

## 2021 Year End Report: Port Sydney Clarke Crescent Well



Drinking Water Works Permit: 143-204

Municipal Drinking Water License: 143-104

Ministry of Environment, Conservation and Parks Waterworks #: 220005688

Engineering and Public Works Department

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## Introduction

The Clarke Crescent Well serving the community of Port Sydney is owned and operated by the District Municipality of Muskoka.

It constructed in 1984 and has an initial design capacity of 90 meters cubed per day. The water system currently serves a population of approximately 91 people.

The plant operates under license 143-204 and permit 143-104, issued in September 2020 under the Municipal Drinking Water Licensing Program. Groundwater takings from Well 2, the Clarke Well, are permitted in accordance with Permit to Take Water #6652-C7YJK2 (which was renewed in 2021 and expires June 01, 2031), which permits the operation at a rate not exceeding 205 Litres per minute to a maximum of 91 meters cubed per day.

The water source is ground water from a drilled well considered to be under the direct influence of surface conditions due to the potential for the incomplete subsurface filtration of surface water entering the groundwater aquifer. In order to address his potential issue, the treatment system had significant improvements take place in 2004/2005. These upgrades include a filtration system and primary disinfection by Ultraviolet (UV) light. Secondary disinfection continues to be maintained by chlorination. Currently, a study is underway to determine what, if any, the influence is of the surface conditions.

All treatment control systems use a Supervisory Control and Data Acquisition (SCADA) system for process control and monitoring.

## Legislation Requirements

### Safe Drinking Water Act

In the Part Two Report of the Walkerton Inquiry, Commissioner Dennis O'Connor recommended that the Ontario Government enact a Safe Drinking Water Act to deal with matters related to treatment and distribution of drinking water. The Safe Drinking Water Act (SDWA) received royal assent in December, 2002.

The purpose of the Act is to gather in one place all legislation and regulations relating to the treatment and distribution of drinking water. The Act serves to protect human health through the control and regulation of drinking water systems and drinking water testing.

The foundation provisions of the Safe Drinking Water Act include:

- Purpose of the Act
- Definitions
- Minister's Powers and Duties
- Inspections
- Compliance and Enforcement
- Appeals and Offences

## Ontario Regulations

The Ontario Government has enacted several supporting regulations under the SDWA (2002). These regulations combine previous requirements under the Ontario Water Resources Act and the new

requirements under the SDWA. Key components of the regulations include:

- System Categories
- Groundwater Under Direct Influence Of Surface Water (GUDI)
- Exemptions
- Approval of Systems
- Treatment
- Testing and Operational Checks (General Rules)
- Operational Checks
- Microbiological Testing
- Chemical Testing
- Adverse Conditions
- Corrective Action
- Engineer's and Summary Reports

#### [Municipal Drinking Water Licenses / Certificates of Approval](#)

The Municipal Drinking Water Licensing Program has replaced the Certificate of Approval program for municipal residential drinking water systems. The Ontario Government has implemented the Municipal Drinking Water Licensing Program (MDWLP) as recommended by Justice O'Connor in the Part II Report of the Walkerton Inquiry. Justice O'Connor recommended a new approvals framework for municipal drinking water systems, which would require owners to obtain a license to operate their systems as well as incorporate the concept of quality management into their operations.

A municipal drinking water license is an approval that is issued by the Ministry of the Environment Conservation and Park (MECP) to owners under the Safe Drinking Water Act, 2002 for the operation of municipal residential drinking water systems. The District of Muskoka operated under various Certificates of Approval until October 2010 when the operating licenses were issued.

Previous Certificates of Approval were required for the establishment, replacement or alteration of all municipal drinking water systems. The MECP issued Certificates of Approval to ensure that all undertakings comply with the legislation (i.e., Acts and Regulations) and the Ministry's Environmental Guidelines and Procedures developed to provide consistency of approach to various aspects of environmental protection throughout the province. Municipal Drinking Water Licenses and Permits similar to previous Certificates of Approval provide specific details about the drinking water system including:

- Drinking Water System Description
- Definitions and Information
- General Information – Compliance, Other Legal Requirements, Adverse Effects, Inspections
- Performance – Rated Capacity, Management of Residue

- Monitoring and Recording – Flow Measuring Devices, Sampling
- Operations and Maintenance

