2024 Annual Drinking Water System Report

Delhi Drinking Water System

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1. Introduction

The Corporation of Norfolk County has prepared this report to satisfy the requirements of Section 11 of Ontario Regulation (O. Reg.) 170/03. This annual report must be prepared no later than February 28 of each year.

This report covers the period from January 1, 2024 to December 31, 2024, and the information provided complies with the reporting requirements of O. Reg. 170/03 Section 11.

A summary of Delhi's Municipal Drinking Water System is outlined below:

Drinking Water System Number: 220007178

Drinking Water System Name: Delhi Drinking Water System

Drinking Water System Owner: Corporation of Norfolk County

Drinking Water System Category: Large Municipal Residential

2. Reporting Requirements under Section 11 – O. Reg. 170/03

Section 11 requires that the report include the following information relating to the period covered by the report. This includes:

- A statement of where a report prepared under Schedule 22 will be available for inspection by any member of the public during normal business hours without charge.
- A brief description of the drinking water system, including a list of water treatment chemicals used.
- Any major expenses incurred to install, repair or replace required equipment.

- A summary of any reports made to the Ministry of Environment, Conservation and Parks (MECP) for Adverse Water Quality Incidents (AWQI's).
- A summary of the results of tests performed under O. Reg. 170/03, an approval, the municipal drinking water licence or an order, including an Ontario Water Resources Act (OWRA) order.
- To describe any corrective actions taken

3. Evidence of Compliance

Availability of the Annual Report

In accordance with Section 11 O. Reg. 170/03, a copy of the annual report will be posted for each system by the end of February each year on the Norfolk County web site at norfolkcounty.ca. A Summary Report on regulatory compliance is required annually under Schedule 22 of Regulation 170/03 for each municipal drinking water system. This report summarizes any known failures to meet the requirements of the Safe Drinking Water Act, its duration and corrective measures. The reports are presented to Norfolk County Council for acceptance before March 31st each year. The reports are made available to the public in April on the Norfolk County web site noted above or by request from the Environmental Services Department. A copy of the annual report is available to the public, free of charge at the following locations as well:

12 Gilbertson Drive, Simcoe, Ontario, N3Y 4N5

Description of the Municipal Drinking Water System

The Delhi drinking water system supplies water to the communities of Delhi and Courtland. The system is supplied by four water sources: Delhi Well #1, Well #2 and Well #3a and #3b. The Delhi waterworks system, including Courtland, currently serves a population of approximately 6,400.

The Delhi wells are groundwater wells, which draw from an aquifer at a depth of approximately 40 meters.

The water distribution system includes a 3,950-m3 standpipe, which acts as a reservoir when the system requires larger amounts of water than the sources can supply (such as firefighting) and also helps to maintain a constant system pressure. There are approximately 296 fire hydrants and approximately 72,482 meters of water main and

transmission main ranging in size from 150 mm to 400mm in diameter. The piping material consists of cast iron, Polyvinyl Chloride (PVC) and ductile iron pipe.

Water Treatment Chemicals

The following water treatment chemicals were used during the reporting period:

- Sodium Hypochlorite
- Sodium Silicate
- Hydrofluorosilicic Acid

Significant Expenses Incurred

A brief summary of the major expenses incurred during the reporting period to install, repair or replace required equipment, and value of each, is included in Table 1.

Table 1 – Summary of Expenses Incurred

Activity	Cost Incurred (2024)
General Operations Maintenance and Repair in Water Treatment Plants and Distribution System	$187,863
Well Rehabilitations	$41,764
Replacement of Watermains	$353,904

4. Microbiological Testing

E. coli and Total Coliform

As per Schedule 10 of O. Reg. 170/03 – Microbiological Sampling and Testing, bacteriological tests for E. coli and total coliforms were performed weekly on the raw and treated water at the facilities and in the distribution system. The results from the 2024 sampling program for the Delhi Drinking Water System are shown in the table below.

