Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Elizabeth Chee Sing
Water Compliance Supervisor
West Central Office
Ministry of the Environment, Conservation and Parks

March 28, 2025

Re: 2024 Annual Performance Report for the Port Rowan Wastewater Treatment Plant, Sewage Pumping Stations and the Port Rowan Linear Infrastructure

Attached is the 2024 Annual Performance Report for the Port Rowan Wastewater Treatment Plant (WWTP) located at 55 Hunter Drive North in Port Rowan, Norfolk County and all associated sewage pumping stations (SPS's). This report has been completed in accordance with the following approvals:

- Section 10(6)(a) through (l) cited in Environmental Compliance Approval #7612-9XMJ26 issued on July 13, 2015 to the Corporation of Norfolk County.
- Schedule E, Section 4.6 cited in the Consolidated Linear Infrastructure – Environmental Compliance Approval #070-W601 issue number 1 issued on July 27, 2022 to the Corporation of Norfolk County

This report, as it pertains to the WWTF, the SPS's, and forcemains was prepared by the Ontario Clean Water Agency on behalf of Norfolk County, based on the information contained in our records. The information included in the reports on the Port Rowan gravity separate sewers was provided by Norfolk County.

The report covers the period from January 1, 2024 to December 31, 2024.

Sincerely,

Allison Billingsley
Process and Compliance Technician
Ontario Clean Water Agency
Southwest Region - Norfolk Cluster

Cc:
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*Appendices available upon request

Introduction:

The Port Rowan Wastewater Treatment Plant (WWTP) is located at 55 Hunter Drive North in the community of Port Rowan (Norfolk County), on the north shore of Lake Erie. The community of Port Rowan includes both permanent and seasonal residents and is designated as a Lakeshore Special Policy area within the Norfolk Official Plan.

The WWTP has a rated capacity of 1,140m3/d, and has unit processes including screening and grit removal, primary clarification, chemical phosphorus removal, aeration and membrane filtration. The Waste Activated Sludge (WAS) is co-thickened in the primary clarifiers and the combined sludge and scum are digested in an aerobic digester prior to disposal via land application. The treated effluent is discharged through an outfall pipe to the Dedrick Creek which discharges into Lake Erie. The facility also has two (2) odour control systems comprising biofilters—one each for the Headworks Building and the Aerobic Digester.

Raw Wastewater Collection

The wastewater collected in the sanitary sewers in Port Rowan flows from the Mallard Walk and Ducks Landing Pumping Stations (PS) to the Front Road PS and is pumped to the WWTP. These flows also include filter backwash water from the water treatment plant. In addition to receiving pumped flows the plant also receives hauled waste.

Sewage Pumping Stations

The Norfolk County Municipal Wastewater Collection System is made up of five separate wastewater collection systems. The Port Rowan wastewater collection system (population 1,357) conveys sewage to the Port Rowan Wastewater Treatment Facility through a total of 12 kilometres of gravity separate sewers, 1.3 kilometres of forcemains and three (3) sewage pumping stations (SPS). For additional information on the individual SPS's listed below, please refer to CLI-ECA #070-W601 Issue #1.

- WW421 – Ducks Landing SPS located at 25 Hunter Drive South in Port Rowan, Ontario. Ducks Landing SPS is a duplex pumping station equipped with 2 pumps (1 duty, 1 standby), with a wet well of 7.2 m3 capacity. The station is connected to a 100 mm diameter forcemain discharging to a manhole at the intersection of Wood Duck Way and Hunter Drive South. The Overflow is located in the pump station wet well and discharges to Long Point Bay of Lake Erie with an emergency storage volume of 10.3m^3
- WW418 – Front Road SPS located at 10 Front Street in Port Rowan, Ontario. Front Road SPS is a duplex pumping station equipped with 2 pumps (1 duty, 1 standby), with a wet well of 49 m^3 capacity. The station is connected to a 200 mm diameter forcemain discharging to the Port Rowan WWTP at 55 Hunter Drive North. The Overflow is located in the pump station equalization tank and discharges to Long Point Bay of Lake Erie with an emergency storage volume of 200m^3
- WW419 – Mallard Walk SPS located at 1A Mallard Walk in Port Rowan, Ontario. Mallard Walk SPS is a duplex pumping station equipped with 2 pumps (1 duty, 1 standby), with a wet well of 20 m3 capacity. The station is connected to a 150 mm diameter forcemain

discharging to a manhole at the intersection of Long Point Boulevard and Bay Street. There is no overflow.

Inlet Works- Preliminary Treatment System

The preliminary treatment units including coarse screening and grit removal which are enclosed inside the main process equipment area of the Headworks Building. Raw sewage is pumped to the WWTP via a 200 mm forcemain from the Front Road. Sewage flows by gravity to the Headworks Building where it gets screened by a 9.5 mm coarse screen before getting collected in the raw sewage wet well. There are two (2) coarse screens located in the Headworks Building (MBS-101/102), where the raw sewage from the community flows through the south screen (MBS-101).

The raw sewage and hauled waste are blended in a large wet well and pumped to downstream processes where it mixes with any leachate that has been received. The flow passes through a vortex grit chamber in the Headworks Building where it gets de-gritted before flowing to the primary clarifiers.

Primary Treatment

The blend of raw sewage, hauled wastes and leachate flows to the primary clarifier which removes a portion of the particulate load of TSS, BOD, TKN and TP via settling of suspended solids. In addition to gravity settling of the suspended solids, the primary clarifier influent is also dosed with ferrous chloride to remove a fraction of the soluble phosphorus load. Ferrous chloride acts as a coagulant that precipitates the soluble phosphorus and helps it settle along with the other suspended solids removed in the primary clarifier.

Aeration Tanks

At the Port Rowan WWTP, primary effluent enters the biological tanks via the biological tank feed channel. There are two (2) biological tanks, each consisting of two (2) cells, consisting of a small anoxic (swing) cell, followed by a larger aeration cell.

One or both biological tanks may receive primary effluent flow by adjusting the weir gates and opening or closing the slide gates located in the biological tank feed channel.

The mixed liquor in the Aeration Tanks is aerated by means of a fine bubble diffused air aeration system with the air supplied by positive displacement blowers. The air diffusers are spread across the bottom of aeration tanks allowing an even distribution of air. This promotes thorough mixing in all areas of the aeration tanks which maintains the solids in suspension and ensures a supply of oxygen throughout the tanks.

Supplementary Treatment

The mixed liquor from the aeration tanks flows into the membrane tanks, where a microfiltration membrane system separates the solids from the treated effluent (permeate). The membrane system comprises of hollow noodle shaped membrane fibers installed in modular membrane filtration units called cassettes. The permeate water is sucked out through hollow tube

membranes via permeate pumps operating under a negative pressure. The permeate flows from outside to inside of the hollow tubes, is collected and discharged to the permeate tank, from where it overflows and discharges into the effluent outfall system.

The operation of the membrane system is automated based on the flux and permeability through the membranes. The intermittent aeration of membrane tanks helps to keep the membranes clean and reduces the cleaning frequency by chemicals. In addition to this, Maintenance Cleans and Recovery Cleans are executed intermittently to maintain peak performance and prolong membrane life. Maintenance Cleans, are initiated by staff weekly, employs sodium hypochlorite and citric acid to remove organic and inorganic fouling. The Recovery Cleaning is scheduled to be completed every six (6) months. Recovery cleans are performed by soaking the cassettes in a series of chemical baths, first chlorine, then citric acid.

Sludge Management System

Sludge is periodically removed by licensed hauler for offsite storage, disposal, and/or land application. In order to limit nitrification, maintaining the required alkalinity and to optimize the aeration requirements, the digester aeration system is designed to operate at low DO and with an intermittently running aeration. While the low DO conditions limit nitrification, stoppage of air and further dropping of DO results in denitrification that generates alkalinity and helps restore the pH balance in the digester. The digester contents are kept mixed with the sludge removal pump when the aeration is switched off.

The digester supernatant is separated and recycled to the headworks at fixed interval by the operator. This allows the sludge solids to build up in the digester. When the sludge solids concentration builds up to a pre-determined level (usually 2.5 to 3%) in the digester, a portion of digested sludge from the digester is removed and hauled for land application.

Odour Control

Given the high odour potential of the hauled wastes received at the plant, odour control facilities are an important part of the WWTP. Two separate odour control units have been provided, one each for the Headworks Building and the aerobic digester. Each biofilter consists of a biofilter media bed comprising of a proportioned mixture of limestone compost and woodchips. The filter media bed is laid out uniformly over a bed of crushed limestone. The biofilter media is irrigated and kept moist by treated effluent to develop and sustain a biomass layer that helps remove the odours from the foul air received from the headworks and digester.

