

BAYSVILLE WATER SUMMARY 2016 REPORT



DRINKING WATER WORKS PERMIT:	143-208
MUNICIPAL DRINKING WATER LICENCE:	143-108
M.O.E. WATERWORKS#:	260071435

INTRODUCTION

The Baysville Water Treatment Plant (W.T.P.) is owned and operated by the District of Muskoka. The plant serving the community of Baysville was commissioned in July, 2006. The treatment process consists of chemically assisted coagulation-flocculation, sedimentation, filtration, and disinfection by chlorination, with pH adjustment. The reservoir is located at the water treatment plant. The Baysville WTP has a rated capacity of 1,100 m³/day and the water system currently serves a population of approximately 380 people.

The plant operates under MOE Certificate of Approval 5743-64ZKA4, issued January 31, 2005 and Certificate of Approval 4491-7N9R2R issued February 5, 2009. In addition, in October, 2015 the plant was issued license 143-108 and permit 143-208 under the Municipal Drinking Water Licensing Program. The plant also presently operates under MOE Permit To Take Water 8513-7DZNY3, which permits the operation of up to 1,100 cubic metres per day (m³/day) and is valid until April 30, 2018.

The water source is Lake of Bays, a fairly large and clear body of water. The intake is located in 5 metres of water, about 385 metres from shore.

Legislation Requirements

Safe Drinking Water Act

In the Part Two Report in the Walkerton Inquiry, Commissioner Dennis O'Connor recommended that the Ontario Government enact a Safe Drinking Water Act to deal with matters related to treatment and distribution of drinking water. The Safe Drinking Water Act received royal assent in December, 2002.

The purpose of the Act is to gather in one place all legislation and regulations relating to the treatment and distribution of drinking water. The Act serves to protect human health through the control and regulation of drinking water systems and drinking water testing.

The foundation provisions of the Safe Drinking Water Act include:

- Purpose of the Act
- Definitions
- Minister's Powers and Duties
- Inspections
- Compliance and Enforcement
- Appeals and Offences

Ontario Regulations

The Ontario Government has enacted several supporting regulations under the Safe Drinking Water Act (2000) SDWA. These regulations combine previous requirements under the Ontario Water Resources Act and the new requirements under the SDWA. Key components of the regulations include:

- System Categories
- Groundwater Under Direct Influence Of Surface Water (GUDI)
- Exemptions
- Approval of Systems
- Treatment
- Testing and Operational Checks (General Rules)
- Operational Checks
- Microbiological Testing
- Chemical Testing
- Adverse Conditions
- Corrective Action
- Engineer's and Summary Reports

Municipal Drinking Water Licenses / Certificates of Approval

The Municipal Drinking Water Licensing Program has replaced the Certificate of Approval program for municipal residential drinking water systems. The Ontario Government has implemented the Municipal Drinking Water Licensing Program (MDWLP) as recommended by Justice O'Connor in the Part II Report of the Walkerton Inquiry. Justice O'Connor recommended a new approvals framework for municipal drinking water systems, which would require owners to obtain a license to operate their systems as well as incorporate the concept of quality management into their operations.

A municipal drinking water license is an approval that is issued by the MOE to owners under the Safe Drinking Water Act, 2002 for the operation of municipal residential drinking water systems. The District of Muskoka operated under various Certificates of Approval until October 2010 when the operating licenses were issued, these have since been renewed on 5 year intervals.

Previous Certificates of Approval were required for the establishment, replacement or alteration of all municipal drinking water systems. The Ministry of Environment (MOE) issued Certificates of Approval to ensure that all undertakings comply with the legislation (i.e. Acts and Regulations) and the Ministry's Environmental Guidelines and Procedures developed to provide consistency of approach to various aspects of environmental protection throughout the province.

Municipal Drinking Water Licenses and Permits similar to previous Certificates of Approval provide specific details about the drinking water system including:

Drinking Water System Description

Definitions and Information

General Information – Compliance, Other Legal Requirements, Adverse Affects, Inspections

Performance – Rated Capacity, Management of Residue

Monitoring and Recording – Flow Measuring Devices, Sampling

Operations and Maintenance

Comparison to Rated Capacity and Flow Rate

The Baysville Water Treatment Plant has a rated capacity of 1,100 m³/day. In 2016, the average daily flow for the year was 99.4 m³/day. The maximum day flow for the year was 283.3 m³/day, however the 3-year average for maximum day flow is 322 m³/day, which represents 29% of the plant design capacity. (No problems have been associated with this flow).

Monthly flows are shown in the attached table.

The Permit To Take Water (PTTW # 8513-7DZNY3) permits 1,100 m³/day, therefore there were no exceedances of this permit.

Summary of Analytical Results

A total of 263 microbiological regulatory tests were performed in 2016 and all were acceptable results. There were 513 free chlorine residual tests performed in the distribution system and all results were satisfactory. Response was carried out for the one adverse result by proper notification and corrective actions.

A summary of other analytical results is also shown in this report.

Summary of Treatment Chemicals

The following chemicals are used for the treatment of drinking water at the Birch Glen Water Treatment Plant:

Sodium Hypochlorite: Disinfectant

Polyaluminum Chloride: Primary coagulant

Hydrated Lime, Sodium Hydroxide, Carbon Dioxide: Alkalinity and pH adjustment

A chart summarizing the chemical use and average dosages is included in this report.

Documentation of System Repairs and Upgrades

No upgrades or significant repairs were undertaken in 2016.

External Audits

MOE Inspection

An unannounced MOE inspection occurred on November 2, 2016 and is attached to this report. The overall rating was 100%.

DWQMS Audit

In 2016 all drinking water systems had an internal audit performed. There were nine minor non-conformances, all have subsequently been addressed. Overall, all drinking water systems are performing satisfactorily.

BAYSVILLE WATER DISTRIBUTION SUMMARY 2016

New Services

- Two new customer connected to existing water services in 2016
- There were no new water services installed in 2016.

Broken Watermains

- There were no broken watermains in 2016.

Service Leaks

- There were no service leaks in 2016.

Frozen Watermain

- There were no watermains that froze in 2016.

Frozen Services

- There were no water services that froze in 2016.

New Watermains

- No new watermains installed in 2016.

Valve Replacement

- No valves were replaced in 2016.

Curbstops

- One curb stop valve was repaired in 2016.

Fire Hydrants

- There are a total of 57 fire hydrants, 5 of which are privately owned.

Water Meters

- No meters were changed out in 2016.

Air Release Valves

- All air-vacuum release valves were inspected in 2016.

Valve Replacement

- No valves were added, replaced or repaired in 2016.

Locates

- District Staff addressed 14 locate requests in 2016.



OPTIONAL ANNUAL REPORT TEMPLATE

Drinking-Water System Number:	260071435
Drinking-Water System Name:	Birch Glen Water Treatment Plant
Drinking-Water System Owner:	District Municipality of Muskoka
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 01 to December 31,2016

<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 [] No [X]</p> <p>Is your annual report available to the public at no charge on a web site on the Internet? Yes [X] No []</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;"> <p>District Municipality of Muskoka 70 Pine Street Bracebridge, Ontario P1L 1N3 www.muskoka.on.ca</p> </div>	<p><u>Complete for all other Categories.</u></p> <p>Number of Designated Facilities served:</p> <div style="border: 1px solid black; padding: 2px; width: 100px;">N.A.</div> <p>Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [] No []</p> <p>Number of Interested Authorities you report to: <div style="border: 1px solid black; width: 100px; height: 20px; display: inline-block;"></div></p> <p>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [] No []</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 [X]



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

The Water Treatment plant serving the village of Baysville was commissioned July 1 2006. The treatment process consists of chemically assisted coagulation- flocculation, sedimentation, filtration, and disinfection by chlorination and pH adjustment. The capacity of the plant is 1,100 cubic meters per day. The water source is Lake of Bays. The intake is located about 385 meters offshore.

List all water treatment chemicals used over this reporting period

Hydrated Lime, Sodium Hypochlorite, Carbon Dioxide, Sodium Hydroxide and Polyaluminum Chloride. Fluoride discontinued in January 2014.

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

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
December 5, 2016	Total Coliform	12	Count/100 ml	Resample	December 9, 2016



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 #) cfu/100 mL	Range of Total Coliform Results (min #)-(max #) cfu/100 mL	Number of HPC Samples	Range of HPC Results (min #)-(max #) cfu/100 mL
Raw	52	0-15	0-240		
Treated	53	0	0	52	0-1
Distribution	158	0	0-1	53	1-12

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 #)	Geometric Mean
Turbidity	8760	0.05-0.17 NTU	0.090 NTU
Chlorine	8760	1.07-1.88	1.42
Fluoride (If the DWS provides fluoridation)			

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

*NOTE: Record the unit of measure if it is not milligrams per litre.
MDL = Method Detection Limit*

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

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	May 9/16	0.02<MDL	ug/L	No
Arsenic	May 9/16	0.2<MDL	ug/L	No
Barium	May 9/16	12.0	ug/L	No
Boron	May 9/16	2<MDL	ug/L	No
Cadmium	May 9/16	0.009	ug/L	No
Chromium	May 9/16	0.70	ug/L	No
*Lead	May 9/16	-	ug/L	No
Mercury	May 9/16	0.01<MDL	ug/L	No
Selenium	May 9/16	0.12	ug/L	No
Sodium	May 9/16	9.10	mg/L	No
Uranium	May 9/16	0.009	ug/L	No
Fluoride	May 9/16	0.06<MDL	mg/L	No
Nitrite	Feb 8/16	0.003<MDL	mg/L	No
Nitrate	Feb 8/16	0.144	mg/L	No
Nitrite	May 9/16	0.003<MDL	mg/L	No



Nitrate	May 9/16	0.154	mg/L	No
Nitrite	Aug 8/16	0.003<MDL	mg/L	No
Nitrate	Aug 8/16	0.141	mg/L	No
Nitrite	Nov 8/16	0.003<MDL	mg/L	No
Nitrate	Nov 8/16	0.054	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 #)	Number of Exceedances
Plumbing	0		
Distribution	2	0.12 -0.16 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	May 9/16	0.02<MDL	ug/L	No
Atrazine+N-dealkylated Metabolites	May 9/16	0.01<MDL	ug/L	No
Azinphos-methyl	May 9/16	0.05<MDL	ug/L	No
Benzene	May 9/16	0.32<MDL	ug/L	No
Benzo(a)pyrene	May 9/16	0.004<MDL	ug/L	No
Bromoxynil	May 9/16	0.33<MDL	ug/L	No
Carbaryl	May 9/16	0.05<MDL	ug/L	No
Carbofuran	May 9/16	0.01<MDL	ug/L	No
Carbon Tetrachloride	May 9/16	0.16<MDL	ug/L	No
Chorpyrifos	May 9/16	0.02<MDL	ug/L	No
Diazinon	May 9/16	0.02<MDL	ug/L	No
Dicamba	May 9/16	0.20<MDL	ug/L	No
1,2 Dichlorobenzene	May 9/16	0.41<MDL	ug/L	No
1,4 Dichlorobenzene	May 9/16	0.36<MDL	ug/L	No
1,2 Dichloroethane	May 9/16	0.35<MDL	ug/L	No
1,1 Dichloroethylene	May 9/16	0.33<MDL	ug/L	No
Dichloromethane	May 9/16	0.35<MDL	ug/L	No
2,4 Dichlorophenol	May 9/16	0.15<MDL	ug/L	No
2,4-D	May 9/16	0.19<MDL	ug/L	No
Diclofop-Methyl	May 9/16	0.40<MDL	ug/L	No
Dimethoate	May 9/16	0.03<MDL	ug/L	No
Diquat	May 9/16	1<MDL	ug/L	No
Diuron	May 9/16	0.03<MDL	ug/L	No
Glyphosate	May 9/16	1<MDL	ug/L	No
Malathion	May 9/16	0.02<MDL	ug/L	No



MCPA	May 9/16	0.00012<MDL	ug/L	No
Metolachor	May 9/16	0.01<MDL	ug/L	No
Metribuzin	May 9/16	0.02<MDL	ug/L	No
Monochlorobenzene	May 9/16	0.30<MDL	ug/L	No
Paraquat	May 9/16	1<MDL	ug/L	No
Pentachlorophenol	May 9/16	0.15<MDL	ug/L	No
Phorate	May 9/16	0.01<MDL	ug/L	No
Picloram	May 9/16	1<MDL	ug/L	No
PCB	May 9/16	0.04<MDL	ug/L	No
Prometryne	May 9/16	0.03<MDL	ug/L	No
Simazine	May 9/16	0.01<MDL	ug/L	No
Trihalomethanes Total Distribution Water	Annual Avg	56	ug/L	No
Terbufos	May 9/16	0.01<MDL	ug/L	No
Tetrachloroethylene	May 9/16	0.35<MDL	ug/L	No
2,3,4,6 - Tetrachlorophenol	May 9/16	0.20<MDL	ug/L	No
Triallate	May 9/16	0.01<MDL	ug/L	No
Trichloroethylene	May 9/16	0.44<MDL	ug/L	No
2,4,6,- Trichlorophenol	May 9/16	0.25<MDL	ug/L	No
Trifluralin	May 9/16	0.02<MDL	ug/L	No
Vinyl Chloride	May 9/16	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