Location	Number of Samples	Range of E.coli Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)
Raw Well 1	53	0 - 0	0 - 0
Raw Well 2	53	0 - 0	0 - 1
Raw Well 3a	53	0 - 0	0 - 1
Raw Well 3b	53	0 - 0	0 - 0
Treated Well 1	53	0 - 0	0 - 0
Treated Well 2, 3a, 3b	53	0 - 0	0 - 0
Distribution	211	0 - 0	0 - 0

Heterotrophic Plate Count (HPC)

As per Schedule 10 of O. Reg. 170/03 - Microbiological Sampling and Testing, HPC analyses are required from the treated and distribution water. HPC tests are required weekly for treated water and for twenty five percent of the required distribution system bacteriological samples. Results over 500 colonies per 1 mL may indicate a change in water quality but is not considered an indicator of unsafe drinking water. The results from the 2024 sampling program for the Delhi Drinking Water System are shown in the table below.

Location	Number of Samples	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Treated Well 1	53	53	<10 – 20
Treated Well 2, 3a, 3b	53	53	<10-10
Distribution	211	55	<10-50

5. Chemical Testing

The Safe Drinking Water Act requires periodic testing of the water for sixty different chemical parameters. The latest results for these parameters are provided in Appendix A. The sampling frequency varies for the different types of water systems. If the concentration of the parameter is found to be above half of the Maximum Allowable Concentration (MAC) under the Ontario Drinking Water Quality Standards, an increased

testing frequency of once every three months is required by Regulation. No additional testing is required for the Delhi Drinking Water System.

6. Operational Monitoring

Operational checks including raw and treated water turbidity and treated and distribution free chlorine was conducted in accordance with Schedule 7 of Reg. O. 170/03.

Turbidity

The turbidity of the treated water is monitored continuously at each well; the turbidity of the raw water is checked on a weekly basis. Turbidity is measured in Nephelometric Turbidity Units (NTU). Under O. Reg. 170/03 turbidity in groundwater is not reportable, however it is desirable to have <1NTU at the well and <5NTU in the distribution system. The results from the 2024 sampling program for the Delhi Drinking Water System are shown in the table below.

Location	Number of Grab Samples	Range of Results	Unit of Measure
Turbidity Well 1 Raw	51	0.06-0.63	NTU
Turbidity Well 2 Raw	51	0.07-0.47	NTU
Turbidity Well 3a Raw	53	0.02-1.35	NTU
Turbidity Well 3b Raw	53	0.02-1.11	NTU

Chlorine Residual

In accordance with Schedule 7 of O. Reg. 170/03, free chlorine residuals in the treated water are monitored continuously at the point of entry to the distribution system at all water treatment plants and wells. The free chlorine in the water distribution system must be above 0.05 mg/L, if it is below this, it must be reported and corrective actions taken. The results from the 2024 chlorine residual monitoring program for the Delhi Drinking Water System are shown in the table below.

Location	Number of Grab Samples	Range of Results	Unit of Measure
Chlorine Well 1	8760	0.06 – 2.52	mg/L
Chlorine Well 2	8760	0.58 – 5.00	mg/L

Location	Number of Grab Samples	Range of Results	Unit of Measure
Chlorine Residual Distribution System	584	0.31 – 1.87	mg/L

Fluoride

Hydrofluosilicic acid is added for fluoridation at both wells and the fluoride residuals are taken daily. The results from the 2024 fluoride residual monitoring program for the Delhi Drinking Water System are shown in the table below.

Location	Number of Grab Samples	Range of Results	Unit of Measure
Fluoride Well 1	366	0.31 – 1.05	mg/L
Fluoride Well 2, 3A,3B	366	0.13 – 0.86	mg/L

7. Adverse Results

In accordance with Schedule 16 – Reporting of Adverse Test Results and Other Problems of O. Reg. 170/03, there was three Adverse Water Quality Incident (AWQI) issued for the Delhi Drinking Water System. The following table describes the date the adverse occurred, the parameter, the result, the corrective action taken and the corrective action date.

