

BRACEBRIDGE

WATER

2014

ANNUAL AND SUMMARY REPORT



DRINKING WATER WORKS PERMIT: 143-206
MUNICIPAL DRINKING WATER LICENCE: 143-106

M.O.E. WATERWORKS# 220007276

INTRODUCTION

The Kirby's Beach Water Treatment Plant (W.T.P.) was constructed in 1995 and is owned and operated by the District Municipality of Muskoka. The Bracebridge WTP has a rated capacity of 10,000 m³/day. The water system currently serves a population of approximately 9,000 people.

The plant operates under licence 143-106 and permit 143-206, issued October, 2010 under the Municipal Drinking Water Licencing Program. The plant also operates under MOE Permit To Take Water #8183-7EMQZL (expires May 16, 2018), which allows a maximum of 10,000 cubic meters per day (m³/day). The raw water intake structure is located in Lake Muskoka, two meters above the lakebed at a depth of 18 meters and about 500 meters from shore.

The treatment system features pre-treatment consisting of chemically assisted coagulation-flocculation, sedimentation and filtration using dual media filters with a combination of sand and anthracite coal. Disinfection in a post treatment chlorine contact chamber is followed by fluoridation and final pH adjustment before the treated water is pumped to our customers.

The water distribution system was also upgraded and expanded in 1995. A new 2,634 cubic metre above ground reservoir was constructed opposite the Hamblin subdivision. Extensive improvements were made to the trunk watermain network including a new main from the water treatment plant to the existing underground reservoir on Ecclestone Drive. This reservoir has a storage capacity of 4,086 cubic metres.

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 Licences / Certificates of Approval

The Municipal Drinking Water Licencing Program has replaced the Certificate of Approval program for municipal residential drinking water systems. The Ontario Government has implemented the Municipal Drinking Water Licencing 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 licence 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 licences were issued.

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 Licences 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 Rates

In 2014, the total monthly average flow for the year was 3,773 m³/day. The maximum day flow for the year was 5,389 m³/day, however, the 3 year maximum day average is 5708 m³/day which represents 57% 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 #8183-7EMQZL) permits 10,000 cubic metres/day to be withdrawn from the source water; therefore there were no exceedances of this permit.

Summary of Analytical Results

A total of 902 microbiological regulatory tests were performed in 2014 and all had acceptable results..

There were 352 free chlorine residual tests performed in the distribution system. 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 Kirby's Beach Road Water Treatment Plant:

Sodium Hypochlorite: Disinfectant

Aluminum Sulphate (alum): Primary coagulant
Hydrated Lime: Alkalinity and pH adjustment
Carbon Dioxide: pH adjustment
Sodium Hydroxide: Final pH adjustment
Hydrofluorosilicic Acid: Fluoride to prevent dental decay.
Powder Activated Carbon: Taste and Odour Control

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

Documentation of System Repairs and Upgrades

There were no major upgrades started at Kirby's Beach WTP in 2014.



OPTIONAL ANNUAL REPORT TEMPLATE

Drinking-Water System Number:	220007276
Drinking-Water System Name:	Kirby's Beach 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, 2014

<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 [X] No []</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 (705) 645-6764 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: 5px; width: fit-content;">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 []



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 community of Bracebridge was constructed in 1995. The system features pre-treatment consisting of chemically assisted coagulation-flocculation, sedimentation and filtration using dual media filters with a combination of sand and anthracite coal. Disinfection in a post treatment chlorine contact chamber is followed by fluoridation and final pH adjustment before the treated water is pumped to our customers. The water system currently serves a population of approximately 9000. The rated water production capacity of the plant is 10,000 cubic meters per day. Our raw water source is Lake Muskoka where the intake is located two meters above the lakebed at a depth of 18 meters and about 500 meters from shore.

List all water treatment chemicals used over this reporting period

Carbon Dioxide, Aluminum Sulphate, Powdered Activated Carbon, Hydrated Lime, Sodium Hypochlorite, Hydrofluorosilicic Acid, and Sodium Hydroxide.

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

Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period.

	Number of Samples	Range of E.Coli Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Raw	52	0-11	0-237	0	
Treated	52	0-0	0-0	52	0-1
Distribution	263	0-0	0-0	116	0-22

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 Average	<i>NOTE: For continuous monitors use 8760 as the number of samples.</i>
Turbidity	8760	0.05 - 0.16 NTU	0.12 NTU	
Chlorine	8760	1.43 - 1.92 mg/L	1.64 mg/L	
Fluoride (If the DWS provides fluoridation)	8760	0.50 - 0.76 mg/L	0.61 mg/L	

Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument.

