

# *Kagawong Water Treatment*

Large Municipal Residential Drinking Water System

*January 1, 2016 – December 31, 2016*

***O.Reg 170/03 Schedule 22 Summary Report  
O.Reg 170/03 Section 11 Annual Report  
&  
O.Reg 387/04 Annual Record of Water Taking***

Prepared by the Ontario Clean Water Agency  
For The Corporation of the Township of Billings



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



*Drinking-Water System Number: 220003084*  
*Drinking-Water System Name: KAGAWONG DRINKING WATER SYSTEM*  
*Drinking-Water System Owner: The Corporation of the Township of Billings*  
*Drinking-Water System Category: Large Municipal Residential*

## **SECTION 1: INTRODUCTION**

This document is prepared in accordance with Section 11 and Schedule 22 of O.Reg.170/03 under the Safe Drinking Water Act and with Section 9 of O.Reg.387/04 under the Ontario Water Resources Act. The reports are prepared by the Ontario Clean Water Agency. Acronyms and definitions can be found at the end of the report.

A copy of the Summary Report must be provided to the members of the municipal council by March 31, [2016](#).

## **SECTION 2: REQUIREMENTS OF THE REPORTS**

### **Schedule 22 Report**

The report must list the requirements of the Act, the regulations, the system's approval and any order that the system **failed to meet** at any time during the period covered by the report. It must also specify the duration of the failure, and for each failure referred to, describe the measures that were taken to correct the failure.

For the purpose of enabling the owner of the system to assess the rated capability of their system to meet existing and future planned water uses, the following information is required to be included in this report:

- A summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows.
- A comparison of the summary to the rated capacity and flow rates approved in the systems approval.

### **Section 11 Report**

The annual report must contain the following:

- A brief description of the drinking water system and a list of chemicals used by the system.
- A description of any major expenses incurred during the period covered by the report to install, repair or replace required equipment.
- A summary of all adverse water quality incidents (AWQI) reported to the Ministry
- A summary of corrective actions taken in response all AWQIs
- A summary of all test results required under the regulation, under an approval, municipal drinking water licence or order, including an OWRA order.
- A statement of where a Schedule 22 report will be available for inspection.

The report must be prepared not later than February 28 of the following year.

### **Regulation 387 Report**

On or before March 31 in every year, every holder of a permit to take water (PTTW) shall submit to a Director the data collected and recorded for the previous year.

A record of annual water taking can be found in [Appendix A](#).



## **SECTION 3: SCHEDULE 22 REPORT**

### **Flows - Treated**

In accordance with the Municipal Drinking Water License (MDWL), the Kagawong WTP shall not be operated to exceed a maximum daily volume of 1002 m<sup>3</sup>/d to the distribution system.

The daily treated water maximum flow was 532.5 m<sup>3</sup> in October and represents 53.1% of capacity.

The quantity of treated water supplied during the reporting period **did not** exceed the rated maximum capacity.

