Niagara Falls Wastewater Treatment Plant
Annual Performance Summary Report
Treatment and Collection
Reporting Year: 2025

Niagara Region

Table of Contents

Niagara Falls Wastewater Treatment Plant Annual Performance Report (NF-T)

List of Tables:

List of Figures:

Niagara Falls Wastewater Collection System Annual Performance Report (NF-C)

List of Tables

List of Figures

NF-T-1 Wastewater Treatment Process Description

The Niagara Falls Wastewater Treatment Plant (WWTP) is located at 3450 Stanley Avenue in the City of Niagara Falls and provides wastewater treatment to the City of Niagara Falls and portions of the Town of Niagara-on-the-Lake (NOTL). The Niagara Falls WWTP is a class IV treatment facility and has been designed to treat an average daily flow (ADF) of 68,300 cubic meters per day (m^3/d). This facility can fully treat all flows up to 136,400 m^3/d and provides primary treatment for wet weather flows greater than 136,400 m^3/d up to a maximum flow rate of 205,000 m^3/d.

The Niagara Falls WWTP operates under the following Ministry of Environment, Conservation and Parks (MECP) Environmental Compliance Approvals (ECA):

Environmental Compliance Approval (Sewage):

- A-500-5110411564 Revision 1, issued August 22, 2021

Environmental Compliance Approval (Air):

- 6480-7ZUMEH, issued January 19, 2010

The Niagara Falls WWTP uses the following processes to treat wastewater:

- Imported Sewage Receiving
- Screening
- Raw Influent Pumping
- Grit Removal
- Flocculation
- Phosphorus Removal
- Primary Treatment
- Secondary Treatment (Rotating Biological Contactors/Moving Bed Biofilm Reactor and Settling)
- Disinfection (Chlorination and Dechlorination)
- Solids Handling – sludge digestion, dewatering and transportation

A major project is underway to replace the old secondary treatment system, which used Rotating Biological Contactors (RBCs), with a new Moving Bed Biofilm Reactor (MBBR). This upgrade is needed to improve how well the plant treats wastewater. The MBBR system started running in July 2025 and fully replaced the RBCs in September. The work is still ongoing at the site.

The remaining treatment processes remained the same and are described below.

Imported Sewage Receiving Station: To provide service to Niagara Region residents outside the wastewater servicing area, the Niagara Falls WWTP accepts Hauled Sewage from

commercial haulers and recreational vehicle holding tanks. Receiving stations are situated to ensure all hauled 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: Screened wastewater enters a wet well, equipped with raw sewage pumps. The wet well provides a low point for the collection system to discharge. The raw sewage pumps then lift the wastewater from the well (low point) to the beginning of the treatment process (high point) to allow the remainder of the treatment process to occur by gravity.

The Niagara Falls WWTP is equipped to pump all wastewater received up to 205,000 m^3/d. During wet weather events, high flows above 205,000 m^3/d will back up in the incoming sewer and discharge directly to the Queenston-Chippawa Power Canal. This is called a Plant Overflow.

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

Flocculation: Polymer and coagulant is added to the wastewater and mixed in flocculation tanks. Flocculation brings small solids together into larger bunches. The larger bunches of solids are heavier and improve settling in the downstream primary clarifiers.

Primary Treatment: Primary clarifiers are large tanks that allow the incoming wastewater to slow down. The slower speed allows heavier solids to fall from the wastewater to the bottom of the tank. Sludge collected at the bottom of the primary clarifiers is removed and sent to the solids handling process.

For flows less than 136,400 m^3/day, the effluent from the primary clarifiers flows to the secondary treatment process for full treatment, disinfection and dechlorination. Flows greater then 136,400 m^3/d will bypass the secondary treatment system and disinfection/dechlorination system and flow to the OPG canal. This is called a secondary overflow.

Secondary Treatment:

Rotating Biological Contactors (RBCs): A shaft with multiple large round discs stacked close together are slowly rotated into a shallow tank of wastewater. Microorganisms (or “bugs”) grow on the discs and remove dissolved and suspended organics and nutrients when in contact with the wastewater. While the portions of the disc are exposed to the air, the microorganisms get the oxygen they need to remain healthy.

Moving Bed Biofilm Reactor (MBBR): A wastewater treatment process that uses small plastic carriers that float around in an tank with the help of blown in air. These carriers grow a layer of helpful microbes (or “bugs”) that break down organic material (BOD). The carriers keep moving around with the air and mixing, and screens make sure they stay in the tank while the treated water flows out.

Coagulation and Phosphorus Removal: A polymer and metal salt solution, ferric chloride, is added to assist with phosphorus removal and solids settling in the secondary clarifiers.

Secondary Clarifiers: Secondary clarifiers receive effluent from the RBCs/MBBR which separates the remaining solids. Solids settle as waste sludge on the bottom of the clarifier while a clean effluent overflows from the clarifiers to be disinfected and discharged to the environment. The waste sludge collected on the bottom of the clarifier is pumped to the solids handling process for anaerobic digestion.

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 chamber. As chlorine can be toxic to aquatic species, disinfected effluent is dechlorinated with a sodium bisulphite solution before being discharged to the Queenston-Chippawa Power Canal.

Solids Handling:

Anaerobic Digestion: Sludge from the primary and secondary clarifiers is directed to primary anaerobic digesters, which overflow into a secondary digester for thickening. Anaerobic digestion allows a further breakdown of pollutants and pathogens in the collected sludge. The digested sludge is stored for further dewatering.

Dewatering: Digested sludge is mixed with a polymer and processed through a centrifuge. A centrifuge spins the sludge at a high rate of speed to separate the solids from the liquid portion. Centrifuging produces a dewatered cake material which is transported from site for further processing into a pelletized fertilizer. The liquid portion, or centrate, is normally returned to the liquid treatment process for full treatment and discharge to the environment.

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

Review of 2025 Plant Flows

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

Table NF-T-1: Table of Niagara Falls WWTP Treated and Imported Sewage Flows

Flow Statistic	Value
Design Average Daily Flow (ML/d)	68.300
Design Peak Flow Rate - Dry Weather (ML/d)	136.400
Design Peak Flow Rate - Wet Weather (ML/d)	205.000
Total Volume Processed (ML)	13,800.673
Annual Average Daily Flow (MLD)	37.810
% Annual Average Daily Flow Utilization	55%
% Increase/Decrease over prior year	-9%
Volume Imported Sewage Received (ML)	0.746
% Increase/Decrease Imported Sewage over prior year	-29%
Imported Sewage as % of Flow	0.01%

Reviewing the treated flows in 2025, it was observed that, on average, the plant is utilizing 55% of its design Average Daily Flow. This indicates that the facility has hydraulic capacity to meet the needs of the collection system with room for additional future 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 9 instances where the flow to the plant was greater than the design Average Daily Flow, amounting to approximately 2% of the year. These instances occurred during times of wet weather or heavy snow melt. The Niagara Falls WWTP collection system receives flow from a portion of combined sewers and is impacted by wet weather.

A review of the monthly average daily flow rate for the prior 10-year period was completed. This can be observed below in Figure NF-T-1 below. No trends were observed indicating that the average flow at the plant is increasing or decreasing. Spikes during typical wet weather seasons, spring and fall, demonstrate impacts of wet weather on the Niagara Falls collection system and wastewater treatment plant. Lower flows were observed during 2020 and 2021, which can be attributed to COVID-19 pandemic restrictions and its impact on tourism.

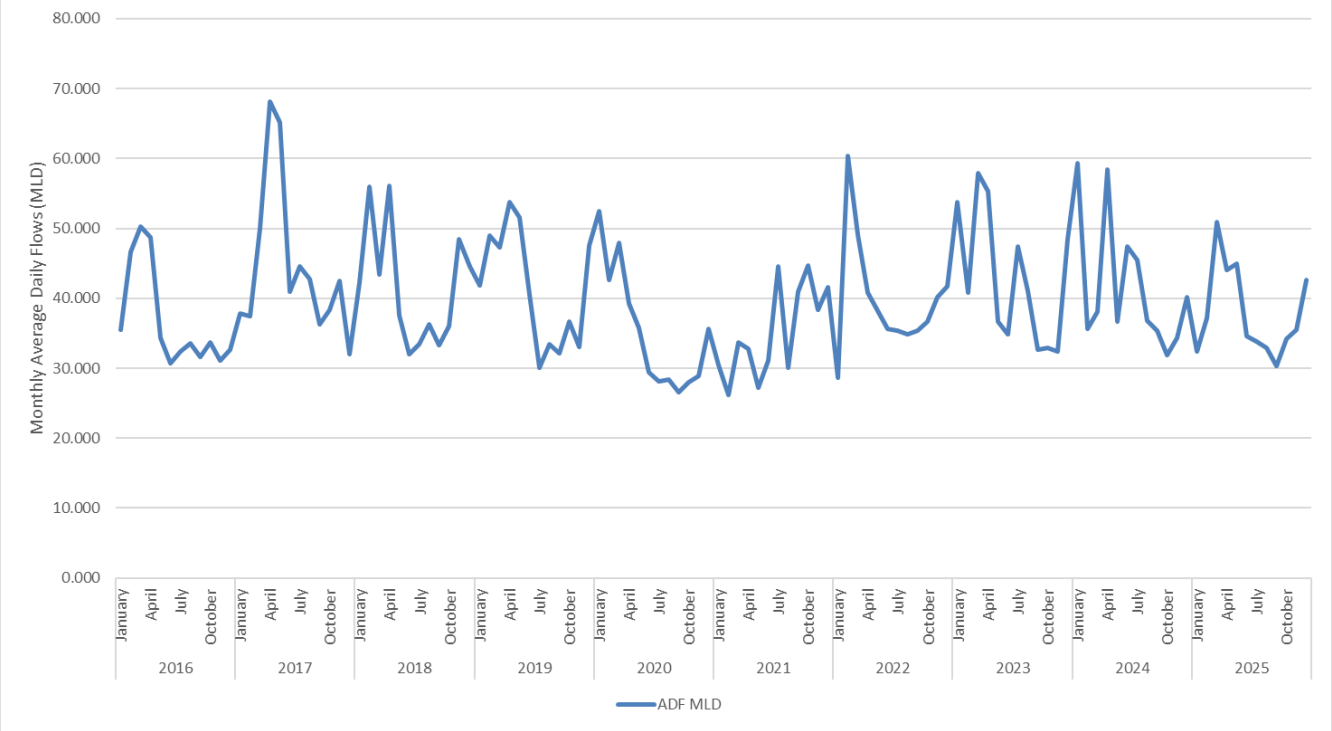

Figure NF-T-1: Graph displaying the Monthly Average Daily Flow Rate in MLD

The volume of imported sewage received at this facility decreased by 29% compared to the prior year.