Date of legal instrument issued	Parameter	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 05/14	0.04	ug/L	No
Arsenic	May 05/14	0.2	ug/L	No
Barium	May 05/14	12.7	ug/L	No
Boron	May 05/14	5.1	ug/L	No
Cadmium	May 05/14	0.003<MDL	ug/L	No
Chromium	May 05/14	0.4	ug/L	No
*Lead	May 05/14	0.05	ug/L	No
Mercury	May 05/14	0.01<MDL	ug/L	No
Selenium	May 05/14	1<MDL	ug/L	No
Sodium	May 05/14	14.6	mg/L	No
Uranium	May 05/14	0.002	ug/L	No

Fluoride	May 05/14	0.68	mg/L	No
Nitrite	Feb 03/14	0.005<MDL	mg/L	No
Nitrate	Feb 03/14	0.185	mg/L	No
Nitrite	May 05/14	0.003<MDL	mg/L	No
Nitrate	May 05/14	0.208	mg/L	No
Nitrite	Aug 05/14	0.003<MDL	mg/L	No
Nitrate	Aug/05/14	0.236	mg/L	No
Nitrite	Nov 03/14	0.003<MDL	mg/L	No
Nitrate	Nov 03/14	0.164	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 large seasonal residential systems, large non-municipal non-residential systems, and small non-municipal non-residential systems

Summary of lead testing under Schedule 15.1 during this reporting period

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

Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Unit of Measure	Number of Exceedances
Plumbing				
Distribution	0	0	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 05/14	0.02<MDL	ug/L	No
Aldicarb	May 05/14	0.01<MDL	ug/L	No
Aldrin + Dieldrin	May 05/14	0.01<MDL	ug/L	No
Atrazine + N-dealkylated metabolites	May 05/14	0.01<MDL	ug/L	No
Azinphos-methyl	May 05/14	0.02<MDL	ug/L	No
Bendiocarb	May 05/14	0.01<MDL	ug/L	No
Benzene	May 05/14	0.32<MDL	ug/L	No
Benzo(a)pyrene	May 05/14	0.004<MDL	ug/L	No
Bromoxynil	May 05/14	0.33<MDL	ug/L	No
Carbaryl	May 05/14	0.01<MDL	ug/L	No
Carbofuran	May 05/14	0.01<MDL	ug/L	No
Carbon Tetrachloride	May 05/14	0.16<MDL	ug/L	No
Chlordane (Total)	May 05/14	0.01<MDL	ug/L	No
Chlorpyrifos	May 05/14	0.02<MDL	ug/L	No
Cyanazine	May 05/14	0.03<MDL	ug/L	No
Diazinon	May 05/14	0.02<MDL	ug/L	No
Dicamba	May 05/14	0.20<MDL	ug/L	No
1,2-Dichlorobenzene	May 05/14	0.41<MDL	ug/L	No
1,4-Dichlorobenzene	May 05/14	0.36<MDL	ug/L	No
Dichlorodiphenyltrichloroethane (DDT) + metabolites	May 05/14	0.01<MDL	ug/L	No
1,2-Dichloroethane	May 05/14	0.35<MDL	ug/L	No
1,1-Dichloroethylene (vinylidene chloride)	May 05/14	0.33<MDL	ug/L	No



