
Mohawks of the Bay of Quinte

Annual Water Report

Reporting period of January 1, 2021 – December 31, 2021

Prepared For:

Mohawks of the Bay of Quinte

Prepared By:



Ontario Clean Water Agency
Agence Ontarienne Des Eaux

This report has been prepared to satisfy the annual reporting requirements of the Provincial Regulations and Guidelines established by the Ministry of the Environment in the Province of Ontario including the section 11 and Schedule 22 reports identified in O.Reg 170/03, Drinking Water Systems Regulation and the Permit to Take Water Reports identified in O.Reg 387/04, Water Taking and Transfer Regulation.

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Mohawks of the Bay of Quinte Water Treatment Facility

Facility Description & Treatment Process

The Mohawks of the Bay of Quinte Water Treatment Facility is a surface water membrane filtration plant with a submerged low-pressure ultrafiltration membrane system. The *Low Lift System* transfers raw water from the Bay of Quinte to feed the water treatment plant; it will be controlled according to the level in the Pretreatment System. Treatment consists of Pre-Treatment Clarifiers, Dissolved Air Flotation (DAF) and membrane filtration system, followed by granular activated carbon filter, followed by an ultraviolet disinfection system, with chemical disinfection and pumping system. This facility is Federally funded and operated, therefore it does not fall under Provincial legislation. However, OCWA does provide oversight of the system as if it is regulated under Ontario Regulation 170/03. The Mohawks of the Bay of Quinte Water Treatment Facility would be considered a Large Municipal Residential system under this legislation; therefore this system is classified as a Large Municipal Residential system.

Treatment Chemicals used during the reporting period:

Chemical Name
• Citric Acid
• Phosphoric Acid
• Calcium Thiosulphate
• Sodium Hypochlorite – 12%
• Carbon Dioxide
• Kemira XL-54 PAC
• Ammonium Sulphate

Operational & Maintenance Summary

- Routine operations, sampling, testing and required system maintenance completed.
- All samples were collected as per Ontario Regulation 170/03.
- All alarms tested and signals confirmed with applicable alarm monitoring.

Performance Data

All Total Coliform and E.Coli samples collected at the Mohawks of the Bay of Quinte Water Treatment Facility during the reporting period were submitted to Eurofins laboratory for analysis, and all chemical samples collected for analysis are submitted to ALS Global Ltd, with the exception of in-house chlorine residuals, pH and turbidity. Eurofins and ALS Global have been deemed accredited by the Canadian Association for Laboratory Accreditation (CALA), meeting strict provincial guidelines including an extensive quality assurance/quality control program. The free chlorine residuals, pH and turbidity parameters were analyzed in the field at the time of sample collection by certified and trained operators, to ensure accuracy and precision of the results obtained. Sampling was conducted in accordance with Ontario Regulation 170/03.

Ontario Regulation 170/03 requires the following microbiological sampling:

- Weekly sample for raw water source to be tested for Total Coliform and E. Coli;
- Nine distribution samples to be tested monthly for Total Coliforms, E. Coli and HPC.

Tabulated below is a summary of all microbiological testing completed during the reporting period.

<u>Mohawks of the Bay of Quinte Water Treatment Facility - Microbiological Test Results</u>							
Sample Location	# Total Coliform and E. Coli Samples	Total Coliform (CFU/100 mL) – Range of Results (min#) – (max#)	E. Coli (CFU/100 mL)– Range of Results (min#) – (max#)	Exceedance	# HPC Samples	HPC (CFU/1 mL) – Range of Results (min#) – (max#)	Exceedance
Raw Water	52	0-193	0-0	<i>Not Applicable</i>	0	<i>Not Applicable</i>	<i>Not Applicable</i>
Treated Water	52	0-0	0-0	NO	12	0-2	<i>Not Applicable</i>
Distribution Water – (Various Locations)	118	0-3	0-0	YES	32	0-169	<i>Not Applicable</i>

Tabulated below is a summary of the Performance Criterion for filtered water turbidity in percent of the measurements each month during the reporting period. The Mohawks of the Bay of Quinte WTF uses membrane filtration and therefore, must remain under 0.10 NTU 99% of the time.

