Morrisburg Wastewater System

Waterworks # 120000168

Annual Report

Prepared By The Municipality of South Dundas

Reporting Period of January 1st – December 31st 2024

Issued: February 27, 2025

Revision: 0

Operating Authority:

The Municipality of SOUTH DUNDAS

This report has been prepared to meet the requirements set out in:

Document	Document#	Issue Date	Issue Number
Facility ECA	2147-734L2K	August 28, 2007	N/A
ECA for Municipal Sewage Collection System	165-W601	June 2, 2023	1.0

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1. Revision History

Date	Revision #	Revision Notes	Revised By
February 27, 2024	0	Annual report issued	Chelsea Fletcher, PCT Municipality of South Dundas

2. Operations and Compliance Reliability Indices

Compliance Event	# of Events
Ministry of Environment Inspections	- No MECP inspections in 2024
Ministry of Labour Inspections	- No Ministry of Labour Inspections in 2024
Non- Compliance	- No non-compliance reported in 2024
Community Complaints	- No community complaints outside sewer main blockages in 2024
Spills	- No spills reported in 2024
Overflows	- No overflow events reported in 2024
Bypass	- No bypass events in 2024
Sewer main blockages	- No sewer main blockages in 2024

3. Process Description

Morrisburg's sewage collection system is a gravity fed sanitary sewage collection system. There is one pumping station which pumps wastewater from the collection system to the wastewater treatment facility.

Morrisburg's wastewater treatment plant (WWTP) is a Class II Wastewater Treatment System owned and operated by the Municipality of South Dundas. Raw sewage is pumped to the WWTP from the plant pumping station, which is equipped with four submersible pumps. From the pumping station wastewater passes through the inlet works, including fine screens with a screw compactor and a grit removal and disposal system. Aluminum Sulphate is added to assist in phosphorous removal. The wastewater then moves through either of two parallel Sequencing Batch Reactors (SBRs) equipped with individual aeration systems, mixers, decanters and sludge removal pumps. Effluent decanted from the SBRs is treated by UV disinfection and subsequently passes through an outfall pipe to the St. Lawrence River.

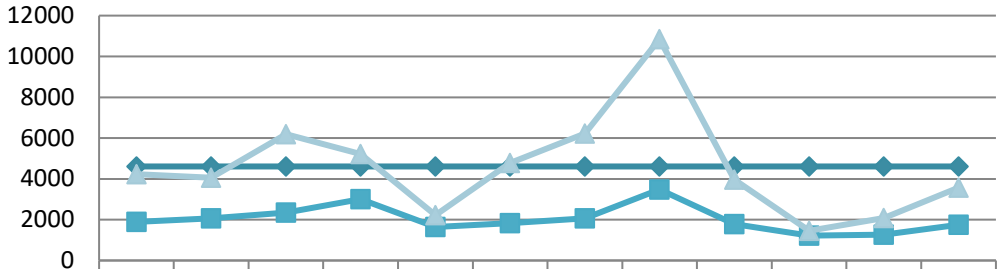
The Morrisburg WWTP can receive septage. Septage can be transferred to the influent fine screens from the onsite holding tank by two dry-pit pumps.

Sludge removed from the SBRs is transferred to a 140 m3 storage tank. From the tank, the sludge enters a gravity belt thickener. The thickened sludge is then pumped to an Autothermal Thermophilic Aerobic Digestion (ATAD) system for stabilization. The digested sludge is subsequently pumped to a 1480 m3 biosolids storage tank. From the storage tank, biosolids are hauled off site to be utilized as soil conditioner.

4. Treatment Flows

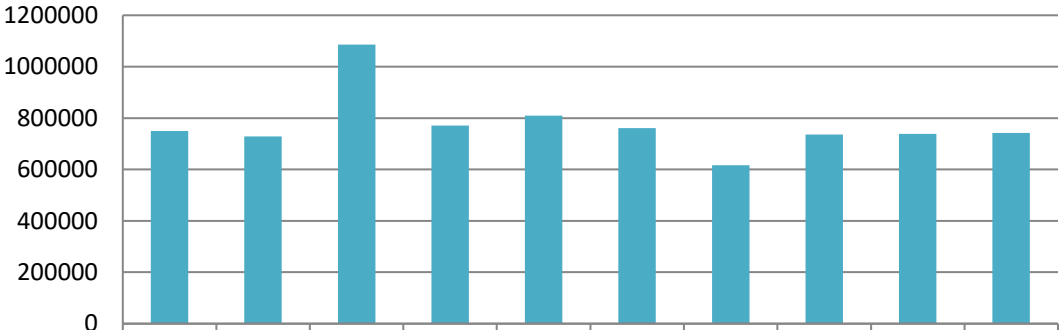
The hydraulic flows reaching the treatment facility in 2024 averaged 2,029 m3/day, which represents 44% of the 4,608 m3/day design.

4.1. Raw Flows (m3/day)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable (m3/d)	4608	4608	4608	4608	4608	4608	4608	4608	4608	4608	4608	4608
Avg (m3/d)	1898	2060	2348	3004	1639	1822	2072	3481	1789	1220	1265	1749
Max Flow (m3/d)	4231	4052	6192	5209	2223	4776	6215	10849	3957	1457	2076	3578

4.1.1. Annual Comparison (m3)



	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Total Annual Flow	749330	728663	1086352	770483	809701	760358	616699	736204	738082	742743

4.2. Effluent Flow

A total of 742,743 m^3 of effluent was discharged form Morrisburg's WWTP in 2024

4.3. Imported Waste/Sludge

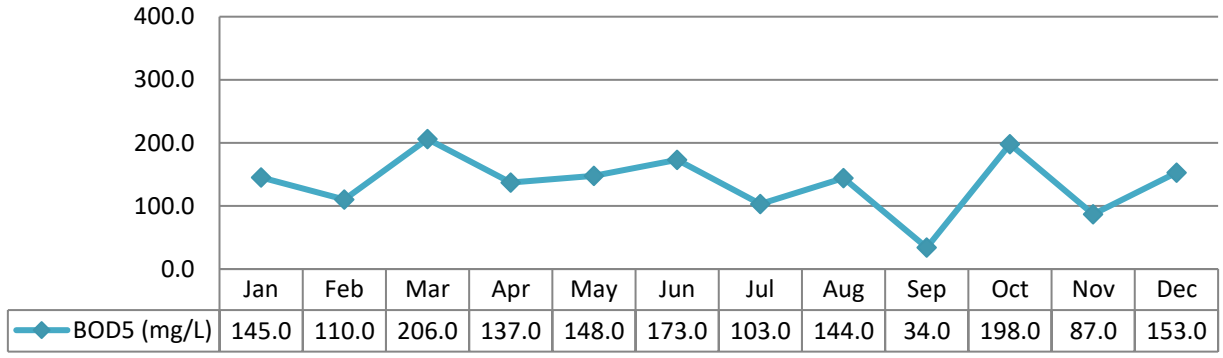
There was no imported waste or sewage accepted at this facility in 2024.

5. Raw Sewage Quality

Current year minimum, maximum and averages are available in Appendix A – Performance Assessment Report.