Incident Date	Parameter	Result	Corrective Action	Date Resolved
09/07/2024	Operational Observation	Turbidity instrument malfunction causing value to freeze.	Took 2/3A/3B out of service until instrumentation technician could repair unit. System grab samples for free CL2 and turbidity were taken immediately throughout system with chlorine and turbidity levels within MECP parameters.	07/09/2024

APPENDIX A: SUMMARY OF CHEMICAL RESULTS

UNDERSTANDING CHEMICAL TEST RESULTS

The following tables summarize the laboratory results of the chemical testing Norfolk County is required to complete. Different parameters are required to be tested for at different frequencies as noted below. Results are shown as concentrations with units of either milligrams per litre (mg/L) or micrograms per litre (ug/L). 1 mg/L is equal to 1000 ug/L. The Maximum Acceptable Concentration (MAC) is the highest amount of a parameter that is acceptable in Municipal drinking water and can be found in the MECP Drinking Water Standards. The Method Detection Limit (MDL) is the lowest amount to which the laboratory can confidently measure. There was no additional testing or sampling carried out in accordance with the requirement of an approval, order or other legal instrument.

The following tables summarize the Inorganic parameters tested for during the reporting period or the most resent sample results for the Delhi Drinking Water System.

Delhi Well One

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	06/05/2024	0.6 <MDL	ug/L	No
Arsenic	06/05/2024	1.2 <MDL	ug/L	No
Barium	06/05/2024	119	ug/L	No
Boron	06/05/2024	10	ug/L	No
Cadmium	06/05/2024	0.003 <MDL	ug/L	No
Chromium	06/05/2024	0.09	ug/L	No
Lead	Exempt			
Mercury	06/05/2024	0.01 <MDL	ug/L	No
Selenium	06/05/2024	0.04 <MDL	ug/L	No
Sodium	11/05/2020	8.26	mg/L	No
Uranium	06/05/2024	1.1	ug/L	No
Fluoride	Daily			No
Nitrite	12/2/2024 06/05/2024	0.003<MDL 0.003<MDL	ug/L ug/L	No No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
	12/08/2024 04/11/2024	0.003<MDL 0.003<MDL	ug/L ug/L	No No
Nitrate	12/02/2024 06/05/2024 12/08/2024 04/11/2024	1.62 1.30 1.71 1.62	ug/L ug/L ug/L ug/L	No No No No

Delhi Well Two, Three A&B

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	06/05/2024	0.6 <MDL	ug/L	No
Arsenic	06/05/2024	1.0	ug/L	No
Barium	06/05/2024	156	ug/L	No
Boron	06/05/2024	10	ug/L	No
Cadmium	06/05/2024	0.003 <MDL	ug/L	No
Chromium	06/05/2024	0.09	ug/L	No
Lead	Exempt			
Mercury	06/05/2024	0.01<MDL	ug/L	No
Selenium	06/05/2024	0.07	ug/L	No
Sodium	06/11/2020	5.24	mg/L	No
Uranium	06/05/2024	1.10	ug/L	No
Fluoride	Daily			No
Nitrite	12/02/2024 06/05/2024 12/08/2024 04/11/2024	0.003<MDL 0.003<MDL 0.003<MDL 0.003<MDL	ug/L ug/L ug/L ug/L	No No No No
Nitrate	12/02/2024 06/05/2024 12/08/2024 04/11/2024	1.58 1.60 1.48 1.60	ug/L ug/L ug/L ug/L	No No No No

The following tables summarize the Organic parameters tested for during the reporting period or the most resent sample results for the Delhi Drinking Water.

