



Ontario Clean Water Agency
Agence Ontarienne Des Eaux

New Liskeard Drinking Water System

2022 ANNUAL/SUMMARY REPORT

Prepared by the Ontario Clean Water Agency
on behalf of the City of Temiskaming Shores

Revised: March 2, 2023



TABLE OF CONTENTS

INTRODUCTION 2

Section 11 - ANNUAL REPORT 3

1.0 INTRODUCTION 3

2.0 NEW LISKEARD DRINKING WATER SYSTEM (DWS No. 220000344) 4

3.0 LIST OF WATER TREATMENT CHEMICALS USED OVER THE REPORTING PERIOD..... 6

4.0 SIGNIFICANT EXPENSES INCURRED TO THE DRINKING WATER SYSTEM 7

5.0 DETAILS ON NOTICES OF ADVERSE TEST RESULTS AND OTHER PROBLEMS REPORTED TO
& SUBMITTED TO THE SPILLS ACTION CENTER..... 7

6.0 MICROBIOLOGICAL TESTING PERFORMED DURING THE REPORTING PERIOD..... 8

7.0 OPERATIONAL TESTING PERFORMED DURING THE REPORTING PERIOD 8

Schedule 22 - SUMMARY REPORTS FOR MUNICIPALITIES 14

1.0 INTRODUCTION 14

2.0 REQUIREMENTS THE SYSTEM FAILED TO MEET 14

3.0 SUMMARY OF QUANTITIES & FLOW RATES..... 14

CONCLUSION..... 20

List of Figures

Figure 1 – 2022 – Comparison of Treated Water Flows to the Rated Capacity

Figure 2 – Historical Water Usage Trends (2018 to 2022)

List of Appendices

APPENDIX A – Monthly Summary of Microbiological Test Results

APPENDIX B – Monthly Summary of Operational Data

Revision: March 2, 2023 – Page 9 of 20 was revised to correct the October 17, 2022 Trihalomethane (THM) result. Testmark Laboratories discovered an error with the result and reissued the laboratory report with the corrected value on March 1st, 2023



INTRODUCTION

Municipalities throughout Ontario are required to comply with Ontario Regulation 170/03 made under the *Safe Drinking Water Act* (SDWA) since June 2003. The Act was passed following recommendations made by Commissioner O'Conner after the Walkerton Inquiry. The Act's purpose is to protect human health through the control and regulation of drinking-water systems. O. Reg. 170/03 regulates drinking water testing, use of licensed laboratories, treatment requirements and reporting requirements.

Section 11 of Regulation 170/03 requires the owner to produce an Annual Report. This report must include the following:

1. Description of system & chemical(s) used
2. Summary of any adverse water quality reports and corrective actions
3. Summary of all required testing
4. Description of any major expenses incurred to install, repair or replace equipment

This Annual Report must be completed by February 28 of each year.

The regulation also requires a Summary Report which must be presented and accepted by Council by March 31 of each year for the preceding calendar year reporting period.

The report must list the requirements of the Act, its regulations, the system's Drinking Water Works Permit (DWWP), Municipal Drinking Water Licence (MDWL), Certificate of Approval (if applicable), and any regulatory requirement the system failed to meet during the reporting period. The report must also specify the duration of the failure, and for each failure referred to, describe the measures that were taken to correct the failure.

The *Safe Drinking Water Act*, 2002 and the drinking water regulations can be viewed at the following website: <http://www.e-laws.gov.on.ca>.

To enable the Owner to assess the rated capacity of their system to meet existing and future planned water uses, the following information is also required in the report.

1. A summary of the quantities and flow rates of water supplied during the reporting period, including the monthly average and the maximum daily flows.
2. A comparison of the summary to the rated capacity and flow rates approved in the systems approval, drinking water works permit or municipal drinking water licence or a written agreement if the system is receiving all its water from another system under an agreement.

The reports have been prepared by the Ontario Clean Water Agency (OCWA) on behalf of the Owner and presented to council as the 2022 Annual/Summary Report.



New Liskeard Drinking Water System

Section 11

2022 ANNUAL REPORT



Section 11 - ANNUAL REPORT

1.0 INTRODUCTION

Drinking-Water System Name	New Liskeard Drinking Water System
Drinking-Water System Number	220000344
Drinking-Water System Owner	The Corporation of the City of Temiskaming Shores
Drinking-Water System Category	Large Municipal, Residential System
Reporting Period	January 1, 2022 to December 31, 2022

Does your Drinking-Water System serve more than 10,000 people? No

Is your annual report available to the public at no charge on a web site on the Internet? Yes
at: <http://www.temiskamingshores.ca/en/index.asp>

Location where the report required under O. Reg. 170/03 Schedule 22 will be available for inspection:

City of Temiskaming Shores
325 Farr Drive, P.O. Box 2050
Haileybury, ON P0J 1K0

Drinking-Water Systems that receive drinking water from the New Liskeard Drinking Water System

The New Liskeard Drinking Water System provides all of its drinking water to the communities of New Liskeard and Dymond within the City of Temiskaming Shores.

The Annual Report was not provided to any other Drinking Water System Owners

The Ontario Clean Water Agency prepared the 2022 Annual Report for the New Liskeard Drinking Water System and provided a copy to the system owner; the City of Temiskaming Shores. The New Liskeard Drinking Water System is a stand-alone system that does not receive water from or send water to another system.

Notification to system users that the Annual Report is available for viewing is accomplished through:

- Notice on the city's Facebook page
- Notice in the local newspaper



2.0 NEW LISKEARD DRINKING WATER SYSTEM (DWS No. 220000344)

The New Liskeard Drinking Water System is owned by The Corporation of the City of Temiskaming Shores and consists of a Class 1 water treatment system and a Class 3 water distribution subsystem. The system is a communal ground water well supply that services the communities of New Liskeard and Dymond. The Ontario Clean Water Agency is the accredited operating authority and is designated as the Overall Responsible Operator for both the water treatment and water distribution facilities.

Raw Water Supply

The New Liskeard water treatment plant, located at 301 McCamus Avenue and is supplied by two main production wells; Well 3 and Well 4. Well No. 3 was originally constructed on December 2, 1950. It is a 54.9 m deep drilled well equipped with a magnetic flow meter and a vertical turbine pump rated at 2700 L/min. It consists of a 660 mm diameter outer casing and 406 mm inner steel casing with a 7.6 m long stainless steel (shutter style) screen. The well is housed in a secure building located directly across from the water plant.