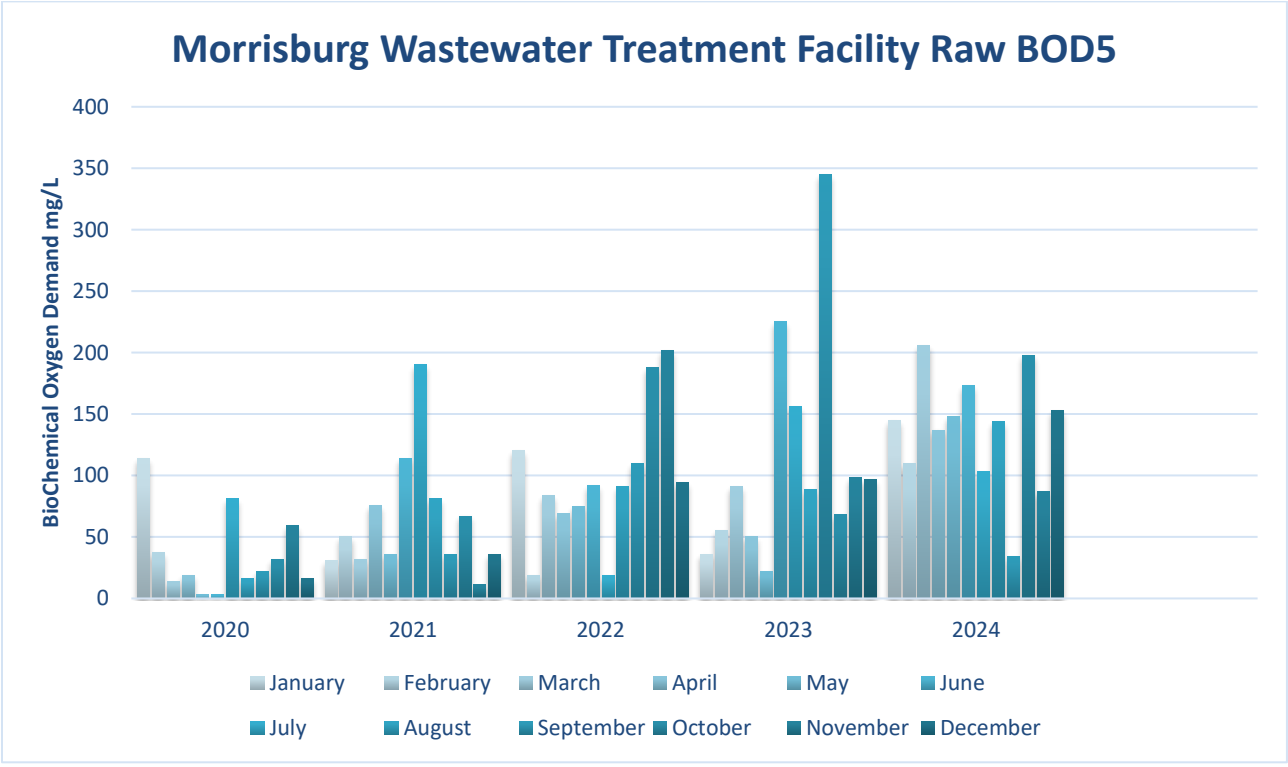
5.1. Influent Trending

5.1.1. BOD5 (mg/L)

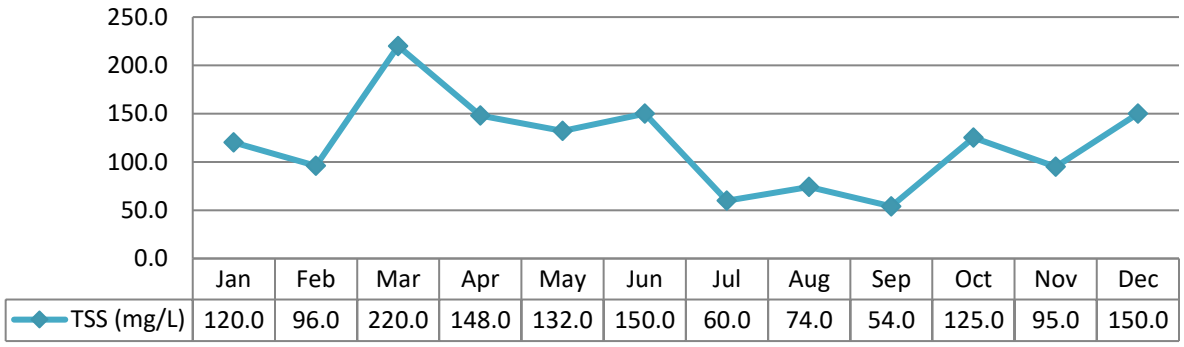


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BOD5 (mg/L)	145.0	110.0	206.0	137.0	148.0	173.0	103.0	144.0	34.0	198.0	87.0	153.0

5.1.2. Influent - 5 Year Biochemical Oxygen Demand Comparison (mg/L)

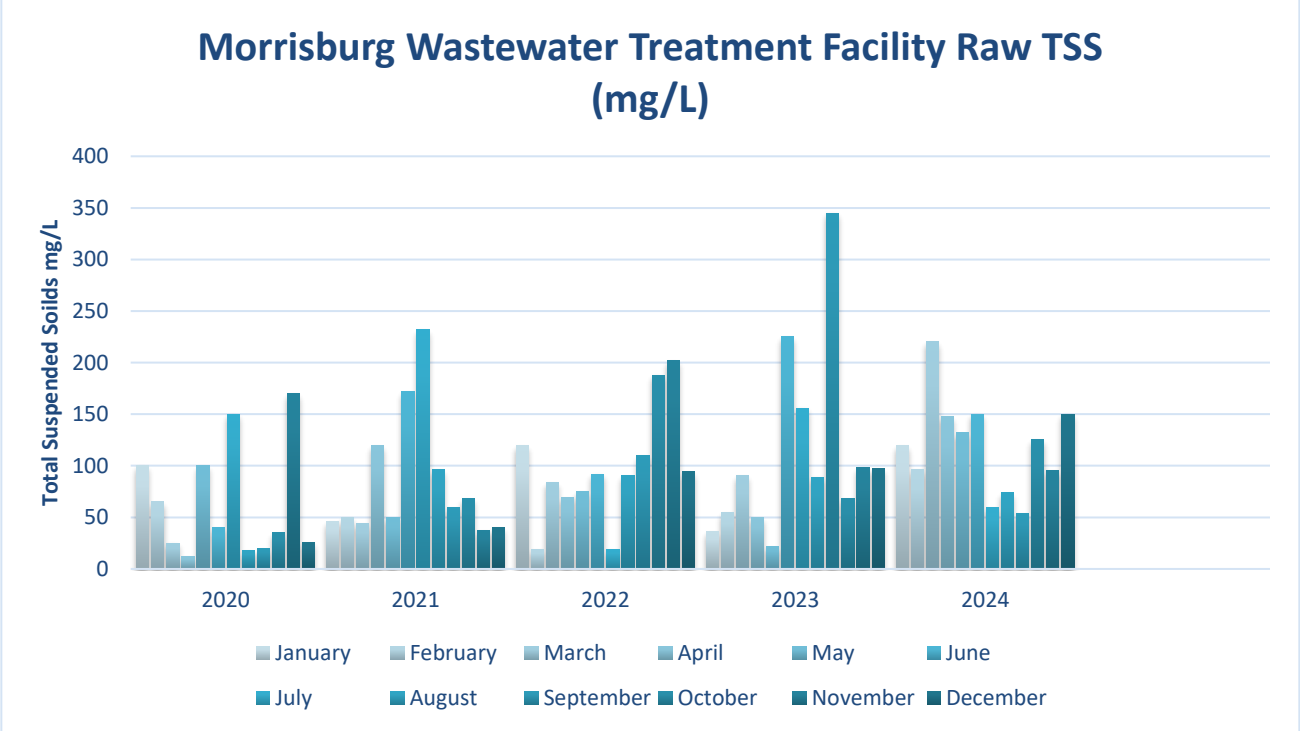


5.1.3. *Influent - Total Suspended Solids (mg/L)*

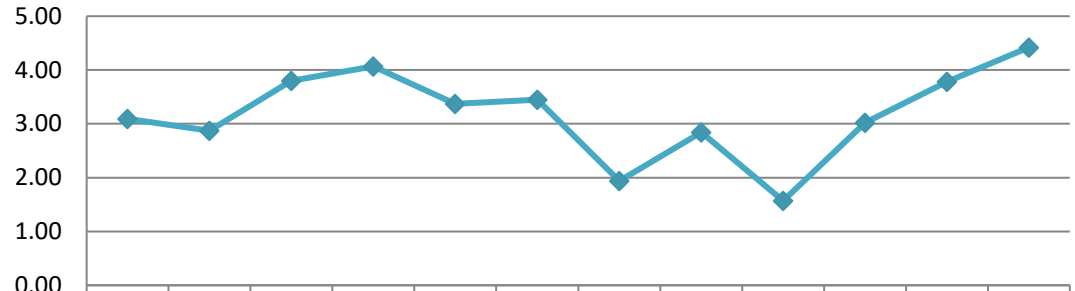


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
TSS (mg/L)	120.0	96.0	220.0	148.0	132.0	150.0	60.0	74.0	54.0	125.0	95.0	150.0

