# Anger Avenue Wastewater Treatment Plant Annual Performance Report Treatment and Collection Reporting Year: 2025

Niagara Region

## Table of Contents:

## List of Tables:



## List of Figures:

**Anger Avenue Wastewater Collection System Annual Performance Report (AA-C)**



## List of Tables



## List of Figures

# AA-T-1 Wastewater Treatment Process Description

The Anger Avenue (Fort Erie) Wastewater Treatment Plant (WWTP) is located at 1 Anger Avenue in the Town of Fort Erie and provides wastewater treatment to areas of Fort Erie. The Anger Avenue WWTP is a class IV extended aeration treatment facility and has been designed to treat an average daily flow (ADF) of 24,500 cubic meters per day ($m^3/d$). This facility can fully treat all flows up to 49,500 $m^3/d$ and provides storm treatment for flows greater than 49,500 $m^3/d$ up to a maximum flow rate of 98,000 $m^3/d$.

The Anger Avenue WWTP operates under the following MECP approvals:

Environmental Compliance Approval (Sewage): 0421-8LVJ3N, issued October 24, 2011
Environmental Compliance Approval (Air): 8-2372-95-006, Issued December 13, 1995

The Anger Avenue WWTP uses the following processes to treat wastewater:

- Imported Sewage Receiving
- Screening
- Raw Influent Pumping
- Grit Removal
- Phosphorus Removal
- Secondary Treatment
- Disinfection (Chlorination/Dechlorination)
- Solids Handling – sludge digestion, storage and transportation
- Storm Treatment

Imported Sewage Receiving Station: To provide service to Niagara Region residents outside the wastewater servicing area, the Anger Avenue WWTP accepts imported sewage from commercial haulers as well as Recreational Vehicle holding tank disposals. Receiving stations are situated to ensure all received sewage receives full treatment.

Screening: mechanically cleaned screens remove rags and large debris that could harm pumps and process equipment. Screenings are sent for disposal in landfill.

Raw Influent Pumping: After screening, wastewater from the collection system and imported sewage receiving station enters a wet well, equipped with raw sewage pumps. The wet well provides a low point for the collection system to discharge to while the raw sewage pumps lift the wastewater to allow the remainder of the treatment process to occur by gravity.

Grit Removal: A grit tank equipped with coarse bubble diffusers is used to remove grit from wastewater. Heavy suspended material such as sand and small stones (grit) is settled to the bottom of the tanks while lighter organic particles are kept in suspension and pass through the tanks for further treatment. The grit removed is dewatered for landfill disposal.

Phosphorus Removal: A coagulant, ferric chloride, is added to the treatment process to aid in phosphorus and suspended solids removal.

Secondary Treatment:

Aeration Tank: Large tanks are equipped with air diffusers to add fine bubbles into the wastewater. This oxygen-enriched environment encourages microorganisms (or “bugs”) to remove dissolved and suspended organics and nutrients. Activated sludge is returned to the aeration process to ensure enough bugs are present to provide adequate wastewater treatment.

Secondary Clarifiers: Secondary clarifiers receive effluent from the aeration tanks which separates the microorganism population and remaining solids. Solids settle as activated sludge on the bottom of the clarifier while a clean effluent flows from the clarifiers to be disinfected and discharged to the environment. A portion of the activated sludge collected on the bottom of the clarifier is pumped back to the front of the aeration tanks to ensure a healthy microbial population. Excess activated sludge is ‘wasted’ or removed from the process and is pumped to the solids handling treatment process.

Disinfection (chlorination/dechlorination):

Chlorine in the form of liquid sodium hypochlorite is added into the effluent stream for pathogen control from April 1 to October 31 each year. Adequate contact time is provided by the chlorine contact chambers. As chlorine can be toxic to aquatic species, disinfected effluent is dechlorinated with a sodium bisulphite solution before being discharged to the Niagara River.

Solids Handling

Waste Activated Sludge Thickening: Waste activated sludge from the secondary treatment process is mixed with a polymer solution and sent to a gravity belt thickener where the polymer acts to bring solids together while water is removed and sent back to the liquid treatment process, producing a thickened sludge.

Anaerobic Digestion: Thickened sludge is pumped to one of two (2) primary anaerobic digesters, which overflow into one (1) secondary digester for thickening. Anaerobic digestion allows a further breakdown of pollutants and pathogens in the collected sludge. The digested sludge is stored in onsite storage tanks until it is transported from site for further treatment or beneficial reuse such as land application or dewatering at the Garner Road Biosolids Facility.

Storm Treatment: During times of wet weather, inflow and infiltration (I&I) can occur in the collection system resulting in high flows of sewage and storm water to the treatment plant. To protect the plant processes from high flows, flows greater than the design peak flow of 49,500 m3/d are diverted to a storm treatment system. Storm flows diverted to the storm treatment system receive screening, phosphorus removal, settling (solids removal), chlorination and dechlorination (from April 1 to October 31) prior to discharge to the Niagara River via the storm

system outfall. The storm system act as a storage tank during wet weather and can hold approximately 4,000 $m^3$ in the settling tanks. This volume is returned to the plant for full treatment when wet weather events are over.

# AA-T-2 Review of Plant Flows, Influent and Imported Sewage Sampling and Monitoring

## Review of 2025 Plant Flows

Table AA-T-1 below outlines the volume of sewage treated at the Anger Avenue WWTP during the reporting year. It also outlines how much Imported Sewage was received at site for treatment.

Table AA-T-1: Table of Anger Avenue WWTP Treated and Imported Sewage Flows

| Flow Statistic | Value |
|---|---|
| Design Average Daily Flow (ML/d) | 24.500 |
| Design Peak Flow Rate - Dry Weather (ML/d) | 49.000 |
| Design Peak Flow Rate - Wet Weather (ML/d) | 98.000 |
| Total Volume Processed (ML) | 4,215.045 |
| Annual Average Daily Flow (MLD) | 11.548 |
| % Annual Average Daily Flow Utilization | 47% |
| % Increase/Decrease over prior year | -4% |
| Volume Imported Sewage Received (ML) | 5.021 |
| % Increase/Decrease Imported Sewage over prior year | -12% |
| Imported Sewage as % of Flow | 0.12% |

Reviewing the treated flows in 2025, it was observed that, on average, the plant is utilizing 47% of its design Average Daily Flow capacity. This indicates that the facility has the hydraulic capacity to meet the needs of the collection system with room for additional flows that may be added from development. Where the average becomes greater than 80%, plant expansion should be considered.

Daily flows to the plant were reviewed. In 2025, there were 22 instances where the flow to the plant was greater than the design Average Daily Flow, amounting to approximately 6% of the year. These instances occurred during times of wet weather or heavy snow melt suggesting increased flows are occurring due to Inflow and Infiltration.

A review of the monthly average daily flow rate for the prior 10-year period was completed. This can be observed below in Figure AA-T-1 below. No trends were observed indicating that

the average flow at the plant is reasonably consistent. Spikes during typical wet weather seasons further support increased flows are occurring due to Inflow and Infiltration.

