



2011 Water Works Summary Report

Large Municipal – Residential Systems

O. Reg. 170/03, Sched. 22; O. Reg. 249/03, s. 24; O. Reg. 253/05, s. 18.

v.1.0

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Executive Summary

The production and delivery of potable water in Ontario is regulated by the Ministry of Environment (MOE) 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 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, 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 (www.greatersudbury.ca)

and notice has been posted that 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 seven large municipal, residential systems and one independent distribution system. The one distribution system (Vermillion) 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 Serviced
Sudbury Drinking Water System - Wanapitei	City of Greater Sudbury	Surface water conventional treatment plant, Fluoridation, Corrosion control added, Distribution system	Wanapitei River	Sudbury, Coniston, Wanapitei, Markstay, Garson
Sudbury Drinking Water System - David Street	City of Greater Sudbury	Surface water Membrane Filtration and Ultraviolet irradiation, Fluoridation, Corrosion control added, Distribution system	Ramsey Lake	Sudbury
Sudbury Drinking Water System - Garson	City of Greater Sudbury	Wells with disinfection, Fluoridation, Distribution system	Groundwater	Garson
Dowling Drinking Water System	City of Greater Sudbury	Wells with disinfection and Ultraviolet irradiation, Fluoridation, Distribution system	Groundwater	Dowling
Bleazard Valley/ Capreol Drinking Water System	City of Greater Sudbury	Wells with disinfection and Ultraviolet irradiation, Fluoridation, Corrosion control added for supply to Capreol, Distribution system	Groundwater	Valley East, Azilda, Chelmsford & Capreol

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
Vermillion River Water Treatment Plant	Vale	Surface water conventional treatment plant, Fluoridation	River	Vermillion Distribution System
Vermillion Distribution System	City of Greater Sudbury	Distribution System	Vermillion 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 MOE. 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 of our water facilities. It is important to understand that this is part of the required process of the Regulations and the MOE'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 is responsible for the enforcement of regulations and conducts regular, annual, announced and unannounced, inspections of all of our facilities. MOE inspections "grading" has given the CGS water systems a 99.92% with most of the individual assessments being 100%. 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 MOE 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 moving forward with the initiative. The City has completed eight 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 is improving with the corrosion control additive and pH adjustment measures. To date, 2370 samples have been collected with 37 private residences and one distribution sample in excess of the standard, representing less than 2% of all samples. The initiative is scheduled to continue through 2012 after which time the City will be able to exercise the new direction the MOE has adopted for lead sampling requirements.

The City is well organized to manage the existing water works systems. Further, staff has been pro-active 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 are being planned and implemented in accordance with applicable standards.

Reviewed by:


Date: FEB. 1 / 12



Gary Conlin
Water Supervisor III

Approved by:

Date: FEB 8 2012



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. 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 MOE 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

1.2 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. 324/08) - 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. 106/10). This regulation outlines the requirements for:

1) Types of Drinking Water Systems

- 2) Required reports (annual, summary reports)
- 3) Retention of records
- 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 Certificates of Approvals or Licenses, Acts, Regulations or any MOE 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
Apr 20, 2010
Drinking Water Works Permit: 016-206
Nov 3, 2011

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 2011 included: the replacement of a high lift pump and motor at a cost of \$84,000. Capital improvements to various infrastructure projects totaled approximately \$1,688,000.

The water supply for the plant is the Wanapitei River. The raw water quality is reasonably reliable but is, however, subject to changes in water quality 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
- Colour.

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 or up-flow convertors, 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 2011 reportable period.

Table 2 - Wanapitei Water Treatment Plant

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

2011 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
99631	2011/01/08	Total Coliform	3	CFU	Resample/Re-test	2011/01/11
99805	2011/01/26	UV	0	mJ/cm ²	Disinfectant restored/increased	2011/01/26
99882	2011/02/03	UV	0	mJ/cm ²	Disinfectant restored/increased	2011/02/03
100138	2011/03/07	UV	0	mJ/cm ²	Disinfectant restored/increased	2011/03/07
100458	2011/04/08	UV	0	CFU	Disinfectant restored/increased	2011/04/08
100570	2011/03/17	Watermain break			Flushing mains/pipes	2011/08/29
100993	2011/05/23	Security Hatch			Installed security fencing around hatch	2011/05/30
101090	2011/05/30	Hose Bib			Flushing mains/pipes	2011/06/01

103841	2011/10/16	UV	0	CFU	Disinfectant restored/increased	2011/10/16
104331	2011/11/26	Total Coliform	3	CFU	Resample/Re-test	2011/12/02

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 2011 reportable period.

