Welland Wastewater Treatment Plant Annual Performance Summary Report Treatment and Collection Reporting Year: 2024

Niagara Region

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WW-T-1 Wastewater Treatment Process Description

The Welland Wastewater Treatment Plant (WWTP) is located at 505 River Road in the City of Welland and provides wastewater treatment to the City of Welland, Town of Pelham and portions of the City of Thorold. The Welland WWTP is a class IV conventional activated sludge treatment facility and has been designed to treat an average daily flow (ADF) of 54,550 cubic metres per day (m^3/d). This facility can fully treat all flows up to 65,000 m^3/d and provides primary storm treatment for flows greater than 65,000 m^3/d up to a maximum flow rate of 118,000 m^3/d.

The Welland WWTP operates under the following Ministry of Environment, Conservation and Parks (MECP) approvals:

Environmental Compliance Approval (ECA) - Sewage: 3922-C9PJKZ, issued April 3, 2022
Environmental Compliance Approval (ECA) - Air: 8-2198-99-006, issued October 20, 1999
Environmental Compliance Approval (ECA) - Air: 8-2140-98-006, issued July 29, 1998

The Welland WWTP uses the following processes to treat wastewater:

- Raw Influent Pumping
- Imported Sewage Receiving
- Screening
- Grit Removal
- Phosphorus Removal
- Primary Treatment
- Secondary Treatment (Aeration and Settling)
- Disinfection (Chlorination and Dechlorination)
- Solids Handling – sludge digestion and transportation

Raw Influent Pumping: Wastewater from the collection system enters the wastewater treatment plant into a wet well, equipped with raw sewage pumps. The wet well provides a low point for the collection system to discharge to. 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.

Imported Sewage Receiving Station: To provide service to Niagara Region residents outside the wastewater servicing area, the Welland WWTP accepts imported sewage from commercial haulers. Receiving stations are situated to ensure all imported 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.

Grit Removal: Grit tanks equipped with coarse bubble diffusers are 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.

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 up to 65,000m^3/d, the liquid portion of the wastewater flows from the primary clarifiers to the secondary treatment process receiving full treatment. Under high flow or wet weather conditions, flows greater than 65,000 m^3/d to a maximum flow of 118,000 m^3/d are diverted (bypassed) around the secondary treatment process and go directly to disinfection. This is called a secondary bypass.

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 sent to the primary clarifiers for thickening.

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 Welland River.

Solids Handling

Anaerobic Digestion: Sludge from the primary clarifiers 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 transported from site for further treatment such as land application or dewatering at the Garner Road Biosolids Facility.

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

Review of 2024 Plant Flows

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

Table WW-T-1: Table of Welland WWTP Design Flows, 2024 Treated Flows and Reported Imported Sewage Volumes

Flow Statistic	Value
Design Average Daily Flow (ML/d)	54.550
Design Peak Flow Rate - Dry Weather (ML/d)	65.000
Design Peak Flow Rate - Wet Weather (ML/d)	118.000
Total Volume Processed (ML)	12,702.337
Annual Average Daily Flow (MLD)	34.706
% Annual Average Daily Flow Utilization	64%
% Increase/Decrease over prior year	-13%
Volume Imported Sewage Received (ML)	11.844
% Increase/Decrease Imported Sewage over prior year	-33%
Imported Sewage as % of Flow	0.09%

Reviewing the treated flows in 2024, it was observed that, on average, the plant is utilizing 64% 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 future flows that may be added from development. If the utilization becomes greater than 80%, plant expansions should be considered.

Daily flows to the plant were reviewed. In 2024, there were 34 instances where the flow to the plant was greater than the design Average Daily Flow, amounting to approximately 9% of the year. These instances occurred during times of wet weather or heavy snow melt. The Welland 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 also completed. This can be observed below in Figure WW-T-1 below. A slight increase in flows can be observed over the past four years. Spikes during typical wet weather seasons further

support increased flows are occurring due to remaining combined sewers and Inflow and Infiltration present in the collection system. Trends will continue to be monitorerd.

