2025 ANNUAL WASTEWATER TREATMENT SYSTEM SUMMARY REPORT

Norwich Wastewater Treatment Plant

1. GENERAL INFORMATION

Oxford County (the County) prepares a report summarizing wastewater treatment operation and treated effluent discharge quality for every municipal wastewater treatment plant (WWTP) annually. The reports detail the latest effluent quality testing results and quantity statistics, and any non-compliance conditions that may have occurred for the previous year. They are available for review by the end of March on the County website at http://www.oxfordcounty.ca/waterwastewater or by contacting the Public Works Department.

All efforts have been made to ensure the information presented in this report is as accurate as possible.

If you have any questions or comments concerning the report, please contact the County at the address and phone number listed below or by email at wastewater@oxfordcounty.ca.

Wastewater Treatment Plant:	Norwich WWTP
Wastewater Treatment Plant Number:	110001480
Certificate of Approval (CofA):	1680-6F6QR5 (August 31, 2005)
Reporting Period:	January 1, 2025 – December 31, 2025

Wastewater Treatment Plant Owner & Contact Information:

Oxford County Public Works Department - Wastewater Services
P.O. Box 1614
21 Reeve Street
Woodstock, ON N4S 7Y3
Telephone: 519-539-9800
Toll Free: 866-537-7778
Email: wastewater@oxfordcounty.ca

1.1 System Description

The Norwich WWTP is a Class I facility as defined by Ontario Regulation (O. Reg.) 129/04. The Norwich WWTP is a lagoon wastewater treatment system serving the community of Norwich. The nominally separated wastewater collection system includes four (4) sewage pumping stations (SPS), 27.7 kilometers of sanitary gravity sewers, 4.4 kilometers of sanitary forcemain sewers and 0.7 kilometers of sanitary low-pressure sewers. The wastewater is pumped from the collection system to a splitter box; then to either of two lagoon cells as determined by the operator. Wastewater is typically directed to the North cell, which operates in series with the South cell. Effluent is then filtered through the sand filter beds for a portion of each day, as required. The lagoons may discharge year-round; however, freezing conditions normally prevent discharge through the filter beds from December to April.

The system is maintained by licensed wastewater system operators and licensed mechanics that operate, monitor, and maintain the treatment equipment, in accordance with the regulations, and collect samples as required by the CofA. Alarms automatically notify operators in the event of failure of critical operational requirements.

The Norwich WWTP is located at Lot 7, Conc. 5, Norwich Township, Ontario, with the Facility description provided below:

Facility	Norwich WWTP
Design Capacity	1,530 m^3/d
2025 Average Daily Flow	1,011 m^3/d
2025 Maximum Daily Flow	5,943 m^3/d
2025 Total Volume of Wastewater	368,139 $m^3/year$

1.2 Major Expenses

In 2025, the Norwich WWTP had forecast operating and maintenance expenditures of approximately $563,000.

Planning for major wastewater system expenses is included within Oxford County's Wastewater Services Master Plan and managed according to our Asset Management and Capital Replacement Program. In addition to regular operational and maintenance expenditures, Capital Improvement Projects for Norwich were forecast at approximately $700,000 which included improvements to the wastewater collection system and the Norwich WWTP.

Capital Improvement Projects for all systems included:

- $1,340,000 to develop Countywide Supervisory Control and Data Acquisition (SCADA) Master Plan for all wastewater systems.

2. SUMMARY AND INTERPRETATION OF MONITORING DATA

2.1 Effluent Quality Assurance and Control Measures

Sampling Procedure

Influent samples are taken from the WWTP influent splitter box. The sampling frequency is once per week and samples are tested for Biochemical Oxygen Demand (BOD_5), Total Suspended Solids (TSS) monthly, Total Phosphorus (TP), and Total Kjeldahl Nitrogen (TKN) weekly.

Effluent samples are collected using a 24-hour composite sampler programmed to collect a sample every 15 minutes for the duration of each discharge period. During discharge, effluent is sampled and analyzed for BOD_5, TKN, and TSS at least monthly. Total phosphorus (TP), total ammonia nitrogen (TAN), pH, and temperature are sampled and analyzed at least three times per week, while E. coli and dissolved oxygen (DO) are sampled and tested at least weekly.