Table 4 - Annual Flow Summary (Sudbury Plants)

Wanapitei Water Treatment Plant							David Street Water Treatment Plant					
	Total Flow m3	Average Daily Flow m3/d	Maximum Daily Flow m3/d	Instantaneous Peak Flow L/s	PTTW Maximum Flow m3/d	% Capacity	Total Flow m3	Average Daily Flow m3/d	Maximum Daily Flow m3/d	Instantaneous Peak Flow L/s	PTTW Maximum Flow m3/d	% Capacity
January	933,124	30,101	36,220.07	437.37	54,000	67	373,341	12,043	12,383.63	320.30	40,000	31
February	854,579	30,521	35,457.41	431.66	54,000	66	336,205	12,007	12,089.51	177.76	40,000	30
March	949,665	30,634	36,026.59	432.50	54,000	67	369,664	11,925	12,085.40	313.32	40,000	30
April	869,282	28,976	31,138.04	621.64	54,000	58	359,066	11,969	12,075.02	183.84	40,000	30
May	843,894	27,222	29,320.94	420.25	54,000	54	369,061	11,905	12,495.40	317.27	40,000	31
June	853,587	28,453	30,444.49	420.08	54,000	56	416,124	13,871	21,517.43	317.70	40,000	54
July	911,095	29,390	35,083.56	432.83	54,000	65	459,253	14,815	19,547.84	318.53	40,000	49
August	960,757	30,992	35,542.03	440.55	54,000	66	398,568	12,857	16,603.97	317.74	40,000	42
September	889,080	29,636	31,252.75	435.02	54,000	58	408,713	13,624	18,938.45	317.80	40,000	47
October	855,553	27,598	29,347.92	414.88	54,000	54	384,593	12,406	20,273.59	316.35	40,000	51
November	837,653	27,922	31,337.49	497.45	54,000	58	363,114	12,104	16,775.76	316.60	40,000	42
December	825,279	26,622	32,272.80	436.19	54,000	60	367,554	11,857	14,490.25	353.98	40,000	36
Total	10,583,548						4,605,256					

Sudbury Drinking Water System - David Street DWS# 220003537

Municipal Drinking Water License: 016-106
Apr 20, 2010
Drinking Water Works Permit: 016-206
Nov 3, 2011

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 is over 100 years old and 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. Although this lake is seen as an excellent source of raw water, development around the lake has compromised the security of this water source. Although virtually all septic use has been removed from the watershed, further measures are being reviewed by City staff and the Provincial Source Water Protection Committee 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 2011 included replacing 96 Zenon ultrafiltration modules at a cost of \$87,330.

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. Watermain related capital projects undertaken in 2011 included work done at the Beech St. bridge, Ramsey Lake Rd. watermain looping and various watermain replacements totaling approximately \$919,000.

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 2011 reportable period.

Table 5 - David Street Water Treatment Plant

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

2011 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
101624	2011/06/27	UV	0	mJ/cm ²	Disinfectant restored/increased	2011/06/27
101969	2011/07/13	Pressure		psi	Resample/Re-test	2011/07/13
102202	2011/07/23	Total Coliform	1	CFU	Resample/Re-test	2011/07/25
102887	2011/08/21	Chlorine residual	0.05	mg/l	No further action required	2011/08/21
103400	2011/09/20	E-Coli / Total Coliform	9/17	CFU	Resample/Re-test	2011/09/21
104334	2011/11/27	Pressure			Resample/Re-test	2011/12/02

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 2011 reporting period.

Table 7 - Annual Flow Summary

Wanapitei Water Treatment Plant							David Street Water Treatment Plant					
	Total Flow m3	Average Daily Flow m3/d	Maximum Daily Flow m3/d	Instantaneous Peak Flow L/s	PTTW Maximum Flow m3/d	% Capacity	Total Flow m3	Average Daily Flow m3/d	Maximum Daily Flow m3/d	Instantaneous Peak Flow L/s	PTTW Maximum Flow m3/d	% Capacity
January	933,124	30,101	36,220.07	437.37	54,000	67	373,341	12,043	12,383.63	320.30	40,000	31
February	854,579	30,521	35,457.41	431.66	54,000	66	336,205	12,007	12,089.51	177.76	40,000	30
March	949,665	30,634	36,026.59	432.50	54,000	67	369,664	11,925	12,085.40	313.32	40,000	30
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June	853,587	28,453	30,444.49	420.08	54,000	56	416,124	13,871	21,517.43	317.70	40,000	54
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December	825,279	26,622	32,272.80	436.19	54,000	60	367,554	11,857	14,490.25	353.98	40,000	36
Total	10,583,548						4,605,256					

