2023 Annual Water Quality Summary Report

Prepared by:  March 27, 2024

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 March 27, 2024

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Introduction

The production and delivery of potable water in Ontario is regulated by Ontario Regulation (O. Reg.) 170/03 governed by the Ministry of the Environment, Conservation and Parks (MECP) under the *Safe Drinking Water Act* (SDWA), 2002, S.O. 2002, c. 32.

The purpose of this summary report is to provide system owners and municipal council information to satisfy the regulatory reporting required under Schedule 22 titled *Summary Reports for Municipalities* of the O. Reg. 170/03 Drinking Water Systems.

The information within the report must cover the following topics of the previous calendar year from January 1st through to December 31st:

- A list of orders that were not met, the duration and any corrective actions needed.
- A brief description of the operations of the treatment systems.
- Quantities and flow rates of the water supplied during the reporting period, including monthly averages and maximum daily flows.
- A comparison of the quantities and flows to the rated capacities approved in the system performance section in the Municipal Drinking Water License (MDWL).

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

SUMMARY

During the 2023 calendar year, the City of Greater Sudbury (CGS) operated its Drinking Water Systems (DWS) within the limits specified in all applicable Municipal Drinking Water Licenses. Surface water plants supplying the Sudbury DWS operated at less than half of permitted levels, with the Wanapitei Water Treatment Plant (WTP) averaging 46% and the David Street WTP utilizing 34% of their Permits to Take Water (PTTW) permissible total water takings. Ground water systems also operated below permitted levels with Blezard Valley-Capreol DWS at 27% (Valley) and 20% (Capreol), Falconbridge DWS at 26%, Garson DWS at 18%, Onaping DWS at 32%, and Dowling DWS at 10% of its PTTW.

As part of our congoing commitment to provide safe, reliable drinking water while meeting the requirements of source water protection legislation, CGS continues to invest in water treatment and distribution systems to perform critical upgrades and renew aging infrastructure. These upgrades are not necessarily the result of any water quality incidents, but are completed to reduce the risk of potable water contamination as part of our Statutory Standard of Care. The regulation stipulates that water works owners will continually monitor water works performance, source water quality and review levels of treatment versus current standards and emerging technologies. For example, this standard of care has been demonstrated through the following projects:

1. The ongoing construction phase for the removal of Iron and Manganese within the Blezard Valley-Capreol system is underway with its estimated completion date to be the summer of 2024.
2. Addressing Tetrachloroethylene contaminant levels in the Garson Well Field through the planned decommissioning of existing groundwater wells and connection to the Sudbury DWS.
3. David Street HVAC system upgrades to improve air quality for employees and lessen the exposure to oxidizing chemical fumes on the plants assets.
4. David street primary membrane filtration module replacement and upgrades (1 module per year for three years).
5. Wanapetei Water Treatment Plant pump motor upgrades and filter refurbishment (1 unit per year for four years).

The MECP is responsible for the enforcement of regulations and conducts inspections of all large municipal water systems. As of this report, all CGS water systems have passed inspection with two issues identified:

1. Ongoing presence of tetrachloroethylene within the Garson Wells #1 and #3
2. Elevated levels of trihalomethanes (THMs) and halo acetic acids (HAAs) in parts of the Vermilion distribution system.

CGS and Vale continue to work together to improve the disinfection process and reduce the presence of THMs and HAAs within the Vermilion distribution system.

In 2023, twenty-six (26) adverse water quality incident (AWQI) reports were filed. Corrective actions were taken, and issues were promptly rectified and reported to the MECP as well as the Public Health Sudbury & Districts (PHSD). Twelve (12) of the AWQI were to provide information on non-compliance events and did not represent adverse water conditions. These occurrences are discussed in their respective DWS sections contained in this report.

The Community Lead Testing Initiative was implemented in 2007 as part of O. Reg. 170/03, Schedule 15.1. CGS was granted relief by the MECP from lead testing in all systems except for the Sudbury DWS, fed by the Wanapitei and David St. WTPs. These sections must continue to be sampled due to the population served by that system, not as a result of water quality. CGS continues to provide corrosion control in targeted DWS to lower residual lead levels in affected areas.

Water quality throughout all systems is monitored 24 hours a day, 365 days a year. Regular sampling schedules are followed in accordance with O. Reg. 170/03 as well as our Municipal Drinking Water Licenses and Permits. Treated water is fluoridated in all CGS systems under the direction of PHSD.

System Specific

Drinking Water Services within the City of Greater Sudbury are a combination of municipally owned and operated utilities along with the supply of purchased potable water. CGS owns and operates two surface water treatment plants servicing the Sudbury distribution systems, six groundwater well fields along with their own distribution systems and one independent distribution system conveying purchased potable water from Vale's Vermilion Water Treatment Plant.