### Comparison to Rated Capacity and Flow Rates

The Clarke Crescent Well has a rated capacity of 91 meters cubed per day. In 2021, the total monthly average flow for the year was 1,327.3 meters cubed per day. The maximum day flow for the year was 77.6 meters cubed per day, however the 3-year average for maximum day flow is 66.6 meters cubed per day. This represents 73.2% of the plant design capacity. This value exaggerates the amount of plant capacity available as the cause for the high peak day flow values were found to be caused by unplanned issues with customers plumbing resulting in short lived high daily flows. When examined using annual peak flow averages over 3 years, peak flow average becomes 51.7 meters cubed per day which represents 56.8% of the plant design capacity. No problems have been associated with this flow.

Monthly flows are shown in the attached table.

The Permit to Take Water (PTTW #6652-C7YJK2) permits 91 m<sup>3</sup>/day; therefore there were no exceedances of this permit.

### Summary of Analytical Results

A total of 364 microbiological regulatory tests were performed in 2021 and compliance with Provincial standards was achieved throughout the entire year.

There were 104 free chlorine residual tests performed in the distribution system and all results were satisfactory. Staff continue to routinely sample all areas of the system to ensure adequate free chlorine residuals are available throughout the distribution system.

A summary of other analytical results is also shown in this report.

### Summary of Treatment Chemicals

The following chemicals are used for the treatment of drinking water at the Clarke Crescent Well:

- Sodium Hypochlorite: Secondary disinfection

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

### Documentation of System Repairs and Upgrades

In 2021, the chemical flow control board was replaced for the sodium hypochlorite system along with the replacement of the small sodium hypochlorite day tank, tubing and check valve assemblies. Communication systems were updated from end of life copper lines to wireless to increase data transfer signal reliability.

### External Audits

#### MECP Inspection

A MECP inspection was completed on July 15, 2021. The overall rating was 100%.

## DWQMS Audit

In 2021, all drinking water systems within the District had an external reaccreditation audit performed. There were no minor non-conformances reported and all drinking water systems have been recertified. Overall, all drinking water systems are performing satisfactorily.

## Port Sydney Clarke Well Water Distribution Summary 2021

### New Services:

There were no new water services installed in 2021.

### Broken Watermains:

There were no broken water mains to report in 2021.

### Service Leaks:

There were no service leaks to report in 2021.

### Service Relocation:

There were no service relocations to report in 2021.

### Frozen Services:

No municipal water services were frozen in 2021.

### Replacement Watermains:

No watermain replacement occurred in 2021.

### New Watermains:

There were no new watermains installed in 2021.

### Valve Replacement:

No mainline valve replacement took place in 2021.

### Fire Hydrants:

There are no fire hydrants in Port Sydney. There exists one dry hydrant connection provided for fire department use. This equipment exists at the Clarke Well site and is tested for functionality annually.

### Meter Installations:

No water meters required replacement in Port Sydney in 2021.

### Service Box Maintenance:

No Service boxes required maintenance in Port Sydney in 2021.

### Air-Vacuum Release Valves:

There are no air release valves in Port Sydney.

### Locates:

There were 4 requests for locates in Port Sydney in 2021.

*Table 1 Water Flow Summary - 2021*

<b>Month</b>	<b>Total Monthly (m<sup>3</sup>)</b>	<b>Average Day Flow (m<sup>3</sup>/d)</b>	<b>Maximum Day Flow (m<sup>3</sup>/d)</b>	<b>Minimum Day Flow (m<sup>3</sup>/d)</b>
<b>January</b>	1,235.9	41.2	47.2	42.9
<b>February</b>	1,152.1	42.7	45.8	40.7
<b>March</b>	1,336.1	43.1	47.0	41.0
<b>April</b>	1,290.3	43.0	48.9	39.7
<b>May</b>	1,475.7	47.6	59.6	41.3
<b>June</b>	1,426.7	47.6	67.0	40.4
<b>July</b>	1,359.0	43.8	48.0	41.3
<b>August</b>	1,488.8	48.0	77.6	41.5
<b>September</b>	1,366.6	45.6	50.7	43.3
<b>October</b>	1,390.1	44.8	51.0	28.4
<b>November</b>	1,345.7	44.9	47.7	42.6
<b>December</b>	1,417.1	45.7	50.6	42.6