Standby Power

The emergency power for the entire plant is supplied from:

Cummins DFEK-61256223
500KW
475 HP
7,000 L diesel fuel tank

Port Rowan WWTP Facts:

Environmental Compliance Approval	ECA 7612-9XMJ26 (issued July 13, 2015)
Rated Capacity	1,140m^3/day
Receiving Water	Dedrick Creek

For 2024, the Port Rowan WWTP was operated in accordance with provincial regulations as required in ECA #7612-9XMJ26 (ECA) issued July 13, 2015.The following report is presented such that it corresponds with ECA #7612-9XMJ26 Section 10(6) (a) through (l) and satisfies the requirements for the sewage pumping stations and the Port Rowan linear infrastructure in CLI-ECA #070-W601 Issue #1 dated July 27, 2022.

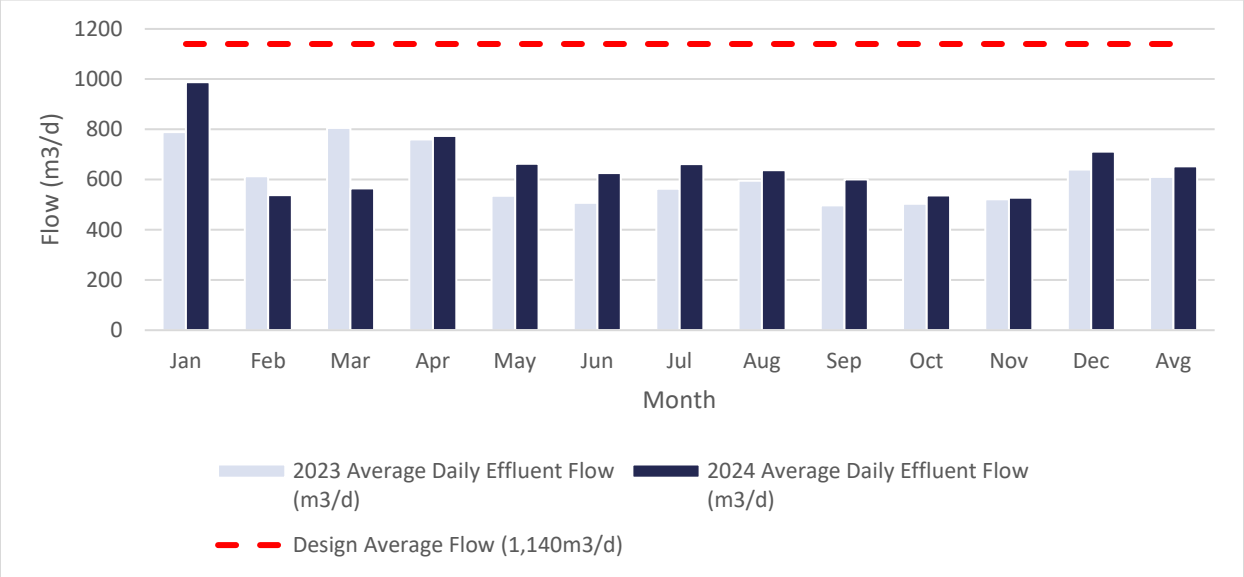
Section A: Summary of Monitoring Data

The Port Rowan Wastewater Treatment Plant is monitored as per the Environmental Compliance Approval requirements. Detailed monitoring data is supplied in Appendix A.

(I) Effluent Flow Monitoring

The average daily effluent flow for 2024 was 652.1m^3/d, which is 57.2% of the Port Rowan's WWTP's rated capacity of 1,140m^3/d. The following Graph 1 shows a comparison of the average daily flows per month for 2024 and 2023 compared to the rated capacity of the facility.

Graph 1. Average daily flows in 2024 compared to 2023.



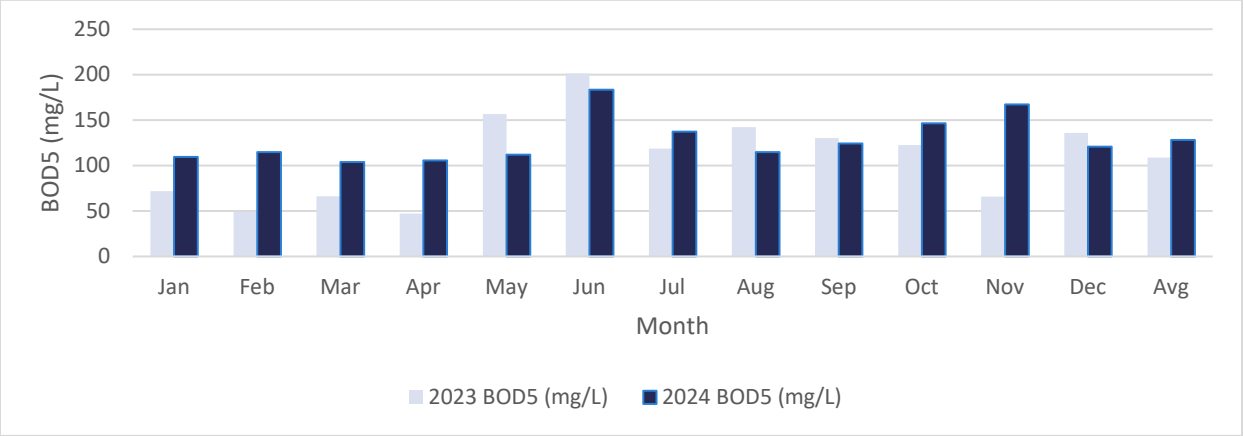
(II) Raw Sewage Monitoring

The raw sewage is monitored for BOD_5, total suspended solids (TSS), total phosphorus (TP), total kjeldahl nitrogen (TKN), total ammonia nitrogen (TAN) and alkalinity on a weekly basis (minimum) by means of a composite sample. The treatment capabilities of the facility were designed based on the raw water characteristics identified in the Operations Manual from the

design engineers. Refer to Appendix A for the detailed monthly results. Graphs 2-6 below, show the monthly average concentrations for the required raw sewage parameters in 2024 compared to 2023.

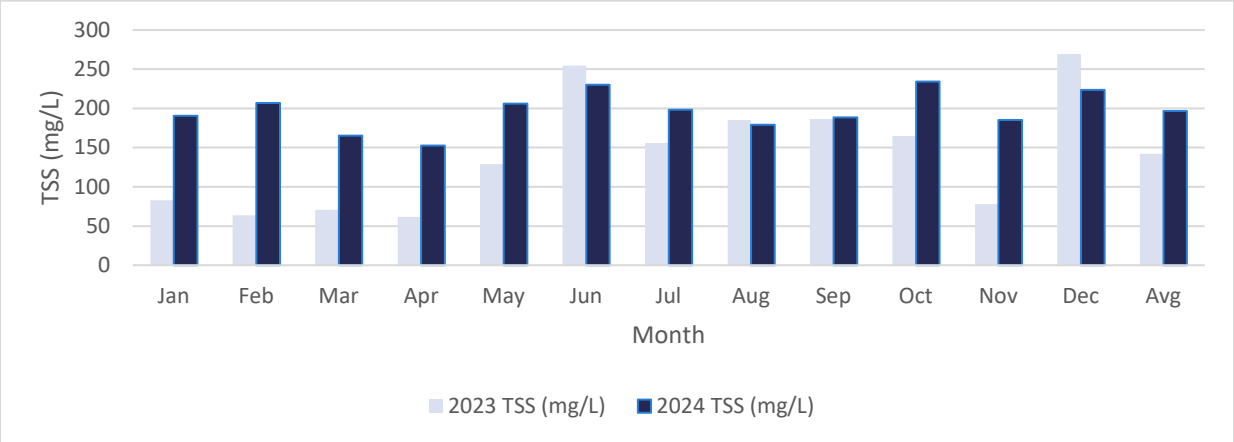
The annual average for the raw sewage BOD_5 concentration to the plant in 2024 was 128.3mg/L with an average loading of 82.52kg/d. This annual average loading is below the design criteria of 570kg/d. Refer to Graph 2 for a comparison of monthly concentrations in 2024 to 2023.

Graph 2. Influent sewage average monthly concentration of BOD_5 for 2024 compared to 2023.