Table 1 - Overview of the City's Water Systems

Drinking Water System	Type of Facility	Source of Water	Communities Served
Sudbury DWS – Wanapitei	• Class IV Surface water conventional treatment plant • Class IV Distribution system	Wanapitei River	Sudbury, Coniston, Wanapitei, Markstay, Garson West
Sudbury DWS - David	• Class III Surface water Membrane Filtration Plant • Class IV Distribution system	Ramsey Lake	Sudbury (West and South sections)
Sudbury DWS - Garson	• Class I Wells • Class II Distribution system	Groundwater	Garson East (east of Penman Dr.)
Dowling DWS	• Class I Wells • Class I Distribution system	Groundwater	Dowling
Valley DWS	• Class I Wells • Class II Distribution system	Groundwater	Valley East, Azilda, Chelmsford & Capreol
Falconbridge DWS	• Class I Wells • Class II Distribution system	Groundwater	Falconbridge
Onaping /Levack DWS	• Class I Wells • Class II Distribution system	Groundwater	Onaping & Levack
Vermilion Distribution System	• Class II Distribution System	Vermilion River WTP Owned and Operated by Vale	Lively, Naughton, Whitefish, Copper Cliff, Walden Industrial Park

Sudbury Drinking Water System 210001111 - Wanapitei

The Sudbury DWS is comprised of three different water sources: the Wanapitei Water Treatment Plant (WTP), the David WTP and the Garson Well Field.

The Wanapitei WTP is a conventional surface plant located between the towns of Coniston and Wahnapitae. Its source water is the Wanapitei River. The plant's rated capacity is 54,000 m^3/day and provides approximately sixty percent of CGS's potable water. The treatment process follows these steps:

- Raw river water is screened through coarse and fine screens. Five pumps convey the raw water several kilometers to the plant for treatment.
- Raw water is initially disinfected by chlorination and the water's pH and alkalinity are controlled by the addition of lime.
- A coagulant (alum) and flocculant (polymer) are added to remove colloidal solids that are in suspension with separation performed by gravity sedimentation of clarified water and sludge.
- Settled sludge waste is pumped to a nearby sewage lagoon for treatment and the clarified water is sent to four filters.
- Filtered water flows into a clear well where lime is added to adjust the final pH and alkalinity along with addition of a corrosion control chemical.
- Chlorine is added to ensure final disinfection of finished water and to maintain a residual disinfectant within the distribution system.
- Treated water is exposed to ultraviolet (UV) light disinfection to provide extra inactivation of pathogens and pumped east to the community of Markstay and west towards the communities of Coniston and Sudbury (via the Ellis Reservoir).

Non-Compliance with Act, Regulations, Order or Approvals

In 2023, the Wanapitei system had two Adverse Water Quality Incidents (AWQI) to report:

- Chlorine residual samples were not completed as required on one occasion. A communications outage resulted in remote readings being unavailable. An operator was dispatched to site to test for chlorine and no issues were found.
- A bacterial sample taken at a City owned facility tested positive for coliform contamination. Further testing confirmed this was an isolated incident. The tap was cleaned, resampled, and showed no contamination.

Annual Flow Summary

Wanapitei WTP							
	Total Flow m^3	Average Daily Flow m^3/d	Maximum Daily Flow m^3/d	Instantaneous Peak Flow L/s	MDWL Daily Maximum Permitted m^3/d	MDWL Annual Permitted m^3	% Capacity
January	695,417	22,433	24,238	438.0	54,000	19,710,000	41.5
February	621,777	22,206	24,248	406.6	54,000	19,710,000	41.1
March	704,451	22,724	25,406	415.4	54,000	19,710,000	42.1
April	675,139	22,505	25,706	392.7	54,000	19,710,000	41.7
May	772,702	24,926	29,577	416.4	54,000	19,710,000	46.2
June	845,487	28,183	31,066	436.5	54,000	19,710,000	52.2
July	861,592	27,793	32,883	454.0	54,000	19,710,000	51.5
August	843,416	27,207	31,452	435.2	54,000	19,710,000	50.4
September	838,177	27,939	32,216	436.4	54,000	19,710,000	51.7
October	782,015	25,226	29,085	444.4	54,000	19,710,000	46.7
November	715,541	23,851	27,141	394.4	54,000	19,710,000	44.2
December	731,265	23,589	27,235	462.6	54,000	19,710,000	43.7
Total	9,086,981				54,000	19,710,000	46.1

Sudbury Drinking Water System 220003537- David Street

David St. WTP is a membrane ultra-filtration surface water treatment plant. The plant's rated capacity is 40,000 m^3/day and provides approximately forty percent of the City of Greater Sudbury's potable water.

The raw water intake is located approximately three hundred meters from the shores of Ramsey Lake. The treatment process follows these steps:

- Raw lake water is screened through coarse screens and two strainers and is initially disinfected by chlorination.
- Four pumps send the water to membrane trains for ultrafiltration. Where particles 0.02 microns (µm) in size or larger are removed.
- The filtered water flows into a reservoir where chlorine, as sodium hypochlorite, is added to ensure final disinfection of finished water and to maintain a residual disinfectant within the distribution system. Fluoride is added to prevent tooth decay along with a corrosion control chemical.
- The treated water is pumped through UV light disinfection units to provide extra inactivation of pathogens.

- The treated water is pumped to the distribution system by four pumps and directs water flows to the south, west and downtown sections of the City of Greater Sudbury. Water from this plant is also used to fill the Ellis Reservoir.

