



2023 ANNUAL WASTEWATER TREATMENT SYSTEM SUMMARY REPORT

Plattsville 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:	Plattsville WWTP
Wastewater Treatment Plant Number:	110003022
Environmental Compliance Approval (ECA):	3133-7QWH4N (June 23, 2009)
Reporting Period:	January 1, 2023 – December 31, 2023

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 Plattsville WWTP is a Class I facility, as defined by Ontario Regulation (O.Reg.) 129/04. The Plattsville WWTP is a lagoon wastewater treatment system serving the community of Plattsville. The nominally separated wastewater collection system includes one (1) sewage pumping station (SPS), 12.8 kilometers of sanitary gravity sewers and 3.1 kilometers of sanitary forcemain sewers. Wastewater is treated at the Plattsville WWTP, which includes two aerated lagoon cells and two conventional wastewater stabilization ponds. Phosphorus removal is accomplished through the continuous dosing of aluminum sulphate into the splitter box prior to the wastewater entering the stabilization ponds and/or when required by batch dosing via a return pump pond mixing system, which can dose either cell and recirculate the contents. Treated effluent is pumped to an intermittent sand filter designed for ammonia removal prior to discharge into the Nith River.

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 ECA. Alarms automatically notify operators in the event of failure of critical operational requirements.

The Plattsville WWTP is located at Lot 16, Conc. 12, Township of Blandford-Blenheim, Ontario with the Facility description provided below.

Facility	Plattsville WWTP
Design Capacity	800 m ³ /d
2023 Average Daily Flow	441 m ³ /d
2023 Maximum Daily Flow	970 m ³ /d
2023 Total Volume of Wastewater	160,848 m ³ /year

1.2 Major Expenses

In 2023, the Plattsville WWTP had forecasted operating and maintenance expenditures of approximately \$655,000.

In addition to regular operational and maintenance expenditures, Capital Improvement Projects for the Village of Plattsville were forecasted at \$34,000 which included improvements to the wastewater collection system and the Plattsville WWTP.

Capital Improvement Projects included:

- \$27,000 for Lagoon Biosolids Inventory Monitoring Reports (2)
- \$7,000 for the replacement of general equipment

Capital Improvement Projects for all systems included:

- \$1,799,000 to develop Countywide SCADA Master Plan for all wastewater systems
- \$70,000 to develop Countywide Wastewater Servicing Master Plan for all wastewater systems
- \$38,000 for Development Charges Technical Study

2. SUMMARY AND INTERPRETATION OF MONITORING DATA

2.1. Effluent Quality Assurance and Control Measures

Sampling Procedure

Raw influent wastewater is sampled on a monthly basis. The influent samples are analyzed for Biochemical Oxygen Demand (BOD₅), Total Suspended Solids (TSS), Total Kjeldahl Nitrogen (TKN), Total Phosphorus (TP), and pH. Effluent discharge samples are collected bi-weekly or monthly and at an interval to meet the percentage of drawdown of the lagoon cell during discharge periods as stipulated in the ECA. Effluent samples are analyzed for CBOD₅, TSS, Total Ammonia Nitrogen, TP, E. coli, temperature and pH.

Laboratory and Field Testing

All samples that are reported for compliance purposes are analyzed by a licensed laboratory except for pH, dissolved oxygen (DO), and temperature which are field collected. Laboratory analysis is performed by SGS Lakefield Research Ltd. All other in-house testing is done for process control, the results of which are not included in this report.

Groundwater Testing

The ECA requires that an annual groundwater sample be collected and tested for Total Organic Carbon (TOC), TP, TKN, Nitrite and Nitrate.

Four samples were collected in 2023 and are referred to as the shallow well samples and deep well samples:

PLATTSVILLE WWTP GROUNDWATER SAMPLING								
Date	Jun 23/23	Jun 23/23	July 7/23	July 7/23	Oct 2/23	Oct 2/23	Oct 16/23	Oct 16/23
Depth of Sample	Shallow	Deep	Shallow	Deep	Shallow	Deep	Shallow	Deep
Parameter								
TOC (mg/L)	< 1	< 1	1	< 1	< 1	< 1	1	< 1
Total P (mg/L)	< 0.03	0.71	0.09	0.12	0.18	0.21	0.12	1.29
TKN (mg/L N)	1.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ammonia (mg/L)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Nitrite (mg/L)	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Nitrate (mg/L)	0.41	< 0.06	0.34	< 0.06	0.39	< 0.06	0.33	< 0.06
Nitrate + Nitrite (mg/L N)	0.41	< 0.06	0.34	< 0.06	0.39	< 0.06	0.33	< 0.06
Chloride (mg/L)	6	26	6	25	6	24	7	24

Oxford County's Hydrogeologist has reviewed all monitoring well data, and will continue to monitor groundwater results on our behalf and has no concerns at this time.