Laboratory and Field Testing

Sample results that are used to determine the WWTP compliance are analyzed at a licensed laboratory. Laboratory analysis is performed by SGS Lakefield Research Ltd. on all samples for all parameters except for pH, temperature, and DO which are collected and analyzed in the field. Any information generated in-house is used in process control but is not included in this report.

2.2 WWTP Performance and Effluent Quality

Final Effluent Compliance Limits

Compliance limits are defined as the maximum effluent concentrations permitted for a given parameter set by the Ministry of Environment, Conservation and Parks (MECP). Compliance limits are detailed within each WWTP CofA. The limits are determined to prevent impairment to the receiving water body quality. The Owner is legally obligated to operate and maintain the treatment system to ensure the compliance limits are achieved.

The Norwich WWTP provided effective treatment in 2025 and was 100% in compliance with all its regulatory limits for all effluent discharged from the WWTP:

There was a non-compliance event that occurred on April 3, 2025, related to the high influent volumes:

- Extreme weather conditions and heavy rainfall in the area resulted in elevated influent volumes being conveyed to the Norwich WWTP. A total daily influent volume of 5,943 m^3 was received at the Norwich WWTP on April 3, 2025, which exceeded the CofA Daily Flow Limit through the plant of 5,160 m^3/d.

The CofA Daily Flow Limit through the plant of 5,160 m^3/d was discussed during MECP consultation meetings involved with the recently completed Norwich Wastewater Treatment Plant Capacity Expansion Municipal Class Environmental Assessment Study (2025). Based on these discussions, and the inability of WWTPs to control influent flow, the County will be requesting to remove this limit during the next capacity expansion (2027-2030).

The non-compliance was reported to the MECP.

Influent Streams and Effluent Streams

The operator measures pH of both the influent and effluent streams. There was no single pH result for the effluent outside the discharge limit of 6.0 to 9.5 in 2025.

In 2025, chlorine was not used at the Norwich WWTP.

There were no single sample un-ionized ammonia effluent results or monthly average un-ionized ammonia effluent results above the CofA limits in 2025.

Influent wastewater characteristics and effluent discharge values are presented in the tables below:

Influent Wastewater Characteristics (annual average)		
Parameter	**Concentration (mg/L)**	**Loading (kg/d)**
BOD_5	285	288
Total Suspended Solids	266	269
Total Phosphorus	5.3	5.4
Total Kjeldahl Nitrogen	50	51

Effluent Parameter	**Sample Frequency** (when discharging)	**CofA Effluent Limit (Monthly Average)** (mg/L unless otherwise indicated)	**Monthly Average Result Min-Max** (mg/L unless otherwise indicated)	**Percentage Removal**
Biochemical Oxygen Demand (BOD_5)	monthly	10.0	2.0 – 4.0	98.6 – 99.3
Total Suspended Solids (TSS)	monthly	10.0	2.0 – 4.2	98.4 – 99.2
Total Phosphorus (TP) (non-freezing period)*	3/week	0.5	0.24 – 0.28	94.7 – 95.5
Total Phosphorus (TP) (freezing period)*	3/week	1.0	0.19 – 0.27	94.9 – 96.4
Total Ammonia Nitrogen (TAN) (non-freezing period)*	3/week	3.0	0.23 – 0.15	--
Total Ammonia Nitrogen (TAN) (freezing period)*	3/week	5.0	0.23 – 0.40	--
E. coli	weekly	200 MPN**/100 mL (Monthly Geometric Mean Density)	5.0 – 121.4 MPN/100 mL (Monthly Geometric Mean Density)	--

Effluent Parameter	**Sample Frequency** (when discharging)	**CofA Effluent Limit (Monthly Average)** (mg/L unless otherwise indicated)	**Monthly Average Result Min-Max** (mg/L unless otherwise indicated)	**Percentage Removal**
Dissolved Oxygen (DO)	weekly	4.0	5.0 – 12.0	--
pH (any single sample)	3/week	6.0 - 9.5	6.6 – 7.8	--
Total Ammonia Nitrogen (any single sample) (non-freezing period)*	3/week	5.0	0.1 – 0.5	--
Total Ammonia Nitrogen (any single sample) (freezing period)*	3/week	8.0	0.1 – 1.2	--
Un-ionized Ammonia (any single sample)		0.2	0.001 – 0.045	--

* Freezing period means the period of the year during which the water temperature of the receiving stream is equal to or below 5 degrees Celsius, normally from December 1 to April 30. In 2025, the non-freezing period was determined to be April 22 to November 30, as the recorded temperature of the receiving stream was above 5 degrees Celsius.
**MPN: Most Probable Number

Graphs of discharge parameters versus effluent discharge limits are included in this report in Appendix 'A'.