Total Flow: 16,283.9 m<sup>3</sup>  
 Average Day: 44.8 m<sup>3</sup>  
 Maximum Day: 53.4 m<sup>3</sup>  
 Minimum Day: 40.5 m<sup>3</sup>

Table 2 Raw Water Monthly Analysis Summary 2021 Part 1

Month	Alkalinity (mg/L)	Hardness (mg/L)	pH	Turbidity (ntu)	True Colour (tcu)	Temperature (Celsius)
January	35	48	6.37	0.13	0	8.9
February	27	50	6.47	0.25	6	7.2
March	25	51	6.30	0.12	1	7.2
April	28	51	6.31	0.09	0	7.4
May	26	51	6.25	0.17	5	7.1
June	25	49	6.26	0.09	1	7.5
July	25	49	6.30	0.11	0	7.5
August	23	48	6.36	0.11	0	7.4
September	27	49	6.31	0.08	0	7.4
October	26	50	6.26	0.08	0	8.8
November	30	56	6.25	0.12	1	7.9
December	28	52	6.45	0.11	0	8.7
Average	27	50	6.32	0.12	1.1	7.8

Table 3 Raw Water Monthly Analysis Summary 2021 Part 2

Month	Microcystin (ug/L)	TDS (mg/L)	Langliers Saturation Index	Total Coliforms (CFU/100mL)	E. Coli (CFU/100mL)	Total Number of Samples
January	Not Tested		-2.20	0	0	4
February	Not Tested		-2.70	0	0	4
March	Not Tested		-2.60	0	0	5
April	Not Tested		-2.70	0	0	4
May	Not Tested		-2.60	0	0	5
June	Not Tested		-2.70	6.3	0	4
July	<0.1		-2.89	0	0	4
August	<0.1		-2.94	0	0	5
September	<0.1		-2.85	0	0	4
October	<0.1		-2.88	0	0	4
November	Not Tested		-2.79	0	0	5
December	Not Tested		-2.64	0	0	4
Average	<0.1		-2.71	0.53	0	4



*Table 4 Chemical Usage Summary: Sodium Hypochlorite*

Month	Average Dosage mg/L	Total Litres
January	2.9	29.4
February	2.9	27.1
March	2.8	29.7
April	2.7	27.0
May	2.4	24.7
June	2.5	22.1
July	2.5	24.7
August	3.1	35.0
September	2.9	30.4
October	3.1	33.0
November	3.1	31.6
December	3.3	34.7
Average	2.9	29.1
Total		349.4

Total Yearly Liters: 349.4

## Port Sydney Certification of Reports

I certify that the information in this document and all attachments are correct, accurate, and complete to the best of my knowledge

Michael Spicer  
Director, Water and Wastewater Services

Michael Currie  
Manager of Water and Wastewater Operations

**Disclaimer: The following pages are not in an accessible format.**



**OPTIONAL ANNUAL REPORT TEMPLATE**

<b>Drinking-Water System Number:</b>	220005688
<b>Drinking-Water System Name:</b>	Clarke Crescent Well Water Treatment System
<b>Drinking-Water System Owner:</b>	District Municipality of Muskoka
<b>Drinking-Water System Category:</b>	Small Municipal Residential
<b>Period being reported:</b>	January 01 to December 31, 2021

<p><b><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></b></p> <p>Does your Drinking-Water System serve more than 10,000 people? Yes [ ] No [X ]</p> <p>Is your annual report available to the public at no charge on a web site on the Internet? Yes [ X ] No [ ]</p> <p>Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.</p> <div style="border: 1px solid black; padding: 5px;"> <p>District Municipality of Muskoka 70 Pine Street Bracebridge, Ontario P1L 1N3 (705) 645-6764 www.muskoka.on.ca</p> </div>	<p><b><u>Complete for all other Categories.</u></b></p> <p>Number of Designated Facilities served:  <div style="border: 1px solid black; padding: 2px; display: inline-block;">N.A.</div> </p> <p>Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [ ] No [ ]</p> <p>Number of Interested Authorities you report to: <div style="border: 1px solid black; width: 100px; height: 20px; display: inline-block;"></div></p> <p>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [ ] No [ ]</p>
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**Note: For the following tables below, additional rows or columns may be added or an appendix may be attached to the report**

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

Drinking Water System Name	Drinking Water System Number
N.A.	