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 ECA. 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.

In 2023, the Plattsville WWTP provided effective treatment, with 284 samples out of 296 meeting compliance or 96% compliance to its regulatory limits for all effluent discharge to the Nith River.

In October, warm temperatures led to an algal bloom in Waste Stabilization Pond #2 resulting in higher effluent TSS and E. coli results.

- The Effluent Total Suspended Solids Monthly Average Concentration was 19.0 mg/L, with an ECA Total Suspended Solids Monthly Average Concentration Limit of 10.0 mg/L
- The Effluent Total Suspended Solids Average Monthly Loading Concentration was 17.5 kg/day, with an ECA Effluent Total Suspended Solids Average Monthly Loading Concentration Limit of 9.6 kg/day
- The Effluent Monthly Geometric Mean Density of E. coli was 222.2 organisms/100 mL, with an ECA Effluent Monthly Geometric Mean Density Limit of 200 organisms/100 mL

The non-compliance was reported to the MECP at the time.

On a bi-weekly basis (as a minimum) the operator measures the pH of the effluent stream during discharge. There was no single pH result for the effluent outside the discharge limit of 6 - 9.5 in 2023.

Chlorine was not used at the Plattsville WWTP in 2023.

During discharge, the receiving stream temperature was <12 degrees Celsius from May 1 to May 7, October 10, 13, 16, 19, 23, 24 and again on October 30 to November 30, 2023. During discharge, the receiving stream temperature was >12 degrees Celsius from May 8 to June 20, October 2 to 5, October 12, 17, 18, 20 and 25 to 27, 2023.

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

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	173	76
Total Suspended Solids	221	98
Total Phosphorus	5.3	2.3
Total Kjeldahl Nitrogen	49.5	22

Effluent Parameter	Sample Frequency (when discharging)	ECA Effluent Limit (Monthly Average) (mg/L unless otherwise indicated)	Monthly Average Result Min-Max (mg/L unless otherwise indicated)	Percentage Removal
CBOD ₅	weekly	10	2.0 – 8.0	94.7 – 98.7
TSS	weekly	10	4.6 – 19.0	91.4 – 97.9
TP	weekly	0.5	0.03 – 0.15	97.2 – 99.4
Total Ammonia Nitrogen (when receiving stream >12 degrees Celsius)	weekly	2	0.1 – 0.4	99.1 – 99.8
Total Ammonia Nitrogen (when receiving stream < or = to 12 degrees Celsius)	weekly	5	0.1 – 1.2	97.2 – 99.8
E. coli	weekly	200 colonies/100mL (monthly Geometric Mean Density)	4 – 222 colonies/100 mL (monthly Geometric Mean Density)	--
pH any single sample	weekly	6.0 – 9.5	6.8 – 7.9	--

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.

There were monthly average objective exceedances related to TSS, CBOD₅, and E. coli. Several single sample effluent objective exceedances occurred in 2023. These results are summarized in the tables below.

Achieving the effluent objective for TSS, E. coli and CBOD₅ was difficult in the fall of 2023, due to algae blooms that formed in the waste stabilization ponds due to warmer temperatures. Operational strategies planned in 2024 to reduce the TSS effluent concentrations include recirculating waste stabilization pond 1 prior to equalizing into waste stabilization pond 2, increased process testing and coagulant dosage optimization.

The following table presents the range of effluent discharge values vs. ECA 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)
CBOD ₅	weekly	5	2.0 – 8.0
TSS	weekly	5	4.6 – 19.0
TP	weekly	0.3	0.03 – 0.15
Total Ammonia Nitrogen (when receiving stream >12 degrees Celsius)	weekly	1	0.1 – 0.4
Total Ammonia Nitrogen (when receiving stream < or = to 12 degrees Celsius)	weekly	3	0.1 – 1.2
E. coli	weekly	150 colonies/100 mL (monthly Geometric Mean Density)	4 – 222 colonies/100 mL (monthly Geometric Mean Density)

Plattsville effluent single sample concentrations that exceeded the objective in 2023 included the following:

Date	Parameter	Objective (mg/L unless otherwise indicated)	Result (mg/L unless otherwise indicated)
May 1, 2023	TSS	5	7
May 2, 2023	TSS	5	7
May 3, 2023	TSS	5	6
May 9, 2023	TSS	5	7
June 20, 2023	TSS	5	6
June 22, 2023	TSS	5	7
October 2, 2023	TSS	5	7
October 2, 2023	E. coli	150 colonies/100 mL	244 colonies/100 mL
October 12, 2023	TSS	5	23
October 12, 2023	CBOD ₅	5	12

Date	Parameter	Objective (mg/L unless otherwise indicated)	Result (mg/L unless otherwise indicated)
October 12, 2023	E. coli	150 colonies/100 mL	1,280 colonies/100 mL
October 20, 2023	TSS	5	21
October 20, 2023	CBOD ₅	5	11
October 20, 2023	E. coli	150 colonies/100 mL	330 colonies/100 mL
October 25, 2023	TSS	5	23
October 25, 2023	CBOD ₅	5	8
October 31, 2023	TSS	5	21
October 31, 2023	CBOD ₅	5	6
November 9, 2023	TSS	5	15
November 9, 2023	CBOD ₅	5	11
November 11, 2023	TSS	5	8
November 12, 2023	TSS	5	6
November 14, 2023	TSS	5	6
November 15, 2023	TSS	5	8
November 16, 2023	TSS	5	6
November 17, 2023	TSS	5	7
November 18, 2023	TSS	5	7
November 19, 2023	TSS	5	7
November 21, 2023	TSS	5	7
November 23, 2023	TSS	5	7
November 24, 2023	TSS	5	7
November 25, 2023	TSS	5	6
November 26, 2023	TSS	5	6
November 30, 2023	TSS	5	7
November 30, 2023	TAN	3	4.1

Plattsville effluent monthly average concentrations that exceeded the objective in 2023 included the following:

Month	Parameter	Objective (mg/L)	Monthly Average Result (mg/L)
October 2023	TSS	5	19
October 2023	CBOD ₅	5	8
October 2023	E. coli	150 colonies/100 mL (monthly Geometric Mean Density)	222 colonies/100 mL
November 2023	TSS	5	6.8

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

There were no overflows, bypassing, upsets, spills, and abnormal conditions at the Plattsville WWTP in 2023.

Over the weekend of June 3 and 4, 2023, an odour complaint was received by the MECF and relayed to the County on June 5, 2023. The County reported back to the MECF that no odours were noticed at the WWTP on June 2 or June 5, 2023, and dissolved oxygen levels in the aerated lagoons were recorded at 4.5 mg/L on June 2, 2023 and 5.6 mg/L on June 5, 2023. It was concluded that any odours observed were agriculturally related.

There were no additional complaints in 2023.

4. MAINTENANCE OF WORKS

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

5. MONITORING EQUIPMENT MAINTENANCE AND CALIBRATION

The calibration of flow meters is conducted yearly by JBF Controls Ltd. in accordance with the requirements of the ECA. The records are kept on-site at the Plattsville WWTP.

The operational monitoring equipment calibration records are kept on-site at the Plattsville WWTP.

6. INSPECTION, PILOTS, AND TRIALS

The MECP conducted an inspection of the Plattsville WWTP on November 17, 2023. The inspection covered the period of November 17, 2021 to November 17, 2023.

The results of the inspection concluded that there were three non-compliance issues:

- NC-1: The sewage works was not in compliance with the effluent total suspended solids concentration limits or criteria during the review period. **Required Action:** Oxford County will monitor the effluent performance closely going forward and make all appropriate operational changes as needed to ensure the sewage works is operating within the effluent limits.
- NC-2: The sewage works was not in compliance with the effluent microbiological limits listed in the ECA or Order for the review period. **Required Action:** Oxford County will monitor the effluent performance closely going forward and make all appropriate operational changes as needed to ensure the sewage works is operating within the effluent limits.
- NC-3: The sewage works was not in compliance with the effluent total suspended solids loading limit prescribed by the ECA or an Order during the review period. **Required Action:** Oxford County will monitor the effluent performance closely going forward and make all appropriate operational changes as needed to ensure the sewage works is operating within the effluent limits

The inspection report provided two recommendations:

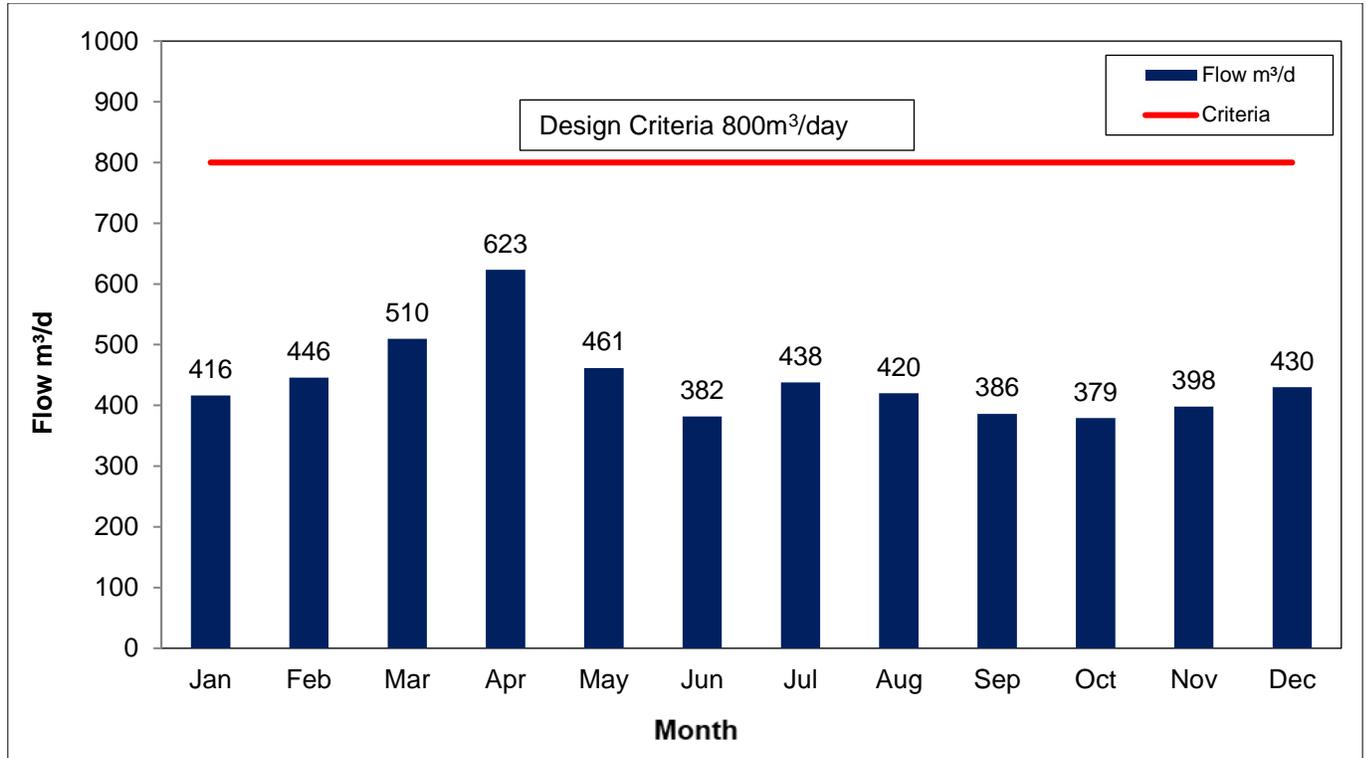
- R-1: The sewage works was not in conformance with the effluent total suspended solids concentration and/or loading objectives listed in the ECA or an Order during the review period. **Required Action:** Oxford County will monitor the effluent performance closely going forward and make all appropriate operational changes as needed to ensure the sewage works is operating within the effluent limits.
- R-2: The sewage works was not in conformance with the effluent microbiological objectives listed in the ECA or an Order during the review period. **Required Action:** Oxford County will monitor the effluent performance closely going forward and make all appropriate operational changes as needed to ensure the sewage works is operating within the effluent limits.

