GRAVENHURST

WATER

2014

ANNUAL AND SUMMARY REPORT

DRINKING WATER WORKS PERMIT: **143-209**
MUNICIPAL DRINKING WATER LICENCE: **143-109**

M.O.E. WATERWORKS#: **220002100**

INTRODUCTION

The Beach Road Water Treatment Plant (WTP) is owned and operated by the District Municipality of Muskoka. The WTP serving the community of Gravenhurst was constructed in 1983, replacing an old system that consisted of a well house at Nelson Street and a pump house supplying chlorinated water to the town from Gull Lake. The Gravenhurst WTP has a rated capacity of 10,000 cubic metres per day (m3/day) and the water system currently serves a population of approximately 7,400 people

The plant operates under licence 143-09 and permit 143-09, issued in October 2010 under the Municipal Drinking Water Licencing Program. The plant also presently operates under MOE permit to take water #2320-8G2MLQ (expires February 28, 2021), which permits the operation of up to 10,000 m3/d. The Raw Water intake structure is located near Brydon's Bay on Lake Muskoka approximately 11.5 meters deep and 1,000 meters from shore.

The plant treatment process is a direct filtration plant, with supplementary pH adjustment. The facility includes an intake crib, intake pipe, fixed screen, and a low lift pumping station. The treatment plant consists of flash mixing, four variable speed flocculators, and four dual media filters. Also located at the treatment plant are 2 backwash holding tanks, two contact chambers, two clear wells, 4 high lift pumps, 2 backwash pumps, chemical storage, preparation, and feed equipment.

The treatment plant system features chemical treatment consisting of hydrated lime / carbon dioxide (corrosion control), polyaluminum chloride (coagulation), polymer (filter aid), sodium hydroxide (pH control) and. disinfection in a chlorine contact chamber followed by final pH adjustment. The addition of hydrofluorosilicic acid (fluoridation) to prevent tooth decay completes the treatment process.

The distribution system includes two elevated storage tanks supplying the urban area of Gravenhurst and one underground reservoir supplying Fenbrook Institutions owned by Correctional Services Canada.

Legislation Requirements

Safe Drinking Water Act

In the Part Two Report of 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.

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 Muskoka Beach Road water treatment plant has a rated capacity of 10,000 m3/day. In 2014, the total monthly average flow for the year was 2,795 m3/day. The maximum day flow for the year was 3,857 m3/day, however, the 3-year average for maximum day flow is 4,331 m3/day, which represents 43% of the plant design capacity.

Monthly flows are shown in the attached table.

The Permit to Take Water (PTTW #2320-8G2MLQ) permits 10,000 m3/day; therefore there were no exceedances of this permit.

Summary of Analytical Results

A total of 1,062 microbiological regulatory tests were performed in 2014 and compliance with Provincial standards was achieved throughout. There were 841 free chlorine residual tests performed in the distribution system, and all results were within guidelines with one exception. A distribution chlorine residual test conducted June 24 indicated a secondary free chlorine residual reading of 0.02 mg/l. This was reported as an adverse result (0.05 mg/L is the minimum) promptly to the Health Unit and MOECC Spills Response (Adverse Water Quality Incident # 118229), the area of the distribution system was immediately flushed and residual recovered to acceptable levels within 90 minutes. Subsequently, the adverse incident was considered resolved. Staff continues to routinely sample all areas of the system to ensure adequate free chlorine residuals are available throughout 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 Muskoka Beach Road Water Treatment Plant:

Sodium Hypochlorite: Disinfectant
Polyaluminum Chloride (Stern PAC): Primary Coagulant
Polymer: Filter Aid
Sodium Hydroxide: Final pH adjustment
Hydrated Lime: Alkalinity and pH adjustment
Carbon Dioxide: pH adjustment
Sodium Permanganate: Taste and Odour Control, manganese precipitant
Hydrofluorosilicic Acid: Fluoride to prevent tooth decay

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

Documentation of System Repairs and Upgrades

No significant capital expenses were incurred to conduct system repairs or upgrades in 2014.