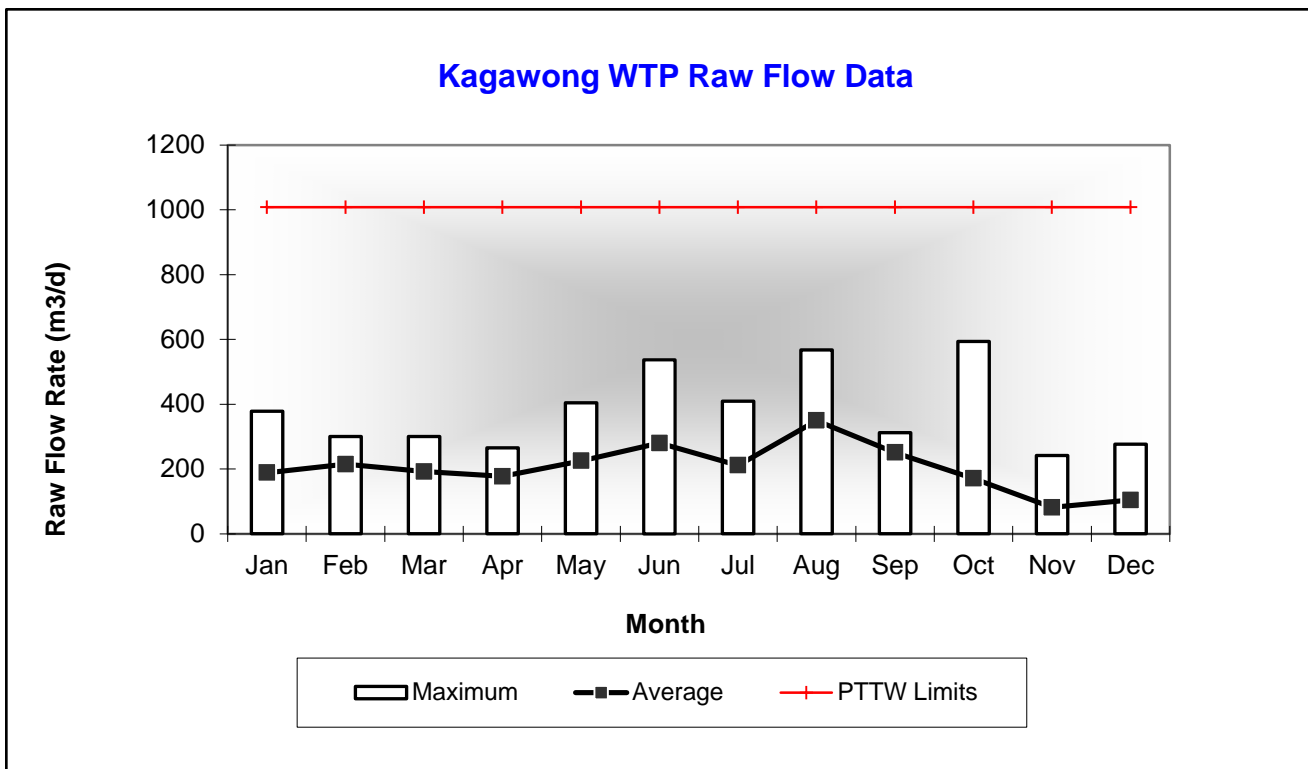
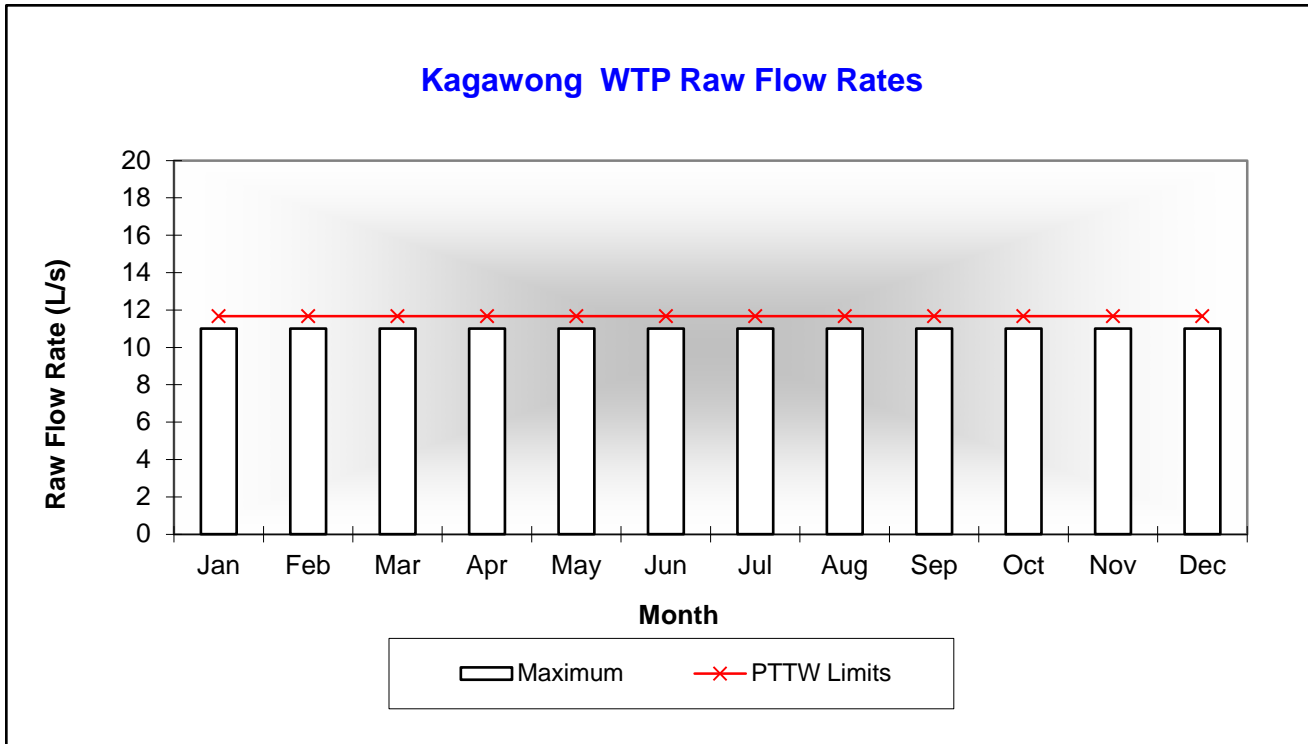
### **Flows - Raw**

Daily raw maximum instantaneous flow is stated in the PTTW at a maximum rate of flow of 11.67 L/s and a maximum daily volume of 1008 m<sup>3</sup>/d.

The average monthly raw water flow for this reporting period was 212.8 m<sup>3</sup>/d. The maximum daily flow was 593.4 m<sup>3</sup>/d representing 58.9% of water taking limits.

The quantity of raw water taken **did not** exceed any limits stipulated within the PTTW based on the information available.

<b>RAW WATER FLOW DATA - TOTAL ALL SOURCES</b>						
<b>Month</b>	<b>Total Monthly Flow (m<sup>3</sup>)</b>	<b>Average Flow (m<sup>3</sup>/d)</b>	<b>Maximum Flow (m<sup>3</sup>/d)</b>	<b>Maximum Flow Rate (L/s)</b>	<b>Limits</b>	
					<b>L/s (PTTW)</b>	<b>m<sup>3</sup>/d (PTTW)</b>
January	5,840	188.39	378	11	11.67	1,008
February	6,235	215	300	11	11.67	1,008
March	5,958	192.19	300	11	11.67	1,008
April	5,319	177.3	265	11	11.67	1,008
May	6,982	225.23	404	11	11.67	1,008
June	8,401	280.03	537	11	11.67	1,008
July	9,656	311.48	409	11	11.67	1,008
August	10,830.3	349.36	567.2	11	11.67	1,008
September	7,521.6	250.72	311.8	11	11.67	1,008
October	5,288.8	170.61	593.4	11	11.67	1,008
November	2,619.9	87.33	241.4	11	11.67	1,008
December	3,233.2	104.3	276.3	11	11.67	1,008
<b>Total</b>	<b>77,884.8</b>					
<b>Average</b>		<b>212.8</b>				
<b>Maximum</b>			<b>593.4</b>	<b>18.93</b>	11.67	1,008





