



2014 Water Works Summary Report

**Large Municipal
Residential Systems**

Table of Contents

EXECUTIVE SUMMARY	I
SECTION 1-LEGISLATIVE AND REGULATORY REQUIREMENTS.....	1
1.1 O.REG.128/04 CERTIFICATION OF DRINKING-WATER SYSTEM OPERATORS.....	1
1.2 O.REG. 242/05 COMPLIANCE AND ENFORCEMENT	2
1.3 O.REG.172/03 DEFINITIONS OF “DEFICIENCY” AND “MUNICIPAL DRINKING-WATER SYSTEM”	2
1.4 O.REG.171/03 DEFINITIONS OF WORDS AND EXPRESSIONS USED IN THE ACT	2
1.5 O.REG.170/03 DRINKING-WATER SYSTEMS	2
1.6 O.REG.248/03 DRINKING-WATER TESTING SERVICES.....	3
1.7 O.REG.169/03 ONTARIO DRINKING-WATER QUALITY STANDARDS.....	3
 SECTION 2 – PLANT SPECIFIC REVIEW.....	 4
2.1 PLANT SPECIFIC REQUIREMENTS.....	4
SUDBURY DRINKING WATER SYSTEM - WANAPITEI	4
SUDBURY DRINKING WATER SYSTEM - DAVID STREET	7
SUDBURY DRINKING WATER SYSTEM - GARSON.....	10
DOWLING DRINKING WATER SYSTEM.....	13
VALLEY DRINKING WATER SYSTEM.....	16
FALCONBRIDGE DRINKING WATER SYSTEM.....	23
ONAPING/LEVACK DRINKING WATER SYSTEM.....	26
VERMILION DISTRIBUTION SYSTEM.....	29

Executive Summary

The production and delivery of potable water in Ontario is regulated by the Ministry of the Environment and Climate Change (MOECC) under the **Safe Drinking Water Act, 2002, S.O. 2002, c. 32** (formerly the Ontario Water Resources Act). Regulated systems must meet the requirements of the **Safe Drinking Water Act, 2002, S.O. 2002, c. 32** and its regulations. Most notably: the Drinking Water Systems Regulation Ontario Regulation (O.Reg.) 170/03 sets out treatment and testing requirements for all categories of regulated water systems; O.Reg. 169/03 covers the Ontario Drinking Water Quality Standards; and O.Reg 128/04 covers the necessity for Certification of Drinking Water System Operators and Water Quality Analysts.

Since the implementation of the Act, several amendments to O. Reg. 170/03 have taken place. There are amendments requiring additional resources and costs, such as the Community Lead Testing initiative and Quality Management Systems, while others streamlined legislative requirements to make the new regulations feasible for the vast majority of municipalities.

Among other obligations, O.Reg. 170/03 prescribes the need for all owners of licensed water works to produce an Annual Summary Report as indicated in Schedule 22. This Summary Report is filed annually for the previous calendar year (January 1st through December 31st) and must contain the following information:

- List of requirements of the Safe Drinking Water Act (SDWA), the regulations, the system's approval, drinking water works permits and the municipal drinking water license;
- Any orders applicable to the system that were not met at any time during the period covered by the report. If any failures were identified, specify the duration of the failure and describe the measures taken to correct the situation;
- Summary of quantities and flow rates of the water supplied during the reporting period, including monthly averages and maximum daily flows; and
- A comparison of the summary of quantities and flow to the rated capacities and flows approved in the systems approval, drinking water works permit or municipal drinking water license.

An Annual Report, to fulfill Section 11 of Ontario Regulation 170/03, has been completed separately and details the drinking water quality of all of the CGS owned and operated drinking water systems. This annual report is available for viewing on the City of Greater Sudbury's website

(<http://www.greatersudbury.ca/living/sewer-and-water/water-source/water-quality-reports/>) and notices have been posted in local newsprint for those that do not have access to a computer can use a computer at any of the CGS Citizen Service Centers to view.

The City of Greater Sudbury is listed as the Owner of five large municipal, residential drinking water systems and one independent distribution system. The one distribution system (Vermilion) receives its water from a “donor system” which is operated by Vale. The City of Greater Sudbury is supplied from this “donor system” wherein water is purchased by the CGS from Vale and supplied to consumers through a CGS owned distribution system. The following reports are written to comply with the Condition that each of these facilities produces an Annual Summary Report as per Schedule 22 of O. Reg. 170/03. Table 1 provides a summary of the various water systems throughout the City.

Table 1 - Overview of the City’s Water Systems

Name	Owner	Type of Facility	Source of Water	Community Served
Sudbury Drinking Water System - Wanapitei	City of Greater Sudbury	Surface water conventional treatment plant and Ultraviolet irradiation, Fluoridation, Corrosion control added, Distribution system	Wanapitei River	Sudbury, Coniston, Wanapitei, Markstay, Garson
Sudbury Drinking Water System - David Street		Surface water Membrane Filtration and Ultraviolet irradiation, Fluoridation, Corrosion control added, Distribution system	Ramsey Lake	Sudbury (West and South sections)
Sudbury Drinking Water System - Garson		Wells with disinfection, Fluoridation, Distribution system	Groundwater	Garson (east of Penman Dr.)
Dowling Drinking Water System	City of Greater Sudbury	Wells with disinfection and Ultraviolet irradiation, Fluoridation, Distribution system	Groundwater	Dowling
Valley Drinking Water System	City of Greater Sudbury	Wells with disinfection and Ultraviolet irradiation, Fluoridation, Corrosion control added for supply to Capreol, Distribution	Groundwater	Valley East, Azilda, Chelmsford & Capreol

		system		
Falconbridge Drinking Water System	City of Greater Sudbury	Wells with disinfection, Fluoridation, Corrosion control added, Distribution system	Groundwater	Falconbridge
Onaping /Levack Drinking Water System	City of Greater Sudbury	Wells with disinfection, Fluoridation, Corrosion control added, Distribution system	Groundwater	Onaping & Levack
Vermilion River Water Treatment Plant	Vale	Surface water conventional treatment plant, Fluoridation and Corrosion control added	River	Vermilion Distribution System
Vermilion Distribution System	City of Greater Sudbury	Distribution System	Vermilion River WTP	Lively, Naughton, Whitefish, Copper Cliff, Walden Industrial Park

Due to the significant impact of the Drinking Water Protection Regulation and continuing Source Water Protection legislation, virtually all of the City's water works have had to undergo some level of upgrading. It should not be assumed that these upgrades are the result of any detected incidents of poor water quality. The upgrades at the City water works are necessary to reduce the risk of potable water contamination as deemed necessary by the MOECC. The level of acceptable risk is stipulated through mandatory compliance with O. Reg. 170/03.

The last several years have seen a number of upgrades at most CGS water facilities and throughout various sections of the distribution systems. It is important to understand that this is part of the required process of the Regulations and the MOECC's statutory Standard of Care to ensure all citizens have access to and receive safe drinking water. The regulation stipulates that water works owners will continually monitor water works performance, and review levels of treatment versus current standards and emerging technologies. The Ministry of the Environment and Climate Change (MOECC) is responsible for the enforcement of regulations and conducts regular, announced and unannounced, inspections of all of our facilities every year. MOECC inspections "grading" has given the CGS water systems a **99.52%** for all of our systems through the 2014 inspection regimen. The public expects that responsible Owners will be diligent in their duty to care for public water supplies.

The Community Lead Testing Initiative was mandated by the MOECC in 2007 and falls under O. Reg. 170/03, Schedule 15.1. Although there have been challenges in garnering enough volunteers for the program, the City is continuing with the initiative. The City has completed fourteen periods of lead sampling to date. Results have been positive and demonstrated that lead is not a concern for the City of Greater Sudbury. There have been issues in the Onaping/Levack system, which has seen considerable improvement with the recent corrosion control additive and pH adjustment measures. To date, 3204 samples have been collected throughout all of our Drinking Water Systems. There have been a total of 56 private residences or commercial establishments and one distribution sample in excess of the standard, representing less than 2% of all samples. The initiative will continue into the foreseeable future but the City has been able to act on new legislative provisions put forth by the MOECC. Drinking water systems that have demonstrated less than 10% of one half the Maximum Allowable Concentration (MAC) over six rounds of lead sampling will no longer be required to test in private residents or commercial establishments. Drinking Water Systems that have a population over 50,000 will continue to be required to test for Lead, but at a reduced number, providing the same criteria as listed above for half MAC have been met.

The City is well organized to manage the existing water works systems. Further, staff have been proactive to ensure all necessary measures are taken to achieve compliance with the Regulations and the various Drinking Water Permits and Licenses. The water works owned and operated by the City have been managed with the standard of care expected by the public and as legislated by the government. All necessary upgrades have been completed or are being planned and implemented in accordance with applicable standards.

