

Norland Drinking Water System

Waterworks # 250001910
System Category – Small Municipal Residential

Annual Water Report

Prepared For: The City of Kawartha Lakes

Reporting Period of January 1st – December 31st 2019

Issued: February 13, 2020

Revision: 0

Operating Authorities:



This report has been prepared to satisfy the annual reporting requirements in O. Reg. 170/03 Section 11 and Schedule 22

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Report Availability

This system does not serve more than 10,000 residents. The annual reports are available to residents free of charge at the City of Kawartha Lakes – Public Works Administration Office located at 12 Peel Street in Lindsay, Ontario. The reports are also available online at the [City of Kawartha Lakes website](http://www.kawarthalakes.ca). (www.kawarthalakes.ca)

Compliance Report Card

Drinking Water System Number: 250001910

Drinking Water System Name: Norland DWS

Drinking Water System Owner: City of Kawartha Lakes

Drinking Water System Category: Small Municipal Residential

Period Being Reported: January 1, 2019 - December 31, 2019

	# of Events	Date	Details
Health & Safety			
Number of Incidents	0		
Drinking Water			
MECP Inspections	1	January 14, 2020	Announced-Focused Drinking Water Inspection - Final Inspection Rating of 100%
AWQI's	1	October 7, 2019	Low system pressure
Number of Non-Compliances	0		
Number of Boil Water Advisories	0		

System Process Description

Raw Source

The Norland Water Treatment Plant is supplied with surface water from the Gull River.

Treatment

The treatment system is a dual train conventional filtration package plant consisting of the following:

- In-line static mixer
- Coagulant feed system with SternPac addition upstream of static mixer
- Two stage variable speed flocculators located in flocculation tanks
- Coagulant aid feed system with polymer added to flocculation tanks
- Two upflow clarifier units equipped with tube settlers
- Two dual media rapid gravity filters
- Sodium hypochlorite feed system for primary disinfection

- Dual celled chlorine contact tanks located beneath the plant
- Two highlift pump chambers housing four highlift pumps
- Sodium hypochlorite feed system for post chlorination
- Online analyzers to monitor both free treated chlorine and filter effluent turbidity
- Wastewater treatment system that consists of two backwash pumps and a settling tank that receives backwash wastewater and clarifier sludge
- SCADA computer control system
- Standby power generator

Treatment Chemicals used during the reporting year:

Chemical Name	Use	Supplier
Sodium Hypochlorite	Disinfection	Brenntag
Polyalumunium Chloride	Flocculation	FloChem
Polymer	Flocculation	Basf
Sodium hydroxide	pH adjustment	Not required in 2019

Summary of Non-Compliance

Adverse Water Quality Incidents

Date	AWQI #	Location	Problem	Details	Legislation	Corrective Action Taken
07-Oct-2019	148434	Distribution	Low pressure	Power issue caused high lift pump to lock out.	O. Reg. 170/03	Restored pressure, flushed system, sampled, replaced clearwell 1 level transducer

Non-Compliance

There were no non-compliances identified during the reporting period.

Non-Compliance Identified in a Ministry Inspection

There were no non-compliances identified during the reporting period.

Flows

The Norland Drinking Water System is operating on average under half the rated capacity.