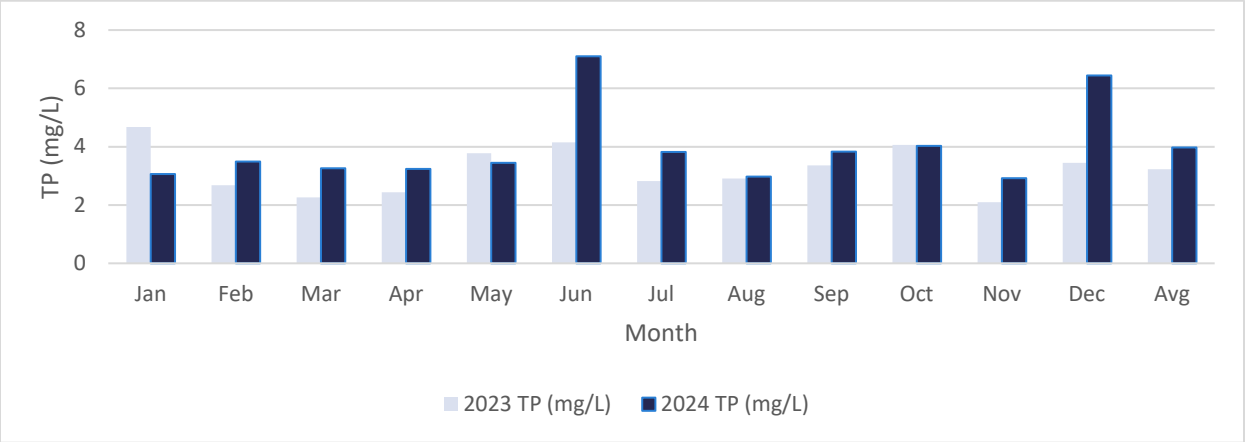
The annual average for raw sewage total suspended solids (TSS) concentration to the plant in 2024 was 196.8mg/L. Refer to Graph 3 for a comparison of monthly concentrations in 2024 to 2023.

Graph 3. Raw sewage average monthly concentration of TSS for 2024 compared to 2023.



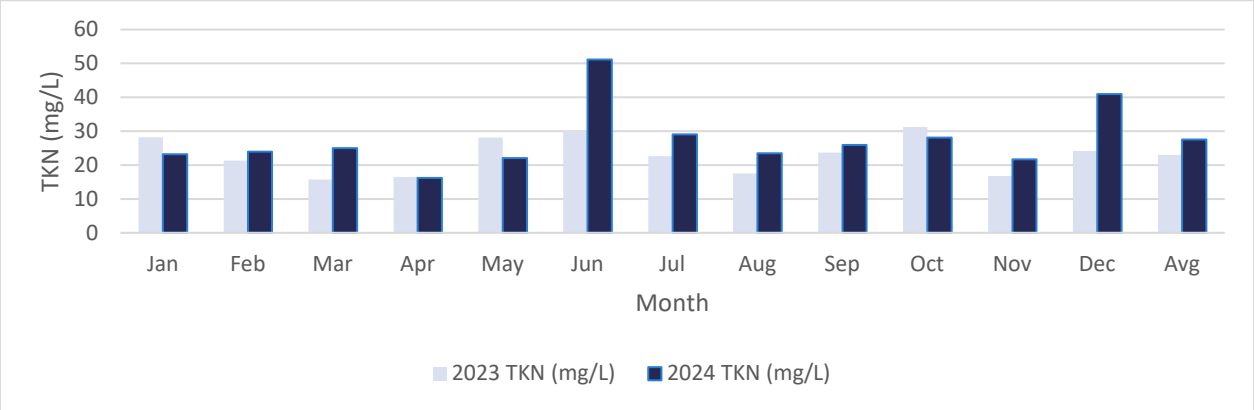
The annual average for raw sewage total phosphorus (TP) concentration to the plant in 2024 was 3.97mg/L. Refer to Graph 4 for a comparison of monthly concentrations in 2024 to 2023.

Graph 4. Raw sewage average monthly concentration of TP for 2024 compared to 2023.



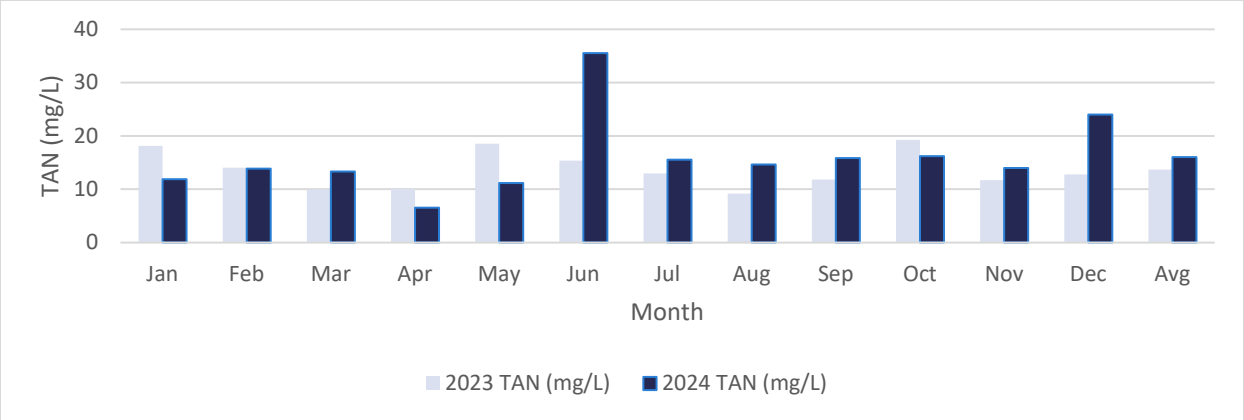
The annual average for raw sewage total kjeldahl nitrogen (TKN) concentration to the plant in 2024 was 27.6mg/L. Refer to Graph 5 for a comparison of monthly concentrations in 2024 compared to 2023.

Graph 5. Raw sewage average monthly concentration of TKN for 2024 compared to 2023.



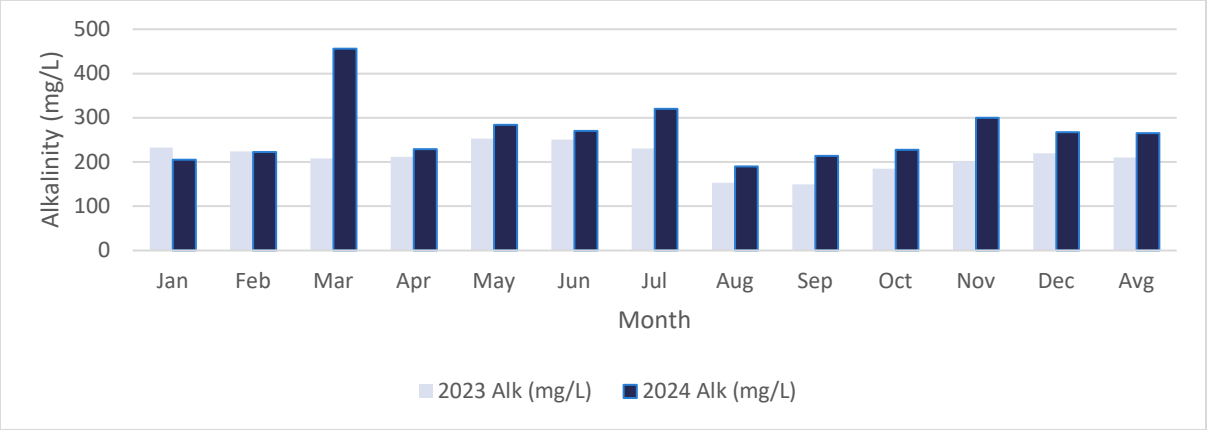
The annual average for raw sewage total ammonia nitrogen (TAN) concentration to the plant in 2024 was16.1mg/L. Refer to Graph 6 for a comparison of monthly concentrations in 2024 to 2023.

Graph 6. Raw Sewage TAN readings for 2024 compared to 2023.



The annual average for raw sewage alkalinity concentration to the plant in 2024 was 265mg/L. Refer to Graph 7 for a comparison of monthly concentrations in 2024 to 2023.

Graph 7. Raw Sewage alkalinity readings for 2024 compared to 2023.