Well No. 4 was originally constructed on August 13, 1977. It is a 54.9 m deep drilled well also equipped a magnetic flow meter and with a vertical turbine pump rated at 2700 L/min. It consists of a 762 mm diameter outer steel casing, to a depth of 27.4 m and 356 mm inner steel casing, to a depth of 46.3 m with a 7.6 m long stainless steel screen, 30.5 cm in diameter. This well is located inside the water treatment plant building.

There is approximately 23 m of low permeability clay between the ground surface and the aquifer protecting the groundwater from surface spills.

Water Treatment

The production wells feed the main water treatment plant that has a maximum rated capacity of 7865 cubic meters per day (m³/d).

The treatment process consists of two iron and manganese removal/pressure filtration systems rated at 94.6 L/s that are filled with Filtronic's Electromedia®, a proprietary media. The configuration allows either filter to be supplied with raw water from either of the two wells and the filter effluent is continuously monitored for turbidity and free chlorine residual. The two pressurized filters are automatically backwashed, based on high filter turbidity or maximum filter runtime. Manual backwashes can also be initiated when required. The backwash wastewater is discharged into the municipal sanitary sewage system which flows into the New Liskeard Lagoon.

Prior to filtration, chlorine gas is injected into the water to aid the oxidation process and precipitate the iron and manganese. After filtration, the treated water is re-chlorinated and directed into a contact tank comprised of two clearwells.



Water Storage and Pumping Capabilities

The clearwells are located directly below the water treatment plant and have a total storage capacity of 271 m³ (clearwell No. 1: 126 m³; clearwell No. 2: 145 m³). The baffles in the clearwell help to ensure sufficient chlorine contact time (CT). The free chlorine residual, pH, temperature, level and flow are continuously monitored to ensure adequate primary disinfection before the water enters the distribution system. The two clearwells are connected via an isolation valve to enable either clearwell to be drained for maintenance without compromising a continuous supply of water to users.

Two vertical turbine high lift pumps, equipped with variable frequency drives (VFDs) are each rated at 3272 L/min. They direct the treated water from the clear well to the Shepherdson Road reservoir and the Dymond reservoirs. If the high lifts are off then the Dymond Reservoir is fed by the Shepherdson Road reservoir.

The Shepherdson Road Reservoir is located at 150 Shepherdson Road in New Liskeard and has a storage capacity of 1818 m³. Three vertical turbine pumps, all equipped with variable frequency drives (VFDs), supply water to pressure zones 2 and 3 in the system. A secondary disinfection system is in place at the reservoir using sodium hypochlorite to boost the chlorine levels leaving the reservoir if required.

The Dymond Reservoir is located at 286 Raymond Street and has a capacity of 1395 m³. The reservoir is a single story building with an underground clearwell consisting of four interconnected baffled cells. A second building houses a sodium hypochlorite feed system, if boosting is required and four vertical turbine pumps (equipped with VFDs) two rated at 70 L/s and two rated at 28.1 L/s.

Control System

The New Liskeard Water Treatment System is controlled by a dedicated Programmable Logic Controller (PLC) and monitored through a Control System Supervisory Control and Data Acquisition (SCADA) system. All analyzing, monitoring and control module equipment information is routed through the SCADA system for operator monitoring and control. Control of equipment can be accomplished locally using the Human Machine Interface (HMI) touch screen at the New Liskeard water treatment plant or remotely via the SCADA computer located at the Haileybury water treatment plant. Operators can also access the system using their computers and cell phones. Alarm capability and set point adjustment along with trend monitoring are also available through SCADA system controls.

Emergency Power

An emergency stand-by 300 kW diesel powered generator with a 1000L fuel tank is available at the Well No. 3 pump house to ensure continued operation of the water treatment facility during a power outage.

A 230 kW diesel generator with a 2000 L fuel tank is on-site at the Shepherdson Street Reservoir



A 260 kW standby diesel generator with two (2) 1000 L fuel tanks are available at the Dymond Reservoir in case of power failures.

Distribution System

The New Liskeard Drinking Water System is classified as a Large Municipal Residential Drinking Water System that provides water to the communities of New Liskeard and Dymond. The distribution system consists of approximately 5750 residents and 2300 service connections and is comprised of various pipe materials including cast iron, ductile iron and PVC ranging from 4 to 16 “ in New Liskeard and 6 to 12 “ in Dymond. Approximately 535 m of 150 mm diameter HDPE feeder main to the Dymond Reservoir was installed in May 2020. There are several isolation valves to allow for the repair and maintenance of selected sections of the distribution system, three air relief valves and five pressure reducing valves. Approximately 313 fire hydrants are connected to the system to aid in fire protection.

This distribution system is broken down into three (3) service zones. It should be noted that the feeder main from the McCamus water treatment plant to the storage reservoir on Shepherdson Road also acts as a distribution line within Zone I. The three zones are supplied with potable water in the following manner:

Zone I – Gravity Zone is supplied with water through a distribution line (also the feeder main to the reservoir from the WTP) from the Shepherdson Road reservoir. Zone I is also isolated from Zones II and III via natural topography and closed valves. Zone I also supplies water from Shepherdson Road to the Dymond Reservoir which feeds the Dymond Distribution System.

Zone II – Intermediate Zone is fed through a separate distribution line from the Shepherdson Road reservoir through pumping. The area is generally comprised of residential units as well as the recently developed (2011) Dymond Industrial Park. The interconnected distribution piping between this zone and Zone I (gravity) is isolated via closed gate valves.

Zone III – High Zone is fed through a separate distribution line from the Shepherdson Road reservoir through pumping. The area is generally comprised of limited industrial users and is the main feed for Temiskaming Hospital.

3.0 LIST OF WATER TREATMENT CHEMICALS USED OVER THE REPORTING PERIOD

The following chemicals were used in the New Liskeard Drinking Water System treatment process:

- Chlorine Gas – Primary Disinfection
- Sodium Hypochlorite – Secondary Disinfection

All treatment chemicals meet AWWA and NSF/ANSI standards.



4.0 SIGNIFICANT EXPENSES INCURRED TO THE DRINKING WATER SYSTEM

OCWA is committed to maintaining the assets of the drinking water system and sustains a program of scheduled inspection and maintenance activities using a computerized Work Management System (WMS).