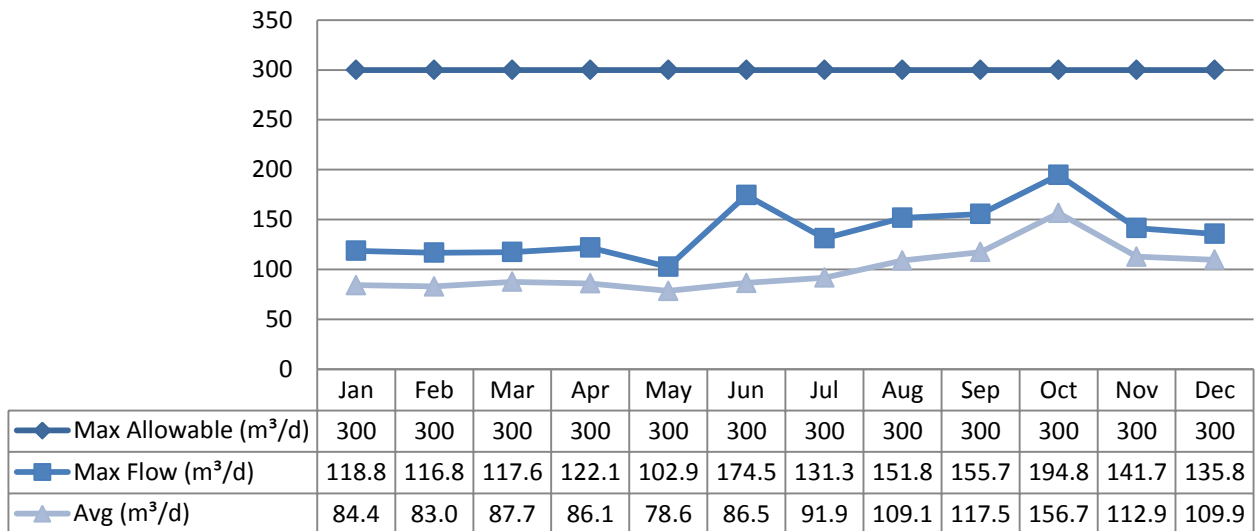
Raw Water Flows

The Raw Water takings are regulated by the Permit to Take Water (PTTW). 2019 Raw Flow Data was submitted to the Ministry electronically under permit #6033-AQ5HFW. The

confirmation for the data that was submitted is attached in Appendix A.

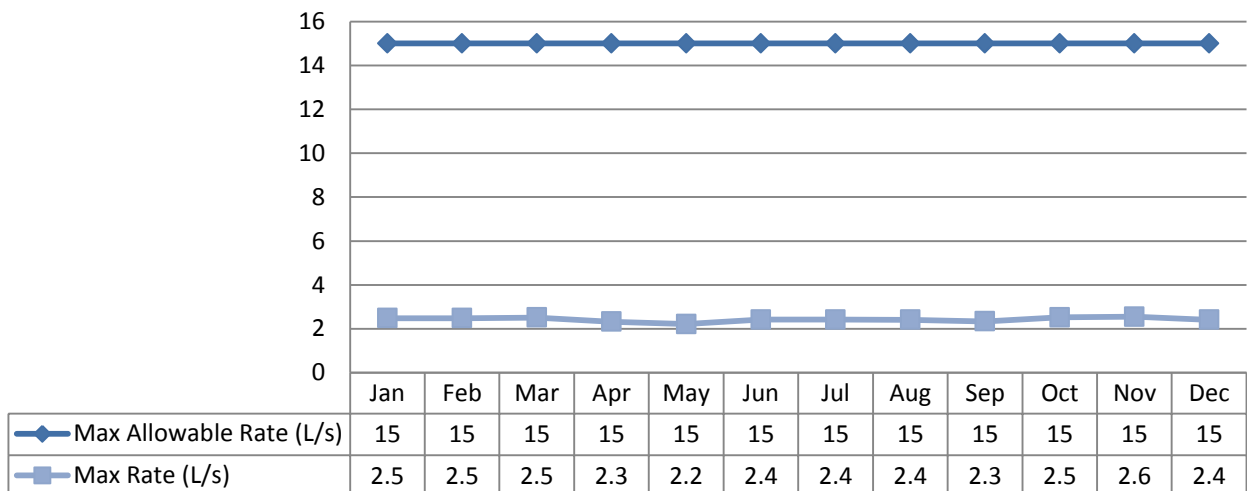
Total Monthly Flows (m³/d)

Max Allowable PTTW- Raw



Monthly Rated Flows (L/s)