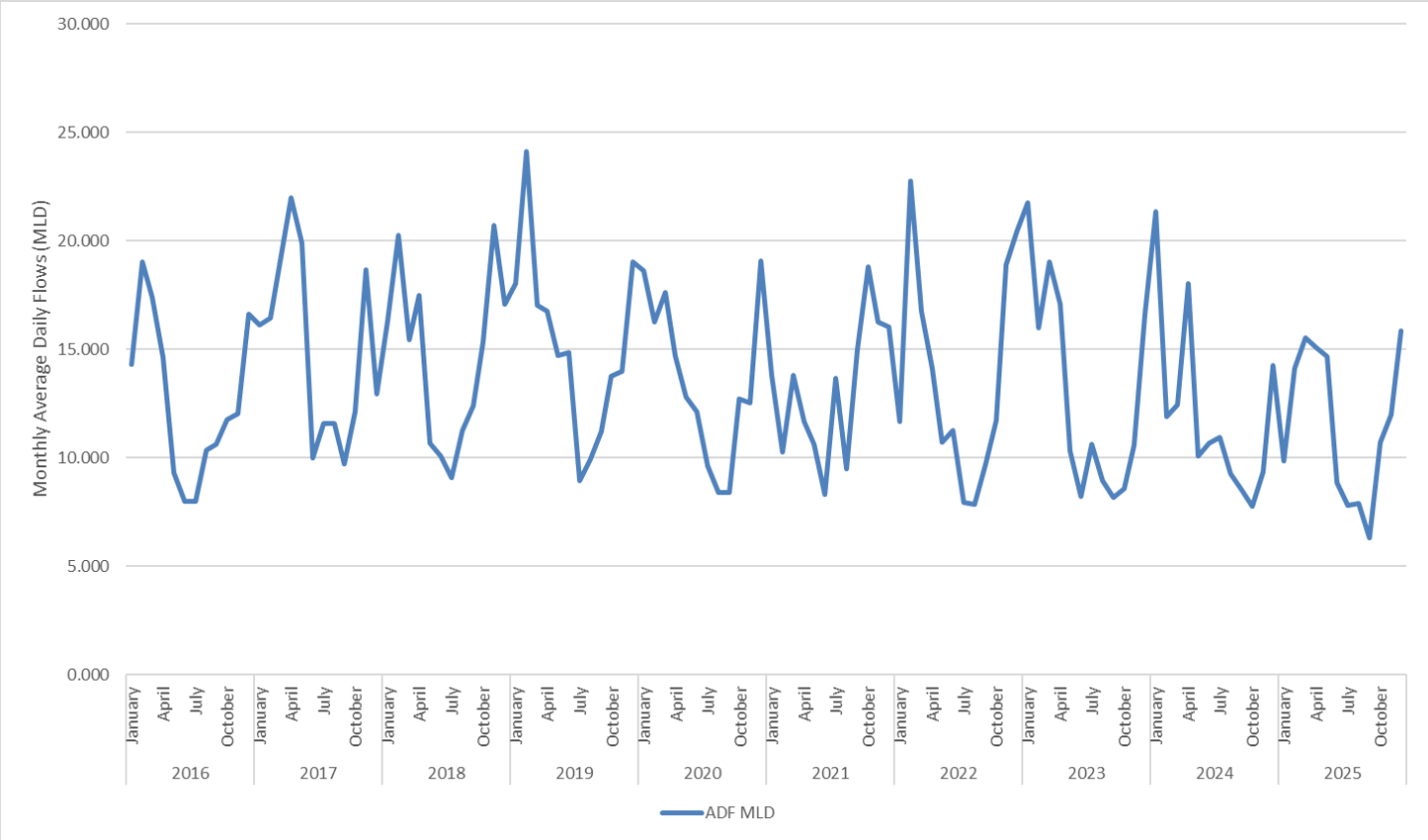


Figure AA-T-1: Graph displaying the Monthly Average Daily Flow Rate in MLD

The volume of imported sewage received at this facility decreased by 12% compared to the previous reporting period. No operational issues were encountered with receipt and treatment of imported sewage in 2025.

## Review of Influent Sampling and Monitoring Activities

In 2025, 105 samples of influent were collected and tested. An annual summary of influent sampling can be observed in Table AA-T-5.

Although the volume of sewage is an important consideration for the effective operation of a wastewater treatment plant, another important factor to monitor is plant loading. Plant loading displays if the strength of the sewage received at the plant is getting stronger or weaker. Stronger sewage may impact the amount of sewage the plant can treat effectively.

Plant loading is calculated by measuring the average strength of a pollutant per liter of influent sewage and multiplying it by the average volume of sewage received. This is generally displayed as kilograms of pollutant per day or kg/d. Below in Figure AA-T-2, is a graph depicting four commonly monitored pollutant loading to the plant for the period of 2023-2025.

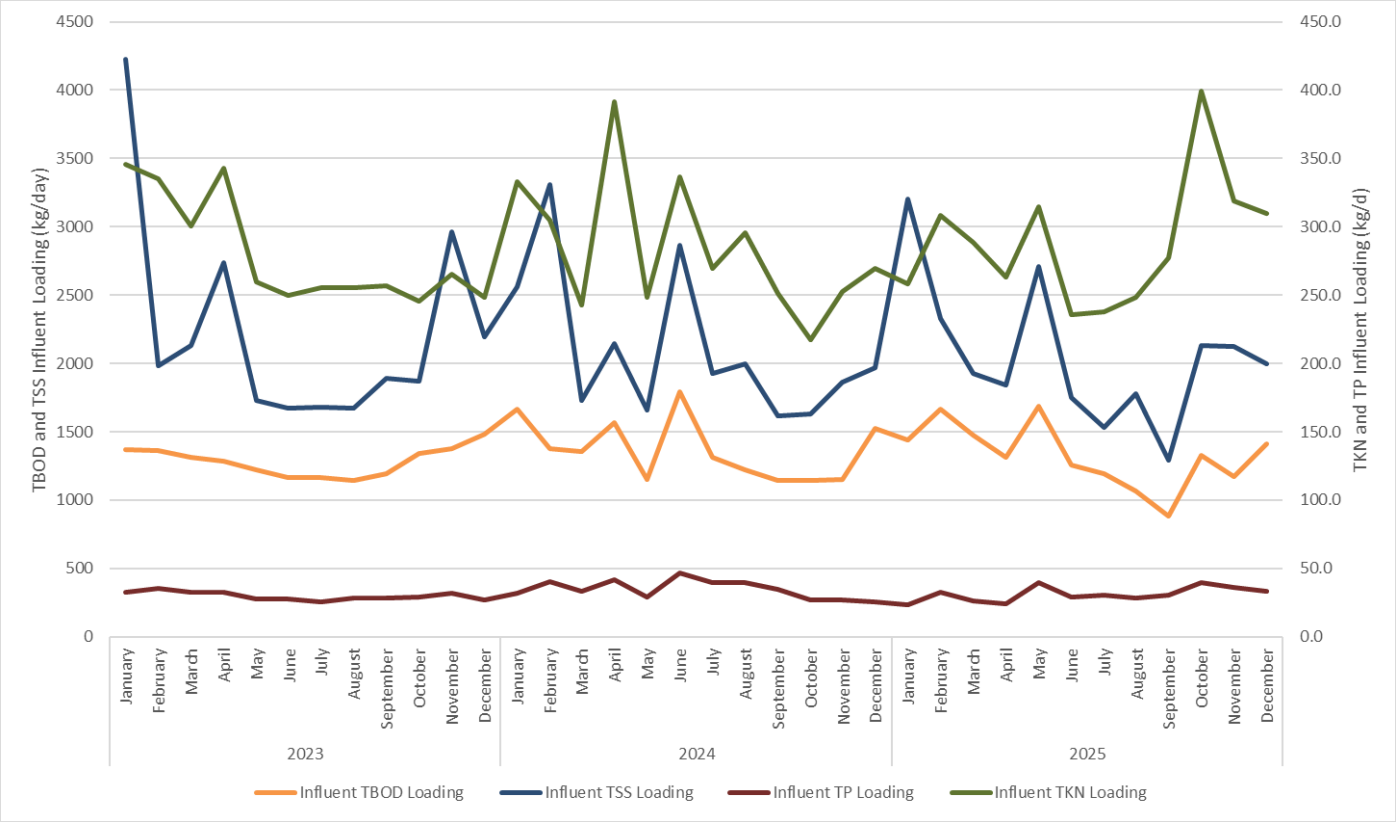


Figure AA-T-2: Figure of monthly plant loadings to the Anger Avenue WWTP for Total Biochemical Oxygen Demand (TBOD), Total Suspended Solids (TSS), Total Kjeldahl Nitrogen (TKN) and Total Phosphorus (TP), in kg/d, for the period 2023 to 2025.