2.3 Final Effluent Design Objectives

Final Effluent Design Objectives (objectives) are non-enforceable effluent quality values which the Owner is obligated to use best efforts to strive towards achieving on an ongoing basis. These objectives are to be used as a mechanism to trigger corrective action proactively, and voluntarily, before environmental impairment occurs and before the compliance limits are exceeded.

All monthly average final effluent objectives concentrations and loadings were met in 2025.

The following table presents the range of effluent discharge values vs. CofA Objectives:

Effluent Parameter	**Sample Frequency** (when discharging)	**Monthly Average Objective Concentration** (mg/L unless otherwise indicated)	**Monthly Average Result Min-Max** (mg/L unless otherwise indicated)
BOD_5	monthly	5.0	2.0 – 4.0
TSS	monthly	5.0	2.0 – 4.2
TP (non-freezing period)*	3/week	0.3	0.24 – 0.28

Effluent Parameter	Sample Frequency (when discharging)	Monthly Average Objective Concentration (mg/L unless otherwise indicated)	Monthly Average Result Min-Max (mg/L unless otherwise indicated)
TP (freezing period)*	3/week	0.8	0.19 – 0.27
Total Ammonia Nitrogen (non-freezing period) *	3/week	2.0	0.23 – 0.15
Total Ammonia Nitrogen (freezing period)*	3/week	4.0	0.23 – 0.40
Dissolved Oxygen (DO)	weekly	5.0	5.0 – 12.0
E. coli	weekly	150 MPN/100 mL (Monthly Geometric Mean Density)	5.0 – 121.4 MPN/100 mL (Monthly Geometric Mean Density)
* Freezing period means the period of the year during which the water temperature of the receiving stream is equal to or below 5 degrees Celsius, normally from December 1 to April 30. In 2025, the non-freezing period was determined to be April 22 to November 30, as the temperature of the receiving stream was above 5 degrees Celsius.			

3. OVERFLOWS, BYPASSING, UPSETS, SPILLS, AND ABNORMAL CONDITIONS

There were no overflows, bypasses, spills, or abnormal conditions at the Norwich WWTP in 2025.

There were no complaints received in 2025.

4. MAINTENANCE OF WORKS

The operating and maintenance staff at the Norwich WWTP conducts regularly scheduled maintenance of the WWTP equipment. The Norwich WWTP utilizes a database, known as Cartegraph to issue work orders and maintain records for regular maintenance and repair at the Norwich WWTP.

5. MONITORING EQUIPMENT MAINTENANCE AND CALIBRATION

The calibration of flow meters was conducted by JBF Controls Ltd. in accordance with the requirements of the CofA. The records are kept on-site at the Norwich WWTP.