District of Muskoka - Birch Glen WTP - Baysville

1.0 Water Flow Summary - 2016

Month	Total Monthly (m ³)	Average Day Flow (m ³ /d)	Maximum Day Flow (m ³ /d)	Minimum Day Flow (m ³ /d)	Comments
January	2,509	81	104	60	
February	2,751	95	171	64	
March	2,584	83	107	60	
April	2,791	93	114	68	
May	3,104	100	176	69	
June	3,966	132	283	75	
July	3,765	121	147	96	
August	3,783	122	160	92	
September	3,183	106	219	79	
October	3,110	100	185	75	
November	2,452	82	100	58	
December	2,367	76	97	49	

Total 36,367

Average Day 99.4

Maximum Day 283.3

Minimum Day 49.0

District of Muskoka - Birch Glen WTP - Baysville

2.0 Raw Water Monthly Analysis Summary - 2016

Month	Alkalinity	Hardness	pH	Turbidity	True Colour	Temperature	Conductivity	Langliers Saturation Index	Total Coliform	E-coli	Total Number of Samples
<i>Parameter</i>	<i>mg/l</i>	<i>mg/l</i>	<i>pH</i>	<i>ntu</i>	<i>tcu</i>	<i>Celcius</i>	<i>mg/l</i>		<i>CFU/100ml</i>	<i>CFU/100ml</i>	
January	10	10	6.90	0.26	16	5.7	30.9	-3.0	30	2	4
February	9	13	6.80	0.27	16	4.0	31.3	-3.0	43	2	5
March	9	17	6.63	0.22	16	4.3	30.4	-3.2	47	0	4
April	9	12	6.90	0.27	18	5.9	30.3	-1.7	24	0	4
May	10	11	6.67	0.33	16	11.7	29.3	-2.9	70	4	4
June	10	10	6.53	0.43	18	11.7	29.5	-3.3	77	6	5
July	8	10	6.69	0.59	19	14.1	30.0	-3.3	33	2	4
August	10	10	6.33	0.87	22	16.2	31.4	-3.2	37	17	5
September	8	11	6.80	0.37	14	19.5	35.6	-3.1	653	16	0
October	8	8	6.91	0.42	15	14.0	35.5	-3.0	118	31	5
November	10	13	7.10	0.32	7	9.7	34.4	-2.3	104	24	4
December	10	14	6.88	0.35	15	8.0	34.9	-2.6	91	11	4
Average	9	11	6.76	0.39	16	10.4	32.0	-2.9	111	10	4

District of Muskoka - Birch Glen WTP - Baysville

4.0 Treated Water Monthly Analysis Summary - 2016

Month	Alkalinity	Hardness	pH	Average	Turbidity High	Low	TRUE Colour	Iron	Manganese	Free	Chlorine High	Low	Cond.	Langliers Saturation Index	Total Coliforms	E-coli	Total Number of Samples	HPC	Total Number of Samples
<i>Parameter</i>	<i>mg/l</i>	<i>mg/l</i>	<i>pH</i>	<i>ntu</i>	<i>ntu</i>	<i>ntu</i>	<i>tcu</i>	<i>mg/l</i>	<i>mg/l</i>	<i>mg/l</i>	<i>mg/l</i>	<i>mg/l</i>	<i>mg/l</i>		<i>CFU/100ml</i>	<i>CFU/100ml</i>		<i>CFU/1ml</i>	
January	36	32	7.29	0.08	0.09	0.06	0			1.50	1.64	1.31	94.8	-1.5	0	0	4	0	4
February	34	36	7.06	0.08	0.14	0.06	0			1.53	1.81	1.16	95.4	-1.7	0	0	5	0	5
March	33	35	7.13	0.08	0.14	0.06	0			1.52	1.77	1.31	102.1	-1.4	0	0	4	0	4
April	37	35	7.12	0.07	0.10	0.05	0			1.52	1.64	1.41	101.3	-1.5	0	0	4	0	4
May	38	34	7.18	0.08	0.10	0.06	0			1.46	1.59	1.22	97.7	-1.7	0	0	4	1	4
June	34	33	7.33	0.08	0.10	0.07	0			1.54	1.73	1.35	92.4	-1.2	0	0	5	1	4
July	34	34	7.41	0.09	0.13	0.08	0			1.54	1.69	1.40	95.5	-1.2	0	0	4	1	4
August	35	36	7.55	0.12	0.17	0.09	0			1.32	1.48	1.07	100.5	-1.1	0	0	5	0	5
September	36	34	7.57	0.12	0.17	0.09	0			1.49	1.67	1.23	113.5	-1.1	0	0	4	1	4
October	35	32	7.54	0.11	0.14	0.09	0			1.59	1.76	1.42	110.1	-1.0	0	0	5	1	5
November	35	33	7.28	0.09	0.11	0.08	0			1.68	1.88	1.45	110.1	-1.5	0	0	4	1	4
December	36	32	7.13	0.09	0.11	0.07	0			1.53	1.73	1.41	112.9	-1.4	0	0	4	1	4
Average	35	34	7.30	0.09	0.12	0.07	0.02			1.52	1.70	1.31	102.2	-1.4	0	0	4	1	4

District of Muskoka - Birch Glen WTP - Baysville

9.0 Chemical Usage Summary - 2016

Month	Powdered Activated Carbon		CO2		Hydrated Lime		Coagulant	
	Average Dosage mg/L	Total kg	Average Dosage mg/L	Total kg	Average Dosage mg/L	Total kg	Average Dosage mg/L	Total Kg
January	0.0	0.0	25.6	72.9	27.2	83.0	27.9	85
February	0.0	0.0	30.3	95.7	27.0	97.3	28.1	100
March	0.0	0.0	37.9	124.0	21.4	76.2	32.8	117
April	0.0	0.0	36.0	120.0	20.9	74.6	31.3	111
May	0.0	0.0	22.8	85.3	29.7	116.9	27.9	109
June	0.0	0.0	15.6	66.0	20.4	92.1	27.9	135
July	0.0	0.0	20.9	89.9	20.5	94.6	27.1	125
August	0.0	0.0	14.1	62.3	22.0	101.7	26.0	121
September	0.0	0.0	21.8	81.3	23.2	93.4	26.0	104
October	0.0	0.0	21.9	80.9	22.8	88.8	26.0	101
November	0.0	0.0	28.8	82.8	21.8	71.0	26.0	85
December	0.0	0.0	33.0	83.7	18.4	57.9	26.0	82
Average Monthly	0.0	0.0	25.7	87.1	23	87.3	27.7	106
Total Yearly		0		1,045		1,048		1,277

Month	Sodium Hydroxide		Fluoride		Chlorine		Soda Ash	
	Average Dosage mg/L	Total Kg	Average Dosage mg/L	Total kg	Average Dosage mg/L	Total Kg	Average Dosage mg/L	Total Kg
January	7.4	22	0.00	0.0	4.04	11.8	0.00	0.0
February	7.4	23	0.00	0.0	3.99	12.4	0.00	0.0
March	7.8	24	0.00	0.0	3.70	11.4	0.00	0.0
April	8.3	26	0.00	0.0	3.70	11.8	0.00	0.0
May	6.3	22	0.00	0.0	3.70	13.0	0.00	0.0
June	5.3	23	0.00	0.0	4.04	17.7	0.00	0.0
July	4.6	19	0.00	0.0	3.93	16.1	0.00	0.0
August	3.8	16	0.00	0.0	4.17	17.1	0.00	0.0
September	4.1	15	0.00	0.0	4.56	16.3	0.00	0.0
October	3.8	13	0.00	0.0	4.31	15.0	0.00	0.0
November	5.5	16	0.00	0.0	4.31	12.4	0.00	0.0
December	6.3	17	0.00	0.0	3.77	10.5	0.00	0.0
Average Monthly	5.9	20	0.00	0	4.05	14	0	0
Total Yearly		236		0		165		0

Month	Potassium Permanganate		Polymer	
	Average Dosage mg/L	Total Kg	Average Dosage mg/L	Total Kg
January	0.0	0	0.0	0
February	0.0	0	0.0	0
March	0.0	0	0.0	0
April	0.0	0	0.0	0
May	0.0	0	0.0	0
June	0.0	0	0.0	0
July	0.0	0	0.0	0
August	0.0	0	0.0	0
September	0.0	0	0.0	0
October	0.0	0	0.0	0
November	0.0	0	0.0	0
December	0.0	0	0.0	0
Average Monthly	0.0	0	0.0	0
Total Yearly		0		0

**Ministry of the Environment and
Climate Change**

Safe Drinking Water
Branch

Director's Office
2nd floor
40 St. Clair Ave West
Toronto ON M4V 1M2

Ministère de l'Environnement

Direction du contrôle de la qualité de l'eau
potable

Bureau du directeur
2^e étage
40, avenue St. Clair Ouest
Toronto (Ontario) M4V 1M2



November 4, 2016

The District Municipality of Muskoka
70 Pine Street
Bracebridge, Ontario
P1L 1N3

Attention: Mr. Marcus Firman, Director of Water and Wastewater Engineering

**RE: 2016 Drinking Water Inspection Report
Birch Glen (Baysville) Drinking Water System (DWS#260071435)
Date of MOECC inspection: November 2, 2016**

Please find enclosed the Ministry of the Environment and Climate Change's 2016 Inspection Report for the Birch Glen (Baysville) Drinking Water System (DWS#260071435), following an inspection of the water treatment plant and distribution system, November 2, 2016.

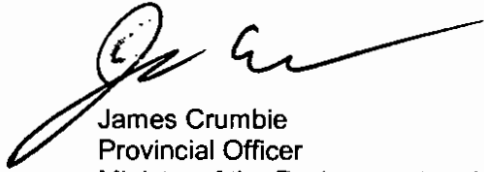
The primary focus of this inspection was to confirm compliance with Ministry of the Environment and Climate Change legislation and control documents, as well as conformance with Ministry drinking water related policies for the inspection period. The Ministry is implementing a rigorous and comprehensive approach in the inspection of water systems that focuses on the source, treatment, and distribution components as well as water system management practices.

In order to measure individual inspection results, the Ministry has established an inspection compliance risk framework based on the principles of the Inspection, Investigation & Enforcement (II&E) Secretariat and advice of internal and risk experts. The Inspection Summary Rating Record (IRR), included as Appendix D of the inspection report, provides the Ministry, the system Owner and the associated Public Health Units with a summarized quantitative measure of the drinking water system's annual inspection and regulated water quality testing performance. IRR ratings are published (for the previous inspection year) in the Ministry's Chief Drinking Water Inspector's Annual Report. If you have any questions or concerns regarding the rating, please contact Craig Seabrook, Water Program Supervisor, at 705-739-6392.

Section 19 of the Safe Drinking Water Act (Standard of Care) creates a number of obligations for individuals who exercise decision-making authority over municipal drinking water systems. Please be aware that the Ministry has encouraged such individuals, particularly municipal councillors, to take steps to be better informed about the drinking water systems over which they have decision-making authority. These steps could include asking for a copy of this inspection report and a review of its findings. Further information about Section 19 can be found in the Ministry's publication "Taking Care of Your Drinking Water: A guide for members of municipal council" found under the "Resources" tab on the Ministry's Drinking Water Ontario website at www.ontario.ca/drinkingwater.

If you have any questions or concerns regarding this inspection report, please contact the undersigned at 705-739-6379.

Respectfully,



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Ontario

Ministry of the Environment and Climate Change

BIRCH GLEN (BAYSVILLE) DRINKING WATER SYSTEM

Inspection Report

Site Number:	260071435
Inspection Number:	1-CLKZD
Date of Inspection:	Nov 02, 2016
Inspected By:	James Crumbie

OWNER INFORMATION:

Company Name:	MUSKOKA, THE CORPORATION OF THE DISTRICT MUNICIPALITY OF	Unit Identifier:	
Street Number:	70		
Street Name:	PINE St N		
City:	BRACEBRIDGE		
Province:	ON	Postal Code:	P1L 1N3

CONTACT INFORMATION
INSPECTION DETAILS:

Site Name:	BIRCH GLEN (BAYSVILLE) DRINKING WATER SYSTEM
Site Address:	2815 MUSKOKA ROAD #117 E BAYSVILLE P0B 1A0
County/District:	Lake Of Bays
MOECC District/Area Office:	Barrie District
Health Unit:	SIMCOE MUSKOKA DISTRICT HEALTH UNIT
Conservation Authority:	
MNR Office:	
Category:	Large Municipal Residential
Site Number:	260071435
Inspection Type:	Unannounced
Inspection Number:	1-CLKZD
Date of Inspection:	Nov 02, 2016
Date of Previous Inspection:	Sep 21, 2015

COMPONENTS DESCRIPTION

Site (Name):	MOE DWS Mapping	Sub Type:	
Type:	DWS Mapping Point		

Site (Name):	Raw Water	Sub Type:	Surface Water
Type:	Source		

Comments:

The intake system consists of an approximately 385 m long, 250 mm diameter high-density polyethylene (HDPE) intake pipe weighted with concrete collars, a timber crib and a 900 mm fibre-resin plastic bellmouth with a cylindrical stainless steel screen. The crib sits in about 8 m of water where the Lake of Bays becomes the south branch of the Muskoka River.