Reviewing the calculated loadings for TBOD, TSS, TKN and TP for the past three years shows no observable trend indicating a change to the sewage strength being received at the site, although spikes in TKN levels can be observed. A potential industrial source has been noted for high TKN and we continue to work with this industry to reduce TKN values.

## Review of Imported Sewage Sampling and Monitoring

Imported sewage is sampled bi-weekly to ensure sewage being received will not have an adverse impact to the treatment process or the beneficial re-use of biosolids resulting from the wastewater treatment process. Sampling and testing of imported sewage is not regulated by the ECA but is completed as a best practice. In 2025, 20 samples of imported sewage were collected and submitted for testing by an ISO 17025:2017 accredited laboratory. Results were reviewed and compared to the Niagara Region Sewer Use By-law. Where exceedances of the by-law were noted, the source of the imported sewage is investigated. Exceedances of treatable parameters (BOD, COD, TP, TSS, TKN and pH) are allowable under the SUBL.

Table AA-T-2: Table of Imported Sewage monthly average analysis results

| Analyte | Units | SUBL Limit | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Solids | % | - | | 9,160 | 1,445 | 2,175 | 3,185 | 4,565 | 4,220 | 6,495 | 102,000 | 32,300 | 1,270 | 3,793 |
| Phosphorus | mg/L | 10 | | 79.70 | 10.49 | 36.30 | 29.95 | 35.50 | 35.65 | 45.85 | 80.50 | 49.40 | 16.70 | 37.85 |
| Arsenic | mg/L | 1 | | 0.30 | 0.01 | 0.02 | 0.03 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| Cadmium | mg/L | 0.7 | | 0.12 | 0.00 | 0.01 | 0.01 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| Chromium | mg/L | 3 | | 0.30 | 0.01 | 0.03 | 0.06 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| Cobalt | mg/L | 5 | | 0.12 | 0.00 | 0.00 | 0.02 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| Copper | mg/L | 3 | | 34.41 | 0.30 | 2.16 | 1.40 | 2.70 | 3.10 | 3.40 | 7.60 | 7.40 | 0.50 | 4.53 |
| Lead | mg/L | 1 | | 0.60 | 0.02 | 0.06 | 0.04 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 1.10 |
| Mercury | ug/L | 10 | | 7.57 | 0.05 | 0.30 | 0.59 | 1.84 | 1.04 | 4.56 | 2.75 | 0.09 | 0.17 | 11.63 |
| Molybdenum | mg/L | 5 | | 0.18 | 0.02 | 0.02 | 0.04 | 0.20 | 0.20 | 0.20 | 0.20 | 3.40 | 0.20 | 0.20 |
| Nickel | mg/L | 2 | | 0.27 | 0.02 | 0.04 | 0.06 | 0.20 | 0.20 | 0.20 | 0.20 | 0.30 | 0.20 | 0.23 |
| Selenium | mg/L | 1 | | 0.30 | 0.02 | 0.01 | 0.06 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.73 |
| Zinc | mg/L | 3 | | 17.60 | 0.30 | 2.24 | 4.32 | 4.50 | 7.00 | 6.00 | 14.00 | 12.00 | 2.00 | 7.75 |
| Aluminum | mg/L | - | | 77.40 | 3.91 | 6.87 | 13.70 | 20.00 | 18.50 | 16.00 | 27.00 | 32.00 | 2.00 | 27.75 |
| Antimony | mg/L | 5 | | 0.60 | 0.03 | 0.03 | 0.08 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Barium | mg/L | - | | 1.30 | 0.06 | 0.18 | 0.99 | 1.70 | 0.65 | 1.35 | 0.80 | 2.10 | 0.50 | 2.43 |
| Beryllium | mg/L | - | | 0.30 | 0.01 | 0.01 | 0.03 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| Boron | mg/L | - | | 6.00 | 0.20 | 0.20 | 0.60 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 |
| COD | mg/L | 600 | | 10,205 | 714 | 19,42 | 3,670 | 6,070 | 5,290 | 8,515 | 13,700 | 12,600 | 1,240 | 4,778 |
| Conductivity | us/cm | - | | 2,480 | 1,980 | 2,925 | 1,320 | 1,745 | 19,00 | 1,480 | 1,930 | 32,200 | 1,470 | 1,933 |
| Iron | mg/L | - | | 103.35 | 3.95 | 7.89 | 11.22 | 25.95 | 32.00 | 44.15 | 46.40 | 33.20 | 4.50 | 31.55 |
| Manganese | mg/L | - | | 1.65 | 0.11 | 0.30 | 0.38 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| pH | | 6-11 | | 7.60 | 8.80 | 7.55 | 7.20 | 7.30 | 7.35 | 7.30 | 7.50 | 6.20 | 7.10 | 7.65 |

| Analyte | Units | SUBL Limit | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Silver | mg/L | 5 | | 0.30 | 0.01 | 0.01 | 0.03 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| Tin | mg/L | 5 | | 2.10 | 0.04 | 0.11 | 0.17 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Total Volatile Solids | % | - | | 5,780 | 375 | 1,125 | 2,120 | 3,395 | 2,835 | 4,995 | 7,690 | 12,400 | 780 | 2,293 |
| Vanadium | mg/L | - | | 0.18 | 0.01 | 0.02 | 0.03 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |

# Review of Final Effluent Sampling and Monitoring Activities

In 2025, 105 samples of final effluent were collected and tested. Individual as well as monthly average results are reviewed and compared to the objective and compliance limits stated in the facility ECA. Table AA-T-3 below summarizes the number of monthly objective and compliance limit exceedances at the Anger Avenue WWTP in the reporting year.

Table AA-T-3: Evaluation of Final Effluent sample results to ECA objectives and compliance limits

| Pollutant | ECA Monthly Concentration Objective | ECA Monthly Concentration Limit | Number of Objective Concentration Exceedances | Number of Monthly Limit Concentration Exceedances |
|---|---|---|---|---|
| pH[1] | 6.0-9.0 | - | 0 | - |
| Carbonaceous Biochemical Oxygen Demand (CBOD) | 15 mg/L | 25 mg/L | 0 | 0 |
| Total Suspended Solids (TSS) | 15 mg/L | 25 mg/L | 2 | 1 |
| Total Phosphorus (TP) | 1.0 mg/L | 1.0 mg/L | 0 | 0 |
| Total Residual Chlorine[2] (TRC) | 0.5 mg/L | - | 0 | - |
| *E-Coli (geomean)*[3] | 200 CFU/100 mL | 200 CFU/100 mL | 0 | 0 |

Anger Avenue WWTP exceeded the compliance limit for TSS in February 2025. The ECA objective for TSS was also not met in March 2025. Full details of this exceedance are included in section AA-T-3 Operational Issues Encountered below.

A review of individual results against ECA objectives was also completed. Below summarizes the percentage of samples that were over the ECA objective:

- CBOD – 1%
- TSS – 11%
- TP – 0%
- E.Coli –7%

Final Effluent sample results did not exceed the ECA objective greater than 50% of the time. The plant continues to effectively treat all wastewater received for treatment. An annual summary of monthly average final effluent sample results are available in Table AA-T-5 below.

[1] pH must meet objectives/limits at all times (inclusive)
[2] Total Residual Chlorine monitoring only required April 01 to October 31 inclusive
[3] E.Coli monitoring only required April 01 to October 31 inclusive

## Effluent Quality Assurance Measurements and Control Measures

To ensure Anger Avenue WWTP continues to produce a high-quality effluent the following measures have been implemented:

- Development and implementation of a Wastewater Quality Management System (WWQMS) program
    - This program promotes an environment of continuous improvement for all staff impacting the quality of wastewater
- Development of an ISO 14001:2015 Environmental Management System
- Compliance samples are analyzed by an ISO 17025:2017 accredited laboratory unless sample results are required to be collected in the field at the time of sampling
- Standard Operating Procedures (SOPs) are in place to support proper sampling and field measurements
- A compliance sampling schedule is created each year to ensure regulatory requirements are being met, as a minimum
- Equipment used in the monitoring and measurement of Final Effluent quality are calibrated annually

## Deviations from Scheduled Monitoring Program

Compliance sampling activities at the Anger Avenue WWTP follow a scheduled monitoring program to ensure all provincial and federal requirements are met. A schedule is prepared for the upcoming year and is submitted to the MECP as part of the annual reporting requirement.