Microplastic Study

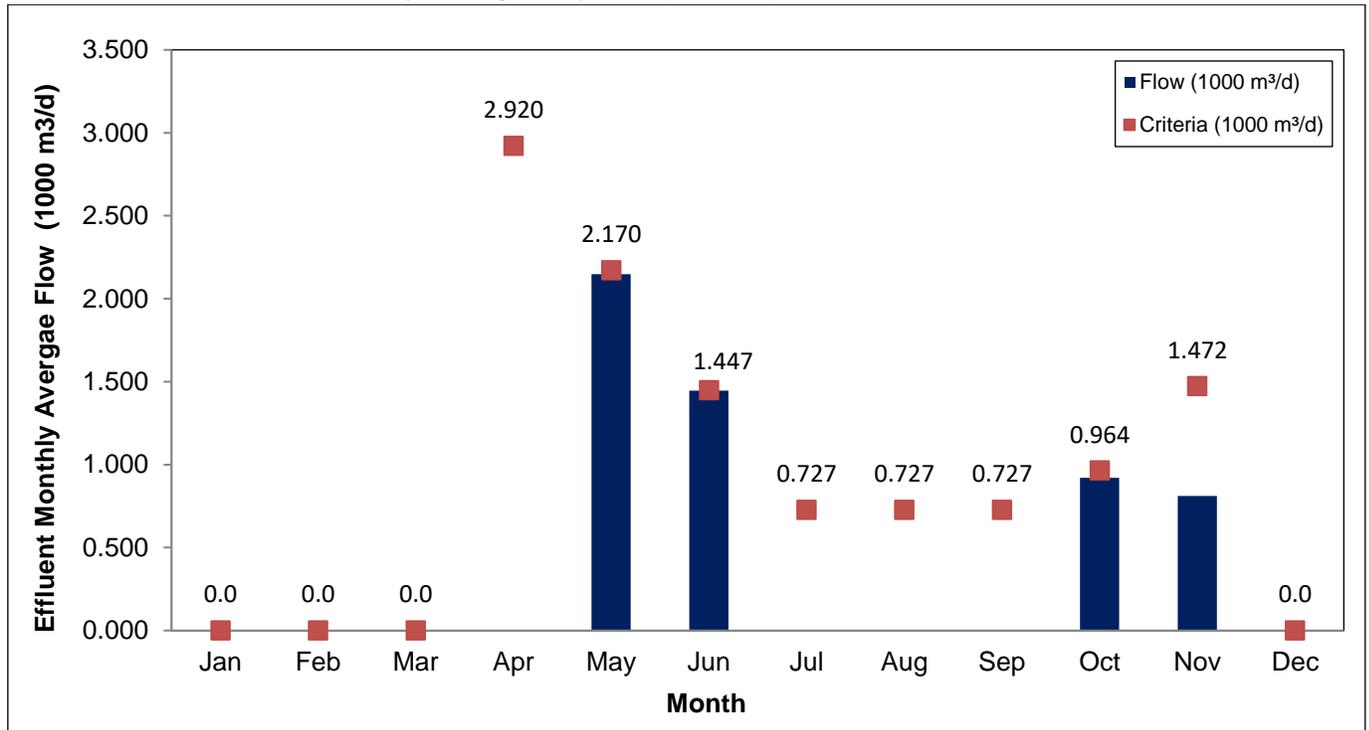
The Plattsville WWTP continued participation in a Study by Environment Canada and the University of Guelph that was initiated in 2022. The multi-year Study is to explore the effects of microplastic on aquatic ecosystems, examining WWTP influent, effluent and biosolids.