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



Indicate how you notified system users that your annual report is available, and is free of charge.

- Public access/notice via the web
- Public access/notice via Government Office
- Public access/notice via a newspaper
- Public access/notice via Public Request
- Public access/notice via a Public Library
- Public access/notice via other method \_\_\_\_\_

**Describe your Drinking-Water System**

The Clarke well system services one subdivision consisting of 34 homes. The system was constructed in 1984. The system had significant upgrades in 2004/2005. The treatment process consists of disinfection by UV, chlorination and filtration. The rated water production capacity of this facility is 90 cubic meters per day. The water is obtained from a drilled well located at 46 Clarke Crescent.

**List all water treatment chemicals used over this reporting period**

Sodium Hypochlorite

**Were any significant expenses incurred to?**

- Install required equipment
- Repair required equipment
- Replace required equipment

**Please provide a brief description and a breakdown of monetary expenses incurred**

**Provide details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre**

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
N/A					

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

	Number of Samples	Range of E.Coli Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Raw	52	0 - 0	0 - 10	0	~
Treated	52	0 - 0	0 - 0	52	0 - 21
Distribution	52	0 - 0	0 - 0	52	0 - 1

**Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.**

	Number of Grab Samples	Range of Results (min #)-(max #)	Geomean
Turbidity	8760	0.07 – 0.16 NTU	0.09 NTU
Chlorine	8760	1.27 – 1.72 mg/L	1.46 mg/L
Fluoride (If the DWS provides fluoridation)	Not in Use	Not in Use	

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

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

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	May 03, 2021	0.9<MDL	µg/L	No
Arsenic	May 03, 2021	0.2<MDL	µg/L	No
Barium	May 03, 2021	19.5	µg/L	No
Boron	May 03, 2021	9	µg/L	No
Cadmium	May 03, 2021	0.005	µg/L	No
Chromium	May 03, 2021	0.28	µg/L	No
*Lead				
Mercury	May 03, 2021	0.01<MDL	µg/L	No
Selenium	May 03, 2021	0.06	µg/L	No
Sodium	May 03, 2021	33.6	mg/L	No
Uranium	May 03, 2021	0.066	µg/L	No
Fluoride	May 03, 2021	0.06<MDL	mg/L	No
Nitrite	Feb 08, 2021	0.003<MDL	mg/L	No
Nitrate	Feb 08, 2021	1.04	mg/L	No
Nitrite	May 03, 2021	0.003<MDL	mg/L	No



<b>Nitrate</b>	May 03, 2021	1.08	mg/L	No
<b>Nitrite</b>	Aug 03, 2021	0.003<MDL	mg/L	No
<b>Nitrate</b>	Aug 03, 2021	1.01	mg/L	No
<b>Nitrite</b>	Nov 01, 2021	0.003<MDL	mg/L	No
<b>Nitrate</b>	Nov 01, 2021	1.03	mg/L	No

\*only for drinking water systems testing under Schedule 15.2; this includes large municipal non-residential systems, small municipal non-residential systems, non-municipal seasonal residential systems, large non-municipal non-residential systems, and small non-municipal non-residential systems

**Summary of lead testing under Schedule 15.1 during this reporting period**

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

<b>Location Type</b>	<b>Number of Samples</b>	<b>Range of Lead Results (min#) – (max #)</b>	<b>Unit of Measure</b>	<b>Number of Exceedances</b>
<b>Plumbing</b>				
<b>Distribution</b>	2	0.19 - 0.23	µg/L	0