In 2025, one (1) deviation from the scheduled sampling day occurred. Additional deviations occurred with hauled waste samples due to lack of sample availability.

Table AA-T-4 below provides the instances where a deviation occurred and a reason for the deviation.

A copy of the 2026 sampling schedule is available upon request.

Table AA-T-4: Table of sampling schedule deviations

| Sampling Date Deviation | Sample Type(s) | Reason |
|---|---|---|
| 2025-12-09 | Influent, Final Effluent | Autosampler Malfunctioned. Sample was submitted on December 11th. |

Table AA-T-5: Annual Summary of Plant and Imported Sewage Flows, Influent and Effluent Sampling and Monitoring Results

| Measured Parameter | January | February | March | April | May | June | July | August | September | October | November | December | Total / Average | Total Samples Collected |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Influent - Monthly Average TSS (mg/L) | 325 | 165 | 124 | 122 | 185 | 198 | 197 | 225 | 204 | 199 | 177 | 126 | 187 | |
| Number of Influent TSS Samples | 9 | 8 | 9 | 9 | 8 | 8 | 10 | 8 | 9 | 9 | 8 | 10 | | 105 |
| Influent - Monthly Average TBOD5 (mg/L) | 146 | 118 | 95 | 87 | 115 | 142 | 153 | 135 | 140 | 124 | 98 | 89 | 120 | |
| Number of Influent TBOD5 Samples | 9 | 8 | 9 | 9 | 8 | 8 | 10 | 8 | 9 | 9 | 8 | 10 | | 105 |
| Influent - Monthly Average TP (mg/L) | 2.4 | 2.3 | 1.7 | 1.6 | 2.7 | 3.3 | 3.9 | 3.6 | 4.8 | 3.7 | 3.0 | 2.1 | 2.9 | |
| Number of Influent TP Samples | 9 | 8 | 9 | 9 | 8 | 8 | 10 | 8 | 9 | 9 | 8 | 10 | | 105 |
| Influent - Monthly Average TKN (mg/L) | 26.17 | 21.86 | 18.54 | 17.41 | 21.44 | 26.66 | 30.49 | 31.35 | 43.83 | 37.26 | 26.60 | 19.58 | 26.77 | |
| Number of Influent TKN Samples | 9 | 8 | 9 | 9 | 8 | 8 | 10 | 8 | 9 | 9 | 8 | 10 | | 105 |
| Total Plant Flows (ML) | 305.491 | 395.055 | 482.264 | 453.051 | 454.576 | 265.189 | 241.493 | 245.265 | 189.930 | 332.102 | 359.856 | 490.773 | 4215.045 | |
| Daily Average (MLD) | 9.855 | 14.109 | 15.557 | 15.102 | 14.664 | 8.840 | 7.790 | 7.912 | 6.331 | 10.713 | 11.995 | 15.831 | 11.548 | |
| Maximum Flow (ML) | 21.978 | 30.331 | 29.074 | 30.904 | 38.110 | 11.767 | 11.607 | 17.533 | 11.672 | 35.860 | 27.810 | 44.803 | MAX | 44.803 |
| Minimum Flow (ML) | 7.312 | 9.195 | 9.096 | 8.059 | 8.393 | 7.445 | 6.759 | 6.167 | 5.337 | 5.012 | 6.998 | 7.881 | MIN | 5.012 |
| Volume Imported Sewage Received (ML) | 0.241 | 0.171 | 0.265 | 0.261 | 0.428 | 0.456 | 1.061 | 0.836 | 0.430 | 0.342 | 0.354 | 0.175 | 5.021 | |
| Final Effluent - Monthly Average TSS (mg/L) | 8.1 | 34.8 | 18.8 | 10.2 | 4.9 | 5.3 | 3.6 | 3.4 | 4.6 | 7.7 | 4.5 | 7.0 | 9.4 | |
| Final Effluent - Average Daily TSS Loading (kg/d) | 80 | 491 | 292 | 154 | 72 | 47 | 28 | 27 | 29 | 82 | 54 | 111 | 109 | |
| Number of Final Effluent TSS Samples | 9 | 8 | 9 | 9 | 8 | 8 | 10 | 8 | 9 | 9 | 8 | 10 | | 105 |
| Final Effluent - Monthly Average CBOD5 (mg/L) | 4.0 | 11.0 | 6.4 | 4.9 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.4 | 4.0 | 4.4 | 4.9 | |
| Final Effluent - Average Daily CBOD5 Loading (kg/d) | 39 | 155 | 100 | 74 | 59 | 35 | 31 | 32 | 25 | 47 | 48 | 70 | 57 | |
| Number of Final Effluent CBOD5 Samples | 9 | 8 | 9 | 9 | 8 | 8 | 10 | 8 | 9 | 9 | 8 | 10 | | 105 |
| Final Effluent - Monthly Average TP (mg/L) | 0.13 | 0.71 | 0.40 | 0.14 | 0.13 | 0.14 | 0.13 | 0.10 | 0.24 | 0.29 | 0.14 | 0.21 | 0.23 | |
| Final Effluent - Average Daily TP Loading (kg/d) | 1.28 | 10.02 | 6.22 | 2.11 | 1.91 | 1.24 | 1.01 | 0.79 | 1.52 | 3.11 | 1.68 | 3.32 | 2.66 | |
| Number of Final Effluent TP Samples | 9 | 8 | 9 | 9 | 8 | 8 | 10 | 8 | 9 | 9 | 8 | 10 | | 105 |
| Final Effluent - Monthly Average TKN (mg/L) | 1.77 | 8.05 | 7.09 | 3.04 | 1.49 | 6.16 | 4.65 | 1.89 | 3.16 | 11.21 | 2.51 | 1.62 | 4.39 | |
| Number of Final Effluent TKN Samples | 9 | 8 | 9 | 9 | 8 | 8 | 10 | 8 | 9 | 9 | 8 | 10 | | 105 |
| Final Effluent - Monthly Average NH3 (mg/L) | 0.59 | 3.93 | 3.89 | 1.40 | 0.28 | 5.23 | 3.29 | 0.72 | 1.88 | 9.60 | 1.05 | 0.27 | 2.68 | |
| Final Effluent - Average Daily NH3 Loading (kg/d) | 5.81 | 55.45 | 60.52 | 21.14 | 4.11 | 46.23 | 25.63 | 5.70 | 11.90 | 102.84 | 12.59 | 4.27 | 30.92 | |
| Number of Final Effluent NH3 Samples | 9 | 8 | 9 | 9 | 8 | 8 | 10 | 8 | 9 | 9 | 8 | 10 | | 105 |
| Final Effluent - Monthly Average NO3 (mg/L) | 9.23 | 2.45 | 0.83 | 3.34 | 6.44 | 3.51 | 3.96 | 9.61 | 13.60 | 7.51 | 6.80 | 7.00 | 6.19 | |
| Number of Final Effluent NO3 Samples | 9 | 8 | 9 | 9 | 8 | 8 | 10 | 8 | 9 | 9 | 8 | 10 | | 105 |
| Final Effluent - Monthly Average NO2 (mg/L) | 0.40 | 0.50 | 0.97 | 0.77 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.43 | 0.45 | 0.50 | 0.50 | |
| Number of Final Effluent NO2 Samples | 9 | 8 | 9 | 9 | 8 | 8 | 10 | 8 | 9 | 9 | 8 | 10 | | 105 |
| Final Effluent - Monthly Geomean E.Coli (cfu/100mL) | | | | 104 | 4 | 2 | 2 | 3 | 4 | 9 | | | 6 | |
| Number of Final Effluent E.Coli Samples | | | | 9 | 9 | 8 | 10 | 8 | 9 | 9 | | | | 62 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Final Effluent - Monthly Average TRC (mg/L) | | | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | 0.00 | |
| Number of Final Effluent TRC Samples | | | | 30 | 31 | 30 | 30 | 31 | 30 | 31 | 0 | | | 213 |
| Final Effluent - Monthly Average Temperature (°C) | 10.16 | 8.13 | 8.16 | 10.28 | 13.48 | 17.99 | 20.11 | 20.29 | 20.37 | 18.26 | 14.56 | 10.74 | 14.38 | |
| Number of Final Effluent Temperature Samples | 9 | 8 | 9 | 9 | 8 | 8 | 10 | 8 | 9 | 9 | 8 | 10 | | 105 |
| Final Effluent - Monthly Average pH | 6.83 | 7.18 | 7.07 | 7.02 | 6.99 | 7.05 | 7.04 | 6.76 | 6.77 | 7.02 | 7.05 | 7.13 | 6.99 | |
| Number of Final Effluent pH Samples | 9 | 8 | 9 | 9 | 8 | 8 | 10 | 8 | 9 | 9 | 8 | 10 | | 105 |