5.1.4. *Influent – 5 Year Total Suspended Solids (mg/L)*

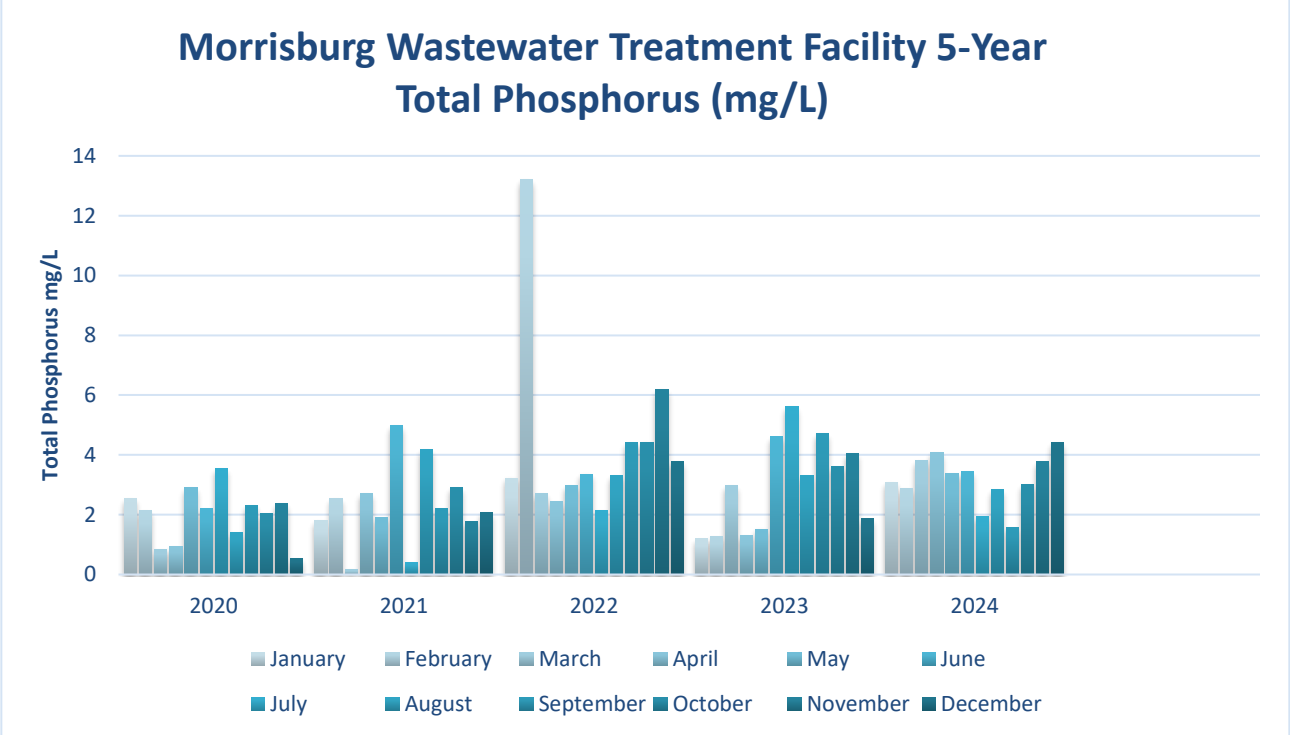


5.1.5. *Influent - Total Phosphorus (mg/L)*

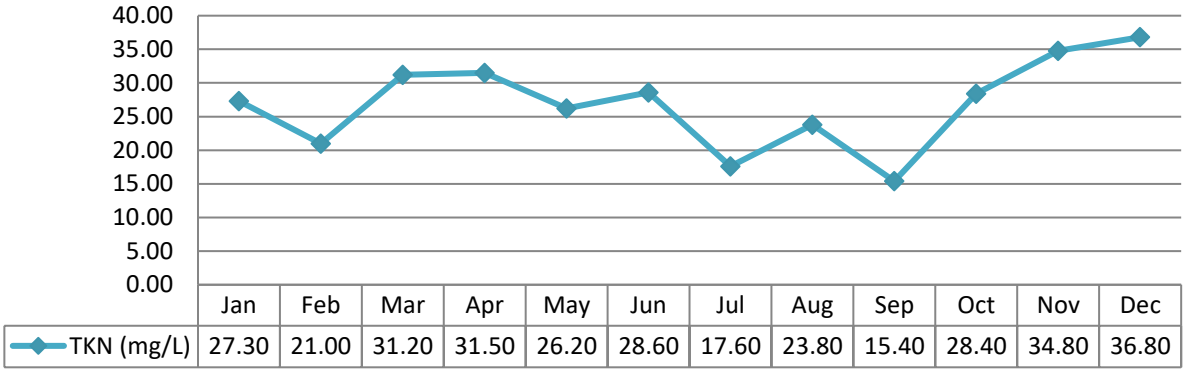


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total Phosphorus (mg/L)	3.09	2.87	3.80	4.07	3.37	3.45	1.94	2.84	1.57	3.02	3.78	4.42