## Annual Raw Water Review

Raw Water Taking	Total Taking m3/d	Average Day m3/d	Max Day m3/d	Max Day % of PTTW allowable 1008 m3/d
2016	77,884.8	213	593	53.1%
2015	73,847.8*	232	460	45.6%
2014	81,982.4	225	495	49.1%
2013	136,580.4	377	743	73.7%
2012	154,543.3	422	692	68.6%
2011	158,454.0	434	877	87.0%
2010	127,099.0	356	767	76.1%

\*Based on available flow data

## System Failures and Corrective Actions

The latest inspection of the drinking water facility took place on **June 9, 2015**. The facility scored **0/758** providing a rating of **100%**.

AWQIs reported to the Ministry

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
4-May-16	Pressure	0	Psi	A contractor hit a watermain with an excavator causing 5 homes and 1 shop to be placed on a BWA. After the repair, operator took 2 sets of bacti samples 24hrs apart. Samples came back clear and advisory was lifted	9-May-16
30-Aug-16	Pressure	0	Psi	A contractor drilled through a 6" watermain. BWA issued. After repair, area was flushed and disinfected. The operator took 2 sets of bacti samples 24hrs apart. Samples came back clear and advisory was lifted	06-Sept-16



## **SECTION 4: SECTION 11 REPORT**

### **Information to be provided**

Population Served	<b>350</b>
Does your Drinking-Water System serve more than 10,000 people?	<b>No</b>
Is your annual report available to the public at no charge on a web site on the Internet?	<b>Yes</b>
Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.	<b>Township of Billings, Township Office 15 Old Mill Road Kagawong, Ontario POP 1J0</b>
Number of Designated Facilities served:	<b>0</b>
Did you provide a copy of your annual report to all Designated Facilities you serve?	<b>NA</b>
Number of Interested Authorities you report to:	<b>0</b>
Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility?	<b>NA</b>
List all Drinking-Water Systems (if any), and their DWS Number which receive all of their drinking water from your system:	<b>N/A</b>
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?	<b>N/A</b>
Indicate how you notified system users that your annual report is available, and is free of charge.	<b>Public access/notice via newspaper</b>
Indicate if you notified system users that your annual report is available and is free of charge using an alternate method	<b>Yes</b>

The Kagawong Water treatment facility consists of a low lift pumping station with three submersible pumps. The low lift pumping station includes a zebra mussel control system utilizing sodium hypochlorite.

Prior to Aug 27, 2015, treatment consisted of membrane filtration comprised of two concrete tanks each having six ultrafiltration units. Each unit contained 12 modules with a filtering area of 23.23 m<sup>2</sup>. There were three permeate pumps used to push the water to the chlorine contact chamber.

An upgrade to the membrane system was completed in 2015. The membrane system now consists of 2 ultrafiltration zeebox package units. By August 2<sup>nd</sup>, 1 unit was online and providing water to the distribution while the second unit was online by November 2<sup>nd</sup>.

The contact chamber maintains a constant volume of 162 m<sup>3</sup>. Following the chlorine contact chamber there are two clear wells, each having a storage volume of 749.8 m<sup>3</sup>. The high lift pumping consists of four centrifugal high lift pumps, with two pumps having a capacity of 57.87 L/s and two pumps having a capacity of 28.94 L/s. The process back pulse & reject water from the plant is de-chlorinated and discharged back to the North Channel.



## Chemicals Used

Sodium Hypochlorite (12%)	Disinfection and clean-in-place
Sodium Hydroxide	Neutralization of wastewater
Citric Acid	Clean-in-place
Calcium Thiosulphate (Captor)	Dechlorination of reject water & wastewater

## Significant Expenses

Significant expenses incurred to

- Install required equipment
- Repair required equipment
- Replace required equipment

Work Order	Completion Date	Comment
26651	Jan 2016	<i>Chlorine Pump</i> Purchase of parts kit for chlorine pump & cap/gel for total probe.
147727	16-Sept-16	<i>Air compressor</i> Install a moisture bleed off on the bottom of the air compressor. GE required this be done with the upgrades.
171446	20-Oct-16	<i>Air compressor</i> Air compressor tank replacement. The bottom of the tank has developed a hole.
171919	28-Oct-16	<i>Water Tower</i> Tower cleaning and inspection performed.

## Adverse Water Quality Incidents

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	Comment / Corrective Action	Corrective Action Date
4-May-16	Pressure	0	Psi	A contractor hit a watermain with an excavator causing 5 homes and 1 shop to be placed on a BWA. After the repair, operator took 2 sets of bacti samples 24hrs apart. Samples came back clear and advisory was lifted	9-May-16
30-Aug-16	Pressure	0	Psi	A contractor drilled through a 6" watermain. BWA issued. After repair, area was flushed and disinfected. The operator took 2 sets of bacti samples 24hrs apart. Samples came back clear and advisory was lifted	06-Sept-16

## Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03.