# AA-T-3 Description of Operating Problems Encountered and Corrective Actions Taken

**Total Suspended Solids Limit Exceedance – February 2025**

On August 26, 2024, secondary clarifier #2 was taken out of service for tank and gear box assembly inspection. The gear box and rotating assembly for the collection arm was found to be out of specification and requiring rebuild. Since this date, the plant was operating with a single secondary clarifier in service while awaiting a rebuild of the gear box. Having a single final clarifier in service reduces the treatment capacity and retention time, particularly during times of wet weather/high flow events.

On February 26, 2025, heavy rainfall combined with snow melt occurred resulting in high flows to the Anger Avenue WWTP. The plant was operating at a reduced capacity flow rate of 30,000 $m^3$ /d. A 24-hour composite sample of the final effluent was collected from 8:00 am February 25 to 8:00 am February 26 with a resulting TSS of 200 mg/L. The high flows caused solids carryover into the final effluent as a single final clarifier is not capable of achieving the required settling at this flow rate.

This single result caused the TSS monthly average to exceed the ECA limit.

The gear box was rebuilt and was installed on April 10, 2025, restoring the flow capacity back to 49,000 m3/d.

**Total Suspended Solids Objective Exceedance – March 2025**

In March 2025, the TSS monthly average exceeded the ECA objectives. This exceedance was related to a process upset that occurred in relation to the loss of biomass in February 2025. A loss of biomass can result in poor settling. In March, the system was still recovering while also experiencing increased flows from rainfall and snowmelt events. Performance improved throughout March, and the compliance objective was met in April.

# Summary of Major Maintenance Activities and Capital Works

## Summary of Maintenance Carried out on Major Equipment

Niagara Region works to keep wastewater infrastructure in a state of good repair. Maintenance activities completed include regular preventative maintenance (PM) activities and normal and emergency equipment repair or replacement. Where a substantial amount of upgrade is required, this work is carried out under the capital works program.

Below is a summary of normal and emergency repairs carried out on major equipment at the Anger Avenue WWTP:

- Final clarifier gearbox rebuild
- Storm tank jetting repairs
- Rebuild sewage lift pump #1
- Secondary clarifier weir repairs
- Scum arm rebuild on clarifier #1
- Rebuild waste sewage pump #1
- Raw sewage pump discharge pipe repairs
- Flare stack repairs

This list does not include PM activities. PMs are completed and tracked in a computerized maintenance management system. PMs completed during the reporting year are available upon request.

## Planned Capital Upgrades

The following is a list of capital upgrades forecasted for the Anger Avenue WWTP Treatment System:

- Sludge Holding Tank cleanout and valve replacement – Construction 2026

## Summary and Update of Notice of Modifications Completed

Through the facility ECA, MECP has given System Owners the ability to complete low risk changes to a treatment plant without requiring approval from the MECP. These modifications are documented on a Notice of Modification form and are signed off by the Owner or delegate of the system. Any pre-authorized modifications must be reported on annually to the MECP.

During the reporting year 2025, no Notices of Modification were completed.

No Notice of Modification forms were completed in previous reporting years. No status update is required.

## Proposed Works – Status Update

There were no Proposed Works to be reported for the 2025 reporting period.

# AA-T-4 Summary Calibration Activities

## Flow Meter Calibration – Influent, Effluent and Imported Sewage

Flow meters measuring discharges to the environment are calibrated at minimum, once per calendar year. Below in Table AA-T-6 provides a summary of flow meter calibration.

Table AA-T-6: Summary of Flow Meter Calibration

| Meter Name | Date Calibrated | Comments |
|---|---|---|
| Anger Avenue Influent Flow Meter | 2025-05-05 | Passed |
| Anger Avenue Influent Flow Meter | 2025-11-04 | Passed |
| Anger Avenue Final Effluent Meter | 2025-06-26 | Passed |
| Anger Avenue Final Effluent Meter | 2025-11-04 | Passed |
| Anger Avenue Storm Flow Meter | 2025-11-04 | Passed |
| Anger Avenue Storm Flow Meter | 2025-06-26 | Passed |

Calibration certificates are available upon request

The volume of Imported Sewage received at site is reported by the sewage hauler on submitted paper manifests. No calibration required.

## Effluent Monitoring Equipment Calibration/Verification

It is a requirement to calibrate, or, where unable to calibrate, verify equipment that is used to measure effluent quality.

Some effluent monitoring equipment calibration or verification is completed daily or as used by operations staff such as pH meter calibration or verification of the Total Residual Chlorine colorimeter.

Once annually, a contractor performs calibration or verification on all effluent monitoring equipment. A summary of calibration/verification activities are available in Table AA-T-7 below.

Table AA-T-7: Summary of Calibration/Verification of Effluent Monitoring Equipment

| Equipment Description | Date Calibrated | Comments |
|---|---|---|
| Thermo Star A211 pH Meter | 2025-09-17 | Passed |
| Pocket Colourimeter - Chlorine - 42401 | 2025-09-17 | Passed |
| Pocket Colourimeter - Chlorine - 37662 | 2025-09-17 | Passed |
| HQ30D with Dissolved Oxygen Probe | 2025-09-17 | Passed |
| Spectrophotometer - DR1900 | 2025-09-17 | Passed |

| Equipment Description | Date Calibrated | Comments |
|---|---|---|
| Reactor - DRV200 | 2025-09-17 | Passed |
| Balance - AG204DR | 2025-08-13 | Passed |
| HQ40D with Dissolved Oxygen Probe | 2025-09-17 | Passed |

Calibration certificates are available upon request.

# AA-T-5 Solids Handling

## Processed Organics Received

No processed organics were received at the Anger Avenue WWTP during the reporting period. Anger Avenue does not typically receive processed organics.

## Volumes Sludge Generated and Removed From Site

Solids removed from the treatment process are thickened, digested and transported from site for further processing and beneficial re-use. All sludge removed from the Anger Avenue WWTP is taken to Niagara Region's Garner Road Biosolids Facility where it is stored, further thickened and either sent for land application or for dewatering and conversion to a pelletized fertilizer.

217 $m^3$ of activated sludge was transferred to the Crystal Beach WWTP to replenish the bacterial population after a loss of biomass from the secondary treatment process.

One (1) load, 43 $m^3$, of activated sludge was transferred to the Queenston WWTP to help improve the plant biomass and settling of solids in the final clarifier.

Table AA-T-8 provides a summary of 2024 and 2025 sludge volumes removed from site.