Max allowable rate – PTTW- Raw

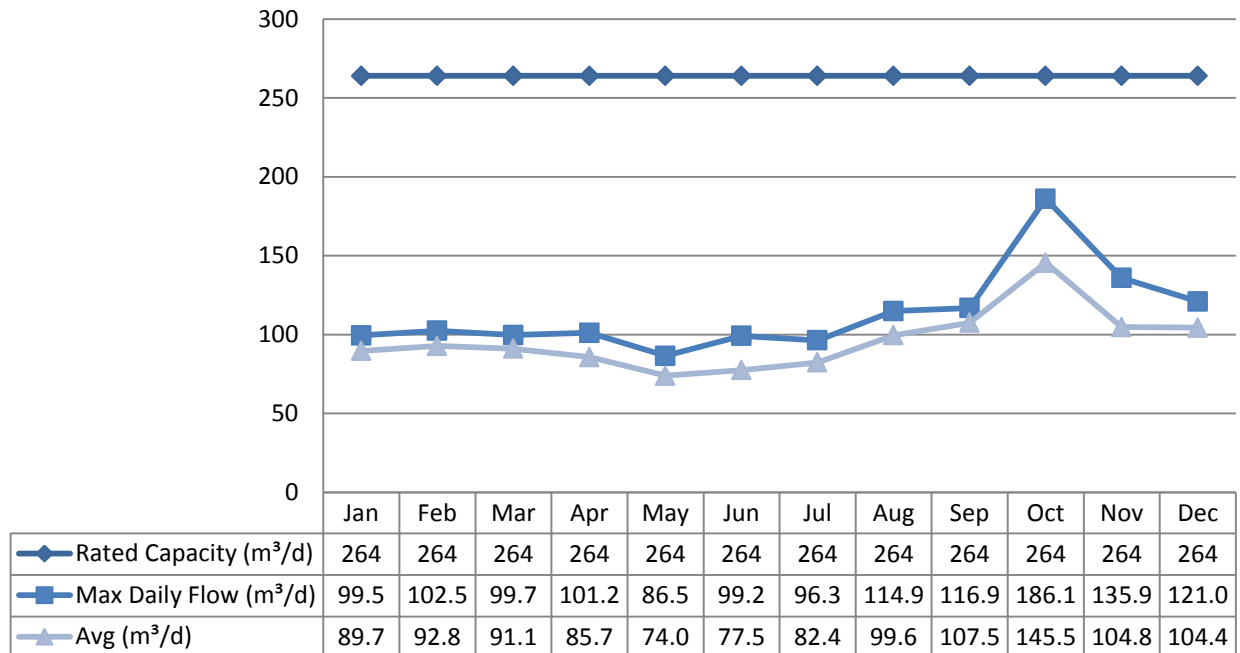


Treated Water Flows

The Treated Water flows are regulated under the Municipal Licence.