5.1.6. *Influent – 5 Year Total Phosphorus (mg/L)*

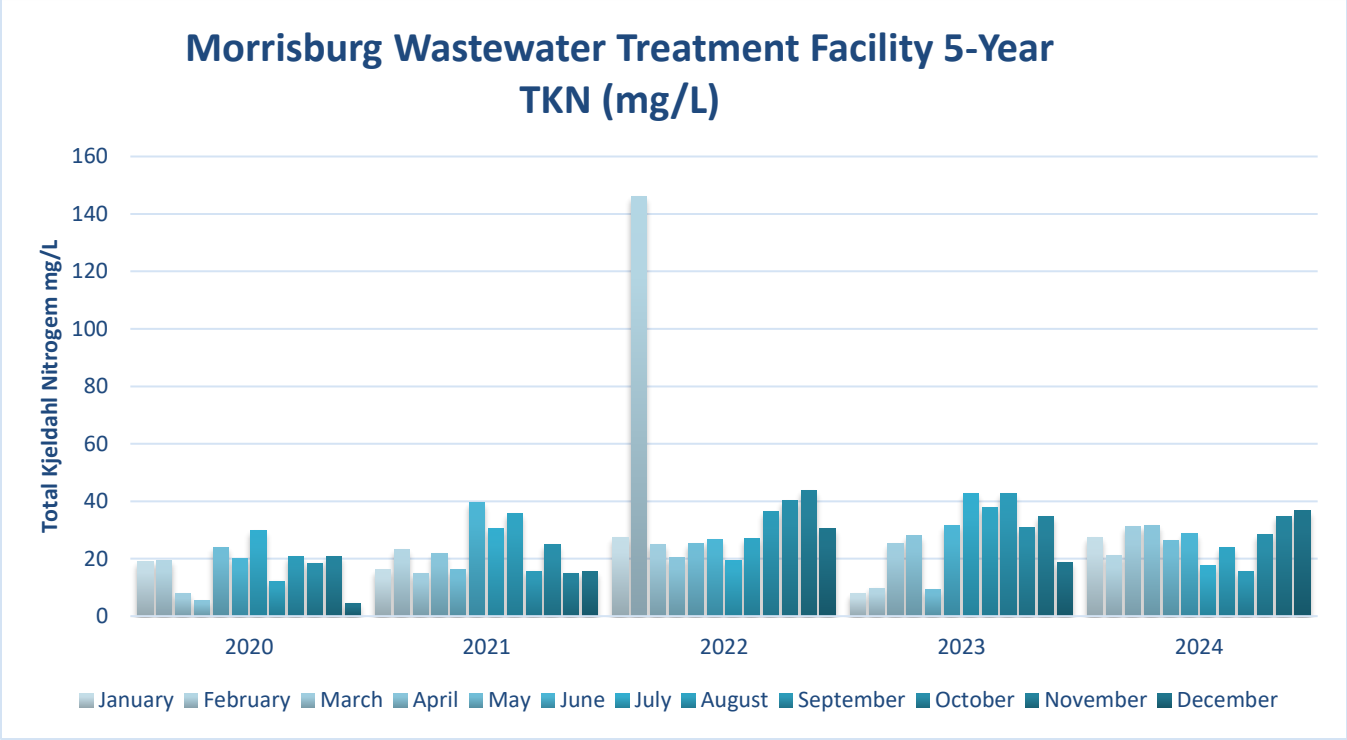


5.1.7. *Influent - Total Kjeldahl Nitrogen (TKN) (mg/L)*

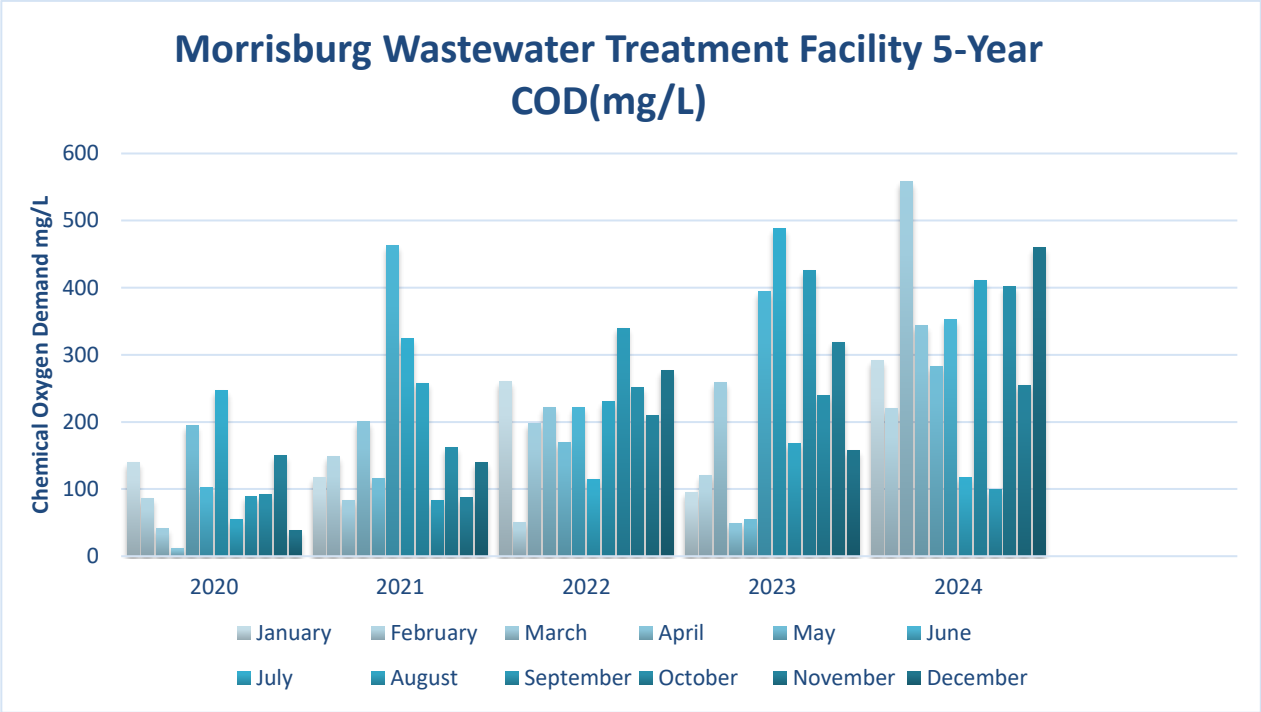


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
TKN (mg/L)	27.30	21.00	31.20	31.50	26.20	28.60	17.60	23.80	15.40	28.40	34.80	36.80

5.1.8. *Influent – 5 Year Total Kjeldahl Nitrogen (TKN) (mg/L)*



5.1.9. *Influent – 5 Year Chemical Oxygen Demand (COD) (mg/L)*



5.2. Imported Waste Quality

There was no imported waste or sewage accepted at this facility in 2024

6. Effluent Quality

The monthly average concentrations of carbonaceous biochemical oxygen demand (CBOD5), total suspended solids (TSS), total phosphorus (TP) and total ammonia nitrogen (TAN) remained below the effluent objectives and limits outlined in the facility's Certificate of Approval during 2024. The geometric mean density of E. coli in the effluent also remained below the ECA limit and objective in 2024. In addition the effluent pH remained within the limits and objectives throughout the year.

Effluent results from the WWTP for 2024 are tabulated below. Additional data can be found in the Performance Assessment Reports attached in Appendix A.

6.1. Effluent Quality Assurance and Control Measures Taken

This system is part of the Municipality of South Dundas. Operational Services are delivered by Municipal staff. The systems are operated to meet compliance with applicable regulations. The system has comprehensive manuals detailing operations, maintenance, instrumentation, and emergency procedures. All procedures are treated as active documents and are updated as required. These documents are also part of the Municipality's Quality & Environmental Management System.

The process is reviewed and maintained by certified operators. These operator's complete in-house rounds and testing to monitor the process. All sampling and analysis follow approved methods and protocols for sampling, analysis and recording as specified in the Ministry's Procedure F-10-1, "Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works", the Ministry's publication, "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" and the publication, "Standard Methods for the Examination of Water and Wastewater".

All final effluent samples collected during the reporting period to meet legislated sampling requirements are submitted to Caduceon Ottawa for analysis, with the exception of pH and temperature. Caduceon Ottawa has been deemed accredited by the Canadian Association for Laboratory Accreditation (CALA), meeting strict provincial guidelines including an extensive quality assurance/quality control program. By choosing this laboratory, the Municipality of South Dundas is ensuring appropriate control measures are undertaken during sample analysis. The pH and temperature parameters are analyzed in the field at the time of sample collection by certified operators, to ensure accuracy and precision of the results obtained.

South Dundas uses a data management system maintained by staff, which includes:

- SharePoint – Municipality of South Dundas Water/Wastewater Site.
    - This online database consolidates all operational data from a variety of sources including field data, online instrumentation, and electronic receipt of lab test results for reporting, tracking and analysis.

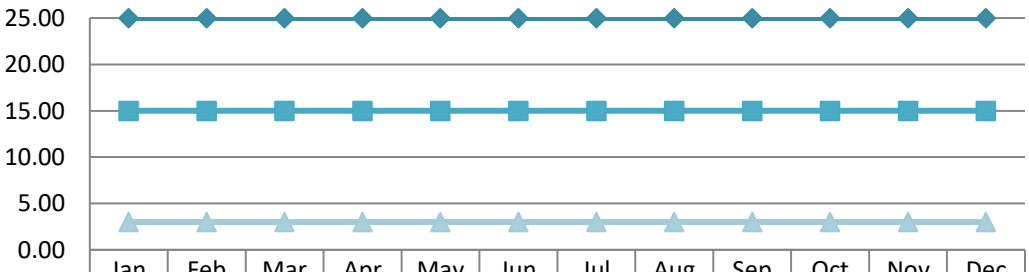
The operations team also has access to in-house Operational Compliance and Process Technicians (PCTs) to assist for emerging process issues. This aids in establishing additional control measures to ensure a quality effluent product.

Detailed individual sample results for both raw sewage and final effluent can be requested from the operating authority.

6.2. CBOD5 mg/L

Compliance Limit and Objective for this parameter was met for 2024.

6.2.1. Effluent – CBOD5 Concentration

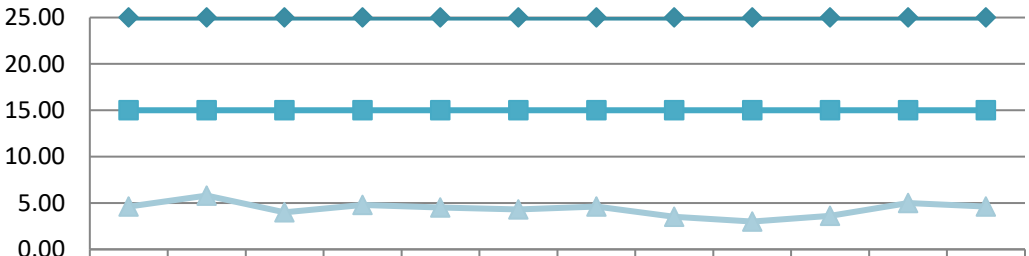


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ECA Limit	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
ECA Objective	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Average (mg/L)	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00

6.3. Total Suspended Solids (TSS) (mg/L)

Compliance limit and Objective for this parameter was met in 2024.

6.3.1. Effluent – TSS Concentration (mg/L)

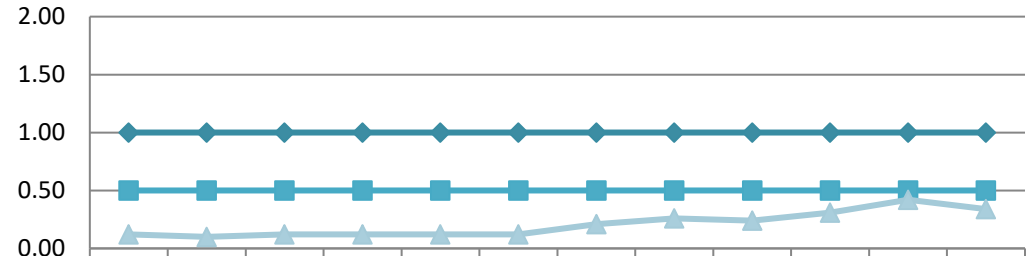


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ECA Limit	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
ECA Objective	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Average (mg/L)	4.60	5.80	4.00	4.80	4.50	4.30	4.60	3.50	3.00	3.60	5.00	4.60

6.4. Total Phosphorus (mg/L)

Compliance Limit and Objective for this parameter was met in 2024.