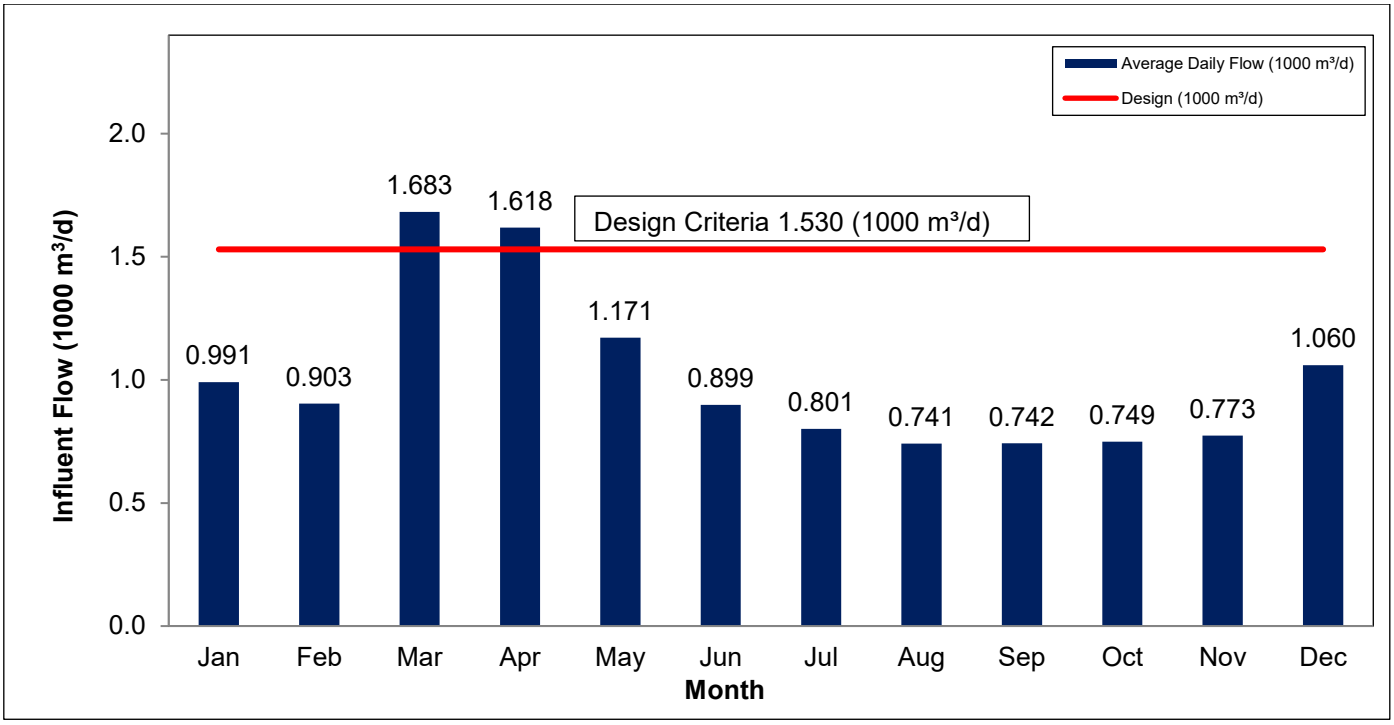
All other operational monitoring equipment is calibrated by staff and records are kept on-site at the Norwich WWTP.

6. INSPECTION, PILOTS, AND TRIALS

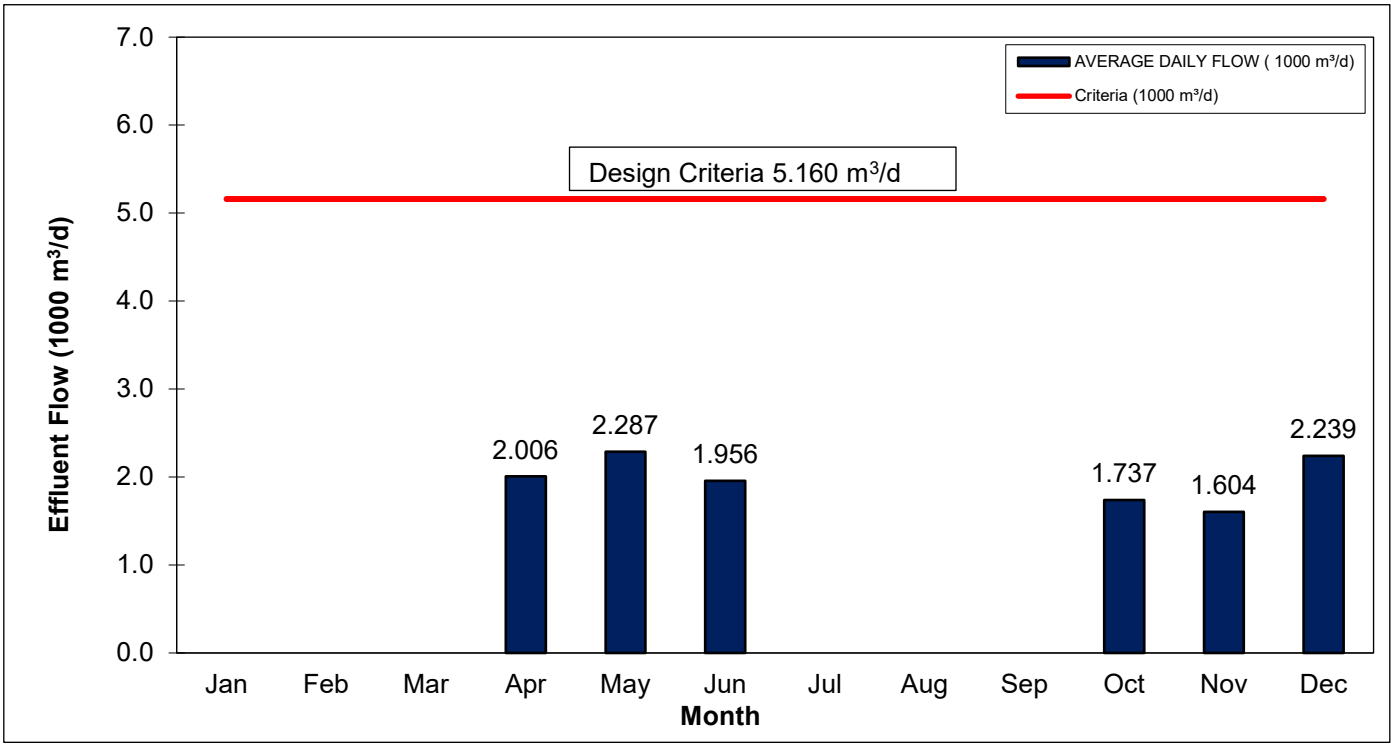
The MECP did not perform an inspection of the Norwich WWTP in 2025. The MECP inspections typically occur on a 3-year schedule.