Non-Compliance with Act, Regulations, Order or Approvals

In 2023, the David St. system had one AWQI:

- Hourly chlorine residual samples were not completed as required on one occasion. A communications outage resulted in remote readings being unavailable. An operator was dispatched to site to test for chlorine and no issues were found.

Annual Flow Summary

David St. WTP							
	Total Flow m^3	Average Daily Flow m^3/d	Maximum Daily Flow m^3/d	Instantaneous Peak Flow L/s	MDWL Daily Maximum Permitted m^3/d	MDWL Annual Permitted m^3	% Capacity
January	418,010	13,484	13,682	389.4	40,000	14,600,000	33.7
February	381,583	12,309	21,382	384.5	40,000	14,600,000	34.1
March	422,500	13,629	24,837	405.6	40,000	14,600,000	34.1
April	405,064	13,067	15,292	412.5	40,000	14,600,000	33.8
May	423,783	13,670	14,920	390.7	40,000	14,600,000	34.2
June	420,921	13,578	15,762	500.1	40,000	14,600,000	35.1
July	418,561	13,502	14,107	365.7	40,000	14,600,000	33.8
August	419,797	13,542	14,136	358.8	40,000	14,600,000	33.9
September	396,879	12,803	13,694	372.5	40,000	14,600,000	33.1
October	438,535	14,146	24,907	560.6	40,000	14,600,000	35.4
November	424,726	13,701	14,415	386.4	40,000	14,600,000	35.4
December	458,837	14,801	18,242	487.4	40,000	14,600,000	37.0
Total	5,029,197				40,000	14,600,000	34.4

Sudbury Drinking Water System 220003485 - Garson

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

- Garson Well No. 1.
- Garson Well No. 2.

- Garson Well No. 3.

The system includes three well pumps, disinfection with sodium hypochlorite and fluoride injection as mandated by PHSD. The water is directly connected to the distribution system. The distribution system extends from Skead Road to the north to Garson-Coniston Road to the south. The community west of Penman Avenue is serviced from the Sudbury distribution system and is connected to the rest of the Garson system via a pressure actuated valve at Falconbridge Road and O'Neil Drive West. If all three wells were to fail, this valve will open supplying the eastern portion of the community with water from the Sudbury system.

In 2011, with direction and consultation from PHSD and the MECP, CGS committed to undertaking a groundwater monitoring program for tetrachloroethylene (TCE). In 2012 four monitoring wells were drilled in the area. Sampling and analysis is completed regularly by staff to augment historical data and to ensure the safety of the public. Although TCE levels found during audit sampling are well below regulatory limits, CGS is proactively sampling and monitoring these levels. In 2017 CGS retained a consultant to provide feasibility options for the Garson system. Feeding the entire community of Garson from the Sudbury system was selected as the best available option, and the upgrades required to facilitate this are currently in the detailed design phase. In the meantime, well #3 is being underutilized as it has the highest concentration of TCE.

Non-Compliance with Act, Regulations, Order or Approvals

The Garson DWS had eight AWQI to report in 2023.

- Data was not reviewed on the mandated 72-hour schedule on one occasion. Trending was completed outside this window.
- Low water pressure in the system was reported on one occasion during a main break and a boil water advisory was issued.
- Chlorine residual samples were not completed as required on one occasion. A communications outage resulted in remote readings being unavailable. An operator was dispatched to site to test for chlorine and no issues were found.
- Four (4) incidences of bacterial contamination were found in the distribution system in which it was found to be sampling mistakes. No issues were found with the water quality.
- A valve was not properly closed during maintenance activities, potentially allowing a small amount of unchlorinated water to enter the distribution system. The issue was reported to the MECP and PHSD, the system was sampled, analyzed, and no adverse water quality was noted.

Annual Flow Summary

Garson Well #1							
	Total Flow m^3	Average Daily Flow m^3/d	Maximum Daily Flow m^3/d	Instantaneous Peak Flow L/s	MDWL Daily Maximum Permitted m^3/d	MDWL Annual Permitted m^3	% Capacity
January	11,961	386	599	15.9	1,572	573,955	24.5
February	8,145	291	412	16.0	1,572	573,955	18.5
March	9,425	304	463	16.0	1,572	573,955	19.3
April	8,680	289	429	16.2	1,572	573,955	18.4
May	9,347	302	773	17.1	1,572	573,955	19.2
June	12,211	407	753	17.1	1,572	573,955	25.9
July	8,858	286	538	16.8	1,572	573,955	18.2
August	7,316	236	442	16.5	1,572	573,955	15.0
September	9,156	305	568	11.6	1,572	573,955	19.4
October	8,526	275	470	11.6	1,572	573,955	17.5
November	7,460	249	484	11.4	1,572	573,955	15.8
December	6,829	220	342	11.5	1,572	573,955	14.0
Total	107,913				1,572	573,955	18.8

