Petawawa Drinking Water System

Waterworks # 210002101
System Category – Large Municipal Residential

Annual Water Report

Prepared For: Town of Petawawa

Reporting Period of January 1st – December 31st, 2023

Issued: Feb 22, 2024

Revision: 0

Operating Authority:

OCWA
ONTARIO CLEAN WATER AGENCY
AGENCE ONTARIENNE DES EAUX

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

Table of Contents

Report Availability

This system serves more than 10,000 residences and the annual report will be available to residents at the Town of Petawawa Municipal Office. Notification will be at the Municipal Office and copies provided free of charge, if requested. The Town of Petawawa office is located at 1111 Victoria Street in Petawawa, ON.

Compliance Report Card

Compliance Event	# of Events
Ministry of the Environment, Conservation and Parks (MECP) Inspection(s)	Feb 6, 2023 – received 100% (2022-2023 Inspection period) Dec 5, 2023 – no Final Report received yet (2023-2024 Inspection period)
Ministry of Labour Inspection(s)	There were no inspections during the reporting period
QEMS External Audit	Surveillance System Audit (S2 - Off-Site) held this year Completed on Nov 3, 2023 – No Non-Conformances; One (1) OFI identified – need new endorsement of Operational Plan
AWQI's	Five (5)
Non-Compliances	None
Community Complaints	Four (4) Community Complaints: Service leak - 3 Water Shut-off - 1
Spills	There were no Spills reported during the reporting period
Water Main Breaks	Three (3)

System Process Description

Raw Source

The source water to the Petawawa WTP is the Ottawa River (Allumette Lake). Once water is treated, it is supplied to the distribution system. The Petawawa WTP supplies water to Garrison Petawawa (Federal Jurisdiction). The south end of the distribution system is connected (only if required) to the City of Pembroke/Laurentian Valley Drinking Water System. Flow is controlled using Booster Pumping Station #1.

Treatment

Petawawa Water Treatment Plant is a conventional water treatment system using coagulation, flocculation, and sedimentation processes. Pre and post pH adjustment is also utilized. Dual media filters provide filtration, and chlorine gas is used for disinfection. Fluoridation is also practiced.

Treatment Chemicals used during the reporting year:

Chemical Name	Use	Supplier
PAX-XL6	Coagulant	Kemira
Fluoride	Fluoridation	Brenntag
Soda Ash Dense (bulk/bags)	pH Adjustment	Brenntag/Reliable Industrial Supply
Chlorine Gas	Disinfection	Brenntag
Superfloc A-100 Flocculant	Coagulant Aid (Polymer)	Kemira

Distribution

The distribution consists of a network of piping, three (3) towers and two (2) booster pumping stations. The distribution system consists of about 4 105 service connections in the Town of Petawawa, approximately 3 962 of which are residential. There are approx. 37 dead ends and approx. 606 fire hydrants. The distribution pipes are made of asbestos cement, cast iron, and polyvinyl chloride (PVC).

Summary of Non-Compliances

Adverse Water Quality Incidents

Date	AWQI #	Location	Problem	Details	Legislation	Corrective Action Taken
Jan 5, 2024	164295	Distribution System	HAA RAA Exceedance – Q4 of 2023	HAA formation problem in the distribution system	Result of 92.2 (MAC is 80 ug/L)	Sent to MECP SAC, MECP local office Water Inspector, MOH, and client the AWQI form, Section 2C, to notify of exceedance. No further actions required.
Oct 4, 2023	163703	Distribution System	HAA RAA Exceedance – Q3 of 2023	HAA formation problem in the distribution system	Result of 81.5	Sent to MECP SAC, MECP local office Water Inspector, MOH, and client the AWQI form, Section 2C, to notify of exceedance. No further actions required.
Sept 14, 2023	163459	Distribution System	Lead Exceedance in Residential Plumbing	Lead exceedance from sampling at private residence for insurance purposes	Result of 33 ug/L (MAC is 10 ug/L)	Laboratory reported to MECP SAC, MOH, and client. Results were verbally communicated to owner and a paper copy was provided to residential owner.
April 19, 2023	161777	Water Treatment Plant	Coagulant dosing issue	The raw water was not being dosed with coagulant due	O. Reg. 170/03,	OCWA's integrator looked into the issue and the raw water pumps were being run in