Due to final effluent quality issues and ongoing non-compliance with ECA limits, the imported sewage receiving station is operating under restricted conditions including:

- Limited to domestic wastewater from within the Niagara Region boundaries only
- Daily received volume limit of 100 m^3
- Daily sewage disposals would be stored in the hauled sewage holding tank to be released slowly into the influent stream over time

On October 6, 2025, the Niagara Falls WWTP began accepting domestic wastewater from the entire Niagara Region with the start up of the new MBBR system.

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 NF-T-4: Annual Summary of Niagara Falls Plant and Imported Sewage Flows, Influent and Effluent Sampling and Monitoring Results.

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 shows 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 displayed as kilograms of pollutant per day or kg/d. Below in Figure NF-T-2, is a graph depicting four commonly monitored pollutant loadings to the plant for the period of 2023-2025.

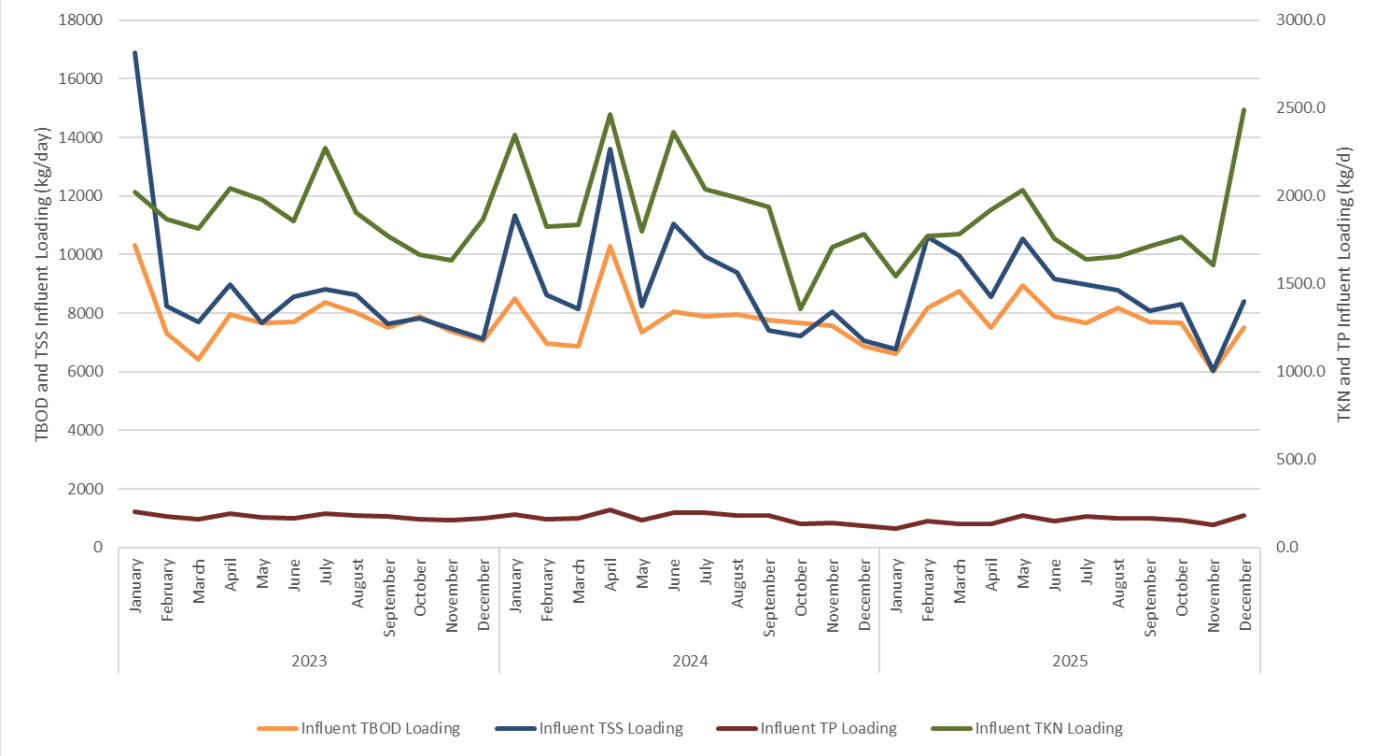

Figure NF-T-2: Figure of monthly plant loadings to the Niagara Falls WWTP for Total Biochemical Oxygen Demand (TBOD), Total Suspended Solids (TSS), Total Kjeldahl Nitrogen (TKN) and Total Phosphorus (TP), in kg/d, for the period 2023 to 2025.

Reviewing the calculated loadings for TBOD, TSS, TKN, and TP data over the past three years shows a noticeable spike in influent loading at the end of 2025. This increase coincides with the introduction of centrate feeding to the plant influent, which may explain the higher loadings. Trends will continue to be monitored to see if this increase persists.

Review of Imported Sewage Sampling and Monitoring

Imported sewage is sampled 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. In 2025, 25 samples of imported sewage were collected and submitted for testing by an ISO 17025:2017 accredited laboratory. No sample was submitted for testing in August, as required by the ECA. Corrective actions are being taken to prevent recurrence in the future.

All sample results were reviewed and compared to the Niagara Region SUBL. Where exceedances of the by-law were noted, the source of the imported sewage is investigated. Exceedances of treatable parameters (TBOD, COD, TSS, TP, TKN and pH) are allowable under the SUBL.

Table NF-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	mg/L	-	850	3,445	6,500	2,120	1,405	3,763	16,515	-	5,610	558	900	1,367
Phosphorus	mg/L	10	2.24	32.75	47.90	15.00	17.70	58.95	122.70	-	27.65	5.10	1.97	9.65
Arsenic	mg/L	1	0.02	0.28	0.07	0.01	0.26	0.50	0.50	-	0.50	0.33	0.08	0.35
Cadmium	mg/L	0.7	0.00	0.11	0.01	0.00	0.10	0.20	0.20	-	0.20	0.13	0.03	0.14
Chromium	mg/L	3	0.02	0.28	0.09	0.04	0.26	0.50	0.50	-	0.50	0.33	0.08	0.35
Cobalt	mg/L	5	0.00	0.11	0.04	0.01	0.10	0.20	0.20	-	0.20	0.13	0.03	0.14
Copper	mg/L	3	0.24	0.51	2.93	3.73	0.39	0.70	9.80	-	2.45	1.23	0.24	0.55
Lead	mg/L	1	0.02	0.28	0.18	0.06	0.26	0.50	0.65	-	0.50	0.33	0.08	0.35
Mercury	ug/L	10	0.06	0.86	1.10	0.94	0.31	0.70	3.02	-	1.49	0.62	0.13	0.87
Molybdenum	mg/L	5	0.01	0.11	0.05	0.08	0.10	0.20	0.25	-	0.20	0.13	0.04	0.14
Nickel	mg/L	2	0.01	0.11	0.15	0.08	0.10	0.20	0.35	-	0.20	0.13	0.03	0.14
Selenium	mg/L	1	0.02	0.28	0.02	0.03	0.26	0.50	0.50	-	0.50	0.33	0.08	0.35
Zinc	mg/L	3	0.56	4.00	9.18	2.86	1.23	2.00	18.00	-	3.50	1.40	0.35	1.40
Aluminum	mg/L	-	1.92	13.25	71.80	10.70	4.83	4.33	78.00	-	10.00	2.68	0.90	4.40
Antimony	mg/L	5	0.03	0.55	0.02	0.12	0.51	1.00	1.00	-	1.00	0.66	0.15	0.70
Barium	mg/L	-	0.04	0.28	0.87	0.19	0.28	0.50	1.85	-	0.50	0.33	0.08	0.35
Beryllium	mg/L	-	0.02	0.28	0.01	0.01	0.26	0.50	0.50	-	0.50	0.33	0.08	0.35
Boron	mg/L	-	0.30	5.50	0.20	0.20	5.10	10.00	10.00	-	10.00	6.60	1.50	7.00
T BOD	mg/L	300	330	1,360	880	600	520	1,041	2,577	-	1,606	492	373	390
COD	mg/L	600	200	4,000	5,640	1,770	1,527	3,600	19,825	-	4,675	526	1,013	1,250
Conductivity	mg/L	-	1,115	3,270	2,010	771	1,632	3,710	1,760	-	1,840	627	453	815
Iron	mg/L	-	2.11	7.10	85.30	12.60	4.22	9.93	96.55	-	23.80	4.89	1.05	4.16
Manganese	mg/L	-	0.21	0.55	1.99	0.26	0.56	1.00	2.50	-	1.00	0.68	0.15	0.70
pH		6-11	7.70	7.65	7.40	7.50	7.75	8.17	5.15	-	7.25	7.68	7.30	7.20
Silver	mg/L	5	0.02	0.28	0.01	0.01	0.26	0.50	0.50	-	0.50	0.33	0.08	0.35
Tin	mg/L	5	0.03	0.55	0.09	0.26	0.51	1.00	1.00	-	1.00	0.66	0.15	0.70
Total Volatile Solids	mg/L	-	310	2,110	2,910	1,400	905	2,650	12,285	-	3,730	318	625	907
Vanadium	mg/L	-	0.01	0.11	0.14	0.03	0.10	0.20	0.20	-	0.20	0.13	0.04	0.14
Total Kjeldahl Nitrogen	mg/L	100	24	300	325	75	142	413	444	-	206	41	37	46
Total Suspended Solids	mg/L	350	99	2,450	5,440	1,940	732	2,371	15,610	-	2,470	439	685	833

Review of Final Effluent Sampling and Monitoring Activities

In 2025, 140 samples of final effluent were collected and tested. Both individual and monthly average results are reviewed and compared to the objective and compliance limits stated in the facility ECA. Table NF-T-3 below shows the number of times Niagara Falls WWTP went over the monthly objectives and compliance limits. Table NF-T-4 below provides a summary of the monthly average final effluent results.