Sudbury Drinking Water System - Garson

DWS# 220003485

Municipal Drinking Water License: 016-106

Apr 20, 2010

Drinking Water Works Permit: 016-206

Nov 3, 2011

The Garson water works is a communal groundwater system consisting of three wells, and servicing the community of Garson. 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. Completion of the install of the replacement backup generator and facility has been completed. Most work was completed in 2010 but final costs of \$13,000 were required for 2011.

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. The hydrogeologists noted potential sources of contamination of the water supply that required further study and a plan to provide long-term protection of the groundwater sources. The Source Water Protection Committee has since been formed and the City awaits direction from the Committee.

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 201 reportable period.

Table 8 - Garson Wells and Distribution System

Item	Non-Compliance	Measure Taken to Ensure Compliance
MOE Inspection Issues	Regulatory sample not collected and sample not collected within regulated timeframe	Increased monitoring of sample collection and frequency
MOE Orders	NONE	N/A

2011 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
100218	2011/03/15	Free Cl ₂	0.03	mg/l	Resample/Re-test	2011/03/21

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 2011 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	PTTW 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	PTTW Maximum Flow m ³ /d	% Capacity
January	5,147	166	326.94	40.00	1,572	21	10,146	327	882.58	32.71	3,274	27
February	5,378	192	329.00	14.67	1,572	21	14,430	515	1,287.64	30.97	3,274	39
March	5,508	178	406.72	15.45	1,572	26	11,510	371	1,072.35	30.79	3,274	33
April	4,059	135	361.25	14.69	1,572	23	12,363	412	1,275.75	33.05	3,274	39
May	6,168	199	349.18	14.92	1,572	22	17,865	576	963.63	31.79	3,274	29
June	6,781	226	449.75	15.21	1,572	29	18,250	608	1,219.49	35.35	3,274	37
July	6,947	224	568.51	15.22	1,572	36	16,391	529	1,107.52	35.50	3,274	34
August	7,176	231	527.57	14.62	1,572	34	14,812	478	1,096.49	34.47	3,274	33

September	6,594	220	309.18	14.92	1,572	20	13,402	447	1,194.00	30.96	3,274	36
October	6,103	197	257.88	14.42	1,572	16	12,957	418	944.54	29.74	3,274	29
November	6,224	207	263.11	14.27	1,572	17	16,496	550	1,505.96	31.31	3,274	46
December	6,655	215	294.81	14.45	1,572	19	14,756	476	1,047.85	30.61	3,274	32
Total	72,740						173,378					

Garson Well #2						
	Total Flow m3	Average Daily Flow m3/d	Maximum Daily Flow m3/d	Instantaneous Peak Flow L/s	PTTW Maximum Flow m3/d	% Capacity
January	27,267	880	1,941.41	31.73	2,981	65
February	17,658	631	1,445.84	33.06	2,981	49
March	22,092	713	1,578.70	31.23	2,981	53
April	24,222	807	1,726.61	31.98	2,981	58
May	20,403	658	1,392.00	34.73	2,981	47
June	24,752	825	1,581.92	37.03	2,981	53
July	29,628	956	1,474.36	32.24	2,981	49
August	24,812	800	1,114.67	32.30	2,981	37
September	23,568	786	1,242.92	31.61	2,981	42
October	21,317	688	1,032.23	32.83	2,981	35
November	18,298	610	1,190.83	32.66	2,981	40
December	20,235	653	1,197.93	33.34	2,981	40
Total	274,252					

Dowling Wells and Distribution System DWS# 210001665

Municipal Drinking Water License: 016-103

Apr 19, 2010

Drinking Water Works Permit: 016-203

Nov 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 MOE 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. 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 MOE 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 MOE 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 MOE criteria for “potentially under the influence of surface water”, adequate natural filtration of the water exists. Based on the conclusions by the MOE, 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 2011 reportable period.

