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Rev	Date	DESCRIPTION	MADE	CHECKED	APPR'D	
						
<b>SAINT JOHN SAFE CLEAN DRINKING WATER PROJECT</b>						
						
<p><b>PRIMARY INFRASTRUCTURE - COMPONENT 1-1 &amp; 2-1</b>  <b>ANNUAL OPERATIONS REPORT</b>  <i>January 1, 2022-December 31, 2022</i></p>						
Project Code	Company Code	Area Code	Discipline Code	Document Type	Document N°	Rev
SCDWP	PCWS	1-1/2-1	OP	RP	00001	00



# Drinking-Water Systems Annual Report 2022

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# Drinking-Water Systems Annual Report 2022

## Annual Report Requirements & System Information

### Approval to Operate Annual Report Requirements W-1673:

*\*The Approval Holder shall submit an annual report for the reporting period of January to December to the Director, no later than March 1st of the following year. The report shall include the following (if applicable):*

- a) Monitoring results (daily/ weekly/ monthly data such as free chlorine residual, turbidity, pH, temperature, Mn, Fe, etc.);(Range of results summary)*
- b) Monthly water production in m3;*
- c) Operational highlights (significant incidents & system improvements, changes or additions)*
- d) Alarm log; (Alarms reportable were done under “notices” during this reporting period).*
- e) Summary of backflow prevention and cross-connection control activities; (BPV’s in plant tested and certified. There are no known cross connections in the system)*
- f) Summary of flushing activities; (No flushing activities took place during the reporting period)*
- g) Operator information (training, certification & staffing changes);*
- h) Public relations (notifications & public education);*
- i) list of new extensions and/or renewals complete with analytical results (microbiological, organic & inorganic); (No new extensions and/or renewals were conducted during the reporting period)*
- j) Additional comments.*

### System Information

<b>Drinking-Water Approval Number:</b>	<b>W-1673</b>
<b>Drinking-Water System Name:</b>	Loch Lomond Water Treatment Plant
<b>Drinking-Water System Owner:</b>	The City of Saint John
<b>Drinking-Water System Category:</b>	Water Treatment Class IV
<b>Period being reported:</b>	<b>January 1-December 31, 2022</b>



## Drinking-Water Systems Annual Report 2022

**Does your Drinking-Water System serve more than 10,000 people?**

Yes [  ] No [  ]

**Is your annual report available to the public at no charge on a web site on the Internet?**

Yes [  ] No [  ]

**Location where Report will be available for inspection.**

City of Saint John Web Page  
 or hard copies by request to PCWS at  
 55 Latimore Lake Road, Saint John NB  
 E2N 0E6

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

Drinking Water System Name	Drinking Water System Approval Number
Saint John Treatment & Distribution System	W-1510

**Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?**

Yes [  ] No [  ]

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

[  ] Public access/notice via the web (City web page)

[  ] 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 Loch Lomond WTP is categorized as a Class IV WT plant operated by PCWS under Approval to Operate # W-1673 issued August 24, 2018. The Loch Lomond WTP is the new drinking water treatment facility supplying Saint John East customers in 2019 and early in 2020, feed to the west side Saint John customers in 7 communities as well; (Approximately 70,000) residential, business and industrial. Treatment is in the form of surface water received from Latimore Lake Reservoir intakes (City operated) through two (2) large raw water transmission mains feeding the plant. The treatment plant consists of four (4) lines or ‘trains’; each line incorporates a flash mix tank, floc tank, Dissolved Air Flootation (DAF) and filter. Each “train” is capable of 25MLD flow rates. The total plant maximum treatment design rate is for 75MLD.