Date	AWQI #	Location	Problem	Details	Legislation	Corrective Action Taken
				to an issue with the valve and interlock that were not working properly and did not stop the plant from allowing raw water to continue onto the floc tank with not coagulant being dosed	MDWL 199-101 #3	manual to make sure raw water continued to enter the plant and dosed with coagulant, before proceeding onto the next process. A "positioning" part for the raw water valve and interlock was ordered.
Apr 5, 2023	161680	Distribution System	HAA RAA Exceedance – Q1 of 2023	HAA formation problem in the distribution system	Result of 89.3	Sent to MECP SAC, MECP local office Water Inspector, MOH, and client the AWQI form, Section 2C, to notify of exceedance. No further actions required.

Non-Compliances

Legislation	Requirement(s) system failed to meet	Duration of the failure (i.e. date(s))	Corrective Action	Status
There were no non-compliances during this reporting period.				

Non-Compliances Identified in a Ministry Inspection: (2022-2023 Inspection)

Legislation	requirement(s) system failed to meet	duration of the failure (i.e. date(s))	Corrective Action	Status
There were no non-compliances in the Ministry inspection, reported during the 2022-2023 reporting period.				

Flows

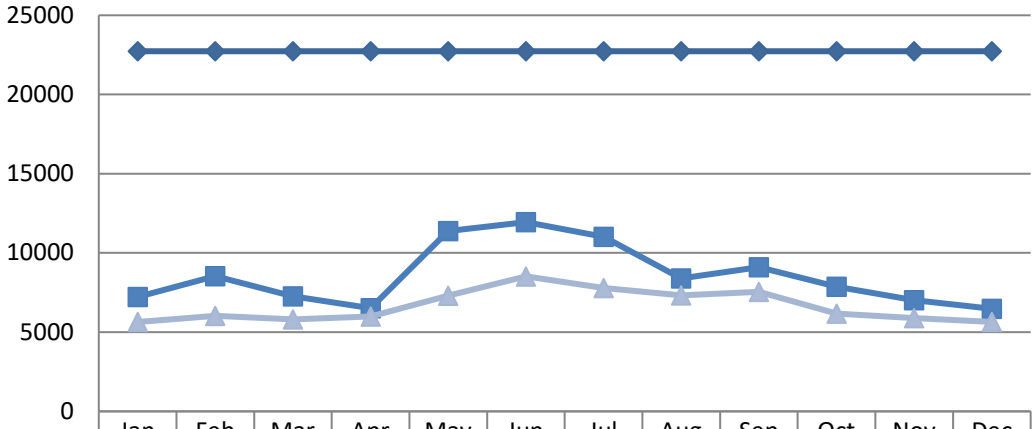
In 2023, the average day flow was at approximately 29.8% of the current plant design for the Petawawa Drinking Water System, and the maximum day flow was at approximately 53.1% of the plant design of 21 500 m^3/d.

Raw Water Flows

The Raw Water flows are regulated under the Permit to Take Water. 2023 Raw Flow Data was submitted to the Ministry electronically under permit #3814-9J2RQN. The confirmation and a copy of the data that was submitted are attached in Appendix A.

Total Monthly Flows (m3/d)