Dichloromethane	May 05/14	0.35<MDL	ug/L	No
2-4 Dichlorophenol	May 05/14	0.15<MDL	ug/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	May 05/14	0.19<MDL	ug/L	No
Diclofop-methyl	May 05/14	0.40<MDL	ug/L	No
Dimethoate	May 05/14	0.03<MDL	ug/L	No
Dinoseb	May 05/14	0.36<MDL	ug/L	No
Diquat	May 05/14	1<MDL	ug/L	No
Diuron	May 05/14	0.03<MDL	ug/L	No
Glyphosate	May 05/14	1<MDL	ug/L	No
Heptachlor + Heptachlor Epoxide	May 05/14	0.01<MDL	ug/L	No
Lindane (Total)	May 05/14	0.01<MDL	ug/L	No
Malathion	May 05/14	0.02<MDL	ug/L	No
Methoxychlor	May 05/14	0.01<MDL	ug/L	No
Metolachlor	May 05/14	0.01<MDL	ug/L	No
Metribuzin	May 05/14	0.02<MDL	ug/L	No
Monochlorobenzene	May 05/14	0.30<MDL	ug/L	No
Paraquat	May 05/14	1<MDL	ug/L	No
Parathion	May 05/14	0.02<MDL	ug/L	No
Pentachlorophenol	May 05/14	0.15<MDL	ug/L	No
Phorate	May 05/14	0.01<MDL	ug/L	No
Picloram	May 05/14	1<MDL	ug/L	No
Polychlorinated Biphenyls(PCB)	May 05/14	0.04<MDL	ug/L	No
Prometryne	May 05/14	0.03<MDL	ug/L	No
Simazine	May 05/14	0.01<MDL	ug/L	No
THM (NOTE: annual average from Distribution System)	Samples Taken: Feb 3/14 May 5/14 Aug 5/14 Nov 03/14	64	ug/L	No
Temephos	May 05/14	0.01<MDL	ug/L	No
Terbufos	May 05/14	0.01<MDL	ug/L	No
Tetrachloroethylene	May 05/14	0.35<MDL	ug/L	No
2,3,4,6-Tetrachlorophenol	May 05/14	0.14<MDL	ug/L	No
Triallate	May 05/14	0.01<MDL	ug/L	No
Trichloroethylene	May 05/14	0.44<MDL	ug/L	No
2,4,6-Trichlorophenol	May 05/14	0.25<MDL	ug/L	No
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	May 05/14	0.22<MDL	ug/L	No
Trifluralin	May 05/14	0.02<MDL	ug/L	No
Vinyl Chloride	May 05/14	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

The District of Muskoka - Kirby's Beach WTP - Bracebridge

1.0 Water Flow Summary - 2014

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	117,470	3,789	4,084	3,288	
February	103,528	3,697	4,080	3,422	
March	116,470	3,757	4,232	3,496	
April	107,961	3,599	4,087	3,421	
May	119,246	3,847	4,515	3,450	
June	133,739	4,458	5,024	3,703	
July	127,872	4,125	4,570	3,604	
August	124,456	4,015	4,454	3,331	
September	110,381	3,679	4,409	3,167	
October	109,439	3,530	4,282	3,220	
November	101,363	3,379	3,592	3,154	
December	105,228	3,394	3,673	3,149	