Significant expenses incurred in the drinking water system include the following:

- Replaced air relief valve and added drain line to Well No. 3,
- Replaced compressor pressure regulator,
- Repaired leaking copper lines, pilots and fittings on OCV valves,
- Repair pressure relief valve (Shepherdson reservoir),
- Replaced faulty security key pads,
- Programmable Logic Controller (PLC) expansion to tie in pH and temperature. On-going into 2023.
- SAI Global Quality and Environmental Management System (QEM) surveillance and re-accreditation audits. Accreditation achieved on November 28, 2022.

5.0 DETAILS ON NOTICES OF ADVERSE TEST RESULTS AND OTHER PROBLEMS REPORTED TO & SUBMITTED TO THE SPILLS ACTION CENTER

Based on information kept on record by OCWA, one (1) adverse water quality incident was reported to the Ministry’s Spills Action Centre in 2022.

Date	AWQI No.	Details
July 11, 2022	159088	<p>Pumps at the Shepherdson Road Reservoir that feed the pressurized zones failed on July 11th from 15:27 to 15:50 hours (approximately 23 minutes). The failure resulted in a loss of pressure to 4 commercial buildings including the hospital.</p> <p>The local Health Unit was notified and issued a precautionary boil water advisory (BWA) for the affected area.</p> <p>Once the pressure was restored, the affected area was flushed and sampled. Two sets of 3 bacteriological samples were collected 24 hours apart (July 11th and 12th) The sample results were acceptable having zero total coliforms and <i>E. coli</i>. The BWA was lifted on July 15th at approximately 8:00 AM.</p>



6.0 MICROBIOLOGICAL TESTING PERFORMED DURING THE REPORTING PERIOD

Summary of Microbiological Data

Sample Type	# of Samples	Range of <i>E.coli</i> Results (min to max)	Range of Total Coliform Results (min to max)	# of HPC Samples	Range of HPC Results (min to max)
Raw – Well 3	52	0 to 0	0 to 2	N/A	N/A
Raw – Well 4	52	0 to 0	0 to 0	N/A	N/A
Treated	52	0 to 0	0 to 0	52	< 10 to 330
Distribution	208	0 to 0	0 to 0	104	< 10 to > 2000

Maximum Acceptable Concentration (MAC) for *E. coli* = 0 Counts/100 mL

MAC for Total Coliforms = 0 Counts/100 mL

“<” denotes less than the laboratory’s method detection limit

“>” denotes greater than the laboratory’s method detection limit.

Notes:

- One microbiological sample is collected and tested each week from the raw and treated water supply. A total of four microbiological samples are collected and tested each week from the New Liskeard distribution system. At least 25% of the distribution samples must be tested for HPC bacteria.

Refer to [Appendix A](#) for a monthly summary of microbiological test results.

7.0 OPERATIONAL TESTING PERFORMED DURING THE REPORTING PERIOD

Summary of Raw Water Turbidity Data

Parameter	Number of Samples	Range of Results (min to max)	Unit of Measure
Turbidity – Well 3	50	0.13 to 3.82	NTU
Turbidity – Well 4	50	0.22 to 4.92	NTU

Notes:

- Turbidity samples are required once every month.

Continuous Monitoring in the Treatment Process

Parameter	# of Samples	Range of Results (min to max)	Unit of Measure	Standard
Free Chlorine Residual	8760	0.82 to 2.90	mg/L	CT

Notes:

- For continuous monitors use 8760 as the number samples for one year.
- CT is the concentration of chlorine in the water times the time of contact that the chlorine has with the water. It is used to demonstrate the level of disinfection treatment in the water. CT calculations are performed for the New Liskeard water plant if the free chlorine residual level drops below 0.40 mg/L to ensure primary disinfection is achieved.



Summary of Chlorine Residual Data in the Distribution System

Number of Samples	Free Chlorine (min to max)	Unit of Measure	Standard
364	0.44 to 1.70	mg/L	≥ 0.05

Note: Four (4) chlorine residual samples are collected one day and three (3) on a second day of each week. The sample sets must be collected at least 48-hours apart and samples collected on the same day must be from different locations.

Summary of Nitrate & Nitrite Data (sampled at the plant’s point of entry into the distribution every quarter)

Date of Sample	Nitrate Result	Nitrite Result	Unit of Measure	Exceedance
January 10	< 0.1	< 0.01	mg/L	No
April 11	0.3	< 0.01	mg/L	No
July 11	< 0.1	< 0.01	mg/L	No
October 17	< 0.1	< 0.01	mg/L	No

Maximum Allowable Concentration (MAC) for Nitrate = 10 mg/L

MAC for Nitrite = 1 mg/L

Summary of Total Trihalomethane Data (sampled in the distribution system every quarter)

Date of Sample	THM Result	Unit of Measure	Running Average	Exceedance
January 10	57	ug/L		
April 11	40.2	ug/L		
July 11	39.3	ug/L	42.9	No
October 17	35.0	ug/L		

Maximum Allowable Concentration (MAC) for Total Trihalomethanes = 100 ug/L (Four Quarter Running Average)

Summary of Total Haloacetic Acid Data (sampled in the distribution system every quarter)

Date of Sample	Result Value	Unit of Measure	Running Average	Exceedance
January 10	42	ug/L		
April 11	19	ug/L		
July 11	38	ug/L	37	No
October 17	49	ug/L		

Maximum Allowable Concentration (MAC) for Total Haloacetic Acid = 80 ug/L (Four Quarter Running Average)

Summary of Most Recent Lead Data under Schedule 15.1

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

The New Liskeard Drinking Water System qualified for the ‘Exemption from Plumbing Sampling’ as described in section 15.1-5 (9-10) of Ontario Regulation 170/03. The exemption applies to a drinking water system if; in two consecutive periods at reduced sampling, not more than 10% of all samples from plumbing exceed the maximum allowable concentration of 10 ug/L for lead. As such, the system was required to test for total alkalinity and pH in three distribution samples



collected during the periods of December 15 to April 15 (winter period) and June 15 to October 15 (summer period). This testing is required in every 12-month period with lead testing in every third 12-month period.

Lead samples were last collected in 2021 and results were well below the MAC. Two rounds of alkalinity and pH testing were carried out on March 15th and September 13th of 2022. Results are summarized in the table below.