APPENDIX A: GRAPHS OF 2025 DISCHARGE PARAMETERS VS. EFFLUENT DISCHARGE LIMITS

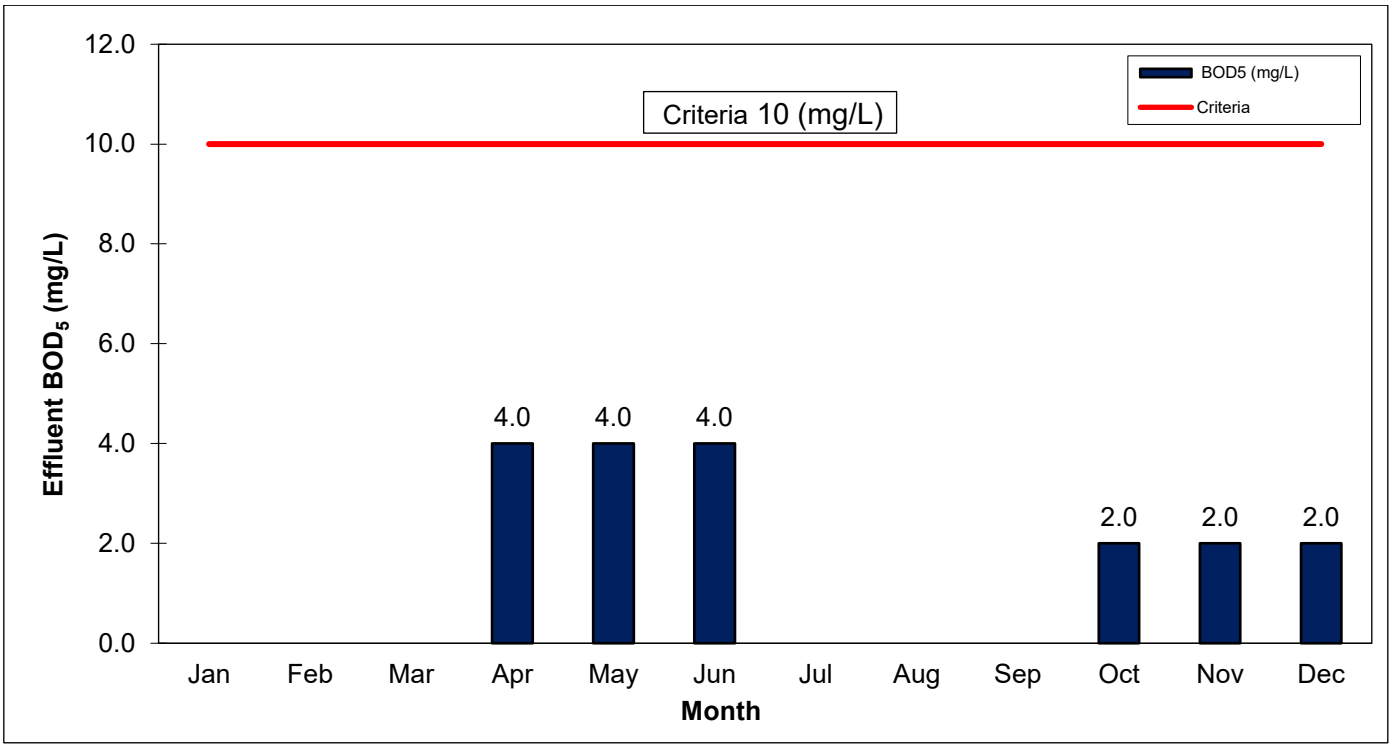
Norwich WWTP Influent, Monthly Average Daily Flow (1000 m³/d), 2025