	No. of Samples Collected	Range of E.Coli		Range of Total Coliform Results		Number of HPC Samples	Range of HPC Results	
		Min #	Max #	Min #	Max #		Min #	Max #
Raw Water	52	0	4	0	21	N/A	N/A	N/A
Treated Water	52	0	0	0	0	52	0	10
Distribution	127	0	0	0	0	53	0	840



**Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03**

	No. of Samples Collected	Range of Results		Units of Measure
		Minimum	Maximum	
Turbidity – Filter 1	8760	0	0.99	(NTU)
Turbidity – Filter 2	8760	0	1	(NTU)
Free Chlorine Residual – TW	8760	0	5	(mg/L)
Free Chlorine Residual, Distribution Location 1	100	0.59	1.61	(mg/L)
Free Chlorine Residual, Distribution Location 2	102	0.58	1.76	(mg/L)
Free Chlorine Residual, Distribution Location 3	102	0.53	1.66	(mg/L)
Free Chlorine Residual, Distribution Location 4	52	0.55	1.4	(mg/L)

**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 and limits	Month Sampled	Day Sampled	Result	Unit of Measure
255-101 Issue 1  May 24, 2011  Renewed on May 20, 2016	Point of discharge from the backwash reservoir  Total Suspended Solids  25 mg/L (annual average)	Jan	4	2	mg/L
		Feb	1	2	mg/L
		Mar	8	2	mg/L
		Apr	4	2	mg/L
		May	2	2	mg/L
		Jun	6	2	mg/L
		Jul	4	2	mg/L
		Aug	2	3	mg/L
		Sep	6	4	mg/L
		Oct	5	3	mg/L
		Nov	1	2	mg/L
		Dec	5	2	mg/L
		<b>Annual Average</b>			

**Summary of Inorganic parameters tested during this reporting period or the most recent sample results**

TREATED WATER	Sample Date (mm/dd/yyyy)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
Antimony: Sb (ug/L) - TW	01/05/2016	0.13	6.0	No	No
Arsenic: As (ug/L) - TW	01/05/2016	0.4	25.0	No	No
Barium: Ba (ug/L) - TW	01/05/2016	14.8	1000.0	No	No
Boron: B (ug/L) - TW	01/05/2016	15.4	5000.0	No	No
Cadmium: Cd (ug/L) - TW	01/05/2016	0.006	5.0	No	No
Chromium: Cr (ug/L) - TW	01/05/2016	0.38	50.0	No	No
Mercury: Hg (ug/L) - TW	01/05/2016	<MDL 0.01	1.0	No	No
Selenium: Se (ug/L) - TW	01/05/2016	0.19	10.0	No	No
Uranium: U (ug/L) - TW	01/05/2016	0.17	20.0	No	No





TREATED WATER	Sample Date (mm/dd/yyyy)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
Fluoride (mg/L) - TW	01/05/2016	0.07	1.5	No	No
Nitrite (mg/L) - TW	01/05/2016	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	04/06/2016	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	07/11/2016	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	10/03/2016	<MDL 0.003	1.0	No	No
Nitrate (mg/L) - TW	01/05/2016	0.222	10.0	No	No
Nitrate (mg/L) - TW	04/06/2016	0.22	10.0	No	No
Nitrate (mg/L) - TW	07/11/2016	0.186	10.0	No	No
Nitrate (mg/L) - TW	10/03/2016	0.116	10.0	No	No
Sodium: Na (mg/L) - TW	01/05/2016	6.09	20*	No	No

\*There is no "MAC" for Sodium. The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.

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

Location Type	Number of Samples	Range of Results		MAC (ug/L)	Number of Exceedances
		Minimum	Maximum		
Distribution - Lead Results (ug/L)	2	0.08	1.45	10	0
Distribution - Alkalinity (mg/L)	2	70	75	N/A	N/A
Distribution - pH In-House	2	6.85	7.39	N/A	N/A

### Summary of Organic parameters sampled during this reporting period or the most recent results

TREATED WATER	Sample Date (mm/dd/yyyy)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Alachlor (ug/L) - TW	01/05/2016	<MDL 0.02	5.00	No	No
Aldicarb (ug/L) - TW	01/05/2016	0.01	9.00	No	No
Aldrin+Dieldrin (ug/L) - TW	01/05/2016	<MDL 0.05	0.70	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	01/05/2016	<MDL 0.32	5.00	No	No
Azinphos-methyl (ug/L) - TW	01/05/2016	<MDL 0.004	20.00	No	No
Bendiocarb (ug/L) - TW	01/05/2016	<MDL 0.33	40.00	No	No
Benzene (ug/L) - TW	01/05/2016	<MDL 0.05	5.00	No	No
Benzo(a)pyrene (ug/L) - TW	01/05/2016	<MDL 0.01	0.01	No	No
Bromoxynil (ug/L) - TW	01/05/2016	<MDL 0.16	5.00	No	No
Carbaryl (ug/L) - TW	01/05/2016	<MDL 0.02	90.00	No	No
Carbofuran (ug/L) - TW	01/05/2016	<MDL 0.02	90.00	No	No
Carbon Tetrachloride (ug/L) - TW	01/05/2016	<MDL 0.2	5.00	No	No
Chlordane: Total (ug/L) - TW	01/05/2016	<MDL 0.41	7.00	No	No
Chlorpyrifos (ug/L) - TW	01/05/2016	<MDL 0.36	90.00	No	No
Cyanazine (ug/L) - TW	01/05/2016	<MDL 0.35	10.00	No	No
Diazinon (ug/L) - TW	01/05/2016	<MDL 0.33	20.00	No	No
Dicamba (ug/L) - TW	01/05/2016	<MDL 0.35	120.00	No	No
1,2-Dichlorobenzene (ug/L) - TW	01/05/2016	<MDL 0.15	200.00	No	No