Reviewed by:

Date: Mar 3, 2015



Paul Javor
Water Supervisor III

Approved by:

Date: MAR 9 2015



Nick Benkovich
Director, Water and Wastewater Services

SECTION 1 – LEGISLATIVE AND REGULATORY REQUIREMENTS

Regulated systems must meet the requirements of Ontario's *Safe Drinking Water Act, 2002* and its regulations. Most notably, the Drinking Water Systems Regulation sets out treatment and testing requirements for all categories of regulated water systems, including non-municipal and municipal non-residential operations. Some of the CGS systems are classified as Class IV and therefore require Operators of the same level of Certification. Related regulations made under the Act:

1.1 O.REG. 128/04 CERTIFICATION OF DRINKING-WATER SYSTEM OPERATORS AND WATER QUALITY ANALYSTS

This Regulation was filed on May 14, 2004 (Last amendment: O.Reg. 466/10). Section 29 lists Operator training requirements and the number of training hours required for operators. Class IV Water Treatment Operators will require 14 hours of continuing education with an additional 36 hours of on-the-job practical training, for a minimum of 50 hours total of annual training. The continuing education that is used to meet the training requirements must be approved by the MOECC Director using criteria which includes the following:

- a. The training course must have documented learning objectives.
- b. The training course must be planned and be provided by a qualified training provider.
- c. The training course must include a means to verify that the participants have learned the material covered in the course
- d. The training course must cover subject matter that is directly related to the duties typically performed by an operator.

The on-the-job practical training that is used to meet the training requirements must meet a criterion that includes the following:

- a. The training must have documented learning objectives.
- b. The training must be provided by a trainer with expertise in the subject matter that is being covered.
- c. The training must be in respect of subject matter that is directly related to the duties typically performed by an operator

Note: The annual number of hours of training set out in Table 1 may be averaged over the three years during which an operator's certificate is valid but shall not be reduced or prorated for an operator who is employed on a part-time basis.

Table 1 – Annual Training for Operators

Type and Class of Subsystem Where the Operator is Employed	Training Requirements	Minimum Total Hours
Limited Groundwater or Limited Surface Water	7 hours or more of continuing education, with the remaining hours to at least the minimum total as on-the-job practical training	20
Class I Water Treatment or Class I Distribution or Class I Distribution and Supply	7 hours or more of continuing education, with the remaining hours to at least the minimum total as on-the-job practical training	30
Class II Water Treatment or Class II Distribution or Class II Distribution and Supply	12 hours or more of continuing education, with the remaining hours to at least the minimum total as on-the-job practical training	35
Class III Water Treatment or Class III Distribution or Class III Distribution and Supply	14 hours or more of continuing education, with the remaining hours to at least the minimum total as on-the-job practical training	40
Class IV Water Treatment or Class IV Distribution or Class IV Distribution and Supply	14 hours or more of continuing education, with the remaining hours to at least the minimum total as on-the-job practical training	50

O. Reg. 128/04, s. 29, Table 1

1.2 O. REG. 242/05 COMPLIANCE AND ENFORCEMENT

This Regulation (Last amendment: O.Reg. 328/08) lists the requirements for inspections. What to do when deficiencies and contraventions are found. This regulation also deals with enforcement, investigations and notices required once investigations have been completed.

1.3 O. REG. 172/03 DEFINITIONS OF "DEFICIENCY" AND "MUNICIPAL DRINKING-WATER SYSTEM"

Ontario Regulation 172/03 (Last Amendment: O.Reg. 329/08), provides definitions of words and expressions within the Safe Drinking Water Act and associated Regulations.

1.4 O. REG. 171/03 DEFINITIONS OF WORDS AND EXPRESSIONS USED IN THE ACT

Ontario Regulation 171/03 (Last amendment: O.Reg. 336/13) - Provides definitions of words and expressions within the Safe Drinking Water Act and associated Regulations.

1.5 O. REG. 170/03 DRINKING WATER SYSTEMS

This Regulation was filed in 2004 (Last amendment: O.Reg. 335/13). This regulation outlines the requirements for:

- 1) Types of Drinking Water Systems
- 2) Required reports (annual, summary reports)
- 3) Retention of record
- 4) Treatment equipment requirements
- 5) Types of Treatment
- 6) Operational Checks, Sampling and Testing
- 7) Use of accredited laboratories
- 8) Maintenance and Operational Checks
- 9) Microbiological Sampling and Testing
- 10) Chemical Sampling and Testing
- 11) Reporting Adverse Test Results and Other Problems
- 12) Corrective Action
- 13) Engineers' Reports
- 14) Inorganic Parameters
- 15) Organic Parameters

1.6 O. REG. 248/03 DRINKING WATER TESTING SERVICES

Ontario Regulation 248/03 (Last amendment: O.Reg. 416/09) - Drinking-Water Testing Services is the regulation governing accredited laboratories that came into effect October 31, 2004.

- 1) Lists systems that do not require drinking-water testing license
- 2) Lists prescribed tests of the Safe Drinking Water Act
- 3) Lists person(s) to do water quality analysis
- 4) Lists the types of tests that can be conducted for the sole purpose of carrying out research or Criteria for drinking-water testing services
- 5) Conditions of drinking-water testing license
- 6) Handling samples
- 7) Testing records
- 8) Laboratory qualifications and accreditation

1.7 O. REG. 169/03 ONTARIO DRINKING WATER QUALITY STANDARDS

Ontario Regulation 169/03 (Last amendment: O.Reg. 327/08). This regulation sets out standards in Schedules 1, 2 and 3 as prescribed drinking-water quality standards. Included in this regulation, what is deemed as compliance standards.

SECTION 2 - PLANT SPECIFIC REVIEW

2.1 Plant Specific Requirements

This Section of the report provides details on measures taken by the City to ensure compliance with Terms and Conditions of the Municipal Drinking Water Licenses, Drinking Water Works Permits, Acts, Regulations or any MOECC orders the systems may have been under during the reporting period. This section of the report also provides details on the specifics of the systems, any non-compliance issues along with actions taken by the City to rectify the situations, as well as flow data with comparison to allowable limits. This flow comparison is to allow for a basic overview of the systems performance and allows for review and planning of possible future expansions if required.

A more detailed description of the water works is provided at the start of each sub-section. The description is provided for reference purposes only, and to ensure that the compliance measures remain in context. All non-compliance items and the corrective actions taken are summarized in table format and appended to the particular plant section in this report. The most recent Municipal Drinking Water License and Drinking Water Works Permit that was valid at the time of this report is also listed in the particular plant section.

Sudbury Drinking Water System - Wanapitei DWS# 210001111

Municipal Drinking Water License: 016-106
April 21, 2010
Drinking Water Works Permit: 016-206
November 3, 2011
Schedule C to DWWP 016-206
March 30, 2010

The Wanapitei WTP is a surface water plant which draws water from the Wanapitei River. Proportionally, the plant supplies approximately 60% of the water for Sudbury; however, most of the water produced is delivered to New Sudbury, Coniston, Wahnapiatae, Markstay, and parts of downtown. Garson, west of Falconbridge Rd. and O'Neil Dr., is also supplied by this plant. The plant was constructed in the 1970's at the onset of Regional Government. Since the original construction, the plant has undergone upgrading to enhance treatment efficiency, increase production, and to reduce energy costs. Completed projects in 2014 and the associated approximate costs included: upgrading SCADA controls and Instrumentation, (\$23,500); repair of the Snowdon Booster, (\$58,000); repairs to the water intake by divers, (\$120,000); and bulk water filling station upgrades, (\$28,800). Capital improvements to various distribution infrastructure projects totaled approximately \$2,948,200.

The water supply for the plant is the Wanapitei River. The raw water quality is reasonably reliable but is, however, subject to some change, which is typical of most rivers. The watershed area for the Wanapitei River is vast with much in its natural state.

The river water quality varies depending on seasonal changes and local weather patterns. Some process parameters affected by these changes include:

- Temperature;
- Turbidity; and
- Color.

The changing raw water quality requires careful observation by the water plant operators to ensure necessary process and chemical adjustments are made to effectively treat the water.

The Wanapitei WTP incorporates conventional technologies to treat the water. The raw water undergoes initial treatment with chlorine dioxide for taste and odor control and/or chlorine for pre-disinfection. Raw water is further subjected to chemical coagulation with alum to form a floc. The coagulated water passes through one of two settling tanks, referred to as reactivators, for the flocculation and sedimentation process. The water then passes through one of four, dual media, filter beds. The filtered water is treated with hydrated lime for pH/alkalinity adjustment; with chlorine to maintain disinfection; with fluoride to comply with Sudbury and District Health Unit requirements; and with polyphosphate to reduce corrosion in the distribution system. The final process the finished water undergoes is irradiation by ultraviolet light. The plant is designed to be capable of achieving, at all times, at least 99.99% removal or inactivation of viruses by the time water enters the distribution system.