Table 11 - Dowling Wells and Distribution System

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

2011 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 Certificate of Approval during the 2011 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	PTTW Maximum Flow m3/d	% Capacity	Total Flow m3	Average Daily Flow m3/d	Maximum Daily Flow m3/d	Instantaneous Peak Flow L/s	PTTW Maximum Flow m3/d	% Capacity
January	6,839	221	694.95	32.99	3,600	19	4,715	152	688.09	32.16	3,600	19
February	5,373	192	698.85	32.58	3,600	19	4,879	174	720.62	31.34	3,600	20
March	5,150	166	690.02	32.16	3,600	19	5,848	189	681.01	31.34	3,600	19
April	5,718	191	693.79	32.99	3,600	19	2,838	95	652.32	32.16	3,600	18
May	7,579	244	717.00	32.99	3,600	20	7,038	227	1,207.23	32.16	3,600	34
June	762	25	514.44	42.06	3,600	14	11,244	375	713.71	31.34	3,600	20
July	4,622	149	667.84	33.40	3,600	19	8,755	282	724.23	30.93	3,600	20
August	10,345	334	746.42	30.52	3,600	21	1,921	62	727.95	30.52	3,600	20
September	3,323	111	743.21	30.10	3,600	21	8,386	280	654.75	30.93	3,600	18
October	6,629	214	735.84	33.40	3,600	20	4,861	157	651.54	30.52	3,600	18
November	4,387	146	662.02	31.34	3,600	18	6,258	209	685.99	30.93	3,600	19
December	620	20	301.55	30.93	3,600	8	10,369	334	810.67	30.52	3,600	23
Total	61,347						77,112					

Bleazard Valley /Capreol Well Supply DWS# 210000737

Municipal Drinking Water License: 016-105
Nov 3, 2011
Drinking Water Works Permit: 016-205
Nov 1, 2011

In 2010, the Bleazard 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 Bleazard Valley portion of the system is a multi-well groundwater system servicing the communities of Hanmer, Bleazard Valley, Val Caron, McCreah Heights, Azilda and Chelmsford. Nine 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 MOE 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 MOE system were constructed by the City.

Each well pumphouse contains a vertical turbine well pump, gas chlorine disinfection equipment and 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 – Phillipe;
- Well D – Frost;
- Well E - Notre Dame; and
- Well I – I 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 MOE 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 MOE 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.

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. 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.

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. The water quality is beginning to show the effects of urban storm drainage. Further, existing zoning by-laws appear inadequate to protect the wells from further development within the well capture zones. For these reasons, options are being considered to preserve the quality of the water over the long-term. The engineering and geotechnical/hydrogeological investigations for new well supplies are complete and work was started in 2011 for two additional water supply wells.

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 M.R. No.84. Wells J and M are housed in separate well houses and have vertical turbine 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 hydrogeological 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 MOE on June 30, 2002. The response from a review by MOE 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 3500 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 2011 reportable period.

Table 14 - Blezard Valley/Capreol Wells Supply

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

2011 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
99673	2011/01/13	Total coliform	1	CFU	Resample/Re-test	2011/02/14
103071	2011/08/31	Pressure	15.3	psi	No further action required	2011/08/31
103908	2011/10/20	Pressure	10	psi	No further action required	2011/10/20
104448	2011/12/07	Total coliform	1	CFU	Resample/Re-test	2011/12/09

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 Certificate of Approval during the 2011 reportable period.

Table 16 – Annual Flow Summary (Valley Wells)

Well "A" Deschene							Well "B" Kenneth					
	Total Flow m3	Average Daily Flow m3/d	Maximum Daily Flow m3/d	Instantaneous Peak Flow L/s	PTTW Maximum Flow m3/d	% Capacity	Total Flow m3	Average Daily Flow m3/d	Maximum Daily Flow m3/d	Instantaneous Peak Flow L/s	PTTW Maximum Flow m3/d	% Capacity
January	19,904	642	947.84	18.91	1,797	53	17,167	554	879.47	18.21	2,288	38
February	16,095	575	899.14	18.94	1,797	50	19,100	682	970.73	20.89	2,288	42
March	22,769	734	1,032.42	19.83	1,797	57	17,572	567	1,048.32	20.33	2,288	46
April	20,053	668	884.97	18.88	1,797	49	18,500	617	985.29	20.98	2,288	43
May	22,758	734	1,121.27	19.03	1,797	62	23,467	757	1,326.82	48.56	2,288	58
June	21,227	708	1,009.45	19.00	1,797	56	23,807	794	1,369.93	22.34	2,288	60
July	22,152	715	992.03	18.93	1,797	55	18,765	605	1,034.59	21.96	2,288	45
August	21,260	686	1,010.27	18.98	1,797	56	13,401	432	885.39	18.75	2,288	39
September	18,617	621	944.88	18.80	1,797	53	5,867	196	813.98	20.81	2,288	36
October	1,829	59	414.86	18.32	1,797	23	3,214	104	695.23	21.49	2,288	30
November	2,181	73	269.23	18.96	1,797	15	12,331	411	948.46	22.61	2,288	41
December	1,893	61	293.32	17.98	1,797	16	18,534	598	951.36	23.14	2,288	42
Total	190,738						191,725					