Niagara Falls went over the TSS compliance limit for eight months and the CBOD limit for six months. The objectives for both CBOD and TSS were exceeded for all 12 months. The TP compliance limit was exceeded once in August 2025, and the TP objective was not met in any month. TP objective exceedances are linked to high TSS, because solids in the final effluent contain phosphorus. However, the TP annual average loading for 2025 was below the ECA limit of 68.3 kg/d. The objective for TRC was not achieved in August 2025.

Final effluent quality continues to be affected by problems in the secondary treatment process. A new MBBR system was built and began operating in July 2025, fully replacing the aging RBC system in September. The MBBR system is still in the commissioning and optimization phase and is not yet performing at its full potential.

More details on the causes of objective and limit exceedances can be found in section NF-T-3 A status update on the ongoing construction work is provided in section NF-T-4 (Proposed Works – Status Update).

A review of individual sample results showed the following percentages of samples that exceeded the ECA objective:

- Carbonaceous Biochemical Oxygen Demand (CBOD) – 82%
- Total Suspended Solids (TSS) – 91%
- Total Phosphorus (TP) – 79%
- E.Coli – 8%
- pH – 0%

Niagara Falls WWTP exceeded the ECA objectives more than half the time for CBOD, TSS, and TP. After the new MBBR system started treating flows in July, performance began to improve, and the plant met its objectives more often compared to the previous year. Additional improvements are expected as optimization continues.

The facility continued to face challenges meeting limits and objectives throughout this reporting year.

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

Parameter	ECA Monthly Concentration Objective	ECA Monthly Concentration Limit	Monthly Loading Limit (kg/d)	Number of Monthly Objective Concentration Exceedances	Number of Monthly Limit Concentration Exceedances	Number of Monthly Loading Limits Exceeded
pH[1]	6.5-8.5	6.0-9.5	-	0	0	-
CBOD5	15 mg/L	25 mg/L	-	12	6	-
Total Suspended Solids	15 mg/L	25 mg/L	-	12	8	-
Total Phosphorus	0.5 mg/L	1.0 mg/L	68.3 kg/d	12	1	0
Total Residual Chlorine[2]	non-detect	0.02 mg/L	-	1	0	-
E-Coli (geomean) [2]	200 CFU/100 mL	200 CFU/100 mL	-	0	0	-

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

Table NF-T-4: Annual Summary of Niagara Falls 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	Samples Tested
Influent - Monthly Average TSS (mg/L)	209	285	196	195	235	265	262	267	267	243	170	197	233	
Number of Influent TSS Samples	9	8	9	9	8	9	10	8	9	9	9	9		106
Influent - Monthly Average TBOD5 (mg/L)	204	220	172	171	199	228	227	248	254	224	169	176	208	
Number of Influent TBOD5 Samples	9	8	9	9	8	8	10	8	9	9	9	9		105
Influent - Monthly Average TP (mg/L)	3.4	4.1	2.6	3.1	4.1	4.4	5.0	5.0	5.5	4.5	3.7	4.3	4.2	
Number of Influent TP Samples	9	8	9	9	8	8	10	8	9	9	9	9		105
Influent - Monthly Average TKN (mg/L)	47.63	47.70	35.08	43.67	45.31	50.76	48.27	50.19	56.72	51.71	45.16	58.51	48.41	
Number of Influent TKN Samples	9	8	9	9	8	8	10	8	9	9	9	9		105
Total Plant Flows (ML)	1005.814	1042.026	1578.182	1319.452	1392.316	1037.544	1047.979	1021.285	907.910	1060.329	1058.093	1321.020	13791.950	
Average Daily Flow (MLD)	32.446	37.215	50.909	43.982	44.913	34.585	33.806	32.945	30.264	34.204	35.270	42.614	37.810	
Maximum Daily Flow (MLD)	62.666	83.562	122.289	132.351	117.178	62.463	46.606	57.929	60.477	67.262	62.760	106.022	**MAX**	132.351
Minimum Daily Flow (MLD)	25.650	25.940	30.098	31.689	28.032	27.415	28.932	28.310	25.582	25.464	26.968	25.771	**MIN**	25.464
Volume Imported Sewage Received (ML)	0.025	0.009	0.022	0.019	0.075	0.050	0.078	0.063	0.054	0.171	0.105	0.076	0.746	
Final Effluent - Monthly Average TSS (mg/L)	32.0	35.6	33.4	31.6	27.8	26.0	20.1	40.5	24.9	19.1	23.9	30.4	28.8	
Final Effluent - Average Daily TSS Loading (kg/d)	1038	1325	1700	1390	1249	899	679	1334	754	653	843	1295	1088	
Number of Final Effluent TSS Samples	9	8	9	9	8	8	10	8	9	16	29	17		140
Final Effluent - Monthly Average CBOD5 (mg/L)	35.2	42.3	34.1	45.1	39.9	25.2	17.9	24.3	23.6	17.8	16.6	22.2	28.7	
Final Effluent - Average Daily CBOD5 Loading (kg/d)	1142	1574	1736	1984	1792	872	605	801	714	609	585	946	1085	
Number of Final Effluent CBOD5 Samples	9	8	9	9	8	8	10	8	9	16	29	17		140
Final Effluent - Monthly Average TP (mg/L)	0.64	0.86	0.79	0.91	0.76	0.79	0.75	1.18	0.84	0.62	0.74	0.89	0.81	
Final Effluent - Average Daily TP Loading (kg/d)	20.77	32.01	40.22	40.02	34.13	27.32	25.35	38.87	25.42	21.21	26.10	37.93	30.78	
Number of Final Effluent TP Samples	9	8	9	9	8	8	10	8	9	16	29	17		140
Final Effluent - Monthly Average TKN (mg/L)	41.01	40.58	31.16	40.96	40.51	54.61	37.28	42.25	42.74	40.41	41.76	41.43	41.23	
Number of Final Effluent TKN Samples	9	8	9	9	8	8	10	8	9	16	29	17		140
Final Effluent - Monthly Average NH3 (mg/L)	32.98	34.13	24.34	26.43	29.09	38.31	32.54	34.13	38.20	34.72	33.41	33.33	32.63	
Number of Final Effluent NH3 Samples	9	8	9	9	8	8	10	8	9	16	29	17		140
Final Effluent - Monthly Average NO3 (mg/L)	0.42	0.34	0.48	0.50	0.23	0.33	0.53	0.75	1.06	0.48	0.43	0.70	0.52	
Number of Final Effluent NO3 Samples	9	8	9	9	8	8	10	8	9	16	29	17		140
Final Effluent - Monthly Average NO2 (mg/L)	0.22	0.28	0.17	0.32	0.10	0.30	0.48	0.53	0.43	0.20	0.14	0.43	0.30	
Number of Final Effluent NO2 Samples	9	8	9	9	8	8	10	8	9	16	29	17		140
Final Effluent - Monthly Geomean E.Coli (cfu/100mL)				53	22	12	54	30	9	3			18	

Measured Parameter	January	February	March	April	May	June	July	August	September	October	November	December	Total / Average	Samples Tested
Number of Final Effluent E.Coli Samples				8	9	8	10	8	9	9				61
Final Effluent - Monthly Average TRC (mg/L)			0.000	0.01	0.00	0.00	0.00	0.00	0.00	0.00			0.00	
Number of Final Effluent TRC Samples			4	30	31	30	31	31	30	31				218
Final Effluent - Monthly Average Temperature (°C)	14.03	13.88	14.24	15.96	17.83	20.08	22.50	22.48	22.01	19.91	17.61	14.93	17.96	
Number of Final Effluent Temperature Samples	9	8	9	9	8	8	10	8	9	16	29	17		140
Final Effluent - Monthly Average pH	6.97	7.06	7.04	6.98	7.00	6.96	6.92	6.89	6.74	6.85	6.92	6.94	6.94	
Number of Final Effluent pH Samples	9	8	9	9	8	8	10	8	9	16	29	17		140

Quarterly sampling and testing of Final Effluent for Acute Lethality to Daphnia Magna[3] and Rainbow Trout[4] is a requirement of the ECA at the Niagara Falls WWTP. This testing includes introducing Daphnia or Rainbow Trout to a sample of Final Effluent. The sample is aerated and observed for multiple days.