Drinking-Water Systems Regulation O. Reg. 170/03

Part III Form 2
Section 11. ANNUAL REPORT.

Drinking-Water System Number:	**220002100**
Drinking-Water System Name:	Muskoka 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

Complete if your Category is Large Municipal Residential or Small Municipal Residential

Does your Drinking-Water System serve more than 10,000 people? Yes [ ] No [X]

Is your annual report available to the public at no charge on a web site on the Internet? Yes [X] No [ ]

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

District municipality of Muskoka
70 Pine Street
Bracebridge, Ontario
P1l 1N3
(705) 645-6764
www.muskoka.on.ca

Complete for all other Categories.

Number of Designated Facilities served:

N.A.

Did you provide a copy of your annual report to all Designated Facilities you serve?
Yes [ ] No [ ]

Number of Interested Authorities you report to:

Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility?
Yes [ ] No [ ]

List Drinking-Water Systems, if any, which receive all of their drinking water from your system:

Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?
Yes [ ] No [ ]

Indicate how you notified system users that your annual report is available, and is free of charge.
[X] Public access/notice via the web
[X] Public access/notice via Government Office
[X] Public access/notice via a newspaper

[X] 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 in Gravenhurst was originally constructed in 1983. Significant improvements to process monitoring, control, and chemical feed systems were completed in 2004. The treatment process consists of chemically assisted coagulation-flocculation and direct filtration using dual media filters with a combination of sand and anthracite coal. Disinfection in a chlorine contact chamber followed by final pH adjustment and fluoridation completes the treatment process. The water system currently serves a population of approximately 7400 people. The rated water production of the plant is 10,000 cubic meters per day. Our raw water source is Lake Muskoka. Our intake is located approximately 11.5 meters deep, about 1000 meters from shore.

List all water treatment chemicals used over this reporting period

Sodium Hypochlorite, Sodium hydroxide, Polyaluminum Chloride, Carbon Dioxide, Hydrated Lime, Sodium Permanganate, Fluoride, Cationic Polymer

Were any significant expenses incurred to?

[ ] Install required equipment
[ ] Repair required equipment
[ ] Replace required equipment

Describe

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
28/01/14	NDMA	0.018	µg/L	Resample	28/01/14
24/06/14	Free Cl_2 residual	0.02	mg/L	Flush / Resample	24/06/14

Microbiological testing done under section 8-2 during this reporting period

	Number of Samples	Range of E.Coli Or Fecal Results (#-#)	Range of Total Coliform Results (#-#)	Number of HPC Samples Or Background Colony Counts	Range of HPC Results (#-#) Or Background Colony Counts
Raw	52	0 - 8	0 – 127	0	N/A
Treated	52	0 - 0	0 - 0	52	0 – 5
Distribution	310	0 - 0	0 - 0	182	0 – 360

Operational testing done under Schedule 7, 8 or 9 during the period covered by this Annual Report.

	Number of Grab Samples	Range of Results (min # - max #)	Geometric Average
Turbidity	8760	0.0 – 0.08 NTU	0.04 NTU
Chlorine	8760	1.52 – 2.84	2.11
Chlorine Residual Distribution System	8760	0.02 – 2.20	1.18
Fluoride (If the DWS provides fluoridation)	8760	0.44 – 0.76	0.61