The distribution system incorporates a large diameter concrete pressure pipe to deliver water to Sudbury and Coniston. The communities are networked with an extensive distribution system including numerous booster stations. The system pressure is regulated by the water level in the Ellis Water Reservoir. Most of the pipes in the distribution system are less than 50 years old and much of the system is plastic pipe.

Water quality throughout the distribution system is monitored through regular sampling in accordance with O. Reg. 170/03.

Non-Compliance with Act, Regulations, Order or Approvals

Table 2 provides a summary of any requirements of the Act, Regulations, Orders, or Approval that the system failed to meet during the 2014 reportable period.

Table 2 - Wanapitei Water Treatment Plant

Item	Non-Compliance	Measure Taken to Ensure Compliance
MOECC Inspection Issues	NONE	N/A
MOECC Orders	NONE	N/A

2014 Adverse Water Quality Incident Report

Table 3 provides 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 and the Sudbury and District Health Unit.

Table 3 - Adverse Water Quality Incidents

AWQI #	Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
115954	2014/02/05	System Pressure	<20	psi	Restored Pressure Resample/Re-test	2014/02/08
116535	2014/03/26	Total Coliforms	9	CFU/100 mL	Resample/Re-test	See AWQI 116544
116544	2014/03/28	Total Coliforms	29	CFU/100 mL	Resample/Re-test	2014/03/31
121383	2014/10/30	Total Coliforms	1	CFU/100 mL	Resample/Re-test	2014/11/02

Annual Flow Summary

Table 4 provides a summary of the quantities of flow rates with a comparison to rated capacities as listed in the systems Municipal Drinking Water License during the 2014 reportable period.

Table 4 - Annual Flow Summary (Sudbury Plants)

Wanapitei Water Treatment Plant							David Street Water Treatment Plant					
	Total Flow m ³	Average Daily Flow m ³ /d	Maximum Daily Flow m ³ /d	Instantaneous Peak Flow L/s	MDWL Maximum Flow m ³ /d	% Capacity	Total Flow m ³	Average Daily Flow m ³ /d	Maximum Daily Flow m ³ /d	Instantaneous Peak Flow L/s	MDWL Maximum Flow m ³ /d	% Capacity
January	771,376	24,883	31,294.37	484.36	54,000	58	469,671	15,151	23,248.87	326.11	40,000	58
February	607,147	21,684	29,234.02	456.67	54,000	54	598,808	21,386	26,820.74	350.12	40,000	67
March	832,310	26,849	30,643.03	474.96	54,000	57	462,747	14,927	25,232.55	341.69	40,000	63
April	734,453	24,482	29,262.46	473.28	54,000	54	480,865	16,029	24,810.06	317.32	40,000	62
May	838,079	27,035	29,391.84	481.51	54,000	54	440,034	14,195	25,862.17	316.35	40,000	65
June	892,371	29,746	33,896.42	472.61	54,000	63	446,591	14,886	21,280.86	328.71	40,000	53
July	875,081	28,228	30,006.37	467.91	54,000	56	466,162	15,037	19,775.00	317.35	40,000	49
August	864,520	27,888	32,455.31	471.60	54,000	60	407,319	13,139	17,530.36	317.60	40,000	44
September	835,413	27,847	29,118.14	501.64	54,000	54	403,239	13,441	16,587.33	319.88	40,000	41
October	847,114	27,326	30,147.48	492.25	54,000	56	382,777	12,348	16,608.53	319.25	40,000	42
November	827,180	27,573	28,766.76	466.40	54,000	53	368,082	12,269	14,053.14	314.72	40,000	35
December	819,908	26,449	30,391.58	469.25	54,000	56	380,829	12,285	16,684.00	318.07	40,000	42
Total	9,744,952						5,307,124					

Sudbury Drinking Water System - David Street DWS# 220003537

Municipal Drinking Water License: 016-106
April 21, 2010
Drinking Water Works Permit: 016-206
November 3, 2011
Schedule C to DWWP 016-206
March 30, 2010

The David St. WTP is a surface water plant, which draws water from Ramsey Lake. Proportionally, the plant services approximately 40% of Sudbury, however, most of the water produced at the David St. WTP is normally delivered to the south, west and downtown areas of Sudbury. The plant was originally over 100 years old but has undergone numerous upgrades to meet changing needs. The plant completed retrofits with Zenon membrane ultrafiltration technologies and ultraviolet irradiation in 2004 to ensure the treatment system meets the requirements in O. Reg. 170/03. The plant is designed to be capable of achieving, at all times, at least 99.99% removal or inactivation of viruses by the time water enters the distribution system.

The water supply for the David St. WTP is Ramsey Lake. Under the Clean Water Act and careful review by the Source Water Protection Committee and City staff, provisions are being established to maintain and improve the source water quality.

The City is planning to have the David St. plant remain an integral part of the water works system for many years. For this reason the City has made a significant financial investment in the upgrading of this plant. Projects completed for 2014 and the associated approximate costs included: replacing ultrafiltration membrane trains, (\$980,000); raw pump replacement, (\$12,000); installation of a seamless power transfer switch, (\$17,000) and bulk water filling station upgrades, (\$28,800).

The portion of the distribution system supplied by the David Street WTP includes parts of downtown Sudbury, the south and west ends of Sudbury. In addition, the Ellis Reservoir is part of the distribution network for Sudbury. The Ellis Reservoir is a 36.4 million liter, dual cell, water storage facility that is also fed by the Wanapitei WTP. As is common with many older distribution networks, the Sudbury pipe system is prone to line breaks, complaints of discolored water and difficulties maintaining adequate chlorine residual. Capital projects undertaken in 2014 included various watermain repairs, replacements and relining totaling approximately \$4,260,000.

Water quality throughout the distribution system is monitored through regular sampling in accordance with O. Reg. 170/03.

Non-Compliance with Act, Regulations, Order or Approvals

Table 5 provides a summary of any requirements of the Act, Regulations, Orders, or Approval that the system failed to meet during the 2014 reportable period.

Table 5 - David Street Water Treatment Plant

Item	Non-Compliance	Measure Taken to Ensure Compliance
MOECC Inspection Issues	NONE	N/A
MOECC Orders	NONE	N/A

2014 Adverse Water Quality Incident Report

Table 6 provides 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 and the Sudbury and District Health Unit.

Table 6 - Adverse Water Quality Incidents

AWQI #	Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
119038	2014/07/19	Total Coliforms	39	CFU/100mL	Resample/Re-test	See AWQI #119048
119048	2014/07/20	Total Coliforms	2	CFU/100mL	Resample/Re-test	2014/07/23
120155	2014/09/08	Fluoride Residual	1.52	mg/L	Flushed lines Resample/Re-test	2014/09/08
122052	2014/11/16	Monthly Average for Turbidity of <0.10 NTU, 99% of the time	>0.010	NTU	Resample/Re-test	2014/12/24

Annual Flow Summary

Table 7 provides a summary of the quantities of flow rates with a comparison to rated capacities as listed in the systems Municipal Drinking Water License during the 2014 reporting period.

Table 7 - Annual Flow Summary

Wanapitei Water Treatment Plant							David Street Water Treatment Plant					
	Total Flow m ³	Average Daily Flow m ³ /d	Maximum Daily Flow m ³ /d	Instantaneous Peak Flow L/s	MDWL Maximum Flow m ³ /d	% Capacity	Total Flow m ³	Average Daily Flow m ³ /d	Maximum Daily Flow m ³ /d	Instantaneous Peak Flow L/s	MDWL Maximum Flow m ³ /d	% Capacity
January	771,376	24,883	31,294.37	484.36	54,000	58	469,671	15,151	23,248.87	326.11	40,000	58
February	607,147	21,684	29,234.02	456.67	54,000	54	598,808	21,386	26,820.74	350.12	40,000	67
March	832,310	26,849	30,643.03	474.96	54,000	57	462,747	14,927	25,232.55	341.69	40,000	63
April	734,453	24,482	29,262.46	473.28	54,000	54	480,865	16,029	24,810.06	317.32	40,000	62
May	838,079	27,035	29,391.84	481.51	54,000	54	440,034	14,195	25,862.17	316.35	40,000	65
June	892,371	29,746	33,896.42	472.61	54,000	63	446,591	14,886	21,280.86	328.71	40,000	53
July	875,081	28,228	30,006.37	467.91	54,000	56	466,162	15,037	19,775.00	317.35	40,000	49
August	864,520	27,888	32,455.31	471.60	54,000	60	407,319	13,139	17,530.36	317.60	40,000	44
September	835,413	27,847	29,118.14	501.64	54,000	54	403,239	13,441	16,587.33	319.88	40,000	41

October	847,114	27,326	30,147.48	492.25	54,000	56	382,777	12,348	16,608.53	319.25	40,000	42
November	827,180	27,573	28,766.76	466.40	54,000	53	368,082	12,269	14,053.14	314.72	40,000	35
December	819,908	26,449	30,391.58	469.25	54,000	56	380,829	12,285	16,684.00	318.07	40,000	42
Total	9,744,952						5,307,124					

Sudbury Drinking Water System - Garson

DWS# 220003485

Municipal Drinking Water License: 016-106

April 21, 2010

Drinking Water Works Permit: 016-206

November 3, 2011

Schedule C to DWWP 016-206

March 30, 2010

The Garson water works is a communal groundwater system consisting of three wells, and servicing the community of Garson east of Penman Ave and O'Neil Dr East. The three wells are:

- Garson Well No.2;
- Garson Well No.1; and
- Garson Well No.3.