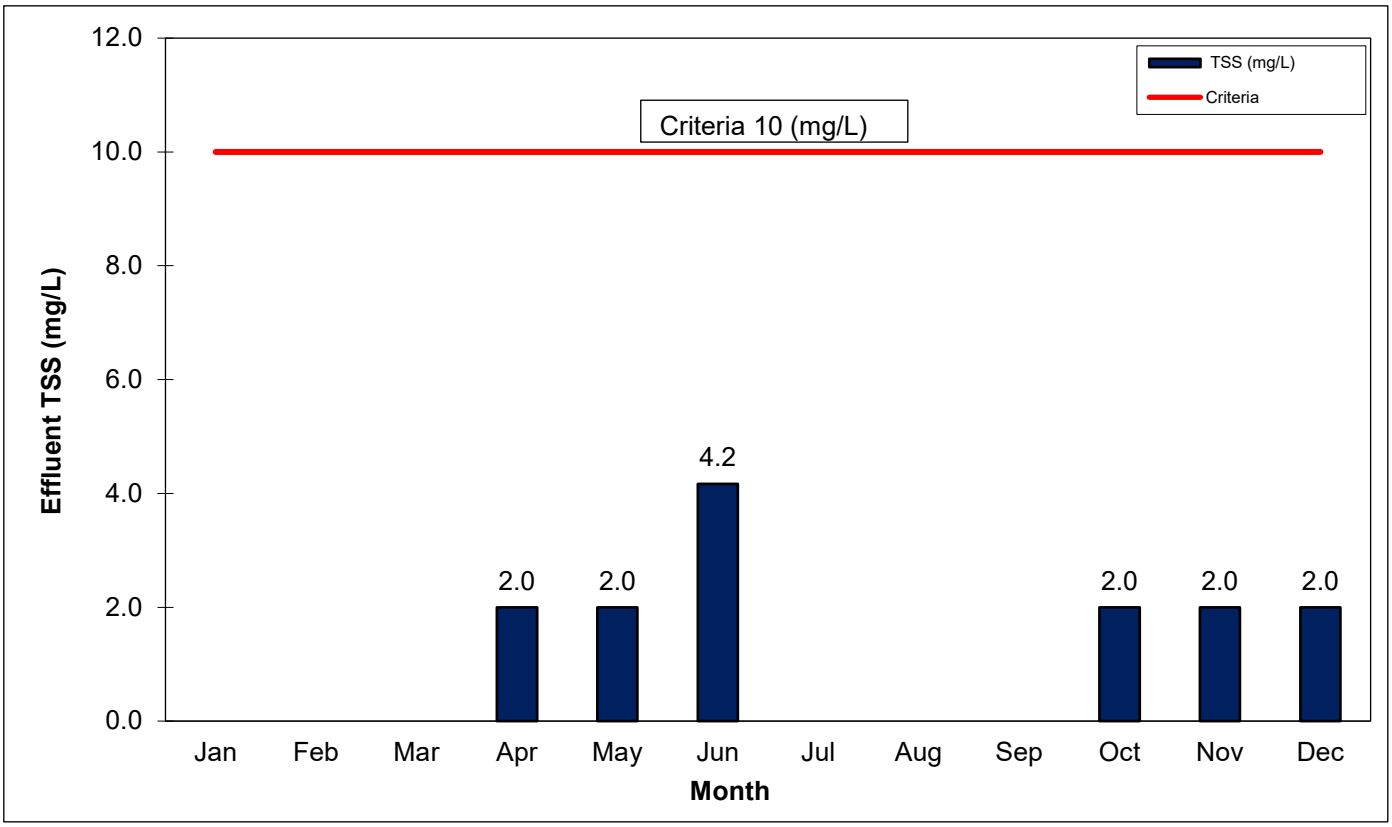
Norwich WWTP Effluent, Monthly Average Daily Flow (1000 m³/d), 2025