6.4.1. Effluent – Total Phosphorus Concentration (mg/L)

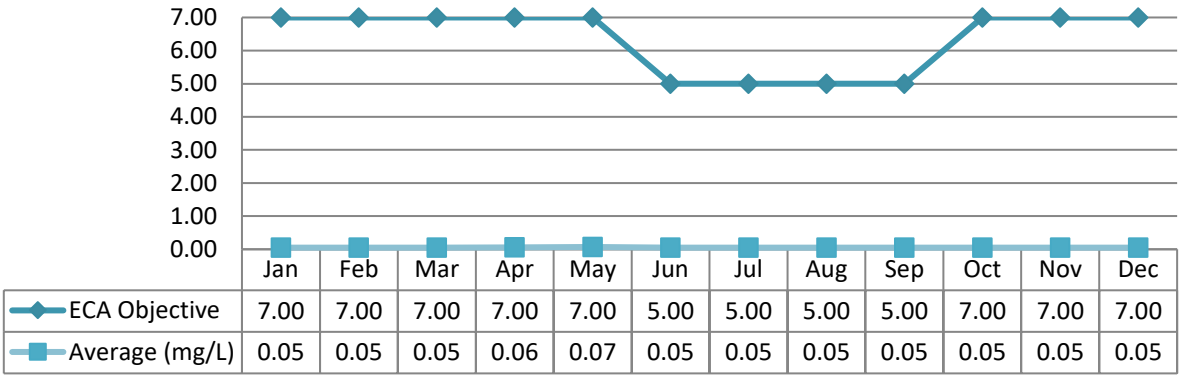


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ECA Limit	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
ECA Objective	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Average (mg/L)	0.12	0.10	0.12	0.12	0.12	0.12	0.21	0.26	0.24	0.31	0.42	0.34

6.5 Total Ammonia Nitrogen (TAN) (mg/L)

There is no Compliance Limit for this parameter. Both the June to September Compliance Objective for this parameter and the October to May Compliance Objective were met in 2024

6.4.2. Effluent – Total Ammonia Nitrogen Concentration (mg/L)

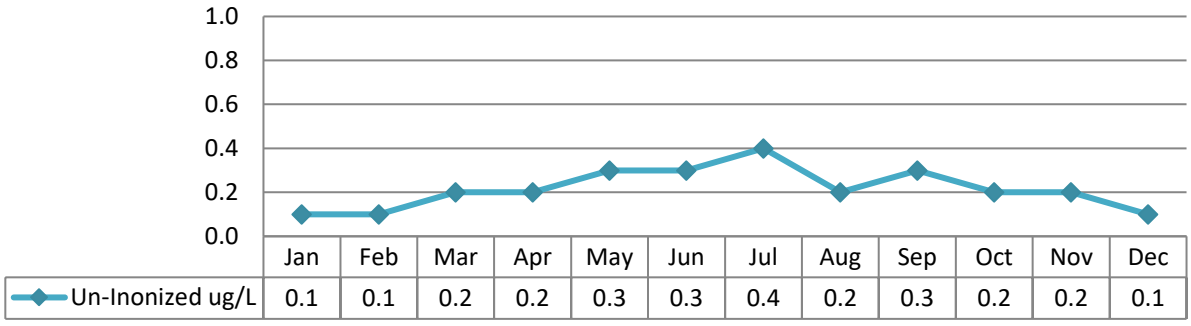


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ECA Objective	7.00	7.00	7.00	7.00	7.00	5.00	5.00	5.00	5.00	7.00	7.00	7.00
Average (mg/L)	0.05	0.05	0.05	0.06	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.05

6.5 Un-Ionized Ammonia (ug/L)

There is no Compliance Limit of Objective for this parameter.

6.4.3. Effluent – Un-Ionized Ammonia Concentration

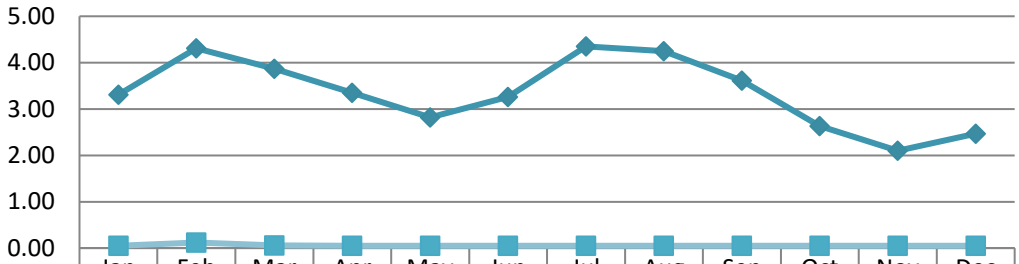


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Un-Inonized ug/L	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.2	0.3	0.2	0.2	0.1

6.5. Nitrate, Nitrite (mg/L)

There is no Compliance Limit or Objective for these parameters.

6.5.1. *Effluent – Nitrate, Nitrite Concentration*



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Nitrate mg/L	3.31	4.31	3.87	3.35	2.82	3.26	4.35	4.25	3.61	2.63	2.10	2.47
Nitrite mg/L	0.05	0.12	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05

6.6. Regulatory Sample Results Summary

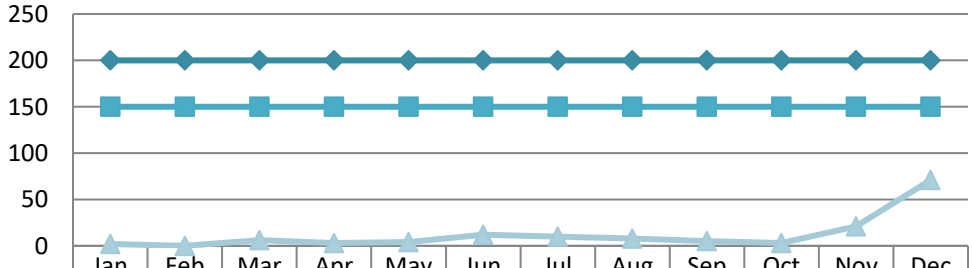
There was one (1) effluent sample collected in 2024 and tested for acute lethality to Rainbow Trout and Daphnia Magna. Results are displayed as % mortality. An adverse result is indicated by a > 50% mortality rate. Compliance Limit for this parameter was met in 2024.

Date	Rainbow Trout	Daphnia Magna
January 9, 2025	0%	0%

6.7. E-Coli

Compliance Limit and Objective for this parameter was met in 2024.

6.7.1. *E. Coli Monthly Geometric Mean Density (cfu/100ml):*

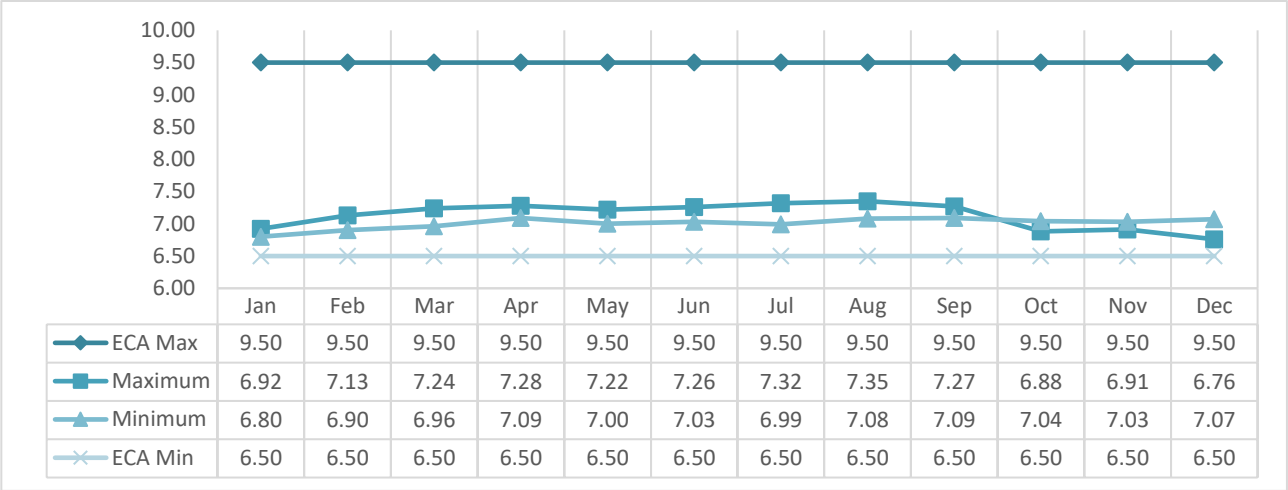


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ECA Limit	200	200	200	200	200	200	200	200	200	200	200	200
ECA Objective	150	150	150	150	150	150	150	150	150	150	150	150
Average cfu/100ml	2.00	0.00	6.00	3.00	4.00	12.00	10.00	8.00	5.00	3.00	21.00	71.00

6.8. pH

Compliance Limit and Objective range for this parameter is 6.0 – 9.5. The parameter was met in 2024. Each instance the pH is outside of that range is reported as a non-compliance.