1,4-Dichlorobenzene (ug/L) - TW	01/05/2016	<MDL 0.19	5.00	No	No
DDT + metabolites (ug/L) - TW	01/05/2016	<MDL 0.4	30.00	No	No
1,2-Dichloroethane (ug/L) - TW	01/05/2016	<MDL 0.03	5.00	No	No
1,1-Dichloroethylene (ug/L) - TW	01/05/2016	<MDL 1.0	14.00	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	01/05/2016	<MDL 0.03	50.00	No	No
2,4-Dichlorophenol (ug/L) - TW	01/05/2016	<MDL 1.0	900.00	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	01/05/2016	<MDL 0.02	100.00	No	No
Diclofop-methyl (ug/L) - TW	01/05/2016	<MDL 0.01	9.00	No	No
Dimethoate (ug/L) - TW	01/05/2016	<MDL 0.02	20.00	No	No
Dinoseb (ug/L) - TW	01/05/2016	<MDL 0.3	10.00	No	No
Diquat (ug/L) - TW	01/05/2016	<MDL 1.0	70.00	No	No
Diuron (ug/L) - TW	01/05/2016	<MDL 0.04	150.00	No	No
Glyphosate (ug/L) - TW	01/05/2016	<MDL 0.15	280.00	No	No
Heptachlor+hepachlor epoxide (ug/L) - TW	01/05/2016	<MDL 0.01	3.00	No	No
Lindane (ug/L) - TW	01/05/2016	<MDL 1.0	4.00	No	No
Malathion (ug/L) - TW	01/05/2016	<MDL 0.03	190.00	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA) (mg/L) - TW	01/05/2016	<MDL 0.00012	N/A	N/A	N/A
Methoxychlor (ug/L) - TW	01/05/2016	<MDL 0.01	900.00	No	No
Metolachlor (ug/L) - TW	01/05/2016	<MDL 0.01	50.00	No	No
Metribuzin (ug/L) - TW	01/05/2016	<MDL 0.35	80.00	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	01/05/2016	<MDL 0.2	80.00	No	No
Paraquat (ug/L) - TW	01/05/2016	<MDL 0.01	10.00	No	No
Parathion (ug/L) - TW	01/05/2016	<MDL 0.44	50.00	No	No
PCB (ug/L) - TW	01/05/2016	<MDL 0.25	3.00	No	No
Pentachlorophenol (ug/L) - TW	01/05/2016	<MDL 0.02	60.00	No	No
Phorate (ug/L) - TW	01/05/2016	<MDL 0.17	2.00	No	No
Picloram (ug/L) - TW	01/05/2016	<MDL 0.02	190.00	No	No
Prometryne (ug/L) - TW	01/05/2016	0.01	1.00	No	No
Simazine (ug/L) - TW	01/05/2016	<MDL 0.05	10.00	No	No
Temephos (ug/L) - TW	01/05/2016	<MDL 0.32	280.00	No	No
Terbufos (ug/L) - TW	01/05/2016	<MDL 0.004	1.00	No	No
Tetrachloroethylene (ug/L) - TW	01/05/2016	<MDL 0.33	30.00	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	01/05/2016	<MDL 0.05	100.00	No	No
Triallate (ug/L) - TW	01/05/2016	<MDL 0.01	230.00	No	No
Trichloroethylene (ug/L) - TW	01/05/2016	<MDL 0.16	50.00	No	No
2,4,6-Trichlorophenol (ug/L) - TW	01/05/2016	<MDL 0.02	5.00	No	No
2,4,5-T (ug/L) - TW	01/05/2016	<MDL 0.02	280.00	No	No
Trifluralin (ug/L) - TW	01/05/2016	<MDL 0.2	45.00	No	No
Vinyl Chloride (ug/L) - TW	01/05/2016	<MDL 0.41	2.00	No	No
<b>DISTRIBUTION WATER</b>					
Trihalomethane: Total (ug/L) Annual Average - DW	12/31/2016	75.5	100.00	No	Yes

## SECTION 5: RAW WATER SUBMISSIONS



Raw water flows were submitted to the Ministry on [Feb 23, 2017](#).



Location: [WTRS](#) / [WT DATA](#) / [Input WT Record](#)

WTRS-WT-008

**Water Taking Data submitted successfully.**

**Confirmation:**

Thank you for submitting your water taking data online.

Permit Number: 7363-7SXNEP

Permit Holder: THE CORPORATION OF THE TOWNSHIP OF BILLINGS.

Received on: Feb 23, 2017 1:27 PM

This confirmation indicates that your data has been received by the Ministry, but should not be construed as acceptance of this data if it differs from that specified on the Permit Number, assigned to the Permit Holder stated above.

[Return to Main Page](#)

TOWN2 BILLINGS2 | 2017/02/23  
version: v4.5.0.6 (build#: 16)  
Last modified: 2016/12/13



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## **SECTION 6: CONCLUSION**

The Kagawong WTP delivers water that, in all its treated and distribution samples, indicates the water to be free of bacteriological contamination.

For the [2016](#) operating year, the Kagawong WTP was able to meet the demand of water use without exceeding the PTTW or the MDWL based on information available.