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

***NOTE**: Record the unit of measure if it is **not** milligrams per litre.*

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

Date of order or C of A	Parameter	Date Sampled	Result	Unit of Measure
Oct 10/10 Municipal Drinking Water Licence 143-109 Issue 1	E.Coli (backwash supernatant)	Jan - Dec	0 - 0	CFU/100 ml
Oct 14/10 Municipal Drinking Water Licence 143-109 Issue 1	Suspended Solids (backwash supernatant)	Jan - Dec	2.0 – 18.0	mg/L
Oct 14/10 Municipal Drinking Water Licence 143-109 Issue 1	Turbidity (backwash supernatant)	Jan - Dec	0.10 – 2.84	NTU
Oct 14/10 Municipal Drinking Water Licence 143-109 Issue 1	pH (backwash supernatant)	Jan - Dec	6.90 – 7.71	
Oct 14/10 Municipal Drinking Water Licence 143-109 Issue 1	Aluminum (backwash supernatant)	Jan - Dec	0.08 – 1.99	mg/L
Oct 14/10 Municipal Drinking Water Licence 143-109 Issue 1	Manganese (backwash supernatant)	Quarterly	0.0076 – 0.0227	mg/L
Oct 14/10 Municipal Drinking Water Licence 143-109 Issue 1	THM (backwash supernatant)	Quarterly	23 - 32	µg/L
Oct 14/10 Municipal Drinking Water Licence 143-109 Issue 1	Free Chlorine (backwash supernatant)	Jan - Dec	0.00 – 0.04	mg/L

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	May 05/14	0.02<MDL	µg/L	No
Arsenic	May 05/14	0.2	µg/L	No
Barium	May 05/14	11.9	µg/L	No
Boron	May 05/14	5.1	µg/L	No
Cadmium	May 05/14	0.003<MDL	µg/L	No
Chromium	May 05/14	0.31	µg/L	No
Lead*	May 05/14	0.02	µg/L	No
Mercury	May 05/14	0.01<MDL	µg/L	No
Selenium	May 05/14	1<MDL	µg/L	No
Sodium	May 05/14	16.2	mg/L	No
Uranium	May 05/14	0.002<MDL	µg/L	No
Fluoride	May 05/14	0.59	mg/L	No
Nitrite	Feb 10/14	0.003<MDL	mg/L	No
Nitrate	Feb 10/14	0.227	mg/L	No
Nitrite	May 05/14	0.003<MDL	mg/L	No
Nitrate	May 05/14	0.215	mg/L	No
Nitrite	Aug 11/14	0.003<MDL	mg/L	No
Nitrate	Aug 11/14	0.236	mg/L	No
Nitrite	Nov 12/14	0.003<MDL	mg/L	No
Nitrate	Nov 12/14	0.176	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 small non-municipal non-residential systems)

Location Type	Number of Samples	Range of Lead Results (min#) -(max#)	Unit of Measure	Number of Exceedances
Plumbing	0	N.A.	N.A.	N.A.
Distribution	1	0.02	µg/L	0

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	May 05/14	0.02<MDL	µg/L	No
Aldicarb	May 05/14	0.01<MDL	µg/L	No
Aldrin + Dieldrin	May 05/14	0.01<MDL	µg/L	No
Atrazine + N-dealkylated metobolites	May 05/14	0.01<MDL	µg/L	No
Azinphos-methyl	May 05/14	0.02<MDL	µg/L	No