Table AA-T-8: Summary of Sludge Removed from Site 2025

| Month | 2025 Volume Sludge Hauled (ML) | Prior Year Volume Sludge Hauled (ML) |
|---|---|---|
| January | 0.000 | 0.477 |
| February | 0.000 | 1.214 |
| March | 1.995 | 1.041 |
| April | 1.908 | 3.209 |
| May | 4.856 | 2.341 |
| June | 4.596 | 4.726 |
| July | 1.648 | 4.726 |

| Month | 2025 Volume Sludge Hauled (ML) | Prior Year Volume Sludge Hauled (ML) |
|---|---|---|
| August | 0.000 | 1.951 |
| September | 1.127 | 1.127 |
| October | 1.821 | 0.911 |
| November | 1.474 | 0.000 |
| December | 0.564 | 0.043 |
| **TOTAL** | **19.989** | **21.767** |

It was noted there was an 8% decrease in sludge removed from site in 2025 versus reporting year 2024. Anger Avenue WWTP is equipped with two sludge storage tanks allowing for a large amount of on-site storage capacity. Where the volume of sludge removed is zero for a given month, this means sludge produced was stored on site. Variations in sludge removed from site year to year occur due to batch haulage from the storage tanks.

## Sludge Quality Monitoring

Sludge is sampled and analyzed bi-weekly to meet regulatory requirements of the Garner Road Biosolids Facility ECA and maintain our ability to beneficially re-use biosolids. Results are trended and compared to Nutrient Management Act (NMA) limits. Where a trend is detected, investigations are initiated to identify potential sources of the pollutant and correct any issue identified. Average monthly results for 2025 sludge analysis from the Anger Avenue WWTP is included in Table AA-T-9.

Table AA-T-9: Summary of Monthly Average Sludge Results

| Analyte | Units | NMA Limits | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Solids | % | - | 2.40 | 2.60 | 2.30 | 2.37 | 2.50 | 2.80 | 2.70 | 2.45 | 2.53 | 2.50 | 2.65 | 2.85 |
| Ammonia as N | mg/kg | - | 350 | 355 | 385 | 400 | 285 | 365 | 505 | 380 | 437 | 605 | 615 | 535 |
| Nitrate+Nitrite | mg/kg | - | 1.00 | 3.19 | 1.00 | 0.99 | 1.00 | 1.00 | 1.00 | 0.99 | 1.00 | 1.12 | 3.20 | 0.99 |
| Phosphorus | mg/kg | - | 20,250 | 19,550 | 19,800 | 20,467 | 20,300 | 19,350 | 23,800 | 27,100 | 24,467 | 28,200 | 25,050 | 20,650 |
| Arsenic | mg/kg | 170 | 7.75 | 8.40 | 7.50 | 7.87 | 8.20 | 7.95 | 6.05 | 6.95 | 9.20 | 6.05 | 6.40 | 10.10 |
| Cadmium | mg/kg | 34 | 0.90 | 0.75 | 0.95 | 1.23 | 1.20 | 0.85 | 1.10 | 0.85 | 1.33 | 1.30 | 1.55 | 1.80 |
| Chromium | mg/kg | 2,800 | 137.5 | 132.5 | 137.0 | 140.3 | 126.5 | 114.5 | 121.5 | 109.7 | 119.3 | 137.5 | 130.5 | 111.0 |
| Cobalt | mg/kg | 340 | 3.55 | 3.55 | 3.15 | 2.87 | 3.50 | 3.10 | 2.75 | 2.80 | 3.27 | 3.50 | 3.00 | 3.15 |
| Copper | mg/kg | 1,700 | 301.5 | 310.0 | 323.0 | 338.3 | 348.5 | 313.0 | 344.5 | 343.0 | 377.7 | 434.0 | 405.0 | 341.5 |
| Lead | mg/kg | 1,100 | 16.00 | 16.50 | 15.50 | 18.67 | 18.00 | 14.50 | 15.00 | 12.50 | 14.00 | 19.50 | 19.50 | 14.00 |
| Mercury | mg/kg | 11 | 0.23 | 0.21 | 0.22 | 0.23 | 0.12 | 0.17 | 0.13 | 0.14 | 0.23 | 0.25 | 0.28 | 0.33 |
| Molybdenum | mg/kg | 94 | 7.00 | 6.50 | 6.00 | 6.00 | 5.00 | 5.50 | 6.50 | 7.50 | 7.67 | 9.00 | 8.00 | 5.00 |
| Nickel | mg/kg | 420 | 23.70 | 23.70 | 23.80 | 24.47 | 26.00 | 23.35 | 24.75 | 22.95 | 25.97 | 28.50 | 28.50 | 24.70 |
| Potassium | mg/kg | - | 5,060 | 5,435 | 6,405 | 5,763 | 6,095 | 5,205 | 5,440 | 4,610 | 4,137 | 4,425 | 5,170 | 4,780 |
| Selenium | mg/kg | 34 | 2.65 | 2.80 | 2.50 | 2.43 | 1.55 | 3.35 | 3.80 | 3.45 | 3.23 | 3.45 | 3.65 | 3.05 |
| Zinc | mg/kg | 4,200 | 389.5 | 343.0 | 364.0 | 375.7 | 385.5 | 366.5 | 425.5 | 450.0 | 479.0 | 579.5 | 539.0 | 424.5 |

# AA-T-6 Complaints

There were no complaints received in 2025 regarding the operation of the Anger Avenue WWTP. One (1) complaint was received regarding the Anger Avenue sewage collection system. This is included in section AA-C-6 Summary of Collection System Complaints below. When a complaint is received, operations staff attend the site to verify the complaint. Corrective actions are taken if required based on the site verification. All complaints and corrective actions are logged in a complaint tracking system.

# AA-T-7 Bypasses, Overflows, other situations outside Normal Operating, Spills and Abnormal Discharge Events

## Bypasses and Overflows

There were six (6) secondary overflow events at the Anger Avenue WWTP in 2025. Secondary overflows from this facility receive partial treatment prior to discharge including screening, phosphorus removal, settling (solids removal), chlorination and dechlorination (from April 1 to October 31). Table AA-T-10 provides a monthly breakdown of secondary overflow events occurring at the Anger Avenue WWTP during the reporting period. A complete listing of individual events are available upon request.

Table AA-T-10: Annual Summary of Secondary Overflow Events by Month

| Month Name | Number of Overflow Events | Total Volume (ML) |
|---|---|---|
| January | 0 | 0.000 |
| February | 2 | 2.817 |
| March | 1 | 17.062 |
| April | 1 | 14.458 |
| May | 0 | 0.000 |
| June | 0 | 0.000 |
| July | 0 | 0.000 |
| August | 0 | 0.000 |
| September | 0 | 0.000 |
| October | 1 | 0.935 |
| November | 0 | 0.000 |
| December | 1 | 16.439 |
| **Total** | **6** | **51.711** |

Secondary overflows are sampled and submitted for analysis. Results are shown in Table AA-T-11 below.

Table AA-T-11: Anger Avenue WWTP Overflow Sampling Results

| Date | CBOD (mg/L) | Total Suspended Solids (mg/L) | Phosphorus (total) (mg/L) | Total Kjeldahl Nitrogen (mg/L) | Ammonia as N (mg/L) | Nitrate (mg/L) | Nitrite (mg/L) | E. Coli[4] |
|---|---|---|---|---|---|---|---|---|
| 2025/02/26 | 420 | 97 | 1.30 | 9.70 | 4.50 | 0.50 | 0.10 | |
| 2025/02/27 | 40 | 40 | 0.50 | 9.70 | 5.20 | 1.50 | 0.10 | |
| 2025/03/06 | 30 | 45 | 0.70 | 10.40 | 4.80 | 1.30 | 0.10 | |
| 2025/04/02 | 40 | 72 | 1.20 | 8.70 | 4.90 | 1.30 | 0.10 | 1,090,000 |
| 2025/10/22 | 40 | 43 | 1.10 | 4.60 | 2.00 | 2.00 | 0.10 | 770,000 |
| 2025/12/28 | 40 | 67 | 0.90 | 8.60 | 2.50 | 1.50 | 0.10 | |

[4] Sampling and Analysis of E.Coli is only required April 1 through October 31, annually

## Situations Outside of Normal Operating Conditions

The MECP defines “Normal Operating Conditions” as when all unit process(es), excluding the Preliminary Treatment System, in a treatment train is operating within its design capacity.