Summary of Lead Data (sampled in the distribution system)

Date of Sample	# of Samples	Field pH (min to max)	Field Temperature (°C) (min to max)	Alkalinity (mg/L) (min to max)	Lead (ug/L) (min to max)
March 15	3	6.90 to 7.20	4.5 to 6.9	237 to 243	N/A
September 13	3	6.80 to 7.08	11.7 to 15.8	223 to 225	N/A

Note: Next lead sampling scheduled for 2024

Most Recent Schedule 23 Inorganic Data Tested at the Water Treatment Plant

Parameter	Result Value	Unit of Measure	MAC	MAC Exceedance	½ MAC Exceedance
Antimony	< 0.5	ug/L	6	No	No
Arsenic	< 1.0	ug/L	10	No	No
Barium	98.0	ug/L	1000	No	No
Boron	88.0	ug/L	5000	No	No
Cadmium	< 0.1	ug/L	5	No	No
Chromium	< 1.0	ug/L	50	No	No
Mercury	< 0.1	ug/L	1	No	No
Selenium	0.4	ug/L	50	No	No
Uranium	< 1.0	ug/L	20	No	No

Note: Sample required every 36 months (sample date = October 5, 2020). Next sampling scheduled for October 2023

Most Recent Schedule 24 Organic Data Tested at the Water Treatment Plant

Parameter	Result Value	Unit of Measure	MAC	MAC Exceedance	½ MAC Exceedance
Alachlor	< 0.354	ug/L	5	No	No
Atrazine + N-dealkylated metabolites	< 0.5	ug/L	5	No	No
Azinphos-methyl	< 0.265	ug/L	20	No	No
Benzene	< 0.1	ug/L	1	No	No
Benzo(a)pyrene	< 0.01	ug/L	0.01	No	No
Bromoxynil	< 0.092	ug/L	5	No	No
Carbaryl	< 1.0	ug/L	90	No	No
Carbofuran	< 2.0	ug/L	90	No	No
Carbon Tetrachloride	< 0.2	ug/L	2	No	No
Chlorpyrifos	< 0.265	ug/L	90	No	No



Most Recent Schedule 24 Organic Data Tested at the Water Treatment Plant

Parameter	Result Value	Unit of Measure	MAC	MAC Exceedance	½ MAC Exceedance
Diazinon	< 0.265	ug/L	20	No	No
Dicamba	< 0.08	ug/L	120	No	No
1,2-Dichlorobenzene	< 0.3	ug/L	200	No	No
1,4-Dichlorobenzene	< 0.3	ug/L	5	No	No
1,2-Dichloroethane	< 0.3	ug/L	5	No	No
1,1-Dichloroethylene (vinylidene chloride)	< 0.3	ug/L	14	No	No
Dichloromethane	< 1.0	ug/L	50	No	No
2-4 Dichlorophenol	< 0.2	ug/L	900	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	< 0.343	ug/L	100	No	No
Diclofop-methyl	< 0.114	ug/L	9	No	No
Dimethoate	< 0.265	ug/L	20	No	No
Diquat	< 0.2	ug/L	70	No	No
Diuron	< 7.0	ug/L	150	No	No
Glyphosate	< 20.0	ug/L	280	No	No
Malathion	< 0.265	ug/L	190	No	No
Metolachlor	< 0.177	ug/L	50	No	No
Metribuzin	< 0.177	ug/L	80	No	No
Monochlorobenzene	< 0.5	ug/L	80	No	No
Paraquat	1.9	ug/L	10	No	No
Polychlorinated Biphenyls (PCBs)	< 0.06	ug/L	3.0	No	No
Pentachlorophenol	< 0.3	ug/L	60	No	No
Phorate	< 0.177	ug/L	2	No	No
Picloram	< 0.08	ug/L	190	No	No
Prometryne	< 0.089	ug/L	1	No	No
Simazine	< 0.265	ug/L	10	No	No
Terbufos	< 0.177	ug/L	1	No	No
Tetrachloroethylene	< 0.3	ug/L	10	No	No
2,3,4,6-Tetrachlorophenol	< 0.2	ug/L	100	No	No
Triallate	< 0.177	ug/L	230	No	No
Trichloroethylene	< 0.2	ug/L	5	No	No
2,4,6-Trichlorophenol	< 0.2	ug/L	5	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA)	< 5.72	ug/L	100	No	No
Trifluralin	< 0.177	ug/L	45	No	No
Vinyl Chloride	< 0.1	ug/L	1	No	No

Note: Sample required every 36 months (sample date = October 5, 2020). Next sampling scheduled for October 2023



Inorganic or Organic Parameter(s) that Exceeded Half the Standard Prescribed in Schedule 2 of Ontario Drinking Water Quality Standards

No inorganic or organic parameter(s) listed in Schedule 23 and 24 of Ontario Regulation 170/03 exceeded half the standard found in Schedule 2 of the Ontario Drinking Water Standard (O. Reg.169/03) during the reporting period.

Most Recent Sodium Data at the Water Treatment Plant

Date of Sample	# of Samples	Result Value	Unit of Measure	Standard	Exceedance
October 9, 2018	1	14.7	mg/L	20	Yes

Note: Sample required every 60 months. Next sampling scheduled for October 2023.

Most Recent Fluoride Data at the Water Treatment Plant

Date of Sample	# of Samples	Result Value	Unit of Measure	Standard	Exceedance
October 9, 2018	1	0.718	mg/L	1.5	No

Note: Sample required every 60 months. Next sampling scheduled for October 2023.

Additional Testing Performed in Accordance with a Legal Instrument

Schedule D, Section 2.0 of Municipal Drinking Water Licence #218-103-3 issued on July 23, 2021 provides relief from regulatory requirements Schedule 1-2(2) 4i and 16-3(1) 4 which states that:

Notwithstanding the provisions of Ontario Reg. 170/03, the Owner is not required to comply with the following:

- The free chlorine residual at 399 Radley Hill Road is never less than 0.05 mg/L.
- A result indicating that the free chlorine residual is less than 0.05 mg/L in a sample of drinking water at 399 Radley Hill Road is an adverse result of a drinking water test for the purpose of section 18 of the Ontario Safe Drinking Water Act (SDWA, 2002) if a report under subsection 18(1) of the SDWA has not been made in respect of free chlorine residual in the preceding 24 hours.

In exchange, the following conditions apply:

- An ultraviolet light (UV) point of entry treatment unit owned or leased by the owner of the system is connected to the plumbing of every building and other structure that is served by the drinking water system at 399 Radley Hill Road.
- The UV unit(s) is validated through biosimetry testing for a dose of 40 mJ/cm².
- In the event that the UV unit malfunctions, loses power or ceases to provide the appropriate level of disinfection:



- The UV unit has a feature that ensures that no water is directed to users of water treated by the unit and a certified operator takes appropriate action at the location where the unit is installed if such an event occurs before water is again directed to users of water treated by the unit, or
- The UV unit has a feature that causes an alarm to sound immediately at the building or structure where the point of entry treatment unit is installed and a location where a certified operator is present, if a certified operator is not always present at the building or structure where the point of entry treatment unit is installed. If an alarm sounds, a certified operator must take appropriate action as soon as possible.