APPENDIX A: GRAPHS OF 2023 DISCHARGE PARAMETERS VS. EFFLUENT DISCHARGE LIMITS

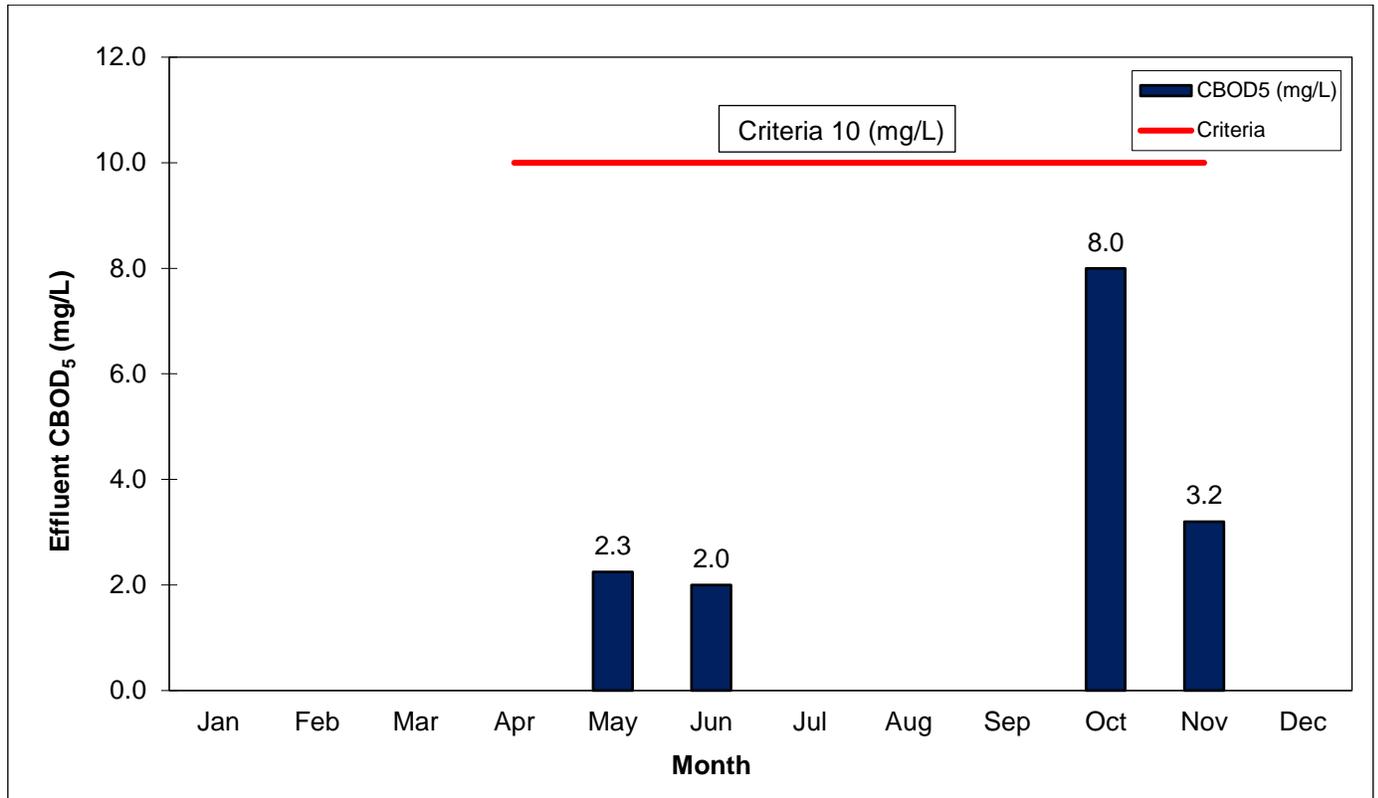
Plattsville WWTP Influent, Monthly Average Daily Flow in Cubic Meters per Day, 2023



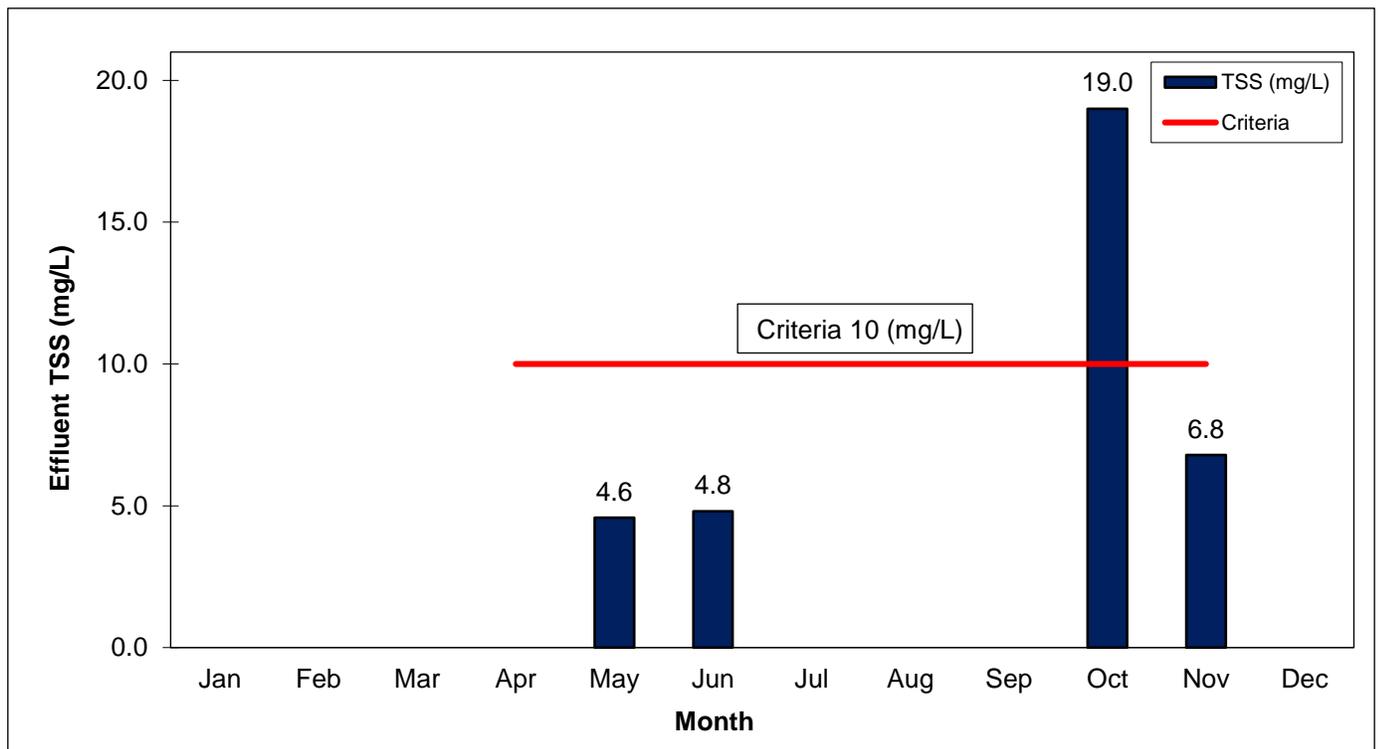
Plattsville WWTP Effluent, Monthly Average Daily Flow (1000 m³), 2023