- For the Daphnia Magna, the number of test subjects that die during the 48-hour testing period are counted. If more then 50% of the total Daphnia die, the sample fails.
- For Rainbow Trout, 10 fingerling trout are tested in the effluent for 96 hours. If more than five trout die during the testing period, the sample fails.
    - Typically during the 96 hour testing period for Rainbow Trout, the action of aerating the effluent will cause the pH of the sample to rise due to the evolution of carbon dioxide. The increase in pH causes ammonium and ammonia concentrations present in the sample to shift resulting in a higher amount of un-ionized ammonia that can be toxic to fish. This is a result of the testing conditions and is not a true representation of the toxicity of the effluent.
    - As the pH shifted sample is not reflective of the actual effluent pH, the Rainbow Trout test can also be conducted using pH stabilization. This means the pH is measured at the beginning and during the test. If it begins to change, the pH is adjusted back to the originally measured value at the beginning of the test.
    - Both the standard Rainbow Trout test as well as the pH stabilized version are run at the same time as a precaution and means to determine if final effluent toxicity is occurring due to the pH shift that can occur during testing

Test results for 2025 can be observed in Table NF-T-5 below.

Table NF-T-5: Summary of Daphnia Magna and Rainbow Trout Acute Lethality Results

Sample Date	Acute Lethality to Daphnia Magna Pass/Fail	Acute Lethality to Rainbow Trout Pass/Fail	Acute Lethality to Rainbow Trout - pH Stabilized Pass/Fail
2025-02-10	Pass	Fail	Pass
2025-04-22	Pass	Fail	Fail
2025-04-29	Pass	Fail	Pass
2025-05-13	Pass	Fail	Pass
2025-05-27	Pass	Fail	Pass
2025-09-09	Pass	Fail	Pass
2025-11-17	Pass	Fail	Pass

[3] Acute Lethality to Daphnia Magna is carried out as per Environment Canada Publication EPS 1/RM/14

[4] Acute Lethality to Rainbow Trout is carried out as per Environment and Climate Change Canada publication EPS 1/RM/13 and EPS 1/RM/50 for pH Stabilization

One (1) sample of treated effluent collected at the Niagara Falls WWTP, April 22, 2025, failed pH-stabilized acute lethality to Rainbow Trout testing.

The cause of failure is covered in detail in section NF-T-3 Operating Issues Encountered below.

Toxicity test reports are available upon request.

Niagara Falls WWTP receives landfill leachate from the collection system for treatment and discharge. To monitor impacts of landfill leachate on the Final Effluent, the ECA requires quarterly testing for landfill leachate related parameters. Table NF-T-6 below summarizes landfill leachate testing results for reporting year 2025.

Table NF-T-6: Summary of landfill leachate testing required by Niagara Falls WWTP ECA

Analyte	Units	2025-02-03	2025-05-05	2025-08-11	2025-11-03
Arsenic	mg/L	<0.01	<0.01	<0.01	<0.01
Bis(2-ethylhexyl) Phthalate	ug/L	<10	<10	<10	<2
Boron	mg/L	<0.2	<0.2	<0.2	<0.2
Cobalt	mg/L	<0.003	<0.003	<0.003	<0.003
Magnesium	mg/L	19.9	22.3	14.7	17.4
Manganese	mg/L	0.14	0.12	0.13	0.16
Potassium	mg/L	16.7	13	16.4	13.6
Strontium	mg/L	0.5	0.53	0.34	0.46

Effluent Quality Assurance Measurements and Control Measures

To ensure Niagara Falls 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 Sampling Days

Compliance sampling activities at the Niagara Falls WWTP are scheduled 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, 37 deviations from the scheduled sampling days occurred. 33 of these deviations were related to submission of Imported Sewage samples. Although weekly sampling was scheduled, a disposal may not occur on a scheduled sampling day resulting in no sample being available to submit to the lab.

Table NF-T-7 below provides the remaining instances where a deviation occurred and a reason for the deviation.

The 2026 sampling schedule is available upon request.

Table NF-T-7: Table of 2025 sampling schedule deviations

Sampling Date Deviation	Sample Type(s)	Reason
2025-09-22	Influent, Final Effluent, Final Effluent E.coli	Autosamplers faulted. A full set of samples were submitted the following day.
2025-11-05	Final Effluent	Autosampler faulted. Samples submitted following day.
2025-11-10	Influent, Final Effluent	Autosampler faulted. Samples submitted following day.
2025-09-23	Influent, Final Effluent	Samples submitted following day.

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

CBOD and TSS Monthly Compliance Limit Exceedances – 2025

The Niagara Falls WWTP did not achieve ECA objectives for CBOD, TSS and TP in 2025. Additionally, the plant did not meet compliance limits for CBOD for six (6) months, TSS for eight (8) months and TP for one (1) month.

The new Moving Bed Biofilm Reactor (MBBR) system was started up in July. The new system required time to develop a biofilm on the media to establish a stable and active microbial

population to provide removal of contaminants from wastewater. During this time, flow from the MBBRs was directed to the existing RBC process to receive additional treatment. The effluent quality of the MBBRs was monitored. Treated flow from the MBBRs began directly discharging to the final clarifiers on August 15.

CBOD limit exceedances occurred from January to June, prior to the start up of the new MBBR system. While best efforts were being taken to keep the RBC process in service until the MBBR system was operational, several breakdowns of RBC units occurred in 2025. Table NF-T-8 below outlines the average number of RBC units in service during this period. Once the MBBR system was established, CBOD removal improved and there were no CBOD exceedances from July to December.

The RBCs were fully taken out of service in September 2025.

Table NF-T-8: Average Number of RBCs In Service for reporting period 2025

Month Name	Average Number of RBC Units in Service
January	19
February	16
March	22
April	20
May	20
June	21

To address final effluent CBOD quality, the following measures have been taken:

- All centrate generated by the onsite centrifuge was being removed by truck until September 2025. Starting in September, an increasing amount of centrate was directed to the plant influent for treatment through the MBBR system. The remaining volume of the centrate continued to be removed by truck for treatment at other Niagara Region wastewater treatment plants. This helps to reduce BOD loading to the Niagara Falls plant. Centrate has high amounts of soluble organics that the RBC units were not able to effectively remove. This has been ongoing since February 2021.
    - In 2025, over 530 loads of centrate were removed from site
- Daily COD influent sampling to monitor plant loadings and process change impacts more closely.
- Restrictions are in place for the receipt of Imported Sewage.
- Sludge from Queenston WWTP has been diverted from Niagara Falls WWTP.
- Increased sewershed monitoring

Final effluent TSS results exceeded the ECA limits in January to June, August and December in 2025. TP exceeded the compliance limit in August 2025. Solids handling is still limited at the plant while primary digester #2 remains out of service. Solids removal efficiency improved with the start up of the MBBR process, which can be observed in the reduction of non-compliance that occurred from July to December.

The TSS exceedance in August was related to issues with the polymer system. The TP exceedance that occurred this same month was a direct result of the elevated effluent solids.

The TSS limit failure in December was related to instability associated with performance testing of the MBBR system. The polymer system was not in operation during this testing period.

To improve solids handling at the Niagara Falls plant, the following actions continued or were taken in 2025:

- Operations staff continue with process optimization efforts that have been ongoing at the facility since 2019.
- Polymer is be added to the flow prior to the secondary clarifiers. Polymer is added to aid in settling of solids in the secondary clarifiers.
- Flushing of the ferric chloride lines are completed on a weekly basis.
- Niagara Falls Water Treatment Plant has been redirecting the discharge of residuals away from the sanitary sewer. Sludge from the Queenston WWTP was redirected to other WWTPs.
- Sampling of discharges to the collection system from industries has been increased since 2024 and maintained to identify any additional loadings to the plant.

In 2026, addition of polymer to the secondary clarifiers will continue to improve solids removal.

All incidents of non-compliance were reported as required to the MECP and Environment and Climate Change Canada.

Acute Lethality Failure – April 2025

A grab sample of Niagara Falls final effluent collected on April 22, 2025 failed the pH stabilized Rainbow Trout acute lethality test.

While it is difficult to pinpoint the exact cause of mortality in the toxicity testing, based on a review of supporting sample results and toxicity test parameters, the following are considered contributing factors to the acute lethality failure:

- Effluent quality and microbial activity
    - A supporting grab sample was collected at the time of sampling for toxicity and tested for CBOD. The observed CBOD result was 69 mg/L.
    - A supporting grab sample was collected and tested for Total Coliforms and E.Coli. Sample results indicate that bacteria were present in the effluent at the time of toxicity sample collection.
    - During the toxicity test, the oxygen saturation of the sample is measured. It was observed that the oxygen saturation that typically increases on the pre-test aeration did not significantly increase for this sample.
    - With the combination of increased CBOD and the presence of microbial populations, this could decrease the availability of oxygen in the sample and increase the risk of mortality to Rainbow Trout. This is supported with the low DO and oxygen saturation observed during sampling and testing.
    - This is suspected to be the cause of failure.
- Ammonia
    - Niagara Falls effluent is typically high in ammonia. The measured ammonia in the sample collected on April 22 was 26.2 mg/L. Using the field pH and temperature of the effluent from April 22, 2025, gives a field un-ionized ammonia value of 0.04 mg/L. This is not a likely factor of toxicity in this sample.
- Chemical usage
    - Chemical dosages at the time of sampling were reviewed and overdosing of chemical is not considered to be a cause of failure in this case.

Three (3) follow up samples were collected and tested for toxicity on April 29, May 13 and May 27. All further samples passed the pH-stabilized toxicity tests.

The following actions have been completed or are currently underway to address the effluent quality at Niagara Falls WWTP:

- Replacement of the existing RBC secondary treatment process with an MBBR process was completed in 2025.
- A polymer is being added in the secondary clarifiers to optimize settling of solids and TSS removal.

- Hauled sewage receiving has been restricted to domestic sewage from sources within the Niagara Region boundaries only. Specifically, barring winery waste helps to reduce pollutant loading to the facility.
- Increased sewershed monitoring activities to identify any additional pollutant loading to the facility.