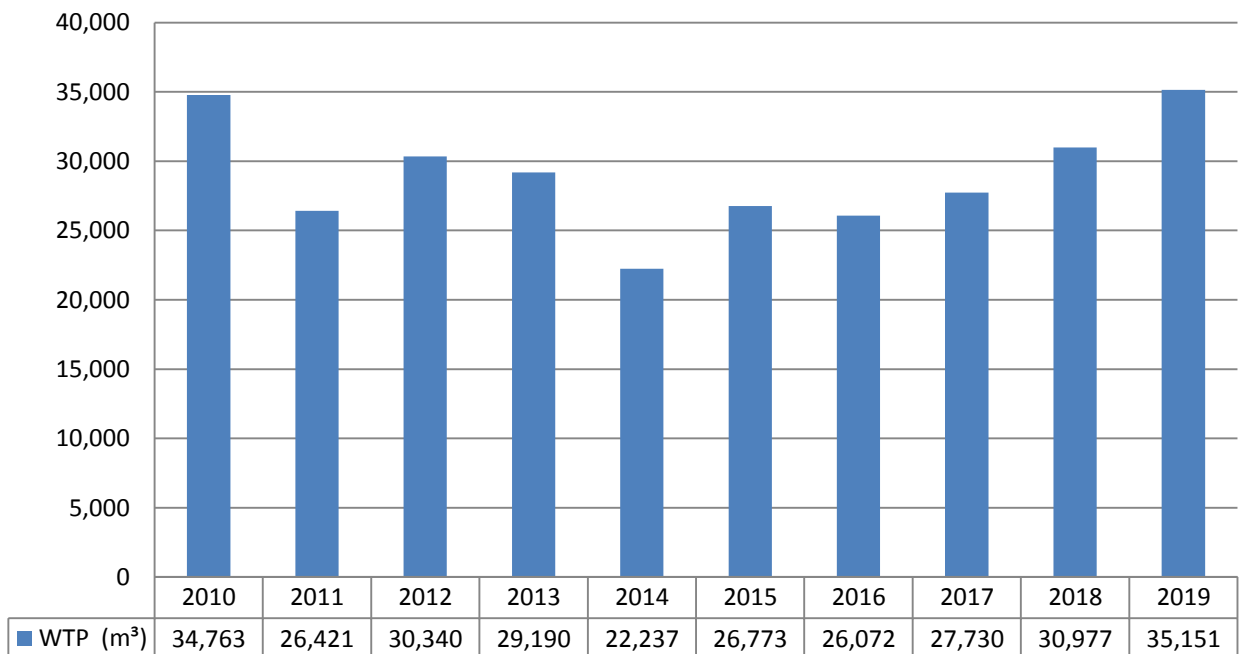
Monthly Rated Flows

Rated Capacity - MDWL



Annual Total Flow Comparison

Total Annual m³



Regulatory Sample Results Summary

Microbiological Testing

Location	No. of Samples Collected	Range of E.coli Results (MIN)	Range of E.coli Results (MAX)	Range of Total Coliform Results (MIN)	Range of Total Coliform Results (MAX)	No. of Samples Collected	Range of HPC Results (MIN)	Range of HPC Results (MAX)
Raw	27	0	98	20	560			
Distribution	54	0	0	0	0	53	0	37

Operational Testing

Parameter	No. of Samples	Range of Results (MIN)	Range of Results (MAX)
Turbidity Filter 1 (NTU)	8760	0.00	1.99
Turbidity Filter 2 (NTU)	8760	0.00	1.66
Chlorine	8760	0.00	3.29
Fluoride (If the DWS provides fluoridation)	N/A	N/A	N/A

Note: Record the unit of measure if it is **not** milligrams per litre.

Note: For continuous monitors 8760 is used as the number of samples. Spikes recorded by on-line instrumentation were a result of air bubbles and various maintenance/calibration activities. All spikes are reviewed for compliance with O. Reg. 170/03

Inorganic Parameters

These parameters are tested as a requirement under O.Reg.170/03. Sodium, Fluoride and the metals are required to be tested every 5 years while Nitrate and Nitrite are tested quarterly. In the event any of the parameters exceed half of the maximum allowable concentration the parameter is required to be sampled quarterly.

- MAC = Maximum Allowable Concentration as per O.Reg.169/03
- MDL = Method Detection Limit

Treated Water	Sample Date (yyyy/mm/dd)	Sample Results	MAC	No. Of Exceedances MAC	No. of Exceedances MIN
Antimony: Sb (ug/L) - TW	2015/01/14	0.02	6.0	No	No
Arsenic: As (ug/L) - TW	2015/01/14	< 0.2	10.0	No	No
Barium: Ba (ug/L) - TW	2015/01/14	17.9	1000.0	No	No
Boron: B (ug/L) - TW	2015/01/14	6.1	5000.0	No	No
Cadmium: Cd (ug/L) - TW	2015/01/14	0.005	5.0	No	No
Chromium: Cr (ug/L) - TW	2015/01/14	0.1	50.0	No	No
Mercury: Hg (ug/L) - TW	2015/01/14	0.01	1.0	No	No
Selenium: Se (ug/L) - TW	2015/01/14	< 1.0	50.0	No	No