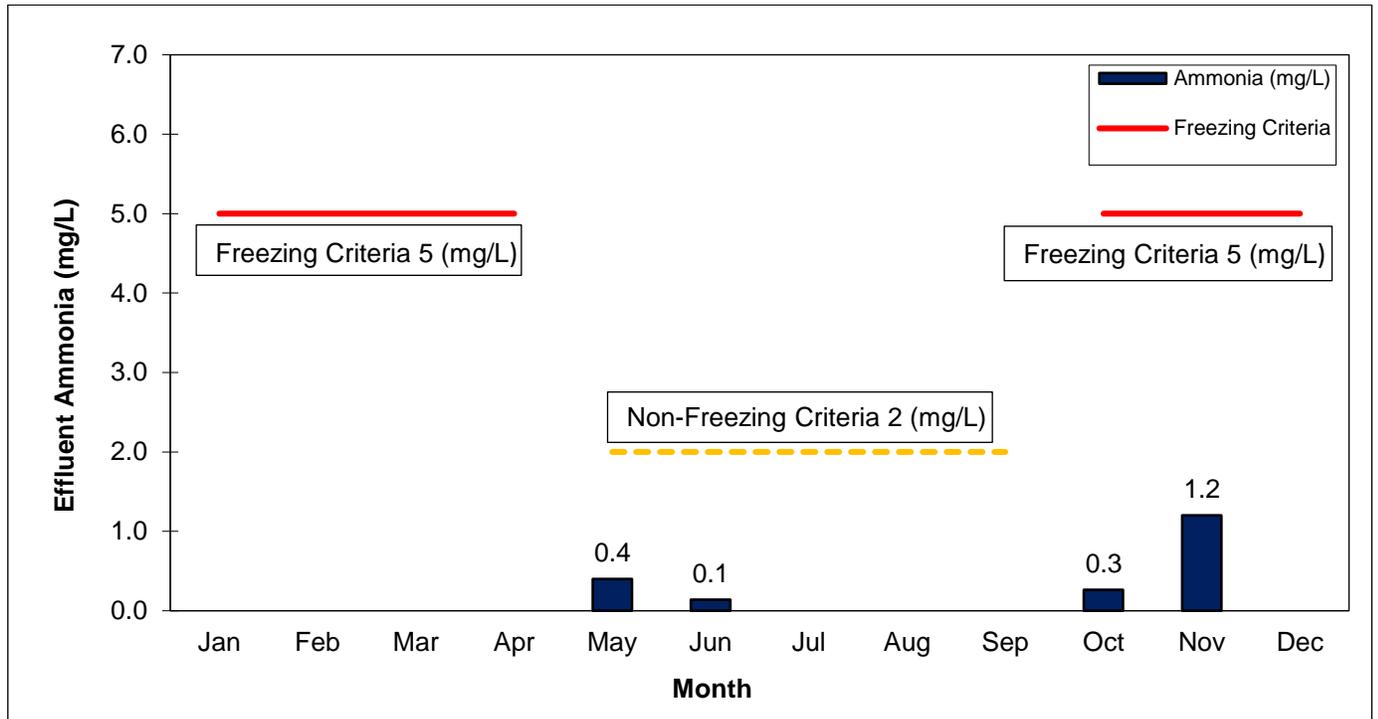
Plattsville WWTP Effluent, Monthly Average CBOD₅ (mg/L), 2023