## **List of Acronyms and Definitions**



Alkalinity	The capacity of water for neutralizing an acid solution
AWQI	Adverse Water Quality Incident- when a water sample test result exceeds the Ontario Drinking Water Quality Standards
Backwash	Water pumped backwards to clean filters
BWA	Boil Water Advisory; Issued when risk of contamination is possible in drinking water
CFU	Colony Forming Units
Chlorine Residual	A low level of chlorine remaining in water after disinfection occurs
DW	Distribution Water
DWA	Drinking Water Advisory; Issued when water cannot be consumed by any means
DWWP	Drinking Water Works Permit - provides a description of the overall system
E.Coli	Bacteria used as indicators to measure the degree of pollution and sanitary quality of water
GUDI	Groundwater Under Direct Influence – Considered to be surface water under O.Reg 170/03
HPC	Heterotrophic Plant Count
L/s	Litres per Second
m <sup>3</sup> /d	Cubic Metres per Day
MAC	Maximum Acceptable Concentration
MDL	Minimum Detection Level
MDWL	Municipal Drinking Water Licence - relates to the operation and performance requirements
mg/L	Miligrams per Litre
Ministry	Ministry of the Environment and Climate Change
MOECC	Ministry of the Environment and Climate Change
O.Reg	Ontario Regulation
PTTW	Permit to Take Water – Permit which allows water taking from groundwater or surface water
RW	Raw Water
TC	Total Coliforms
TSS	Total Suspended Solids
Turbidity	Cloudiness or haziness of water
TW	Treated Water



# Appendix A

## Raw Water Flows

**Ontario Clean Water Agency**  
**Annual Water Taking and Transfer Report**  
 From 01/01/2016 To 12/31/2016

Facility: KAGAWONG DRINKING WATER SYSTEM-1010  
 Tag: Raw Flow: Sum (m3/d)  
 Tag Group: Raw Water

Permit#: 7363-7SXNEP  
 Source Name: Lake Huron (North Channel, Mudge Bay)  
 Source: Lake  
 Type:  
 Purpose: Municipal

Coordinate Zone: 17  
 Easting: 401405  
 Northing: 5085124  
 Method deter: Metered

Date Measured	Value (m³/d)	Value (Litres)
01/01/2016	221.0000	221000.0000
02/01/2016	225.0000	225000.0000
03/01/2016	218.0000	218000.0000
04/01/2016	112.0000	112000.0000
05/01/2016	216.0000	216000.0000
06/01/2016	132.0000	132000.0000
07/01/2016	258.0000	258000.0000
08/01/2016	378.0000	378000.0000
09/01/2016	185.0000	185000.0000
10/01/2016	226.0000	226000.0000
11/01/2016	111.0000	111000.0000
12/01/2016	112.0000	112000.0000
13/01/2016	219.0000	219000.0000
14/01/2016	111.0000	111000.0000
15/01/2016	215.0000	215000.0000
16/01/2016	170.0000	170000.0000
17/01/2016	143.0000	143000.0000
18/01/2016	145.0000	145000.0000
19/01/2016	178.0000	178000.0000
20/01/2016	129.0000	129000.0000
21/01/2016	202.0000	202000.0000
22/01/2016	277.0000	277000.0000
23/01/2016	223.0000	223000.0000
24/01/2016	123.0000	123000.0000
25/01/2016	191.0000	191000.0000
26/01/2016	191.0000	191000.0000
27/01/2016	190.0000	190000.0000
28/01/2016	161.0000	161000.0000
29/01/2016	176.0000	176000.0000
30/01/2016	197.0000	197000.0000
31/01/2016	205.0000	205000.0000
01/02/2016	170.0000	170000.0000
02/02/2016	170.0000	170000.0000
03/02/2016	201.0000	201000.0000
04/02/2016	202.0000	202000.0000
05/02/2016	201.0000	201000.0000
06/02/2016	200.0000	200000.0000
07/02/2016	199.0000	199000.0000
08/02/2016	216.0000	216000.0000
09/02/2016	207.0000	207000.0000
10/02/2016	204.0000	204000.0000
11/02/2016	202.0000	202000.0000

12/02/2016	193.0000	193000.0000
13/02/2016	300.0000	300000.0000
14/02/2016	286.0000	286000.0000
15/02/2016	200.0000	200000.0000
16/02/2016	176.0000	176000.0000
17/02/2016	225.0000	225000.0000
18/02/2016	218.0000	218000.0000
19/02/2016	230.0000	230000.0000
20/02/2016	285.0000	285000.0000
21/02/2016	231.0000	231000.0000
22/02/2016	171.0000	171000.0000
23/02/2016	244.0000	244000.0000
24/02/2016	217.0000	217000.0000
25/02/2016	172.0000	172000.0000
26/02/2016	264.0000	264000.0000
27/02/2016	242.0000	242000.0000
28/02/2016	239.0000	239000.0000
29/02/2016	170.0000	170000.0000
01/03/2016	209.0000	209000.0000
02/03/2016	231.0000	231000.0000
03/03/2016	219.0000	219000.0000
04/03/2016	236.0000	236000.0000
05/03/2016	233.0000	233000.0000
06/03/2016	241.0000	241000.0000
07/03/2016	184.0000	184000.0000
08/03/2016	239.0000	239000.0000
09/03/2016	206.0000	206000.0000
10/03/2016	154.0000	154000.0000
11/03/2016	243.0000	243000.0000
12/03/2016	66.0000	66000.0000
13/03/2016	215.0000	215000.0000
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17/03/2016	212.0000	212000.0000
18/03/2016	300.0000	300000.0000
19/03/2016	186.0000	186000.0000
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21/03/2016	145.0000	145000.0000
22/03/2016	174.0000	174000.0000
23/03/2016	167.0000	167000.0000
24/03/2016	168.0000	168000.0000
25/03/2016	177.0000	177000.0000
26/03/2016	176.0000	176000.0000
27/03/2016	178.0000	178000.0000
28/03/2016	220.0000	220000.0000
29/03/2016	160.0000	160000.0000
30/03/2016	173.0000	173000.0000
31/03/2016	170.0000	170000.0000
01/04/2016	171.0000	171000.0000
02/04/2016	201.0000	201000.0000
03/04/2016	107.0000	107000.0000
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05/04/2016	173.0000	173000.0000
06/04/2016	176.0000	176000.0000
07/04/2016	203.0000	203000.0000
08/04/2016	118.0000	118000.0000
09/04/2016	193.0000	193000.0000
10/04/2016	210.0000	210000.0000
11/04/2016	191.0000	191000.0000
12/04/2016	166.0000	166000.0000