Garson Well No.2 is situated within a pumphouse on the east side of Falconbridge Highway at Spruce Street. The system includes a Variable Frequency Drive (VFD) vertical turbine well pump, disinfection with sodium hypochlorite and fluoride injection as mandated by the Sudbury and District Health Unit. There is no standby power at Garson Well No. 2. The City of Greater Sudbury operated the well pumphouse on behalf of Vale and now, as the sole owner/operator, the water is directly connected to the public distribution network.

The other two wells in Garson, No.'s 1 and 3, are situated on the south side of Falconbridge Road at Orell Street. The two wells are in close proximity to each other but are housed in separate buildings, both of which contain the vertical turbine well pumps. The discharges from the well pumps enter a common building which houses the disinfection and fluoride injection equipment. The well supply historically provided very good quality water with no record of bacteriological contamination. During preparation of the First Engineers' Report, in March 2001, a hydrogeological assessment was made of each of the wells. It was concluded that it is unlikely that any of the wells are under the direct influence of surface water. The raw water was therefore found to be in general conformance with the ODWS. Notwithstanding the historical good water quality, the aquifer used in the Garson well supply has a recharge area which

includes the developed area of Garson. With direction and consultation from the Sudbury and District Health Unit and the Ministry of the Environment and Climate Change (MOECC), the CGS committed to undertaking a Groundwater Monitoring Program for Tetrachloroethylene. Although TCE levels found during audit sampling are well below regulatory limits, the City is proactively sampling and monitoring these levels. In 2012, four monitoring wells were drilled in the area and sampling and graphing of results is completed regularly by staff to augment historical data. Review of all data is undertaken by staff to ensure the safety of the water source and public.

The community of Garson extends from Skead Road at the north to Garson-Coniston Road at the south. The pipe network is connected to the water supply from Sudbury at the intersection of Falconbridge Road and O'Neil Drive West, therefore the community is serviced from the Sudbury Distribution system West of Penman Avenue. In the event that all of the three wells were to fail, the Garson system is connected to the Sudbury Distribution System by way of a pressure valve and would have water supplied from Sudbury. The pipe network is a combination of new and older pipes and frost penetration can be an issue in Garson.

Water quality throughout the distribution system is monitored through regular sampling in accordance with O. Reg. 170/03.

Non-Compliance with Act, Regulations, Order or Approvals

Table 8 provides a summary of any requirements of the Act, Regulations, Orders, or Approval that the system failed to meet during the 2014 reportable period.

Table 8 - Garson Wells and Distribution System

Item	Non-Compliance	Measure Taken to Ensure Compliance
MOECC Inspection Issues	NONE	N/A
MOECC Orders	NONE	N/A

2014 Adverse Water Quality Incident Report

Table 9 provides 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 and the Sudbury and District Health Unit.

Table 9 - Adverse Water Quality Incidents

AWQI #	Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
116381	2014/03/12	Total Coliform	7	CFU/100 mL	Resample/Re-test	2014/03/14
119921	2014/09/01	Distribution chlorine residual	<0.05	mg/L	Flush hydrants Resample/Re-test	2014/09/01
121338	2014/10/29	Distribution chlorine residual	0.0	mg/L	Flush hydrants Resample/Re-test	2014/10/29

Annual Flow Summary

Table 10 provides a summary of the quantities of flow rates with a comparison to rated capacities as listed in the systems Municipal Drinking Water License during the 2014 reportable period.

Table 10 - Flow Summary (Garson Wells)

	Garson Well #1						Garson Well #3					
	Total Flow m ³	Average Daily Flow m ³ /d	Maximum Daily Flow m ³ /d	Instantaneous Peak Flow L/s	MDWL Maximum Flow m ³ /d	% Capacity	Total Flow m ³	Average Daily Flow m ³ /d	Maximum Daily Flow m ³ /d	Instantaneous Peak Flow L/s	MDWL Maximum Flow m ³ /d	% Capacity
January	6,414	207	266.90	17.19	1,572	17	12,908	416	1,211.11	32.14	3,275	37
February	6,010	215	295.22	16.80	1,572	19	11,993	428	870.37	32.21	3,275	27
March	5,757	186	411.23	16.49	1,572	26	18,929	611	2,095.14	33.51	3,275	64
April	5,008	167	298.47	16.41	1,572	19	17,542	585	1,537.14	37.06	3,275	47
May	5,462	176	294.20	15.80	1,572	19	15,847	511	1,189.24	34.13	3,275	36
June	984	33	214.71	14.81	1,572	14	30,219	1,007	1,236.26	36.35	3,275	38
July	46	1	20.12	7.47	1,572	1	28,674	925	1,866.74	34.91	3,275	57
August	5,524	178	323.73	15.58	1,572	21	15,305	494	1,049.27	35.83	3,275	32
September	6,620	221	327.21	16.02	1,572	21	9,702	323	1,212.94	32.15	3,275	37
October	4,870	157	374.47	16.92	1,572	24	8,656	279	830.32	32.15	3,275	25
November	1,500	50	213.43	15.49	1,572	14	12,663	422	1,698.89	29.68	3,275	52
December	250	8	105.95	14.12	1,572	7	10,812	349	1,016.09	28.07	3,275	31
Total	48,445						193,250					

Garson Well #2						
	Total Flow m ³	Average Daily Flow m ³ /d	Maximum Daily Flow m ³ /d	Instantaneous Peak Flow L/s	MDWL Maximum Flow m ³ /d	% Capacity
January	27,469	886	1,220.13	34.38	2,981	41
February	23,190	828	1,070.56	32.17	2,981	36
March	23,601	761	1,539.41	34.87	2,981	52
April	25,717	857	1,523.41	35.83	2,981	51
May	30,866	996	1,899.98	35.44	2,981	64
June	23,873	796	1,327.44	34.03	2,981	45
July	22,631	730	1,147.98	33.33	2,981	39
August	24,697	797	1,184.23	32.61	2,981	40
September	22,422	747	1,298.03	33.40	2,981	44
October	23,043	743	1,171.85	34.92	2,981	39
November	20,248	675	975.91	33.83	2,981	33
December	27,651	892	1,335.89	31.28	2,981	45
Total	295,408					

Dowling Wells and Distribution System DWS# 210001665

Municipal Drinking Water License: 016-103
April 19, 2010
Drinking Water Works Permit: 016-203
November 3, 2011

The Dowling water works is a communal groundwater system, which supplies water to the community of Dowling. The water works includes two wells with well pumphouses, a distribution network of in-ground piping and an elevated water storage tank. The entire water system was developed with subsidy from the MOECC in the 1970's. The ownership and operation of the water works was transferred to the Regional Municipality of Sudbury and it is now owned and operated by the City of Greater Sudbury.

The Riverside well and pumphouse includes a vertical turbine supply pump, disinfection with gas chlorine, ultraviolet irradiation along with fluoride injection as mandated by the Sudbury and District Health Unit. The Lionel well and pumphouse has similar facilities plus a diesel generator for standby

power, which can power both well sites and a wastewater lift station. Both facilities have automatic valving to waste raw water for a few minutes upon start-up of a well pump.

The water supply source for the Dowling wells is an unconfined aquifer of sand and gravel deposits located within the Onaping river watershed. Due to the unconfined nature of the soils and the proximity to the river, the MOECC has characterized the water source as potentially groundwater under the direct influence of surface water (potentially GUDI).

Studies were conducted in 2002 with the resulting submission of a GUDI study on July 1, 2002. This study was reviewed and accepted by the MOECC and as a result, both wells were deemed to be GUDI with effective in situ filtration. As such, additional treatment and disinfection would be required. The prior recommendations of the consultant included that, while the wells have met the MOECC criteria for “potentially under the influence of surface water”, adequate natural filtration of the water exists. Based on the conclusions by the MOECC, the well systems have had ultraviolet irradiation added to enhance disinfection to comply with the treatment requirements of the ODWS.

The distribution network in Dowling has been relatively reliable and is not exposed to as severe frost depths as other areas of the City. Further, the elevated water storage provides a measure of security to the water system in the event of power interruptions and watermain breaks.