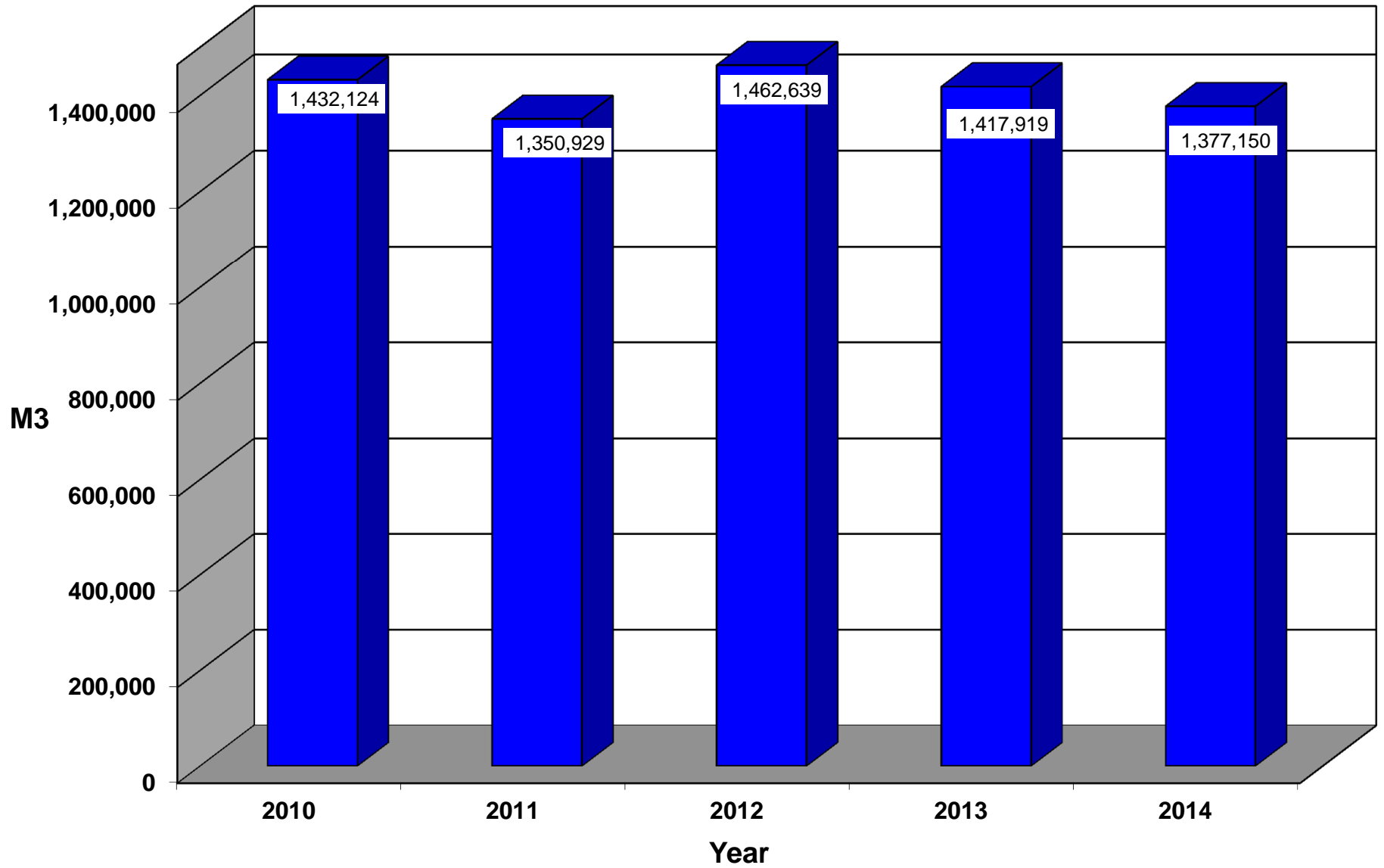
Total 1,377,150

Average Day 3,773

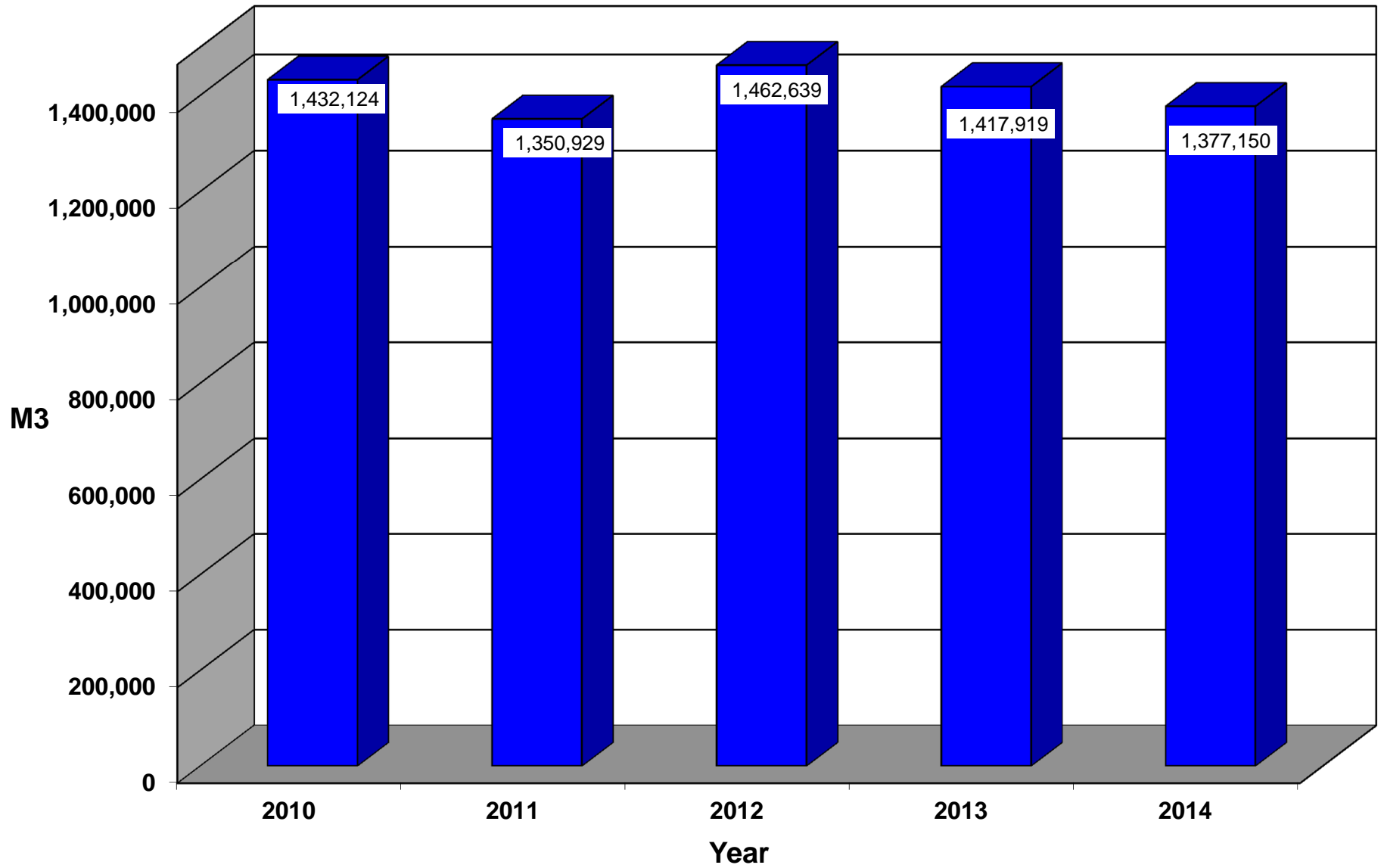
Maximum Day 5,024

Minimum Day 3,149