Ultraviolet Dosage

UV System	# of Samples	Range of Results <i>(min to max)</i>	Unit of Measure	Limit
UV Unit	90	79.5 to 307	mJ/cm ²	40



New Liskeard Drinking Water System

Schedule 22

2022 SUMMARY REPORT

FOR MUNICIPALITIES



Schedule 22 - SUMMARY REPORTS FOR MUNICIPALITIES

1.0 INTRODUCTION

Drinking-Water System Name	New Liskeard Drinking Water System
Municipal Drinking Water Licence (MDWL)	218-103-3 (issued July 23, 2021)
Drinking Water Works Permit (DWWP)	218-203-4 (issued July 23, 2021)
Permit to Take Water (PTTW)	4417-AF2JAM (issued November 2, 2016)
Reporting Period	January 1, 2022 to December 31, 2022

2.0 REQUIREMENTS THE SYSTEM FAILED TO MEET

According to information kept on record by OCWA, the New Liskeard Drinking Water System has complied with all the requirements set out in the system’s MDWL, its DWWP, the Act and its Regulations.

However, it should be mentioned that, one (1) adverse water quality incidents was reported to the Ministry’s Spills Action Center during the reporting period. Refer to Section 5.0 – *Details on Notices of Adverse Test Results and Other Problems Reported to & Submitted to the Spills Actions Center* on page 7 of this report for details.

3.0 SUMMARY OF QUANTITIES & FLOW RATES

Flow Monitoring

Municipal Drinking Water Licence (MDWL) #218-103 requires the owner to install a sufficient number of flow measuring devices to permit the continuous measurement and recording of:

- the flow rate and daily volume of water conveyed from the treatment system to the distribution system, and
- the flow rate and daily volume of water conveyed into the treatment system.

The flow monitoring equipment identified in the MDWL is present and operating as required. These flow meters are calibrated on an annual basis as specified in the manufacturers’ instructions.

Water Usage

The following Water Usage Tables summarize the quantities and flow rates of water taken and produced during the 2022 reporting period, including average monthly volumes, maximum monthly volumes, total monthly volumes and maximum flow rates.



Raw Water

2022 - Monthly Summary of Water Takings from the Source (Well No. 3 and Well No. 4)

Regulated by Permit to Take Water (PTTW) #4417-AF2JAM, issued November 2, 2016

Well No. 3

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m ³)	43122	38590	45251	45384	56919	56041	56136	52142	49036	39452	34860	34074	551005
Average Volume (m ³ /d)	1391	1378	1460	1513	1836	1868	1811	1682	1635	1273	1162	1099	1510
Maximum Volume (m ³ /d)	2066	1961	2341	2188	2435	2494	2805	2357	2484	1937	1690	1427	2805
PTTW - Maximum Allowable Volume (m ³ /day)	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
Maximum Flow Rate (L/min)	4378	4408	4272	4114	3720	4496	3772	3831	3799	3781	3957	3935	4496
PTTW - Maximum Allowable Flow Rate (L/min)	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500

Well No. 4

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m ³)	46973	44487	52268	53142	56495	49381	57061	53621	47985	47445	40179	40077	589114
Average Volume (m ³ /d)	1515	1589	1686	1771	1822	1646	1841	1730	1599	1530	1339	1293	1614
Maximum Volume (m ³ /d)	2140	1976	2080	2358	2627	2290	2483	2282	1974	2062	1877	1739	2627
PTTW - Maximum Allowable Volume (m ³ /day)	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
Maximum Flow Rate (L/min)	2796	2772	2530	2704	2645	2470	2540	2540	2603	2578	2592	2597	2796
PTTW - Maximum Allowable Flow Rate (L/min)	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500

Combined Raw Water Taking (Well No. 3 and Well No. 4)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m ³)	90095	83076	97519	98527	113413	105421	113198	105763	97020	86897	75039	74152	1140120
Average Volume (m ³ /d)	2906	2967	3146	3284	3658	3514	3652	3412	3234	2803	2501	2392	3124
Maximum Volume (m ³ /d)	3047	3332	3349	3606	4532	3883	5211	4147	4086	3519	3077	2570	5211
MDWL - Rated Capacity (m ³ /day)	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000

The system's Permit to Take Water #4417-AF2JAM allows the City to withdraw water at the following rates:

Well No. 3: 4000 m³/day 4,500 L/minute

Well No. 4: 4000 m³/day 4,500 L/minute

Total Combined Daily Volume: 8000 m³/day

A review of the raw water flow data indicates that the wells did not exceed the maximum allowable volumes or maximum flow rates during the reporting period.



Treated Water

2022 - Monthly Summary of Treated Water Supplied to the Distribution System

Regulated by Municipal Drinking Water Licence (MDWL) #218-103 (issue 3), dated July 23, 2021