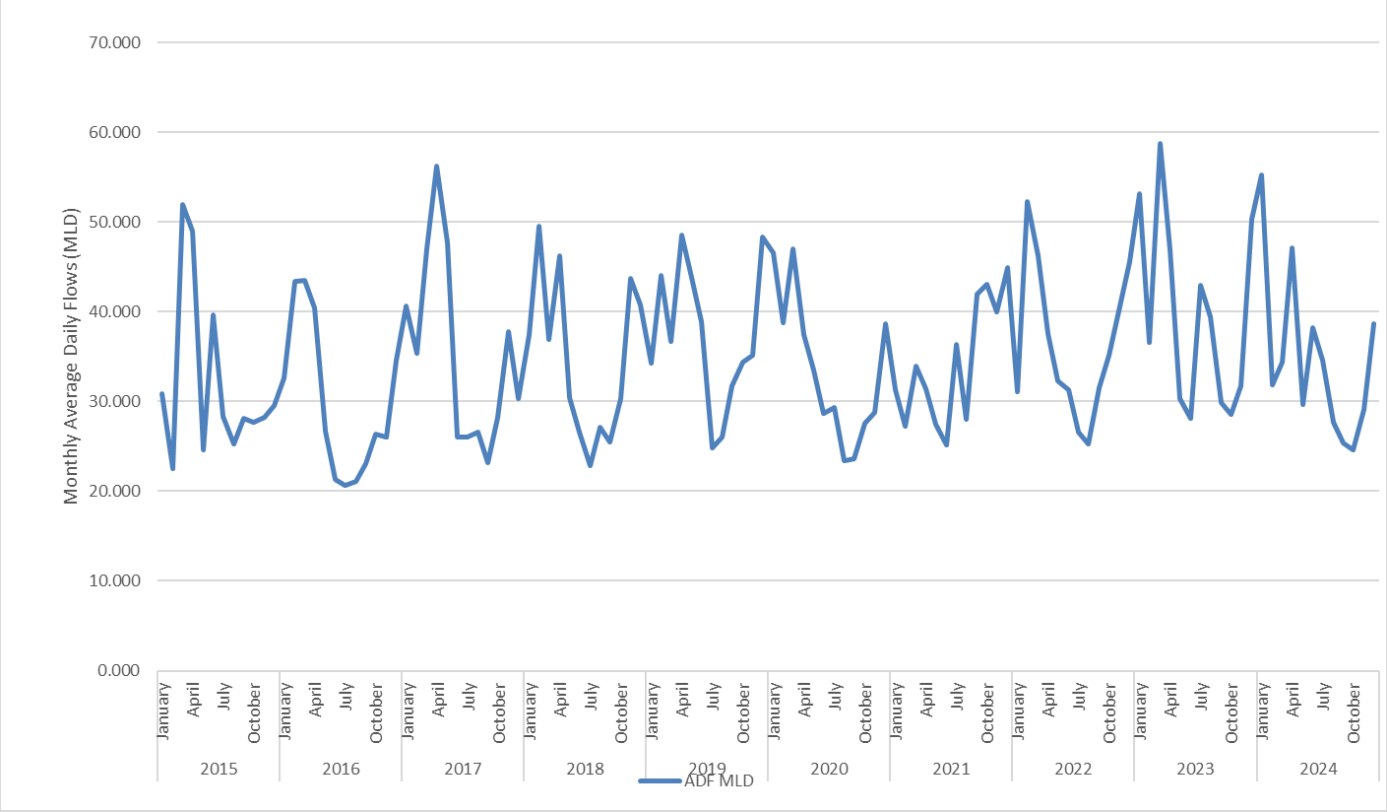

Figure WW-T-1: Graph displaying the Monthly Average Daily Flow Rate in Megalitres per Day (MLD)

The volume of imported sewage received at this facility decreased by 33%. The decrease in volume was directly related to less haulage from a local sewage generator. No operational issues were encountered with receipt and treatment of imported sewage in 2024.