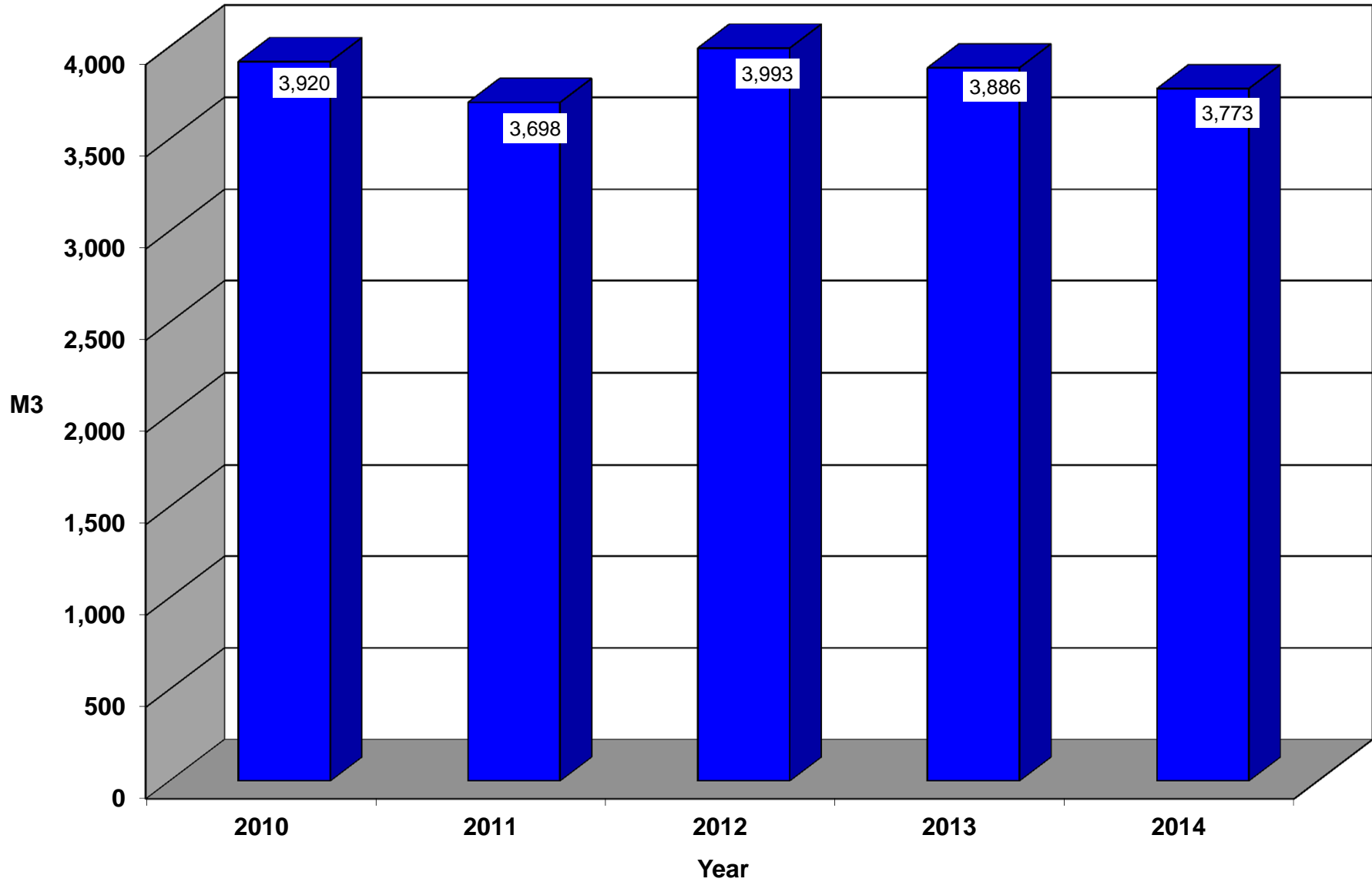
**District Municipality of Muskoka
Bracebridge - Kirby's Beach Water Treatment Plant
Total Water Production 2010-2014**