6.8.1. *Effluent – pH Minimum and Maximum*

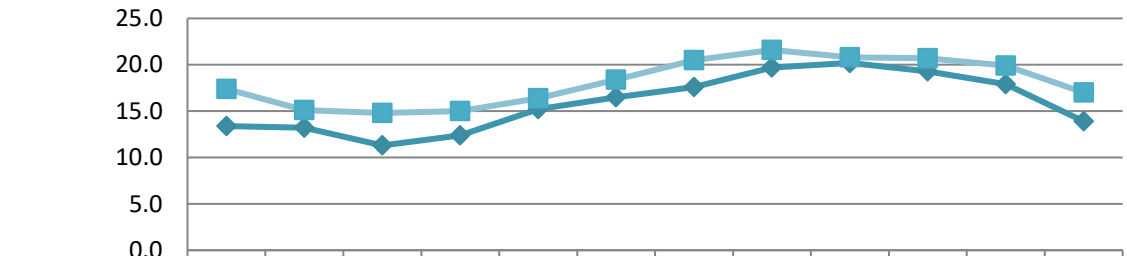


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ECA Max	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50
Maximum	6.92	7.13	7.24	7.28	7.22	7.26	7.32	7.35	7.27	6.88	6.91	6.76
Minimum	6.80	6.90	6.96	7.09	7.00	7.03	6.99	7.08	7.09	7.04	7.03	7.07
ECA Min	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50

6.9. Temperature

There are no Compliance Limits or Objectives defined for Effluent Temperature.

6.9.1. *Effluent – Temperature Minimum and Maximum*



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Minimum	13.4	13.2	11.3	12.4	15.2	16.5	17.6	19.7	20.2	19.3	17.9	13.9
Maximum	17.4	15.1	14.8	15.0	16.4	18.4	20.5	21.6	20.8	20.7	19.9	17.0

7.0. Operating Issues

There were no operating issues to report in 2024.

7.1. Effluent Quality Non-Compliance Summary

Date	Exceedance of	Limit	Value	Corrective Action
No objective or limit exceedances in 2024				

7.2. Summary of Abnormal Sewage Discharge Events

Abnormal Discharge Events include Bypass', Overflows, Diversions and Spills of Sewage. Summary Details are included in Appendix B.

7.3. Spills (Other than Sewage)

Date	Location	Details	Volume (m3)	Start Date and Time	End Date and Time
No spills to report in 2024					

8.0. Maintenance

Routine planned maintenance activities:

- Inspect, adjust and calibrate process control equipment to ensure proper operation of water distribution systems, pumps, chemical feeders, and all other equipment installed at the facilities.
- Carry out a routine maintenance program including greasing and oiling as specified in the lubrication schedule.
- Perform day-to-day maintenance duties to equipment including checking machinery and electrical equipment when required.
- Maintain an equipment inventory.
- Maintain accurate records of work conducted, activities, and achievements.

Unplanned maintenance is conducted as required.

8.1. Normal Maintenance and Repairs

Maintenance/Repair
- Routine MWWTP lift station cleaning in April, July, October and November - UV System repairs done for ballast cards and new UV lights installed - New PowerFlex 70 for ATAD 610 installed. - New 25hp Motor purchased and installed for Jet Pump 620 - Replaced rotameters in headworks - Sludge hauling completed in September

8.2. Emergency Maintenance and Repairs

Maintenance/Repair	Details
No emergency maintenance in 2024	

8.3. Flow Meter Calibrations and Maintenance

Location	Date of Calibration	Additional Maintenance
FIT-370 East Influent Flow Meter	May 28th, 2024	None.
FIT-380 West Influent Flow Meter	May 28th, 2024	None.

8.4. Authorized Alterations in Collection System

Alteration	Details	Significant Drinking Water Threat (Y/N)
No alterations to the collection system in 2024		

8.5. Notice of Modifications

Date	Process	Modification	Status
April 2024	Flowrate Study being conducted by EVB Engineering on behalf of the Municipality for	1 Stingray Logger mounted in manhole	Ongoing until April of 2025

9.0. Sludge Generation

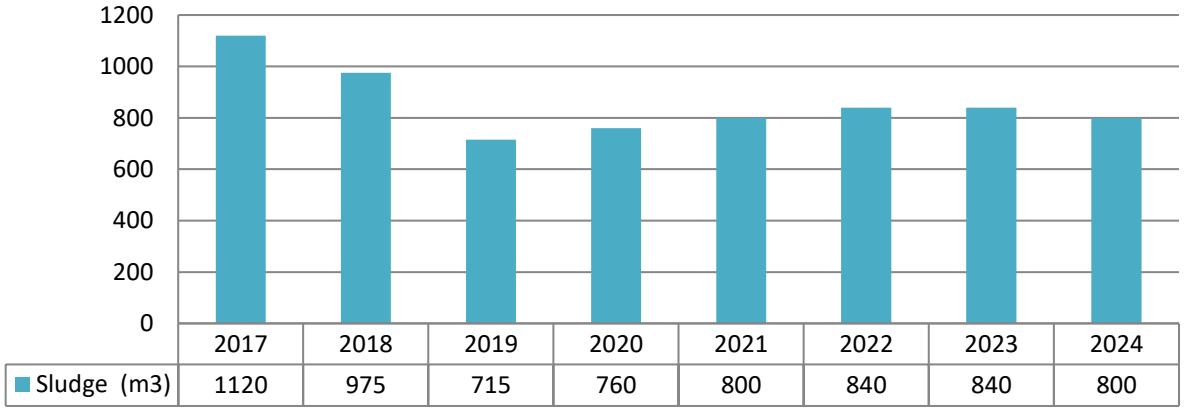
9.1. Sludge Disposal Summary

Date	Disposal Location	Approval Number	Total Volume (m3)
August 13/20, 2024	Township of Edwardsburgh/Cardinal Edwardsburgh, Concession: 5, Lot: 12	ECA # H480300	800

In 2024, a total of 800 m^3 of liquid sludge was removed from Morrisburg's WWTP and was utilized as soil conditioner. The sludge was removed from the WWTP by GFL in August, NASM Plan # 23752. It is anticipated that approximately the same volume of sludge will be generated in 2025

9.2. Annual Comparison (m3/year)

It is anticipated that sludge volumes will remain similar to the 2024 volumes.

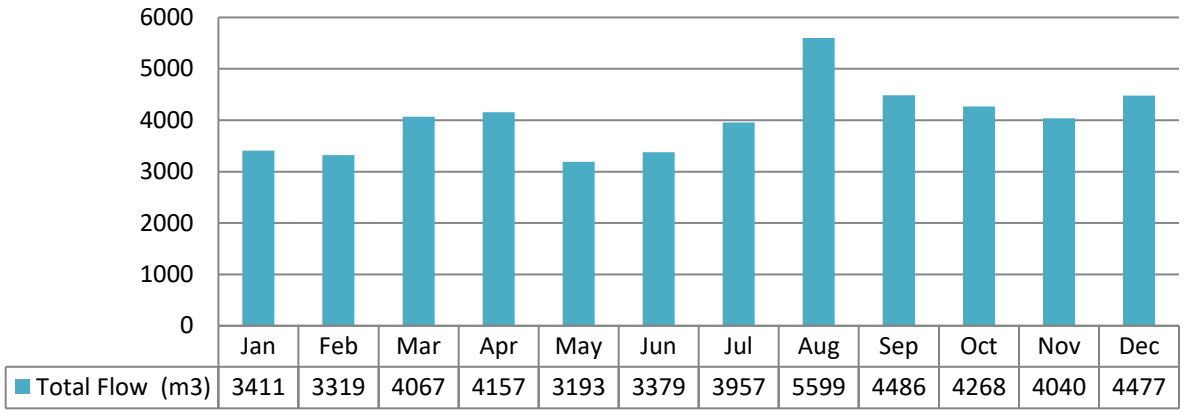


10.0. Summary of Complaints

Location	Date	Nature of Complaint	Actions Taken
No complaints were received during the reporting period			

11.0. Groundwater Pumping Volumes

Groundwater is pumped from the WWTP Building Foundation.