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 Daily Maximum Permitted m^3/d	MDWL Annual Permitted m^3	% Capacity
January	13,343	430	1,060	40.0	2,981	1,088,065	14.4
February	24,171	863	1,125	32.3	2,981	1,088,065	29.0
March	26,733	862	1,230	30.1	2,981	1,088,065	28.9
April	25,850	862	1,033	29.7	2,981	1,088,065	28.9
May	29,787	961	1,708	32.2	2,981	1,088,065	32.2
June	30,765	1,025	1,562	40.0	2,981	1,088,065	34.4
July	27,823	898	1,329	40.0	2,981	1,088,065	30.1
August	26,965	870	1,247	37.2	2,981	1,088,065	29.2
September	27,053	902	1,017	40.0	2,981	1,088,065	30.3
October	27,070	873	1,042	26.9	2,981	1,088,065	29.3
November	27,156	905	1,028	26.1	2,981	1,088,065	30.4
December	24,881	803	946	40.0	2,981	1,088,065	26.9
Total	311,596				2,981	1,088,065	28.6

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 Daily Maximum Permitted m^3/d	MDWL Annual Permitted m^3	% Capacity
January	10,479	338	930	31.7	3,275	1,195,214	10.3
February	915	33	113	31.7	3,275	1,195,214	1.0
March	2,466	80	506	31.1	3,275	1,195,214	2.4
April	1,953	65	472	32.5	3,275	1,195,214	2.0
May	3,918	126	679	31.4	3,275	1,195,214	3.9
June	7,193	240	713	33.0	3,275	1,195,214	7.3
July	9,264	299	1,026	28.3	3,275	1,195,214	9.1
August	11,203	361	1,367	30.4	3,275	1,195,214	11.0
September	5,083	169	510	30.3	3,275	1,195,214	5.2
October	5,165	167	671	26.0	3,275	1,195,214	5.1
November	4,629	154	383	24.4	3,275	1,195,214	4.7
December	5,419	175	1,139	27.0	3,275	1,195,214	5.3
Total	67,687				3,275	1,195,214	5.7

Dowling Wells and Distribution System 210001665

The water source for the Dowling wells is within the Onaping river watershed. Due to the unconfined nature of the soils and the proximity to the river, the MECP has characterized the water source as potentially groundwater under the direct influence of surface water (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 MECP and as a result, both wells were deemed to be GUDI with effective in-situ filtration. As such, the additional treatment of UV irradiation was added to enhance disinfection to comply with the treatment requirements.

The treatment process follows these steps:

The system includes two well sites. Each well site contains one well pump, disinfection with chlorine gas, UV irradiation along with fluoride injection. The elevated water storage provides a measure of security to the water system in the event of power interruptions and watermain breaks.

Non-Compliance with Act, Regulations, Order or Approvals

The Dowling DWS had two non-compliance in 2023.

- Data was not reviewed on the mandated 72-hour schedule on one occasion. Data was reviewed outside this window.
- Chlorine residual samples were not completed as required on one occasion. A communications outage resulted in remote readings being unavailable. An operator was dispatched to site to test for chlorine and no issues were found.

Annual Flow Summary

Lionel Well							
	Total Flow m^3	**Average Daily Flow m^3/d**	**Maximum Daily Flow m^3/d**	**Instantaneous Peak Flow L/s**	**MDWL Daily Maximum Permitted m^3/d**	**MDWL Annual Permitted m^3**	**% Capacity**
January	5,788	187	448	23.1	3,640	1,328,600	5.1
February	4,242	137	521	22.3	3,640	1,328,600	4.2
March	4,109	133	408	22.3	3,640	1,328,600	3.6
April	7,926	256	424	23.1	3,640	1,328,600	7.3
May	6,475	209	552	22.7	3,640	1,328,600	5.7
June	6,285	203	531	22.3	3,640	1,328,600	5.8
July	6,490	209	523	21.9	3,640	1,328,600	5.8
August	5,991	193	448	21.0	3,640	1,328,600	5.3
September	6,731	217	456	21.0	3,640	1,328,600	6.2
October	7,195	232	505	21.4	3,640	1,328,600	6.4
November	6,511	210	680	21.9	3,640	1,328,600	6.0
December	6,309	204	445	22.3	3,640	1,328,600	5.6
Total	74,051				3,640	1,328,600	5.6

Riverside Well							
	Total Flow m^3	Average Daily Flow m^3/d	Maximum Daily Flow m^3/d	Instantaneous Peak Flow L/s	MDWL Daily Maximum Permitted m^3/d	MDWL Annual Permitted m^3	% Capacity
January	4,406	142	424	33.4	3,640	1,328,600	3.9
February	4,737	153	486	32.6	3,640	1,328,600	4.6
March	5,978	193	495	32.6	3,640	1,328,600	5.3
April	2,740	88	392	54.8	3,640	1,328,600	2.5
May	7,225	233	625	32.2	3,640	1,328,600	6.4
June	6,815	220	716	30.9	3,640	1,328,600	6.2
July	5,917	191	388	30.5	3,640	1,328,600	5.2
August	6,403	207	500	30.5	3,640	1,328,600	5.7
September	6,039	195	589	30.5	3,640	1,328,600	5.5
October	7,032	227	625	30.9	3,640	1,328,600	6.2
November	7,619	246	742	32.2	3,640	1,328,600	7.0
December	6,761	218	582	30.9	3,640	1,328,600	6.0
Total	71,672				3,640	1,328,600	5.4

Blezard Valley/Capreol Drinking Water System-210000737

In 2010, the Blezard Valley and Capreol well supply systems were determined to be one system due to existing cross connections. As such 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 Therese, Val Caron, McCrea Heights, Azilda and Chelmsford. Eleven groundwater wells are situated throughout the Hanmer and Val Therese area. The communities are interconnected with distribution piping and the system feeds three water storage tanks located in Val Caron, Azilda, and Chelmsford. This well field extends approximately 7.5 km (west to east) from Val Therese to Hanmer.