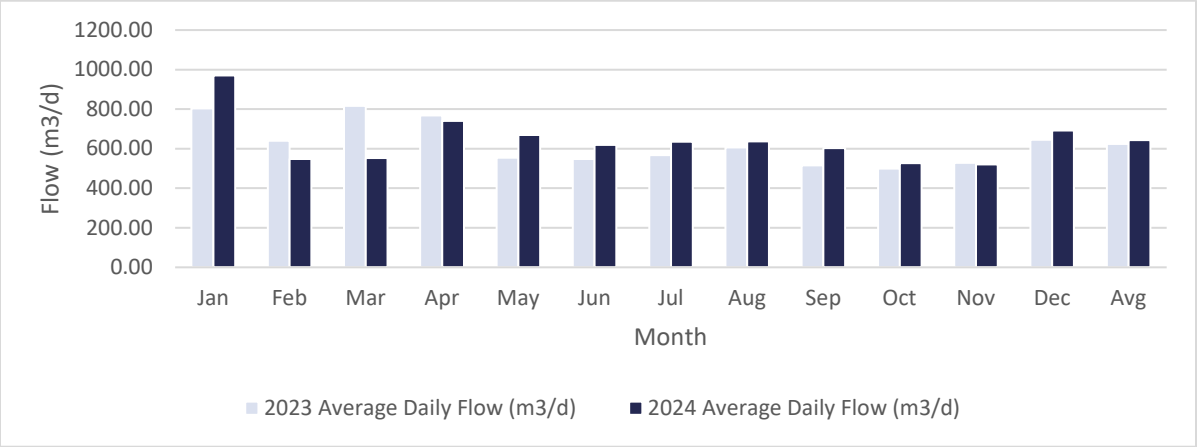
The raw sewage characteristics have changed throughout the year. This is to be expected with the flow variations that are experienced and fluctuations in hauled waste volumes and characteristics.

(III) Sewage Pumping Station Monitoring Data

As per the CLI-ECA Schedule E Condition 4.6.3, a summary and interpretation of monitoring data for the SPS's is included below. There are flow meters located at the Front Road SPS and Ducks Landing SPS. The following graphs show the flow trends from these stations for 2024 compared to 2022. Table 1 and 2 below show the Port Rowan SPS pump run times for all stations in 2024 compared to 2023. There is no additional monitoring data that required interpretation or conclusions for the Port Rowan sewage pumping stations in 2024. An additional flow meter is scheduled to be commissioned in early 2025 at the Mallard Walk SPS.

The average daily flow for Front Road SPS was 643.6m^3/d in 2024. The total flow for 2024 was 235,563m^3/d which is an increase of 3.4% compared to the total flow of 227,926m^3/d in 2023. The following Graph 8 shows a comparison of the average daily flows per month for 2024 and 2023.

Graph 8. Front Road SPS daily flows in 2024 compared to 2023.



The average daily flow for Ducks Landing SPS was 6.84m^3/d in 2024. The total flow for 2024 was 2,505m^3/d which is an increase of 35.8% compared to the total flow of 1,844m^3/d in 2023. The following Graph 9 shows a comparison of the average daily flows per month for 2024 and 2023.

Graph 9. Ducks Landing SPS daily flows in 2024 compared to 2023.

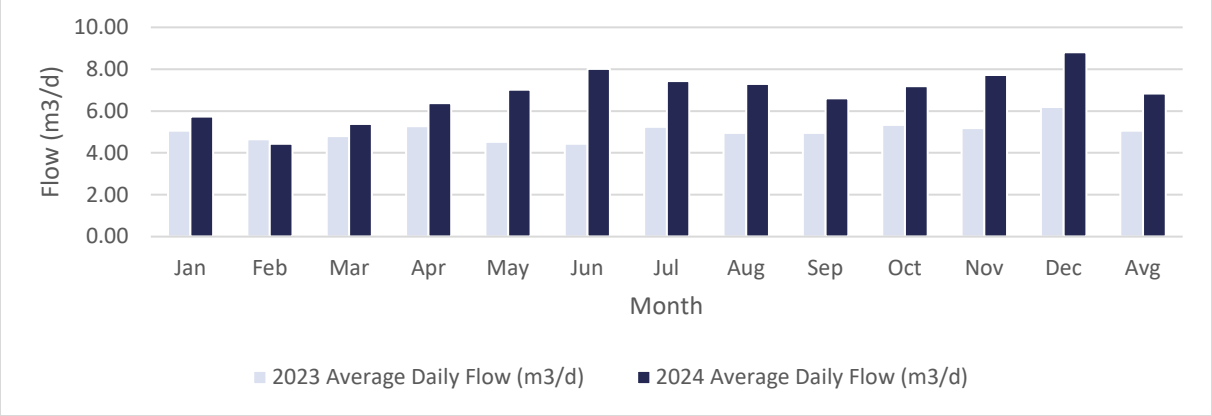


Table 1. Pump Run Hours for the Port Rowan SPS's in 2024 and 2023

Sewage Pumping Station (SPS)	Year	Pump #1 (hours)	Pump #2 (hours)
Front Road	2023	766.10	736.20
	2024	823.47	790.30
Ducks Landing	2023	13.20	12.00
	2024	19.50	20.80
Mallard Walk	2023	347.50	707.90
	2024	366.10	604.60

Table 2. Total Pump Run Hours for the Port Rowan SPS's in 2024 compared to 2023

Sewage Pumping Station (SPS)	Total Hours 2023 (hours)	Total Hours 2024 (hours)	Percent Change (%)
Front Road	1502.3	1613.77	+7.4%
Ducks Landing	25.2	40.30	+59.9%
Mallard Walk	1055.4	970.70	-8.0%

(IV) Imported Sewage (Septage) Monitoring

Imported sewage (septage) is sampled on a monthly basis and tested, at a minimum, for BOD_5, total suspended solids, total phosphorus, total kjeldahl nitrogen, pH and alkalinity. The Port Rowan WWTP received a total of 1,485.76m^3 in 2024 as broken down in Table 3 below.

Table 3. Total Volume of Imported Sewage to the Port Rowan WWTP in 2024

Month	Holding Volume (m^3)	Septic Volume (m^3)	Portable Waste Volume (m^3)
January	335.80	-	1.70
February	242.10	-	0.20
March	85.90	-	7.00
April	-	-	1.40
May	43.22	-	26.44
June	12.49	0.95	25.93
July	-	-	14.52
August	48.83	-	14.14
September	19.87	-	10.54
October	20.82	-	14.53
November	-	-	2.57
December	676.76	-	1.59
Total	**1,485.76**	**0.95**	**120.51**

(V) Effluent Monitoring

Effluent is sampled by way of a composite sample on a weekly basis and tested for $cBOD_5$, total suspended solids, total phosphorus, total ammonia nitrogen, alkalinity and nitrate as nitrogen. A grab sample is collected weekly and tested for E. coli. Three times a week, samples are collected and tested for pH and temperature. Detailed results are found in Appendix A. Table 4 below shows the monthly average results from the composite samples, Table 5 shows the monthly average results from the grab samples and Table 6 shows the monthly average loadings.

Table 4. Monthly average effluent results for 2024.

Month	$cBOD_5$ (mg/L)	TSS (mg/L)	TP (mg/L)	TAN (mg/L)	NO_3 (mg/L)	Alkalinity (mg/L)
January	2.0	1.2	0.07	0.27	17.8	110.4

Month	$cBOD_5$ (mg/L)	TSS (mg/L)	TP (mg/L)	TAN (mg/L)	NO_3 (mg/L)	Alkalinity (mg/L)
February	2.0	1.0	0.07	0.04	23.0	88.3
March	2.0	1.0	0.08	0.03	22.1	139.5
April	2.0	1.0	0.07	0.03	18.9	114.8
May	2.0	1.8	0.10	0.04	20.6	126.8
June	2.0	1.3	0.06	0.05	23.1	97.3
July	2.0	1.2	0.06	0.04	17.4	78.2
August	2.0	1.0	0.07	0.04	21.0	74.5
September	2.0	1.0	0.07	0.03	18.7	72.5
October	2.0	1.0	0.09	0.03	20.1	96.4
November	2.0	1.3	0.06	0.03	20.9	97.5
December	3.0	1.5	0.09	0.04	21.3	110.0
Average	**2.1**	**1.2**	**0.07**	**0.06**	**20.4**	**100.5**
Objective	2.5	1.0	0.06	2.0(1.0)*	n/a	n/a
Limit	5.0	2.0	0.12	4.0(2.0)*	n/a	n/a

*Values in brackets are temperature dependent limits and objectives

Table 5. Monthly average effluent ranges for 2024 obtained from grab samples.

Month	E. coli (cfu/100mL)*	pH **	Temp (°C)	Un-ionized Ammonia (mg/L)
January	1.9	7.17-7.90	11.5	0.0022
February	1.0	7.08-7.83	11.1	0.0003
March	1.2	7.15-7.80	12.3	0.0002
April	1.0	7.19-7.87	13.7	0.0002
May	4.6	7.04-7.84	17.6	0.0003
June	1.0	7.05-7.89	20.6	0.0004
July	2.6	6.73-7.79	22.4	0.0004
August	2.6	6.59-7.76	22.7	0.0003
September	5.0	6.71-7.41	21.9	0.0002
October	1.9	6.64-7.52	18.8	0.0002
November	1.8	6.99-7.78	16.4	0.0002
December	1.2	7.03-7.51	12.5	0.0002
Average	**1.8**	**6.59-7.90**	**16.8**	**0.0004**
Objective	12	7.0-8.5 (min-max)	n/a	0.012
Limit	200	6.0-8.5 (min-max)	n/a	0.024

*expressed as geometric mean

**minimum and maximum result range

Table 6. Monthly average loading limits for 2024.