Bendiocarb	May 05/14	0.01<MDL	µg/L	No
Benzene	May 05/14	0.32<MDL	µg/L	No
Benzo(a)pyrene	May 05/14	0.004<MDL	µg/L	No
Bromoxynil	May 05/14	0.33<MDL	µg/L	No
Carbaryl	May 05/14	0.01<MDL	µg/L	No
Carbofuran	May 05/14	0.01<MDL	µg/L	No
Carbon Tetrachloride	May 05/14	0.16<MDL	µg/L	No
Chlordane (Total)	May 05/14	0.01<MDL	µg/L	No
Chlorpyrifos	May 05/14	0.02<MDL	µg/L	No
Cyanazine	May 05/14	0.03<MDL	µg/L	No
Diazinon	May 05/14	0.02<MDL	µg/L	No
Dicamba	May 05/14	0.20<MDL	µg/L	No
1,2-Dichlorobenzene	May 05/14	0.41<MDL	µg/L	No
1,4-Dichlorobenzene	May 05/14	0.36<MDL	µg/L	No
Dichlorodiphenyltrichloroethane (DDT) + metabolites	May 05/14	0.01<MDL	µg/L	No
1,2-Dichloroethane	May 05/14	0.35<MDL	µg/L	No
1,1-Dichloroethylene (vinylidene chloride)	May 05/14	0.33<MDL	µg/L	No
Dichloromethane	May 05/14	0.35<MDL	µg/L	No
2-4 Dichlorophenol	May 05/14	0.15<MDL	µg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	May 05/14	0.19<MDL	µg/L	No
Diclofop-methyl	May 05/14	0.40<MDL	µg/L	No
Dimethoate	May 05/14	0.03<MDL	µg/L	No
Dinoseb	May 05/14	0.36<MDL	µg/L	No
Diquat	May 05/14	1<MDL	µg/L	No
Diuron	May 05/14	0.03<MDL	µg/L	No
Glyphosate	May 05/14	1<MDL	µg/L	No
Heptachlor + Heptachlor Epoxide	May 05/14	0.01<MDL	µg/L	No
Linadane (Total)	May 05/14	0.01<MDL	µg/L	No
Malathion	May 05/14	0.02<MDL	µg/L	No
Methoxychlor	May 05/14	0.01<MDL	µg/L	No
Metolachlor	May 05/14	0.01<MDL	µg/L	No
Metribuzin	May 05/14	0.02<MDL	µg/L	No
Monochlorobenzene	May 05/14	0.30<MDL	µg/L	No
Paraquat	May 05/14	1<MDL	µg/L	No
Parathion	May 05/14	0.02<MDL	µg/L	No
Pentachlorophenol	May 05/14	0.15<MDL	µg/L	No
Phorate	May 05/14	0.01<MDL	µg/L	No
Picloram	May 05/14	1<MDL	µg/L	No
Polychlorinated Biphenyls(PCB)	May 05/14	0.04<MDL	µg/L	No
Prometryne	May 05/14	0.03<MDL	µg/L	No
Simazine	May 05/14	0.01<MDL	µg/L	No
THM (NOTE: annual average from Distribution System – 4 samples)	Samples Taken: Feb 13/14 May 06/14 Aug. 11/14 Nov. 12/14	63	µg/L	No
Temephos	May 05/14	0.01<MDL	µg/L	No
Terbufos	May 05/14	0.01<MDL	µg/L	No
Tetrachloroethylene	May 05/14	0.35<MDL	µg/L	No

2,3,4,6-Tetrachlorophenol	May 05/14	0.14<MDL	µg/L	No
Triallate	May 05/14	0.01<MDL	µg/L	No
Trichloroethylene	May 05/14	0.44<MDL	µg/L	No
2,4,6-Trichlorophenol	May 05/14	0.25<MDL	µg/L	No
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	May 05/14	0.25<MDL	µg/L	No
Trifluralin	May 05/14	0.22<MDL	µg/L	No
Vinyl Chloride	May 05/14	0.02<MDL	µg/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 - Beach Road WTP - Gravenhurst

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	83,121	2,681	3,527	2,037	
February	79,343	2,834	3,185	2,351	
March	86,125	2,778	3,258	2,383	
April	79,319	2,644	3,042	2,327	
May	92,289	2,977	3,639	2,584	
June	92,163	3,072	3,751	1,924	
July	99,678	3,215	3,732	2,763	
August	101,014	3,259	3,857	2,358	
September	82,355	2,745	3,360	2,036	
October	79,675	2,570	3,292	2,150	
November	72,716	2,424	2,994	1,923	
December	73,415	2,368	2,771	1,997	