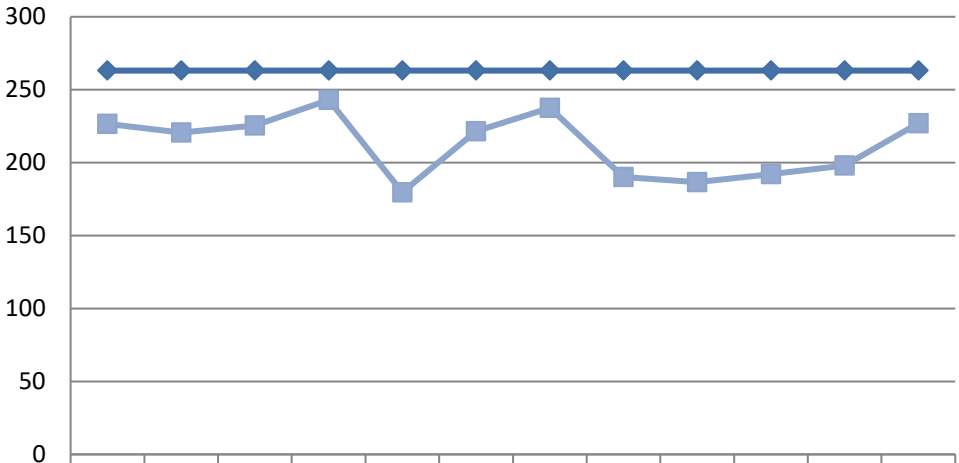
Max Allowable - PTTW



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable (m3/d)	22730	22730	22730	22730	22730	22730	22730	22730	22730	22730	22730	22730
Max Flow (m3/d)	7213	8540	7257	6509	11389	11944	11013	8388	9107	7877	7018	6477
Avg (m3/d)	5638	6034	5804	5981	7294	8520	7780	7315	7540	6177	5880	5648

Monthly Rated Flows (L/s)

Max allowable rate - PTTW



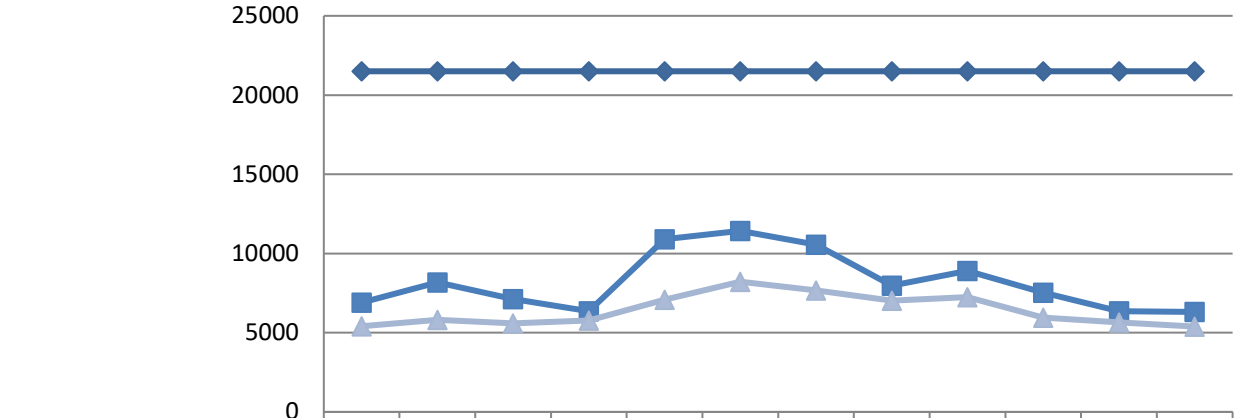
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable Rate (L/sec)	263.1	263.1	263.1	263.1	263.1	263.1	263.1	263.1	263.1	263.1	263.1	263.1
Max Rate (L/s)	226.6	220.7	225.5	243.0	179.7	221.5	237.6	190.1	186.6	192.1	198.1	226.9

Treated Water Flows

The Treated Water flows are regulated under the Municipal Licence.