Month	cBOD5 (kg/d)	TSS (kg/d)	TP (kg/d)	TAN (kg/d)	UA (kg/d)
January	1.98	1.19	0.07	0.27	0.0021
February	1.08	0.54	0.04	0.02	0.0001
March	1.13	0.56	0.05	0.02	0.0001
April	1.55	0.77	0.05	0.02	0.0002
May	1.33	1.19	0.07	0.03	0.0002
June	1.25	0.81	0.04	0.03	0.0002

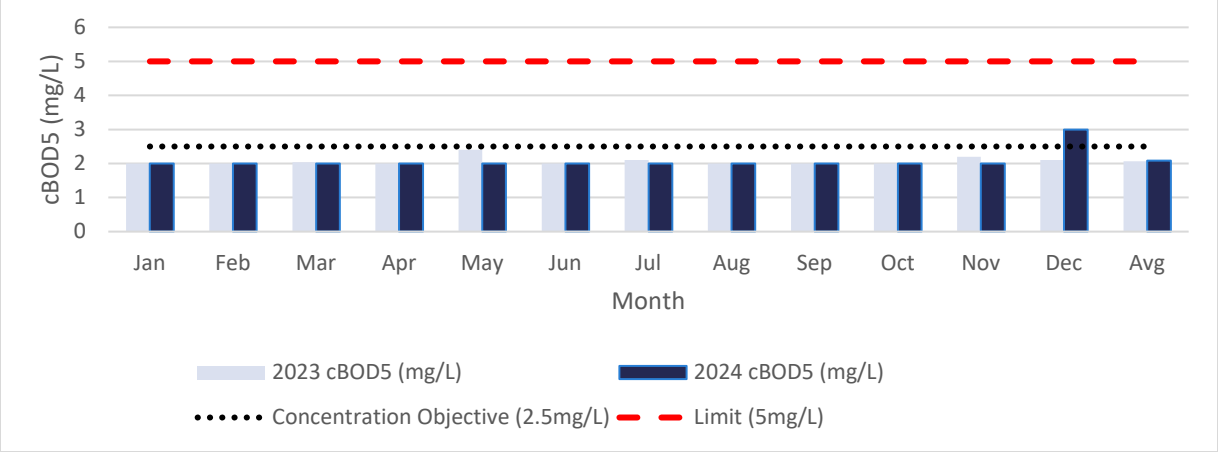
Month	cBOD5 (kg/d)	TSS (kg/d)	TP (kg/d)	TAN (kg/d)	UA (kg/d)
July	1.32	0.79	0.04	0.03	0.0003
August	1.27	0.64	0.04	0.03	0.0002
September	1.20	0.60	0.04	0.02	0.0001
October	1.07	0.54	0.05	0.02	0.0001
November	1.06	0.66	0.03	0.02	0.0001
December	2.13	1.07	0.06	0.03	0.0001
Average	**1.36**	**0.78**	**0.05**	**0.04**	**0.0003**
Limit	5.7	2.28	0.14	1.28 (2.48)*	0.03

*value in brackets is from Dec 1 to March 31

(VI) Comparison to Compliance Limits and Objectives

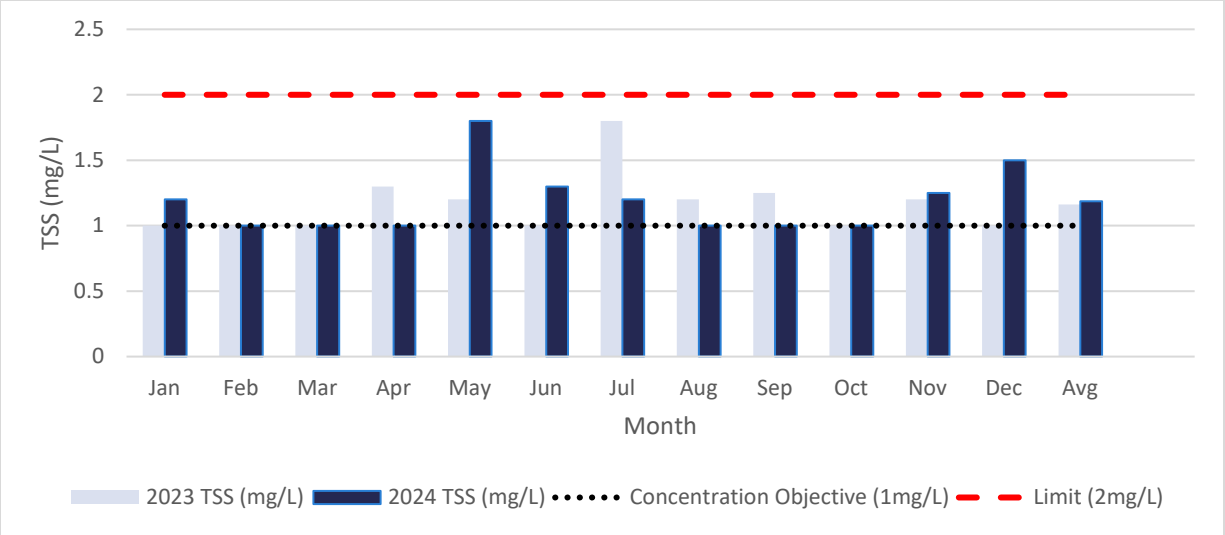
The annual average for effluent $cBOD_5$ in 2024 was 2.1mg/L; this value has remained the same compared to 2023. The annual loading of $cBOD_5$ was 1.36kg/d. The concentration and loading limits for $cBOD_5$ were not exceeded in 2024. The concentration objective was exceeded one (1) time in 2024 as discussed below in ***Section F: Objective Exceedances & Best Efforts***. Refer to Graph 10 for a comparison of effluent monthly average concentration of $cBOD_5$.

Graph 10. The effluent monthly average concentration of $cBOD_5$ in 2024 compared to 2023



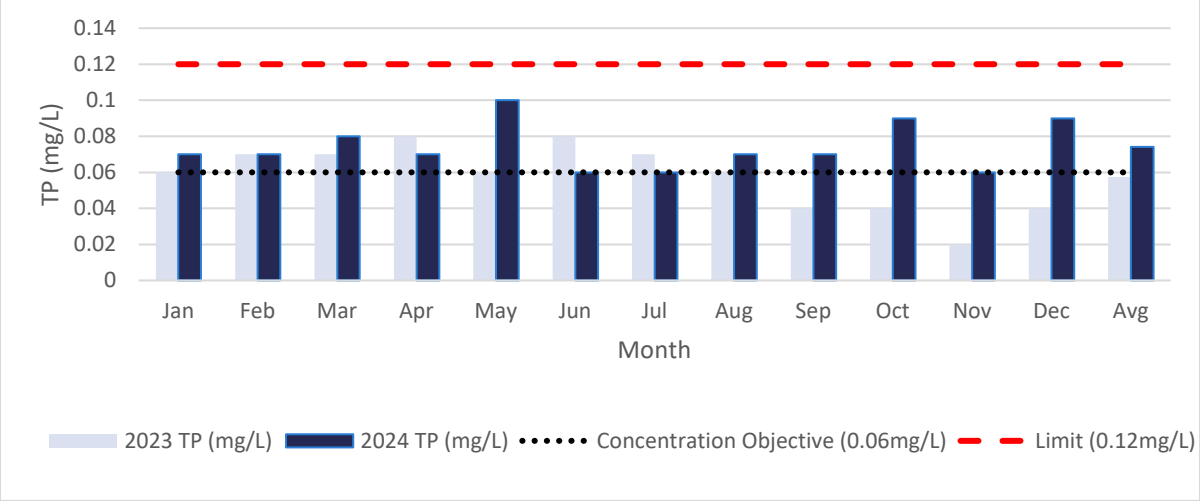
The annual average for effluent TSS in 2024 was 1.2mg/L; this value has remained the same compared to 2023. The annual loading of TSS was 0.78kg/d. The concentration and loading limits were not exceeded in 2024. The concentration objective was exceeded six (6) times in 2024 as discussed below in ***Section F: Objective Exceedances & Best Efforts***. Refer to Graph 11 for the effluent monthly average concentration of TSS.