Review of Influent Sampling and Monitoring Activities

In 2024, 104 samples of influent were collected and tested. An annual summary of influent sampling can be observed in Table WW-T-4 below.

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 displayed as kilograms of pollutant per day or kg/d. Below in Figure WW-T-2, is a graph depicting four commonly monitored pollutant loadings to the plant for the period of 2022-2024.

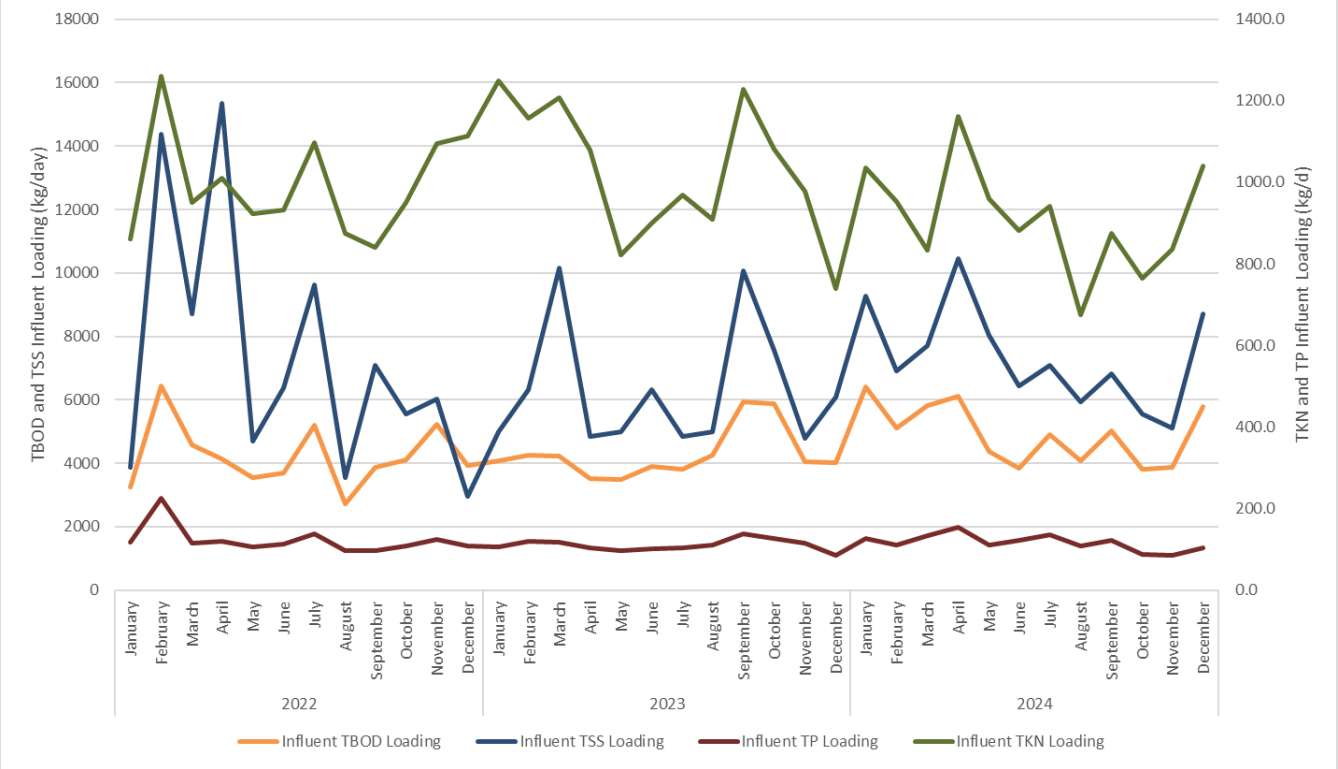

Figure WW-T-2: Figure of monthly plant loadings to the Welland WWTP for Total Biochemical Oxygen Demand (TBOD), Total Suspended Solids (TSS), Total Kjeldahl Nitrogen (TKN) and Total Phosphorus (TP), in kg/d, for the period 2022 to 2024.