**Summary of Organic parameters sampled during this reporting period or the most recent sample results**

<b>Parameter</b>	<b>Sample Date</b>	<b>Result Value</b>	<b>Unit of Measure</b>	<b>Exceedance</b>
<b>Alachlor</b>	May 03, 2021	0.02<MDL	µg/L	No
<b>Atrazine + N-dealkylated metabolites</b>	May 03, 2021	0.01<MDL	µg/L	No
<b>Azinphos-methyl</b>	May 03, 2021	0.05<MDL	µg/L	No
<b>Benzene</b>	May 03, 2021	0.32<MDL	µg/L	No
<b>Benzo(a)pyrene</b>	May 03, 2021	0.004<MDL	µg/L	No
<b>Bromoxynil</b>	May 03, 2021	0.33<MDL	µg/L	No
<b>Carbaryl</b>	May 03, 2021	0.05<MDL	µg/L	No
<b>Carbofuran</b>	May 03, 2021	0.01<MDL	µg/L	No
<b>Carbon Tetrachloride</b>	May 03, 2021	0.17<MDL	µg/L	No
<b>Chlorpyrifos</b>	May 03, 2021	0.02<MDL	µg/L	No
<b>Diazinon</b>	May 03, 2021	0.02<MDL	µg/L	No
<b>Dicamba</b>	May 03, 2021	0.20<MDL	µg/L	No
<b>1,2-Dichlorobenzene</b>	May 03, 2021	0.41<MDL	µg/L	No
<b>1,4-Dichlorobenzene</b>	May 03, 2021	0.36<MDL	µg/L	No
<b>1,2-Dichloroethane</b>	May 03, 2021	0.35<MDL	µg/L	No
<b>1,1-Dichloroethylene (vinylidene chloride)</b>	May 03, 2021	0.33<MDL	µg/L	No
<b>Dichloromethane</b>	May 03, 2021	0.35<MDL	µg/L	No
<b>2-4 Dichlorophenol</b>	May 03, 2021	0.15<MDL	µg/L	No
<b>2,4-Dichlorophenoxy acetic acid (2,4-D)</b>	May 03, 2021	0.19<MDL	µg/L	No
<b>Diclofop-methyl</b>	May 03, 2021	0.40<MDL	µg/L	No
<b>Dimethoate</b>	May 03, 2021	0.06<MDL	µg/L	No
<b>Diquat</b>	May 03, 2021	1<MDL	µg/L	No
<b>Diuron</b>	May 03, 2021	0.03<MDL	µg/L	No
<b>Glyphosate</b>	May 03, 2021	1<MDL	µg/L	No



<b>Malathion</b>	May 03, 2021	0.02<MDL	µg/L	No
<b>MCPA</b>	May 03, 2021	0.00012<MDL	µg/L	No
<b>Metolachlor</b>	May 03, 2021	0.01<MDL	µg/L	No
<b>Metribuzin</b>	May 03, 2021	0.02<MDL	µg/L	No
<b>Monochlorobenzene</b>	May 03, 2021	0.30<MDL	µg/L	No
<b>Paraquat</b>	May 03, 2021	1<MDL	µg/L	No
<b>Pentachlorophenol</b>	May 03, 2021	0.15<MDL	µg/L	No
<b>Phorate</b>	May 03, 2021	0.01<MDL	µg/L	No
<b>Picloram</b>	May 03, 2021	1<MDL	µg/L	No
<b>Polychlorinated Biphenyls(PCB)</b>	May 03, 2021	0.04<MDL	µg/L	No
<b>Prometryne</b>	May 03, 2021	0.03<MDL	µg/L	No
<b>Simazine</b>	May 03, 2021	0.01<MDL	µg/L	No
<b>THM</b> (NOTE: annual average from Distribution – 8 samples)	Samples taken: Feb 08, 2021 May 03, 2021 Aug 03, 2021 Nov 01, 2021	3.3	µg/L	No
<b>Terbufos</b>	May 03, 2021	0.01<MDL	µg/L	No
<b>Tetrachloroethylene</b>	May 03, 2021	0.35<MDL	µg/L	No
<b>2,3,4,6-Tetrachlorophenol</b>	May 03, 2021	0.20<MDL	µg/L	No
<b>Triallate</b>	May 03, 2021	0.01<MDL	µg/L	No
<b>Trichloroethylene</b>	May 03, 2021	0.44<MDL	µg/L	No
<b>2,4,6-Trichlorophenol</b>	May 03, 2021	0.25<MDL	µg/L	No
<b>Trifluralin</b>	May 03, 2021	0.02<MDL	µg/L	No
<b>Vinyl Chloride</b>	May 03, 2021	0.17<MDL	µg/L	No
<b>HAA5</b>	Samples Taken:			
	Feb. 08/21	5.3<MDL	µg/L	No
	May 03/ 21	5.3<MDL	µg/L	No
	Aug 03/21	5.3<MDL	µg/L	No
	Nov 01/21	5.3<MDL	µg/L	No

**List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.**

Parameter	Result Value	Unit of Measure	Date of Sample