Total	1,021,213
Average Day	2,795
Maximum Day	3,857
Minimum Day	1,923

District of Muskoka - Beach Road WTP - Gravenhurst

2.0 Raw Water Monthly Analysis Summary - 2014

Month	Alkalinity	Hardness	pH	Turbidity	True Colour	Temperature	TDS	Langliers Saturation Index	Total Coliform	E-coli	Total Number of Samples
Parameter	*mg/l*	*mg/l*	*pH*	*ntu*	*tcu*	*Celcius*	*mg/l*		*CFU/100ml*	*CFU/100ml*	
January	8.8	14	6.73	0.44	18	3.1	51.8	-3.2	7	0	4
February	8.9	15	6.82	0.41	13	3.1	55.3	-3.1	3	0	4
March	9.1	16	6.81	0.39	15	3.0	57.3	-3.0	6	0	5
April	8.2	17	6.59	0.55	23	3.1	60.1	-3.3	9	0	4
May	8.0	15	6.73	0.52	16	6.4	52.8	-3.1	7	1	4
June	6.8	15	6.68	0.50	22	9.2	51.3	-4.6	4	0	4
July	8.7	15	6.72	0.50	18	9.6	41.2	-3.1	9	0	5
August	7.4	14	6.57	0.40	30	11.0	51.5	-3.3	74	0	4
September	7.4	14	6.52	0.39	19	13.0	52.1	-3.3	20	2	5
October	7.2	14	6.61	0.37	20	12.0	51.2	-3.2	11	1	4
November	7.6	14	6.78	0.44	16	8.2	50.2	-3.1	12	1	4
December	8.4	14	6.94	0.40	27	3.9	49.9	-3.0	15	1	5
Average	8.0	15	6.71	0.44	20	7.1	52.1	-3.3	15	1	4

District of Muskoka - Beach Road WTP - Gravenhurst

4.0 Treated Water Monthly Analysis Summary - 2014

Month	Alkalinity	Hardness	pH	Turbidity			TRUE Colour	Chlorine			TDS	Langliers Saturation Index	Total Coliforms	E-coli	Total Number of Samples	HPC	Total Number of Samples
				Average	High	Low		Free	High	Low							
Parameter	*mg/l*	*mg/l*	*pH*	*ntu*	*ntu*	*ntu*	*tcu*	*mg/l*	*mg/l*	*mg/l*	*mg/l*		*CFU/100ml*	*CFU/100ml*		*CFU/1ml*	
January	52.3	45	7.65	0.12	0.14	0.11	0	2.05	2.15	1.82	148.6	-1.0	0	0	4	0	4
February	53.4	45	7.56	0.12	0.13	0.11	0	1.88	1.90	1.80	156.4	-1.1	0	0	4	0	4
March	55.1	44	7.62	0.12	0.13	0.11	0	1.91	1.95	1.83	159.2	-1.0	0	0	5	0	5
April	55.1	46	7.57	0.14	0.15	0.12	0	1.83	1.90	1.65	166.3	-1.1	0	0	4	0	4
May	51.6	44	7.71	0.15	0.17	0.12	0	1.99	2.10	1.90	151.6	-0.9	0	0	4	0	4
June	51.2	45	7.50	0.17	0.20	0.13	0	1.90	2.05	1.65	152.7	-1.1	0	0	4	0	4
July	54.4	47	7.74	0.17	0.27	0.13	0	2.00	2.15	1.86	155.6	-0.8	0	0	5	0	5
August	58.2	49	7.51	0.14	0.15	0.13	0	1.99	2.04	1.85	167.1	-0.9	0	0	4	0	4
September	53.8	45	7.47	0.12	0.14	0.08	0	1.98	2.04	1.95	154.3	-1.0	0	0	5	0	5
October	52.0	43	7.50	0.11	0.13	0.07	0	1.90	1.96	1.85	150.7	-9.1	0	0	4	1	4
November	56.3	45	7.29	0.08	0.08	0.07	0	2.09	2.14	2.04	158.3	-1.3	0	0	4	0	4
December	53.0	44	7.44	0.08	0.10	0.08	0	2.07	2.20	2.00	153.5	-1.2	0	0	5	0	5
Average	53.9	45	7.55	0.13	0.15	0.11	0.0	1.96	2.05	1.85	156.2	-1.7	0.0	0.0	4.3	0.2	4.3