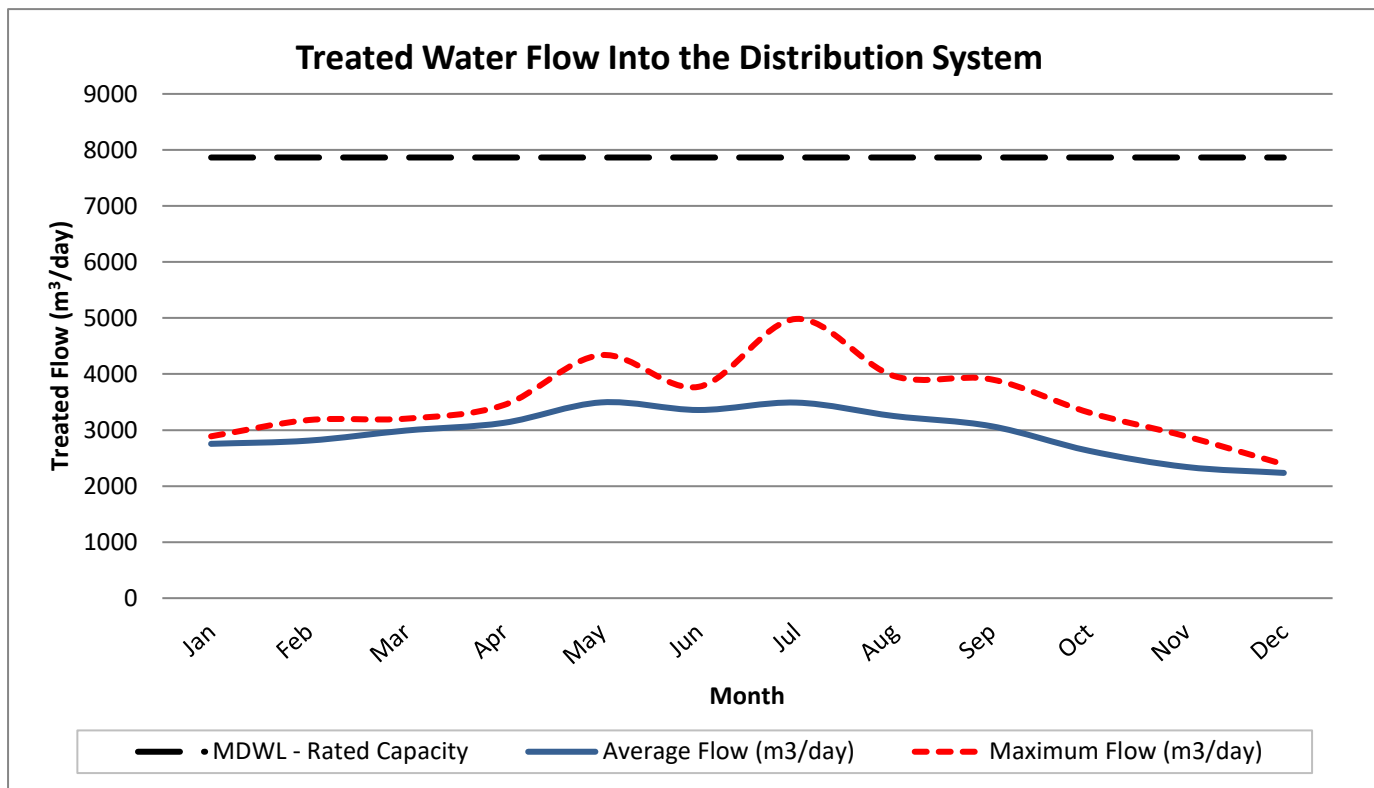
	<i>Jan</i>	<i>Feb</i>	<i>Mar</i>	<i>Apr</i>	<i>May</i>	<i>Jun</i>	<i>Jul</i>	<i>Aug</i>	<i>Sep</i>	<i>Oct</i>	<i>Nov</i>	<i>Dec</i>	<i>Year to Date</i>
<i>Total Volume (m³)</i>	85385	78729	92737	93857	108308	100744	108204	100784	92084	81560	70250	69300	1081941
<i>Average Volume (m³/d)</i>	2754	2812	2992	3129	3494	3358	3490	3251	3069	2631	2342	2235	2964
<i>Maximum Volume (m³/d)</i>	2889	3179	3204	3446	4338	3773	4984	3966	3905	3315	2887	2388	4984
MDWL - Rated Capacity (m³/day)	7865	7865	7865	7865	7865	7865	7865	7865	7865	7865	7865	7865	7865

Schedule C, Section 1.0 (1.1) of MDWL No. 218-103 states that the maximum daily volume of treated water that flows from the treatment subsystem to the distribution system shall not exceed 7865 m³ on any calendar day. The New Liskeard DWS complied with this limit having a recorded maximum volume of 4984 m³/day on July 19th, which represents 63.4 % of the rated capacity.

Figure 1 compares the average and maximum flow rates into the distribution system to the approved rated capacity of the system as identified in the MDWL.

Figure 1: 2022 - Comparison of Treated Water Flows to the Rated Capacity

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Flow (m ³ /day)	2754	2812	2992	3129	3494	3358	3490	3251	3069	2631	2342	2235
Maximum Flow (m ³ /day)	2889	3179	3204	3446	4338	3773	4984	3966	3905	3315	2887	2388
MDWL - Rated Capacity	7865	7865	7865	7865	7865	7865	7865	7865	7865	7865	7865	7865
% Rated Capacity	37	40	41	44	55	48	63	50	50	42	37	30





Summary of System Performance

The following information is provided to enable the Owner to assess the capability of the system to meet existing and future water usage needs:

Rated Capacity of the Plant (MDWL)	7865 m ³ /day	
Average Daily Flow for 2022	2964 m ³ /day	37.7 % of the rated capacity
Maximum Daily Flow for 2022	4984 m ³ /day	63.4 % of the rated capacity
Total Treated Water Produced in 2022	1,076,690 m ³	

Historical Flows

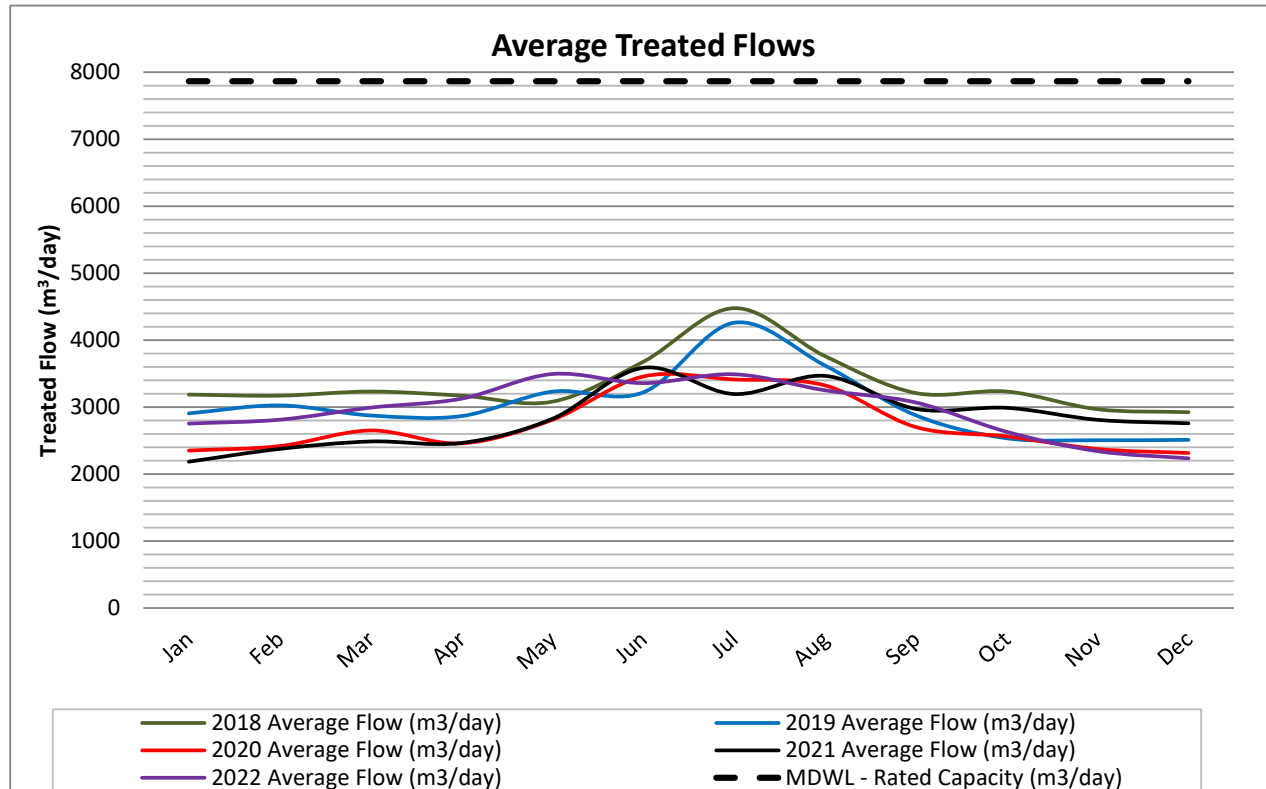
New Liskeard Water Treatment Plant – Flow Comparison