Sine the startup of the MBBR system, no further failures of the pH stabilized Rainbow Trout acute lethality test have occurred, indicating improved effluent quality from the new system.

NF-T-4 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 Niagara Falls WWTP:

- Rebuild of raw sewage pump #2 and #3
- Rebuild of grit tank chemical mixer #2
- Polymer containment cleanout
- Rebuild of digester gas compressor
- Replacement of grit system valves
- Continued repairs to RBC units including gearbox rebuilds, bearing replacements and rotating assembly rebuilds
- On going maintenance of primary clarifiers including rebuild of chains and flights
- Rebuild of secondary sludge pump #1
- Replacement of primary clarifier chain pins and retainers
- Chlorine contact tank cleaning

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

Planned Capital Upgrades

The following is a list of capital upgrades occurring or forecasted for the Niagara Falls WWTP:

- Niagara Falls WWTP phase one secondary treatment upgrades – in construction

- Niagara Falls WWTP phase two primary treatment upgrades – in design

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

ECA A-500-5110411564 version 1.0 includes the following Proposed Works:

- Upgrades to grit treatment system
- Installation of new Moving Bed Biological Reactor (MBBR) secondary treatment system to replace failing RBC units
- Decommissioning of RBC units
- Improvements to secondary clarifiers
- Influent flow measurement
- Improvements to coagulation and flocculation processes
- Construction of new chlorine contact tank
- New Final Effluent flow measurement

All above listed items have been completed as of December 31, 2025 with the exception of chlorine contact tank and new effluent flow measurement. This work is anticipated to be complete in 2026.

NF-T-5 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 NF-T-9 provides a summary of flow meter calibration.

Table NF-T-9: Summary of Flow Meter Calibration

Meter Name	Date Calibrated	Comments
Niagara Falls Final Effluent Meter	2025-06-23	Passed
Niagara Falls Final Effluent Meter	2025-11-05	Passed
Niagara Falls Secondary Overflow Meter	2025-07-08	Passed
Niagara Falls Secondary Overflow Meter	2025-11-05	Passed
Niagara Falls Plant Overflow Meter	2025-10-03	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, calibration or verification on all effluent monitoring equipment is completed. A summary of annual calibration/verification activities are available in Table NF-T-10 below.

Table NF-T-10: Summary of Calibration/Verification of Effluent Monitoring Equipment

Equipment Description	Date Calibrated	Comments
pH Meter (asset 51045)	2025-11-27	Passed
COD Reactor	2025-09-16	Passed
Spectrophotometer (DR1900)	2025-09-16	Passed
Dissolved Oxygen Meter	2025-09-16	Passed
Turbidimeter (TU5200)	2025-09-16	Passed
Turbidimeter (2100Q)	2025-09-16	Passed
Balance	2025-08-13	Passed

Calibration certificates are available upon request.

NF-T-6 Solids Handling

Processed Organics Received

No processed organics were received at the Niagara Falls WWTP in 2025. Sludge from Queenston WWTP is usually accepted at this site but this has been redirected to other wastewater treatment plants to limit loading to the facility.

Volumes Sludge Generated and Removed from Site

Solids removed from the treatment process are stored and centrifuged on site to produce a thickened product called dewatered cake. Dewatered cake is transported from site for further processing and conversion to a pelletized fertilizer. Additional sludge unable to be dewatered on site is transported 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. Table NF-T-11 provides a summary of 2024 and 2025 sludge volumes removed from site.

Table NF-T-11: Summary of Niagara Falls 2025 Sludge Production and Handling

Month	2025 Volume Sludge Dewatered On Site (ML)	2025 Dewatered Cake Yield (Dry tons)	2025 Volume Digested Sludge Hauled to Garner Road Biosolids Facility (ML)	2025 Volume Raw Sludge Hauled Off Site (ML)	Prior Year Total Sludge Produced (ML)
January	8.369	167.05	0.000	0.000	7.630
February	6.356	147.14	0.000	0.000	7.608
March	6.439	156.12	0.000	0.000	7.437
April	7.595	179.85	0.000	0.000	8.220
May	7.944	188.53	0.000	0.000	7.425
June	8.511	170.60	0.000	0.000	6.002
July	9.045	204.75	0.000	0.000	7.983
August	7.177	160.62	0.000	0.000	7.219
September	10.477	194.24	1.647	0.000	6.275
October	9.595	188.09	0.230	0.000	8.347
November	9.382	179.51	0.000	0.000	7.651
December	6.978	121.96	2.948	0.000	7.591
TOTAL	97.868	2,058.46	4.293	0.000	89.387

230.36 m³ of material was removed and hauled to Garner Road in October 2025 as part of the demolition of the RBCs.

Sludge removed from the site increased by 14% in 2025 versus 2024. The implementation of the MBBR system, along with enhanced solids removal practices, contributed to an increase in sludge production at the plant.

No changes are anticipated for sludge handling in 2026 at the Niagara Falls WWTP.

Sludge Quality Monitoring

Digested sludge is sampled and analyzed bi-weekly to meet regulatory requirements of the Garner Road Biosolids Facility and Niagara Falls WWTP ECA and maintain our ability to beneficially re-use biosolids. Results are trended and compared to Nutrient Management Act 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 biosolids analysis from the Niagara Falls WWTP is included in Table NF-T-12.

Table NF-T-12: Summary of Monthly Average Sludge Results

Analyte	Units	NMA Limits	January	February	March	April	May	June	August	September	October	November	December
Total Solids	%	-	2.10	2.40	2.85	2.35	2.50	2.30	2.30	2.30	2.25	1.95	2.25
Ammonia as N	mg/kg	-	903	910	905	925	890	850	1,077	1,020	1,070	1,150	1,010
Nitrate+Nitrite	mg/kg	-	1.00	0.99	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Phosphorus	mg/kg	-	26,933	26,200	22,850	25,450	26,750	24,250	24,367	27,600	28,900	28,700	23,850
Arsenic	mg/kg	170	3.13	3.10	3.90	3.80	3.20	3.45	2.73	2.80	1.70	2.25	2.60
Cadmium	mg/kg	34	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Chromium	mg/kg	2,800	135.00	122.00	121.00	110.00	118.00	132.50	104.27	103.00	109.50	117.50	109.00
Cobalt	mg/kg	340	3.07	3.00	3.75	3.80	5.00	4.05	4.23	3.80	3.50	3.50	3.00
Copper	mg/kg	1,700	501	461	424	465	488	464	463	476	539	538	467
Lead	mg/kg	1,100	39.33	23.00	26.00	28.00	28.50	21.00	22.00	18.50	24.50	37.50	23.50
Mercury	mg/kg	11	0.21	0.09	0.10	0.09	0.13	0.08	0.10	0.04	0.10	0.19	0.12
Molybdenum	mg/kg	94	13.00	10.00	9.50	10.00	8.50	11.00	11.33	12.50	12.50	13.50	11.50
Nickel	mg/kg	420	20.37	16.10	17.00	18.60	18.50	17.45	20.93	24.60	20.50	21.00	18.65
Potassium	mg/kg	-	3957	3,620	3,205	3,850	3,850	3,800	3,583	3,595	3,740	4,645	4,200
Selenium	mg/kg	34	1.97	2.40	2.14	2.65	3.15	2.40	3.27	3.45	2.45	2.85	2.35
Zinc	mg/kg	4,200	589	541	524	593	621	594	656	641	653	645	510

NF-T-7 Complaints

Four (4) odour complaints were received regarding the operation of the Niagara Falls WWTP. 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. Four (4) complaints were received regarding operation of the collection system. This is included in section NF-C-6 Summary of Collection System Complaints below.

NF-T-8 Bypasses, Overflows, other situations outside Normal Operating, Spills and Abnormal Discharge Events

Bypasses and Overflows

There were 25 secondary overflow events at the Niagara Falls WWTP in 2025. Secondary overflows from this facility receive primary treatment prior to discharge to the environment including screening, grit removal, phosphorus removal and settling (solids removal). The facility also had 10 plant overflows. Plant overflows occur when flows to the plant increase above the raw sewage pumping capabilities of 205,000 m^3/d. Plant overflows receive no treatment prior to discharge to the environment.

Table NF-T-13 provides a monthly breakdown of overflow events occurring at the Niagara Falls WWTP during the reporting period. A complete listing of individual events is available upon request.

Table NF-T-13: Summary of Secondary and Plant Overflow Events by Month

Month	Number of Secondary Overflow Events	Total Secondary Overflow Volume (ML)	Number of Plant Overflow Events	Total Plant Overflow Volume (ML)
January	0	0.000	0	0.000
February	1	1.402	0	0.000
March	2	22.459	2	9.063
April	2	17.901	1	14.412
May	3	14.815	2	1.251
June	4	4.405	2	0.803
July	1	0.004	0	0.000
August	2	2.423	1	1.498
September	2	0.883	0	0.000
October	3	11.640	1	4.520
November	2	1.190	0	0.000
December	3	31.240	1	14.250
Total	**25**	**108.362**	**10**	**45.797**

Overflow events are sampled and submitted for analysis. Overflow events are to be sampled at the start of an event and every 8 hours during an event. Results for secondary overflow event samples collected in 2025 are shown in Table NF-T-14 below. A secondary overflow sample was not collected or submitted for the September 4, 2025 overflow event due to the short duration of the event and competing operational responsibilities. The overflow was reported to the MECP. Results for plant overflow event samples collected in 2025 are shown in Table NF-T-15 below.

Table NF-T-14: Niagara Falls WWTP Secondary Overflow Sampling Results. Where NS is indicated, no sample results are available.