Well "C" Phillipe							Well "D" Frost					
	Total Flow m3	Average Daily Flow m3/d	Maximum Daily Flow m3/d	Instantaneous Peak Flow L/s	PTTW Maximum Flow m3/d	% Capacity	Total Flow m3	Average Daily Flow m3/d	Maximum Daily Flow m3/d	Instantaneous Peak Flow L/s	PTTW Maximum Flow m3/d	% Capacity
January	27,290	880	1,282.09	24.53	2,288	56	25,620	826	1,268.71	24.42	2,288	55
February	25,404	907	1,227.19	24.52	2,288	54	28,031	1,001	1,925.15	25.65	2,288	84
March	30,002	968	1,401.65	24.58	2,288	61	29,133	940	1,554.01	24.84	2,288	68
April	27,034	901	1,188.87	24.39	2,288	52	41,400	1,380	1,976.04	25.57	2,288	86
May	30,327	978	1,496.46	24.50	2,288	65	44,450	1,434	1,976.90	25.95	2,288	86
June	30,683	1,023	1,812.59	24.50	2,288	79	33,789	1,126	1,929.07	25.55	2,288	84
July	31,657	1,021	1,360.71	24.41	2,288	59	41,523	1,339	1,944.62	25.19	2,288	85
August	25,876	835	1,208.78	24.67	2,288	53	42,668	1,376	1,906.99	25.11	2,288	83
September	28,754	958	1,270.30	24.42	2,288	56	50,715	1,691	1,985.24	25.66	2,288	87
October	30,775	993	1,411.85	24.73	2,288	62	42,986	1,387	1,927.81	25.25	2,288	84
November	30,001	1,000	1,352.58	24.74	2,288	59	35,143	1,171	1,900.35	25.31	2,288	83
December	33,507	1,081	1,358.95	24.56	2,288	59	34,299	1,106	1,898.08	24.89	2,288	83
Total	351,310						449,757					

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	PTTW Maximum Flow m3/d	% Capacity	Total Flow m3	Average Daily Flow m3/d	Maximum Daily Flow m3/d	Instantaneous Peak Flow L/s	PTTW Maximum Flow m3/d	% Capacity
January	47,545	1,534	2,552.00	30.56	3,105	82	59,579	1,922	2,407.05	32.00	3,268	74
February	56,126	2,005	2,521.57	30.25	3,105	81	43,038	1,537	2,406.33	31.11	3,268	74
March	50,707	1,636	2,507.96	29.95	3,105	81	62,615	2,020	2,378.64	30.08	3,268	73
April	44,609	1,487	2,510.39	29.75	3,105	81	42,250	1,408	2,373.81	30.63	3,268	73
May	58,517	1,888	2,530.38	30.01	3,105	81	37,677	1,215	2,450.03	36.04	3,268	75
June	64,418	2,147	2,514.14	30.45	3,105	81	41,049	1,368	2,440.42	34.51	3,268	75
July	57,053	1,840	2,533.45	32.72	3,105	82	42,819	1,381	2,338.35	33.89	3,268	72
August	39,204	1,265	1,919.17	30.35	3,105	62	52,703	1,700	2,426.05	30.69	3,268	74
September	34,680	1,156	1,564.14	31.23	3,105	50	44,991	1,500	2,452.58	30.80	3,268	75
October	46,123	1,488	2,787.92	29.76	3,105	90	49,385	1,593	2,454.48	31.34	3,268	75
November	36,690	1,223	2,482.59	35.06	3,105	80	51,498	1,717	2,404.85	30.77	3,268	74
December	39,555	1,276	2,502.29	30.45	3,105	81	64,208	2,071	2,412.39	30.26	3,268	74
Total	575,227						591,812					