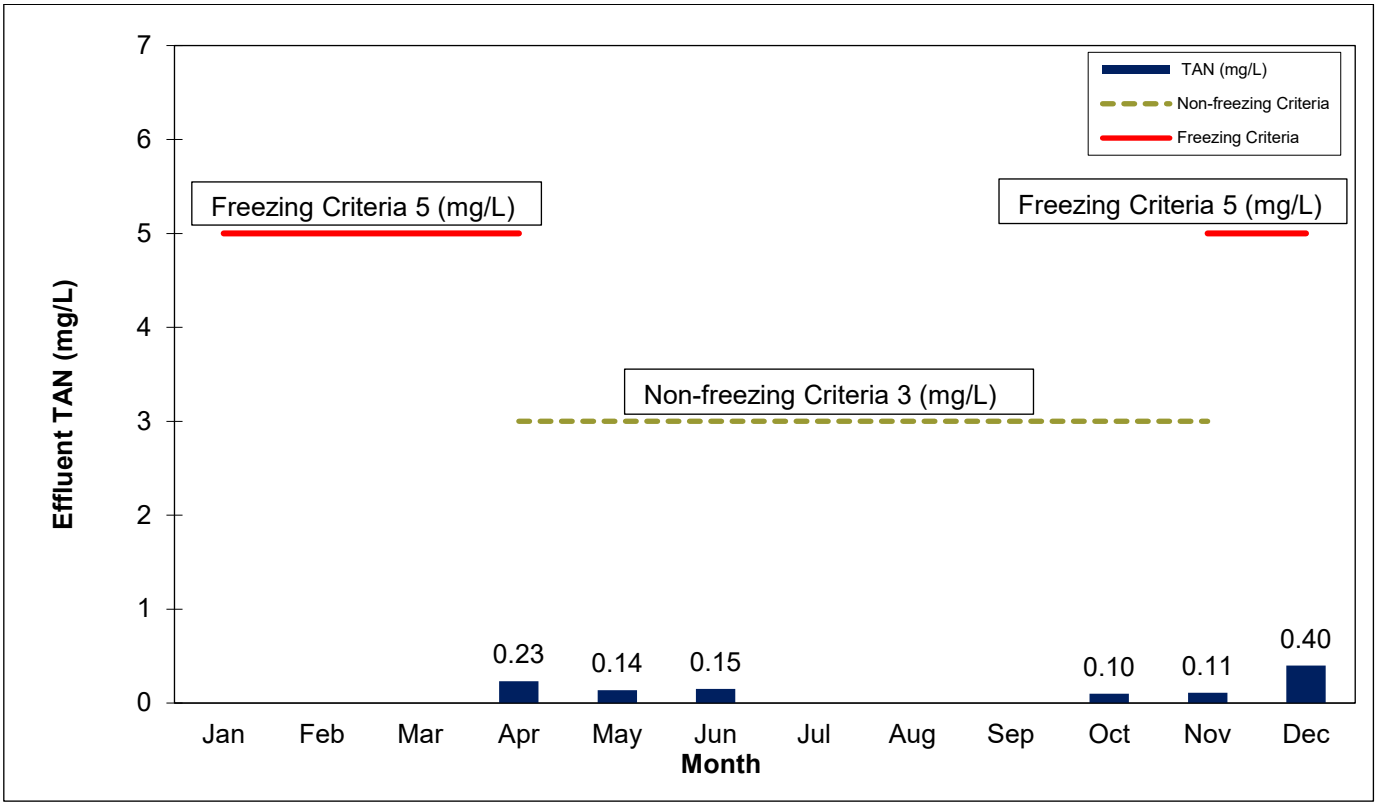
Norwich WWTP Effluent, Monthly Average BOD_5 (mg/L), 2025