Water quality throughout the distribution system is monitored through regular sampling in accordance with O. Reg. 170/03.

Non-Compliance with Act, Regulations, Order or Approvals

Table 11 provides a summary of any requirements of the Act, Regulations, Orders, or Approval that the system failed to meet during the 2014 reportable period.

Table 11 - Dowling Wells and Distribution System

Item	Non-Compliance	Measure Taken to Ensure Compliance
MOECC Inspection Issues	NONE	N/A
MOECC Orders	NONE	N/A

2014 Adverse Water Quality Incident Report

Table 12 provides 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 and the Sudbury and District Health Unit.

Table 12 - Adverse Water Quality Incidents

AWQI #	Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
None						

Annual Flow Summary

Table 13 provides a summary of the quantities of flow rates with a comparison to rated capacities as listed in the systems Municipal Drinking Water License during the 2014 reportable period.

Table 13 - Flow Summary (Dowling Wells)

	Lionel Well						Riverside Well					
	Total Flow m³	Average Daily Flow m³/d	Maximum Daily Flow m³/d	Instantaneous Peak Flow L/s	MDWL Maximum Flow m³/d	% Capacity	Total Flow m³	Average Daily Flow m³/d	Maximum Daily Flow m³/d	Instantaneous Peak Flow L/s	MDWL Maximum Flow m³/d	% Capacity
January	5,922	191	683.46	27.22	3,640	19	6,739	217	697.81	31.75	3,640	19
February	5,331	190	621.62	29.28	3,640	17	6,240	223	790.95	30.93	3,640	22
March	7,685	248	602.03	35.46	3,640	17	5,376	173	598.60	30.10	3,640	16
April	7,191	240	639.38	36.29	3,640	18	5,563	185	562.40	31.34	3,640	15
May	6,011	194	658.46	40.41	3,640	18	8,041	259	681.91	31.34	3,640	19
June	3,488	116	475.22	37.53	3,640	13	9,821	327	896.72	30.52	3,640	25
July	2,296	74	510.02	25.98	3,640	14	10,429	336	666.69	30.52	3,640	18
August	4,602	148	533.20	26.80	3,640	15	6,580	212	604.50	30.52	3,640	17
September	4,824	161	612.68	26.80	3,640	17	5,101	170	540.02	30.52	3,640	15
October	5,749	185	592.39	28.04	3,640	16	4,659	150	576.64	31.34	3,640	16
November	3,370	112	597.27	27.63	3,640	16	6,059	202	580.43	31.34	3,640	16
December	6,534	211	607.43	27.22	3,640	17	4,558	147	533.92	30.93	3,640	15
Total	63,003						79,166					

Valley Drinking Water System DWS# 210000737

Municipal Drinking Water License: 016-105 (v. 2.0)
November 3, 2011
Drinking Water Works Permit: 016-205 (v. 2.0)
November 1, 2011
Schedule C to DWWP 016-205
August 5, 2011

In 2010, the Blezard Valley and Capreol well supply systems were considered to be one complete system as both of the systems are connected. As such, one Drinking Water System (DWS) number and one Municipal Drinking Water License and Works Permit has been assigned to the entire system. This report will identify the works by geographical area where appropriate.

The Blezard Valley portion of the system is a multi-well groundwater system servicing the communities of Hanmer, Blezard Valley, Val Caron, McCreagh Heights, Azilda and Chelmsford. Eleven groundwater wells are situated throughout the Valley and each are located in well pumphouses. The communities are interconnected with distribution piping and three water storage tanks located in each of Val Caron, Azilda and Chelmsford.

The water works were originally constructed by the MOECC in the 1970's then transferred to the Regional Municipality of Sudbury. With amalgamation, the ownership was transferred to the City of Greater Sudbury. All upgrades from the original MOECC system were constructed by the City.

Each well pumphouse contains a vertical turbine well pump, ultraviolet irradiation and chlorine disinfection equipment plus fluoride injection equipment as mandated by the Sudbury and District Health Unit. Some of the well pumphouses incorporate standby diesel generators, summarized as follows:

- Well A – Deschene;
- Well B – Kenneth;
- Well C – Phillippe;
- Well D – Frost;
- Well E - Notre Dame
- Well Q - Chenier; and
- Well R – R Well.

The water supply source is a common groundwater aquifer characterized as a shallow sand and gravel aquifer. This well field extends approximately 7.5 km (west to east) from Val Therese to Hanmer. A

preliminary hydrology study performed during the preparation of the First Engineers' Report classified all of the wells as not under the direct influence of surface water. Due to the shallow nature of the aquifer and the lack of a confining clay layer the MOECC requested further study.

The GUDI study was submitted in August of 2002. An amended PTTW was received on February 23, 2003. The amended PTTW acknowledged the opinion of the hydrogeology study, which states that the wells are not GUDI. As such, no additional filtration is required and the wells may supply water provided they meet MOECC Procedures for Disinfection of Drinking Water.

The wells in the Valley system did not meet chemical disinfection CT (Concentration (mg/L) x Time (minutes)) requirements, therefore, all the wells were upgraded in 2007 to incorporate ultraviolet irradiation to deal with CT issues.

As previously noted, the Valley well system is a relatively shallow aquifer and the community has developed extensively around the wells. Some of the wells are located immediately adjacent to residential homes, commercial establishments and major arterial roadways. Two new water wells were developed (Wells Q and R) utilizing VFD pumps and commissioned in 2012 thus increasing the capacity to supply the additional demands in Blezard Valley.

Completed projects in 2014 and the associated approximate costs included: well inspection and rehabilitation, (\$28,000); continued groundwater monitoring program, (\$21,000); well building upgrades including eye wash and deluge showers, (\$104,000); and bulk water filling station upgrades, (\$57,600).

The distribution system in the Valley is very extensive and contains many areas with dead-ends. System pressure is regulated by the level of the three storage tanks situated in Azilda, Chelmsford and Val Caron. During the reporting period the City operated the distribution system with good control of the chlorine residuals. This is due in part to the age of the distribution network, and the good source of raw water quality. Capital projects undertaken in 2014 included various watermain repairs, replacements and relining totaling approximately \$337,000.

The Capreol Well portion of the system draws water from two (2) wells to service the community of Capreol. The wells include:

- Well J; and
- Well M.

In the event that these two wells fail and due to the fact that Capreol does not have backup water storage facilities, the Blezard Valley wells can supply water through the Capreol Boosters located onsite at M well.

This system, started in 2004, was completed and commissioned in 2007, ensuring a continued water supply to Capreol.

The source of water for the Capreol wells is groundwater. Wells J and M draw from a common unconfined aquifer comprised mostly of sands and gravels. Although neither of the wells have any record of bacteriological contamination, the unconfined nature of the aquifer required these wells to be characterized as potentially groundwater under the influence of surface water (potentially GUDI).

Wells J and M are located within approximately 30 meters of each other on the east side of Greens Lake and west of MR 84. Wells J and M are housed in separate well houses and have Variable Frequency Drive well pumps. A common discharge from the wells undergoes treatment in the form of disinfection by gas chlorination, ultraviolet irradiation, and fluoridation, as mandated by the Sudbury and District Health Unit. Corrosion control for the system is accomplished with the addition of a polyphosphate. Both facilities have automatic valving to waste raw water for a few minutes upon start-up of a well pump. Standby power with an automatic transfer switch for Wells J and M is available from a diesel generator located in Well M pumphouse.

A previous PTTW for Capreol required further hydro geological studies to be conducted in Capreol to determine if the wells were in fact under influence of surface water. The results of the study were necessary to determine if a filtration system would be required to ensure that the water quality remains in compliance with the ODWS at all times. The studies, referred to as GUDI studies, were completed for Wells M and J and submitted to the MOECC on June 30, 2002. The response from a review by MOECC found these wells to be potentially under influence of surface water with effective in situ filtration and as such required upgrades to meet the ODWS disinfection and log removal criteria. Upgrades have been completed and the system achieves the required log removals and enhanced the disinfection process.

The distribution system in Capreol was developed in conjunction with the growth of the industrial development. Some of the pipe network is therefore, relatively old. The frost depths in Capreol extend to extreme depths during cold winters, which impose additional stresses on the integrity of the distribution system. A second line was added to the distribution system so now two 350 mm water mains run in parallel along MR84 to the Town of Capreol. The distribution system is comprised of PVC, cast iron and ductile piping and serves approximately 3300 residents.

Water quality throughout the distribution system is monitored through regular sampling in accordance with O. Reg. 170/03.

Non-Compliance with Act, Regulations, Order or Approvals

Table 14 provides a summary of any requirements of the Act, Regulations, Orders, or Approval that the system failed to meet during the 2014 reportable period.