**District Municipality of Muskoka
Bracebridge - Kirby's Beach Water Treatment Plant
Total Water Production 2010-2014**



District Municipality of Muskoka
Bracebridge - Kirby's Beach Water Treatment Plant
Average Day Flow 2010-2014



The District of Muskoka - Kirby's Beach WTP - Bracebridge
Summary of Microbiological Raw Analysis - 2014
Number of Samples Taken

Month	Total Coliform Total for 2014	E-coli Total for 2014	HPC Total for 2014	Adverse Samples Total for 2014
January	4	4	0	0
February	4	4	0	0
March	5	5	0	0
April	4	4	0	0
May	4	4	0	0
June	4	4	0	0
July	5	5	0	0
August	4	4	0	0
September	5	5	0	0
October	4	4	0	0
November	4	4	0	0
December	5	5	0	0

The District of Muskoka - Kirby's Beach WTP - Bracebridge
Summary of Microbiological Treated Water Analysis - 2014
Number of Samples Taken

Month	Total Coliform Total for 2014	E-coli Total for 2014	HPC Total for 2014	Adverse Samples Total for 2014
January	4	4	4	0
February	4	4	4	0
March	5	5	5	0
April	4	4	4	0
May	4	4	4	0
June	4	4	4	0
July	5	5	5	0
August	4	4	4	0
September	5	5	5	0
October	4	4	4	0
November	4	4	4	0
December	5	5	5	0

The District of Muskoka - Kirby's Beach WTP - Bracebridge
Summary of Microbiological Distribution Analysis - 2014
Number of Samples Taken

Month	Total Coliform Total for 2014	E-coli Total for 2014	HPC Total for 2014	Adverse Samples Total for 2014
January	22	22	10	0
February	23	23	11	0
March	22	22	9	0
April	22	22	10	0
May	20	20	10	0
June	21	21	9	0
July	23	23	10	0
August	22	22	10	0
September	22	22	9	0
October	22	22	10	0
November	22	22	10	0
December	22	22	8	0

2014 SCHEDULED SAMPLE LOCATIONS:

<u>Sample #</u>	<u>Location</u>	<u>Municipal Address</u>
BBW 1	WATER TREATMENT PLANT-RAW	1601 Beaumont Drive
BBW 2	WATER TREATMENT PLANT-TREATED	1601 Beaumont Drive
BBW 3	ECCLESTONE BOOSTER STATION	336 Ecclestone Drive
BBW 4	HAMBLIN RESERVOIR	926 Manitoba Street
BBW 5	WTP - DRINKING TAP (Summer)	1601 Beaumont Drive
BBW 6	TAYLOR RD.-DRINKING WATER TAP	196 Taylor Road
BBW 7	KELVIN GROVE PARK TAP (Summer)	101 Ecclestone Drive
BBW 8	PINE STREET PUMP STATION	104 Pine Street
BBW 9	CEDAR LANE LAB	1270 Cedar Lane
BBW 10	S.M.M. HOSPITAL	75 Ann Street
BBW 11	CURLING RINK	10 Golf Course Road
BBW 12	MC DONALDS	20 Hwy 118 West
BBW 13	BRACEBRIDGE VILLA	690 District Road 118 West
BBW 15	ROYAL MUSKOKA	594 Ecclestone Drive
BBW 16	MORELAND COURT TAP	End of Moreland Court
BBW 17	RIVER RD. SPS	30 River Road
BBW 18	DILL ST. SPS	257 Dill Street
BBW 19	PUROLATOR COURIER	5 Gray Road
BBW 20	HYDRANT # 328 TAP	1063 Taylor Road
BBW 21	FAIRGROUNDS	325 Fraserburg Road
BBW 22	SANTA'S VILLAGE (June-Sept.)	1624 Golden Beach Road
BBW 30	APPLE TREE PARK FOUNTAIN	Manitoba St. @ Entrance Dr.
BBW 31	PUBLIC FOUNTAIN (John DeLang's)	Manitoba St. @ Dominion St.
BBW 32	MEMORIAL PARK FOUNTAIN	110 Manitoba Street
BBW 35	UNITED CHURCH CEMETARY TAP	46 Santa's Village Road
BBW 36	ANNIE WILLIAMS PARK FOUNTAIN	50 Santa's Village Road
BBW 37	KERR PARK CHALET	130 Beaumont Drive
BBW 38	CATHOLIC CEMETARY	660 Manitoba Street