<u>Mohawks of the Bay of Quinte WTF – Filter Turbidity</u>		
Sample Parameter & Location	Filter #1	Filter #2
2021 Average	<.10 NTU at %100	<.10 NTU at %100

Tabulated below is a summary of Raw Water flows from the Bay of Quinte for the reporting period.

<u>Mohawks of the Bay of Quinte WTF – Raw Water Flow</u>				
Month	Total Flow m3	Minimum m3/day	Maximum m3/day	Average m3/day
January	8,695	45	621	280
February	9,534	48	622	340
March	9,767	48	792	315
April	10,942	48	718	364
May	14,352	40	893	462
June	13,443	38	769	463
July	12,564	41	882	405
August	16,284	98	1,018	525
September	11,733	42	881	391
October	11,698	43	675	377
November	11,096	41	874	382
December	10,689	46	820	344
Total	140,797			
Minimum		38		

Maximum			1,018	
Average				387

Tabulated below is a summary of Treated Water Flows for the reporting period.

<u>Mohawks of the Bay of Quinte WTF – Treated Water Flow</u>				
	Total Flow m3	Minimum m3/day	Maximum m3/day	Average m3/day
January	5,411	39	332	193
February	6,182	15	559	228
March	5,279	10	369	188
April	6,942	101	422	239
May	10,165	116	603	327
June	9,401	117	570	335
July	8,541	114	603	294
August	11,268	106	745	375
September	7,858	117	555	280
October	8,122	99	582	290
November	6,766	31	534	270
December	7,296	53	626	270
Total	93,231			
Minimum		10		
Maximum			745	
Average				274

*The raw water flows are occasionally higher than the treated water flows due the water used to perform backwashes on the DAF and Ultrafiltration system.

Tabulated below is a summary of in-house analytical testing performed during sampling in the Mohawks of the Bay of Quinte Drinking Water System for the reporting period.

<u>Mohawks of the Bay of Quinte WTF - In-House Test Results</u>		
Sample Parameter & Location	# of Grab Samples	Range of Results (min#) – (max#)
Turbidity (NTU)- Raw Water	8760	0.00-60.00
Free Chlorine Residual (mg/L) – Treated Water	8760	0.16-5.00
Turbidity (NTU)- Treated Water	8760	0.04-2.00
Free Chlorine Residual (mg/L) – Distribution Water	8760	0.27-2.20

*Instrument spikes and dips recorded by on-line instrumentation were a result of air bubbles and various maintenance and calibration activities. Power interruptions may also cause an instrument reading to drop to zero. All events are reviewed for compliance with O. Reg. 170/03 and if warranted would be reported to Health Canada.

Ontario Regulation 170/03 requires The following chemical testing to be performed:

- One treated water sample every three months to be tested for nitrite and nitrate;
- One distribution sample every three months to be tested for THM and HAA
- One treated water sample every 12 months to be tested for every parameter listed in Schedules 23 and 24; and

- One treated water sample every 60 months to be tested for sodium and fluoride.

Tabulated below is a summary of all chemical sample results for the reporting period.

MBQ WTF -- Chemical Test Results				
Sample Parameter	# of Samples	Distribution 251 York Rd-- 2021 Average Result(ug/L)	ODWS Objective (Type)	Exceedance
Nitrite (N) - mg/L	4	0.01	1 (MAC)	No
Nitrate (N) – mg/L	4	0.07	10 (MAC)	No
Nitrite + Nitrate (N) – mg/L	4	0.08	10 (MAC)	No
THM's Total – ug/L	4	45.6	100 (MAC) *	No
HAA Total – ug/L	4	33	80 (MAC)	No

MAC = Maximum Acceptable Concentration, *expressed as a running annual average

Schedule 23 & 24 - Organic and Inorganic Parameter Results

Tabulated below is a summary of all Schedule 23 & 24 sample results for the reporting period.