Treated Water	Sample Date (yyyy/mm/dd)	Sample Results	MAC	No. Of Exceedances MAC	No. of Exceedances MIN
Uranium: U (ug/L) - TW	2015/01/14	< 0.002	20.0	No	No
Additional Inorganics					
Fluoride (mg/L) - TW	2015/01/14	< 0.06	1.5	No	No
Nitrite (mg/L) - TW	2019/01/07	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2019/04/01	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2019/07/04	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2019/10/07	<MDL 0.003	1.0	No	No
Nitrate (mg/L) - TW	2019/01/07	0.103	10.0	No	No
Nitrate (mg/L) - TW	2019/04/01	0.130	10.0	No	No
Nitrate (mg/L) - TW	2019/07/04	0.048	10.0	No	No
Nitrate (mg/L) - TW	2019/10/07	0.007	10.0	No	No
Sodium: Na (mg/L) - TW	2020/01/14	7.77	20*	No	No

*There is no "MAC" for Sodium. The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified mg/L when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.

Schedule 15 Sampling:

The Schedule 15 Sampling is required under O. Reg.170/03. This system is under reduced sampling. No plumbing samples were collected.

Distribution System	Number of Sampling Points	Number of Samples	Range of Results (MIN)	Range of Results (MAX)	MAC (ug/L)	Number of Exceedances
Alkalinity (mg/L)	2	2	12	17	N/A	N/A
pH	2	2	6.9	7.4	N/A	N/A
Lead (ug/l)	N/A	N/A				

Organic Parameters

These parameters are tested annually as a requirement under O.Reg.170/03. In the event any of the parameters exceed half of the maximum allowable concentration the parameter is required to be sampled quarterly.

Parameters (Treated Water)	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedances MAC	Exceedances ½ MAC
Alachlor (ug/L) - TW	2015/01/14	<MDL 0.02	5.00	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	2015/01/14	<MDL 0.01	5.00	No	No
Azinphos-methyl (ug/L) - TW	2015/01/14	<MDL 0.02	20.00	No	No

Parameters (Treated Water)	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedances MAC	Exceedances ½ MAC
Benzene (ug/L) - TW	2015/01/14	<MDL 0.32	1.00	No	No
Benzo(a)pyrene (ug/L) - TW	2015/01/14	<MDL 0.004	0.01	No	No
Bromoxynil (ug/L) - TW	2015/01/14	<MDL 0.33	5.00	No	No
Carbaryl (ug/L) - TW	2015/01/14	<MDL 0.01	90.00	No	No
Carbofuran (ug/L) - TW	2015/01/14	<MDL 0.01	90.00	No	No
Carbon Tetrachloride (ug/L) - TW	2015/01/14	<MDL 0.16	2.00	No	No
Chlorpyrifos (ug/L) - TW	2015/01/14	<MDL 0.02	90.00	No	No
Diazinon (ug/L) - TW	2015/01/14	<MDL 0.02	20.00	No	No
Dicamba (ug/L) - TW	2015/01/14	<MDL 0.2	120.00	No	No
1,2-Dichlorobenzene (ug/L) - TW	2015/01/14	<MDL 0.41	200.00	No	No
1,4-Dichlorobenzene (ug/L) - TW	2015/01/14	<MDL 0.36	5.00	No	No
1,2-Dichloroethane (ug/L) - TW	2015/01/14	<MDL 0.35	5.00	No	No
1,1-Dichloroethylene (ug/L) - TW	2015/01/14	<MDL 0.33	14.00	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2015/01/14	<MDL 0.35	50.00	No	No
2,4-Dichlorophenol (ug/L) - TW	2015/01/14	<MDL 0.15	900.00	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2015/01/14	<MDL 0.19	100.00	No	No
Diclofop-methyl (ug/L) - TW	2015/01/14	<MDL 0.4	9.00	No	No
Dimethoate (ug/L) - TW	2015/01/14	<MDL 0.03	20.00	No	No
Diquat (ug/L) - TW	2015/01/14	<MDL 1.0	70.00	No	No
Diuron (ug/L) - TW	2015/01/14	<MDL 0.03	150.00	No	No
Glyphosate (ug/L) - TW	2015/01/14	<MDL 1.0	280.00	No	No
Malathion (ug/L) - TW	2015/01/14	<MDL 0.02	190.00	No	No
Metolachlor (ug/L) - TW	2015/01/14	<MDL 0.01	80.00	No	No
Metribuzin (ug/L) - TW	2015/01/14	<MDL 0.02	80.00	No	No