The low lift pumping station (LLPS) is a below grade, 3 m x 3 m x 2.6 m (24.3 m3) concrete walled tank with three locked plate metal access hatches and a locked, steel encased, above grade, electrical panel situated on an easement beside the river. The intake pipe terminates in this chamber with a gate valve and two stationary stainless steel, 10 mm mesh size screens. Three submersible low lift pumps (LLP's) (two duty, one standby) with rated capacities of 7 L/s at 19 m total dynamic head (TDH), direct water out of this chamber and through an approximately 175 m long, 150 mm diameter raw water main to the water treatment plant WTP.

Each pump is equipped with backflow prevention, isolation valves and pressure and failure monitoring. The chamber has continuous level monitoring and the raw water transmission main is fitted with an air relief valve.

Site (Name): Treatment System
Type: Treated Water POE
Sub Type: Treatment Facility

Comments:

The WTP is a brick and concrete block structure co-located on the same property as the Baysville Water Pollution Control Plant (WPCP) at 2815 Muskoka Road 117 in the Town of Baysville, Township of Lake of Bays, District of Muskoka. The property is surrounded by a chain link fence with "No Entry" signage. The treatment works are fully contained in the building which has locking steel doors and entry alarms.

Water from the raw water main is conveyed into the WTP, past continuously monitored and alarmed turbidity, pH and temperature analysers, the valved hydrated lime and carbon dioxide (CO₂) injection points, a provisional sodium hypochlorite injection point, a static mixer and the recycled supernatant injection point (not in use), before the common header splits into two identical pre-treatment supply lines. Each of these lines directs water through a flow control valve, a continuously monitored magnetic flow meter and into one of two parallel package conventional water treatment plants, each having a rated capacity of 550 m³/day (total capacity 1100 m³/day).

Each package plant includes a 8.4 m³, two celled pre-treatment basin, each cell equipped with a mixer; a 0.25 m³ flash mixing compartment, equipped with a mixer and coagulant injection point; isolation valves and a connection between the trains; a continuously monitored pH meter; one flocculation tank divided into three stages, providing a total hydraulic retention time (HRT) of 30 minutes, and each stage equipped with one mixer providing tapered mixing speed through each stage of flocculation; a settling tank equipped with up flow tube settlers with a 60° angle of inclination, providing a 34 minute HRT, continuous level monitoring and with gravity de-sludge piping leading to the on site sewage pumping station and mechanical desludge valves; a dual media (anthracite/sand) filter providing an 8 m/h filtration rate, and equipped with a 460 mm layer of anthracite, a 400 mm layer of silica sand and a 415 mm layer of supporting gravel covering the underdrain, complete with an air scour system, filter-to-waste capability and a valved discharge line emptying to the backwash holding tank (BWHT).

Water leaving the filters is directed past individual, continuously monitored turbidimeters, pressure differential sensors and the filter-to-waste discharge line. Flow control valves on the filter-to-waste line and filter effluent line regulate to where the filter effluent water is directed. The filter effluent lines combine into a common header and water flows through a continuously monitored magnetic flow meter, past the sodium hypochlorite injection point, past a valved chlorine contact chamber (CCC) by-pass line (normally closed), through an isolation valve and into the below grade CCC.

The 96 m³ CCC is equipped with concrete baffles and an overflow weir, it provides contact time for disinfection. A continuously monitored free chlorine residual analyser draws sample from just before the overflow weir by way of a sample pump. As water flows over the weir, sodium hydroxide addition occurs for pH regulation and corrosion control. The water is mixed in a discharge chamber, flows out a valved outlet line and past the CCC by-pass return point. The line then splits into two valved clearwell inlet lines.

The two, 350 m³, below grade, concrete, parallel clearwells/ reservoirs are separated by a concrete wall with a normally opened equalization valve. Each has a continuously monitored pH meter, level sensor and overflow which empties to an outside ditch. Each clearwell cell is fitted with two high lift pumps (HLP's) and one backwash pump. All six are vertical turbine pumps which are equipped with isolation valves, backflow prevention, pressure gauges, pressure sensors, air relief valves and failure alarms. One constant speed standby pump in each cell has a rated capacity of 35 L/s at 45 m TDH. The two (one duty, one standby) constant speed backwash pumps for filter backwashing, have rated capacities of 36 L/s at 12 m TDH. They direct water to the filters through flow control valves.

The HLP's direct water into a common discharge header which is equipped with a pressure relief valve which will open and direct water to both cells if the line pressure gets too high, there is also a solenoid operated recirculation line which ensures water is constantly moving through the clearwells and lines even if water is not being directed to the distribution system. Water in the common header passes through a valve, past the trim chlorination point, the continuously monitored finished water magnetic flow meter, a valve, a pressure regulating valve, a pressure relief valve which will open and return distribution water to the two clearwell cells if system pressures get too high, a valved flow meter by-pass line, continuously monitored pressure and temperature sensors and continuously monitored free chlorine residual, pH and turbidity analysers before being discharged to the distribution system.

There is one air blower rated at 375 m³/h which provides air scour to the filter media during backwashing.

Floor drains have been verified as going to sanitary sewer.

A 500 kW standby diesel generator is located in the adjacent WPCP. It has an internal, double walled 850 gallon fuel

tank and automatic start and stop capabilities.

All pump and process control instrumentation is located at the WTP.

All controls, monitoring and alarms on site are routed through the programmable logic controller (PLC) on-site and on to the supervisory control and data acquisition (SCADA) system at the WTP.

The LLP's are triggered by filter levels and reservoir levels. The HLP's are typically always operating but low system pressure will trigger the VFD's to increase flows or start further pumps.

Site (Name): Chemical Storage and Feed Systems
Type: Other **Sub Type:** Treatment Facility

Comments:

The hydrated lime storage and feed system consists of a 340 L storage hopper, a 184 L/hr volumetric dry feeder, a 2000 L solution tank equipped with a mechanical mixer, two peristaltic metering pumps (one duty, one standby), each having a rated capacity up to 500L/h and solution feed lines to inject the lime slurry into the raw header upstream of the pre-treatment tanks for alkalinity adjustment. Bulk bags of lime are used and positioning is accomplished with a hoist. Domestic water is used for batching. There is a flow meter on the supply line. Raw water flows trigger this system.

The carbon dioxide (CO₂) gas feed system consists of two approximately 150 kg cylinders (one duty, one standby) connected to a common manifold for automatic vacuum changeover, two weigh scales, a gas delivery system and chemical lines to inject carbon dioxide into the raw header upstream of the pre-treatment tanks for pH adjustment. A gas monitor is in-place. Raw water flows trigger this system.

The coagulant storage and feed system consists of a contained 5.5 m³ bulk storage tank, a contained 200 L day tank with weigh scale, three (two duty, one standby) positive displacement metering pumps, each having a rated capacity of 4.4 L/h at 1000 kPa and chemical feed lines to inject the coagulant into each pre-treatment flash mix compartment. Polyaluminum chloride (SternPAC) is the chemical in use. This storage system is common for the WTP and the WPCP but the supply pumps are separate. Raw water flows trigger this system.

The disinfection system, utilizing sodium hypochlorite, consists of a primary system with one contained 400 L day tank on an alarmed weigh scale, two positive displacement metering pumps (one duty, one standby), each having a rated capacity of 3.6 L/h at 1000 kPa and chemical feed lines to inject hypochlorite into the filtered water common header for primary disinfection. There is also a utility system consisting of two positive displacement metering pumps (one duty, one standby), each having a rated capacity of 3.6 L/h at 1000 kPa and chemical feed lines to inject hypochlorite on an as needed basis to the raw and/or high lift header. Filtered water flows trigger the primary chlorination system.

A sodium hydroxide (NaOH) storage and feed system consists of a contained 200 L day tank on a weigh scale, two positive displacement metering pumps (one duty, one standby), each having a rated capacity of 1.1 L/h at 1750 kPa and chemical feed lines to inject the NaOH at the CCC overflow weir for pH adjustment and corrosion control.

Filtered water flows trigger this system.

A hydrofluosilicic acid storage and feed system consists of a contained 200 L day tank on a weigh scale, two positive displacement metering pumps (one duty, one standby), each having a rated capacity of 1.1 L/h at 1750 kPa and chemical feed lines. The fluoridation system ceased operation in February 2014 and although the chemical has been removed the equipment remains in place for future consideration.

All of the chemical pumps and systems are equipped with backflow prevention, alarmed flow sensors and pump failure alarms.

The bulk storage tanks have level sensors.

A soda ash storage and feed system and a coagulant storage and feed system for the adjacent WPCP are also located within the WTP.

Site (Name): Backwash Treatment and Recirculation System
Type: Other **Sub Type:** Treatment Facility

Comments:

The backwash wastewater treatment and recirculation system consists of one 64.1 m³, concrete, below grade backwash holding tank, with a sloped bottom and raised, plate metal access hatches, constructed to settle out

suspended solids from filter backwash water. The tank is equipped with a level sensor, a sludge surface interface sensor and valved inlet lines from both of the filters. The holding tank is equipped with a floating decanter with one submersible supernatant pump having a rated capacity of 7.8 L/s at 13.2 m TDH and equipped with pressure sensors, pump failure sensors, backflow prevention and valving. This system was designed to allow for backwash supernatant to be recycled to the raw header after the lime and CO₂ injection points. The supernatant recirculation system is not currently in use. All generated wastewater is being directed by way of a valved gravity discharge line in the bottom of this tank to the on-site sewage pumping station and then to the adjacent WPCP. Any over flows from this tank are also directed to the sewage pumping station by way of separate line equipped with backflow prevention. If supernatant is being conducted, supernatant water is directed from the pump, past a continuously monitored turbidimeter, a composite sampler, a continuously monitored magnetic flow meter and a flow control valve before it is injected into the raw water header.

Site (Name): Distribution System

Type: Other

Sub Type: Other

Comments:

Currently, there are approximately 170 service connections (approximately 130 residential and the remainder being a mix of commercial and institutional) serving approximately 380 people. There are approximately 52 fire hydrants, two air release valves, four sampling stations and 63 main valves within the community of Baysville. The "Landscapes" fractional ownership resort is considered as a single service connection even though approximately 19 residential units are serviced by this single connection.

The installed watermains are all polyvinyl chloride (PVC) which range in size from 150 mm to 300 mm.

There is no additional storage within the distribution system and pressure is maintained via the continuous operation of the HLP's.

INSPECTION SUMMARY:

Introduction

- The primary focus of this inspection is to confirm compliance with Ministry of the Environment and Climate Change (MOECC) legislation as well as evaluating conformance with ministry drinking water policies and guidelines during the inspection period. The ministry utilizes a comprehensive, multi-barrier approach in the inspection of water systems that focuses on the source, treatment, and distribution components as well as management practices.

This drinking water system is subject to the legislative requirements of the Safe Drinking Water Act, 2002 (SDWA) and regulations made therein, including Ontario Regulation 170/03, "Drinking Water Systems" (O.Reg. 170/03). This inspection has been conducted pursuant to Section 81 of the SDWA.

This inspection report does not suggest that all applicable legislation and regulations were evaluated. It remains the responsibility of the owner to ensure compliance with all applicable legislative and regulatory requirements.

The Birch Glen (Baysville) drinking water system serves the community of Baysville, in Lake of Bays Township, which is located east of Provincial Highway 11, situated along Muskoka Road 117. The drinking water system services an estimated population of 348 persons. There are approximately 134 total service connections, of which approximately 109 are residential; 16 are commercial and 9 are institutional. The Birch Glen (Baysville) drinking water system is owned and operated by the Corporation of the District Municipality of Muskoka. The Corporation of the District Municipality of Muskoka is referred to as the Owner, Operator and Municipality for the purposes of this inspection report.

Drinking water for the Baysville community is obtained from Lake of Bays where it drains into the South Branch of the Muskoka River. The Birch Glen (Baysville) drinking water treatment plant was commissioned in July 2006. The drinking water treatment process consists of screening, chemically assisted coagulation-flocculation, sedimentation, and filtration using multi-media filters with a combination of silica sand and anthracite. Disinfection is achieved by chlorination through the use of sodium hypochlorite solution. Alkalinity and pH adjustment also occurs during the treatment process and prior to the treated water being conveyed to the distribution system. Historically, drinking water treatment had also included fluoridation; however, fluoridation has not been practiced since February 3, 2014, following the passing of By-law No. 2014-2 by the District Municipality of Muskoka Council in January 2014. The Birch Glen (Baysville) drinking water treatment plant is rated to treat up to 1100 cubic meters of water per day (m³/day).