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 urbanization such as sodium residuals higher than the provincial standard. Public education sessions and bylaws have been implemented in attempts to maintain the quality of source water.

The Blezard wells are:

- Deschene well.
- Kenneth well (currently not in service).
- Philippe well.
- Frost well.
- I well (currently not in service).
- Notre Dame well.
- Linden well.
- Pharand well.
- Michelle well.
- Chenier well.
- R Well.

Each well site consists of one well pump, disinfection with chlorine gas, UV irradiation along with fluoride injection. The distribution system has been relatively reliable. It is to be noted that all the wells producing water are before the Val Caron tank. One trunk main delivers the potable water to the Val Caron Tank, the Azilda Tank and the Chelmsford Tank.

Two wells, I-Well and Kenneth well, were not used in 2023. Analysis of raw water samples has shown elevated iron and manganese that compromises the aesthetic quality of the water. Removal of these parameters is expected to be available by end of 2024 as the construction phase to add additional treatment steps is underway.

The Capreol Well portion of the system draws water from two wells to service the community of Capreol. The Capreol wells are:

- M Well.
- J Well.

The Capreol portion of the system consists of two groundwater wells servicing the community of Capreol. They are situated on the east side of Greens Lake. Like the Dowling wells, hydrogeological studies found these wells to be potentially GUDI with effective in situ filtration and as such required UV irradiation.

Each well site consists of one well pump, disinfection with chlorine gas, UV irradiation, polyphosphate for corrosion control along with fluoride injection.

The Blezard Valley wells can supply water through the Capreol Boosters located onsite at the wells ensuring a continued water supply to the town of Capreol in the event the two wells are unavailable.

The distribution system in Capreol was developed in conjunction with the growth of industry in the area and, as such, some of the pipe network is relatively old. The frost depths in Capreol extend to extreme depths during cold winters, which impose additional stresses on the integrity of the system. A second water main was added to the distribution system from the well as a contingency.

Non-Compliance with Act, Regulations, Order or Approvals

The Blezard Valley/Capreol DWS had 2 non-compliances in 2023.

- An MECP inspection documented non-NSF certified piping. The piping was removed, and new NSF certified piping was installed.
- Data was not reviewed in the mandated 72-hour time frame on one occasion. The review was completed, and no unusual data was found.

Annual Flow Summary

Due to high iron and manganese causing aesthetic issues with the distributed water from I well and Kenneth well; they were not used in 2023. Kenneth well will be receiving a rehabilitation in 2024 in steps to return it to aesthetically pleasing parameters. I well will continue to be out of production until the manganese and iron filtration installation at M and J wells is proven to be viable.

Well "A" Deschene							
	Total Flow m^3	**Average Daily Flow m^3/d**	**Maximum Daily Flow m^3/d**	**Instantaneous Peak Flow L/s**	**MDWL Daily Maximum Permitted m^3/d**	**MDWL Annual Permitted m^3**	**% Capacity**
January	13,172	425	1,056	18.5	1,798	656,212	23.6
February	7	0	7	18.3	1,798	656,212	0.0
March	0	0	0	0.0	1,798	656,212	0.0
April	1,414	47	270	18.5	1,798	656,212	2.6
May	4,634	149	687	80.0	1,798	656,212	8.3
June	0	0	0	0.0	1,798	656,212	0.0
July	0	0	0	0.0	1,798	656,212	0.0
August	0	0	0	0.0	1,798	656,212	0.0
September	12	0	12	24.3	1,798	656,212	0.0
October	14,210	458	1,564	24.3	1,798	656,212	25.5
November	18,428	614	1,635	20.3	1,798	656,212	34.2
December	4,886	158	714	21.6	1,798	656,212	8.8
Total	56,762				1,798	656,212	8.7

Well "C" Philippe							
	Total Flow m^3	Average Daily Flow m^3/d	Maximum Daily Flow m^3/d	Instantaneous Peak Flow L/s	MDWL Daily Maximum Permitted m^3/d	MDWL Annual Permitted m^3	% Capacity
January	22,890	738	1,220	25.1	2,288	835,178	32.3
February	24,604	879	1,798	24.4	2,288	835,178	38.4
March	22,141	714	1,813	24.6	2,288	835,178	31.2
April	23,323	777	1,330	24.6	2,288	835,178	34.0
May	37,694	1,216	1,883	24.8	2,288	835,178	53.1
June	28,119	937	1,623	25.3	2,288	835,178	41.0
July	22,735	733	1,195	25.0	2,288	835,178	32.1
August	25,384	819	1,447	25.2	2,288	835,178	35.8
September	25,123	837	1,841	24.5	2,288	835,178	36.6
October	26,997	871	1,883	24.9	2,288	835,178	38.1
November	20,690	690	1,783	25.5	2,288	835,178	30.1
December	26,693	861	1,820	24.9	2,288	835,178	37.6
Total	306,393				2,288	835,178	36.7