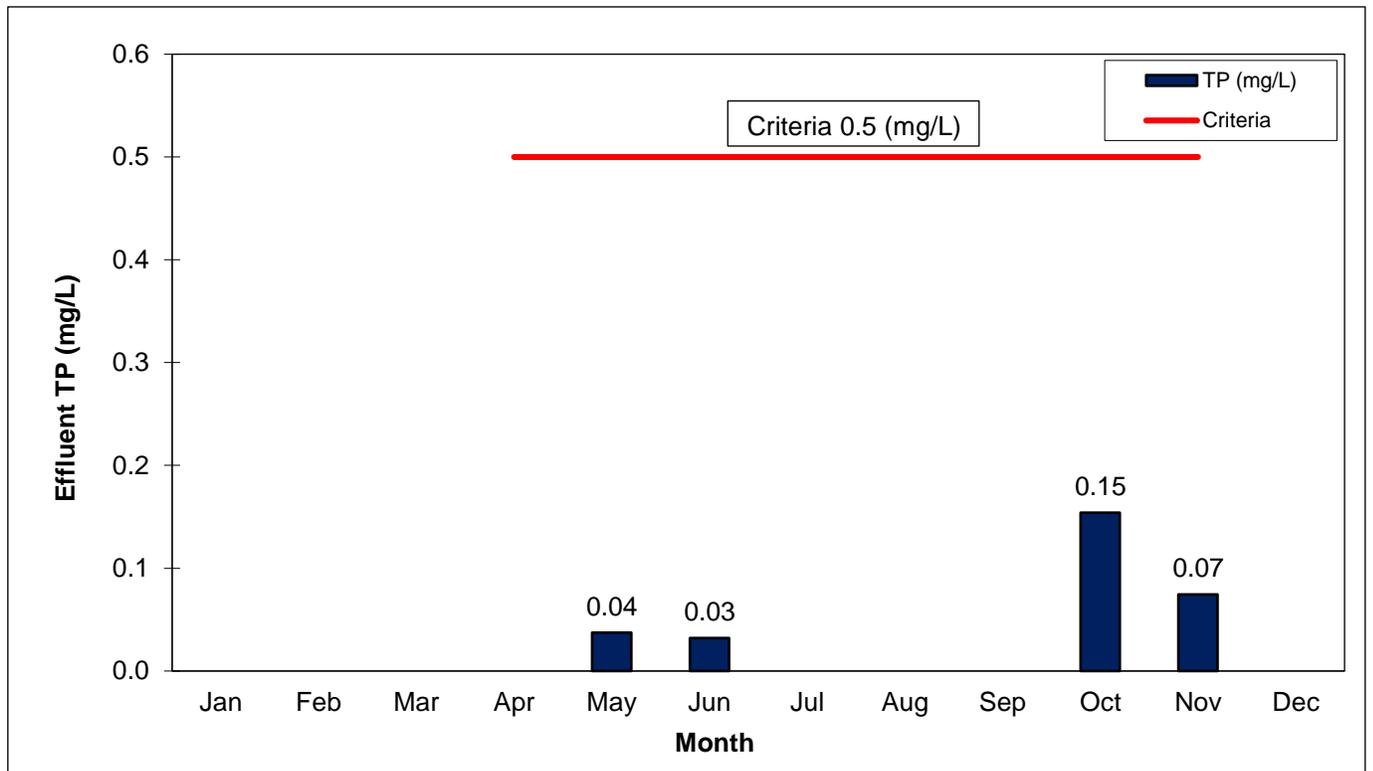
Plattsville WWTP Effluent, Monthly Average TSS (mg/L), 2023



Plattsville WWTP Effluent, Monthly Average Ammonia (mg/L), 2023



Plattsville WWTP Effluent, Monthly Average Total Phosphorus (mg/L), 2023



Plattsville WWTP Effluent, Monthly Geometric Mean Density E. coli (colonies/100 mL), 2023