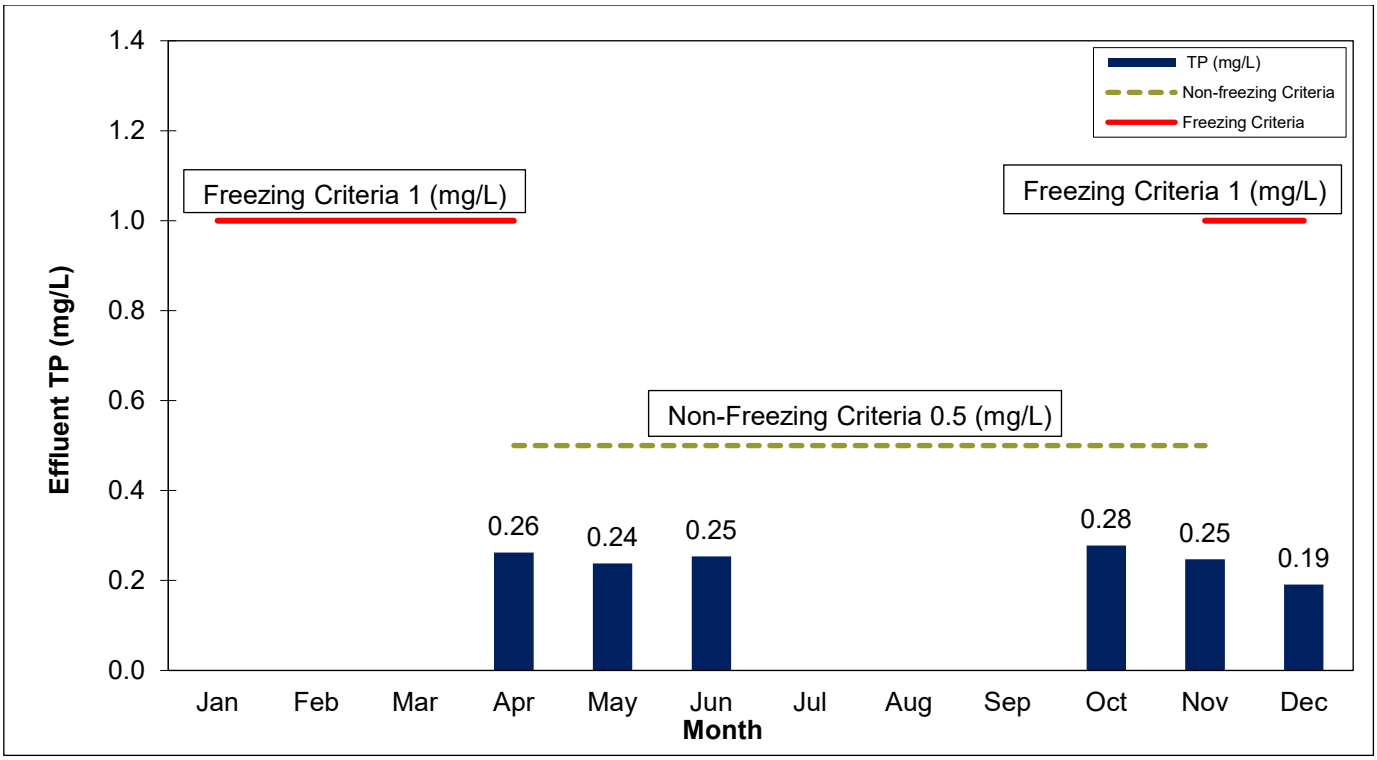
Norwich WWTP Effluent, Monthly Average TSS (mg/L), 2025



Norwich WWTP Effluent, Monthly Average TAN (mg/L), 2025



Norwich WWTP Effluent, Monthly Average TP (mg/L), 2025



Norwich WWTP Effluent, Monthly Geometric Mean Density E. coli (MPN/100 mL), 2025