The treatment consists of alkalinity and pH adjustment through lime and CO<sub>2</sub>, with pre-oxidation of metals with Potassium Permanganate. This raw inlet water is then chemically assisted to coagulate and flocculate the fine suspended organic and inorganic particulates with coagulant and polymer. This coagulated water passes through a flash mix chamber, flocculation basins and the solids removal is obtained via Dissolved Air Flotation units (DAF’s). The effluent water from the DAF’s is then directed onto multi media filters (4) where final solids removal is performed. The filtered water then flows through a chlorine contact chamber (baffled) where primary chlorination is achieved. The treated water at this point is then pH adjusted and corrosion inhibitor applied to protect the City network. Caustic Soda is used for pH adjustment and Zinc Orthophosphate used as a corrosion inhibitor. This water is then pumped via high lift pumps (4) through UV Trojan disinfection (as needed) to the storage tanks (3) each consisting of 11,000m<sup>3</sup> volume. The water from the tanks then flows through Treated Water meters on supply lines (2) to Lakewood Heights and Hickey Road where secondary chlorination occurs to ensure proper residuals for City network.

There are several auxiliary possesses consisting of plant service water pumps (2), potable water feed pumps (3), backwash pumps (2), and blowers and compressors for treatment. There is also sludge pumps (2) and plate & frame press, backwash waste pumps (2) and sewer pumps (2) along with flow metering for process lines and systems. Staffing consists of a Plant Manager, Maintenance/Operations Manager, and five (5) Operators.

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

- Lime
- CO<sub>2</sub>
- KMnO<sub>4</sub>
- Orthophosphate (Corrosion inhibitor)
- Sodium Hydroxide (50% Caustic)
- Sodium Hypochlorite (12% Bleach/Chlorine)
- PAX XL1900 (Coagulant)
- Polymer (Superfloc A120)
- Polymer (Sludge dewatering LT22S & Superfloc C492)

### Were any significant expenses incurred to?

Install required equipment

Repair required equipment

Replace required equipment (*Add critical spares*)

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

- 1) Updates to server applications, cyber security devices and firewall systems, scope and plan for network redesign at a cost of \$30K.
- 2) Back-up analyzers for lab (DR, Turbidity, UVT) to ensure compliance in the event of analyser failures in WTP lab. Capital expense with costs associated around \$10K.



## Drinking-Water Systems Annual Report 2022

**Provide details on the Operator training, certification, staff changes in accordance with Approval to Operate W-1673.**

Name	Certification	Training Hours/CEU	Other Details
Peter Larsen	WT IV/ WD IV/ WWT IV/ WWC IV	57 hrs, 1.0 CEU's	Ops Meeting/safety(22), First Aid & CPR with AED (8), Cal State MBR course (10), Fall Protection (4), LOTO (4), Slay Project Management (1), Confined Space (4)
Shon Karolic	WT IV / WD II	60 hrs, 0.7 CEU's	Ops Meeting/safety (22), First Aid & CPR with AED (8), Fall Arrest (4), LOTO (4), Confined Space (4), ACWWA conference (16), Chainsaw course (2)
Brenda MacKinnon	WT III	42 hrs, 0 CEU's	Ops Meeting/safety (20), First Aid & CPR with AED (8), Inablon Acciona database (2), LOTO (4), Confined Space (4), Fall Arrest (4),
Travis Keenan	WT III, Cal State WT Course I&II	181 hrs, 12.6 CEU's	Ops meeting/safety (24), First Aid & CPR with AED (8), Cal State WWT Vol I (119), Fall Arrest (4), ACWWA conference (16), Chainsaw course (2), Arc Flash (8)
Robert Theriault	WT III, Cal State WT Course I&II	183 hrs, 12.6 CEU's	Ops meeting/safety (24), First Aid & CPR with AED (8), WHMIS (2), LOTO (4), Confined Space (4), Fall Arrest (4), Cal State WWT Vol I (119), ACWWA conference (16), Chainsaw course (2)
Kyle Kirkpatrick	WT I, Cal State WT Course I & II	52 hrs, 0.7 CEU's	Ops meeting/safety (24), First Aid & CPR with AED (8), LOTO (4), ACWWA conference (16)
Ben Larsen	Cal State WT Course I & II	542 hrs 18.0 CEU	New employee training (320), Ops meeting/safety (18), First Aid & CPR with AED (16), WHMIS (2), Fall Arrest (4), Cal State Vol I & II (180), chainsaw course (2)



## Drinking-Water Systems Annual Report 2022

**Provide details on the notices submitted in accordance with Approval to Operate W-1673 and reported to NBDELG or DOH.**