The trend shows no large changes in calculated loadings for TBOD, TSS, TKN and TP for the past three years.

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. In 2024, 51 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 WW-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
T BOD	mg/L	300	5,386	551	4,312	3,346	2,669	617	6,738	1,725	2,732	2,466	3,241	3,200
Total Suspended Solids	mg/L	350	4,373.40	3,100.00	10,077.50	13,715	8,140	3,645	20,260	2,011	8,633	7,763	5,490	3,277
Total Kjeldahl Nitrogen	mg/L	100	180	88	1,082	354	507	301	1,877	795	443	349	1,316	1,195
Phosphorus	mg/L	10	28.7	15.7	102.9	79.8	100.2	58.9	207.4	60.6	84.8	158.5	102.9	141.8
Total Solids	mg/L	-	6,792	4,685	34,138	15,302	8,780	4,465	21,614	4,083	10,893	14,948	9,363	7,730
Total Volatile Solids	mg/L	-	5,036	1,770	18,740	9,836	6,414	2,823	11,744	2,465	8,360	7,018	6,040	3,980
Arsenic	mg/L	1	0.10	0.05	0.09	0.09	0.09	0.04	0.08	0.04	0.08	0.16	0.20	0.37
Cadmium	mg/L	0.7	0.04	0.01	0.03	0.03	0.03	0.02	0.02	0.01	0.03	0.06	0.08	0.14
Chromium	mg/L	3	0.14	0.10	0.13	0.40	0.17	0.12	0.22	0.04	0.13	0.16	0.20	0.37
Cobalt	mg/L	5	0.04	0.03	0.03	0.04	0.03	0.01	0.04	0.01	0.04	0.06	0.08	0.14
Copper	mg/L	3	1.41	1.18	9.13	3.28	3.52	1.78	12.52	0.40	5.66	9.82	1.82	0.47
Lead	mg/L	1	0.15	0.26	0.75	0.48	0.18	0.12	0.46	0.04	0.10	0.30	0.20	0.37
Mercury	ug/L	10	0.26	0.37	0.69	1.95	1.38	0.67	1.70	0.05	3.80	3.89	1.13	0.28
Molybdenum	mg/L	5	0.49	0.29	0.05	0.16	0.19	0.14	0.07	0.02	0.08	0.20	0.09	0.18
Nickel	mg/L	2	0.07	0.15	1.30	0.24	0.15	0.08	0.24	0.03	0.13	0.20	0.08	0.14
Selenium	mg/L	1	0.10	0.03	0.08	0.07	0.09	0.04	0.08	0.04	0.08	0.16	0.20	0.37
Zinc	mg/L	3	1.30	2.45	36.63	11.29	10.40	3.68	12.21	2.18	10.40	8.10	5.32	1.90
Aluminum	mg/L	-	4.82	15.35	36.75	54.65	26.52	20.74	34.96	2.90	25.08	49.11	14.51	5.40
Antimony	mg/L	5	0.25	0.08	0.15	0.16	0.18	0.08	0.16	0.09	0.15	0.32	0.41	0.73
Barium	mg/L	-	0.14	0.57	0.59	1.26	0.50	0.39	1.51	0.09	0.78	4.93	0.40	0.37
Beryllium	mg/L	-	0.10	0.03	0.08	0.07	0.09	0.04	0.08	0.04	0.08	0.16	0.20	0.37
Boron	mg/L	-	2.56	0.63	1.50	1.72	1.80	0.83	1.64	0.85	1.50	3.24	4.07	7.33
COD	mg/L	600	14,469	3,244	16,165	13,184	11,194	5,849	21,658	6,891	16,998	10,832	11,530	7,777
Conductivity	us/cm	-	2,294	2,826	23,945	2,217	2,400	2,240	11,148	5,720	1,843	11,570	1,778	660
Iron	mg/L	-	5.19	56.51	40.15	124.53	41.14	27.11	146.78	5.02	38.23	86.14	19.17	10.17
Manganese	mg/L	-	0.30	2.58	1.43	2.90	0.94	0.83	2.87	0.30	1.05	1.85	0.45	0.77
pH		6-11	5.9	7.7	7.7	7.3	7.1	7.8	7.9	7.7	7.3	7.7	7.8	7.5
Silver	mg/L	5	0.10	0.03	0.08	0.07	0.09	0.04	0.08	0.04	0.08	0.16	0.20	0.37
Tin	mg/L	5	0	0	1	0	0	0	0	0	0	0	0	1
Vanadium	mg/L	-	0.05	0.03	0.07	0	0	0	0	0	0	0	0	0