MBQ WTF --Test Results					
Parameter	Units	Sample Date	Result Value	Objective	Exceedance (Yes/No)
Antimony (Sb)	ug/L	2021-04-13	<0.60	6.0	N
Arsenic (As)	ug/L	2021-04-13	<1.0	10.0	N
Barium (Ba)	ug/L	2021-04-13	39	1000.0	N
Boron (B)	ug/L	2021-04-13	<50	5000.0	N
Cadmium (Cd)	ug/L	2021-04-13	<0.10	5.0	N
Chromium (Cr)	ug/L	2021-04-13	<1.0	50.0	N
Selenium (Se)	ug/L	2021-04-13	<5.0	50.0	N
Uranium (U)	ug/L	2021-04-13	<5.0	20.0	N
Mercury	ug/L	2021-04-13	<0.10	1.0	N
Benzene	ug/L	2021-04-13	<0.50	1.0	N
Carbon tetrachloride	ug/L	2021-04-13	<0.20	2.0	N
Monochlorobenzene	ug/L	2021-04-13	<0.50	80.0	N
1,2-Dichlorobenzene	ug/L	2021-04-13	<0.50	200.0	N
1,4-Dichlorobenzene	ug/L	2021-04-13	<0.50	5.0	N
1,2-Dichloroethane	ug/L	2021-04-13	<0.50	5.0	N
1,1-dichloroethylene (vinylidene chlorid	ug/L	2021-04-13	<0.50	14.0	N
Dichloromethane	ug/L	2021-04-13	<5.0	50.0	N
Ethylbenzene	ug/L	2021-04-13	<0.50	140.0	N
Tetrachloroethylene (perchloroethylene)	ug/L	2021-04-13	<0.50	10.0	N

Toluene	ug/L	2021-04-13	<0.50	60.0	N
Trichloroethylene	ug/L	2021-04-13	<0.50	5.0	N
Vinyl chloride	ug/L	2021-04-13	<0.20	1.0	N
o-xylene	ug/L	2021-04-13	<0.50	<i>Not Applicable</i>	
m/p-xylene	ug/L	2021-04-13	<1.0	<i>Not Applicable</i>	
Xylenes (Total)	ug/L	2021-04-13	<1.5	90.0	N
4-Bromofluorobenzene	%	2021-04-13	99.8	<i>Not Applicable</i>	
1,4-Difluorobenzene	%	2021-04-13	100.4	<i>Not Applicable</i>	
Benzo(a)pyrene	Ug/L	2021-04-13	<0.0050	0.01	N
Aroclor 1242	ug/L	2021-04-13	<0.020	<i>Not Applicable</i>	
Aroclor 1254	ug/L	2021-04-13	<0.020	<i>Not Applicable</i>	
Aroclor 1260	ug/L	2021-04-13	<0.020	<i>Not Applicable</i>	
Total PCBs	ug/L	2021-04-13	<0.035	3.0	N
d14-Terphenyl	%	2021-04-13	93.4	<i>Not Applicable</i>	
alpha-Chlordane	ug/L	2021-04-13	<0.0080	<i>Not Applicable</i>	
gamma-Chlordane	ug/L	2021-04-13	<0.0080	<i>Not Applicable</i>	
p,p-DDD	ug/L	2021-04-13	<0.004	<i>Not Applicable</i>	
p,p-DDE	ug/L	2021-04-13	<0.004	<i>Not Applicable</i>	
o,p-DDT	ug/L	2021-04-13	<0.004	<i>Not Applicable</i>	
p,p-DDT	ug/L	2021-04-13	<0.004	<i>Not Applicable</i>	
Oxychlordane	ug/L	2021-04-13	<0.008	<i>Not Applicable</i>	
Bromoxynil	ug/L	2021-04-13	<0.20	5.0	N
2,4-D	ug/L	2021-04-13	<0.20	100.0	N
Dicamba	ug/L	2021-04-13	<0.20	120.0	N
Dinoseb	ug/L	2021-04-13	<0.20	10	
Glyphosate	ug/L	2021-04-13	<5.0	280.0	N
MCPA	ug/L	2021-04-13	<0.20	100.0	N
Picloram	ug/L	2021-04-13	<0.20	190.0	N
2,4-Dichlorophenylacetic Acid	%	2021-04-13	82.8	<i>Not Applicable</i>	
Alachlor	ug/L	2021-04-13	<0.10	5.0	N
Atrazine	ug/L	2021-04-13	<0.10		
Atrazine & Metabolites	ug/L	2021-04-13	<0.20	5.0	N
Azinphos-methyl	ug/L	2021-04-13	<0.10	20.0	N
Benzo(a)pyrene	ug/L	2021-04-13	<0.0050	20.0	N
Carbaryl	ug/L	2021-04-13	<0.20	90.0	N
Carbofuran	ug/L	2021-04-13	<0.20	90.0	N
Chlorpyrifos	ug/L	2021-04-13	<0.10	90.0	N
Diazinon	ug/L	2021-04-13	<0.10	90.0	N