<b>Incident: Date / number</b>	<b>Parameter</b>	<b>Result</b>	<b>Unit of Measure</b>	<b>Corrective Action</b>	<b>Corrective Action Date</b>
May 12, 2022	General notice	N/A	N/A	Provided notification to Medical Officer of Health and NBDELG and City water department of PCWS removal of storage tank #1 for maintenance and warranty repairs. No further action required	May 12, 2022
July 5, 2022	General notice	N/A	N/A	Provided notification to Medical Officer of Health and NBDELG and City water department of PCWS completion of work on Tank #1 and all testing and checks completed. Back into service by July 7 <sup>th</sup> , 2022. No further action required	July 5, 2022
September 20, 2022	General notice	N/A	N/A	Provided notification to Medical Officer of Health and NBDELG and City water department of PCWS removal of storage tank #2 for maintenance and warranty repairs. No further action required	September 20, 2022
October 28, 2022	General notice	N/A	N/A	Provided notification to Medical Officer of Health and NBDELG and City water department of PCWS completion of work on Tank #2 and all testing and checks completed. Back into service. No further action required	October 28, 2022
November 3, 2022	General Notice	N/A	N/A	Provided notification to Medical Officer of Health and NBDELG and City water department of plant down day to perform cleaning on raw water mix chamber. Clean-up and job completed as expected, no compliance or further notifications required.	November 3, 2022

## Drinking-Water Systems Annual Report 2022

### Microbiological testing done during this reporting period (January 1 to December 31, 2022)

Water Type	Number of Samples	Range of E.Coli or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #) as cfu/100 ml	Number of HPC Samples (Background) as cfu/ml	Range of HPC Results (Background) (min #)-(max #)
Raw Water	52	0 to 3	0 to 144	Not applicable.	Not applicable.
Treated Lakewood Heights	52	0 to 0	0 to 0	27	0 to 203
Treated Hickey Road	52	0 to 0	0 to 0	27	0 to 168

### Operational testing done during the period covered by this Annual Report (January 1 to December 31, 2022)

Parameter (Raw Water (RW) & Finished Water (FW) & Treated Water (TW))	Number of Grab Samples #	Range of Results (min #)-(max #) (mg/L)
<b>Turbidity (NTU)</b>		
RW	365	0.39 – 1.34
FW	365	0.02 – 0.04
<b>pH</b>		
RW	365	6.80 – 7.44
FW	365	7.30 – 7.88
<b>Cl<sub>2</sub> (mg/L free)</b>		
FW	365	0.88 – 1.26
<b>CL<sub>2</sub> (mg/L free) TW</b>		
Hickey Road line	365	1.07 – 1.55
Lakewood Heights Line	365	1.10 – 1.51
<b>Alkalinity (mg/L)</b>		
RW	365	8.8 – 14.8
FW	366	25.6 – 35.2

*NOTE: Other process analysis results obtained as part of operational controls are available at WTP as required.*

## Drinking-Water Systems Annual Report 2022

**Summary of Water production. (January 1, 2022 to December 31, 2022) as per the requirement of contract and approval #W-1673.**

<b>Date</b>	<b>Water Produced M<sup>3</sup></b>
<b>January 2022</b>	1,437,100
<b>February 2022</b>	1,370,200
<b>March 2022</b>	1,485,600
<b>April 2022</b>	1,242,750
<b>May 2022</b>	1,218,500
<b>June 2022</b>	1,177,500
<b>July 2022</b>	1,235,100
<b>August 2022</b>	1,232,700
<b>September 2022</b>	1,201,100
<b>October 2022</b>	1,218,000
<b>November 2022</b>	1,214,600
<b>December 2022</b>	1,340,200

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

<b>Parameter</b>	<b>Unit of Measure</b>	<b>Number of Samples (Jan 1, 2022-Dec 31, 2022)</b>	<b>Range of Results (min#-max#)</b>
Filter Turbidity#1	NTU	8760	0.019– 0.056
Filter Turbidity#2	NTU	8760	0.018 – 0.040
Filter Turbidity#3	NTU	8760	0.019 – 0.041
Filter Turbidity#4	NTU	8760	0.019 – 0.052
FW Turbidity	NTU	8760	0.019 – 0.036
FW pH	pH	8760	7.38 – 7.80
TW CL <sub>2</sub> free	mg/L	8760	
TW Hickey Road			1.19 – 1.35
TW Lakewood Heights			1.20 – 1.34