The Birch Glen (Baysville) drinking water system is categorized as a Large Municipal Residential drinking water system and is regulated by the Safe Drinking Water Act, 2002 (SDWA) and regulations made therein, including Ontario Regulation (O.Reg.)170/03.

Operation of the Birch Glen (Baysville) drinking water system is authorized under Municipal Drinking Water Licence #143-108 (Licence) and Drinking Water Works Permit 143-208 (Permit) which were originally issued to the District of Muskoka, respectively, on October 14, 2010 and October 13, 2010. An application was submitted by the Municipality to renew the Licence with the Ministry on February 3, 2015, and the Ministry renewed and re-issued Licence Issue #2 and Permit Issue #2 on October 6, 2015.

The Birch Glen (Baysville) Drinking Water System was last inspected by the Ministry of the Environment and Climate Change (Ministry) on September 21, 2015. Findings associated with that 2015 inspection were detailed in Inspection Report # 1-BYLB4, issued to the Municipality on September 28, 2015.

The November 2, 2016 inspection, to which this inspection report pertains, encompasses an inspection review period between September 21, 2015 and November 2, 2016. The November 2, 2016 inspection included a physical inspection of the water treatment equipment and facilities; interviews with operational staff; and a review of relevant documents for the inspection review period. A physical inspection of the four air relief valve chambers situated within the distribution system was also undertaken. The inspector also measured the free available

Introduction

chlorine residual in the drinking water at two extremities within the distribution system and found the free available chlorine residuals at those locations to be adequate with results ranging between 0.85 and 1.00 mg/L.

Source

- **Trends in source water quality were being monitored.**

Raw water is continuously monitored for pH, temperature and turbidity. Additionally, bench tests are performed for colour, conductivity, alkalinity and hardness weekly. A weekly bench test is also performed for pH, temperature and turbidity to verify the on-line analyzers.

The continuously monitored parameters are trended on SCADA. The weekly parameters are tabulated in a spreadsheet.

As required, microbiological samples are also taken weekly.

Operational staff monitor seasonal raw water quality changes and adjust treatment practices accordingly.

Significant fluctuations in temperature are noted for the raw source water throughout the year.

The Birch Glen (Baysville) drinking water system falls outside of a formal source protection area. As a result, formal source protection plans in accordance with the Clean Water Act, 2006 are not required by legislation at the present time.

Proactively, the District Municipality of Muskoka, together with consultants developed the Muskoka Watershed Pilot Project. The project was established to assess and identify any potential threats to the drinking water sources throughout Muskoka.

Part 1 and 2 of the study were completed in 2008. The reports concluded that there were no significant threats to the raw water source waters and as a result no additional action was initiated.

The Official Plan for the District Municipality of Muskoka contains a section designed to protect source waters nearby the drinking water system intakes whereby any development within 1000 metres of a drinking water supply intake or sanitary sewage outfall is not permitted unless the district is satisfied that there will be no negative impacts to the particular system. The developer will be required to provide the necessary background information to support the development application.

Permit To Take Water

- **The owner was in compliance with all conditions of the PTTW.**

Water takings from Lake of Bays, at the South Branch of the Muskoka River, are permitted in accordance with Permit to Take Water (PTTW)#8513-7DZNY3 issued May 15, 2008. The PTTW allows the Municipality to take a maximum of 1100000 Litres per day (L/d) from Lake of Bays at a rate not exceeding 920 Litres per minute (L/min). The PTTW expires on April 30, 2018.

During this inspection review period, records indicate that the daily maximum withdrawal was recorded as 414520 litres on October 6, 2015, representing approximately 38% of the permitted daily total. The maximum rate of water taking on October 6, 2015 was reported to be 607 L/min, well within the stipulated limit. The maximum rate of water taking, during this inspection review period is noted to have occurred on June 16, 2016, when water was reportedly taken at a rate of 608.3 L/min.

On each day water is taken, Condition 4.1 of the PTTW, requires the Municipality to record the date, the volume of water taken on that date and the rate at which water was taken. The same condition requires the daily volume of water taken to be measured by a flow meter, and that the Municipality keep all records required by that condition current and available at or near the site of the taking.

To comply with this condition, the Municipality has installed flow meters on each of the filter influent lines. The flow meters are linked to the Supervisory Control and Data Acquisition (SCADA) system for monitoring and trending purposes. Instantaneous flow rates are continuously trended on SCADA. Totalized daily flows are calculated by SCADA, and transcribed to record keeping mechanisms for reporting purposes.

The Municipality confirmed that they submitted the 2015 water taking records to the Ministry's Water Taking Reporting System on February 23, 2016.

Capacity Assessment

- **There was sufficient monitoring of flow as required by the Municipal Drinking Water Licence or Drinking Water Works Permit issued under Part V of the SDWA.**

Condition 2.1, Schedule C of the Licence requires the Municipality to ensure the continuous flow measurement and recording be undertaken for the flow rate and daily volume of water conveyed into the treatment system and the flow rate and daily volume of water conveyed from the treatment system into the distribution system.

To comply with this condition, the Municipality has installed flow meters, one on each of the two separate filter inlet trains, one on the combined filter outlet line, and one on the combined high-lift pump discharge header entering the distribution system. In addition, a flow meter has also been installed on the backwash wastewater supernatant line which would permit the measurement of supernatant conveyed from the backwash wastewater facilities to the head of the plant to satisfy condition 7.1 of the Permit. However, backwash wastewater supernatant is not presently being recirculated to the head of the plant, as all wastewater is being directed to wastewater treatment plant. Instantaneous flow rates are measured by each flow measuring device and continuously trended and recorded on the Supervisory Control and Data Acquisition (SCADA) system associated with the drinking water system. Totalized daily flows are calculated by SCADA, and transcribed to record keeping mechanisms for reporting purposes.

- **The flow measuring devices were calibrated or verified in accordance with the requirements of the Municipal Drinking Water Licence issued under Part V of the SDWA.**

All flow measuring devices were most recently calibrated on October 27, 2015. Prior to that, the flow measuring devices had been calibrated on November 5, 2014. There were reportedly no concerns identified with the calibrations.

The 2016 flow meter calibrations are scheduled for the week of November 6, 2016.

- **The owner was in compliance with the conditions associated with maximum flow rate or the rated capacity conditions in the Municipal Drinking Water Licence issued under Part V of the SDWA.**

Condition 1.1, Schedule C of the Licence stipulates that the maximum daily volume of treated water that flows from the Baysville (Birch Glen) drinking water treatment plant to the distribution system shall not exceed 1100 cubic metres per day (m³/day). Each filter is rated at 550 cubic metres per day.

In 2015 the maximum day demand occurred on October 6, 2015 when a total daily flow of 352m³ or 32% of the rated capacity was noted to have occurred. The average day demand for 2015 was reported to be approximately 96m³/d or 9% of the plant rated capacity.

Between January 1, 2016 and up to the date of this inspection, November 2, 2016, the maximum day demand occurred on June 29, 2016 when a total daily flow of 283m³ or 26% of the rated capacity was noted to have occurred. The average day demand for this same period is reported to be approximately 103.4m³/d or 9.4% of the plant rated capacity.

During water production, the rate of flow into the treatment system is governed by valving installed on each of the filtration trains. A review of records made during this inspection review period indicates that the Baysville (Birch Glen) drinking water system was not operated to exceed the plant rated capacity set out in the Licence. Similarly, records indicate that the filters were not operated in excess of their design capacities during the production of water.

- **Appropriate records of flows and any capacity exceedances were made in accordance with the Municipal Drinking Water Licence issued under Part V of the SDWA.**

The records of raw and treated water flow rates and volumes are being recorded each day. There were no exceedances of the permitted flows of either the Permit to Take Water or the Municipal Drinking Water System Licence.

Treatment Processes

Treatment Processes

- **The owner had ensured that all equipment was installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit.**

All equipment described in the Permit issued October 13, 2010, appeared to be installed and operating on the date of this inspection. As previously discussed, fluoridation of the Baysville (Birch Glen) Huntsville drinking water system ended on February 3, 2014, and although the fluoridation equipment remains in place, it is not being used at this time. Similarly, the trim chlorine addition equipment remains installed, however use of this equipment is not required at this time.

There were reportedly no alterations to the works, during this inspection review period, which required the preparation of a Form 2 document, nor did the Municipality undertake any alterations to the works which required Director Notifications to be made under Condition 2.4, Schedule B of the Permit. Similarly, there were reportedly no watermain additions or modifications to necessitate the completion of any Form 1 documents nor were there reportedly any minor modifications undertaken or additions made which required the completion of any Form 3 documents.

- **Records indicated that the treatment equipment was operated in a manner that achieved the design capabilities required under Ontario Regulation 170/03 or a Drinking Water Works Permit and/or Municipal Drinking Water Licence issued under Part V of the SDWA at all times that water was being supplied to consumers.**

O.Reg. 170/03 requires that treatment for a surface water source consist of chemically assisted filtration and disinfection capable of achieving at a minimum 2-log removal or inactivation of *Cryptosporidium* oocysts, a 3-log removal or inactivation of *Giardia* cysts and a 4-log removal or inactivation of viruses.

These requirements are reportedly met by coagulation, clarification and filtration followed by chlorination with sodium hypochlorite for both primary and secondary disinfection purposes.

According to the Ministry's Procedure for Disinfection, the filtration process is credited with 2.5 log *Giardia* cyst removal, 2.0 log *Cryptosporidium* oocyst removal and 2.0 log virus removal credits, if the filtration process meets the following criteria:

- use a chemical coagulant at all times when the treatment plant is in operation;
- monitor and adjust chemical dosages in response to variations in raw water quality;
- maintain effective backwash procedures, including filter-to-waste or an equivalent procedure during filter ripening to ensure that the effluent turbidity requirements are met at all times;
- continuously monitor filtrate turbidity from each filter; and,
- meet the performance criterion for filtered water turbidity of less than or equal to 0.3 NTU in 95% of the measurements each month.

To ensure these criteria are met, the Municipality has installed a chemical coagulation system comprised of chemical metering pumps dedicated to each filter train, and each equipped with chemical flow sensors linked to SCADA for alarming purposes. In the event the chemical pumping system fails, the filter valves close and the low lift pumps shut down such that water production ceases until such time the metering pumps are returned to service.

Continuous turbidimeters installed on each filter train are configured to trigger an alarm should filter effluent turbidity exceed 0.20NTU, or should the turbidimeter register a low analog output, indicative of a malfunction. Should filter effluent turbidity exceed 0.3NTU the filter valves close and the low lift pumps shut down, ceasing water production, until operational staff respond to the site and resolve any issues.

The multimedia filters are backwashed manually by operational staff on a weekly basis, at a minimum, using SCADA controls and formalized filter backwashing and filter waste procedures are available within the Operations and Maintenance Manual. The filters are also capable of being backwashed automatically through SCADA based on run times; however, operational staff prefer to be on-site during the backwash process to observe for any abnormal conditions. Following a backwash cycle, water is automatically filtered to waste for a set period of time or until such time that filter effluent turbidity is below the alarm setting of 0.2NTU.

Based on reports made and records reviewed it would appear that the filtration components were operated to meet these criteria during the inspection review period. A review of continuous monitoring records indicate that the filters

Treatment Processes

were operated to meet the performance criterion for filtered water turbidity of less than or equal to 0.3 NTU in 95% of the measurements each month during this inspection review period. Likewise, the coagulant system was in operation when water was being produced. In addition to the regular on-going review of continuous turbidity records, operational staff review the filter turbidity measurements at the end of each calendar month to ensure the filter criterion are being met and typically make record of this review in record keeping mechanisms.

To achieve the remaining 0.5-log Giardia cysts and 2-log Virus removal or inactivation, a free available chlorine residual chemical disinfection system is utilized and the CT disinfection concept is used to quantify the capability of the disinfection system for primary disinfection purposes. Free available chlorine residual is achieved through the addition of sodium hypochlorite solution. The effective disinfectant contact time required for the CT concept is afforded in the dedicated chlorine contact chamber. The treatment system is typically operated to target a free available chlorine residual of 2.0mg/L at the end of the chlorine contact chamber, and a free chlorine residual between 1.3 and 1.5mg/L in the water being conveyed to the distribution system. The primary chlorine residual analyzer installed at the end of the chlorine contact chamber is configured to trigger an alarm sequence in the event free chlorine residuals fall below 1.30mg/L. Should the free chlorine residual fall below 0.90mg/L, the filter valves will close and the low-lift pumps will shut down, ceasing water production until operational staff respond to the site and resolve any issues. The SCADA system is also configured to calculate CT continuously to ensure adequate disinfection is provided and will alarm if CT is not met.