Date/Time	TBOD (mg/L)	TSS (mg/L)	TP (mg/L)	TKN (mg/L)	Ammonia as N (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	E.Coli[5] (cfu/100mL)
2025-02-25/ Event Start	82	100	2.6	34.3	23.4	0.70	0.10	
2025-03-05/ Event Start	160	154	2.2	27.9	17.6	0.20	0.10	
2025-03-05/ 8 Hour Sample	45	75	1.1	14.2	9.9	1.20	0.10	
2025-03-05/ 16 Hour Sample	62	70	0.6	14.8	11.5	1.50	0.10	
2025-03-16 Event Start	64	54	2.4	25.3	19.7	0.20	0.10	
2025-04-02/ Event Start	89	109	1.3	28.6	18.9	0.20	0.10	3,870,000
2025-04-02/ 8 Hour Sample	98	113	1.6	30.2	18.6	0.20	0.10	3,130,000
2025-04-02/ 16 Hour Sample	91	108	1.8	28.7	18.8	0.20	0.10	3,130,000
2025-04-02/ 24 Hour Sample	102	109	1.9	26.4	16.3	0.20	0.10	3,450,000
2025-04-29/ Event Start	150	128	2.7	37.7	32.5	0.20	0.10	9,210,000
2025-05-01/ Event Start	118	100	1.9	36.2	21.6	0.20	0.10	4,110,000
2025-05-16/ Event Start	139	102	2.6	30.9	17.6	0.20	0.10	5,790,000
2025-05-22/ Event Start	66	85	1.5	26.2	13.8	0.60	0.10	1,930,000
2025-05-22/ 8 Hour Sample	68	97	1.1	14.0	6.8	0.60	0.20	2,050,000
2025-05-22/ 16 Hour Sample	65	94	1.0	15.1	6.4	0.50	0.10	1,780,000
2025-06-18/ Event Start	260	68	3.4	41.8	32.3	0.20	0.10	6,490,000
2025-06-25/ Event Start	165	169	4.1	54.0	45.0	0.20	0.10	9,800,000
2025-06-26/ Event Start	128	300	2.6	33.0	22.3	0.20	0.10	6,130,000
2025-06-30/ Event Start	146	145	3.4	36.5	26.6	0.20	0.10	7,700,000
2025-07-10/ Event Start	250	220	6.8	70.0	51.6	0.20	0.10	9,800,000
2025-08-17/ Event Start	130	69	4.0	44.5	38.9	0.20	0.10	10,500,000

[5] Sampling of E.Coli is completed April 01 to October 31 annually

Date/Time	TBOD (mg/L)	TSS (mg/L)	TP (mg/L)	TKN (mg/L)	Ammonia as N (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	E.Coli[5] (cfu/100mL)
2025-08-28/ Event Start	220	177	5.2	48.3	24.8	0.20	0.10	14,100,000
2025-09-04/ Event Start	240	63	5.2	50.4	36.5	0.20	0.10	19,900,000
2025-09-22/ Event Start	NS	NS	NS	NS	NS	NS	NS	NS
2025-10-07/ Event Start	179	180	3.9	50.1	40.3	0.20	0.10	17,300,000
2025-10-07/ 8 Hour Sample	40	61	1.1	11.3	5.7	0.70	0.10	4,110,000
2025-10-19/ Event Start	200	103	4.7	47.5	31.8	0.20	0.10	10,500,000
2025-10-19/ 8 Hour Sample	187	60	2.8	28.7	17.3	0.20	0.10	15,500,000
2025-10-30/ Event Start	140	67	3.8	36.0	28.0	0.20	0.10	10,500,000
2025-10-30/ 8 Hour Sample	95	68	1.7	27.0	20.5	0.20	0.10	6,130,000
2025-10-30/ 16 Hour Sample	63	38	1.0	19.4	14.4	0.20	0.10	2,010,000
2025-11-12/ Event Start	150	124	3.0	45.8	31.6	0.20	0.10	5,480,000
2025-11-12/ 8 Hour Sample	60	61	1.6	20.6	14.4	0.60	0.20	
2025-11-15/ Event Start	147	96	3.1	48.0	41.9	0.20	0.10	
2025-12-10/ Event Start	130	137	4.9	50.8	35.1	0.20	0.10	
2025-12-19/ Event Start	129	95	3.2	52.1	36.7	0.20	0.10	
2025-12-19/ 8 Hour Sample	52	95	2.1	37.2	27.4	0.20	0.10	
2025-12-28/ Event Start	120	68	4.0	65.0	48.3	0.20	0.10	
2025-12-28/ 8 Hour Sample	134	61	3.6	61.0	49.9	0.20	0.10	
2025-12-28/ 16 Hour Sample	40	55	1.1	16.3	10.3	2.70	0.10	
2025-12-28/ 24 Hour Sample	61	80	1.6	26.5	14.4	2.00	0.20	
2025-12-28/ 32 Hour Sample	30	45	1.2	24.1	10.3	1.40	0.10	

Table NF-T-15: 2025 Niagara Falls WWTP Plant Overflow Sampling Results

Date/Time	TBOD (mg/L)	TSS (mg/L)	TP (mg/L)	TKN (mg/L)	Ammonia as N (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	E.Coli[6] (cfu/100mL)
2025-03-05/ Event Start	160	314	2.3	34.6	24.1	0.20	0.20	
2025-03-05/ 8 Hour Sample	149	328	1.9	34.8	24.4	0.30	0.10	
2025-03-16/ Event Start	140	582	3.2	26.9	12.0	0.20	0.10	
2025-04-02/ Event Start	170	384	2.2	29.3	15.6	0.20	0.10	2,760,000
2025-04-02/ 8 Hour Sample	140	380	2.4	26.6	12.6	0.20	0.10	1,160,000
2025-04-02/ 16 Hour Sample	87	218	1.8	16.1	9.0	0.70	0.10	8,10,000
2025-05-01/ Event Start	135	261	2.4	34.3	14.9	0.20	0.10	3,650,000
2025-05-22/ Event Start	106	138	2.5	25.8	11.9	0.50	0.10	2,760,000
2025-05-22/ 8 Hour Sample	104	127	1.9	22.2	10.2	0.60	0.20	1,790,000
2025-06-26/ Event Start	130	82	2.7	31.6	24.4	0.20	0.10	10,500,000
2025-06-30/ Event Start	180	377	3.9	31.4	19.2	0.20	0.10	8,660,000
2025-08-17/ Event Start	200	357	3.9	35.0	21.3	0.20	0.10	9,210,000
2025-10-07/ Event Start	183	1590	4.1	46.2	33.6	0.20	0.10	7,270,000
2025-12-28/ Event Start	131	81	4.9	86.0	66.6	0.20	0.10	
2025-12-28/ 8 Hour Sample	250	109	1.6	15.1	7.8	0.20	0.10	

[6] Sampling of E.Coli is completed April 01 to October 31 annually

Situations Outside of Normal Operating Conditions

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

There were no situations outside of Normal Operating Conditions during the reporting year.

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, spills can also be a necessity to complete required maintenance to critical equipment in a safe way. These are “Planned Spills” and approval is obtained prior to the spill from the MECP.

All spills are reported to the MECP Spills Action Centre upon discovery and follow up written reports are completed and submitted to the MECP and Environment and Climate Change Canada as required by regulation. Below in Table NF-T-16 summarizes spills that occurred at the Niagara Falls WWTP in 2025.

Table NF-T-16: Summary of spills occurring at the Niagara Falls WWTP during the reporting year

Spill Date	MECP Incident Number	Short Description of Spill	Link to Public Report
2025-08-22	1-PF5NA5	Digester Gas Spill-Planned Maintenance	CWCD 2025-139 https://www.niagararegion.ca/council/CouncilDocuments/2025/council-correspondence-sep-19-2025.pdf
2025-11-26	1-PU96SB	Digester Gas Spill-Loss of Seal	CWCD 2026-01 https://www.niagararegion.ca/council/CouncilDocuments/2026/council-correspondence-jan-09-2026.pdf

Abnormal Discharges

An abnormal discharge is a discharge to the environment that is abnormal in quality or quantity. There were no instances of abnormal discharge to the environment in 2025.

NF-T-9 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 discussed above in section NF-T-2, Niagara Falls WWTP did not achieve ECA objectives for CBOD, TSS and TP in 2025. Improvements to effluent quality occurred following the start up of the new MBBR technology. Optimization of the MBBR system is ongoing and further effluent quality improvements are anticipated for 2026.

Summary of Efforts – Procedure F-5-1 and F-5-5 – Bypassing from Combined Sewer Systems

The Niagara Falls WWTP receives sewage from portions of the City of Niagara Falls where combined sewer systems still exist. Procedure F-5-1 and F-5-5 require that a staged program be developed for the ultimate goal of total containment and treatment of all sewage flows.

Being a two-tier system, Niagara Region works closely with the City of Niagara Falls and the Town of Niagara-on-the-Lake to reduce overflows at the wastewater treatment plant. Pollution Prevention and Control Plans (PPCP) are undertaken by area municipalities with support and participation from Niagara Region. As well, Niagara Region undergoes a Master Servicing Plan every five years to identify areas that require inflow and infiltration reduction or capacity increases based on expected development growth in the area. Both studies take into consideration impacts from wet weather and provide recommended actions to reduce wet weather overflows/bypasses.

Niagara Region participates in a cost sharing strategy with lower tier municipalities to fund overflow reduction projects and pollution prevention and control plan updates. 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 with the City of Niagara Falls totaling $738,800 for sewer separation work. One (1) project was approved for cost sharing in the Town of Niagara-on-the-Lake contributing $75,000 for completion of an inflow and infiltration study.