*NOTE: Record the unit of measure if it is not milligrams per litre.  
NOTE: For continuous monitors use 8760 as the number of samples/year.*

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
<b>Aluminum</b>	Standard –	MAC 0.100	mg/L	
Raw Water	Mar 16.22	0.023	mg/L	NONE
Treated Water		<0.005	mg/L	
Raw Water	Sept 13.22	<0.005	mg/L	NONE
Treated Water		<0.005	mg/L	
<b>Antimony</b>	Standard –	IMAC 0.006	mg/L	
Raw Water	Mar 16.22	<0.002	mg/L	NONE
Treated Water		<0.002	mg/L	
Raw Water	Sept 13.22	<0.002	mg/L	NONE
Treated Water		<0.002	mg/L	
<b>Arsenic</b>	Standard –	IMAC 0.010	mg/L	
Raw Water	Mar 16.22	<0.001	mg/L	NONE
Treated Water		<0.001	mg/L	
Raw Water	Sept 13.22	<0.001	mg/L	NONE
Treated Water		<0.001	mg/L	
<b>Barium</b>	Standard –	MAC 2.0	mg/L	
Raw Water	Mar 16.22	<0.010	mg/L	NONE
Treated Water		<0.010	mg/L	
Raw Water	Sept 13.22	<0.010	mg/L	NONE
Treated Water		<0.010	mg/L	
<b>Boron</b>	Standard –	IMAC 5.0	mg/L	
Raw Water	Mar 16.22	<0.1	mg/L	NONE
Treated Water		<0.1	mg/L	
Raw Water	Sept 13.22	<0.1	mg/L	NONE
Treated Water		<0.1	mg/L	

<b>Cadmium</b>	Standard –	MAC 0.005	mg/L	
Raw Water Treated Water	Mar 16.22	<0.00002 <0.00002	mg/L mg/L	NONE
Raw Water Treated Water	Sept 13.22	<0.00002 <0.00002	mg/L mg/L	NONE
<b>Calcium</b>	Standard –	N/A	mg/L	
Raw Water Treated Water	Mar 16.22	3.2 5.1	mg/L mg/L	N/A
Raw Water Treated Water	Sept 13.22	4.6 7.7	mg/L mg/L	N/A
<b>Chloride</b>	Standard –	AO 250	mg/L	
Raw Water Treated Water	Mar 16.22	6.0 9.6	mg/L mg/L	NONE
Raw Water Treated Water	Sept 13.22	4.3 7.1	mg/L mg/L	NONE
<b>Chromium</b>	Standard –	MAC 0.05	mg/L	
Raw Water Treated Water	Mar 16.22	<0.001 <0.001	mg/L mg/L	NONE
Raw Water Treated Water	Sept 13.22	<0.001 <0.001	mg/L mg/L	NONE
<b>Copper</b>	Standard –	AO 10000	mg/L	
Raw Water Treated Water	Mar 16.22	<1.0 <1.0	mg/L mg/L	NONE
Raw Water Treated Water	Sept 13.22	<1.0 <1.0	mg/L mg/L	NONE