A manual CT calculator is also installed on the computer in the control room allowing operators to calculate and verify whether or not CT provisions were being met under specific conditions. Supporting documentation related to CT is readily available in the operations and maintenance manuals in the office at the water treatment plant. Records reviewed indicate that the Baysville (Birch Glen) Water Treatment Plant was operated to achieve the necessary CT requirements for primary disinfection purposes during this inspection review period.

- **Records confirmed that the water treatment equipment which provides chlorination or chloramination for secondary disinfection purposes was operated so that at all times and all locations in the distribution system the chlorine residual was never less than 0.05 mg/l free or 0.25 mg/l combined.**

Following completion of the intended chlorine contact time for primary disinfection purposes, free available chlorine residual is maintained out and into the distribution system for secondary disinfection purposes to reduce the potential for microbial re-growth within the distribution system, and in accordance with section 1-5 of Schedule 1, O.Reg.170/03. The Baysville (Birch Glen) water treatment plant is designed to target a free chlorine residual between 1.3 and 1.5 mg/L at the point of entry into the distribution system which should ensure a minimum free chlorine residual of 0.2mg/L is maintained throughout the distribution system as is recommended in the Ministry's Procedure for Disinfection. The free chlorine residual analyzer installed on the high lift pump discharge header is configured to initiate an alarm notification if the free available chlorine residual drops below 0.8mg/L. A trim chlorination system is installed and may be used to increase the chlorine residual in the treated water being conveyed to the distribution system, however, operation of this system is not typically required. The free chlorine residual concentrations within the distribution system are measured at four locations on Mondays (Tuesdays in the event of a holiday) and from three locations on Thursdays of each week. In addition, chlorine residuals are also measured at one location each day Monday through Friday, and in conjunction with microbiological sampling and maintenance activities throughout the distribution system.

Records indicate that free chlorine residuals were maintained above the 0.2mg/L throughout the distribution system during this inspection review period; and, there were no records which indicated free chlorine residuals less than 0.05 mg/L at any time during the inspection review period. The recorded distribution system free chlorine residual concentrations ranged between 0.60mg/L and 2.20mg/L.

- **The owner had evidence indicating that all chemicals and materials that come in contact with water within the drinking water system met the AWWA and ANSI standards in accordance with the Municipal Drinking Water Licence and Drinking Water Works Permit issued under Part V of the SDWA.**

The Municipality maintains documentation to verify that the treatment chemicals meet applicable standards set by the American Water Works Association(AWWA) and the American National Standards Institute(ANSI) NSF 60 and

Treatment Processes

NSF 61 for use in water treatment plants.

Sodium hypochlorite, Polyaluminum chloride (SternPAC), carbon dioxide, sodium hydroxide, and hydrated lime are available for use at the water treatment plant.

- **Up-to-date plans for the drinking-water system were kept in a place, or made available in such a manner, that they could be readily viewed by all persons responsible for all or part of the operation of the drinking water system in accordance with the Drinking Water Works Permit and Municipal Drinking Water Licence issued under Part V of the SDWA.**

The most recent as built plans for the water treatment plant are dated September, 2007. Copies of these plans are available at the water treatment plant, and a Process Flow Diagram also exists in Schedule D of the Permit.

Although the plan and diagram accurately reflect the works, it is noted that the plans and the diagram in the Permit continue to reflect the fluoride injection and monitoring locations. These injection and monitoring locations still exist, however, as previously discussed, fluoridation ceased on February 3, 2014.

- **Where a potential bypass of primary or secondary treatment equipment existed, measures were taken to ensure that raw or partially treated water was not directed to the distribution system.**

It is not possible for raw unfiltered water to bypass the filtration or disinfection components of the treatment train. Bypass piping and valving does, however, exist which would allow for chlorinated filtered water to bypass the chlorine contact chamber, and be conveyed directly to the reservoirs. This bypass line is installed to allow the chlorine contact chamber to be taken out of service for maintenance purposes. The valving associated with this bypass piping is closed and tagged "Do Not Operate". The bypass line was not used during this inspection review period.

In the event the bypass is utilized, adjustments could be made within SCADA such that the treated water analyser on the high lift pump discharge header is used for primary disinfection monitoring, and trending would provide a continuously calculated contact time and a CT value for the reservoirs and ensure effective disinfection is still being achieved.

Treatment Process Monitoring

- **Primary disinfection chlorine monitoring was conducted at a location approved by Municipal Drinking Water Licence and/or Drinking Water Works Permit issued under Part V of the SDWA, or at/near a location where the intended CT has just been achieved.**

The primary disinfection chlorine monitoring point is currently located at the end of the dedicated baffled chlorine contact chamber, prior to the sodium hydroxide injection and the water entering the high lift pump reservoirs. The chlorine analyser is supplied samples from the end of the chlorine contact chamber by a peristaltic pump, and is linked to SCADA for continuous monitoring, trending and alarming purposes, and is used by SCADA and operational staff to calculate CT provisions.

- **Operators were aware of the operational criteria necessary to achieve primary disinfection within the drinking water system.**

The water treatment plant staff are familiar with the operational criteria necessary to achieve primary disinfection. The SCADA system is also configured to calculate CT continuously to ensure adequate disinfection is provided and will alarm if CT is not met.

A manual CT calculator is also installed on the computer in the control room allowing operators to calculate and verify whether or not CT provisions were being met under specific conditions. Supporting documentation related to CT is readily available in the operations and maintenance manuals.

- **Continuous monitoring of each filter effluent line was being performed for turbidity.**

In accordance with subsection 7-3(2)(b) of Schedule 7, O.Reg.170/03 the Municipality has installed continuous turbidimeters on each filter train effluent lines. For operational purposes, the Municipality has also installed

Treatment Process Monitoring

continuous turbidimeters for the purpose of measuring the turbidity of the raw water and the finished drinking water conveyed to the distribution system. All four of the turbidimeters are linked to the SCADA system for continuous trending, monitoring and alarm purposes.

The high turbidity alarm set points on the two filter trains is set at 0.20 NTU. SCADA is also configured to initiate an alarm should turbidity measure a low analog output (4mA), which might suggest a turbidimeter malfunction. Should the filter effluent turbidity exceed 0.3NTU the filter inlet and outlet valves close, ceasing the production of water.

The filter train alarms are present to help ensure compliance with the Procedure for Disinfection of Drinking Water in Ontario effluent turbidity requirements of being less than or equal to 0.30 NTU in 95% of the measurements recorded each month on each filter effluent line.

The turbidimeter installed to measure the treated water is configured to initiate an alarm should treated water turbidity exceed 0.90NTU, and the raw turbidimeter is configured to trigger an alarm if raw water turbidity exceeds 5.00NTU. If raw water turbidity exceeds 10.00NTU, the filter will shut down.

A few instances were noted wherein filtrate turbidity exceeds 0.3NTU for short durations, typically less than 5 minutes; however each of these occurrences coincided with analyzer maintenance activities or the filter to waste portion of the filter backwash cycle. The water at these times is being directed to the sanitary sewer and not further into the treatment train.

- **The secondary disinfectant residual was measured as required for the distribution system.**

The free chlorine residual concentrations within the distribution system are measured at four locations on Mondays and from three locations on Thursdays of each week. In addition, chlorine residuals are also measured at one location each day Monday through Friday, and in conjunction with microbiological sampling and maintenance (flushing) activities throughout the distribution system.

The recorded distribution system free chlorine residual concentrations ranged 0.60mg/L and 2.20mg/L, during this inspection review period.

On the date of this inspection, the inspector measured the free available chlorine residual in the drinking water at two extremities within the distribution system and found the free available chlorine residuals at those locations to be adequate with results ranging between 0.85 and 1.00 mg/L.

- **Operators were examining continuous monitoring test results and they were examining the results within 72 hours of the test.**

The data review is completed daily Monday through Friday. Weekends and holidays are considered. Operators are scheduled to conduct a data review so that the time between checks does not exceed the 72 hour regulatory requirement. Records of these checks are documented in the log book in order to satisfy Schedule 6, O.Reg.170/03 requirements for examination of continuous monitoring data.

In addition to the regular on-going review of continuous turbidity records, operational staff also reportedly review the filter turbidity measurements at the end of each calendar month to ensure the filter criterion are being met and records of this review are typically made within the record keeping mechanisms.

- **Samples for chlorine residual analysis were tested using an acceptable portable device.**

Chlorine residual analysis that is not conducted by continuous monitoring equipment is done using portable hand-held HACH direct read out colourimeters. The portable hand-held units are verified against secondary standards on a monthly basis at a minimum.

A third party is retained to perform annual verifications and calibrations to primary standards. The hand held units were third-party verified on August 22, 2016.

- **All continuous monitoring equipment utilized for sampling and testing required by O. Reg.170/03, or Municipal Drinking Water Licence or Drinking Water Works Permit or order, were equipped with alarms or shut-off mechanisms that satisfy the standards described in Schedule 6.**

Continuous monitors are used to assess primary disinfection chlorine residual concentrations and turbidity on each

Treatment Process Monitoring

filter effluent. At the time of inspection, the analyzer used for primary disinfection monitoring had a low chlorine alarm set point of 1.30mg/L and a low/low chlorine alarm set point of 0.90mg/L. The high chlorine alarm is set at 3.00mg/L and the high/high chlorine alarm set point is set at 3.25mg/L. By activating the low or high set points, an alarm notification process is initiated and an operator responds to the site. By activating the low/low or high/high alarm, the filters shut down, ceasing water production, and allow time for an operator to intervene. The filter effluent turbidity high set point alarm was set at 0.20(NTU), and SCADA is configured to alarm if the turbidimeter generates a low analog signal (4mA). Should the filter effluent turbidity exceed 0.30NTU, the filter inlet and outlet valves shut down, ceasing the production of water, until rectified.

- **Continuous monitoring equipment that was being utilized to fulfill O. Reg. 170/03 requirements was performing tests for the parameters with at least the minimum frequency specified in the Table in Schedule 6 of O. Reg. 170/03 and recording data with the prescribed format.**

Schedule 6 of Ontario Regulation 170/03 outlines the recording frequency requirements for continuous on line analysers. It requires that the free chlorine residual for primary disinfection be tested and recorded with a frequency of every five minutes. Turbidity monitoring must be performed with a minimum frequency of at least once every 15 minutes. If secondary disinfection monitoring uses continuous analysers, the free chlorine residual in a distribution sample must have a minimum recording frequency of at least once every 1 hour.

Complying with these requirements, continuous monitoring data is recorded and trended on the SCADA system at five to ten second intervals.

- **All continuous analysers were calibrated, maintained, and operated, in accordance with the manufacturer's instructions or the regulation.**

The water treatment plant is equipped with continuous analysers for pH, chlorine residual, turbidity, and temperature.

Analyzer verifications are completed a minimum of at least once per month, or as needed to exceed the manufacturer's recommendations, to ensure effective operation and accuracy. These verifications are performed using titrations or against secondary standards. The information is noted in the electronic spreadsheets and in the log books.

A third party is retained to perform annual verifications and calibrations to primary standards. These annual verifications/calibrations were last completed in August 2016.

Procedures are available in the operations and maintenance manual for the calibration of the continuous analysers. The continuous chlorine analysers are verified on a monthly basis at a minimum. Calibration of the chlorine analysers occur when the unit reads 5% above or below hand held readings. Records of each verification/calibration are made in the daily log book and the maintenance log book at the plant. Handheld colorimeters are verified against secondary standards on a regular basis, and the hand held unit is also used to verify the calibration of the analyzer.

Process Wastewater

- **The process wastewater and residual solids/sludges were treated, handled and disposed of in accordance with the design requirements approved under the Drinking Water Works Permit and the Municipal Drinking Water Licence.**

All wastes generated at the water treatment plant are being directed to the municipal wastewater treatment facility.

Distribution System

- **The owner had up-to-date documents describing the distribution components as required.**

The most recent updates to the distribution mapping occurred in conjunction with the Municipalities Licence renewal in February 2015. Distribution system mapping is maintained electronically on the Municipality's ArcGIS, and a copy of the distribution map is posted at the water treatment plant.

Distribution System

- **There is a backflow prevention program, policy and/or bylaw in place.**

By-law 2007-24 requires that all premises in municipally serviced areas to connect within 24 months of the service becoming available and By-law 97-1 requires premises connecting to the municipal supply to first obtain a connection permit from the Municipality.

Prior to the connection permit being issued, the District of Muskoka and the local municipality review the application. Adhering to the provisions of the Ontario Building Code, new facilities, and existing facilities which change use are required to install, where necessary, backflow prevention devices. The device used is determined in accordance with Canadian Standards Association's (CSA) standard B64.10-07 "Selection and installation of backflow preventers".