Graph 11. The effluent monthly average concentration of TSS in 2024 compared to 2023.



The annual average for effluent TP in 2024 was 0.07mg/L. This value has increased by 22.5% compared to the annual average result for TP in 2023. The annual loading of TP was 0.05kg/d. The concentration and loading limits were not exceeded in 2024. The concentration objective was exceeded nine (9) times in 2024 as discussed below in ***Section F: Objective Exceedances & Best Efforts***. Refer to Graph 12 for the effluent monthly average concentration of TP

Graph 12. The effluent monthly average concentration of TP in 2024 compared to 2023.

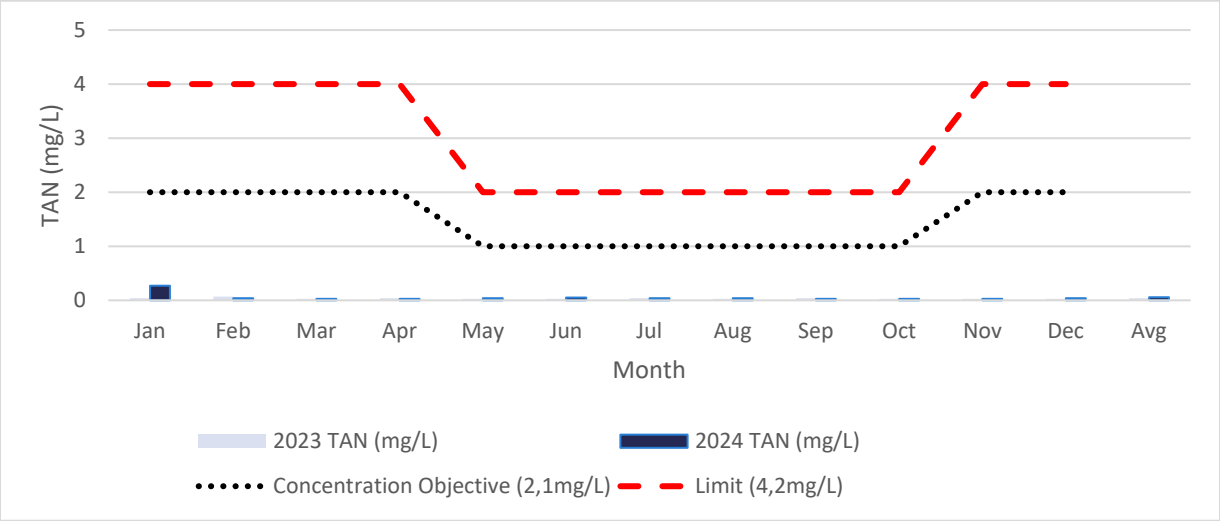


The annual average for effluent Total Ammonia Nitrogen (TAN) in 2024 was 0.06mg/L; this value has increased by 34.3% compared to the annual average in 2023. The annual loading of TAN was 0.04kg/d. The limits and objectives for TAN are based on temperature:

- December 1st to April 30th – limit is 4.0mg/L, objective is 2.0mg/L
- May 1st to November 30th - limit is 2.0mg/L, objective is 1.0mg/L.

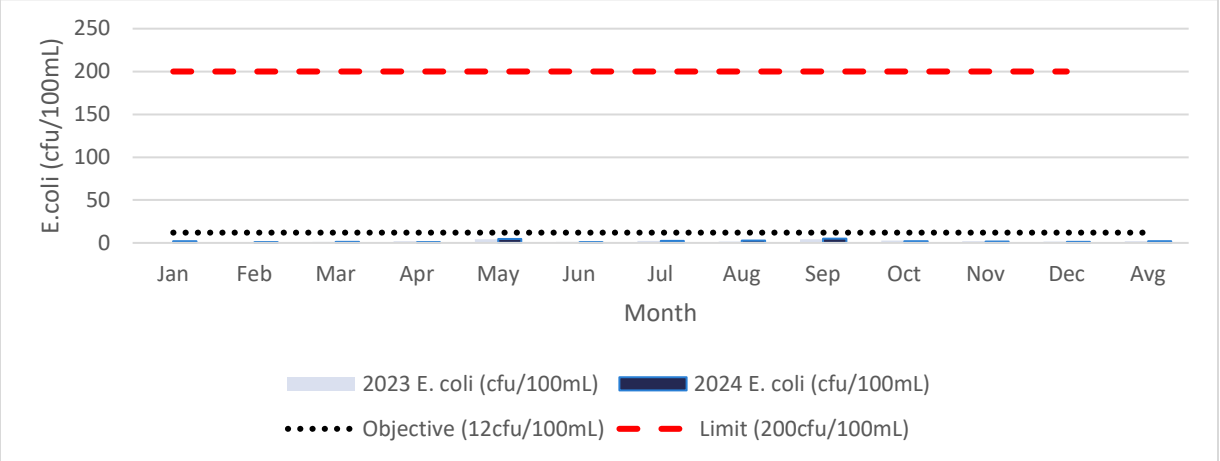
There were no limit or objective exceedances for TAN in 2024. Refer to Graph 13 for the effluent monthly average concentrations.

Graph 13. The effluent monthly average concentration of TAN in 2024 compared to 2023.



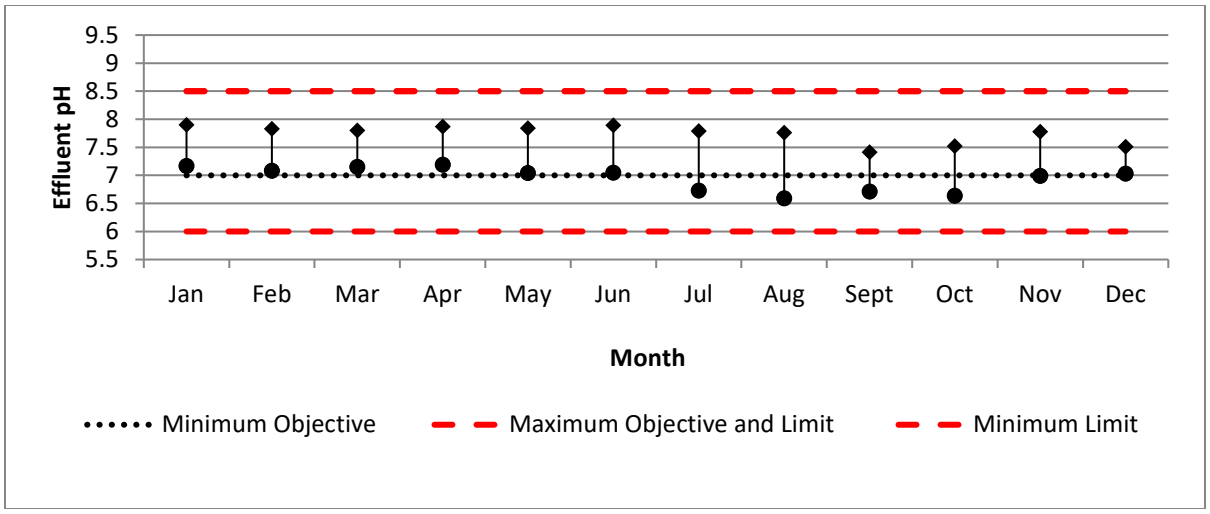
The annual geometric mean for effluent E. coli in 2024 was 1.8cfu/100mL; this value has decreased by 2.0% compared to the annual average in 2023. There were no limit or objective exceedances for E.coli in 2024. Refer to Graph 14 for the effluent monthly geometric mean concentrations.

Graph 14. The effluent monthly geometric mean of E. coli in 2024 compared to 2023.