Well "D" Frost							
	Total Flow m^3	Average Daily Flow m^3/d	Maximum Daily Flow m^3/d	Instantaneous Peak Flow L/s	MDWL Daily Maximum Permitted m^3/d	MDWL Annual Permitted m^3	% Capacity
January	21,876	706	1,417	26.8	2,288	835,178	30.8
February	24,071	860	1,821	25.4	2,288	835,178	37.6
March	19,615	633	1,532	25.6	2,288	835,178	27.7
April	24,137	805	1,881	31.9	2,288	835,178	35.2
May	25,725	830	1,554	29.8	2,288	835,178	36.3
June	24,288	810	1,520	22.4	2,288	835,178	35.4
July	38,419	1,239	1,871	25.3	2,288	835,178	54.2
August	34,797	1,122	1,883	25.4	2,288	835,178	49.1
September	19,622	654	1,093	25.3	2,288	835,178	28.6
October	28,673	925	2,018	26.3	2,288	835,178	40.4
November	24,572	819	1,919	27.9	2,288	835,178	35.8
December	18,663	602	1,997	28.0	2,288	835,178	26.3
Total	304,459				2,288	835,178	36.5

Well "E" Notre Dame							
	Total Flow m^3	Average Daily Flow m^3/d	Maximum Daily Flow m^3/d	Instantaneous Peak Flow L/s	MDWL Daily Maximum Permitted m^3/d	MDWL Annual Permitted m^3	% Capacity
January	33,080	1,067	1,940	36.7	3,105	1,133,456	34.4
February	43,309	1,547	2,811	36.2	3,105	1,133,456	49.8
March	54,582	1,761	2,798	36.1	3,105	1,133,456	56.7
April	39,180	1,306	2,583	35.6	3,105	1,133,456	42.1
May	38,220	1,233	2,781	36.6	3,105	1,133,456	39.7
June	42,242	1,408	2,807	36.1	3,105	1,133,456	45.3
July	37,786	1,219	2,891	80.0	3,105	1,133,456	39.3
August	32,327	1,043	2,907	37.3	3,105	1,133,456	33.6
September	31,844	1,061	2,317	31.9	3,105	1,133,456	34.2
October	35,628	1,149	2,513	32.4	3,105	1,133,456	37.0
November	33,251	1,108	2,559	32.1	3,105	1,133,456	35.7
December	44,028	1,420	2,514	32.4	3,105	1,133,456	45.7
Total	465,478				3,105	1,133,456	41.1

Well "F" Linden							
	Total Flow m^3	Average Daily Flow m^3/d	Maximum Daily Flow m^3/d	Instantaneous Peak Flow L/s	MDWL Daily Maximum Permitted m^3/d	MDWL Annual Permitted m^3	% Capacity
January	45,623	1,472	2,607	33.7	3,269	1,193,112	45.0
February	43,882	1,567	2,632	33.7	3,269	1,193,112	47.9
March	48,250	1,556	2,669	34.4	3,269	1,193,112	47.6
April	40,279	1,343	2,663	33.1	3,269	1,193,112	41.1
May	35,605	1,149	1,946	33.2	3,269	1,193,112	35.1
June	43,987	1,466	2,652	32.7	3,269	1,193,112	44.9
July	44,090	1,422	2,610	33.2	3,269	1,193,112	43.5
August	36,967	1,192	1,935	33.1	3,269	1,193,112	36.5
September	33,364	1,112	2,594	33.5	3,269	1,193,112	34.0
October	45,426	1,465	2,698	34.4	3,269	1,193,112	44.8
November	50,099	1,670	2,627	33.0	3,269	1,193,112	51.1
December	48,977	1,580	2,622	33.1	3,269	1,193,112	48.3
Total	516,547				3,269	1,193,112	43.3

Well "G" Pharand							
	Total Flow m^3	Average Daily Flow m^3/d	Maximum Daily Flow m^3/d	Instantaneous Peak Flow L/s	MDWL Daily Maximum Permitted m^3/d	MDWL Annual Permitted m^3	% Capacity
January	21,227	685	2,131	26.3	2,290	835,704	29.9
February	33,072	1,181	2,139	26.4	2,290	835,704	51.6
March	22,687	732	1,525	29.5	2,290	835,704	32.0
April	25,698	857	1,521	28.9	2,290	835,704	37.4
May	28,148	908	2,116	29.2	2,290	835,704	39.7
June	30,303	1,010	1,558	30.0	2,290	835,704	44.1
July	25,452	821	1,491	28.8	2,290	835,704	35.9
August	24,451	789	1,582	29.7	2,290	835,704	34.4
September	22,168	739	1,252	25.4	2,290	835,704	32.3
October	25,134	811	1,667	25.3	2,290	835,704	35.4
November	20,283	676	1,172	25.0	2,290	835,704	29.5
December	26,263	847	1,570	25.6	2,290	835,704	37.0
Total	304,886				2,290	835,704	36.5