Monthly Rated Flows

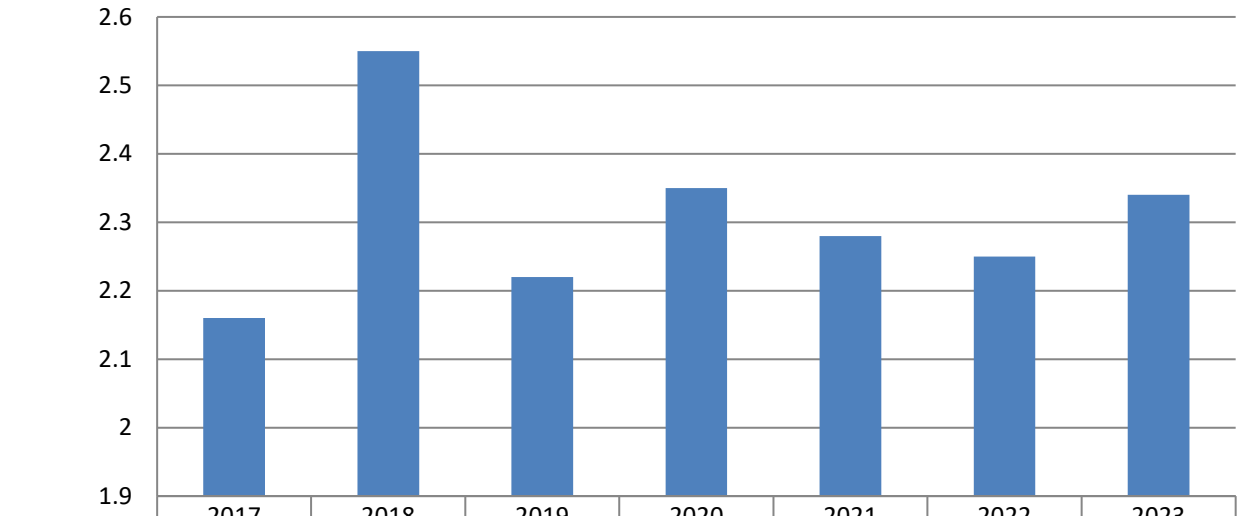
Rated Capacity - MDWL



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rated Capacity (m3/d)	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500	21500
Max Daily Flow (m3/d)	6901	8174	7123	6367	10906	11427	10568	7973	8894	7524	6347	6310
Avg (m3/d)	5416	5820	5587	5776	7094	8218	7676	7024	7253	5945	5644	5387

Annual Total Flow Comparison

Total Annual m3(x 10^6)



	2017	2018	2019	2020	2021	2022	2023
WTP (m3)	2.16	2.55	2.22	2.35	2.28	2.25	2.34

Regulatory Sample Results Summary

Microbiological Testing

	No. of Samples Collected	Range of E. Coli Results		Range of Total Coliform Results		Range of HPC Results		
		Min	Max	Min	Max	No. Samples	Min	Max
Raw Water	51	0	3	0	18			
Treated Water	51	0	0	0	0	51	0	23
Distribution Water	344	0	0	0	0	102	1	17

Operational Testing

	No. of Samples Collected	Range of Results	
		Minimum	Maximum
Turbidity, In-House (NTU) - RW	103	1.01	6.12
Turbidity, On-Line (NTU) - RW	8760	0.85	4.81
Turbidity, In-House (NTU) - TW	103	0.05	0.30
Turbidity, In-House (NTU) - Filt1	104	0.06	0.69
Turbidity, On-Line (NTU) – Filt1	8760	0.02	0.81
Turbidity, In-House (NTU) - Filt2	104	0.04	0.49
Turbidity, On-Line (NTU) – Filt2	8760	0.03	0.66
Turbidity, In-House (NTU) - Filt3	103	0.05	0.76
Turbidity, On-Line (NTU) – Filt3	8760	0.02	0.80
Free Chlorine Residual, In-House (mg/L) - TW	104	1.16	1.90
Free Chlorine Residual, On-Line (mg/L) - TW	8760	0.96	2.24
Total Chlorine Residual, In-House (mg/L) - TW	104	1.58	2.20
Free Chlorine Residual, In-House (mg/L) - DW	344	0.067	1.66
Free Chlorine Residual, On-Line (mg/L) - DW	8760	0.08	4.98
Fluoride Residual, In-House (mg/L) - TW	106	0.34	0.84
Fluoride Residual, On-Line (mg/L) - TW	8760	0.29	1.09

NOTE: Spikes/Drops to zero recorded by on-line instrumentation were a result of air bubbles and various maintenance/calibration activities. All spikes are reviewed for compliance with MDWL.