13/04/2016	148.0000	148000.0000
14/04/2016	152.0000	152000.0000
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16/04/2016	177.0000	177000.0000
17/04/2016	161.0000	161000.0000
18/04/2016	189.0000	189000.0000
19/04/2016	265.0000	265000.0000
20/04/2016	158.0000	158000.0000
21/04/2016	157.0000	157000.0000
22/04/2016	192.0000	192000.0000
23/04/2016	212.0000	212000.0000
24/04/2016	221.0000	221000.0000
25/04/2016	115.0000	115000.0000
26/04/2016	154.0000	154000.0000
27/04/2016	237.0000	237000.0000
28/04/2016	184.0000	184000.0000
29/04/2016	128.0000	128000.0000
30/04/2016	165.0000	165000.0000
01/05/2016	227.0000	227000.0000
02/05/2016	137.0000	137000.0000
03/05/2016	192.0000	192000.0000
04/05/2016	404.0000	404000.0000
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06/05/2016	125.0000	125000.0000
07/05/2016	211.0000	211000.0000
08/05/2016	257.0000	257000.0000
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10/05/2016	318.0000	318000.0000
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12/05/2016	133.0000	133000.0000
13/05/2016	230.0000	230000.0000
14/05/2016	181.0000	181000.0000
15/05/2016	232.0000	232000.0000
16/05/2016	160.0000	160000.0000
17/05/2016	244.0000	244000.0000
18/05/2016	269.0000	269000.0000
19/05/2016	245.0000	245000.0000
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21/05/2016	245.0000	245000.0000
22/05/2016	335.0000	335000.0000
23/05/2016	303.0000	303000.0000
24/05/2016	220.0000	220000.0000
25/05/2016	166.0000	166000.0000
26/05/2016	226.0000	226000.0000
27/05/2016	244.0000	244000.0000
28/05/2016	190.0000	190000.0000
29/05/2016	292.0000	292000.0000
30/05/2016	204.0000	204000.0000
31/05/2016	239.0000	239000.0000
01/06/2016	216.0000	216000.0000
02/06/2016	210.0000	210000.0000
03/06/2016	216.0000	216000.0000
04/06/2016	200.0000	200000.0000
05/06/2016	200.0000	200000.0000
06/06/2016	243.0000	243000.0000
07/06/2016	191.0000	191000.0000
08/06/2016	234.0000	234000.0000
09/06/2016	224.0000	224000.0000
10/06/2016	250.0000	250000.0000
11/06/2016	285.0000	285000.0000
12/06/2016	217.0000	217000.0000



13/06/2016	253.0000	253000.0000
14/06/2016	188.0000	188000.0000
15/06/2016	239.0000	239000.0000
16/06/2016	256.0000	256000.0000
17/06/2016	265.0000	265000.0000
18/06/2016	351.0000	351000.0000
19/06/2016	348.0000	348000.0000
20/06/2016	60.0000	60000.0000
21/06/2016	364.0000	364000.0000
22/06/2016	144.0000	144000.0000
23/06/2016	219.0000	219000.0000
24/06/2016	433.0000	433000.0000
25/06/2016	497.0000	497000.0000
26/06/2016	537.0000	537000.0000
27/06/2016	435.0000	435000.0000
28/06/2016	355.0000	355000.0000
29/06/2016	361.0000	361000.0000
30/06/2016	410.0000	410000.0000
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02/07/2016	316.0000	316000.0000
03/07/2016	368.0000	368000.0000
04/07/2016	344.0000	344000.0000
05/07/2016	269.0000	269000.0000
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07/07/2016	347.0000	347000.0000
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10/07/2016	247.0000	247000.0000
11/07/2016	375.0000	375000.0000
12/07/2016	278.0000	278000.0000
13/07/2016	398.0000	398000.0000
14/07/2016	311.0000	311000.0000
15/07/2016	265.0000	265000.0000
16/07/2016	279.0000	279000.0000
17/07/2016	261.0000	261000.0000
18/07/2016	261.0000	261000.0000
19/07/2016	248.0000	248000.0000
20/07/2016	355.0000	355000.0000
21/07/2016	117.0000	117000.0000
22/07/2016	328.0000	328000.0000
23/07/2016	322.0000	322000.0000
24/07/2016	327.0000	327000.0000
25/07/2016	260.0000	260000.0000
26/07/2016	286.0000	286000.0000
27/07/2016	295.0000	295000.0000
28/07/2016	375.0000	375000.0000
29/07/2016	391.0000	391000.0000
30/07/2016	390.0000	390000.0000
31/07/2016	409.0000	409000.0000
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02/08/2016	371.7000	371700.0000
03/08/2016	215.0000	215000.0000
04/08/2016	285.0000	285000.0000
05/08/2016	461.8000	461800.0000
06/08/2016	523.8000	523800.0000
07/08/2016	525.8000	525800.0000
08/08/2016	521.1000	521100.0000
09/08/2016	402.3000	402300.0000
10/08/2016	567.2000	567200.0000
11/08/2016	228.5000	228500.0000
12/08/2016	566.2000	566200.0000

