary to the Rated Capacity & Flow Rates Allowed in the Systems Permit & Licence

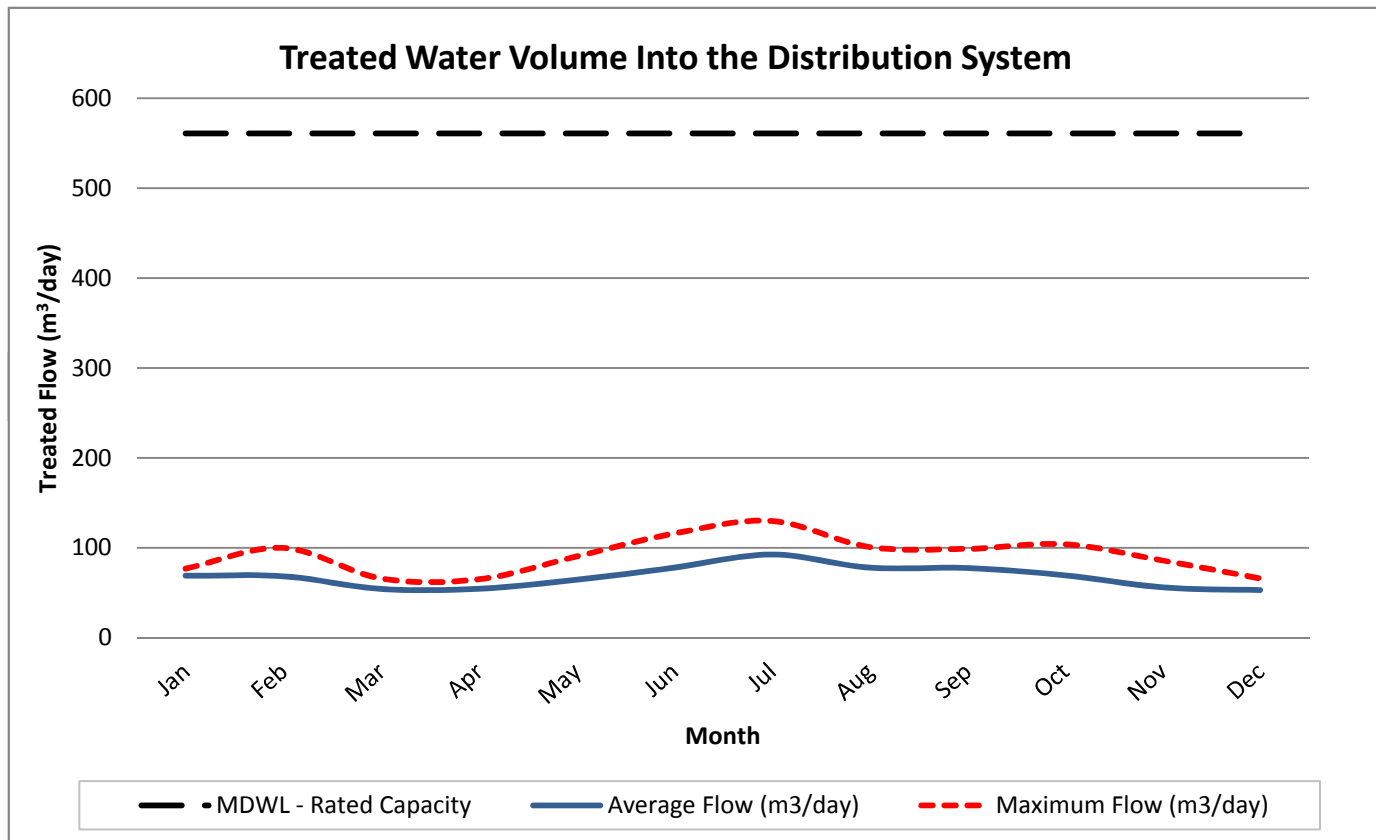
The system's Permit to Take Water #5485-6UJNT7, allows the Municipality to withdraw a maximum volume of 842.4 cubic meters from the Englehart River per day. A review of the raw water flow data indicates that the maximum volume taken was 221 m<sup>3</sup> on December 26, 2013. The Permit also allows a maximum flow rate of 585 L/minute. At no point during the reporting period did the system exceed this rate having a maximum recorded flow of 390 L/minute on February 21, 2013.

Schedule C, Section 1.1 of MDWL No. 271-101 states that the maximum daily volume of treated water that flows from the treatment subsystem to the distribution system shall not exceed a maximum flow rate of 561 m<sup>3</sup> on any calendar day. The Charlton DWS complied with this limit having a recorded maximum volume of 130 m<sup>3</sup>/day on July 6, 2013.

Figure 1 compares the average and maximum treated flow rates to the rated capacity of the system identified in the MDWL. This information enables the Owner to assess the system's existing and future planned water usage needs.

**Figure 1: 2013 - Daily Volume of Treated Water into the Distribution System**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Flow (m <sup>3</sup> /day)	69	68	54	54	64	78	92	78	77	69	56	53
Maximum Flow (m <sup>3</sup> /day)	77	100	66	65	90	116	130	101	99	104	86	66
MDWL - Rated Capacity	561	561	561	561	561	561	561	561	561	561	561	561
% Rated Capacity	14	18	12	12	16	21	23	18	18	19	15	12





#### **4.0 CONCLUSION**

The Charlton Drinking Water System complied with the regulatory requirements of the Safe Drinking Water Act and its Regulations and met the terms and conditions outlined in its site specific drinking water works permit and municipal drinking water licence having no incidents of non-compliance during the reporting period.