Well "G" Pharand							Well "H" Michelle					
	Total Flow m3	Average Daily Flow m3/d	Maximum Daily Flow m3/d	Instantaneous Peak Flow L/s	PTTW Maximum Flow m3/d	% Capacity	Total Flow m3	Average Daily Flow m3/d	Maximum Daily Flow m3/d	Instantaneous Peak Flow L/s	PTTW Maximum Flow m3/d	% Capacity
January	16,626	536	1,052.13	22.18	2,289	46	22,605	729	1,070.65	30.06	2,289	47
February	16,704	597	1,134.43	22.15	2,289	50	21,202	757	1,017.49	29.57	2,289	44
March	7,786	251	1,138.80	22.30	2,289	50	27,542	888	1,421.47	29.77	2,289	62
April	5,887	196	1,065.58	22.34	2,289	47	19,277	643	977.81	23.02	2,289	43
May	14,997	484	1,186.11	22.36	2,289	52	20,781	670	1,258.68	29.94	2,289	55
June	15,937	531	1,222.15	22.33	2,289	53	19,073	636	1,280.96	66.20	2,289	56
July	20,222	652	1,136.65	22.32	2,289	50	24,351	786	1,126.77	28.78	2,289	49
August	20,268	654	1,050.67	22.69	2,289	46	22,992	742	1,104.12	28.90	2,289	48
September	17,691	590	1,179.41	22.49	2,289	52	24,414	814	1,181.14	29.48	2,289	52
October	20,090	648	1,067.21	23.03	2,289	47	25,543	824	1,183.72	29.81	2,289	52
November	23,414	780	1,253.13	22.48	2,289	55	12,892	430	1,066.18	36.49	2,289	47
December	28,795	929	1,254.38	22.26	2,289	55	26,634	859	1,152.95	29.90	2,289	50
Total	208,417						267,306					

"I" Well						
	Total Flow m3	Average Daily Flow m3/d	Maximum Daily Flow m3/d	Instantaneous Peak Flow L/s	PTTW Maximum Flow m3/d	% Capacity
January	28,803	929	1,171.43	21.35	1,972	59
February	10,580	378	1,164.86	21.12	1,972	59
March	25,588	825	1,168.58	21.01	1,972	59
April	34,169	1,139	1,165.76	24.30	1,972	59
May	21,833	704	1,165.34	21.22	1,972	59

June	25,697	857	1,163.25	22.06	1,972	59
July	30,008	968	1,167.60	20.85	1,972	59
August	32,951	1,063	1,169.60	21.67	1,972	59
September	34,214	1,140	1,166.05	21.41	1,972	59
October	34,307	1,107	1,166.54	21.19	1,972	59
November	33,590	1,120	1,164.06	21.42	1,972	59
December	31,234	1,008	1,161.73	21.70	1,972	59
Total	342,974					

Table 17 - Annual Flow Summary (Capreol Wells)

"J" Well							"M" Well					
	Total Flow m3	Average Daily Flow m3/d	Maximum Daily Flow m3/d	Instantaneous Peak Flow L/s	PTTW Maximum Flow m3/d	% Capacity	Total Flow m3	Average Daily Flow m3/d	Maximum Daily Flow m3/d	Instantaneous Peak Flow L/s	PTTW Maximum Flow m3/d	% Capacity
January	31,476	1,015	1,936.20	36.34	3,273	59	15,019	484	1,410.18	29.71	3,927	36
February	34,724	1,240	2,067.67	33.43	3,273	63	11,252	402	1,403.18	29.69	3,927	36
March	26,454	853	1,941.20	33.10	3,273	59	12,205	394	1,818.07	41.08	3,927	46
April	28,811	960	1,811.44	35.61	3,273	55	20,352	678	1,811.49	36.06	3,927	46
May	20,899	674	1,702.94	33.38	3,273	52	26,465	854	1,715.20	32.98	3,927	44
June	11,500	383	1,795.48	32.20	3,273	55	36,177	1,206	1,909.49	46.79	3,927	49
July	21,298	687	1,787.96	35.10	3,273	55	29,225	943	1,966.12	35.05	3,927	50
August	22,434	724	1,892.73	41.18	3,273	58	25,984	838	1,993.25	35.19	3,927	51
September	15,936	531	1,751.24	34.25	3,273	54	24,389	813	1,804.99	38.26	3,927	46
October	19,348	624	1,800.25	33.34	3,273	55	27,440	885	1,774.85	36.68	3,927	45
November	21,511	717	1,625.30	30.72	3,273	50	20,491	683	1,504.86	31.55	3,927	38
December	2,897	93	1,439.95	30.79	3,273	44	13,098	423	1,533.15	41.37	3,927	39
Total	257,288						262,097					

Falconbridge Wells System DWS# 240000020

Municipal Drinking Water License: 016-101
Sep 14, 2011
Drinking Water Works Permit: 016-201
Sep 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. Water is supplied south to the Town of Falconbridge and north via the Western Main to the Greater Sudbury Airport and the 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 Xstrata 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. 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 2011 reportable period.