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total Flow (m3)	3411	3319	4067	4157	3193	3379	3957	5599	4486	4268	4040	4477

Appendix A – Performance Assessment Report

MORRISBURG WWTP
PERFORMANCE ASSESSMENT REPORT

MUNICIPALITY: SOUTH DUNDAS
PROJECT: MORRISBURG WWTP
WORKS NUM.: 120000168
DESCRIPTION: TWO SEQUENTIAL BATCH REACTORS AND AEROBIC SLUDGE DIGESTION

YEAR: 2024
WATER COURSE: ST. LAWRENCE
DESIGN CAPACITY: 4,608 m^3/d

MONTH	RAW			RAW				SEPTAGE	GROUNDWATER	SLUDGE
	Total Flow m^3	Avg Day Flow m^3	Max Day Flow m^3/d	Raw BOD (mg/L)	Raw TSS (mg/L)	Raw PHOS. (mg/L)	Raw TKN (mg/L)	Volume Received m^3	Volume Pumped to Storm Sewer m^3	Liquid Sludge Hauled m^3
JAN	58,837	1,898	4,231	145	120	3.09	27.3	0	3411	0
FEB	59,732	2,060	4,052	110	96	2.87	21.0	0	3319	0
MAR	72,802	2,348	6,192	206	220	3.80	31.2	0	4067	0
APR	90,110	3,004	5,209	137	148	4.07	31.5	0	4157	0
MAY	50,820	1,639	2,223	148	132	3.37	26.2	0	3193	0
JUN	54,657	1,822	4,776	173	150	3.45	28.6	0	3379	0
JUL	64,218	2,072	6,215	103	60	1.94	17.6	0	3957	0
AUG	107,908	3,481	10,849	144	74	2.84	23.8	0	5599	800
SEPT	53,662	1,789	3,957	134	54	1.57	15.4	0	4486	0
OCT	37,823	1,220	1,457	198	125	3.02	28.4	0	4268	0
NOV	37,961	1,265	2,076	87	95	3.78	34.8	0	4040	0
DEC	54,212	1,749	3,578	153	3	4.42	36.8	0	4477	0
TOTAL	742,743							0	48,352	800
AVG		2,035		145	106	3.19	26.9			
MAX			10,849							
CRITERIA		**4,608**	**18,500**					**8.0**		
COMPLIANCE		**YES**	**YES**							

2024- MORRISBURG WWTP EFFLUENT SAMPLING MONTHLY AVERAGES

MONTH	DATE	CBOD5 (mg/L)		TSS (mg/L)		TP (mg/L)		TAN (mg/L)		E. Coli (CFU/100ml)
January	01-03-2024	<	3		4		0.12	<	0.05	2
	01-09-2024	<	3		5		0.17		0.06	1
	01-16-2024	<	3	<	3		0.12	<	0.05	3
	01-23-2024	<	3		8		0.05	<	0.05	2
	01-30-2024	<	3		3		0.16	<	0.05	3
	Monthly Average		3.0		4.6		0.12		0.05	2
	Compliant?		**YES**		**YES**		**YES**		**N/A**	**YES**
February	02-06-2024	<	3		4		0.08	<	0.05	5
	02-13-2024	<	3		3		0.1	<	0.05	4
	02-20-2024	<	3		10		0.12	<	0.05	0
	02-27-2024	<	3		6		0.08	<	0.05	0
	Monthly Average		3.0		5.8		0.10		0.05	0
	Compliant?		**YES**		**YES**		**YES**		**N/A**	**YES**
March	03-05-2024	<	3		3		0.08	<	0.05	6
	03-12-2024	<	3		6		0.14	<	0.05	3
	03-19-2024	<	3		3		0.11	<	0.05	9
	03-26-2024	<	3		4		0.16	<	0.05	6
	Monthly Average		3.0		4.0		0.12		0.05	6
	Compliant?		**YES**		**YES**		**YES**		**N/A**	**YES**
April	04-02-2024	<	3		6		0.20		0.09	5
	04-09-2024	<	3	<	3		0.09	<	0.05	2
	04-16-2024	<	3	<	3		0.10	<	0.05	4
	04-23-2024	<	3		7		0.09	<	0.05	1
	04-30-2024	<	3		5		0.14		0.06	5
	Monthly Average		3		4.8		0.12		0.06	3
	Compliant?		**YES**		**YES**		**YES**		**N/A**	**YES**
May	05-07-2024	<	3		5		0.12		0.11	6
	05-14-2024	<	3		5		0.17	<	0.05	2
	05-21-2024	<	3		5		0.12	<	0.05	4
	05-28-2024	<	3	<	3		0.08	<	0.05	5
	Monthly Average		3.0		4.5		0.12		0.07	4
	Compliant?		**YES**		**YES**		**YES**		**N/A**	**YES**
June	06-04-2024	<	3	<	3		0.11	<	0.05	29
	06-11-2024	<	3	<	3		0.16	<	0.05	14
	06-18-2024	<	3	<	3		0.08	<	0.05	4
	06-25-2024	<	3		8		0.11		0.05	11
	Monthly Average		3.0		4.3		0.12		0.05	12
	Compliant?		**YES**		**YES**		**YES**		**N/A**	**YES**
July	07-02-2024	<	3		4		0.13	<	0.05	14
	07-09-2024	<	3		5		0.13	<	0.05	15
	07-16-2024	<	3		4		0.26	<	0.05	3
	07-23-2024	<	3		7		0.30	<	0.05	18
	07-30-2024	<	3		3		0.21	<	0.05	24
	Monthly Average		3.0		4.6		0.21		0.05	10
	Compliant?		**YES**		**YES**		**YES**		**N/A**	**YES**
August	08-06-2024	<	3		3		0.21	<	0.05	62
	08-13-2024	<	3		3		0.23	<	0.05	3
	08-20-2024	<	3		4		0.26	<	0.05	11
	08-27-2024	<	3		4		0.32	<	0.05	2
	Monthly Average		3.0		3.5		0.26		0.05	8
	Compliant?		**YES**		**YES**		**YES**		**N/A**	**YES**
September	09-03-2024	<	3		3		0.22		0.06	6
	09-10-2024	<	3		3		0.26	<	0.05	1
	09-17-2024	<	3		3		0.29	<	0.05	7
	09-24-2024	<	3		3		0.19	<	0.05	10
	Monthly Average		3.0		3.0		0.24		0.05	5
	Compliant?		**YES**		**YES**		**YES**		**N/A**	**YES**
October	10-01-2024	<	3		4		0.31	<	0.05	1
	10-08-2024	<	3		3		0.42	<	0.05	1
	10-15-2024	<	3		3		0.33		0.06	4
	10-22-2024	<	3		3		0.26	<	0.05	5
	10-29-2024	<	3		5		0.23	<	0.05	8
	Monthly Average		3.0		3.6		0.31		0.05	3
	Compliant?		**YES**		**YES**		**YES**		**N/A**	**YES**
November	11-05-2024	<	3		3		0.28		0.06	12
	11-12-2024	<	3		7		0.25		0.05	27
	11-19-2024	<	3	<	3		0.24	<	0.05	4
	11-26-2024	<	3		7		0.91	<	0.05	147
	Monthly Average		3.0		5.0		0.42		0.05	21
	Compliant?		**YES**		**YES**		**YES**		**N/A**	**YES**
December	12-03-2024	<	3	<	3		0.44	<	0.05	27
	12-10-2024	<	3		5		0.60		0.06	108
	12-17-2024	<	3		6		0.13	<	0.05	246
	12-23-2024	<	3		3		0.32	<	0.05	36
	12-30-2024	<	3		6		0.19	<	0.05	60
	Monthly Average		3.0		4.6		0.34		0.05	71
	Compliant?		**YES**		**YES**		**YES**		**N/A**	**YES**

Appendix B - Details of Abnormal Sewage Discharge Events

Event Details Summary

Facility Bypass

Date	Location	Details	Volume (m3)	Start Time	End Time	Duration (h)	Discharge Receiver	Disinfection Provided
No facility bypass' to report in 2024								

Facility Overflow

Date	Location	Details	Volume (m3)	Start Time	End Time	Duration (h)	Discharge Receiver	Disinfection Provided
No facility overflows to report in 2024								

Collection Overflow

There are no authorized overflow locations in this system.