Well "H" Michelle							
	Total Flow m^3	Average Daily Flow m^3/d	Maximum Daily Flow m^3/d	Instantaneous Peak Flow L/s	MDWL Daily Maximum Permitted m^3/d	MDWL Annual Permitted m^3	% Capacity
January	263	8	210	27.3	2,290	835,704	0.4
February	5,363	192	1,395	24.1	2,290	835,704	8.4
March	28,444	918	1,823	24.0	2,290	835,704	40.1
April	23,935	798	1,812	29.1	2,290	835,704	34.8
May	23,238	750	1,822	23.7	2,290	835,704	32.7
June	25,452	848	1,294	22.8	2,290	835,704	37.1
July	21,574	696	1,229	22.5	2,290	835,704	30.4
August	9,081	293	1,118	24.7	2,290	835,704	12.8
September	48,312	1,610	1,844	23.5	2,290	835,704	70.3
October	20,966	676	1,829	22.7	2,290	835,704	29.5
November	18,950	632	1,223	23.0	2,290	835,704	27.6
December	23,970	773	1,804	23.1	2,290	835,704	33.8
Total	249,548				2,290	835,704	29.9

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 Daily Maximum Permitted m^3/d	MDWL Annual Permitted m^3	% Capacity
January	51,602	1,665	2,076	26.8	2,333	851,472	71.4
February	35,440	1,266	2,075	26.7	2,333	851,472	54.3
March	25,325	817	2,074	26.9	2,333	851,472	35.0
April	41,778	1,393	2,075	26.7	2,333	851,472	59.7
May	35,006	1,129	2,075	26.4	2,333	851,472	48.4
June	38,658	1,289	2,075	26.4	2,333	851,472	55.2
July	30,941	998	2,075	26.6	2,333	851,472	42.8
August	49,705	1,603	2,076	26.8	2,333	851,472	68.7
September	27,657	922	2,075	26.9	2,333	851,472	39.5
October	26,871	867	2,076	26.7	2,333	851,472	37.2
November	31,607	1,054	2,162	26.6	2,333	851,472	45.2
December	24,531	791	1,392	26.9	2,333	851,472	33.9
Total	419,119				2,333	851,472	49.2

Well "R"							
	Total Flow m^3	Average Daily Flow m^3/d	Maximum Daily Flow m^3/d	Instantaneous Peak Flow L/s	MDWL Daily Maximum Permitted m^3/d	MDWL Annual Permitted m^3	% Capacity
January	26,015	839	1,310	30.1	3,162	1,154,218	26.5
February	28,281	1,010	2,163	27.6	3,162	1,154,218	31.9
March	20,369	657	1,271	29.4	3,162	1,154,218	20.8
April	26,702	890	1,491	29.5	3,162	1,154,218	28.1
May	33,813	1,091	2,163	29.2	3,162	1,154,218	34.5
June	42,041	1,401	2,163	29.6	3,162	1,154,218	44.3
July	33,197	1,071	2,163	29.1	3,162	1,154,218	33.9
August	31,218	1,007	2,092	34.3	3,162	1,154,218	31.8
September	34,056	1,135	2,163	28.9	3,162	1,154,218	35.9
October	43,767	1,412	2,163	29.3	3,162	1,154,218	44.6
November	26,136	871	2,108	29.1	3,162	1,154,218	27.5
December	42,186	1,361	2,163	28.7	3,162	1,154,218	43.0
Total	387,778				3,162	1,154,218	33.6

Falconbridge Drinking Water System - 240000020

The Falconbridge well system consists of 3 drilled wells:

- Well 5.
- Well 6.
- Well 7.

The system includes three pumps, disinfection with chlorine gas and polyphosphate addition for corrosion control. The wells are located north of the Sudbury Airport. Water is supplied south to the town of Falconbridge, north to the Greater Sudbury Airport reservoir and to the Nickel Rim Mine tank. CGS sells water to Glencore and two industrial clients along the south transmission line and fluoridates the water as directed by PHSD before it enters the Falconbridge municipal distribution system.

Non-Compliance with Act, Regulations, Order or Approvals

The Falconbridge DWS had two non-compliance in 2023.

- Flow was not directed to a turbidity analyzer and remote analysis was not completed in the twenty-minute allotted time frame on one occasion.
- Data was not reviewed in the mandated 72-hour time frame on one occasion. The review was completed, and no unusual data was found.

Annual Flow Summary

Falconbridge Well #5							
	Total Flow m^3	**Average Daily Flow** m^3/d	**Maximum Daily Flow** m^3/d	**Instantaneous Peak Flow** L/s	**MDWL Daily Maximum Permitted** m^3/d	**MDWL Annual Permitted** m^3	**% Capacity**
January	13,314	429	1,200	15.3	1,417	517,280	30.3
February	13,187	425	1,246	15.3	1,417	517,280	33.2
March	12,160	392	1,205	15.2	1,417	517,280	27.7
April	13,635	440	1,198	15.1	1,417	517,280	32.1
May	12,154	392	1,146	15.4	1,417	517,280	27.7
June	11,442	369	1,283	15.3	1,417	517,280	26.9
July	15,382	496	1,273	15.3	1,417	517,280	35.0
August	16,902	545	1,219	15.2	1,417	517,280	38.5
September	8,383	270	1,174	15.3	1,417	517,280	19.7
October	16,005	516	1,156	15.1	1,417	517,280	36.4
November	6,720	217	1,189	15.1	1,417	517,280	15.8
December	15,816	510	1,158	15.3	1,417	517,280	36.0
Total	155,101				1,417	517,280	30.0