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<b>Iron</b>	Standard –	AO 300	mg/L	
Raw Water	Mar 16.22	0.019	mg/L	NONE
Treated Water		<0.002	mg/L	
Raw Water	Sept 13.22	0.032	mg/L	NONE
Treated Water		0.028	mg/L	
<b>Lead</b>	Standard –	MAC 0.010	mg/L	
Raw Water	Mar 16.22	<0.001	mg/L	NONE
Treated Water		<0.001	mg/L	
Raw Water	Sept 13.22	<0.001	mg/L	NONE
Treated Water		<0.001	mg/L	
<b>Mercury</b>	Standard –	MAC 0.001	mg/L	
Raw Water	Mar 16.22	<0.00002	mg/L	NONE
Treated Water		<0.00002	mg/L	
Raw Water	Sept 13.22	<0.00002	mg/L	NONE
Treated Water		<0.00002	mg/L	
<b>Potassium</b>	Standard –	N/A	mg/L	
Raw Water	Mar 16.22	0.30	mg/L	N/A
Treated Water		0.20	mg/L	
Raw Water	Sept 13.22	0.20	mg/L	N/A
Treated Water		0.20	mg/L	
<b>Selenium</b>	Standard –	MAC 0.05	mg/L	
Raw Water	Mar 16.22	<0.002	mg/L	NONE
Treated Water		<0.002	mg/L	
Raw Water	Sept 13.22	<0.002	mg/L	NONE
Treated Water		<0.002	mg/L	

<b>Sodium</b>	Standard –	AO 200	mg/L	
Raw Water	Mar 16.22	3.5	mg/L	NONE
Treated Water		13.0	mg/L	
Raw Water	Sept 13.22	4.1	mg/L	NONE
Treated Water		10.6	mg/L	
<b>Magnesium</b>	Standard –	N/A	mg/L	
Raw Water	Mar 16.22	0.60	mg/L	N/A
Treated Water		0.50	mg/L	
Raw Water	Sept 13.22	0.60	mg/L	N/A
Treated Water		0.60	mg/L	
<b>Manganese</b>	Standard –	AO 0.05	mg/L	
Raw Water	Mar 16.22	0.006	mg/L	NONE
Treated Water		<0.002	mg/L	
Raw Water	Sept 13.22	0.024	mg/L	NONE
Treated Water		<0.002	mg/L	
<b>Thallium</b>	Standard –	N/A	mg/L	
Raw Water	Mar 16.22	<0.001	mg/L	N/A
Treated Water		<0.001	mg/L	
Raw Water	Sept 13.22	<0.001	mg/L	N/A
Treated Water		<0.001	mg/L	
<b>Uranium</b>	Standard –	MAC 0.02	mg/L	
Raw Water	Mar 16.22	<0.0005	mg/L	NONE
Treated Water		<0.0005	mg/L	
Raw Water	Sept 13.22	<0.0005	mg/L	NONE
Treated Water		<0.0005	mg/L	

<b>Fluoride</b>	Standard –	MAC 1.5	mg/L	
Raw Water	Mar 16.22	<0.10	mg/L	NONE
Treated Water		<0.10	mg/L	
Raw Water	Sept 13.22	<0.10	mg/L	NONE
Treated Water		<0.10	mg/L	
<b>Zinc</b>	Standard –	AO 0.5	mg/L	
Raw Water	Mar 16.22	<0.002	mg/L	NONE
Treated Water		0.079	mg/L	
Raw Water	Sept 13.22	<0.002	mg/L	NONE
Treated Water		0.032	mg/L	
<b>Sulphate</b>	Standard –	AO 5000	mg/L	
Raw Water	Mar 16.22	2.0	mg/L	NONE
Treated Water		2.0	mg/L	
Raw Water	Sept 13.22	<2.0	mg/L	NONE
Treated Water		<2.0	mg/L	
<b>Nitrate</b>	Standard –	MAC 45.0	mg/L	
Raw Water	Mar 16.22	<0.20	mg/L	NONE
Treated Water		<0.20	mg/L	
Raw Water	Sept 13.22	<0.20	mg/L	NONE
Treated Water		<0.20	mg/L	
<b>Nitrite</b>	Standard –	MAC 3.0	mg/L	
Raw Water	Mar 16.22	<0.20	mg/L	NONE
Treated Water		<0.20	mg/L	
Raw Water	Sept 13.22	<0.20	mg/L	NONE
Treated Water		<0.20	mg/L	