Year	Maximum Treated Flow (m ³ /d)	Average Daily Flow (m ³ /d)	Average Day % of Rated Capacity (7865 m ³ /d)
2022	4984	2964	37.7 %
2021	4708	2846	36.2%
2020	6326	2738	34.8%
2019	6112	3036	38.6%
2018	5993	3341	42.5%

Figure 2 compares the average treated water flows from 2018 to 2022.

Figure 2: New Liskeard Water Treatment System - Average Treated Water Flows from 2018 to 2022

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2018 Average Flow (m ³ /day)	3187	3171	3232	3171	3081	3676	4477	3761	3210	3232	2968	2924
2019 Average Flow (m ³ /day)	2906	3026	2875	2866	3231	3220	4260	3622	2878	2535	2505	2512
2020 Average Flow (m ³ /day)	2351	2418	2651	2459	2810	3457	3413	3324	2702	2563	2374	2315
2021 Average Flow (m ³ /day)	2185	2376	2487	2465	2825	3587	3195	3466	2973	2989	2810	2758
2022 Average Flow (m ³ /day)	2754	2812	2992	3126	3494	3358	3490	3251	3069	2631	2342	2235
MDWL - Rated Capacity (m ³ /day)	7865	7865	7865	7865	7865	7865	7865	7865	7865	7865	7865	7865





CONCLUSION

The water quality data collected in 2022 demonstrates that the New Liskeard drinking water system provided high quality drinking water to its users.

The system was able to operate in accordance with the terms and conditions of the Permit to Take Water and in accordance with the rated capacity of the licence while meeting the community's demand for water use.

All Adverse Water Quality Incidents were reported to the Ministry's Spills Action Center and the corrective actions were completed as required and any non-compliances that were identified were resolved as soon as possible.



APPENDIX A

Monthly Summary of Microbiological
Test Results

**NEW LISKEARD DRINKING WATER SYSTEM
2022 SUMMARY OF MICROBIOLOGICAL TEST RESULTS**

RAW WATER	01/2022	02/2022	03/2022	04/2022	05/2022	06/2022	07/2022	08/2022	09/2022	10/2022	11/2022	12/2022	Total	Avg	Max	Min
Well 3 / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	4	5	4	4	5	4	5	4	4	52			
Max Lab	0	0	0	0	0	2	1	0	0	0	0	1			2	
Mean Lab	0	0	0	0	0	0.5	0.25	0	0	0	0	0.25		0.077		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Well 3 / E. Coli: EC - cfu/100mL																
Count Lab	5	4	4	4	5	4	4	5	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Well 4 / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	4	5	4	4	5	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Well 4 / E. Coli: EC - cfu/100mL																
Count Lab	5	4	4	4	5	4	4	5	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
TREATED WATER																
Treated Water POE / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	4	5	4	4	5	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Treated Water POE / E. Coli: EC - cfu/100mL																
Count Lab	5	4	4	4	5	4	4	5	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Treated Water POE / HPC - cfu/mL																
Count Lab	5	4	4	4	5	4	4	5	4	5	4	4	52			
Max Lab	< 330	< 10	< 10	< 10	< 10	< 10	< 20	< 20	< 10	< 90	< 20	< 20			330	
Mean Lab	< 74	< 10	< 10	< 10	< 10	< 10	< 12.5	< 12	< 10	< 40	< 12.5	< 12.5	<	19.808		
Min Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10				< 10
DISTRIBUTION WATER																
1st Bacti/Residual / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	4	5	4	4	5	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
1st Bacti/Residual / E. Coli - cfu/100mL																
Count Lab	5	4	4	4	5	4	4	5	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
2nd Bacti/Residual / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	4	5	4	4	5	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
2nd Bacti/Residual / E. Coli - cfu/100mL																
Count Lab	5	4	4	4	5	4	4	5	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
2nd Bacti/Residual / HPC - cfu/mL																
Count Lab	5	4	4	4	5	4	4	5	4	5	4	4	52			
Max Lab	< 20	< 10	< 10	< 10	> 2000	30	20	< 30	30	< 10	< 10	< 30			> 2000	
Mean Lab	< 12	< 10	< 10	< 10	> 448	< 15	< 12.5	< 16	22.5	< 10	< 10	< 17.5		55		
Min Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	20	< 10	< 10	< 10				< 10
3rd Bacti/Residual / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	4	5	4	4	5	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
3rd Bacti/Residual / E. Coli - cfu/100mL																
Count Lab	5	4	4	4	5	4	4	5	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
4th Bacti/Residual / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	4	5	4	4	5	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
4th Bacti/Residual / E. Coli - cfu/100mL																
Count Lab	5	4	4	4	5	4	4	5	4	5	4	4	52			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
4th Bacti/Residual / HPC - cfu/mL																
Count Lab	5	4	4	4	5	4	4	5	4	5	4	4	52			
Max Lab	< 10	< 10	< 30	< 10	< 20	< 10	< 70	< 20	< 40	60	< 80	< 20			80	
Mean Lab	< 10	< 10	< 15	< 10	< 12	< 10	< 27.5	< 14	< 22.5	< 20	< 27.5	< 12.5	<	15.769		
Min Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10				< 10