Table 14 - Blezard Valley/Capreol Wells Supply

Item	Non-Compliance	Measure Taken to Ensure Compliance
MOECC Inspection Issues	April 2013, 25% of distribution samples were to be HPC and were not provided. Only 2 of 10 req'd were submitted due to issue with Chain of Custody forms.	Written assurance provided to MOECC that operators have been advised of requirement and new Chains of Custody appropriately changed.
MOECC Orders	NONE	N/A

2014 Adverse Water Quality Incident Report

Table 15 provides 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 and the Sudbury and District Health Unit.

Table 15 - Adverse Water Quality Incidents

AWQI #	Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
116514	2014/03/26	Total Coliforms	1	CFU/100 mL	Resample/Re-test	2014/03/28
116578	2014/03/31	Fluoride Residual	2.0	mg/L	Resample/Re-test	2014/03/31
117933	2014/06/09	Total Coliforms	2	CFU/100 mL	Resample/Re-test	2014/06/13
119562	2014/08/12	Low Pressure	10	psi	Restore power and pressure	2014/08/13

122107	2014/12/30	Fluoride Residual	<1.5	mg/L	Resample/Re-test Calibration	2014/01/05
--------	------------	-------------------	------	------	------------------------------	------------

Annual Flow Summary

Tables 16 and 17 provides a summary of the quantities of flow rates with a comparison to rated capacities as listed in the systems Municipal Drinking Water License during the 2014 reportable period.

Table 16 – Annual Flow Summary (Valley Wells)

	Well "A" Deschene						Well "B" Kenneth					
	Total Flow	Average Daily Flow	Maximum Daily Flow	Instantaneous Peak Flow	MDWL Maximum Flow	% Capacity	Total Flow	Average Daily Flow	Maximum Daily Flow	Instantaneous Peak Flow	MDWL Maximum Flow	% Capacity
	m ³	m ³ /d	m ³ /d	L/s	m ³ /d		m ³	m ³ /d	m ³ /d	L/s	m ³ /d	
January	18,925	610	918.58	17.30	1,798	51	16,865	544	875.99	17.57	2,288	38
February	13,785	492	935.29	17.32	1,798	52	8,950	320	740.89	17.02	2,288	32
March	20,081	648	983.61	17.45	1,798	55	14,225	459	869.47	15.81	2,288	38
April	21,422	714	1,056.95	17.35	1,798	59	17,651	588	908.85	18.50	2,288	40
May	17,067	551	824.51	17.44	1,798	46	17,725	572	1,081.03	20.17	2,288	47
June	20,292	676	1,087.49	17.91	1,798	60	14,258	475	880.03	17.77	2,288	38
July	14,275	460	742.38	17.91	1,798	41	10,682	345	554.57	17.47	2,288	24
August	15,123	488	1,155.62	18.01	1,798	64	7,016	226	694.55	17.66	2,288	30
September	8,762	292	829.47	18.15	1,798	46	5,667	189	391.96	18.97	2,288	17
October	14,358	463	818.92	18.24	1,798	46	8,700	281	544.30	19.51	2,288	24
November	15,596	520	897.67	18.45	1,798	50	12,319	411	702.74	20.99	2,288	31
December	16,316	526	974.35	18.43	1,798	54	10,696	345	647.08	14.84	2,288	28
Total	196,002						144,754					

	Well "C" Phillipe						Well "D" Frost					
	Total Flow	Average Daily Flow	Maximum Daily Flow	Instantaneous Peak Flow	MDWL Maximum Flow	% Capacity	Total Flow	Average Daily Flow	Maximum Daily Flow	Instantaneous Peak Flow	MDWL Maximum Flow	% Capacity
	m ³	m ³ /d	m ³ /d	L/s	m ³ /d		m ³	m ³ /d	m ³ /d	L/s	m ³ /d	
January	22,897	739	1,307.98	25.74	2,288	57	39,333	1,269	2,015.22	27.22	2,288	88
February	15,050	538	1,335.76	24.51	2,288	58	23,487	839	1,950.64	26.52	2,288	85
March	32,207	1,039	1,904.75	24.92	2,288	83	51,267	1,654	1,972.04	26.59	2,288	86
April	30,698	1,023	1,878.80	24.45	2,288	82	8,858	295	1,907.61	44.04	2,288	83
May	17,860	576	1,225.83	24.75	2,288	54	32,579	1,051	1,829.31	24.43	2,288	80
June	27,587	920	1,488.00	25.16	2,288	65	34,006	1,134	1,677.93	23.98	2,288	73
July	21,291	687	1,206.91	24.38	2,288	53	22,785	735	1,740.61	24.19	2,288	76
August	14,449	466	1,148.58	24.68	2,288	50	27,346	882	1,779.66	24.55	2,288	78
September	19,644	655	1,163.57	24.76	2,288	51	24,937	831	1,824.40	26.39	2,288	80

City of Greater Sudbury
2014 Annual Water Works Summary Report

21

October	17,162	554	1,237.72	25.16	2,288	54	31,677	1,022	1,826.50	26.47	2,288	80
November	22,067	736	1,286.31	25.44	2,288	56	31,380	1,046	1,932.06	26.08	2,288	84
December	20,393	658	1,025.79	24.67	2,288	45	31,328	1,011	1,842.12	25.88	2,288	81
Total	261,305						358,983					

Well "E" Notre Dame							Well "F" Linden					
	Total Flow m³	Average Daily Flow m³/d	Maximum Daily Flow m³/d	Instantaneous Peak Flow L/s	MDWL Maximum Flow m³/d	% Capacity	Total Flow m³	Average Daily Flow m³/d	Maximum Daily Flow m³/d	Instantaneous Peak Flow L/s	MDWL Maximum Flow m³/d	% Capacity
January	39,730	1,282	2,154.41	26.55	3,105	69	46,260	1,492	2,160.09	27.24	3,269	66
February	38,765	1,384	2,149.12	33.18	3,105	69	29,813	1,065	2,145.27	36.01	3,269	66
March	30,512	984	1,688.94	22.78	3,105	54	37,094	1,197	2,195.55	34.44	3,269	67
April	46,469	1,549	1,822.80	22.11	3,105	59	42,333	1,411	2,202.05	39.62	3,269	67
May	23,359	754	1,658.02	22.12	3,105	53	44,302	1,429	2,254.12	27.88	3,269	69
June	27,017	901	1,386.37	22.58	3,105	45	36,230	1,208	2,264.77	27.74	3,269	69
July	31,017	1,001	1,828.97	22.60	3,105	59	32,728	1,056	2,259.46	33.99	3,269	69
August	30,112	971	1,866.15	23.15	3,105	60	39,741	1,282	2,199.04	39.49	3,269	67
September	23,165	772	1,903.92	23.08	3,105	61	23,134	771	2,202.52	37.79	3,269	67
October	26,496	855	1,931.57	23.29	3,105	62	36,078	1,164	2,190.91	26.79	3,269	67
November	43,446	1,448	1,987.80	23.80	3,105	64	38,000	1,267	2,166.87	36.04	3,269	66
December	23,630	762	1,853.78	24.24	3,105	60	28,809	929	2,138.92	27.13	3,269	65
Total	383,718						434,522					

Well "G" Pharand							Well "H" Michelle					
	Total Flow m³	Average Daily Flow m³/d	Maximum Daily Flow m³/d	Instantaneous Peak Flow L/s	MDWL Maximum Flow m³/d	% Capacity	Total Flow m³	Average Daily Flow m³/d	Maximum Daily Flow m³/d	Instantaneous Peak Flow L/s	MDWL Maximum Flow m³/d	% Capacity
January	10,117	326	1,021.25	23.12	2,290	45	19,269	622	971.96	24.62	2,290	42
February	16,237	580	931.98	22.46	2,290	41	11,602	414	723.25	17.60	2,290	32
March	22,474	725	1,269.98	85.00	2,290	55	18,256	589	1,011.72	25.34	2,290	44
April	28,276	943	1,275.61	22.10	2,290	56	21,666	722	976.79	18.48	2,290	43
May	22,520	726	1,062.29	23.07	2,290	46	17,893	577	992.71	27.20	2,290	43
June	28,743	958	1,409.35	25.64	2,290	62	22,946	765	1,407.75	23.77	2,290	61
July	21,761	702	1,174.68	83.74	2,290	51	15,930	514	770.15	23.55	2,290	34
August	19,497	629	1,235.32	22.68	2,290	54	14,225	459	973.16	18.10	2,290	43
September	19,582	653	1,079.00	22.65	2,290	47	20,600	687	1,499.00	23.75	2,290	65
October	19,312	623	1,189.38	25.74	2,290	52	12,333	398	810.25	23.68	2,290	35
November	3,716	124	705.82	22.47	2,290	31	17,235	575	943.51	18.17	2,290	41
December	21,359	689	1,258.46	22.69	2,290	55	2,686	87	502.67	22.43	2,290	22
Total	233,594						194,641					