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<b>Bromide</b>	Standard –	N/A	mg/L	
Raw Water Treated Water	Mar 16.22	<0.2 <0.2	mg/L mg/L	N/A
Raw Water Treated Water	Sept 13.22	<0.2 <0.2	mg/L mg/L	N/A
<b>TKN</b>	Standard -		mg/L	
Raw Water Treated Water	Mar 16.22	<0.5 <0.5	mg/L mg/L	NONE
Raw Water Treated Water	Sept 13.22	<0.5 <0.5	mg/L mg/L	
<b>Turbidity</b>	Standard –	MAC 1.0 TW	NTU	
Raw Water Treated Water	Mar 16.22	0.78 0.11	NTU NTU	NONE
Raw Water Treated Water	Sept 13.22	0.73 0.24	NTU NTU	NONE
<b>Conductivity</b>	Standard –	N/A	us/cm	
Raw Water Treated Water	Mar 16.22	47 105	us/cm us/cm	N/A
Raw Water Treated Water	Sept 13.22	46 92	us/cm us/cm	N/A
<b>TDS</b>	Standard –	N/A	mg/L	
Raw Water Treated Water	Mar 16.22	22 50	mg/L mg/L	N/A
Raw Water Treated Water	Sept 13.22	22 44	mg/L mg/L	N/A

<b>True Colour</b>	Standard –	AO <15.0	TCU	
Raw Water Treated Water	Mar 16.22	24.0 <1.0	TCU TCU	NONE
Raw Water Treated Water	Sept 13.22	14.0 <1.0	TCU TCU	NONE
<b>Hardness as CaCO<sub>3</sub></b>	Standard –	N/A	mg/L	
Raw Water Treated Water	Mar 16.22	10 15	mg/L mg/L	N/A
Raw Water Treated Water	Sept 13.22	14 22	mg/L mg/L	N/A
<b>Alkalinity mg/L as CaCO<sub>3</sub></b>	Standard –	N/A	mg/L	
Raw Water Treated Water	Mar 16.22	9.0 28.0	mg/L mg/L	N/A
Raw Water Treated Water	Sept 13.22	9.0 25.0	mg/L mg/L	N/A
<b>pH</b>	Standard –	N/A	pH	
Raw Water Treated Water	Mar 16.22	6.76 7.27	pH pH	N/A
Raw Water Treated Water	Sept 13.22	6.87 7.20	pH pH	N/A

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
<b>Benzene</b>	Standard –	MAC 0.005	mg/L	NONE
Raw Water	Mar 16.22	<0.0005	mg/L	NONE
Treated Water		<0.0005	mg/L	
Raw Water	Sept 13.22	<0.0005	mg/L	NONE
Treated Water		<0.0005	mg/L	
<b>Benzo(a)pyrene</b>	Standard –	MAC 0.00004	mg/L	
Raw Water	Mar 16.22	<0.00001	mg/L	NONE
Treated Water		<0.00001	mg/L	
Raw Water	Sept 21.22	<0.00001	mg/L	NONE
Treated Water		<0.00001	mg/L	
<b>Carbon Tetrachloride</b>	Standard –	MAC 0.002	mg/L	
Raw Water	Mar 16.22	<0.0005	mg/L	NONE
Treated Water		<0.0005	mg/L	
Raw Water	Sept 13.22	<0.0005	mg/L	NONE
Treated Water		<0.0005	mg/L	
<b>Chlorobenzene</b>	Standard –	HAL 0.080 Part of THM	mg/L	
Raw Water	Mar 16.22	<0.0005	mg/L	NONE
Treated Water		<0.0005	mg/L	
Raw Water	Sept 13.22	<0.0005	mg/L	NONE
Treated Water		<0.0005	mg/L	
<b>Bromodichloromethane</b>	Standard –	HAL 0.016 Part of THM	mg/L	
Raw Water	Mar 16.22	<0.0005	mg/L	NONE
Treated Water		0.0027	mg/L	
Raw Water	Sept 13.22	<0.0005	mg/L	NONE
Treated Water		0.0038	mg/L	