APPENDIX B

Monthly Summary of Operational Data

**NEW LISKEARD DRINKING WATER SYSTEM
2022 SUMMARY OF OPERATIONAL RESULTS**

RAW WATER	01/2022	02/2022	03/2022	04/2022	05/2022	06/2022	07/2022	08/2022	09/2022	10/2022	11/2022	12/2022	Total	Avg	Max	Min
Well 3 / Turbidity - NTU																
Count IH	4	4	4	4	5	4	4	5	4	5	4	3	50			
Total IH	2.36	2.65	2.33	2.57	1.15	7.99	3.82	4.76	3.15	4.12	4.96	7.39	47.25			
Max IH	0.83	1.15	0.93	1.36	0.35	3.29	2.36	1.05	1.26	1.01	1.92	3.82			3.82	
Mean IH	0.59	0.663	0.583	0.643	0.23	1.998	0.955	0.952	0.787	0.824	1.24	2.463		0.945		
Min IH	0.29	0.31	0.22	0.27	0.13	0.43	0.29	0.82	0.18	0.54	0.82	0.6				0.13
Well 4 / Turbidity - NTU																
Count IH	4	4	4	4	5	4	4	5	4	5	4	3	50			
Total IH	2.5	2.1	10.7	3.97	1.61	9.83	4.25	5.31	4.41	6.45	5.42	2.5	59.05			
Max IH	1.05	0.85	3.7	2.01	0.42	4.92	1.98	1.2	1.78	2.23	2.46	1.08			4.92	
Mean IH	0.625	0.525	2.675	0.992	0.322	2.458	1.063	1.062	1.103	1.29	1.355	0.833		1.181		
Min IH	0.38	0.3	1.78	0.32	0.22	0.69	0.55	0.96	0.63	0.91	0.56	0.38				0.22
TREATED WATER	01/2022	02/2022	03/2022	04/2022	05/2022	06/2022	07/2022	08/2022	09/2022	10/2022	11/2022	12/2022	Total	Avg	Max	Min
Treated Water POE / Cl Residual: Free (0.40 mg/L) - mg/L																
Max OL	2.00	1.87	1.92	1.89	2.02	2.15	2.19	2.05	2.90	2.48	1.75	1.62			2.90	
Mean OL	1.55	1.58	1.50	1.68	1.71	1.77	1.61	1.71	1.68	1.36	1.33	1.36		1.57		
Min OL	0.82	1.21	1.09	1.26	1.30	1.23	1.12	1.29	1.05	0.85	0.85	1.08				0.82
DISTRIBUTION WATER	01/2022	02/2022	03/2022	04/2022	05/2022	06/2022	07/2022	08/2022	09/2022	10/2022	11/2022	12/2022	Total	Avg	Max	Min
1st Bacti/Residual / Cl Residual: Free - mg/L																
Count IH	9	8	9	8	9	9	7	9	9	9	9	8	103			
Max IH	1.49	1.03	1.13	1.27	1.39	1.38	1.24	1.3	1.31	1.53	1.01	1.07			1.53	
Mean IH	1.104	0.974	1.022	1.16	1.268	1.231	1.041	1.052	1.15	1.016	0.748	0.899		1.057		
Min IH	0.95	0.82	0.9	0.99	1.1	0.93	0.8	0.91	0.97	0.71	0.52	0.72				0.52
2nd Bacti/Residual / Cl Residual: Free - mg/L																
Count IH	9	8	9	8	9	9	8	9	9	9	9	8	104			
Max IH	1.42	1.36	1.27	1.36	1.40	1.70	1.25	1.28	1.31	1.15	1.12	1.21			1.70	
Mean IH	1.02	1.144	1.076	1.118	1.301	1.161	1.063	1.073	1.09	0.973	0.883	0.928		1.07		
Min IH	0.44	0.68	0.93	0.7	1.17	0.8	0.9	0.5	0.75	0.84	0.45	0.8				0.44
3rd Bacti/Residual / Cl Residual: Free - mg/L																
Count IH	9	8	9	8	9	9	8	9	9	9	9	8	104			
Max IH	1.36	1.31	1.25	1.24	1.56	1.55	1.26	1.4	1.3	1.3	0.99	1.01			1.56	
Mean IH	1.097	1.108	1.076	1.054	1.291	1.254	1.045	1.169	1.087	0.992	0.83	0.888		1.076		
Min IH	0.83	0.86	0.66	0.63	0.83	1.07	0.85	1.08	0.91	0.65	0.72	0.74				0.63
4th Bacti/Residual / Cl Residual: Free - mg/L																
Count IH	5	4	4	4	5	4	5	5	4	5	4	4	53			
Max IH	1.04	1.08	1.17	1.21	1.37	1.24	1.27	1.25	1.24	1.29	0.92	1.22			1.37	
Mean IH	0.976	0.978	1.04	1.043	1.188	1.133	1.15	1.08	1.163	0.972	0.818	0.912		1.041		
Min IH	0.86	0.92	0.95	0.77	0.95	1.07	1.01	0.91	1.08	0.78	0.7	0.65				0.65
RADLEY HILL ROAD	01/2022	02/2022	03/2022	04/2022	05/2022	06/2022	07/2022	08/2022	09/2022	10/2022	11/2022	12/2022	Total	Avg	Max	Min
Manitoulin Transport / UV Dosage - mJ/cm²																
Count IH	7	8	7	8	7	6	7	8	7	9	10	6	90			
Max IH	231.6	200.2	296.2	285	280.1	305	307	278	270.1	244.5	232.4	199.3			307	
Mean IH	202.257	184.738	188.157	236.65	261.857	267.067	273.043	144.388	247.443	233.744	208.53	190.417		218.549		
Min IH	178.8	167.2	162.8	206.1	216.6	177.9	201.5	106.6	221	222.2	171.1	182.9				106.6

NOTE:
CT is the concentration of chlorine in the water times the time of contact that the chlorine has with the water. It is used to demonstrate the level of disinfection treatment in the water. CT calculations are performed for the New Liskeard water plant if the free chlorine residual level drops below 0.40 mg/L to ensure primary disinfection is achieved. No CT calculations were required during the reporting period.