The District of Muskoka - Kirby's Beach WTP - Bracebridge

2.0 Raw Water Monthly Analysis Summary - 2014

Month	Alkalinity	Hardness	pH	Turbidity	True Colour	Temperature	TDS	Langliers Saturation Index
<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>	
January	8.3	11.5	6.63	0.46	15	2.4	42.35	-3.4
February	6.6	11.0	6.77	0.29	16	2.5	28.5	-3.3
March	7.9	9.0	6.66	0.25	16	2.6	29.6	-3.5
April	7.2	10.0	6.84	0.35	16	3.4	28.9	-3.3
May	6.4	9.0	6.62	0.55	20	6.3	40.3	-3.5
June	7.0	9.0	6.62	0.49	17	8.3	28.8	-3.4
July	6.8	7.6	6.48	0.43	16	9.1	28.5	-3.7
August	6.8	8.0	6.50	0.36	16	10.2	28.8	-3.6
September	6.4	8.0	6.56	0.41	15	11.6	27.6	-3.6
October	7.2	8.0	6.71	0.46	15	12.6	27.9	-3.3
November	6.4	9.0	6.70	0.34	17	7.6	27.0	-3.4
December	6.8	8.0	6.82	0.45	16	4.1	27.0	-3.4
Average	7.0	9.0	6.66	0.40	16	6.7	30.4	-3.4

The District of Muskoka - Kirby's Beach WTP - Bracebridge

4.0 Treated Water Monthly Analysis Summary - 2014

Month	Alkalinity	Hardness	pH	Turbidity			True Colour	Iron	Manganese	Chlorine			TDS	Langliers Saturation Index
				Average	High	Low				Free	High	Low		
<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>	
January	42	41	7.8	0.05	0.06	0.04	0	~~	~~	1.69	1.72	1.67	82.7	-1.0
February	40	39	7.8	0.05	0.06	0.03	0	~~	~~	1.66	1.68	1.54	80.3	-1.1
March	40	37	8.0	0.04	0.07	0.03	0	~~	~~	1.54	1.73	1.46	80.2	-0.9
April	42	40	8.2	0.04	0.08	0.03	0	~~	~~	1.63	1.67	1.50	79.7	-0.6
May	38	36	8.1	0.07	0.08	0.04	0	~~	~~	1.57	1.67	1.47	79.6	-0.7
June	39	39	8.0	0.08	0.09	0.05	0	~~	~~	1.57	1.69	1.40	79.1	-0.8
July	40	38	8.2	0.08	0.09	0.07	0	~~	~~	1.60	1.64	1.55	80.5	-0.5
August	39	40	8.0	0.07	0.08	0.06	0	~~	~~	1.68	1.80	1.56	75.9	-0.7
September	40	40	8.1	0.05	0.10	0.03	0	~~	~~	1.66	1.95	1.33	76.7	-0.5
October	40	38	8.1	0.07	0.09	0.06	0	~~	~~	1.65	1.78	1.50	78.1	-0.6
November	44	39	7.7	0.06	0.06	0.05	0	~~	~~	1.62	1.68	1.57	80.0	-0.9
December	42	39	7.7	0.05	0.06	0.05	0	~~	~~	1.62	1.67	1.57	79.9	-1.1
Average	40	39	8.0	0.06	0.08	0.05	0.0	N/A	N/A	1.62	1.72	1.51	79.4	-0.8

District of Muskoka - Kirby's Beach WTP - Bracebridge

6.0 Distribution Water Monthly Analysis Summary - 2014 BBW20 Hydrant Tap 328 at 1063 Taylor Rd (Location of Greatest Retention Time)

Month	Alkalinity	Hardness	pH	Turbidity	Colour	Free Chlorine	TDS	Langliers Saturation Index
<i>Parameter</i>	<i>mg/l</i>	<i>mg/l</i>		<i>ntu</i>	<i>TCU</i>	<i>mg/l</i>	<i>uS/cm</i>	
January	42	39	7.8	~~	0	1.09	81.9	-0.97
February	42	40	7.7	~~	0	1.11	80.6	-0.89
March	41	37	7.9	~~	0	0.93	80.1	-0.90
April	41	41	7.9	~~	0	0.95	79.6	-0.71
May	39	38	7.9	~~	0	0.89	80.1	-0.91
June	38	39	7.9	~~	0	0.84	78.7	-0.81
July	39	40	8.0	~~	0	0.78	80.3	-0.64
August	36	38	7.9	~~	0	0.78	76.4	-0.75
September	39	39	7.9	~~	0	0.73	76.8	-0.74
October	38	39	8.0	~~	0	0.70	76.5	-0.62
November	43	40	7.8	~~	0	0.84	78.2	-0.85
December	43	39	7.7	~~	0	0.98	81.0	-0.99
Average	40	39	7.9	0	0	0.88	79.2	-0.81