Spills of Sewage

Date	Location	Details	Volume (m3)	Start Time	End Time	Duration (h)	Discharge Receiver	Disinfection Provided
No spills of sewage to report in 2024								

Appendix C – Biosolids Quality Report

2024 - MORRISBURG WWTP MONTHLY AEROBIC BIOSOLIDS CONCENTRATION RATIO

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Ammonia	569	1430	1370	965	740	1530	1680	2240	2360	1900	1740	6
Nitrate	1.0	0.5	0.7	1.5	0.8	0.5	0.9	0.9	0.5	0.7	0.7	0.4
Ammonia + Nitrate	570	1431	1371	967	741	1531	1681	2241	2361	1901	1741	6
Total Phosphorus	1540	1740	1640	1390	1470	1510	1510	1320	1360	1230	1000	1100
Total Solids	36400	49100	36300	34600	28200	33200	34200	34600	38800	37000	33500	27600
Aluminum	1270	1150	1050	1400	1220	1680	1180	1920	2090	1520	1300	1180
Arsenic	0.10	0.10	0.10	0.10	0.10	0.20	0.10	0.2	0.2	0.2	0.1	0.2
Cadmium	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0.04
Chromium	2.38	2.02	2.06	2.45	1.90	3.12	1.68	2.95	3.86	3.87	3.36	3.20
Cobalt	0.17	0.16	0.14	0.12	0.11	0.20	0.10	0.17	0.22	0.22	0.19	0.20
Copper	35.8	28.1	24.9	27.6	25.8	37.5	20.3	36.6	42.5	37.8	32.8	46.0
Lead	0.70	0.40	0.40	0.50	0.50	0.70	0.40	0.8	1.0	0.8	0.8	0.9
Mercury	0.086	0.049	0.039	0.026	0.034	0.019	0.020	0.005	0.040	0.041	0.086	0.085
Molybdenum	0.31	0.26	0.25	0.25	0.24	0.35	0.18	0.33	0.43	0.4	0.4	0.4
Nickel	1.13	0.86	0.77	0.90	0.80	1.10	0.56	0.98	1.36	1.4	1.1	1.4
Selenium	0.20	0.20	0.20	0.20	0.20	0.20	0.10	0.2	0.2	0.2	0.2	0.2
Zinc	17	12	11.20	14.0	12.7	20.2	12.0	20.6	25.8	22.7	20.4	23.0

Metals ratio = mg metals/kg solids

	Metal/Solids Ratio (Sludge)												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Limit
Arsenic	2.75	2.04	2.75	2.89	3.55	6.02	2.92	5.78	5.15	5.41	2.99	7.25	**170**
Cadmium	0.82	0.61	0.83	0.87	1.06	0.90	0.88	0.87	1.03	0.81	0.90	1.45	**34**
Chromium	65.4	41.1	56.7	70.8	67.4	94.0	49.1	85.3	99.5	104.6	100.3	115.9	**2800**
Cobalt	4.67	3.26	3.86	3.47	3.90	6.02	2.92	4.91	5.67	5.95	5.67	7.25	**340**
Copper	984	572	686	798	915	1130	594	1058	1095	1022	979	1667	**1700**
Lead	19.2	8.1	11.0	14.5	17.7	21.1	11.7	23.1	25.8	21.6	23.9	32.6	**1100**
Mercury	2.36	1.00	1.07	0.75	1.21	0.57	0.58	0.14	1.03	1.11	2.57	3.08	**11**
Molybdenum	8.52	5.30	6.89	7.23	8.51	10.54	5.26	9.54	11.08	10.54	10.75	15.22	**94**
Nickel	31.0	17.5	21.2	26.0	28.4	33.1	16.4	28.3	35.1	36.8	33.7	48.9	**420**
Selenium	5.49	4.07	5.51	5.78	7.09	6.02	2.92	5.78	5.15	5.41	5.97	7.25	**34**
Zinc	453	244	309	405	450	608	351	595	665	614	609	833	**4200**
Sludge is Acceptable	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	

SOME ANALYSIS RESULTS EXPRESSED AS "<" (LESS THAN);HOWEVER, IN ORDER TO COMPLETE THE CALCULATION, ONLY THE NUMERIC VALUE WAS USED; THEREFORE THE AVG. CONC. IS GREATER THAN ACTUAL.

Appendix D - ECA Annual Report Requirements

Facility ECA # 2147-734L2K Section 12(6)	**Section in Report**
a) a summary and interpretation of all monitoring data and comparison to the effluent limits outlined in Condition 7, including an overview of success and adequacy	Treatment Flows, Raw Sewage and Effluent Quality
b) a description of any operating problems encountered and corrective actions taken	Operating Issues and Problems
c) summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the Works	Maintenance
d) summary of any effluent quality assurance or control measures undertaken in the reporting period	Effluent Quality
e) summary of the calibration and maintenance carried out on all effluent monitoring equipment	Maintenance
f) description of efforts made and results achieved in meeting the Effluent Objectives of Condition 6	Effluent Quality
g) tabulation of the quantity of septage added to the Works for co-treatment during the reporting period	Treatment Flows
h) summary of chemical characterization data for samples of septage collected in accordance with Table 4 in Condition 11 during the reporting period	Raw Sewage Quality
i) tabulation of the volume of sludge generated in the reporting period, an outline of anticipated volumes to be generated in the next reporting period and a summary of the locations to where the sludge was disposed	Sludge Generation
j) tabulation of the quantity of groundwater pumped from the WWTP Building foundation drainage system to the storm sewer system	Groundwater Pumping Volumes
k) summary of any complaints received during the reporting period and any steps taken to address the complaints	Summary of Complaints
l) summary of all By-pass, overflow, spill or abnormal discharge events	Operating Issues and Problems
m) any other information the District Manager requires from time to time	N/A

Collection ECA # 165-W601 Schedule E	
4.6.3 If applicable, includes a summary of all required monitoring data along with an interpretation of the data and any conclusion drawn from the data evaluation about the need for future modifications to the Authorized System or system operations.	Operating Issues and Problems
4.6.4 Includes a summary of any operating problems encountered and corrective actions taken.	Operating Issues and Problems
4.6.5 Includes a summary of all calibration, maintenance, and repairs carried out on any major structure, Equipment, apparatus, mechanism, or thing forming part of the Municipal Sewage Collection System.	Maintenance
4.6.6 Includes a summary of any complaints related to the Sewage Works received during the reporting period and any steps taken to address the complaints.	Summary of Complaints
4.6.7 Includes a summary of all Alterations to the Authorized System within the reporting period that are authorized by this Approval including a list of Alterations that pose a Significant Drinking Water Threat.	Maintenance
4.6.8 Includes a summary of all Collection System Overflow(s) and Spill(s) of Sewage, including:	Operating Issues and Problems

Collection ECA # 165-W601 **Schedule E**	
a) Dates; b) Volumes and durations; c) If applicable, loadings for total suspended solids, BOD, total phosphorus, and total Kjeldahl nitrogen, and sampling results for E.coli; d) Disinfection, if any; and e) Any adverse impact(s) and any corrective actions, if applicable.	
4.6.9 Includes a summary of efforts made to reduce Collection System Overflows, Spills, STP Overflows, and/or STP Bypasses, including the following items, as applicable: a) A description of projects undertaken and completed in the Authorized System that result in overall overflow reduction or elimination including expenditures and proposed projects to eliminate overflows with estimated budget forecast for the year following that for which the report is submitted. b) Details of the establishment and maintenance of a PPCP, including a summary of project progresses compared to the PPCP's timelines. c) An assessment of the effectiveness of each action taken. d) An assessment of the ability to meet Procedure F-5-1 or Procedure F-5-5 objectives (as applicable) and if able to meet the objectives, an overview of next steps and estimated timelines to meet the objectives. e) Public reporting approach including proactive efforts.	Maintenance Operating Issues and Problems