Prior to the physical connection being made, an inspection of the premise is conducted by the local municipality's building inspector, and confirmation is made that the appropriate device has been installed, where necessary, and that no cross connections exist.

There is currently no specific by-law in place which would require the regular inspection/testing of back-flow prevention devices that have been installed; however, the By-Laws do grant the Municipality the authority to inspect premises as they pertain to water service connections, and include the authority for the Municipality to disconnect any user from the system given reasonable grounds of any non-conformance with the By-Laws.

There were no instances reported by the Municipality where a cross connection or backflow concern was raised during the course of the inspection review period.

- **The owner had a program or maintained a schedule for routine cleanout, inspection and maintenance of reservoirs and elevated storage tanks within the distribution system.**

The reservoirs are scheduled to be internally inspected every six years, and drained and cleaned, when warranted.

The chlorine contact chamber and reservoir were, respectively, drained, cleaned and inspected in February and March 2011, and are scheduled for inspection in 2017.

The Municipality implements the practices recommended in the American Water Works Association (AWWA) Standard for the Disinfection of Storage Facilities when the reservoirs are taken off line for maintenance, and prior to returning the component to service.

The raw water intake is inspected every five years.

The filter settling tank tube settlers are cleaned on a monthly basis.

- **Existing parts of the distribution system that are taken out of service for inspection, repair or other activities that may lead to contamination, and all new parts of the distribution system that come in contact with drinking water, were disinfected in accordance with Schedule B, Condition 2.3 of the Drinking Water Works Permit, or an equivalent procedure (i.e. the Watermain Disinfection Procedure).**

With the next issuance of the Permit it is anticipated that the Municipality will be required to ensure that the Ministry's Watermain Disinfection Procedure is followed during any watermain repairs, alterations or installations. Historically, the Municipality was required to, and did, follow the watermain disinfection procedures set out in the AWWA Standard C651. The Municipality has already developed Standard Operating Procedure (SOP) WS-12, which provides operational staff directives regarding Watermain Distribution Repairs, and incorporates the procedures set out in the Ministry's Watermain Disinfection Procedure.

The Municipality also continues to ensure that the applicable AWWA procedures are followed when disinfecting the water treatment facilities and storage facilities that comprise the drinking water system.

- **The owner had implemented a program for the flushing of watermains as per industry standards.**

The Municipality follows a program for flushing of water mains consistent with AWWA Standard G200-09. The distribution system is flushed twice annually. The entire system is flushed in the spring/early summer and the dead ends are flushed each fall. They attempt to achieve a minimum velocity of 2.5 m/s and try to conduct

Distribution System

unidirectional flushing during the spring flush, whenever possible. Additional spot flushing is completed, as needed, in response to adverse conditions or customer complaints.

There are 52 hydrants situated throughout the distribution system, ten of which are considered on dead-end branches. There are also five private hydrants situated within the distribution system.

Records are kept of the flushing dates, locations, durations, residuals achieved, and times conducted.

As of the inspection date, the spring 2016 flushing program had been undertaken (June 27-30) and the 2016 fall dead-end flushing was being scheduled.

- **Records confirmed that disinfectant residuals were routinely checked at the extremities and "dead ends" of the distribution system.**

The distribution chlorine residual concentration sampling program is designed to sample all areas throughout the Baysville distribution system. Grab samples are obtained daily, Monday through Friday at the Fairy Falls sample station. Checks are performed at other distant locations in the distribution system throughout the week to ensure that adequate residual chlorine concentrations are maintained at distant points in the distribution system. Records are maintained of each check on an electronic spreadsheet which was available for review.

On the date of this inspection, the inspector measured the free available chlorine residual in the drinking water at two extremities within the distribution system and found the free available chlorine residuals at those locations to be adequate. The free chlorine residual at the Heney Lake Road sample station was 0.85mg/L, and the free chlorine residual at the Fairy Falls sample station was 1.00 mg/L.

- **A program was in place for inspecting and exercising valves.**

The Municipality has a program in place for exercising valves. AWWA Standard G200-09, Distribution System Operation and Management, Section 4.2.5 as it pertains to valve exercising and replacement is referenced by the Municipality. Critical main valves are exercised on an annual basis and all main valves are exercised on a six year rotation frequency. The information is noted and the database is tracked electronically.

There are 71 main valves situated throughout the distribution system and three of these are considered critical. All of the valves were most recently inspected/exercised between March 10 and April 21, 2016.

There are also four air relief valves situated throughout the distribution system. These valves are situated on the watermain in below grade vented chambers. The air-vacuum relief valves and chambers are inspected on a twice annual basis, to confirm the chambers are not flooded and the valve is operational. Records of these inspections are made and the database is tracked electronically.

Physical inspections of the four air relief valve chambers were undertaken in conjunction with this Ministry inspection, and although standing water was identified within the chambers, the water was situated well below the watermain and the air relief valve.

- **There was a program in place for inspecting and operating hydrants.**

The Municipality has a program in place for inspecting and maintaining hydrants throughout the distribution system. AWWA Standard G200-09 Distribution System Operation and Management Section 4.2.6, as it pertains to fire hydrant maintenance and testing, is used for reference. Hydrants are scoped and tested in the winter, and inspected on another occasion, annually. The information is recorded and retained in an electronic record for future reference.

- **There was a by-law or policy in place limiting access to hydrants.**

By-law 97-1 limits hydrant use to municipal operators, local fire departments and those holding valid hydrant use permits, issued by the District. Where a fire hydrant is being used for purposes other than firefighting or system flushing, the Municipality ensures a reduced pressure zone (RPZ) backflow prevention device and flow meter is installed on the hydrant.

Distribution System

- **The owner was able to maintain proper pressures in the distribution system and pressure was monitored to alert the operator of conditions which may lead to loss of pressure below the value under which the system is designed to operate.**

Pressure monitoring is conducted on the high lift discharge header on the finished water leaving the treatment plant. System pressure is trended through the SCADA system. A pressure drop below an established set point (150kPa) will trigger an alarm condition to an operator. There is no elevated storage available within the distribution system, and as such the drinking water system pressure is maintained through high lift pumping. The high lift pumps are able to be powered by the 500 kW emergency generator at the water treatment plant, which is tested under load conditions every two weeks. The Municipality did not have any concerns with maintaining adequate system pressure throughout the distribution system, during the inspection review period. There were also no complaints related to low pressure reported during the inspection review period.

Operations Manuals

- **Operators and maintenance personnel had ready access to operations and maintenance manuals.**

Operations and maintenance manuals are available to staff. The documents are located in the office at the water treatment plant.

As discussed, in the following sections of this inspection report, the Municipality is currently reviewing sections of the operations and maintenance manual to ensure the manual is consistent with the requirements of their Permit and Licence; and, to ensure that the manual conforms to their Operational Plan.

In their efforts of ensuring consistency exists across the Municipality, the Municipality is developing a more standardized SOP driven Operations and Maintenance Manual, that can be maintained and made available in an electronic format, at each of the Municipalities drinking water systems. In these efforts to date, many of the record keeping mechanisms have already been standardized across the Municipality.

- **The operations and maintenance manuals contained plans, drawings and process descriptions sufficient for the safe and efficient operation of the system.**

An operations and maintenance manual has been created and is available on-site for the utility operator's use at the water treatment plant. The manual and contingency plans were last fully revised in 2010, and the Municipality is currently reviewing sections of the operations and maintenance manual to ensure the manual is consistent with the requirements of the Permit and Licence, issued October 6, 2015; and, to ensure that the manual conforms to their Operational Plan. The Municipality is working to develop more standardized SOP driven Operations and Maintenance Manuals for each of their drinking water systems, with the intent that the manuals will be maintained and made available in an electronic format.

Plans and drawings are available at the water treatment plant. A Process Flow Diagram also exists in Schedule D of the Permit.

- **The operations and maintenance manuals met the requirements of the Drinking Water Works Permit and Municipal Drinking Water Licence issued under Part V of the SDWA.**

Condition 16, Schedule B of the Licence prescribes that the operations and maintenance manual include at a minimum:

- the requirements of the licence and associated procedures;
- the requirements of the drinking water works permit for the drinking water system;
- a description of the processes used to achieve primary and secondary disinfection within the drinking water system, including where applicable a copy of the CT calculations that were used as the basis for primary disinfection under worst case operating conditions;
- procedures for monitoring and recording the in-process parameters necessary for the control of any treatment subsystem and for assessing the performance of the drinking water system;
- procedures for the operation and maintenance of monitoring equipment;

Operations Manuals

-contingency plans and procedures for the provision of adequate equipment and material to deal with emergencies, upset conditions and equipment breakdown; and,
-procedures for the dealing with complaints related to the drinking water system, including the recording of the nature of the complaint and any investigation and corrective action taken in respect of the complaint.
Procedures necessary for the operation and maintenance of any alterations to the drinking water system must also be incorporated into the operations and maintenance manual prior to the alterations coming into operation. The operations manual and the contingency plans for the drinking water system appear to address all of these topics sufficiently, providing the utility operators enough information to effectively operate the drinking water system.

The requirement for the operations manual to include a description of the processes used to achieve primary and secondary disinfection within the drinking water system, was a new condition, Condition 16.2.3, Schedule B), of the Licence that was issued on October 6, 2015 and the Municipality had until April 13, 2016 to comply with this condition. In review of the information provided for this inspection, all of the information would appear to be available to satisfy this condition. The SCADA system is also configured to calculate CT continuously to ensure adequate disinfection is provided and will alarm if CT is not met, and a CT calculating spreadsheet is also installed on the computer in the control room which allows operators to verify CT under various conditions.

The Municipality is currently reviewing sections of the operations and maintenance manual to ensure the manual is consistent with the requirements of their Permit and Licence and that the manual conforms to their Operational Plan. In their efforts of ensuring consistency exists across the Municipality, considerations are being with respect to developing a more standardized SOP driven Operations and Maintenance Manual, that can be maintained and made available in an electronic format, at each of the Municipalities drinking water systems. In these efforts to date, many of the record keeping mechanisms have already been standardized across the Municipality.

With the next issuance of the Permit, it is anticipated that the Municipality will be required to ensure that the Ministry's Watermain Disinfection Procedure is followed during any watermain repairs, alterations or installations. Historically, the Municipality was required to, and did, follow the watermain disinfection procedures set out in the AWWA Standard C651. The Municipality has already developed Standard Operating Procedure (SOP) WS-12, which provides operational staff directives regarding Watermain Distribution Repairs, and incorporates the procedures set out in the Ministry's Watermain Disinfection Procedure.

Logbooks

- **Logbooks were properly maintained and contained the required information.**

Records, in the form of spreadsheets, forms, notebooks, electronic files, log sheets, and other formats, are kept for work completed in the distribution system and at the water treatment plant. Written records of operational tests and checks are also converted to an electronic excel spreadsheet format.

The logbooks identify the Overall Responsible Operator (ORO) and the Operator in Charge (OIC) daily. There is only one shift and the operator performing weekend and after-hours checks is always identified.

Any unusual events or actions and any directions provided to change from standard operating practices are recorded.

Documentation is very thorough and complete.

- **Records or other record keeping mechanisms confirmed that operational testing not performed by continuous monitoring equipment was being done by a certified operator, water quality analyst, or person who suffices the requirements of O. Reg. 170/03 7-5.**

Records reviewed indicate that only the certified utility operators are the individuals that are performing the operational tests throughout the system.

- **For every required operational test and every required sample, a record was made of the date, time, location, name of the person conducting the test and result of the test.**

Logbooks

- **The operator-in-charge ensured that records were maintained of all adjustments made to the processes within his or her responsibility.**

Presently, operators evaluate the system processes daily, Monday through Friday. They use a checklist to verify operating conditions and also to verify the SCADA trending. Weekends and holidays are also considered, to ensure that the review of the continuous monitoring data does not exceed 72 hours. The specific operating conditions are recorded on their checklists and also stored electronically in Excel spreadsheets. Records of the checks are written in the log book at the water treatment plant.

- **Logs or other record keeping mechanisms were available for at least five (5) years.**

Logs and any related information are reportedly being retained for at least fifteen years.

Contingency/Emergency Planning

- **Spill containment was provided for process chemicals and/or standby power generator fuel.**

All of the liquid chemicals stored at the site, including day tanks and bulk storage tanks are provided with secondary spill containment.

The sizing of the containment vessels appear to be adequate. There were no obvious leaks from, or breaches of, the vessels and no observed drains located within the containment vessels.

The 500 kW diesel powered generator, installed to provide emergency power for the Low Lift Pumping Station and both the water and wastewater treatment plants, is equipped with an integral double walled 850 gallon diesel fuel storage tank. The double walled tank is equipped with interstitial monitoring and alarming.

- **Clean-up equipment and materials were in place for the clean up of spills.**

A spills response kit is located within the chemical storage room. It contains drain covers, a spills response manual, chemically resistant protective clothing for two individuals, signage, absorbent booms and padding. Goggles, gloves, aprons and an emergency shower are also located on site.