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<b>Bromoform</b>	Standard –	Part of THM	mg/L	
Raw Water	Mar 16.22	<0.0005	mg/L	NONE
Treated Water		<0.0005	mg/L	
Raw Water	Sept 13.22	<0.0005	mg/L	NONE
Treated Water		<0.0005	mg/L	
<b>Chloroform</b>	Standard –	Part of THM	mg/L	
Raw Water	Mar 16.22	<0.0005	mg/L	NONE
Treated Water		0.0143		
Raw Water	Sept 13.22	<0.0005	mg/L	NONE
Treated Water		0.0280	mg/L	
<b>Dibromochloromethane</b>	Standard –	Part of THM	mg/L	
Raw Water	Mar 16.22	<0.0005	mg/L	NONE
Treated Water		<0.0005	mg/L	
Raw Water	Sept 13.22	<0.0005	mg/L	NONE
Treated Water		<0.0005	mg/L	
<b>1,2-Dichlorobenzene</b>	Standard –	MAC 0.200	mg/L	
Raw Water	Mar 16.22	<0.0005	mg/L	NONE
Treated Water		<0.0005	mg/L	
Raw Water	Sept 13.22	<0.0005	mg/L	NONE
Treated Water		<0.0005	mg/L	
<b>1,4-Dichlorobenzene</b>	Standard –	MAC 0.005	mg/L	
Raw Water	Mar 16.22	<0.0005	mg/L	NONE
Treated Water		<0.0005	mg/L	
Raw Water	Sept 13.22	<0.0005	mg/L	NONE
Treated Water		<0.0005	mg/L	
<b>1,2-Dichloroethane</b>	Standard –	IMAC 0.005	mg/L	
Raw Water	Mar 16.22	<0.0005	mg/L	NONE
Treated Water		<0.0005	mg/L	
Raw Water	Sept 13.22	<0.0005	mg/L	NONE
Treated Water		<0.0005	mg/L	



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<b>Dichloromethane</b>	Standard –	MAC 0.050	mg/L	
Raw Water	Mar 16.22	<0.0010	mg/L	NONE
Treated Water		<0.0010	mg/L	
Raw Water	Sept 13.22	<0.0010	mg/L	NONE
Treated Water		<0.0010	mg/L	
<b>Ethylbenzene</b>	Standard -	MAC 0.14	mg/L	
Raw Water	Mar 16.22	<0.0005	mg/L	NONE
Treated Water		<0.0005	mg/L	
Raw Water	Sept 13.22	<0.0005	mg/L	NONE
Treated Water		<0.0005	mg/L	
<b>Methyl-t-butyl Ether (MTBE)</b>	Standard -	AO 0.015	mg/L	
Raw Water	Mar 16.22	<0.0010	mg/L	NONE
Treated Water		<0.0010	mg/L	
Raw Water	Sept 13.22	<0.0010	mg/L	NONE
Treated Water		<0.0010	mg/L	
<b>Pentachlorophenol</b>	Standard –	IMAC 0.06	mg/L	
Raw Water	Mar 16.22	<0.0002	mg/L	NONE
Treated Water		<0.0002	mg/L	
Raw Water	Sept 21.22	<0.0002	mg/L	NONE
Treated Water		<0.0002	mg/L	
<b>Toluene</b>	Standard –	HAL 0.024	mg/L	
Raw Water	Mar 16.22	<0.0005	mg/L	NONE
Treated Water		<0.0005	mg/L	
Raw Water	Sept 13.22	<0.0005	mg/L	NONE
Treated Water		<0.0005	mg/L	



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<b>THM (Total)</b>	Standard -	CDWQG 0.100 HAL 0.100	mg/L	
TW (Mar 16.22)	Mar 16.22	0.0170	mg/L	NONE
TW (Sept 13.22)	Sept 13.22	0.0320	mg/L	NONE
<b>TOC</b>	Standard-	<i>None</i>	mg/L	
Treated Water	Mar 16.22	2.8	mg/L	NONE
Treated Water	Sept 13.22	2.3	mg/L	NONE
<b>Tetrachloroethylene</b>	Standard –	MAC 0.010	mg/L	
Raw Water Treated Water	Mar 16.22	<0.0005 <0.0005	mg/L mg/L	NONE
Raw Water Treated Water	Sept 13.22	<0.0005 <0.0005	mg/L mg/L	NONE
<b>Trichloroethylene</b>	Standard –	MAC 0.005	mg/L	
Raw Water Treated Water	Mar 16.22	<0.0005 <0.0005	mg/L mg/L	NONE
Raw Water Treated Water	Sept 13.22	<0.0005 <0.0005	mg/L mg/L	NONE
<b>Vinyl Chloride</b>	Standard –	MAC 0.002	mg/L	
Raw Water Treated Water	Mar 16.22	<0.0020 <0.0020	mg/L mg/L	NONE
Raw Water Treated Water	Sept 13.22	<0.0020 <0.0020	mg/L mg/L	NONE
<b>Xylenes</b>	Standard –	MAC 0.090	mg/L	
Raw Water Treated Water	Mar 16.22	<0.0005 <0.0005	mg/L mg/L	NONE
Raw Water Treated Water	Sept 13.22	<0.0005 <0.0005	mg/L mg/L	NONE