Delhi Well One

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	06/05/2024	0.02 <MDL	ug/L	No
Atrazine + N-dealkylated metobolites	06/05/2024	0.01<MDL	ug/L	No
Azinphos-methyl	06/05/2024	0.05 <MDL	ug/L	No
Benzene	06/05/2024	0.32 <MDL	ug/L	No
Benzo(a)pyrene	06/05/2024	0.004 <MDL	ug/L	No
Bromoxynil	06/05/2024	0.33 <MDL	ug/L	No
Carbaryl	06/05/2024	0.05 <MDL	ug/L	No
Carbofuran	06/05/2024	0.01 <MDL	ug/L	No
Carbon Tetrachloride	06/05/2024	0.17 <MDL	ug/L	No
Chlorpyrifos	06/05/2024	0.02 <MDL	ug/L	No
Diazinon	06/05/2024	0.02 <MDL	ug/L	No
Dicamba	06/05/2024	0.20 <MDL	ug/L	No
1,2-Dichlorobenzene	06/05/2024	0.41 <MDL	ug/L	No
1,4-Dichlorobenzene	06/05/2024	0.36 <MDL	ug/L	No
1,2-Dichloroethane	06/05/2024	0.35 <MDL	ug/L	No
1,1-Dichloroethylene (vinylidene chloride)	06/05/2024	0.33 <MDL	ug/L	No
Dichloromethane	06/05/2024	0.35 <MDL	ug/L	No
2-4 Dichlorophenol	06/05/2024	0.15 <MDL	ug/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	06/05/2024	0.19 <MDL	ug/L	No
Diclofop-methyl	06/05/2024	0.40 <MDL	ug/L	No
Dimethoate	06/05/2024	0.06 <MDL	ug/L	No
Diquat	06/05/2024	1 <MDL	ug/L	No
Diuron	06/05/2024	0.03 <MDL	ug/L	No
Glyphosate	06/05/2024	1 <MDL	ug/L	No
Malathion	06/05/2024	0.02 <MDL	ug/L	No
MCPA	06/05/2024	0.00012 <MDL	mg/L	No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Metolachlor	06/05/2024	0.01 <MDL	ug/L	No
Metribuzin	06/05/2024	0.02 <MDL	ug/L	No
Monochlorobenzene	06/05/2024	0.3 <MDL	ug/L	No
Paraquat	06/05/2024	1 <MDL	ug/L	No
Pentachlorophenol	06/05/2024	0.15 <MDL	ug/L	No
Phorate	06/05/2024	0.01 <MDL	ug/L	No
Picloram	06/05/2024	1 <MDL	ug/L	No
Polychlorinated Biphenyls(PCB)	06/05/2024	0.04 <MDL	ug/L	No
Prometryne	06/05/2024	0.03 <MDL	ug/L	No
Simazine	06/05/2024	0.01 <MDL	ug/L	No
Terbufos	06/05/2024	0.01 <MDL	ug/L	No
Tetrachloroethylene	06/05/2024	0.35 <MDL	ug/L	No
2,3,4,6-Tetrachlorophenol	06/05/2024	0.20 <MDL	ug/L	No
Triallate	06/05/2024	0.01 <MDL	ug/L	No
Trichloroethylene	06/05/2024	0.44 <MDL	ug/L	No
2,4,6-Trichlorophenol	06/05/2024	0.25 <MDL	ug/L	No
Trifluralin	06/05/2024	0.02 <MDL	ug/L	No
Vinyl Chloride	06/05/2024	0.17 <MDL	ug/L	No