	"I" Well						Well "Q" Chenier					
	Total Flow m ³	Average Daily Flow m ³ /d	Maximum Daily Flow m ³ /d	Instantaneous Peak Flow L/s	MDWL Maximum Flow m ³ /d	% Capacity	Total Flow m ³	Average Daily Flow m ³ /d	Maximum Daily Flow m ³ /d	Instantaneous Peak Flow L/s	MDWL Maximum Flow m ³ /d	% Capacity
January	0	0	0.00	0.00	1,973	0	18,285	590	984.64	26.16	2,333	42
February	0	0	0.00	0.00	1,973	0	30,964	1,106	1,466.77	25.71	2,333	63
March	0	0	0.00	0.00	1,973	0	23,751	766	1,900.76	25.78	2,333	81
April	0	0	0.00	0.00	1,973	0	13,295	443	1,590.56	25.95	2,333	68
May	0	0	0.00	0.00	1,973	0	39,858	1,286	1,900.88	25.92	2,333	81
June	0	0	0.00	0.00	1,973	0	44,778	1,493	1,900.84	25.65	2,333	81
July	10	0	14.98	6.43	1,973	1	46,707	1,507	1,900.85	26.06	2,333	81
August	0	0	0.00	0.00	1,973	0	40,284	1,299	1,725.03	26.03	2,333	74
September	0	0	0.00	0.00	1,973	0	46,645	1,555	1,900.85	25.77	2,333	81
October	0	0	0.00	0.00	1,973	0	35,844	1,156	1,900.82	26.35	2,333	81
November	0	0	0.00	0.00	1,973	0	28,812	960	1,900.77	26.23	2,333	81
December	0	0	0.00	0.00	1,973	0	42,293	1,364	1,900.85	26.00	2,333	81
Total	10						411,516					

	Well "R"					
	Total Flow m ³	Average Daily Flow m ³ /d	Maximum Daily Flow m ³ /d	Instantaneous Peak Flow L/s	MDWL Maximum Flow m ³ /d	% Capacity
January	24,780	799	1,251.37	34.77	3,162	40
February	43,819	1,565	2,040.47	34.16	3,162	65
March	28,124	907	1,727.96	24.59	3,162	55
April	32,686	1,090	1,727.91	24.73	3,162	55
May	61,533	1,985	2,592.10	33.46	3,162	82
June	54,259	1,809	2,592.07	34.22	3,162	82
July	60,304	1,945	2,592.07	33.37	3,162	82
August	58,982	1,903	2,591.98	34.48	3,162	82
September	65,515	2,184	2,592.12	34.63	3,162	82
October	51,111	1,649	2,592.04	34.76	3,162	82
November	33,603	1,120	2,591.99	34.17	3,162	82
December	78,330	2,527	2,592.07	33.13	3,162	82
Total	593,046					

Table 17 - Annual Flow Summary (Capreol Wells)

	"J" Well						"M" Well					
	Total Flow m ³	Average Daily Flow m ³ /d	Maximum Daily Flow m ³ /d	Instantaneous Peak Flow L/s	MDWL Maximum Flow m ³ /d	% Capacity	Total Flow m ³	Average Daily Flow m ³ /d	Maximum Daily Flow m ³ /d	Instantaneous Peak Flow L/s	MDWL Maximum Flow m ³ /d	% Capacity
January	26,247	847	2,294.87	30.06	3,273	70	31,609	1,020	2,448.74	34.05	3,927	62
February	27,063	967	2,388.25	29.90	3,273	73	39,695	1,418	2,541.18	33.83	3,927	65
March	22,317	720	2,398.68	29.51	3,273	73	32,852	1,060	2,570.10	35.24	3,927	65
April	29,566	986	2,181.21	29.57	3,273	67	25,461	849	2,166.05	37.35	3,927	55
May	31,557	1,018	1,991.29	29.12	3,273	61	12,308	397	2,044.94	39.16	3,927	52
June	17,692	590	1,861.44	30.17	3,273	57	21,181	706	1,817.64	33.05	3,927	46
July	28,712	926	1,755.50	39.72	3,273	54	20,998	677	1,702.13	37.56	3,927	43
August	32,348	1,043	1,851.20	38.98	3,273	57	15,416	497	1,935.40	31.74	3,927	49
September	15,226	508	1,681.96	27.96	3,273	51	27,000	900	1,717.82	30.56	3,927	44
October	22,266	718	1,716.79	28.01	3,273	52	25,374	819	1,827.61	30.44	3,927	47
November	21,254	708	1,698.05	29.60	3,273	52	19,258	642	1,730.02	30.35	3,927	44
December	27,154	876	2,001.42	28.54	3,273	61	26,080	841	2,022.88	31.77	3,927	52
Total	301,402						297,232					

Falconbridge Drinking Water System DWS# 240000020

Municipal Drinking Water License: 016-101
September 14, 2011
Drinking Water Works Permit: 016-201
September 13, 2011

In April 2009, the City of Greater Sudbury purchased the Falconbridge Wells and Storage Tank from Xstrata. The Falconbridge well system consists of 3 drilled wells:

- Falconbridge Well No. 5
- Falconbridge Well No. 6, and
- Falconbridge Well No. 7

Each well is equipped with a submersible pump. All three wells share a common treatment building that includes stand-by power, chlorine gas for disinfection, and a corrosion inhibitor. The wells are located

north of the Sudbury Airport and were developed by Xstrata, now called Glencore. Water is supplied south to the Town of Falconbridge and north via the Western Main to the Greater Sudbury Airport and Glencore's Nickel Rim Mine reservoir. There is a booster pump for supplying water to Nickel Rim reservoir when a well pump is not operating. The City sells water to Glencore and two industrial clients along the South transmission line and fluoridates the water, as mandated by the Sudbury and District Health Unit, before it enters the Falconbridge Municipal distribution system.

The distribution network in Falconbridge is relatively old and exposed to severe frost depths. Further, the elevated water storage provides a measure of security to the water system in the event of power interruptions and watermain breaks but its future is being explored. Other components of the distribution system include a fluoridation building, booster pumping station and a pressure regulating valve.

Water quality throughout the distribution system is monitored through regular sampling in accordance with O. Reg. 170/03.

Non-Compliance with Act, Regulations, Order or Approvals

Table 18 provides a summary of any requirements of the Act, Regulations, Orders, or Approval that the system failed to meet during the 2014 reportable period.

Table 18 - Falconbridge Wells

Item	Non-Compliance	Corrective Measures Taken
MOECC Inspection Issues	NONE	N/A
MOECC Orders	NONE	N/A

2014 Adverse Water Quality Incident Report

Table 19 provides 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 and the Sudbury and District Health Unit.

Table 19 - Adverse Water Quality Incidents

AWQI #	Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
None						

Annual Flow Summary

Table 20 provides a summary of the quantities of flow rates with a comparison to rated capacities as listed in the systems Municipal Drinking Water License during the 2014 reportable period.

Table 20 – Annual Flow Summary (Falconbridge Wells)

	Falconbridge Well #5						Falconbridge Well #6					
	Total Flow m ³	Average Daily Flow m ³ /d	Maximum Daily Flow m ³ /d	Instantaneous Peak Flow L/s	MDWL Maximum Flow m ³ /d	% Capacity	Total Flow m ³	Average Daily Flow m ³ /d	Maximum Daily Flow m ³ /d	Instantaneous Peak Flow L/s	MDWL Maximum Flow m ³ /d	% Capacity
January	10,135	327	852.42	16.72	1,417	60	4,602	148	740.83	15.39	1,417	52
February	11,369	406	820.80	15.30	1,417	58	4,026	144	876.52	15.51	1,417	62
March	5,810	187	840.65	15.63	1,417	59	9,905	320	847.11	15.43	1,417	60
April	11,696	390	982.12	15.86	1,417	69	6,225	208	772.92	15.45	1,417	55
May	11,799	381	936.49	16.70	1,417	66	4,924	159	794.33	15.43	1,417	56
June	4,780	159	998.25	15.52	1,417	70	16,828	561	1,081.68	15.17	1,417	76
July	8,251	266	998.94	16.86	1,417	70	7,589	245	896.99	15.22	1,417	63
August	11,849	382	1,161.89	16.21	1,417	82	4,413	142	1,022.62	15.14	1,417	72
September	4,909	164	1,198.17	16.71	1,417	85	6,297	210	885.66	15.24	1,417	62
October	5,748	185	1,030.62	16.80	1,417	73	8,424	272	835.03	14.55	1,417	59
November	15,707	524	1,195.97	15.69	1,417	84	10,122	337	910.01	14.84	1,417	64
December	7,852	253	873.49	15.62	1,417	62	11,369	367	908.27	14.86	1,417	64
Total	109,905						94,724					