Table 18 - Falconbridge Wells

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

2011 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
100206	2011/03/14	Sodium (missed sample)		mg/l	Resample/Re-test	2011/03/14
104361	2011/11/29	Fluoride	2	mg/l	Resample/Re-test	2011/11/29

Annual Flow Summary

Tables 20 and 21 provide a summary of the quantities of flow rates with a comparison to rated capacities as listed in the systems Certificate of Approval during the 2011 reportable period.

Table 20 – Annual Flow Summary (Falconbridge Wells)

Falconbridge Well #5							Falconbridge Well #6					
	Total Flow m3	Average Daily Flow m3/d	Maximum Daily Flow m3/d	Instantaneous Peak Flow L/s	PTTW Maximum Flow m3/d	% Capacity	Total Flow m3	Average Daily Flow m3/d	Maximum Daily Flow m3/d	Instantaneous Peak Flow L/s	PTTW Maximum Flow m3/d	% Capacity
January	10,978	354	1,071.60	15.38	4,250	25	7,143	230	867.33	15.53	4,250	20
February	10,532	376	1,031.35	15.28	4,250	24	5,696	203	1,101.61	15.52	4,250	26
March	7,219	233	943.84	15.21	4,250	22	10,744	347	1,000.50	15.87	4,250	24
April	4,764	159	1,000.51	15.12	4,250	24	8,250	275	945.01	15.97	4,250	22
May	11,224	362	996.92	15.14	4,250	23	8,557	276	1,024.58	16.00	4,250	24
June	13,576	453	1,192.10	15.53	4,250	28	11,967	399	1,104.61	15.95	4,250	26
July	16,584	535	1,248.89	15.17	4,250	29	849	27	233.81	16.27	4,250	6
August	8,975	290	1,161.63	15.64	4,250	27	8,158	263	115.77	18.89	4,250	3
September	15,258	509	1,136.44	15.51	4,250	27	8,440	281	1,070.62	15.74	4,250	25
October	6,122	197	1,008.40	15.76	4,250	24	6,158	199	770.34	16.05	4,250	18
November	4,988	166	725.36	15.88	4,250	17	9,173	306	742.56	15.53	4,250	17
December	4,760	154	773.80	15.48	4,250	18	7,514	242	764.65	15.29	4,250	18
Total	114,980						92,649					

Falconbridge Well #7						
	Total Flow m3	Average Daily Flow m3/d	Maximum Daily Flow m3/d	Instantaneous Peak Flow L/s	PTTW Maximum Flow m3/d	% Capacity
January	8,633	278	1,074.32	15.30	4,250	25
February	10,030	358	1,095.11	15.28	4,250	26
March	10,064	325	988.96	15.32	4,250	23
April	13,263	442	1,037.88	15.36	4,250	24
May	7,833	253	973.66	15.36	4,250	23
June	5,281	176	1,259.47	15.27	4,250	30
July	15,833	511	1,165.71	15.32	4,250	27
August	15,298	493	1,162.19	15.45	4,250	27
September	5,250	175	1,086.27	15.39	4,250	26
October	10,221	330	808.44	15.18	4,250	19
November	5,809	194	766.98	15.21	4,250	18
December	8,762	283	787.04	15.26	4,250	19
Total	116,277					

Table 21 – Annual Flow Summary (Falconbridge Fluoridation Facility)

Falconbridge Fluoridation Facility						
	Total Flow m3	Average Daily Flow m3/d	Maximum Daily Flow m3/d	Instantaneous Peak Flow L/s	PTTW Maximum Flow m3/d	% Capacity
January	5,435	175	216.11	10.00	727	30
February	4,819	172	195.81	10.00	727	27
March	5,375	173	192.59	9.38	727	26
April	6,815	227	347.24	10.00	727	48
May	10,621	343	383.44	10.00	727	53
June	11,635	388	519.41	10.00	727	71
July	13,298	429	519.10	10.00	727	71
August	13,009	420	200.99	10.00	727	28
September	11,359	379	433.31	10.00	727	60
October	5,995	193	220.92	7.84	727	30
November	4,538	151	175.40	10.00	727	24
December	5,119	165	210.35	9.90	727	29
Total	98,018					

Onaping/Levack Wells System DWS# 220003519

Municipal Drinking Water License: 016-102
Sep 14, 2011
Drinking Water Works Permit: 016-202
Sep 13, 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 has been assigned to the entire system. 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 are housed in a single pumphouse and Onaping Well 5 is in a separate building, but all 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 corrosion control and 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.