The system was able to operate within the water taking limits of the permit and in accordance with the rated capacity of the licence while meeting the community's demand for water use.



# **APPENDIX A**

Monthly Summary of Microbiological Test Results





## Ontario Clean Water Agency Monthly Process Data Report

Municipality: Town of Charlton  
 Facility: [5049] - Charlton Water Treatment Plant  
 Works: [220005768] - Charlton Water Treatment Plant  
 Classification: Class 1 Water Distribution, Class 3 Water Treatment  
 Water Source: Englehart River

Period: 01/01/2013 to 12/31/2013  
 Serviced Population: 250  
 Total Design Capacity(m<sup>3</sup>/day): 561.0

	Jan/2013	Feb/2013	Mar/2013	Apr/2013	May/2013	Jun/2013	Jul/2013	Aug/2013	Sep/2013	Oct/2013	Nov/2013	Dec/2013	<-- Summary -->
Distribution System\Microbiological - Distribution System													
E. Coli Samples (# collected)													
Sum	8.0	8.0	8.0	10.0	8.0	8.0	10.0	8.0	10.0	8.0	8.0	10.0	104.0
E. Coli (cfu/100 mL): Maximum													
Max	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
E. Coli (cfu/100 mL): Minimum													
Min	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
HPC Samples (# collected)													
Sum	4.0	4.0	4.0	5.0	4.0	4.0	5.0	4.0	5.0	4.0	4.0	5.0	52.0
HPC (cfu/mL): Maximum													
Max	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
HPC (cfu/mL): Minimum													
Min	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0

Note: ? Calculation not verifiable. At least one result reported as < and at least one result reported >.



# **APPENDIX B**

Monthly Summary of Operational Data





# Ontario Clean Water Agency Monthly Process Data Report

Municipality: Town of Charlton  
 Facility: [5049] - Charlton Water Treatment Plant  
 Works: [220005768] - Charlton Water Treatment Plant  
 Classification: Class 1 Water Distribution, Class 3 Water Treatment  
 Water Source: Englehart River

Period: 01/01/2013 to 12/31/2013  
 Serviced Population: 250  
 Total Design Capacity(m<sup>3</sup>/day): 561.0

	Jan/2013	Feb/2013	Mar/2013	Apr/2013	May/2013	Jun/2013	Jul/2013	Aug/2013	Sep/2013	Oct/2013	Nov/2013	Dec/2013	<-- Summary -->
<b>Treated Water\Health - Treated Water</b>													
<b>Turbidity: Maximum (NTU)</b>													
Max	0.439	0.345	0.674	0.87	0.619	0.919	1.548	0.585	0.365	0.703	1.065	1.999	1.999
<b>Turbidity: Minimum (NTU)</b>													
Min	0	0.003	0	0	0	0	0	0	0	0	0	0	0
<b>Turbidity: Mean (NTU)</b>													
Avg	0.052	0.053	0.071	0.072	0.045	0.077	0.076	0.06	0.041	0.048	0.058	0.1	0.063
<b>Cl Residual: Free Max. (mg/L)</b>													
Max	2.643	2.637	1.949	2.724	2.572	2.59	2.896	2.628	3.021	2.272	1.793	2.714	3.021
<b>Cl Residual: Free Min. (mg/L)</b>													
Min	1.297	0.99	1.17	0.944	0.963	0.828	1.079	0.753	0.785	0.815	0.99	1.032	0.753
<b>Cl Residual: Free Mean (mg/L)</b>													
Avg	1.549	1.462	1.593	1.425	1.535	1.264	1.457	1.374	1.48	1.517	1.523	1.368	1.463
<b>Cl Residual: Total Max. (mg/L)</b>													
Max	2.416	2.012	2.768	2.312	2.216	1.91	2.268	3.568	1.912	1.967	1.91	1.964	3.568
<b>Cl Residual: Total Min. (mg/L)</b>													
Min	0.91	0.43	0.957	0.857	0.911	0.91	0.857	0.81	0.555	1.162	1.007	0.91	0.43
<b>Cl Residual: Total Mean (mg/L)</b>													
Avg	1.632	1.517	1.693	1.627	1.691	1.47	1.573	1.476	1.603	1.601	1.592	1.584	1.589
<b>Backwash\Settling Pond - Discharge to River</b>													
<b>Suspended Solids (mg/L)</b>													
Avg	1.0	2.5	18.0	36.0	< 1.0	5.0	22.5	36.5	3.5	2.5	15.0	31.0	< 14.542
Cnt	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	12.0
<b>Distribution System\Health - Distribution System</b>													
<b>Cl Res. Dist Samples (# collected)</b>													
Cnt	9.0	8.0	8.0	9.0	9.0	8.0	9.0	9.0	9.0	9.0	8.0	9.0	104.0
<b>Cl Residual: Combined Max (mg/L)</b>													
Max	1.9	1.82	2.24	2.06	2.03	1.7	2.13	1.75	1.81	1.82	1.7	1.83	2.24
<b>Cl Residual: Combined Min. (mg/L)</b>													
Min	1.45	0.41	0.4	0.28	0.87	0.79	0.75	0.85	0.32	1.22	0.32	0.82	0.28
<b>Cl Residual: Combined Mean (mg/L)</b>													
Avg	1.679	1.503	1.621	1.549	1.577	1.333	1.389	1.369	1.384	1.477	1.301	1.283	1.456

Note: ? Calculation not verifiable. At least one result reported as < and at least one result reported >.