District of Muskoka - Beach Road WTP - Gravenhurst

6.0 Distribution Water Monthly Sampling Summary - 2014

Month	Alkalinity	Hardness	pH	Colour	Free Chlorine	Conductivity	Langliers Saturation Index	Total Coliforms	E-coli	HPC
Parameter	*mg/l*	*mg/l*		*TCU*	*mg/l*	*uS/cm*		*CFU/100ml*	*CFU/100ml*	*CFU/100ml*
January	50.2	44	7.48	0	0.89	153.2	-1.2	0	0	0
February	52.3	43	7.51	0	1.04	151.8	-1.2	0	0	0
March	55.1	44	7.51	0	1.18	159.7	-1.3	0	0	0
April	52.6	45	7.55	0	0.80	158.4	-1.1	0	0	0
May	50.6	45	7.70	0	1.16	152.2	-0.9	0	0	0
June	50.3	46	7.68	0	0.71	155.7	-0.9	0	0	0
July	55.0	46	7.63	0	0.91	163.6	-0.8	0	0	6
August	57.6	49	7.55	0	0.77	169.4	-0.9	0	0	0
September	54.0	46	7.52	0	0.69	156.7	-0.9	0	0	5
October	51.5	46	7.55	0	0.74	156.3	-0.9	0	0	0
November	54.7	45	7.35	0	0.66	159.8	-1.2	0	0	0
December	55.6	44	7.32	0	0.75	159.0	-1.2	0	0	0
Average	53.3	45	7.53	0.0	0.86	158.0	-1.0	0	0	1

District of Muskoka - Beach Road WTP - Gravenhurst

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	0.0	40.3	3,598.8	23.3	2,083.8	7.9	706
February	0.0	0.0	42.4	3,611.7	24.6	2,091.0	7.9	674
March	0.0	0.0	41.0	3,812.5	23.3	2,166.7	7.9	737
April	0.0	0.0	39.8	3,400.5	22.6	1,935.7	7.9	676
May	0.0	0.0	37.0	3,719.6	21.7	2,182.0	8.0	800
June	0.0	0.0	39.1	4,008.4	21.0	2,141.8	8.0	814
July	0.0	0.0	40.9	4,493.9	20.8	2,280.5	8.1	889
August	0.0	0.0	44.2	4,905.8	23.8	2,641.3	8.4	925
September	0.0	0.0	40.7	3,633.4	22.8	2,031.0	8.3	738
October	0.0	0.0	40.9	3,495.0	21.8	1,867.8	8.2	705
November	0.0	0.0	50.9	3,899.3	25.3	1,938.3	8.2	628
December	0.0	0.0	46.5	3,706.5	25.1	2,003.5	8.2	652
Average Monthly	0.0	0.0	42.0	3857.1	23	2113.6	8.1	745
Total Yearly		0		46,286		25,364		8,943

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	12.7	1,180	0.88	72.7	4.69	434.8	0.00	0.0
February	14.4	1,242	0.85	67.7	3.75	324.3	0.00	0.0
March	15.7	1,497	0.87	75.0	3.75	356.7	0.00	0.0
April	13.5	1,197	0.87	69.0	3.73	330.3	0.00	0.0
May	12.4	1,265	0.87	80.3	3.85	393.2	0.00	0.0
June	11.9	1,228	0.87	80.4	3.77	389.0	0.00	0.0
July	12.4	1,371	0.87	87.0	3.91	433.1	0.00	0.0
August	12.5	1,407	0.87	88.2	4.47	502.7	0.00	0.0
September	11.2	1,021	0.87	72.0	4.55	412.4	0.00	0.0
October	11.1	993	0.87	69.7	4.01	358.1	0.00	0.0
November	11.8	961	0.87	63.5	4.08	333.4	0.00	0.0
December	12.1	999	0.87	64.1	4.09	338.1	0.00	0.0
Average Monthly	12.6	1197	0.87	74	4.05	388	0	0
Total Yearly		14,362		890		4,606		0