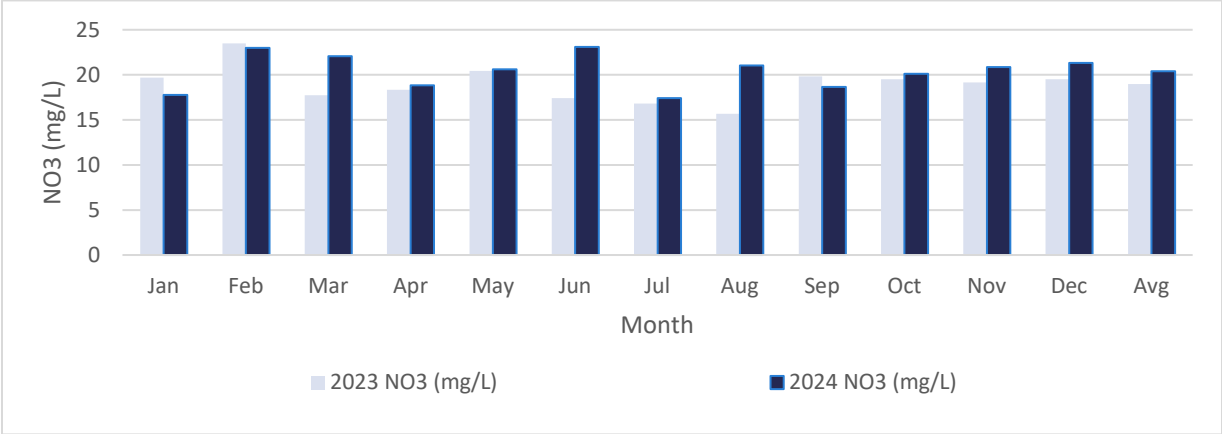
The effluent pH is monitored three times per week at a minimum at the Port Rowan WWTP. The pH is required to be maintained between 6.0-9.5 at all times (limit) with an objective range of 7.0-8.5. In 2024, there were no pH results that were above or below the limit range. There were twelve (12) individual readings below the objective of 7.0 as discussed below in ***Section F: Objective Exceedances & Best Efforts***. Refer to Graph 15 for the monthly minimum and maximum pH readings.

Graph 15. Effluent pH minimum and maximum ranges for 2024



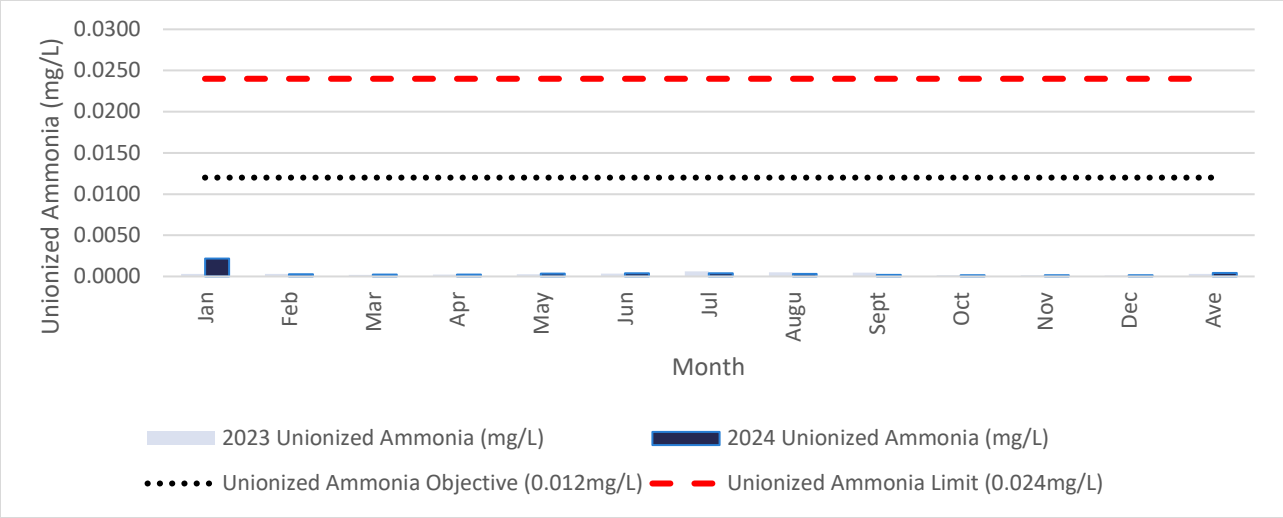
The annual average for effluent NO_3 was 20.4mg/L in 2024. There are no limits or objectives for NO_3.

Graph 16. The effluent monthly average concentration of NO_3 in 2024 compared to 2023.



The annual average effluent concentration of unionized ammonia was 0.0004mg/L in 2024. There were no objective or limit exceedances in 2024, refer to Graph 17 for the effluent monthly average concentration of Unionized Ammonia.

Graph 17. The effluent monthly average unionized ammonia in 2024 compared to 2023.



The Port Rowan Wastewater Plant performed well in 2024 producing quality effluent meeting all limits for the ECA's required parameters however there were objective exceedances for total suspended solids, total phosphorus and pH. These objective exceedances are discussed further below in ***Section F: Objective Exceedances & Best Efforts.***

Section B: Operating Problems and Corrective Actions

In 2024, there were challenges in meeting the $CBOD_5$, TSS, TP and pH objectives. There was a total of twenty-eight (28) objective exceedances overall. Operations staff continued to make adjustments to chemical feed rates, monitor and adjust the pH of the effluent and the membrane cassettes were replaced for both train 1 and train 2 in November. For additional information see **Section F: Objective Exceedances & Best Efforts.**

As per the CLI-ECA Schedule E Condition 4.6.4, there were no operating problems at the sewage pumping stations or with the linear infrastructure that required corrective actions for 2023.

Section C: Maintenance Activities

Regular scheduled monthly preventative maintenance for the Port Rowan WWTP and associated SPS's (as per the CLI-ECA Schedule E Condition 4.6.5) are assigned and monitored using the Workplace Management System (WMS) program. Refer to Appendix C for preventative maintenance schedule. Norfolk County's preventative maintenance of the gravity separate sewers involves a sanitary flushing program (including manhole inspections), aiming to flush 20% of each system on an annual basis. Norfolk County has retained Civica Infrastructure Inc. to complete a County wide Inflow and Infiltration reduction study over a five (5) year period between 2024 and 2029. See Appendix B for the Civica Work Plan. Items that were repaired or replaced in 2024 were as follows:

Table 7. Port Rowan WWTP Major Maintenance Completed in 2024

Date	Maintenance Activities
January 16	Electrical Contractor onsite to replace solenoid on compressor
January 17	Mechanical Contractor onsite to install new grating in fine screen room
February 6	Electrical Contractor onsite to replace pressure sensor on train 2 permeate line
May 2	Gas Detector Calibrations completed by third party
May 8	Contractor onsite for wet well clean out
May 8	Flow meter calibrations completed by third party
May 24	Lifting equipment inspected by third party
July 4	Plant Generator serviced by third party
July 25	Mechanical Contractor onsite installing new emergency shower. Completed July 31.
August 21	Electrical Contractor replaced wiring in grit removal system
September 23	Contractor onsite to replace dissolved oxygen probe in aeration. Install completed October 4
September 25	Electrical Contractor onsite to replace motor for lab fume hood. Completed September 26
October 18	Contractor onsite to install new water meter at the plant
October 24	Fire extinguishers inspections completed by third party
November 20	Contractor replaced fuse in PLC cabinet for return sludge pumps
November 26	Contractor onsite to replace both permeate pumps
November 28	Contractor onsite to install gravel path to new emergency shower/eyewash
November 28	Contractor onsite to start membrane cassette replacement on train 2. Completed November 29.
December 2	Contractor onsite to start membrane cassette replacement on train 1. Completed December 10.
December 9	Backflow preventer inspections completed by third party
December 17	Mechanical Contractor onsite to replace guard around headworks odour control fan
December 23	Electrical contractor installed new relay in air handling unit

Table 8. Ducks Landing SPS Major Maintenance Completed in 2024

Date	Maintenance Activities
May 8	Contractor onsite for wet well clean out
June 3	Generator serviced by third party
October 7	Generator serviced by third party
November 5	Contractor onsite for wet well clean out

Table 9. Front Road SPS Major Maintenance Completed in 2024

Date	Maintenance Activities
January 3	UPS replaced
March 5	Generator serviced by third party
May 24	Battery replaced on generator

Table 10. Mallard Walk SPS Major Maintenance Completed in 2024

Date	Maintenance Activities
May 8	Contractor onsite for wet well clean out
June 6	Contractors coordinated the replacement of the 2.2HP submersible pump #2 with a 2.4KW submersible pump

Date	Maintenance Activities
June 13	Contractor onsite to install new generator – completed June 14
August 21	Electrical Contractor relocated main disconnect
December 23	Contractor installed new flow meter.

Section D: Effluent Quality Assurance

Effluent quality assurance is evaluated by monitoring parameters and changes throughout the plants processes. The operators monitor the basin by performing weekly tests on the mixed liquor. These tests include dissolved oxygen, pH, temperature, settling tests and Mixed Liquor Suspended Solids (MLSS). As well, monitoring of chemical dosages and wasting volumes are completed. Data collected from these tests provide valuable information to the operators to make the appropriate adjustments in the treatment process and take corrective actions before the plant reaches its effluent limits.

Section E: Calibration and Maintenance on Effluent Monitoring Equipment

The Port Rowan WWTP effluent flow meter was calibrated by JBF Controls Ltd. on May 8, 2024. In house meters for pH and dissolved oxygen were calibrated by JBF Controls Ltd. on October 17, 2024 as per manufacturer's instructions.