If required, contact numbers for waste haulers, vacuum trucks and heavy equipment are provided in the O&M manual.

Small on-site spills would typically be handled by operational staff, but larger outdoor spills, and those which could potentially affect the source water, would be handled by contractors.

- **Standby power generators were tested under normal load conditions.**

The 500 kW generator is being tested every two weeks under load conditions. Records of these tests are made on a worksheet, and notes regarding the tests are made within the log book.

Security

- **All storage facilities were completely covered and secure.**

The filters, chlorine contact chamber and reservoir cells are situated within the footprint of the water treatment plant building. The building is always locked and alarmed when operational staff are not present. There are no external routes of access to the chlorine contact chamber or reservoirs. The hatch covers are solid plate metal, elevated above the floor, and are always closed unless maintenance is being completed within.

- **Air vents and overflows associated with reservoirs and elevated storage structures were equipped with screens.**

There are no vents installed for the chlorine contact chamber or reservoirs. The hatch covers associated with these structures serve as venting.

Security

Each of the reservoirs are equipped with overflow piping which converges to a common overflow pipe which is directed to rock outfall in a drainage ditch to the South of the water treatment plant building. Each of the reservoir overflows are fitted with internal tideflex checkvalves, to prevent entry into the reservoir cells through the overflow piping. The overflow outfall is also being screened.

- **The owner had provided security measures to protect components of the drinking water system.**

The security measures in place throughout the Birch Glen (Baysville) drinking water system include fencing at the water treatment plant, security alarms, locked access doors at the water treatment plant and locked distribution sample taps. Security alarms have been linked to the monitoring system. There were no incidents of vandalism or reports of damage during the inspection review period.

Consumer Relations

- **The owner and/or operating authority undertook efforts to promote water conservation and reduce water losses in their system.**

Water conservation measures are being practiced by the Municipality. Information is available on conservation measures on the District Municipality of Muskoka web site. The Municipality has installed water meters on all service connections. Due to the relatively small size of the distribution system, any unusual increase in water usage is noticed during data review. The Municipality estimated that outgoing water volumes are within 5% of the volumes billed to consumers.

District-wide By-Law (97-1) also includes a water conservation provisions. It states that no person shall waste water from a water works, that water used for air conditioning systems must be recirculated and prohibits unauthorized connection to the water system. Under this by-law, the District has the authority to restrict outdoor water use, limit the hours of use or suspend such use.

Certification and Training

- **The overall responsible operator had been designated for each subsystem.**

In accordance with Ontario Regulation 128/04 (Certification of Drinking Water System Operators and Water Quality Analysts) made under the SDWA, the "Birch Glen (Baysville) Water Treatment Plant" is classified as a Class 3 Water Treatment Subsystem (#3759, dated November 08, 2005), while the "Birch Glen (Baysville) Water Distribution System" is classified as a Class 1 Water Distribution Subsystem (#3760, dated November 08, 2005). At the time of this inspection, individuals possessing Class 4 Water Treatment Subsystem and Class 3 Water Distribution certificates, at a minimum, have been designated to act in the capacity of Overall Responsible Operator (ORO). Other operators, who possess, at a minimum, Class 3 Water Treatment and Distribution certifications, are also available and may serve in the ORO capacity, if required.

Records identifying the name of the individual serving in the capacity of ORO are documented within facility logbooks on a daily basis. There were no records to indicate that individuals other than sufficiently certified operators were acting in the capacity of ORO during this inspection review period.

- **Operators in charge had been designated for all subsystems which comprised the drinking-water system.**

The Municipality has designated the operators who possess the appropriate level of certification to act as Operator-in-Charge (OIC) as required. Typically, the operator doing facility checks is considered the OIC of the facility on that particular day.

- **All activities that were undertaken by uncertified persons in the DW subsystems were overseen by persons having the prescribed qualifications.**

Any work being conducted within the water treatment plant or the distribution system by anyone other than the Municipality's operational staff, is directly supervised by operational staff who are all adequately certified to operate

Certification and Training

the Baysville subsystems.

- **All operators possessed the required certification.**

Operator certification is posted at a location from where the drinking water system is managed. The certification was verified by the inspecting Provincial Officer with the Ontario Water/Wastewater Certification Office. All operators possessed valid operator certificates. Several of the operators have certificates which are set to expire in December 2016, and it was confirmed that these operators are in the process of renewing their certificates.

- **Only certified operators made adjustments to the treatment equipment.**

Records provided for review indicate that the District of Muskoka utility operators appear to be the only persons who are adjusting water treatment equipment and processes at the water treatment plant.

- **An adequately licenced operator was designated to act in place of the overall responsible operator when the overall responsible operator was unable to act.**

The Overall Responsible Operator (ORO) is rotated on a weekly basis through three appropriately designated individuals. In the event they are unable to act, other operators, who possess, at a minimum Class 3 Water Treatment certification, are also available and may serve in the ORO capacity, if required. There has been no instance where an ORO has been unable to act during the inspection review period.

Water Quality Monitoring

- **All microbiological water quality monitoring requirements for raw water samples were being met.**

The owner of a large municipal residential drinking water system shall ensure that a water sample is taken at least once every week from the drinking water system's raw water, before any treatment is applied to the water. The sample must be tested for E.coli and total coliforms.

Records reviewed in the course of this inspection indicate that the Municipality complied with these requirements.

- **All microbiological water quality monitoring requirements for distribution samples were being met.**

The owner of a large municipal residential drinking water system shall ensure that if the system serves a population of 100,000 or less, at least 8 distribution samples plus one for every thousand people served by the system are taken every month. At least one of the samples must be taken each week. As Baysville's population is estimated to be 348 residents, eight samples must be collected monthly as a minimum requirement from the distribution system. These samples are required to be tested for E.Coli. and total coliform; and at least 25 percent of the samples are required to be tested for general bacteria populations expressed as colony counts on a heterotrophic plate count. Records indicate that the Municipality is routinely collecting three distribution samples each week in order to comply with, and exceed, the regulatory requirement. Each of those samples were tested for E.Coli., total coliform, and approximately one third of the samples were tested for general bacteria populations expressed as colony counts on a heterotrophic plate count.

It is acknowledged that the distribution sample collected June 1, 2016 was analyzed only for E.Coli and total coliform bacteria. Although, the Municipality complied with their sampling requirement and requested HPC analysis be conducted on the distribution water sample that had been submitted to their licenced laboratory, a laboratory issue prevented the sample from being analyzed for HPC. The laboratory issue is documented on the laboratory report associated with the June 1, 2016 samples.

- **All microbiological water quality monitoring requirements for treated samples were being met.**

Section 10-3 of Schedule 10, O.Reg.170/03 requires the Municipality to ensure samples are collected at least once every week from the system's treated water at the point of entry into the distribution system. The samples collected are required to be tested for E.Coli and total coliform, and general bacteria populations expressed as colony counts

Water Quality Monitoring

on a heterotrophic plate count.

Records reviewed in the course of this inspection indicate that the Municipality complied with these requirements. It is acknowledged that the treated water sample collected June 1, 2016 was analyzed only for E.Coli and total coliform bacteria. Although, the Municipality complied with their sampling requirement and requested HPC analysis be conducted on the treated water sample that had been submitted to their licenced laboratory, a laboratory issue prevented the sample from being analyzed for HPC. The laboratory issue is documented on the laboratory report associated with the June 1, 2016 samples.

- **All inorganic water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

Section 13-2 of Schedule 13, O.Reg.170/03 requires the Owner and the operating authority to ensure that at least one water sample is taken every 12 months if the system obtains water from a raw water supply that is surface water, and have those samples tested for every inorganic parameter set out in Schedule 23, O.Reg.170/03. Complying with these requirements, the Municipality last conducted this sampling on May 9, 2016. Prior to that, this sampling was last conducted on April 13, 2015. There were no concerns identified with the results obtained.

- **All organic water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

Section 13-4 of Schedule 13, O.Reg.170/03 requires the Owner and the operating authority to ensure that at least one water sample is taken every 12 months if the system obtains water from a raw water supply that is surface water, and have those samples tested for every organic parameter set out in Schedule 24, O.Reg.170/03. Complying with these requirements, the Municipality last conducted this sampling on May 9, 2016. Prior to that, this sampling was last conducted April 13, 2015. There were no concerns identified with the results obtained.

- **All trihalomethanes water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

Section 13-6 of Schedule 13, O.Reg.170/03 requires the Owner and the operating authority to ensure that at least one distribution sample is taken every 3 months from a point in the drinking water system's distribution system, or in plumbing that is connected to the drinking water system, that is likely to have an elevated potential for the formation of Trihalomethanes (THMs), and tested for THMs. Section 6-1.1 of Schedule 6, O.Reg.170/03 requires that these samples be taken at least 60 days, and not more than 120 days, after a sample was taken for that purpose in the previous three month period.

Complying with these requirements, the Municipality conducted this quarterly sampling July 13, 2015; October 13, 2015; November 9, 2015; February 8, 2016; May 9, 2016 and August 8, 2016.

THM results during this inspection review period ranged between 40 and 77micrograms per Litre (ug/L). The running annual average of the four most recent samples collected is 59.25ug/L, below the Ontario Drinking Water Quality Standard of 100ug/L.

- **Trihalomethane samples were being collected from a point in the distribution system or connected plumbing system that was likely to have an elevated potential for the formation of trihalomethanes.**

The trihalomethane samples have been obtained at the Fairy Falls Sample Station, a location in the distribution system that may be likely to have an elevated potential for the formation of trihalomethanes.

- **All nitrate/nitrite water quality monitoring requirements prescribed by legislation were conducted within the required frequency for the DWS.**

Section 13-7 of Schedule 13, O.Reg.170/03 requires the Municipality to ensure that at least one water sample is taken every three months and tested for nitrates and nitrites. Section 6-1.1 of Schedule 6, O.Reg.170/03 requires that these samples be taken at least 60 days, and not more than 120 days, after a sample was taken for that purpose in the previous three month period.

Complying with these requirements, the Municipality conducted this required monitoring on July 13, 2015; October

Water Quality Monitoring

13, 2015; November 9, 2015; February 8, 2016; May 9, 2016 and August 8, 2016. There were no concerns identified with the results obtained.

- **All sodium water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

Section 13-8 of Schedule 13, O.Reg.170/03 requires that the owner of a municipal residential drinking-water system ensure that a treated water sample is taken every 60 months and is tested for sodium. Complying with these requirements, the Municipality last conducted this sampling on May 9, 2016. Prior to that, this sampling was last conducted April 13, 2015. There were no concerns identified with the results obtained.

- **All fluoride water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

Section 13-9 of Schedule 13, O.Reg.170/03 requires the Owner and the operating authority to ensure that at least one water sample is taken every 60 months and tested for Fluoride, if the system does not provide fluoridation. As previously discussed, Birch Glen (Baysville) Water Treatment Plant had historically provided fluoridation, however this practice was stopped on February 3, 2014.

Complying with the Section 13-9 requirement, the Municipality last conducted Fluoride sampling on May 9, 2016 and prior to which had conducted this sampling on April 13, 2015. The Fluoride results were consistently 0.06mg/L, below the Ontario Drinking Water Quality Standard of 1.5 mg/L.

- **The owner ensured that water samples were taken at the prescribed location.**

The sampling program in place for the Birch Glen (Baysville) water treatment plant and distribution system appears to be using sample locations in accordance with their regulatory requirements.

- **All sampling requirements for lead prescribed by schedule 15.1 of O. Reg. 170/03 were being met.**

Based on the results of historical lead sampling, the Municipality is exempt from the requirement to sample lead within the plumbing of the private residences in the Baysville community. Instead, the Municipality must ensure to test for total alkalinity and pH during each of the prescribed sampling periods (December 15 to April 15 and June 15 and October 15), and must ensure lead is sampled within the distribution system in each of the prescribed sampling periods in every third 12 month period. Based on the population (380) of the Baysville community, the Municipality is required to ensure this sampling is conducted from one location within the distribution system.

The initial three year cycle commenced with the June 15, 2013 to October 15, 2013 followed by the December 15, 2013 to April 15, 2014 sample period. In each of those sampling periods, at least one distribution sample was obtained and there were no concerns identified with the results obtained. Most recently, and during this inspection review period, sampling for lead occurred from one location within the distribution system on October 13, 2015; February 8, 2016 and August 8, 2016. Alkalinity and pH sampling is also undertaken on a weekly basis as part of the Langelier Saturation Index(LSI) sampling implemented by the Municipality.

The Lead results ranged between 0.12 and 0.18ug/L, well within the Ontario Drinking Water Quality Standard of 10ug/L. Alkalinity results ranged between 30 and 40mg/L and pH ranged between 6.89 and 7.71. Hydrated Lime is used within the treatment process to adjust alkalinity levels for coagulant effectiveness, while sodium hydroxide is added downstream of the chlorine contact chamber for pH adjustment and corrosion control.