Delhi Well Two, Three A&B

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	06/05/2024	0.02 <MDL	ug/L	No
Atrazine + N-dealkylated metobolites	06/05/2024	0.01<MDL	ug/L	No
Azinphos-methyl	06/05/2024	0.05 <MDL	ug/L	No
Benzene	06/05/2024	0.32 <MDL	ug/L	No
Benzo(a)pyrene	06/05/2024	0.004 <MDL	ug/L	No
Bromoxynil	06/05/2024	0.33 <MDL	ug/L	No
Carbaryl	06/05/2024	0.05 <MDL	ug/L	No
Carbofuran	06/05/2024	0.01 <MDL	ug/L	No
Carbon Tetrachloride	06/05/2024	0.17 <MDL	ug/L	No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Chlorpyrifos	06/05/2024	0.02 <MDL	ug/L	No
Diazinon	06/05/2024	0.02 <MDL	ug/L	No
Dicamba	06/05/2024	0.20 <MDL	ug/L	No
1,2-Dichlorobenzene	06/05/2024	0.41 <MDL	ug/L	No
1,4-Dichlorobenzene	06/05/2024	0.36 <MDL	ug/L	No
1,2-Dichloroethane	06/05/2024	0.35 <MDL	ug/L	No
1,1-Dichloroethylene (vinylidene chloride)	06/05/2024	0.33 <MDL	ug/L	No
Dichloromethane	06/05/2024	0.35 <MDL	ug/L	No
2-4 Dichlorophenol	06/05/2024	0.15 <MDL	ug/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	06/05/2024	0.19 <MDL	ug/L	No
Diclofop-methyl	06/05/2024	0.40 <MDL	ug/L	No
Dimethoate	06/05/2024	0.06 <MDL	ug/L	No
Diquat	06/05/2024	1 <MDL	ug/L	No
Diuron	06/05/2024	0.03 <MDL	ug/L	No
Glyphosate	06/05/2024	1 <MDL	ug/L	No
Malathion	06/05/2024	0.02 <MDL	ug/L	No
MCPA	06/05/2024	0.00012 <MDL	mg/L	No
Metolachlor	06/05/2024	0.01 <MDL	ug/L	No
Metribuzin	06/05/2024	0.02 <MDL	ug/L	No
Monochlorobenzene	06/05/2024	0.3 <MDL	ug/L	No
Paraquat	06/05/2024	1 <MDL	ug/L	No
Pentachlorophenol	06/05/2024	0.15 <MDL	ug/L	No
Phorate	06/05/2024	0.01 <MDL	ug/L	No
Picloram	06/05/2024	1 <MDL	ug/L	No
Polychlorinated Biphenyls(PCB)	06/05/2024	0.04 <MDL	ug/L	No
Prometryne	06/05/2024	0.03 <MDL	ug/L	No
Simazine	06/05/2024	0.01 <MDL	ug/L	No
Terbufos	06/05/2024	0.01 <MDL	ug/L	No
Tetrachloroethylene	06/05/2024	0.35 <MDL	ug/L	No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
2,3,4,6-Tetrachlorophenol	06/05/2024	0.20 <MDL	ug/L	No
Triallate	06/05/2024	0.01 <MDL	ug/L	No
Trichloroethylene	06/05/2024	0.44 <MDL	ug/L	No
2,4,6-Trichlorophenol	06/05/2024	0.25 <MDL	ug/L	No
Trifluralin	06/05/2024	0.02 <MDL	ug/L	No
Vinyl Chloride	06/05/2024	0.17 <MDL	ug/L	No
Total Haloacetic Acid Average below detection 5.3 ug/L	12/02/2024 06/05/2024 12/08/2024 04/11/2024	5.3 5.3 5.3 5.3	ug/L ug/L ug/L ug/L	No
THM Annual Average 11.7 ug/L	12/02/2024 06/05/2024 12/08/2024 04/11/2024	8.2 10 17 14	ug/L ug/L ug/L ug/L	No

The following table summarizes the lead testing as set out in Schedule 15.1 of O. Reg. 170/03 during the reporting period.

Location Type	Sample Date (dd/mm/yyyy)	Number of Samples	Range of Lead Results (min#) – (max #) ug/L	Number of Exceedances
Plumbing		Exempt		
Distribution	04/03/2024 23/09/2024	3 3	0.03 - 1.13 0.21 - 0.39	0 0