As per the CLI-ECA Schedule E Condition 4.6.5 –Ducks Landing SPS and Front Road SPS have flow meters that require calibrations. These meters were calibrated by JBF Controls Ltd on May 8, 2024. The Mallard Walk flow meter was installed in December of 2024 and will require annual calibrations beginning in 2025.

Section F: Objective Exceedances & Best Efforts

As per Table 11 below, the Port Rowan WWTP did not achieve compliance with all the design objectives during the reporting year. Throughout 2024, Operations staff worked diligently to perform membrane cleanings, monitor and adjust the pH as well as monitor and adjust chemical feed rates.

Table 11. Sample results compared against the effluent objectives and loading limits.

Parameter	Effluent Objective (mg/L)	Monthly Effluent Result Ranges (mg/L)	# of Objective Exceedances	Effluent Loading Limit (kg/d)	Monthly Loadings Result Ranges (kg/d)	# of Limit Loading Exceedances
$cBOD_5$	2.5	2.0-3.0	1	2.85	1.06-2.13	0
TSS	1.0	1.0-1.8	6	1.14	0.54-1.19	0
TP	0.06	0.06-0.10	9	0.07	0.03-0.07	0
TAN	2.0(1.0)	0.03-0.27	0	2.48(1.28)	0.02-0.27	0
UA	0.012	0.0002-0.0022	0	n/a	n/a	n/a
E. coli (cfu/100mL)	12	1.0-5.0	0	n/a	n/a	n/a
pH*	7.0-8.5	6.59-7.90	12	n/a	n/a	n/a

*minimum and maximum result (not monthly averages)

Table 12. Objective exceedances in 2024.

Date	Parameter	Concentration mg/L	Loadings kg/d	Issue and Proactive Actions Taken
12/2024	$CBOD_5$	3.0	2.13	Cleaned Membranes
01/2024	TSS	1.2	1.19	Cleaned Membranes
05/2024	TSS	1.8	1.19	Cleaned Membranes
06/2024	TSS	1.3	0.81	Cleaned Membranes
07/2024	TSS	1.2	0.79	Cleaned Membranes
11/2024	TSS	1.3	0.66	Cleaned Membranes
12/2024	TSS	1.5	1.07	Cleaned Membranes
01/2024	TP	0.07	0.07	Increased Ferrous Chloride
02/2024	TP	0.07	0.04	Increased Ferrous Chloride
03/2024	TP	0.08	0.05	Increased Ferrous Chloride
04/2024	TP	0.07	0.05	Increased Ferrous Chloride
05/2024	TP	0.10	0.07	Increased Ferrous Chloride
08/2024	TP	0.07	0.04	Increased Ferrous Chloride
09/2024	TP	0.07	0.04	Increased Ferrous Chloride
10/2024	TP	0.09	0.05	Increased Ferrous Chloride
12/2024	TP	0.09	0.06	Increased Ferrous Chloride
23/07/2024	pH	6.90	n/a	Added Sodium Bicarbonate
29/07/2024	pH	6.73	n/a	Added Sodium Bicarbonate
06/08/2024	pH	6.59	n/a	Added Sodium Bicarbonate
23/06/2024	pH	6.96	n/a	Added Sodium Bicarbonate
16/09/2024	pH	6.84	n/a	Added Sodium Bicarbonate
19/09/2024	pH	6.91	n/a	Added Sodium Bicarbonate
23/09/2024	pH	6.71	n/a	Added Sodium Bicarbonate
27/09/2024	pH	6.89	n/a	Added Sodium Bicarbonate
03/10/2024	pH	6.97	n/a	Added Sodium Bicarbonate
04/10/2024	pH	6.94	n/a	Added Sodium Bicarbonate
11/10/2024	pH	6.64	n/a	Added Sodium Bicarbonate
21/11/2024	pH	6.99	n/a	Added Sodium Bicarbonate

The Port Rowan WWTP performed well in 2024 producing quality effluent meeting all require limits however, there were a total of twenty-eight (28) objective exceedances in 2024. In order to ensure compliance, the operators continue to closely monitor the treatment process and utilize best operating practices.

Section G: Sludge Handling and Generated

Sludge is removed from the Port Rowan WWTP and sent to the Townsend Lagoon for processing or taken to field for land application. The total volume generated in 2024 was 1,916m^3, refer to Table 13 below for a breakdown and Table 14 for the sludge disposal locations. Sludge sampling results can be found in Appendix D.

It is expected that 2025 will be similar to 2024 with approximately 2,000m^3 of sludge being removed from the Port Rowan WWTP.

Table 13. Sludge Generation 2024.

Month	Townsend Lagoon (m^3)	Field (m^3)	Total (m^3)
January	498	-	498
February	-	-	-
March	180	-	180
April	131	-	131
May	90	90	180
June	204	-	204
July	-	170	170
August	-	-	-
September	135	-	135
October	-	-	-
November	-	418	418
December	-	-	-
Total	**1,238**	**678**	**1,916**

Table 14. Sludge Disposal Locations 2024.

Site	NASM#	Port Rowan WWTP (m^3)	Dates Spread
OX1110	24975	90	May 3, 2024
HN1068	60406	170	July 23, 2024
HN1340	60746	264	November 7, 2024
HN1340	60746	154	November 8, 2024
Total		**678**	

Section H: Complaints

There were no complaints received for the Port Rowan WWTP in 2024.

As per the CLI-ECA Schedule E Condition 4.6.6 - there was one (1) community complaint received for the Port Rowan Sewage Pumping Stations (SPS) as discussed below.
There were no community complaints received for the gravity separate sewers in 2024.

November 3, 2024 – A complaint was received regarding sewage flowing into the bay by Duck's Landing SPS. Operations checked over the station and overflow pipes and found a storm drain next to the station with water trickling out. No sewage was overflowing the station.

Section I: By-pass, Spill or Abnormal Discharge Events

There were no bypasses or spills at the Port Rowan WWTP in 2024.

As per CLI-ECA Schedule E Condition 4.6.3, 4.6.8 and 4.6.9 - There was one (1) overflow event (raw sewage spills) at the Port Rowan SPS's in 2024. Details of the event are as follows:

January 26, 2024
Incident #1-4M85VX: Front Road Sewage Pumping Station
Volume: 61.23m^3
Duration: 1 hour, 49min
Disinfection: no
Verbal and written notification sent to SAC for overflow due to heavy rainfall overloading the facility. There was no adverse impact to the receiving stream.

As per CLI-ECA Schedule E Condition 4.6.3, 4.6.8 and 4.6.9 - There were no bypass, overflow, spill or abnormal discharge events within the linear infrastructure in 2024.

Norfolk County Collection/Distribution Operators flush twenty percent of the wastewater collection system annually to help eliminate the possibility of bypass/overflows. This also allows operations to assess the system for deficiencies. This information is then taken into consideration when planning infrastructure upgrades and budget forecasting.

Section J: Copy of Notice of Modifications Submitted

There were no modifications to the process at the Port Rowan WWTP that required a Notice of Modification to Sewage Works in 2024.

As per the CLI-ECA Schedule E Condition 4.6.7 – The following modifications were completed at the Port Rowan SPS's in 2024. A Form SS2 Record of Future Alteration Authorized for Components on the Municipal Sewage Collection System, along with a Director's Notification form was submitted to the MECP for the following:

1. June 2024 Asset ID: WW419 - Mallard Walk Pumping Station SPS 2
    - Replace Pump #2 which is a 2.2 HP submersible pump which has failed with a 2.4 KW replacement pump.

A Form A1 Record of Future Alteration Authorized for Equipment Discharging a Contaminant of Concern to the Atmosphere from a Municipal Sewage Collection System, along with a Director's Notification form was submitted to the MECP for the following:

2. June 2024 Asset ID: WW419 - Mallard Walk Pumping Station SPS 2
    - Replace existing Cummans Onan 10.5 KW Natural Gas Generator and transfer switch with Briggs and Stratton 11.5 KW standby Natural Gas Generator and transfer switch. Full Load 212,000 BTU on Natural Gas and 69dB at No Load.

As per the CLI-ECA Schedule E Condition 4.6.7 – There were no alterations to the Port Rowan's linear infrastructure in 2024.

Section K: Report Summarizing Modifications as a result of Schedule B, Section 3

There were no modifications to the process at the Port Rowan WWTP as a result of Schedule B, Section 3 in 2024.

Section L: Other Information:

There is no other information for the Port Rowan WWTP to report to the Water Supervisor for 2024.