13/08/2016	340.6000	340600.0000
14/08/2016	363.8000	363800.0000
15/08/2016	291.3000	291300.0000
16/08/2016	270.7000	270700.0000
17/08/2016	266.4000	266400.0000
18/08/2016	262.4000	262400.0000
19/08/2016	312.4000	312400.0000
20/08/2016	262.8000	262800.0000
21/08/2016	246.5000	246500.0000
22/08/2016	332.0000	332000.0000
23/08/2016	286.8000	286800.0000
24/08/2016	317.2000	317200.0000
25/08/2016	268.3000	268300.0000
26/08/2016	301.3000	301300.0000
27/08/2016	246.8000	246800.0000
28/08/2016	295.4000	295400.0000
29/08/2016	236.5000	236500.0000
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31/08/2016	337.3000	337300.0000
01/09/2016	278.7000	278700.0000
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03/09/2016	290.3000	290300.0000
04/09/2016	291.2000	291200.0000
05/09/2016	296.7000	296700.0000
06/09/2016	252.4000	252400.0000
07/09/2016	248.7000	248700.0000
08/09/2016	221.8000	221800.0000
09/09/2016	279.1000	279100.0000
10/09/2016	284.0000	284000.0000
11/09/2016	248.7000	248700.0000
12/09/2016	251.3000	251300.0000
13/09/2016	296.8000	296800.0000
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18/09/2016	295.1000	295100.0000
19/09/2016	244.8000	244800.0000
20/09/2016	246.3000	246300.0000
21/09/2016	235.5000	235500.0000
22/09/2016	204.2000	204200.0000
23/09/2016	311.8000	311800.0000
24/09/2016	254.8000	254800.0000
25/09/2016	248.5000	248500.0000
26/09/2016	194.7000	194700.0000
27/09/2016	272.4000	272400.0000
28/09/2016	192.3000	192300.0000
29/09/2016	254.6000	254600.0000
30/09/2016	85.0000	85000.0000
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02/10/2016	187.9000	187900.0000
03/10/2016	83.0000	83000.0000
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08/10/2016	194.5000	194500.0000
09/10/2016	90.8000	90800.0000
10/10/2016	190.3000	190300.0000
11/10/2016	114.0000	114000.0000
12/10/2016	108.2000	108200.0000

13/10/2016	151.3000	151300.0000
14/10/2016	124.0000	124000.0000
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16/10/2016	75.0000	75000.0000
17/10/2016	93.9000	93900.0000
18/10/2016	259.0000	259000.0000
19/10/2016	150.1000	150100.0000
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22/10/2016	167.6000	167600.0000
23/10/2016	93.6000	93600.0000
24/10/2016	131.5000	131500.0000
25/10/2016	155.3000	155300.0000
26/10/2016	132.9000	132900.0000
27/10/2016	122.4000	122400.0000
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31/10/2016	176.9000	176900.0000
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03/11/2016	96.4000	96400.0000
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06/11/2016	2.5000	2500.0000
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08/11/2016	109.2000	109200.0000
09/11/2016	80.8000	80800.0000
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12/11/2016	67.1000	67100.0000
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14/11/2016	80.9000	80900.0000
15/11/2016	106.9000	106900.0000
16/11/2016	74.7000	74700.0000
17/11/2016	143.9000	143900.0000
18/11/2016	128.9000	128900.0000
19/11/2016	28.8000	28800.0000
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21/11/2016	216.0000	216000.0000
22/11/2016	90.0000	90000.0000
23/11/2016	57.2000	57200.0000
24/11/2016	105.9000	105900.0000
25/11/2016	72.2000	72200.0000
26/11/2016	0.0000	0.0000
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28/11/2016	241.4000	241400.0000
29/11/2016	0.0000	0.0000
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07/12/2016	101.8000	101800.0000
08/12/2016	121.8000	121800.0000
09/12/2016	91.0000	91000.0000
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12/12/2016	99.2000	99200.0000

13/12/2016	31.5000	31500.0000
14/12/2016	199.2000	199200.0000
15/12/2016	65.7000	65700.0000
16/12/2016	0.0000	0.0000
17/12/2016	97.9000	97900.0000
18/12/2016	256.7000	256700.0000
19/12/2016	26.4000	26400.0000
20/12/2016	183.6000	183600.0000
21/12/2016	117.1000	117100.0000
22/12/2016	106.1000	106100.0000
23/12/2016	104.4000	104400.0000
24/12/2016	0.0000	0.0000
25/12/2016	165.3000	165300.0000
26/12/2016	127.6000	127600.0000
27/12/2016	0.0000	0.0000
28/12/2016	276.3000	276300.0000
29/12/2016	103.1000	103100.0000
30/12/2016	127.5000	127500.0000
31/12/2016	0.0000	0.0000