Inorganic Parameters

These parameters are tested as a requirement under 170/03. Sodium and Fluoride are required to be tested every 5 years. Nitrate and Nitrite are tested quarterly and the metals are tested annually, as required under 170/03. 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
- BDL = Below the laboratory detection level

	Sample Date (yyyy/mm/dd)	Sample Result mg/L	MAC mg/L	No. of Exceedances	
				MAC	1/2 MAC
Treated Water					
Antimony: Sb (mg/L) - TW	2023/01/03	1.9	6.0	No	No

	Sample Date (yyyy/mm/dd)	Sample Result mg/L	MAC mg/L	No. of Exceedances	
				MAC	1/2 MAC
Arsenic: As (mg/L) - TW	2023/01/03	<MDL 1.0	10.0	No	No
Barium: Ba (mg/L) - TW	2023/01/03	<MDL 10.0	1000.0	No	No
Boron: B (mg/L) - TW	2023/01/03	<MDL 10.0	5000.0	No	No
Cadmium: Cd (mg/L) - TW	2023/01/03	<MDL 0.1	5.0	No	No
Chromium: Cr (mg/L) - TW	2023/01/03	<MDL 1.0	50.0	No	No
Mercury: Hg (mg/L) - TW	2023/01/03	<MDL 0.1	1.0	No	No
Selenium: Se (mg/L) - TW	2023/01/03	<MDL 1.0	50.0	No	No
Uranium: U (mg/L) - TW	2023/01/03	<MDL 1.0	20.0	No	No
Additional Inorganics					
Fluoride (mg/L) - TW	2023/12/27	0.46	1.5	No	No
Nitrite (mg/L) - TW	2023/01/03	<MDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2023/04/03	<MDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2023/07/04	<MDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2023/10/03	<MDL 0.1	1.0	No	No
Nitrate (mg/L) - TW	2023/01/03	0.26	10.0	No	No
Nitrate (mg/L) - TW	2023/04/03	0.25	10.0	No	No
Nitrate (mg/L) - TW	2023/07/04	0.18	10.0	No	No
Nitrate (mg/L) - TW	2023/10/03	0.20	10.0	No	No
Sodium: Na (mg/L) - TW	2023/01/03	15.0	20.0*	No	Yes

*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: Lead

The Schedule 15 Sampling is required under MDWL. This system is under the plumbing exemption, therefore, hydrant samples only were collected. (*Lead will be sampled in 2024 – every 3 years)

Distribution System	Number of Sampling Points	Number of Samples	Range of Results		MAC (mg/L)	Number of Exceedances
			Minimum	Maximum		
Alkalinity (mg/L)	4	8	31	37	500	0
pH	4	8	7.29	7.67	8.5	0
Lead (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A