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 Daily Maximum Permitted m^3/d	MDWL Annual Permitted m^3	% Capacity
January	8,581	277	1,257	16.2	1,417	517,280	19.5
February	8,301	268	1,199	16.1	1,417	517,280	20.9
March	8,764	283	1,212	16.1	1,417	517,280	19.9
April	8,936	288	1,225	17.1	1,417	517,280	21.0
May	7,629	246	1,342	16.0	1,417	517,280	17.4
June	16,174	522	1,304	16.0	1,417	517,280	38.0
July	9,300	300	1,244	15.9	1,417	517,280	21.2
August	8,735	282	1,202	15.9	1,417	517,280	19.9
September	13,953	450	1,293	16.0	1,417	517,280	32.8
October	3,058	99	524	15.7	1,417	517,280	7.0
November	15,190	490	1,134	15.7	1,417	517,280	35.7
December	9,779	315	1,175	15.8	1,417	517,280	22.3
Total	118,401				1,417	517,280	22.9

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 Daily Maximum Permitted m^3/d	MDWL Annual Permitted m^3	% Capacity
January	9,433	304	1,010	13.4	1,417	517,280	21.5
February	7,977	257	1,017	13.1	1,417	517,280	20.1
March	12,420	401	1,001	13.4	1,417	517,280	28.3
April	9,860	318	1,009	12.8	1,417	517,280	23.2
May	14,234	459	1,008	12.9	1,417	517,280	32.4
June	8,822	285	1,021	13.0	1,417	517,280	20.7
July	12,830	414	1,009	12.9	1,417	517,280	29.2
August	9,665	312	1,015	12.9	1,417	517,280	22.0
September	12,545	405	1,004	12.7	1,417	517,280	29.5
October	13,572	438	999	13.0	1,417	517,280	30.9
November	8,049	260	883	12.5	1,417	517,280	18.9
December	7,821	252	999	12.6	1,417	517,280	17.8
Total	127,229				1,417	517,280	24.6

Onaping/Levack Drinking Water System - 220003519

The Onaping/Levack system includes three drilled wells:

- Well 3.
- Well 4.
- Well 5.

The system includes three pumps, disinfection with chlorine gas, sodium hydroxide for pH adjustment, polyphosphate addition for corrosion control and fluoride injection. 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 completes the system. The City continues to monitor sodium levels in the raw water monthly due to large amounts of road salt used on a provincial highway located in close proximity to the wells.

Non-Compliance with Act, Regulations, Order or Approvals

The Onaping DWS had three non-compliance in 2023.

- A lead sample was not taken within the distribution system in 2023. Misinterpretation of the reduced sampling protocol caused an error in sample collection.
- Data was not reviewed in the mandated 72-hour time frame on one occasion. The review was completed, and no unusual data was found.
- Chlorine residual samples were not completed as required on one occasion. A communications outage resulted in remote readings being unavailable. An operator was dispatched to site to test for chlorine and no issues were found.

Annual Flow Summary

The Onaping/Levack PTTW is different from the other systems in that its total taking is not a sum of all sources, but rather the same value as any one well. For that reason, this system requires superimposing all three wells onto one chart to ensure the sum does not exceed the permit.

Onaping Wells Total					
	Total Flow m^3	**Maximum Daily Flow m^3/d**	**MDWL Daily Maximum Permitted m^3/d**	**MDWL Annual Permitted m^3**	**% Capacity**
January	44,656	1,792	5,237	1,911,541	27.5
February	42,658	2,192	5,237	1,911,541	29.1
March	50,760	1,939	5,237	1,911,541	31.3
April	50,223	1,983	5,237	1,911,541	32.0
May	52,191	2,088	5,237	1,911,541	32.1
June	52,431	2,067	5,237	1,911,541	33.4
July	55,964	2,285	5,237	1,911,541	34.5
August	52,077	2,276	5,237	1,911,541	32.1
September	55,677	2,282	5,237	1,911,541	35.4
October	56,678	2,366	5,237	1,911,541	34.9
November	49,515	2,107	5,237	1,911,541	31.5
December	53,666	2,132	5,237	1,911,541	33.1
Total	616,495		5,237	1,911,541	32.3

Vermilion Distribution System - 260006789

The Vermilion distribution system is a standalone distribution system that receives water from a “donor” system, as CGS purchases water from Vale, the owner of the Vermilion water treatment facility. 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.

CGS owns and operates the distribution network in the communities of Copper Cliff, Lively, Naughton, Whitefish and the Atikameksheng Anishnawbek Reserve. The system also includes the Walden Water Storage Tank and Walden Metering Chamber.

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

The Vermilion DWS had two non-compliances in 2023.

- Data was not reviewed on the mandated 72-hour schedule. The data was reviewed; no issues were found with the water quality.
- Chlorine residual samples were not completed as required on one occasion. A communications outage resulted in remote readings being unavailable. An operator was dispatched to site to test for chlorine and no issues were found.