Month	Potassium Permanganate		Polymer	
	Average Dosage mg/L	Total Kg	Average Dosage mg/L	Total Kg
January	0.0	0	8.7	225
February	0.0	0	9.2	214
March	0.0	0	9.0	234
April	0.0	0	8.6	215
May	0.0	0	9.9	256
June	0.0	0	10.6	266
July	0.0	0	11.3	291
August	0.0	0	11.4	294
September	0.0	0	8.9	224
October	0.0	0	8.1	210
November	0.0	0	7.2	180
December	0.0	0	7.2	186
Average Monthly	0.0	0	9.2	233
Total Yearly		0		2,793

District of Muskoka - Beach Road WTP - Gravenhurst

10.0 Adverse Water Quality Summary - 2014

	Sample		Lab ID #	Location	Parameter	Result ug/L	Mac / Imac ug/L	Comments
	Date	Time						
1	Jan 28/14	11:28	C209036-0002	Hi Lift Discharge	NDMA	0.018	0.009	DWSP Sample as analyzed by M.O.E. lab
R1	Jan 28/14	11:28	C209036-0003	Wapaska Public Tap	NDMA	0.015	0.009	
R2								
R3								

	Sample		Lab ID #	Location	Parameter	Result	Mac / Imac	Comments
	Date	Time						
2	Jan 29/14	14:50	CA15435 JAN14	GW 1 RAW	NDMA	0.0008	0.009	RESAMPLES as analyzed by SGS Lakefield
R1	Jan 29/14	14:50	CA15435 JAN14	GW2 FINAL	NDMA	0.0008	0.009	
R2	Jan 29/14	15:15	CA15435 JAN14	GW 5 Wapaska P.T.	NDMA	0.0008	0.009	
R3								

	Sample		Lab ID #	Location	Parameter	Result	Mac / Imac	Comments
	Date	Time						
3								
R1								
R2								
R3								

	Sample		Lab ID #	Location	Parameter	Result	Mac / Imac	Comments
	Date	Time						
4								
R1								
R2								
R3								

2014 GRAVENHURST WATER DISTRIBUTION SUMMARY

New Services:
One 19 mm. PE (160 psi) service was installed by the property owner's contractor at 369 Muskoka Beach Road.

One 19 mm.PE (160 psi) service was installed by the property owner's contractor at 371 Muskoka Beach Road.

One 50 mm. PE (160 psi) Fire line was installed by the property owner's contractor at 540 Muskoka Beach Road.

One 25mm PE (160 psi) service (Irrigation line) was installed by the property owner's contractor at 16 Hedgewood Lane.

Watermain Failures:
A 300 mm x 25 mm saddle failed on Jones Road and was repaired at a cost of approximately $4,400.00.

Service Leaks:
Two water services failed and were repaired at a total cost of approximately $7,300.00.

Frozen Services:
One water service located at 470 Bay Street froze within Municipal roadway.

Replacement Watermains:
176 metres of 150 mm PVC was installed on Walton Road replacing the existing 50 mm galvanized watermain.

New Water mains:
150 metres of 200 mm PVC watermain was installed on Pine Street (Looncall).

Watermain Rehabilitation:
No watermain rehabilitation was conducted in 2014.

Valve Replacement:
No valves were replaced in 2014.

Water Service Replacement:
One 19 mm PE (160 psi) service at 470 Bay Street was replaced at an approximate cost of $7,500.00. (This service had a history of freezing within the Municipal roadway).

Fire Hydrants:
One new fire hydrant was added to distribution system on Pine Street (Looncall) bringing the total number of municipally owned fire hydrants to 468, all of which were inspected, operated, and/or flushed at least once during 2014.

Meter Replacement/Installations:
One hundred forty seven (147) 18 mm, one (1) 19 mm and two (2) 25 mm water meters were replaced as part of the aged meter change-out programme in 2014.

Service Box Repairs:
Six curb boxes where repaired in 2014.

Air-vacuum release valves:
All sixteen (16) Air-Vacuum release valves, were removed, cleaned, and tested for the yearly maintenance inspection. Four (4) of the air relief valves had reached end of life cycle and were replaced with new 50 mm A.R.I. valves.

Locates:
Field staff addressed 395 locate requests in 2014.