Review of Final Effluent Sampling and Monitoring Activities

Final Effluent sampling is conducted twice weekly and submitted for analysis to an ISO 17025:2017 accredited laboratory for compliance purposes. In 2024, 131 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 WW-T-3 below summarizes the number of monthly objective and compliance limit exceedances at the Welland WWTP in the reporting year.

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

Parameter	ECA Monthly Concentration Objective	ECA Monthly Concentration Limit	ECA Monthly Average Loading Limit	Number of Monthly Objective Concentration Exceedances	Number of Monthly Limit Concentration Exceedances	Number of Monthly Limit Loading Exceedances
pH[1]	6.0-9.5	-	-	0	-	-
Carbonaceous Biochemical Oxygen Demand (CBOD)	15 mg/L	25 mg/L	1362.5 kg/d	0	0	0
Total Suspended Solids (TSS)	15 mg/L	25 mg/L	1362.5 kg/d	2	1	1
Total Phosphorus (TP)	0.5 mg/L	1.0 mg/L	54.5 kg/d	1	0	0
Total Ammonia Nitrogen November 1 to April 30	10 mg/L	20 mg/L	-	0	0	-
Total Ammonia Nitrogen May 1 to October 31	5 mg/L	10 mg/L	-	0	0	-
Total Residual Chlorine[2] (TRC)	non-detect	0.02 mg/L	-	0	0	-
E-Coli (Geomean)[2]	100 MPN/100 mL	200 MPN/100 mL	-	0	0	0

[1] pH must meet objectives at all times (inclusive)
[2] Only during disinfection season, April 01 - October 31

Welland WWTP failed to achieve the monthly average concentration and loading compliance limits for Total Suspended Solids (TSS) in December 2024. The monthly objective for TSS was also not met during the month of January. The ECA limit exceedances are covered in more detail in section WW-T-3 Operating Issues Encountered below.

The monthly objective for Total Phosphorus (TP) was not met in September.

The ECA for the Welland WWTP requires that samples of the final effluent be collected and tested when the plant is in high flows and a secondary bypass occurs. The sample of the final effluent during these events includes fully treated effluent as well as sewage that has received primary treatment only and has bypassed the secondary treatment process. As these samples include a portion of flow that does not receive full treatment, samples collected during secondary bypass may have elevated results. This reason contributed to the objective exceedances in January, September and December with above objective results observed during high flow events.

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

- CBOD – 6%
- TSS – 25%
- TP – 25%
- Ammonia – 1%
- E.Coli – 2%

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. An annual summary of monthly average final effluent sample results can be observed in Table WW-T-4 below.

Effluent Quality Assurance Measurements and Control Measures

To ensure Welland 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 Welland 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 2024, seven (7) deviations from the scheduled sampling days occurred. Table WW-T-5 below provides the instances where a deviation occurred and a reason for the deviation.

The 2025 sampling schedule is available upon request.