Organic Parameters

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

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Treated Water					
Alachlor (ug/L) - TW	2023/01/03	<MDL 0.5	5.00	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	2023/01/03	<MDL 1.0	5.00	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Azinphos-methyl (ug/L) - TW	2023/01/03	<MDL 2.0	20.00	No	No
Benzene (ug/L) - TW	2020/01/03	<MDL 0.5	1.00	No	No
Benzo(a)pyrene (ug/L) - TW	2023/01/03	<MDL 0.01	0.01	No	Yes*
Bromoxynil (ug/L) - TW	2023/01/03	<MDL 0.5	5.00	No	No
Carbaryl (ug/L) - TW	2023/01/03	<MDL 5.0	90.00	No	No
Carbofuran (ug/L) - TW	2023/01/03	<MDL 5.0	90.00	No	No
Carbon Tetrachloride (ug/L) - TW	2023/01/03	<MDL 0.2	2.00	No	No
Chlorpyrifos (ug/L) - TW	2023/01/03	<MDL 1.0	90.00	No	No
Diazinon (ug/L) - TW	2023/01/03	<MDL 1.0	20.00	No	No
Dicamba (ug/L) - TW	2023/01/03	<MDL 1.0	120.00	No	No
1,2-Dichlorobenzene (ug/L) - TW	2023/01/03	<MDL 0.4	200.00	No	No
1,4-Dichlorobenzene (ug/L) - TW	2023/01/03	<MDL 0.4	5.00	No	No
1,2-Dichloroethane (ug/L) - TW	2023/01/03	<MDL 0.5	5.00	No	No
1,1-Dichloroethylene (ug/L) - TW	2023/01/03	<MDL 0.5	14.00	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2023/01/03	<MDL 4.0	50.00	No	No
2,4-Dichlorophenol (ug/L) - TW	2023/01/03	<MDL 1.0	900.00	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2023/01/03	<MDL 1.0	100.00	No	No
Diclofop-methyl (ug/L) - TW	2023/01/03	<MDL 0.9	9.00	No	No
Dimethoate (ug/L) - TW	2023/01/03	<MDL 2.5	20.00	No	No
Diquat (ug/L) - TW	2023/01/03	<MDL 5.0	70.00	No	No
Diuron (ug/L) - TW	2023/01/03	<MDL 10.0	150.00	No	No
Glyphosate (ug/L) - TW	2023/01/03	<MDL10.0	280.00	No	No
Malathion (ug/L) - TW	2023/01/03	<MDL 0.5	190.00	No	No
2-Methyl-4-chlorophenoxyacetic Acid (MCPA) (ug/L) - TW	2023/01/03	<MDL 1.0	100.00	No	No
Metolachlor (ug/L) - TW	2023/01/03	<MDL 1.0	50.00	No	No
Metribuzin (ug/L) - TW	2023/01/03	<MDL 5.0	80.00	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2023/01/03	<MDL 0.5	80.00	No	No
Paraquat (ug/L) - TW	2023/01/03	<MDL 1.0	10.00	No	No
PCB (ug/L) - TW	2023/01/03	<MDL 0.1	3.00	No	No
Pentachlorophenol (ug/L) - TW	2023/01/03	<MDL 1.0	60.00	No	No
Phorate (ug/L) - TW	2023/01/03	<MDL 0.5	2.00	No	No
Picloram (ug/L) - TW	2023/01/03	<MDL 5.0	190.00	No	No
Prometryne (ug/L) - TW	2023/01/03	<MDL 0.25	1.00	No	No
Simazine (ug/L) - TW	2023/01/03	<MDL 1.0	10.00	No	No
Terbufos (ug/L) - TW	2023/01/03	<MDL 0.4	1.00	No	No
Tetrachloroethylene (ug/L) - TW	2023/01/03	<MDL 0.3	10.00	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2023/01/03	<MDL 1.0	100.00	No	No
Triallate (ug/L) - TW	2023/01/03	<MDL 1.0	230.00	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Trichloroethylene (ug/L) - TW	2023/01/03	<MDL 0.3	5.00	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2023/01/03	<MDL 0.7	5.00	No	No
Trifluralin (ug/L) - TW	2023/01/03	<MDL 1.0	45.00	No	No
Vinyl Chloride (ug/L) - TW	2023/01/03	<MDL 0.2	1.00	No	No
Distribution Water					
Trihalomethane: Total (ug/L) Annual Average - DW	2023	92.1	100.00	No	Yes
HAA: Total (ug/L) Annual Average - DW	2023	92.2	80.0	Yes	Yes

MAC = Maximum Allowable Concentration, as per O. Reg. 169/03
*BDL = Below the laboratory detection level

Additional Legislated Samples

Legislation	Sample	Parameter	Date	Sample Result (mg/L)	Total Chlorine Residual (mg/L)
MDWL	Backwash Effluent	Total Suspended Solids - TSS	January	**NS	NS
			February	NS	NS
			March	NS	NS
			April	NS	NS
			May	NS	NS
			June	NS	NS
			July	NS	NS
			August	NS	NS
			September	NS	NS
			October	NS	NS
			November	NS	NS
			December	NS	NS
			Annual Average	NA	NA

**NS – Not Sampled – OCWA/Town decided to have the supernatant from the backwash tanks to be discharged to the sewage pumping station on-site at the water treatment plant, that is then, conveyed through the sewage collection system to the wastewater treatment plant. Therefore, monthly sampling of the TSS and total chlorine were not performed for this reporting period. (Approved by local MECP office).

Major Maintenance Summary (Capital)

WO #	Description
3203019	Miscellaneous capital purchases for gel-filled probe and sample cell, tubing, gauge, batteries for cordless phone, LED lights, spare parts kit, masonry cleaner, diaphragm, compressor maintenance, head slurry, motor repair, and other hardware.
3203052	Costs for additional sampling for 2023 for the POTS team, distribution samples done for contractors, and Caduceon comparative sampling.
3203060	Replacement reference probe for the fluoride analyzer.