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. As Niagara Falls WWTP services a collection system that is impacted by wet weather flow, fully treating the combined sewage and stormwater is not feasible. Niagara Falls is equipped with primary treatment capacity for flows greater than 136,400 m^3/d, up to a maximum flow of 205,000 m^3/d. Chemically enhanced primary treatment is available to provide enhanced solids and phosphorus removal before being discharged to the Queenston-Chippawa Power Canal. This additional primary treatment capacity treats flows up to five times greater than what is handled on an average day at the Niagara Falls WWTP.

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, 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 now in place ensuring better protection of Niagara Region wastewater infrastructure.

NF-C-1 Overview of the Niagara Falls WWTP Collection System

The Niagara Falls WWTP collection system is a class IV system that collects wastewater from domestic, commercial and industrial sources from the City of Niagara Falls and the Village of St. David's in the Town of Niagara-on-the-Lake (NOTL). The collection system consists of the following:

- Local sanitary sewers
- 21.9 kilometres of regional gravity mains
- 38.9 kilometres of regional force mains
- 22 pumping stations:
    - Bender Hill Sewage Pumping Station
    - Calaguiro Estates Sewage Pumping Station
    - Central Sewage Pumping Station (Niagara Region) and High-Rate Treatment Facility (City of Niagara Falls)
    - Dorchester Road Sewage Pumping Station
    - Drummond Road Sewage Pumping Station
    - Garner Southwest Sewage Pumping Station
    - Grassy Brook Sewage Pumping Station
    - Kalar Road Sewage Pumping Station
    - Lundy's Lane Sewage Pumping Station
    - Meadowvale Sewage Pumping Station
    - Mewburn Sewage Pumping Station
    - Muddy Run Sewage Pumping Station
    - Neighbourhood of St. David's Sewage Pumping Station
    - Oakwood Sewage Pumping Station
    - Riverfront Sewage Pumping Station
    - Rolling Acres Sewage Pumping Station
    - Royal Manor Sewage Pumping Station
    - Seneca Street Sewage Pumping Station
    - South Side Low Lift Sewage Pumping Station (Niagara Region) and Detention Tank (City of Niagara Falls)
    - South Side High Lift Sewage Pumping Station
    - St. David's #1 Sewage Pumping Station
    - St. David's #2 Sewage Pumping Station
- Eight Combined Sewer Overflows (CSOs) at sewage pumping stations
- Three Sanitary Sewer Overflows (SSOs) at sewage pumping stations

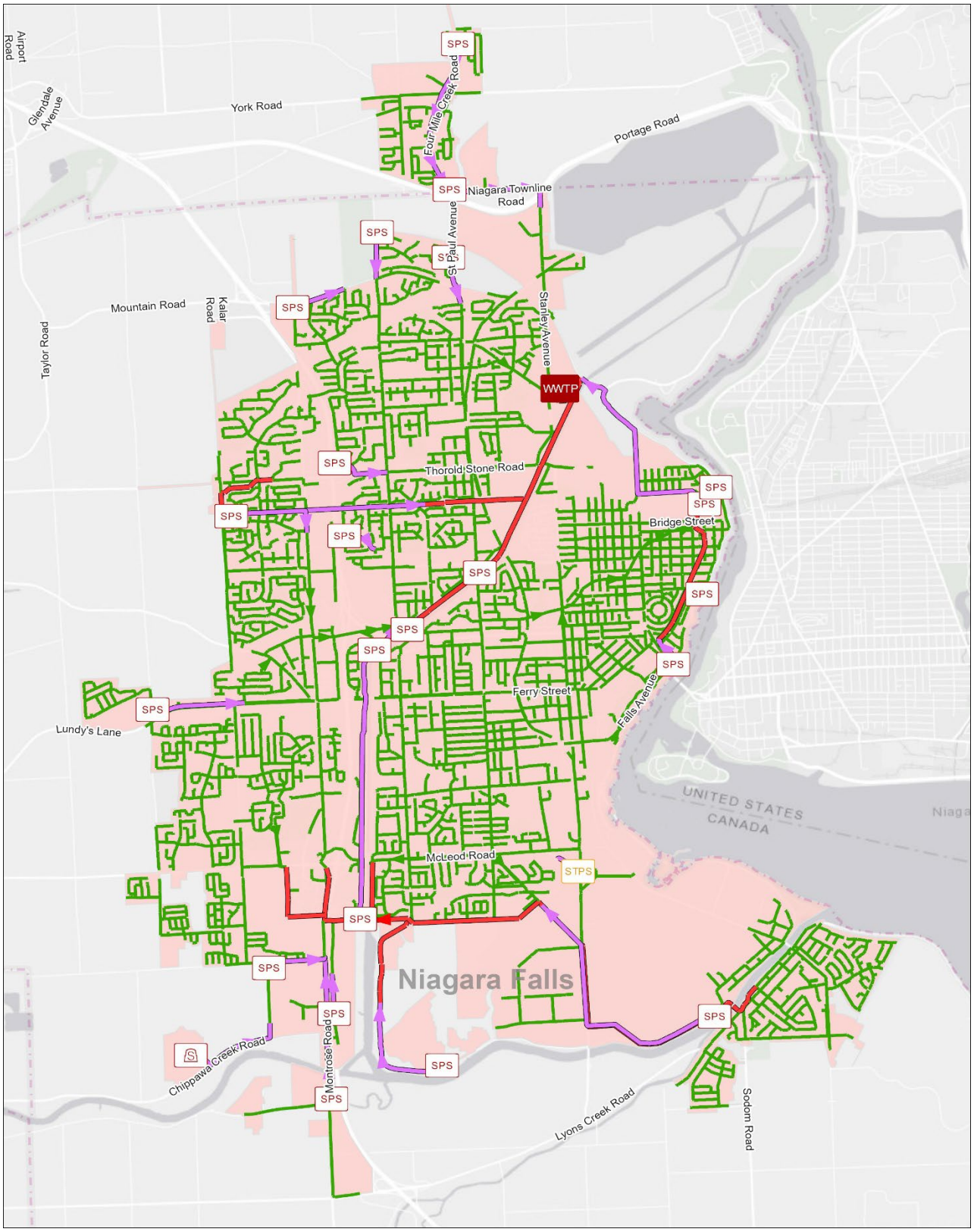

Figure NF-C-1: Map of Niagara Falls WWTP Collection System

The collection system is operated under a two-tier system, where the area municipalities own and operate local gravity sanitary sewers and some sewage detention facilities. Niagara Region owns and operates sewage pumping stations, forcemains and larger gravity sanitary sewers or trunk sewers. It is classified as a combined sewer system. This means there are pipes still remaining in the system that were designed to collect sanitary sewage and storm water in a single pipe. Combined sewers are no longer allowed to be constructed in Ontario and are being replaced with separate sewer systems as funding allows. Combined systems are heavily impacted during wet weather and snow melt events. While the majority of the collection system is separated, the separated system may still be impacted by inflow and infiltration during wet weather from deficiencies 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:

- Niagara Falls Wastewater Catchment System, 007-W603, issue number 2

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

NF-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 Niagara Falls 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, starting in 2025, operations staff conducted 10 visual inspections of sanitary sewer overflow locations and wet weather storage tanks.

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

Table NF-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.

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

Pump Stations and Forcemains

No operational issues were experienced with the pump stations or forcemains in 2025.

Gravity Trunk Sewers

No operational issues were experienced with any gravity trunk sewers in 2025.

NF-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 Niagara Falls Collection System:

- Bender Hill SPS:
  - Rebuild of pump #1
- Central SPS & HRT:
  - Replacement of Impellers for Pump 1, 2, 3, 4 and 5
  - Electrical repairs at SPS
  - Rebuild of pump #5
- Muddy Run SPS:
  - Rebuild of pump#2
  - Install of new style of sewage pump
- South Side Low Lift SPS:
  - Rebuild of pump #1
  - Siphon chamber cleaning

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

Planned Capital Upgrades

The following is a list of capital upgrades forecasted for the Niagara Falls Collection System:

- Bender Hill SPS Upgrades – construction anticipated for 2026
- Mewburn SPS – construction anticipated for 2026
- Rolling Acres SPS – currently in design
- Thundering Waters trunk sewer rehabilitation – construction anticipated for 2026

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, pre-authorized modifications were completed for Riverfront SPS. A schedule C approval was received for addition of a new pumping station in Niagara Falls. After approval, changes to the design were made including shortening the forcemain length, adding an additional section of gravity sewer and changing alignment of the station

emergency overflow. In accordance with MECP approvals, the design modifications were recorded in the forms SS1 and SS2 as instructed. There were no alterations that would pose a significant threat to drinking water.

NF-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 NF-C-2 below provides a summary of calibrations completed in the collection system in 2025.

Table NF-C-2 - Summary of Calibration Activities Undertaken in the Niagara Falls Collection System

Equipment Description	Date Calibrated	Comments
Central SPS Station Overflow Meter	2025-09-30	Passed
Dorchester Road SPS Station Overflow Meter	2025-10-01	Passed
Drummond Road SPS Station Overflow Meter	2024-12-12	Passed
Muddy Run SPS Overflow Meter	2025-09-25	Passed
South Side High Lift SPS Overflow Meter	2025-10-01	Passed
St. David's #2 SPS Station Discharge Flow Meter	2025-11-05	Passed

Calibration certificates are available upon request.

Calibration of the overflow meter at Drummond SPS was not completed as part of the 2025-meter calibration. The Drummond Road SPS overflow meter will be calibrated in 2026.

NF-C-6 Summary of Complaints

Four (4) odour complaints were received in 2025 from operation of the Niagara Falls collection system. When a complaint is received, Operations staff investigate the complaint and try to identify any source of odour. Where odours are confirmed and related to the operation of the collection system, corrective actions are taken as needed. All complaints are recorded along with corrective actions taken.