Secondary clarifier #2 was out of service in January, February and March 2025. The plant was able to fully treat flows up to the daily rated capacity during this time. However, during periods of high flows (wet weather), one clarifier was unable to provide adequate solids removal at the peak flow rate of 49,000 m3/d. This was discussed in AA-T-3 above.

## Spills

Niagara Region strives to maintain and operate wastewater infrastructure so spills to the environment do not occur. However, circumstances may arise and a spill occurs due to equipment malfunction, failure or other reasons. Occasionally, a planned spill may be required to safely complete required maintenance to critical equipment. If this is necessary, approval from the MECP is obtained in advance.

All spills are reported to the MECP Spills Action Centre upon discovery. Spills are investigated and written reports are submitted to the MECP and Environment and Climate Change Canada as required by legislation. Below in Table AA-T-12 summarizes spills that occurred at the Anger Avenue WWTP in 2025.

Table AA-T-12: Summary of spills occurring at the Anger Avenue WWTP during the reporting year

| Spill Date | MECP Incident Number | Short Description of Spill | Link to Public Spill Report |
|---|---|---|---|
| 2025-03-03 | 1-I70J0W | Release of Dilute Chlorinated Water to Environment | CWCD 2025-55 (https://www.niagararegion.ca/council/Council%20Documents/2025/council-correspondence-march-28-2025.pdf) |

## Abnormal Discharges

An abnormal discharge is a discharge to the environment that is abnormal in quality or quantity. Final effluent that containing higher than required levels of suspended solids was discharged to the environment in February 2025. This incident was covered in detail in section AA-T-3 above.

# AA-T-8 Summary of Efforts to Achieve Conformance with F-5-1 and/or F-5-5

## Summary of Efforts – Procedure F-5-1 – Secondary Treatment Equivalent

Procedure F-5-1 states wastewater treatment facilities are to provide treatment of wastewater to a minimum of secondary treatment equivalence. This means the WWTP should be designed to meet objectives of 15 mg/L for CBOD and TSS and 1 mg/L for TP.

As demonstrated above in section AA-T-2-2, in general, Anger Avenue achieved effluent quality that met or exceeded design objectives. The Final Effluent annual average quality achieved in 2025 was equivalent with the MECP design objectives for advanced treatment plants. The observed annual average for CBOD was 5 mg/L, the observed annual average for TSS was less than 9 mg/L, while the annual average TP concentration of the Final Effluent was less than 0.3 mg/L.

## Summary of Efforts – Procedure F-5-1 – Sewage Bypass/Overflow from Nominally Separated System

Procedure F-5-1 states that bypasses and overflows from nominally separated systems are not allowed except in emergency situations. Emergency situations include protection from basement flooding, preventing damage to WWTP equipment or pumping stations or to prevent treatment process washout.

The Anger Avenue WWTP experiences high flow conditions due to inflow and infiltration in the collection system that require overflows to occur to prevent emergency situations. Being a two-tier system, Niagara Region works closely with the Town of Fort Erie to reduce overflows at the wastewater treatment plant. Niagara Region participates in a cost sharing strategy with lower tier municipalities to fund overflow reduction projects. In 2025, Niagara Region had an approved budget totaling $4.0M for the overflow reduction cost sharing program. Three (3) projects were approved for cost sharing in the Town of Fort Erie with Niagara Region contributing $545,000 to support overflow reduction.

## Excess Primary Treatment Capacity

F-5-1 allows for excess primary treatment where it is impractical or uneconomical to provide secondary treatment to wet weather flow. Anger Avenue is equipped with four storm tanks that provide excess primary treatment to wet weather flow. Flows greater than the plant design peak flow of 49,500 $m^3$/d are diverted to the storm systems. Storm flows diverted to the storm treatment system receive screening, phosphorus removal, settling (solids removal),

chlorination and dechlorination (from April 1 to October 31) prior to discharge to the Niagara River via the storm system outfall.

The storm system also acts as a storage tank during wet weather and can hold approximately 4,000 $m^3$ in the settling tanks prior to a secondary overflow occurring. This volume is returned to the plant for full treatment when wet weather events are over.

## Industrial Waste

Industrial waste can contain material that can have negative impacts on collection system infrastructure as well as the wastewater treatment process itself. Upsets to the treatment process can cause a plant to become non-compliant with ECA objectives and limits. To protect our infrastructure, the Niagara Region has a Sewer Use By-law in place. Environmental Enforcement Officers conduct industry inspections as well as sampling and monitoring of industrial discharges on a routine basis to ensure that they meet the Sewer Use By-law limits.

In 2024, an update to the Sewer Use By-law was approved by Council.  Sewer Use By-law 2024-51 is still in place ensuring better protection of Niagara Region wastewater infrastructure.

## Summary of Efforts – Procedure F-5-5

The MECP Procedure F-5-5 applies to combined sewage systems. The Anger Avenue wastewater collection system is considered nominally separated. This procedure does not apply.

# AA-C-1 Overview of the Anger Avenue WWTP Collection System

The Anger Avenue WWTP collection system is a class IV system that collects wastewater from domestic, commercial and some industrial sources from the southeast area of the municipality of Fort Erie. The collection system consists of the following:

- Local sanitary sewers
- 10.9 kilometres of regional gravity mains
- 12.7 kilometres of regional force mains
- 7 pumping stations:
    - Alliston Avenue Sewage Pumping Station
    - Bardol Avenue Sewage Pumping Station
    - Catherine Street Sewage Pumping Station
    - Dominion Road Sewage Pumping Station
    - Lakeshore Road Sewage Pumping Station
    - Rose Avenue Sewage Pumping Station
    - Thompson Rd Sewage Pumping Station
- A total of six Sanitary Sewage Outfalls (SSO) outfalls, including overflow structures at three of the seven pumping stations


Figure AA-C- 1: Map of Anger Avenue WWTP Collection System

The collection system is operated under a two-tier system, where the Town of Fort Erie owns and operates local gravity sanitary sewers and Niagara Region owns and operates sewage pumping stations, forcemains and larger gravity sanitary sewers or trunk sewers. It is classified as a nominally separated system meaning that storm water is collected separately from sanitary sewage, but the system may still be impacted by inflow and infiltration from sources such as roof leaders, foundation drains, leaky pipes and joints and maintenance holes.

The collection system operates under the following Consolidated Linear Infrastructure ECA:

- Fort Erie Trunk Wastewater Catchment System, 007-W610, issue number 1

Annual reporting has been prepared to meet the requirements of this approval.

# AA-C-2 Summary and Interpretation of Collection System Monitoring Data

## Monitoring of Pump Station Operations

Pump stations operate through automatic control and are monitored continuously using Supervisory Control and Data Acquisition (SCADA). Stations alarms are programmed to alert the operations staff at the Anger Avenue WWTP 24 hours a day of potential issues including but not limited to high wet well levels, pump faults, communication failures and standby generator status. Operators will respond to station alarms as required to ensure proper station operation.

Station operation is trended in SCADA. SCADA trends are reviewed daily by operations staff to evaluate station performance. Operators will look at pump cycle times, station discharge flow and pump duty rotation to identify potential issues. Where potential issues are identified, work orders are generated for follow up by maintenance staff.

In addition to SCADA monitoring, monthly station inspections are completed by operations staff. This includes inspection of the station and testing of standby generator equipment. In addition, in 2025, operations staff conducted six (6) visual inspections of sanitary sewer overflow locations.

## Sanitary Sewer Closed-Circuit Television Inspection Program

Niagara Region owns and maintains 151 kilometers of trunk sanitary gravity sewers, 175 kilometers of sanitary forcemains, and 2,093 sanitary access chambers across 11 municipalities. Approximately 85% of its conventional trunk sanitary gravity system is inspected using closed-circuit television (CCTV) once every three years. The remaining 15% is large diameter trunk sewers, which are inspected once every 10 to 15 years due to the necessity for specialized equipment to access and inspect sewers that have continuous high flow levels.

Table AA-C- 1 details the total length of sewers inspected over the past four years.