2,4-Dichlorophenol	ug/L	2021-04-13	<0.30	900.0	N
Dimethoate	ug/L	2021-04-13	<0.10	20.0	N
Diquat	ug/L	2021-04-13	<1.0	70.0	N
Diuron	ug/L	2021-04-13	<1.0	150.0	N
Atrazine Desethyl	ug/L	2021-04-13	<0.10	Not Applicable	
Malathion	ug/L	2021-04-13	<0.10	190.0	N
Diclofop-methyl	ug/L	2021-04-13	<0.20	9.0	N
Metolachlor	ug/L	2021-04-13	<0.10	50.0	N
Metribuzin	ug/L	2021-04-13	<0.10	80.0	N
Paraquat	ug/L	2021-04-13	<1.0	10.0	N
Pentachlorophenol	ug/L	2021-04-13	<0.50	60.0	N
Phorate	ug/L	2021-04-13	<0.10	2.0	N
Prometryne	ug/L	2021-04-13	<0.10	1.0	N
Simazine	ug/L	2021-04-13	<0.10	10.0	N
Terbufos	ug/L	2021-04-13	<0.20	1.0	N
2,3,4,6-Tetrachlorophenol	ug/L	2021-04-13	<0.50	100.0	N
Triallate	ug/L	2021-04-13	<0.10	230.0	N
2,4,6-Trichlorophenol	ug/L	2021-04-13	<0.50	5.0	N
Trifluralin	ug/L	2021-04-13	<0.10	45.0	N
2-Fluorobiphenyl	%	2021-04-13	77.6	Not Applicable	
2,4,6-Tribromophenol	%	2021-04-13	131.5	Not Applicable	

Ontario Regulation 170/03 – Specifies requirements for sampling and testing for lead as follows:

- The Schedule 15 Sampling is required under O.Reg 170/03. This system is under reduced sampling thus no plumbing samples are collected. This facility is on a reduced sampling schedule and lead is sampled every 36 months.

Tabulated below is a summary of the lead sampling results obtained during the reporting period.

Quinte Mohawks School –Plumbing Lead Sample Results			
Location	Sample Parameter- Lead – ug/L	ODWS Objective (Type)	Exceedance
N/A*			

****This system is exempt from plumbing sampling for lead. This system must collect distribution pH and alkalinity samples under the reduced sampling table during each sampling period in every 12-month period and distribution lead samples under the reduced sampling table during each sampling period in every third 12-month period***

MBQ WTF – Chemical Test Results – January 1, 2021 to March 31, 2021					
Sample Parameter	# of Samples	<u>Distribution Water</u> Bottle Fill Station Average Result	<u>Distribution Water</u> 275 Bayshore Rd. Average Result	ODWS Objective Range	Exceedance
pH	2	7.47-7.95	7.26-7.85	6.50 - 8.50	No
Alkalinity(CaCO3) – mg/L	2	102-104	75-79	100 - 200	No