WO #	Description
3203398	Replacement pH probes for the water treatment plant.
3204649	Replacement of heating system boiler.
3205020	Replacement and fabrication of leaking raw water pipe trunk line into plant.
3247829	SCADA repairs from deficiencies.
3287220	Electrical repairs done by contractor at plant.
3339880	Purchase of parts for Depolox chlorine analyzers.
3340675	Miscellaneous capital purchases.
3340920	Replacement of Dart Controller Pre-soda ash and connect turbidity analyzer to SCADA.
3383723	Purchase of a raw water positioner for actuating the raw water valve controlling the flow into the plant.
3431522	Costs for maintenance on air compressor/dryer.
3431709	Costs for intake structures inspection.
3431717	SCADA change for low alum/raw water low alarm.
3432898	Purchase and installation of a new air conditioner in the control room.
3433421	Purchase of a new SWAN Fluoride analyzer.
3481723	Miscellaneous capital purchases including battery for DO tester, hoses, adaptors, couplings, belts for roof top fans, parts to repair cracked fluoride receiving pipe, Chemline union socket, stainless coupers, cam and groove fittings, belt and wheel roller, chemical pump motor replacement, shaft for guide wheels, winding connection on back wash pump, PM on boilers, paint for lab, and ferroin indicator/nitrate titrant (boilers).
3481759	Purchase of Rosemount pH probe sensor as spare.
3572986	Replacement of cupboards and countertops for laboratory.
3573424	Costs for spare DC Dive and Dart Controller for chemical feed pumps.
3622798	Miscellaneous capital purchases including CL 17 Kit, heater fan motors, paddle flow switch, plunger, dehumidifier motor, process vial, semi annual compressor maintenance, backwash pump repair, coiled bulbs, and other hardware.
3623299	Replacement of two chlorine gas transfer valves.

Distribution Maintenance/Activities

Date	Details
Jan 2023	Water service line repair on Northbrook Road. All routine water sampling, tower inspections and booster stations inspections completed in every month for 2023. Twelve (12) ¾-inch live taps on water main at Radtke subdivision completed.
Feb 2023	Three (3) Water turn offs on Petawawa Blvd (2) and on Wolfe Avenue (1).

Date	Details
	One (1) Water service valve repair on Wolfe Avenue. Locates and work area isolation for service valve repair.
Mar 2023	Finished activities mentioned for Feb 2023.
Apr 2023	One (1) Community Complaint: Kramer Avenue – Staff shut off water to residence to accommodate the repair of broken water pipe in bathroom. Annual spring hydrant inspections, testing and flushing commenced.
May 2023	Two (2) Community Complaint: John Street & Roy Street– Service leaks – replaced curb stop at both locations and also the service line on Roy Street. Annual hydrant inspections and water main flushing continued.
Jun 2023	Spring hydrant flushing was completed. Routine operations and maintenance activities for the rest of the month.
Jul 2023	Routine operations and maintenance activities for the month of July. Annual spring hydrant inspections and testing continued in July.
Aug 2023	Routine operations and maintenance activities for the month of August. Annual hydrant inspections and testing continued into August.
Sept 2023	One (1) AWQI to MECP SAC, MOH, and client from Laboratory for Lead Exceedance at residence on Spruce Street – tested on request of owner for insurance purposes. Routine operations and maintenance activities for the month of September. Annual hydrant inspections and testing continued into September.
Oct 2023	Routine operations and maintenance activities for the month of October. Annual hydrant inspections and testing continued into October.
Nov 2023	Routine operations and maintenance activities for the month of November. Annual hydrant inspections and testing continued into November.
Dec 2023	AWQI #164295 reported to MECP SAC, MOH, and client for Q4-2023 exceedance for the HAA RAA. Routine operations and maintenance activities for the month of December. Annual hydrant inspections and testing continued into December.

Appendix A - WTRS Data and Submission Confirmation

Ontario

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: 3814-9J2RQN
Permit Holder: THE CORPORATION OF THE TOWN OF PETAWAWA.
Received on:Jan 29, 2024 8:34 AM

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.

Return to Main Page

TOWN2 PETAWAWA2 | 2024/01/29
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