**List any Inorganic or Organic parameter(s) that exceeded MAC, IMAC or over half MAC of the CDWQG, NBDWG or HAL limits in Water Quality Standards.**

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
NONE FOR 2021				

**Summary of Public Relations (Notifications & Public Education & Tours) during this reporting period (January 1, 2022 – December 31, 2022).**

Tour Irving IPP folks	Tour for IPP staff looking at DAF and tanks. April 2022 (7 staff total)
Tour WTP facility for APEGNB group	Tour of WTP and site for APEGNB members. May 2022 (21 people)
Tour WTP for Worksafe NB Inspector & DELG Inspector	Tour with Worksafe NB inspector and DELG inspector for site reviews and observances. September 2022 (2 individuals)
Tour WTP and site for ACWWA conference attendants	Tour of WTP for ACWWA conference attendants October 2022 (Approx. 40 people)
Tour WTP for UNBSJ Engineering students	Tour of WTP for UNBSJ Eng. Students October 2022 (Approx. 30 students)
Tour WTP and operations for City staff and their kids to work day (Grade 9 students)	Tour of WTP for City staff and kids. November 2022 (Approx. 10 people)
Tour WTP and operations for new City leadership staff	Tour Dec 13, 2022 for 10 people from City SJW staff



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### Summary of Backflow prevention activities during this reporting period (January 1, 2022 – December 31, 2022).

Device Tag/Name	Date Inspected	Certified Pass/Fail	Information
Custodial Room#25537	June 07, 2022	Pass	
Custodial Room#169682	June 07, 2022	Pass	
Custodial Room#169716	June 07, 2022	Pass	
Chemical Room#154128	June 07, 2022	Pass	
Chemical Room#051815	June 07, 2022	Pass	
Chemical Room#090043	June 07, 2022	Pass	
Water Entrance#111713	June 07, 2022	Pass	
Laundry Room#096106	June 07, 2022	Pass	
Laundry Room#156478	June 07, 2022	Pass	
Fire Closet#Q1-1242	June 01, 2022	Pass	
Fire Pump House#1150040717	June 01, 2022	Pass	
Spare (Out of service)#096097	N/A	N/A	Out of service spare

## List of Abbreviations:

CDWQG = Canadian Drinking Water Quality Guidelines  
NBDWG = New Brunswick Drinking Water Guidelines  
HAL = Health advisory level  
RW = Raw Water  
TW = Treated Water  
FW = Finished Water (Before final chlorination)  
NTU = Nephelometric turbidity unit  
mg/L = milligram per litre  
MAC = Maximum acceptable concentration  
IMAC = Interim maximum acceptable concentration  
AO = Asthetic objective  
MLD = Mega liters per day  
ML = Mega Litres (Million Litres)  
UV = Ultraviolet  
DAF = Dissolved air floatation  
UVT = Ultraviolet transmittance  
ug/L = Microgram per litre  
THM = Trihalomethane (Chlorination disinfection byproduct)  
TDS = Total dissolved solids  
N/A = Not Applicable  
DOH = Department of Health  
NBDELG = New Brunswick Department of Environment and Local Government  
TDG = Transportation of Dangerous Goods  
LOTO = Lock Out, Tag Out (Electrical safety)  
WHMIS = Workplace Hazardous Materials Information System  
BPV = Backflow Prevention Valve/device  
TNTC = Too Numerous To Count  
Cfu = Coliform forming units (Count)