The District of Muskoka - Kirby's Beach WTP - Bracebridge

7.0 Distribution Water Quarterly Sampling Summary - 2014

Trihalomethanes		<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>						
<i>Hydrant # 325 Taylor Road</i>	<i>Units</i>	<i>MAC/IMAC</i>	<i>AO/OG</i>	<i>ODWS RDL</i>	<i>LRL MDL</i>	<i>Feb 03/14</i>	<i>May 05/14</i>	<i>Aug 05/14</i>	<i>Nov 03/14</i>	<i>Average</i>	<i>Max</i>

Trihalomethanes Total	µg/L	100	-	10	0.48	46	76	64	68	64	76
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Lead		<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>						
<i>Hydrant # 325 Taylor Road</i>	<i>Units</i>	<i>MAC/IMAC</i>	<i>AO/OG</i>	<i>ODWS RDL</i>	<i>LRL MDL</i>		<i>May 05/14</i>			<i>Average</i>	<i>Max</i>

Lead	µg/L	10	-	2	0.02		0.05			0.05	0.05
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The District of Muskoka - Kirby's Beach WTP - Bracebridge

9.0 Chemical Usage Summary - 2014

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	32	3,708	28	3,241	30.3	3,491
February	0	0	31	3,087	28	2,800	30.4	3,063
March	0	0	30	3,443	27	3,064	29.8	3,387
April	0	0	30	3,146	27	2,839	28.9	3,038
May	0	0	28	3,303	27	3,146	30.4	3,533
June	0	0	27	3,604	27	3,542	29.0	3,799
July	0	0	27	3,341	27	3,182	27.7	3,490
August	0	0	25	3,076	27	3,271	26.7	3,270
September	0	0	27	2,933	27	2,903	25.9	2,814
October	0	0	29	3,140	27	2,881	27.0	2,912
November	0	0	36	3,567	27	2,685	25.4	2,518
December	0	0	33	3,454	27	2,801	28.6	2,958
Average Monthly	0	0	30	3,317	27	3,030	28	3,189
Total Yearly		0		39,802		36,357		38,274

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	13.9	1,586	0.56	61	2.8	318	0	0
February	12.2	1,232	0.55	46	2.8	287	0	0
March	12.3	1,395	0.00	0	3.0	337	0	0
April	11.4	1,203	0.56	58	3.0	311	0	0
May	11.6	1,346	0.58	72	3.1	360	0	0
June	10.9	1,426	0.53	68	3.1	412	0	0
July	11.7	1,461	0.66	94	3.2	408	0	0
August	10.5	1,280	0.54	71	2.7	329	0	0
September	11.2	1,209	0.51	61	3.0	326	0	0
October	10.6	1,140	0.55	62	3.1	328	0	0
November	15.3	1,516	0.53	55	2.9	284	0	0
December	13.1	1,353	0.58	61	3.0	313	0	0
Average Monthly	12	1,346	0.51	59	3.0	334	0	0
Total Yearly		16,148		709		4,013		0

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

2014 BRACEBRIDGE WATER DISTRIBUTION SUMMARY

New Services

During 2014 a total of 12 water connection permits were issued for customers to hook to existing services.

Broken Water Mains

In 2014 District staff was called upon to repair seven broken water mains at an average cost of \$5,100.00 each.

Service Leaks

During 2014 staff repaired sixteen customer service leaks at an average cost of \$4,076.00.00 each including repair and the restoration of each property.

New Water mains

Approximately 50 m of existing water main was replaced in 2014. Approximately 50 Meters of new water main were added to our system with the extension of "Little Ryan's Way".

Fire Hydrants

One additional hydrant was added to our system.

Meter Installations

During our ongoing "Aged Meter Change out Program" a total of 215 meters were change out in 2014 by District staff.

Air Relief Valves

All of our Air Relief Vales were inspected with 8 of them replaced with new ones.

Locates

631 locate requests were completed in 2014.

Valves

No new valves were introduced to the water system.