NF-C-7 Summary of Collection System Overflows and Spills

Collection System Overflows

The Niagara Falls wastewater collection system is classified as a combined sewer system. This means the collection systems consists of a small portion of sewers that are designed to collect both sanitary and storm water while most sewers are separated. Collection system

overflows occur during wet weather events due to combined sewers but also because of inflow and infiltration of storm water into sections of the sewage collection system that are separate. Overflows are necessary to prevent basement flooding and to protect downstream infrastructure and wastewater treatment processes. Table NF-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. There were two instances where overflow samples were not collected, it was because of the short duration of the overflow event.

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

Table NF-C-3: Summary of Collection System Overflow Events Details. 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[7] (MPN/100 mL)	Was the Overflow Disinfected (Yes/No)	Were Any Adverse Impacts Observed (Yes/No)	Corrective Actions Taken
Bender Hill	2025-06-26	3.513	0:22	351.3	748.3	10.5	110.0	5,790,000	No	No	Awaited End of Event
Bender Hill	2025-08-17	2.448	0:21	587.5	1282.8	16.2	127.3	8,160,000	No	No	Awaited End of Event
Central SPS	2025-04-02	1.204	23:40	168.6	461.1	3.1	31.5	1,930,000	No	No	Awaited End of Event
Central SPS	2025-05-16	2.659	1:14	518.5	1175.3	13.0	91.2	6,130,000	No	No	Awaited End of Event
Central SPS	2025-06-18	0.003	0:05	NS	NS	NS	NS	NS	No	No	Awaited End of Event
Central SPS	2025-06-25	0.036	0:29	13.0	31.1	0.3	2.7	10,500,000	No	No	Awaited End of Event
Central SPS	2025-06-26	0.002	0:45	0.2	0.5	0.0	0.1	6,490,000	No	No	Awaited End of Event
Central SPS	2025-12-19	0.079	2:42	10.9	17.4	0.2	3.2	4,110,000	No	No	Awaited End of Event
Central SPS	2025-12-28	6.233	13:52	255.6	822.8	5.0	76.7	450,000	No	No	Awaited End of Event
Dorchester SPS	2025-03-05	0.279	5:58	32.6	57.2	0.5	7.3	2,190,199	No	No	Awaited End of Event
Dorchester SPS	2025-03-16	0.041	0:52	5.7	23.9	0.1	0.8	2,910,000	No	No	Awaited End of Event
Dorchester SPS	2025-04-02	0.093	18:13	14.0	33.7	0.2	2.5	4,787,114	No	No	Awaited End of Event
Dorchester SPS	2025-04-29	0.048	0:44	13.0	24.5	0.2	1.6	6,130,000	No	No	Awaited End of Event
Dorchester SPS	2025-05-01	0.142	1:31	19.0	34.6	0.4	5.7	2,910,000	No	No	Awaited End of Event
Dorchester SPS	2025-05-16	0.322	3:07	74.1	194.2	1.8	11.8	6,490,000	No	No	Awaited End of Event
Dorchester SPS	2025-05-22	0.007	2:18	0.8	1.1	0.0	0.2	2,696,071	No	No	Awaited End of Event
Dorchester SPS	2025-06-26	0.866	0:49	129.9	355.1	3.7	35.8	6,870,000	No	No	Awaited End of Event
Dorchester SPS	2025-06-30	0.183	0:54	33.9	67.3	0.7	5.8	9,210,000	No	No	Awaited End of Event
Dorchester SPS	2025-08-17	1.304	1:44	352.1	706.8	9.4	71.7	9,800,000	No	No	Awaited End of Event
Dorchester SPS	2025-10-07	0.032	1:14	2.0	6.0	0.1	0.5	9,340,236	No	No	Awaited End of Event
Dorchester SPS	2025-12-28	4.98	10:14	702.2	517.9	22.4	428.3	4,880,000	No	No	Awaited End of Event
Drummond SPS	2025-03-16	0.012	0:23	1.6	6.8	0.0	0.3	2,610,000	No	No	Awaited End of Event
Drummond SPS	2025-04-29	0.056	0:23	14.6	39.6	0.2	1.8	5,790,000	No	No	Awaited End of Event
Drummond SPS	2025-05-16	0.14	0:34	25.3	42.3	0.6	4.4	9,210,000	No	No	Awaited End of Event
Drummond SPS	2025-06-25	0.016	0:13	3.4	9.7	0.1	0.5	6,870,000	No	No	Awaited End of Event
Drummond SPS	2025-06-26	0.118	0:35	14.0	32.7	0.3	3.8	4,880,000	No	No	Awaited End of Event
Drummond SPS	2025-06-30	0.019	0:19	3.8	7.3	0.1	0.6	6,870,000	No	No	Awaited End of Event
Drummond SPS	2025-08-17	0.133	0:27	18.0	50.5	0.5	4.7	9,210,000	No	No	Awaited End of Event
Drummond SPS	2025-12-28	0.43	8:18	74.0	72.7	1.8	40.9	5,170,000	No	No	Awaited End of Event
Muddy Run SPS	2025/04/02	0.015	0:37	2.1	4.4	0.0	0.4	-	No	No	Awaited End of Event

[7] E.Coli sampling and analysis is required April 01 to October 31 annually.

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[7] (MPN/100 mL)	Was the Overflow Disinfected (Yes/No)	Were Any Adverse Impacts Observed (Yes/No)	Corrective Actions Taken
Muddy Run SPS	2025/04/29	0.017	0:24	6.1	15.8	0.1	0.6	-	No	No	Awaited End of Event
Muddy Run SPS	2025/05/16	0.016	0:14	4.3	18.7	0.1	1.0	-	No	No	Awaited End of Event
Muddy Run SPS	2025/06/26	0.765	0:48	68.9	459.0	1.8	23.2	-	No	No	Awaited End of Event
Muddy Run SPS	2025/08/17	0.247	0:42	36.6	100.3	1.0	9.6	-	No	No	Awaited End of Event
Muddy Run SPS	2025/12/28	0.55	8:12	73.7	49.0	2.4	51.7	-	No	No	Awaited End of Event
Seneca St SPS	2025-05-16	0.031	0:05	10.5	40.3	0.3	1.8	9,800,000	No	No	Awaited End of Event
Seneca St SPS	2025-06-18	0.03	0:07	NS	NS	NS	NS	NS	No	No	Awaited End of Event
Seneca St SPS	2025-06-26	0.522	0:49	62.1	178.5	1.4	17.5	5,170,000	No	No	Awaited End of Event
Seneca St SPS	2025-08-17	0.070	0:19	9.8	25.2	0.3	2.5	12,000,000	No	No	Awaited End of Event
Seneca St SPS	2025-08-28	0.083	0:18	39.8	54.0	0.6	4.7	19,900,000	No	No	Awaited End of Event
Seneca St SPS	2025-12-28	0.228	7:56	31.5	18.0	0.7	22.8	4,350,000	No	No	Awaited End of Event
South Side High Lift SPS	2025-03-05	3.965	17:30	461.9	1007.1	6.5	103.1	1,905,000	No	No	Awaited End of Event
South Side High Lift SPS	2025-04-02	4.156	21:05	548.6	1039.0	9.6	118.0	4,110,000	No	No	Awaited End of Event
South Side High Lift SPS	2025-05-22	0.003	5:13	0.3	0.5	0.0	0.1	4,350,000	No	No	Awaited End of Event
South Side High Lift SPS	2025-06-26	1.117	5:07	93.8	179.8	2.3	33.2	4,350,000	No	No	Awaited End of Event
South Side High Lift SPS	2025-08-17	0.551	6:20	70.5	168.6	2.3	26.8	8,160,000	No	No	Awaited End of Event
South Side High Lift SPS	2025-10-07	1.36	8:19	261.1	439.3	5.2	63.6	12,000,000	No	No	Awaited End of Event
South Side High Lift SPS	2025-12-28	18.4	24:55	3256.8	2668.0	86.5	1545.6	4,610,000	No	No	Awaited End of Event

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. Spills can also be a necessity to complete required maintenance to critical equipment in a safe way. 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 verbally to the MECP Spills Action Centre upon discovery and written reports are submitted as required to regulatory authorities. Below in Table NF-C-4 summarizes spills that occurred in the Niagara Falls collection system in 2025.

Table NF-C-4: Summary of Spills Occurring in the Niagara Falls Collection System

Spill Date	MECP Incident Number	Short Description of Spill	Link to Public Spill Report
No Spills in Reporting Year 2025			

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

Projects Undertaken to Reduce Bypasses or Overflows

The Niagara Falls WWTP is impacted by wet weather causing overflow in the system and at the wastewater treatment plant. Being a two-tier system, Niagara Region works closely with the City of Niagara Falls and Town of Niagara-on-the-Lake to reduce overflows. 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 projects were approved for cost sharing in the City of Niagara Falls totaling $738,800 for sewer separation and rehabilitation work. One project was approved for cost sharing in the Town of Niagara-on-the-Lake contributing $75,000 supporting an inflow and infiltration study.

The Niagara Region portion of the Niagara Falls collection system had 48 overflows from seven (7) overflow locations in 2025. In addition to work being completed by City of Niagara Falls and Town of NOTL, the Niagara Region is undertaking projects to support the reduction of overflows at the WWTP and in the collection system. The proposed South Niagara Wastewater Solution study is anticipated to provide broad benefits to multiple municipalities

across Niagara Region including optimization of wet weather and minimizing overflows and flooding events across the study area. More information regarding this project can be found on the Niagara Region website. (https://www.niagararegion.ca/projects/south-niagara-falls-treatment-plant/default.aspx)

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)

In 2024, Niagara Region 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. In 2025, a work order has been created, where operations conduct an inspection to ensure these signs remained in place, visible, and in good condition.

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