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 22 provides a summary of any requirements of the Act, Regulations, Orders, or Approval that the system failed to meet during the 2011 reportable period.

Table 22 – Onaping/Levack Wells

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

2011 Adverse Water Quality Incident Report

Table 23 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 23 - Adverse Water Quality Incidents

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

Annual Flow Summary

Table 24 provides a summary of the quantities of flow rates with a comparison to rated capacities as listed in the systems Certificate of Approval during the 2011 reportable period.

Table 24– Annual Flow Summary (Onaping/Levack Wells)

Onaping Well #3							Onaping Well #4					
	Total Flow m3	Average Daily Flow m3/d	Maximum Daily Flow m3/d	Instantaneous Peak Flow L/s	PTTW Maximum Flow m3/d	% Capacity	Total Flow m3	Average Daily Flow m3/d	Maximum Daily Flow m3/d	Instantaneous Peak Flow L/s	PTTW Maximum Flow m3/d	% Capacity
January	28,861	931	2386.34	30.58	5,184	46	18,365	592	2284.42	32.28	5,184	44
February	12,018	429	2366.13	29.81	5,184	46	14,919	533	2533.45	31.72	5,184	49
March	28,969	934	2398.58	29.81	5,184	46	24,518	791	2425.40	32.25	5,184	47
April	25,328	844	2431.81	29.81	5,184	47	10,283	343	2531.63	31.31	5,184	49
May	27,937	901	2378.51	29.81	5,184	46	12,455	402	2016.97	31.98	5,184	39
June	11,555	385	2353.52	29.81	5,184	45	21,429	714	2379.00	31.84	5,184	46
July	20,541	663	2283.19	29.81	5,184	44	21,984	709	2001.95	31.47	5,184	39
August	22,599	729	2135.91	29.81	5,184	41	5,222	168	1765.38	32.21	5,184	34
September	9,290	310	1881.13	29.81	5,184	36	25,832	861	2021.52	31.68	5,184	39
October	13,336	430	1898.78	29.42	5,184	37	16,306	526	2113.27	30.48	5,184	41

November	13,813	460	1924.10	29.42	5,184	37	16,310	544	2209.12	30.66	5,184	43
December	26,709	862	2300.03	29.42	5,184	44	28,278	912	2493.21	31.06	5,184	48
Total	240,956						215,901					

Onaping Well #5						
	Total Flow m3	Average Daily Flow m3/d	Maximum Daily Flow m3/d	Instantaneous Peak Flow L/s	PTTW Maximum Flow m3/d	% Capacity
January	20,853	673	2639.10	52.53	5,184	51
February	37,304	1,332	2890.68	55.78	5,184	56
March	12,867	415	2389.42	68.75	5,184	46
April	31,105	1,037	2817.89	48.10	5,184	54
May	20,214	652	2041.00	49.48	5,184	39
June	24,819	827	2065.14	56.46	5,184	40
July	14,676	473	2056.59	55.96	5,184	40
August	29,838	963	2075.46	56.10	5,184	40
September	18,610	620	1921.21	42.12	5,184	37
October	28,674	925	2063.62	42.38	5,184	40
November	27,036	901	2188.75	42.98	5,184	42
December	10,757	347	2643.27	35.14	5,184	51
Total	276,753					

Vermillion Distribution System DWS# 260006789

Municipal Drinking Water License: 016-104
Apr 19, 2010
Drinking Water Works Permit: 016-204
Nov 3, 2011

The Vermillion 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 Vermillion water treatment facility, which acts as the donor for the CGS Vermillion 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 MOE regulations.

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 25 provides a summary of any requirements of the Act, Regulations, Orders, or Approval that the system failed to meet during the 2011 reportable period.

Table 25 - Vermillion Distribution System

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

2011 Adverse Water Quality Incident Report

Table 26 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 26 - Adverse Water Quality Incidents

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

Annual Flow Summary – N/A