- **Records confirmed that chlorine residual tests were being conducted at the same time and at the same location that microbiological samples were obtained.**

Subsection 6-3 (1) of Schedule 6 of O.Reg.170/03 prescribes that if a microbiological sample required by the regulation is taken, that another sample must be taken at the same time from the same location and tested immediately for free chlorine residual. Records reviewed during the course of this inspection indicate that the Municipality ensured that a free chlorine residual was taken at the time of all microbiological samples. Operational

Water Quality Monitoring

staff recorded the free available chlorine residual tests directly on the Laboratory Sample Submission / Chain of Custody Form at the same time that microbiological samples were obtained. The chlorine residuals associated with microbiological sample were then included by the laboratory on the analytical report associated with results of the microbiological test.

- **The drinking water system owner submitted written notices to the Director that identified the laboratories that were conducting tests for parameters required by legislation, Order, Drinking Water Works Permit or Municipal Drinking Water Licence.**

The Municipality has submitted a Laboratory Services Notification (LSN) to the Ministry advising that SGS Lakefield has been retained to perform the microbiological and chemical analysis on drinking water samples collected from the drinking water system. The most recent LSN submission made on December 29, 2015 also advised the Ministry that SGS Lakefield had been retained to perform sample analysis for 2-methyl-4-chlorophenoxyacetic acid (MCPA), Haloacetic Acid (HAA), Microcystin, chlorate and chlorite.

- **The owner indicated that the required records are kept and will be kept for the required time period.**

The Municipality indicated that any records related to the operation of the Baysville drinking water system are being retained for at least 15 years. Many records are being archived in an electronic format.

Water Quality Assessment

- **Records showed that all water sample results taken during the inspection review period did not exceed the values of tables 1, 2 and 3 of the Ontario Drinking Water Quality Standards (O.Reg. 169/03).**

The standards for drinking water quality in Ontario are prescribed in O.Reg.169/03 "Ontario Drinking Water Quality Standards" (ODWQS). Background and supporting information for each of the standards can be found in the Ministry's "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines". Results of sampling conducted during this inspection review period met the microbiological and chemical requirements of the ODWQS, and there were no other Adverse Water Quality Incident reported or identified.

Reporting & Corrective Actions

- **Where required continuous monitoring equipment used for the monitoring of chlorine residual and/or turbidity triggered an alarm or an automatic shut-off, a qualified person responded in a timely manner and took appropriate actions.**

Following a review of the SCADA and log book entries for the inspection review period, where required, operators responded to and took appropriate measures, where necessary, in response to alarm conditions. Explanations appear to have been consistently provided for power interruptions, maintenance activities, process operation alarm calls, and any communication errors that triggered alarms. Any after hours alarm calls appear to have been responded to in a timely fashion by the utility operators and notes have been entered in the log book of their actions taken for each instance.

- **The Annual Report containing the required information was prepared by February 28th of the following year.**

The 2015 Annual Report for drinking water system has been prepared and is available for review on the District Municipality of Muskoka website

- **Summary Reports for municipal council were completed on time, included the required content, and were distributed in accordance with the regulatory requirements.**

The 2015 Summary Report was prepared and received by municipal council on February 17, 2016.

- **All changes to the system registration information were provided within ten (10) days of the change.**

Reporting & Corrective Actions

NON-COMPLIANCE WITH REGULATORY REQUIREMENTS AND ACTIONS REQUIRED

This section provides a summary of all non-compliance with regulatory requirements identified during the inspection period, as well as actions required to address these issues. Further details pertaining to these items can be found in the body of the inspection report.

Not Applicable

SUMMARY OF RECOMMENDATIONS AND BEST PRACTICE ISSUES

This section provides a summary of all recommendations and best practice issues identified during the inspection period. Details pertaining to these items can be found in the body of the inspection report. In the interest of continuous improvement in the interim, it is recommended that owners and operators develop an awareness of the following issues and consider measures to address them.

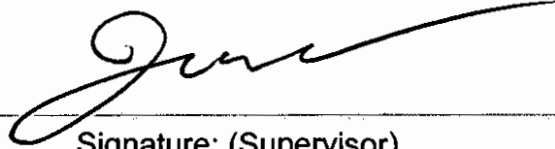
Not Applicable

SIGNATURES

Inspected By:

James Crumbie

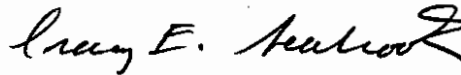
Signature: (Provincial Officer)



Reviewed & Approved By:

Craig Seabrook

Signature: (Supervisor)



Review & Approval Date:

2016-11-04

Note: This inspection does not in any way suggest that there is or has been compliance with applicable legislation and regulations as they apply or may apply to this facility. It is, and remains, the responsibility of the owner and/or operating authority to ensure compliance with all applicable legislative and regulatory requirements.

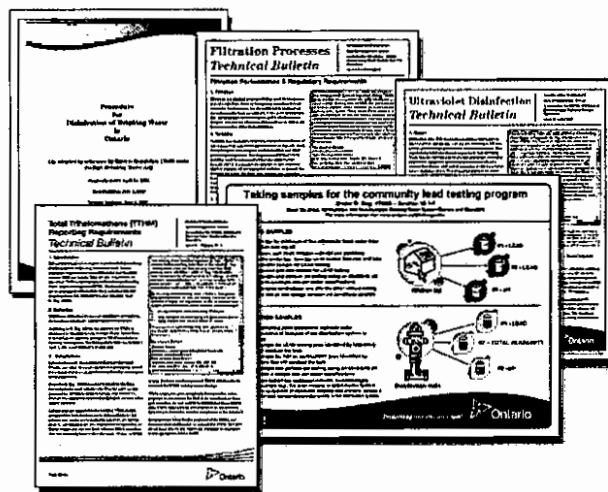
Stakeholder Appendix

Key Reference and Guidance Material for Municipal Residential Drinking Water Systems

Many useful materials are available to help you operate your drinking water system. Below is a list of key materials owners and operators of municipal residential drinking water systems frequently use.

To access these materials online click on their titles in the table below or use your web browser to search for their titles. Contact the Public Information Centre if you need assistance or have questions at 1-800-565-4923/416-325-4000 or picemail.moe@ontario.ca.

For more information on Ontario's drinking water visit www.ontario.ca/drinkingwater and email drinking.water@ontario.ca to subscribe to drinking water news.



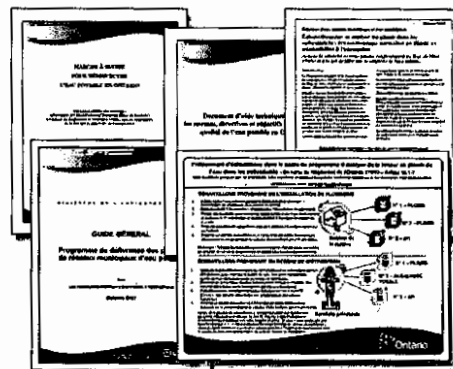
PUBLICATION TITLE	PUBLICATION NUMBER
Taking Care of Your Drinking Water: A Guide for Members of Municipal Councils	7889e01
FORMS: Drinking Water System Profile Information, Laboratory Services Notification, Adverse Test Result Notification Form	7419e, 5387e, 4444e
Procedure for Disinfection of Drinking Water in Ontario	4448e01
Strategies for Minimizing the Disinfection Products Trihalomethanes and Haloacetic Acids	7152e
Total Trihalomethane (TTHM) Reporting Requirements Technical Bulletin (February 2011)	8215e
Filtration Processes Technical Bulletin	7467
Ultraviolet Disinfection Technical Bulletin	7685
Guide for Applying for Drinking Water Works Permit Amendments, Licence Amendments, Licence Renewals and New System Applications	7014e01
Certification Guide for Operators and Water Quality Analysts	
Guide to Drinking Water Operator Training Requirements	9802e
Taking Samples for the Community Lead Testing Program	6560e01
Community Sampling and Testing for Lead: Standard and Reduced Sampling and Eligibility for Exemption	7423e
Guide: Requesting Regulatory Relief from Lead Sampling Requirements	6610
Drinking Water System Contact List	7128e
Technical Support Document for Ontario Drinking Water Quality Standards	4449e01

ontario.ca/drinkingwater

Principaux guides et documents de référence sur les réseaux résidentiels municipaux d'eau potable

De nombreux documents utiles peuvent vous aider à exploiter votre réseau d'eau potable. Vous trouverez ci-après une liste de documents que les propriétaires et exploitants de réseaux résidentiels municipaux d'eau potable utilisent fréquemment.

Pour accéder à ces documents en ligne, cliquez sur leur titre dans le tableau ci-dessous ou faites une recherche à l'aide de votre navigateur Web. Communiquez avec le Centre d'information au public au 1 800 565-4923 ou au 416 325-4000, ou encore à picemail.moe@ontario.ca si vous avez des questions ou besoin d'aide.



Pour plus de renseignements sur l'eau potable en Ontario, consultez le site www.ontario.ca/eaupotable ou envoyez un courriel à drinking.water@ontario.ca pour suivre l'information sur l'eau potable.

TITRE DE LA PUBLICATION	NUMÉRO DE PUBLICATION
Prendre soin de votre eau potable – Un guide destiné aux membres des conseils municipaux	7889f01
Renseignements sur le profil du réseau d'eau potable, Avis de demande de services de laboratoire, Formulaire de communication de résultats d'analyse insatisfaisants et du règlement des problèmes	7419f, 5387f, 4444f
Marche à suivre pour désinfecter l'eau potable en Ontario	4448f01
Strategies for Minimizing the Disinfection Products Trihalomethanes and Haloacetic Acids (en anglais seulement)	7152e
Total Trihalomethane (TTHM) Reporting Requirements: Technical Bulletin (février 2011) (en anglais seulement)	8215e
Filtration Processes Technical Bulletin (en anglais seulement)	7467
Ultraviolet Disinfection Technical Bulletin (en anglais seulement)	7685
Guide de présentation d'une demande de modification du permis d'aménagement de station de production d'eau potable, de modification du permis de réseau municipal d'eau potable, de renouvellement du permis de réseau municipal d'eau potable et de permis pour un nouveau réseau	7014f01
Guide sur l'accréditation des exploitants de réseaux d'eau potable et des analystes de la qualité de l'eau de réseaux d'eau potable	
Guide sur les exigences relatives à la formation des exploitants de réseaux d'eau potable	9802f
Prélèvement d'échantillons dans le cadre du programme d'analyse de la teneur en plomb de l'eau dans les collectivités	6560f01
Échantillonnage et analyse du plomb dans les collectivités : échantillonnage normalisé ou réduit et admissibilité à l'exemption	7423f
Guide: Requesting Regulatory Relief from Lead Sampling Requirements (en anglais seulement)	6610
Liste des personnes-ressources du réseau d'eau potable	7128f
Document d'aide technique pour les normes, directives et objectifs associés à la qualité de l'eau potable en Ontario	4449f01

ontario.ca/eaupotable

MOE Audit Sample Results

Not Applicable



Ontario

**Ministry of the Environment and Climate Change
Drinking Water System Inspection Report Appendix C**

Provincial Officer's Report & Order

Not Applicable



Inspection Rating Record

Ministry of the Environment - Inspection Summary Rating Record (Reporting Year - 2016-2017)

DWS Name: BIRCH GLEN (BAYSVILLE) DRINKING WATER SYSTEM
DWS Number: 260071435
DWS Owner: Muskoka, The Corporation Of The District Municipality Of
Municipal Location: Lake Of Bays

Regulation: O.REG 170/03

Category: Large Municipal Residential System

Type Of Inspection: Detailed

Inspection Date: November 2, 2016

Ministry Office: Barrie District

Maximum Question Rating: 600

Inspection Module	Non-Compliance Rating
Permit To Take Water	0 / 12
Capacity Assessment	0 / 42
Treatment Processes	0 / 68
Process Wastewater	0 / 10
Distribution System	0 / 25
Operations Manuals	0 / 42
Logbooks	0 / 30
Certification and Training	0 / 57
Water Quality Monitoring	0 / 140
Reporting & Corrective Actions	0 / 33
Treatment Process Monitoring	0 / 141
TOTAL	0 / 600

Inspection Risk Rating 0.00%

FINAL INSPECTION RATING: 100.00%

Ministry of the Environment - Detailed Inspection Rating Record (Reporting Year - 2016-2017)

DWS Name: BIRCH GLEN (BAYSVILLE) DRINKING WATER SYSTEM
DWS Number: 260071435
DWS Owner: Muskoka, The Corporation Of The District Municipality Of
Municipal Location: Lake Of Bays

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Category: Large Municipal Residential System
Type Of Inspection: Detailed
Inspection Date: November 2, 2016
Ministry Office: Barrie District

Maximum Question Rating: 600

Inspection Risk Rating 0.00%

FINAL INSPECTION RATING: 100.00%