Table AA-C- 1- CCTV Program Summary

| Measurement in Kilometers (km) | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|
| Inspection Length (km) | 59.3 | 33.0 | 31.3 | 58.7 |

Observations from the inspections are recorded for structural and operational deficiencies of the pipes. Operational deficiencies (blockage from grease, roots, debris) are addressed through the cleaning/flushing program. Structural deficiencies (broken, fractured, surface damage, holes) as well as Inflow and Infiltration are forwarded for consideration in the asset management plan and capital upgrade program.

## Flow Monitoring

Niagara Region monitors sewer flows at 158 locations. Flow monitoring information is used for municipal Pollution Prevention and Control Plans (PPCPs), Master Servicing Plans (MSPs) including the 2021 Water and Wastewater MSP, Inflow and Infiltration studies, billing, development planning, and capital project design.

# AA-C-3 Summary of Operating Issues Encountered and Corrective Actions Taken

## Pump Stations and Forcemains

No operational issues were encountered with the pump station and forcemains in the Anger Avenue collection system.

## Gravity Trunk Sewers

No operational issues were encountered with Niagara Region gravity trunk sewers in 2025.

# AA-C-4 Summary of Major Maintenance, Capital Projects and Pre-Authorized Alterations

## Summary of Maintenance Carried out on Major Equipment

Niagara Region works to keep wastewater infrastructure in a state of good repair. Maintenance activities completed include regular preventative maintenance (PM) activities and normal and emergency equipment repair or replacement. Where a substantial amount of upgrade is required, this work is carried out under the capital works program.

Below is a summary of normal and emergency repairs carried out on major equipment in the Anger Avenue Collection System:

- Dominion Road SPS
  - rebuild of sewage lift pump #2
- Lakeshore Road SPS
  - rebuild of sewage lift pump #2
  - spare pump rebuild
  - new discharge piping, check valves and isolation valves
  - installation of equipment to facilitate temporary bypass pumping of the station to forcemain using portable pump
- Rose Avenue SPS
  - rebuild of sewage lift pump #3
  - repair of variable frequency drive

This list does not include PM activities. PMs are completed and tracked in a computerized maintenance management system. PM completed during the reporting year are available upon request.

## Planned Capital Upgrades

The following is a list of capital upgrades forecasted for the Anger Avenue Collection System:

- The Catherine Street SPS requires sustainability and capacity upgrades. A Municipal Class Environmental Assessment has been completed to determine the best path forward to complete the necessary station improvements. Further archeological work was undertaken in 2024 and 2025. Project is currently on hold pending further archeological investigation.
- Lakeshore Road SPS will undergo upgrades to the station itself as well as replacement of the station forcemain. Upgrades support operations and maintenance of the station, sustainability as well as a capacity increase. This project is currently in the design phase and is expected to be completed in 2027.

## Summary of Pre-Authorized Alterations Undertaken

Through collection system ECAs, MECP has given System Owners the ability to complete low risk changes to a sewage pumping station, forcemain or gravity main without requiring further approval from the MECP. These modifications are documented on an applicable MECP form and signed off by the Owner or delegate of the system. Any pre-authorized modifications must be reported on annually to the MECP.

During the reporting year 2025, no pre-authorized modifications were completed.

No pre-authorized works were completed and therefore, there were no alterations that would pose a significant threat to drinking water.

# AA-C-5 Summary of Calibration Activities

Collection system overflow meters are calibrated at minimum once per year. Other instrumentation used in process control is calibrated on an as needed basis. Table AA-C- 2 below provides a summary of calibrations completed in the collection system in 2025.

Table AA-C- 2: Annual Summary of Collection System Flow Meter Calibrations

| Equipment Description | Date Calibrated | Comments |
|---|---|---|
| Lakeshore Road SPS Overflow Meter | 2025-04-29 | Passed |

Calibration certificates are available upon request.

# AA-C-6 Summary of Complaints

There was one (1) complaint received in 2025 regarding the operation of the Anger Avenue collection system. When a complaint is received, operations staff attend the site to verify the complaint. Corrective actions are taken if required based on the site verification. All complaints and corrective actions are logged in a complaint tracking system.

# AA-C-7 Summary of Collection System Overflows and Spills

## Collection System Overflows

Although the Anger Avenue wastewater collection system is nominally separated, collection system overflows occur during wet weather events due to inflow and infiltration into the sewage collection system. Overflows are necessary to prevent basement flooding and to protect downstream infrastructure and wastewater treatment processes.

Table AA-C- 3 provides a summary of collection system overflows that occurred during the reporting year. The table includes volume discharge, overflow durations as well as pollutant loading to the environment. Individual event details are available upon request.

More information on sewage overflows and inflow and infiltration, is available on the Region's website (www.niagararegion.ca/living/sewage/cso).

Table AA-C- 3 - Summary of Collection System Overflow Events. Where NS is indicated, no sample results are available.

| Overflow Location | Overflow Date | Overflow Volume (ML) | Overflow Duration (hhh:mm) | BOD Loading (kg) | TSS Loading (kg) | TP Loading (kg) | TKN Loading (kg) | E.Coli (CFU/100 mL) | Was the Overflow Disinfected (Yes/No) | Were Any Adverse Impacts Observed (Yes/No) | Corrective Actions Taken |
|---|---|---|---|---|---|---|---|---|---|---|---|
| No overflows from the collection system in 2025 | | | | | | | | | | | |

## Collection System Spills

Niagara Region strives to maintain and operate wastewater infrastructure so spills to the environment do not occur. However, circumstances arise where a spill occurs due to equipment malfunction, failure or other reasons. Occasionally, a spill is required to safely complete required maintenance to critical equipment. If this is necessary, approval from the MECP is obtained in advance.

All spills are reported to the MECP Spills Action Centre upon discovery. Spills are investigated and written reports are submitted to the MECP and Environment and Climate Change Canada as required by legislation. Table AA-C- 4 below summarizes spills that occurred in the Anger Avenue collection system in 2025.

Table AA-C- 4: Summary of Spills Occurring in the Anger Avenue Collection System

| Spill Date | MECP Incident Number | Description of Spill | Link to Spill Report |
|---|---|---|---|
| No spills from the collection system in 2025 | | | |

# AA-C-8 Summary of Efforts to Reduce WWTP Bypasses/Overflows and Collection System Overflows

## Projects Undertaken to Reduce Bypasses or Overflows

The Anger Avenue WWTP experiences high flow conditions that require overflows to occur due to inflow and infiltration in the collection system to prevent emergency situations. Being a two-tier system, Niagara Region works closely with the Town of Fort Erie to reduce overflows at the wastewater treatment plant. Niagara Region participates in a cost sharing strategy with lower tier municipalities to fund overflow reduction projects. In 2025, Niagara Region had an approved budget totaling $4.0M for the overflow reduction cost sharing program. Three (3) projects were approved for cost sharing in the Town of Fort Erie with Niagara Region contributing $545,000 to support overflow reduction.

## Public Reporting of Bypasses and Overflows

Niagara Region reports all bypass and overflow events publicly on the Niagara Region website (https://www.niagararegion.ca/living/sewage/CSO/Reporting/CSOLocations.aspx)

Niagara Region updates the data on recent overflows four times a year and displays any overflows that may have occurred in the past 12 months.

A listing of overflow data back to 2008 is available through the Niagara Open Data website (https://niagaraopendata.ca/dataset/combined-sewage-overflow)

A new public tool is now available that shows bypass and overflow status in near real time. It includes a map of overflow locations and their current status. The status shows if an overflow is happening now or if one occurred in the past 48 hours. This tool can help people make informed decisions about recreational water use. (https://experience.arcgis.com/experience/76c72e893f93447c87e6ff717f78556d#data_s=id%3AdataSource_1-1922f276303-layer-1-0%3A37)

Niagara Region has posted signs at publicly accessible sites close to overflow locations that warn about potential hazards and precautions on water use following wet weather. These precautions are not in place at all times but are recommended after wet weather when overflows may affect water quality and safety.

Figure AA-C- 2 - Image of Sanitary Sewer Overflow Public Signage