Falconbridge Well #7						
	Total Flow m ³	Average Daily Flow m ³ /d	Maximum Daily Flow m ³ /d	Instantaneous Peak Flow L/s	MDWL Maximum Flow m ³ /d	% Capacity
January	8,329	269	958.16	16.27	1,417	68
February	5,872	210	838.59	16.02	1,417	59
March	7,533	243	816.80	16.09	1,417	58
April	5,854	195	850.15	16.09	1,417	60
May	8,354	269	887.57	16.25	1,417	63
June	6,431	214	1,118.64	16.35	1,417	79
July	11,788	380	980.59	16.48	1,417	69
August	14,977	483	1,044.00	16.28	1,417	74
September	17,214	574	1,214.67	16.17	1,417	86
October	11,277	364	887.21	16.05	1,417	63
November	3,579	119	906.44	15.76	1,417	64
December	7,878	254	920.42	15.59	1,417	65
Total	109,086					

Onaping/Levack Drinking Water System DWS# 220003519

Municipal Drinking Water License: 016-102
September 14, 2011
Drinking Water Works Permit: 016-202
September 13, 2011
Schedule C to DWWP 016-202
November 9, 2011

In 2010, the Onaping well supply system, Onaping distribution and Levack distribution were considered to be one complete system as all of the systems are connected. As such, one Drinking Water System (DWS) number and one Certificate of Approval had been assigned to the entire system. The CofA has since been changed to the listed Drinking Water License and Works Permits. This report will identify the works by geographical area where appropriate.

The Onaping Potable Water System was constructed in 1971 and owned by Xstrata. In 2009 the City of Greater Sudbury purchased the system from Xstrata and completed all major upgrades required to supply potable water to the communities of Onaping and Levack. The system was commissioned in November of 2009. The new Onaping/Levack system includes three drilled wells:

- Onaping Well No. 3,
- Onaping Well No. 4, and
- Onaping Well No. 5

Onaping Wells 3 and 4 use verticle turbine pumps and are housed in a single pumphouse. Onaping Well 5 incorporates a VFD pump and is in a separate building, but all wells feed into a common treatment building. The treatment building houses one well (Well 5) and provides chlorine gas injection for disinfection, fluoridation, as mandated by the Sudbury and District Health Unit, chemical addition for optimizing pH and for corrosion control plus stand-by power. An elevated storage tank with re-chlorination capabilities, a Pressure Control/Booster building with stand-by power, a Pressure control facility on Fraser Crescent and the distribution piping complete the system.

Completed projects in 2014 and the associated approximate costs included: Onaping storage tank inspection, (\$7,500)

The Levack distribution system was a recipient of water from the Vale wells in the Levack area but that changed with the acquisition of the Onaping wells and commissioning in November 2009. Water is no longer supplied from Vale and the connection has been terminated. Water is entirely provided by the Onaping wells and both Onaping and Levack distribution systems are connected.

Water quality throughout the distribution system is monitored through regular sampling in accordance with O. Reg. 170/03.

Non-Compliance with Act, Regulations, Order or Approvals

Table 21 provides a summary of any requirements of the Act, Regulations, Orders, or Approval that the system failed to meet during the 2014 reportable period.

Table 21 – Onaping/Levack Wells

Item	Non-Compliance	Corrective Measures Taken
MOECC Inspection Issues	NONE	N/A
MOECC Orders	NONE	N/A

--	--	--

2014 Adverse Water Quality Incident Report

Table 22 provides 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 and the Sudbury and District Health Unit.

Table 22 - Adverse Water Quality Incidents

AWQI #	Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
120638	2014/09/24	Weekly microbiological sample not analyzed by laboratory	N/A	CFU/100 mL	Resample/Re-test	2014/09/26

Annual Flow Summary

Table 23 provides a summary of the quantities of flow rates with a comparison to rated capacities as listed in the systems Municipal Drinking Water License during the 2014 reportable period.

Table 23- Annual Flow Summary (Onaping/Levack Wells)

	Onaping Well #3						Onaping Well #4					
	Total Flow m ³	Average Daily Flow m ³ /d	Maximum Daily Flow m ³ /d	Instantaneous Peak Flow L/s	MDWL Maximum Flow m ³ /d	% Capacity	Total Flow m ³	Average Daily Flow m ³ /d	Maximum Daily Flow m ³ /d	Instantaneous Peak Flow L/s	MDWL Maximum Flow m ³ /d	% Capacity
January	21,573	696	2460.26	30.19	5,184	47	31,063	1,002	2359.90	28.06	5,184	46
February	25,392	907	2454.42	30.19	5,184	47	13,863	495	2267.09	27.76	5,184	44
March	28,708	926	2472.91	30.58	5,184	48	23,583	761	2254.36	27.95	5,184	43
April	5,160	172	976.80	30.58	5,184	19	24,403	813	2279.25	28.58	5,184	44
May	22,367	722	2451.06	30.19	5,184	47	5,248	169	2245.27	29.05	5,184	43
June	6,490	216	2181.10	31.35	5,184	42	37,840	1,261	2441.71	29.11	5,184	47
July	32,446	1,047	2505.02	30.97	5,184	48	5,041	163	2260.49	28.09	5,184	44
August	8,871	286	1214.57	30.97	5,184	23	36,038	1,163	2366.61	27.96	5,184	46
September	4,248	142	641.64	30.97	5,184	12	20,517	684	2264.27	28.09	5,184	44
October	10,875	351	2403.39	30.58	5,184	46	3,488	113	1152.38	27.94	5,184	22
November	19,854	662	2400.09	30.19	5,184	46	14,159	472	2327.39	27.79	5,184	45
December	25,389	819	2472.28	30.58	5,184	48	19,481	628	233.49	27.34	5,184	5
Total	211,373						234,724					

Onaping Well #5						
	Total Flow m ³	Average Daily Flow m ³ /d	Maximum Daily Flow m ³ /d	Instantaneous Peak Flow L/s	MDWL Maximum Flow m ³ /d	% Capacity
January	17,295	558	2509.25	75.00	5,184	48
February	26,955	963	2622.06	46.19	5,184	51
March	27,566	889	2944.48	16.88	5,184	57
April	47,553	1,585	2813.74	46.69	5,184	54
May	50,809	1,639	2891.22	52.98	5,184	56
June	31,401	1,047	2835.43	51.44	5,184	55
July	39,846	1,285	2771.30	58.03	5,184	53
August	36,222	1,168	3046.21	53.28	5,184	59
September	55,774	1,859	3296.92	75.00	5,184	64
October	66,457	2,144	3012.44	58.24	5,184	58
November	47,284	1,576	3070.94	59.82	5,184	59
December	55,041	1,776	3696.63	58.10	5,184	71
Total	502,203					

Vermilion Distribution System DWS# 260006789

Municipal Drinking Water License: 016-104
April 19, 2010
Drinking Water Works Permit: 016-204 (v. 2.0)
November 3, 2011

The Vermilion distribution system is a standalone distribution system that receives water from a “donor” system. The City of Greater Sudbury purchases water from Vale, the owner of the Vermilion water treatment facility, which acts as the donor for the CGS Vermilion distribution system. Vale has responsibility for the treatment facility and must also comply with O. Reg. 170/03. The Vale water treatment facility is not the subject of this report.

The City owns and operates the distribution network in the communities of Copper Cliff, Lively, Naughton and Whitefish. The system also includes the Walden Water Storage Tank and Walden Metering Chamber. Additional service was provided in 2005 to supply Atikameksheng Anishnawbek, formerly known as the Whitefish Lake First Nation Reserve. The City has obligations to test, maintain and report on this distribution system as part of the MOECC regulations.

2014 Annual Water Works Summary Report

Completed projects in 2014 and the associated approximate costs included: communication upgrades to Lively meter chamber, (\$32,000); Walden storage tank inspection, (\$7,500); and bulk water filling station upgrades, (\$28,800).

Water quality throughout the distribution systems is monitored through regular sampling in accordance with O. Reg. 170/03.

Non-Compliance with Act, Regulations, Order or Approvals

Table 24 provides a summary of any requirements of the Act, Regulations, Orders, or Approval that the system failed to meet during the 2014 reportable period.

Table 24 - Vermilion Distribution System

Item	Non-Compliance	Measure Taken to Ensure Compliance
MOECC Inspection Issues	NONE	N/A
MOECC Orders	NONE	N/A

2014 Adverse Water Quality Incident Report

Table 25 provides 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 and the Sudbury and District Health Unit.

Table 25 - Adverse Water Quality Incidents

AWQI #	Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
116229	2014/03/01	Low Pressure	0	psi	Flushed hydrants Restored pressure Resample/Re-test	2014/03/01
121422	2014/11/04	Chlorine Residual	<0.05	mg/L	Flushed hydrants Restored residual	2014/11/04

Annual Flow Summary – N/A