Blue-Green Algae

	Raw	Treated
Lowest Analytical Detection Limit (ALS)		0.1 ug/L
Guideline Limit	N/A	1.50 ug/L
Date	Result (ug/L)	
May 31, 2021	<0.1	<0.1
June 7, 2021	<0.1	<0.1
June 14, 2021	<0.1	<0.1
June 28, 2021	<0.1	<0.1
Jul 5, 2021	<0.1	<0.1
Jul 19, 2021	0.3	<0.1
Jul 28, 2021	0.2	<0.1
Aug 3, 2021	<0.1	<0.1
Aug 9, 2021	<0.1	<0.1
Aug 16, 2021	<0.1	<0.1
Aug 30, 2021	<0.1	<0.1
Sept 7, 2021	<0.1	<0.1
Sept 20, 2021	<0.1	<0.1
Sept 27, 2021	0.2	<0.1
Oct 4, 2021	<0.1	<0.1
Oct 12, 2021	0.3	<0.1
Oct 18, 2021	0.2	<0.1

As a part of the ongoing expansion the following addresses/locations were tied-in to the Mohawks of the Bay of Quinte Drinking Water System during this reporting year:

- MBQ Distribution: North End Cannery Rd.
- MBQ Distribution: 13 Cannery Rd.
- Johnson's Lane: Dead End
- 63 Johnson's Lane
- 48 Johnson's Lane
- MBQ Distribution: Community Centre
- MBQ Distribution: Support Activity Centre
- Shannonville Eastern Dead-End area on HWY#2- 4 homes 1 business
- Martin's Beads Service Line HWY#2/Cannery Rd
- 5665 Old HWY#2 Blow-Off
- Child and Family Services Hydrant Blow Off Line
- Bayview Variety Hydrant Blow Off Line
- Better Buds Service Line HWY#2

Compliance Summary

From the results tabulated in the previous section, sample results obtained during the reporting period were within the Ontario Drinking Water Quality Objective. No samples taken exceeded the Maximum Acceptable Concentration (MAC) and therefore deemed to be in compliance with O.Reg 170/03.

AWQI Summary

The following table contains details on any Adverse Water Quality Incident notices submitted to Environment Canada:

MBQ WTF – AWQI Descriptions					
Facility	Date of Incident (yyyy/mm/dd)	Parameter	Result	Unit of Measure	Corrective Action
Mohawks of the Bay of Quinte Distribution Tie Ins	2021/07/16	Total Coliform	2	cfu/100mL	Flushed and chlorinated

Alarm Response & Overtime Summary

- Aquarius #2 Low Level Alarm
- CWB Sewage Station, Low Level Alarm
- Low Lift Alarm System, failed daily test.
- Water Production Not Ready Alarm,
- SCADA lost all signals due to failed Ethernet switch.
- Low Lift wet well low level alarm
- T.M.P High Alarm on Membrane #1.
- Low Lift Wet Well Low Level Alarm
- Marathon, working for G.B.L, hit blow off pipe on Airport Rd Temp. Dead end.
- False Pre-Distribution High Lift Cl2 High Alarm.
- High Turbidity Alarm, Membrane #2.
- U.V#2 Alarm, Wiper Position Unknown.

- Low Cl2 Alarm at E.S.R caused by internet connection issue.
- SCADA signals lost, Ethernet switch failed.
- Evoqua Alarm, High Turbidity.
- Fire Alarm, was a false alarm.
- Distribution Low Cl2 alarm.
- Power Outage.
- False Pre-Distribution High Lift Cl2 High Alarm.
- UV #1 critical alarm, UV #1 low level alarm.
- Distribution Low Cl2 alarm.
- Tower/Cl2 level alarm, lost signal to tower for about 10 seconds which caused alarm.
- Tower lost signal again for a brief period, Bryce looking into issue.
- Emergency Water shut off on Sadie's Lane due to fire
- No signal from Low Lift, faulty fiber converter
- Lost signal to Tower & Low Lift
- Distribution Cl2 Low Alarm
- G.A.C's Low Level Alarm
- Power Outages
- U.V System Alarm, low level
- High Turbidity Alarm on Membrane #2

Capital Expenditures Summary

- Replacement for broken valve box lids
- Replace water truck filling valve
- Hatfield Electric on-site to troubleshoot generator transfer switch fault
- Floval Equipment to replace water truck loading valve
- Falcon Security on-site to replace a keypad
- Flowmeters calibrated in September 2021
- Horwood Electrical onsite to inspect transfer switches
- Backflow water preventers tested and passed
- Fire Extinguishers annual inspection