Parameters (Treated Water)	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedances MAC	Exceedances ½ MAC
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2015/01/14	<MDL 0.3	10.00	No	No
Paraquat (ug/L) - TW	2015/01/14	<MDL 1.0	3.00	No	No
PCB (ug/L) - TW	2015/01/14	<MDL 0.04	60.00	No	No
Pentachlorophenol (ug/L) - TW	2015/01/14	<MDL 0.15	2.00	No	No
Phorate (ug/L) - TW	2015/01/14	<MDL 0.01	190.00	No	No
Picloram (ug/L) - TW	2015/01/14	<MDL 1.0	1.00	No	No
Prometryne (ug/L) - TW	2015/01/14	<MDL 0.03	10.00	No	No
Simazine (ug/L) - TW	2015/01/14	<MDL 0.01	1.00	No	No
Terbufos (ug/L) - TW	2015/01/14	<MDL 0.01	10.00	No	No
Tetrachloroethylene (ug/L) - TW	2015/01/14	<MDL 0.35	100.00	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2015/01/14	<MDL 0.2	230.00	No	No
Triallate (ug/L) - TW	2015/01/14	<MDL 0.01	5.00	No	No
Trichloroethylene (ug/L) - TW	2015/01/14	<MDL 0.44	5.00	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2015/01/14	<MDL 0.25	100.00	No	No
Trifluralin (ug/L) - TW	2015/01/14	<MDL 0.02	45.00	No	No
Vinyl Chloride (ug/L) - TW	2015/01/14	<MDL 0.17	1.00	No	No
Distribution Water					No
Trihalomethane: Total (ug/L) Annual Average - DW	2019	39	100	No	No
HAA Total (ug/L) Annual Average - DW	2019	55	N/A	N/A	Yes

MAC = Maximum Allowable Concentration as per O. Reg.169/03

MDL = Method Detection Limit

Additional Legislated Samples

Municipal Drinking Water Licence	Date Collected	Suspended Solids (mg/L)	Free Chlorine Residual (mg/L)
Settling Tank Discharge Point	January	17	0.02
	February	6	0.01
	March	3	0.02
	April	7	0.02
	May	3	0.01
	June	19	0.01
	July	20	0.02
	August	36	0.02
	September	25	0.01
	October	32	0.01
	November	18	0.02
	December	30	0.02
	Annual Average	18	


Note: The Suspended Solids annual average limit is 25 mg/L.


Major Maintenance Summary incurred to install, repair or replace required equipment

WO #	Description
1102310	Replacement Coagulant Feed Pumps
1102312	Lowlift Pump Replacement LLP-01
1137352	Upgrade to SPack 32 Outpost
1218636	Dehumidifier Repair
1257607	Rebuild Kits for Air Relief Valve
1420421	Low Lift Repair
1462879	DSC Battery Replacement
1463445	Level Meter LIT 310 Failed and Replaced
1465405	Water Distribution Leak Repaired
767905	Clear well inspected and cleaned

Appendix A

WTRS Data Submission Confirmation





Ministry of the Environment,
Conservation and Parks

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Location: [WTRS](#) / [WT DATA](#) / [Input WT Record](#)WTRS-WT-008

Water Taking Data submitted successfully.

Confirmation:

Thank you for submitting your water taking data online.

Permit Number: 6033-AQ5HFW
Permit Holder: THE CORPORATION OF THE CITY OF KAWARTHA LAKES.
Received on: Feb 6, 2020 2:34 PM

This confirmation indicates that your data has been received by the Ministry, but should not be construed as acceptance of this data if it differs from that specified on the Permit Number, assigned to the Permit Holder stated above.