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

Sampling Date Deviation	Sample Type(s)	Reason
2024-01-01 2024-01-22 2024-01-24	Primary Effluent	Autosampler Malfunction
2024-07-29	Influent	Autosampler Malfunction
2024-11-13 2024-12-27	Hauled Waste	No disposals available on sample date. No sample submitted.
2024-12-02	Final Effluent	Autosampler Malfunction

Table WW-T-5: Annual Summary of Welland 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 # of Samples
Influent - Monthly Average TSS (mg/L)	168	217	224	222	271	169	205	215	269	226	175	225	216	
Number of Influent TSS Samples	10	8	8	10	8	8	9	8	9	9	8	9		104
Influent - Monthly Average TBOD (mg/L)	116	160	169	130	148	101	142	147	198	155	133	150	146	
Number of Influent TBOD Samples	10	8	8	10	8	8	9	8	9	9	8	9		104
Influent - Monthly Average TP (mg/L)	2.3	3.5	3.9	3.3	3.7	3.2	3.9	3.9	4.8	3.6	2.9	2.7	3.5	
Number of Influent TP Samples	10	8	8	10	8	8	9	8	9	9	8	9		104
Influent - Monthly Average TKN (mg/L)	18.75	29.90	24.28	24.68	32.40	23.10	27.28	24.43	34.47	31.03	28.70	26.91	27	
Number of Influent TKN Samples	10	8	8	10	8	8	9	8	9	9	8	9		104
Total Plant Flows (ML)	1,712.365	924.131	1,065.453	1,411.626	918.669	1,144.878	1,070.787	857.016	760.981	763.088	874.385	1,198.958	2,702.337	
Daily Average (MLD)	55.238	31.867	34.369	47.054	29.634	38.163	34.542	27.646	25.366	24.616	29.146	38.676	34.706	
Maximum Flow (ML)	106.785	48.315	47.872	113.242	57.764	80.471	101.621	54.842	40.982	49.380	68.950	90.285	MAX	113.242
Minimum Flow (ML)	31.071	25.989	29.336	27.413	20.882	24.100	23.752	21.753	22.235	19.452	21.295	25.250	MIN	19.452
Volume Imported Sewage Received (ML)	0.792	0.586	0.699	0.959	1.069	1.192	1.038	1.655	1.040	1.060	0.935	0.818	11.844	
Final Effluent - Monthly Average TSS (mg/L)	15.2	9.4	8.1	11.9	12.8	10.6	10.1	8.1	11.2	6.7	8.8	38.0	12.6	
Final Effluent - Average Daily TSS Loading (kg/d)	840	300	278	560	379	405	349	224	284	165	256	1470	436	
Number of Final Effluent TSS Samples	19	8	8	16	8	14	12	8	9	9	9	11		131
Final Effluent - Monthly Average CBOD (mg/L)	6.6	4.0	5.1	6.5	4.6	5.4	4.0	6.0	4.2	4.0	4.4	12.3	5.6	
Final Effluent - Average Daily CBOD Loading (kg/d)	365	127	175	306	136	206	138	166	107	98	128	476	194	
Number of Final Effluent CBOD Samples	19	8	8	16	8	14	12	8	9	9	9	11		131
Final Effluent - Monthly Average TP (mg/L)	0.29	0.27	0.27	0.31	0.43	0.47	0.44	0.41	0.58	0.27	0.30	0.33	0.36	
Final Effluent - Average Daily TP Loading (kg/d)	16.02	8.60	9.28	14.59	12.74	17.94	15.20	11.33	14.71	6.65	8.74	12.76	12.64	
Number of Final Effluent TP Samples	19	8	8	16	8	14	12	8	9	9	9	11		131
Final Effluent - Monthly Average TKN (mg/L)	5.26	4.56	3.96	3.22	3.46	2.14	1.97	3.10	3.50	4.99	6.18	5.18	3.96	
Number of Final Effluent TKN Samples	19	8	8	16	8	14	12	8	9	9	9	11		131
Final Effluent - Monthly Average NH_3 (mg/L)	2.88	2.56	2.03	1.24	1.25	0.29	0.34	1.25	1.25	2.46	2.98	2.70	1.77	
Final Effluent - Average Daily NH_3 Loading (kg/d)	159.08	81.58	69.77	58.35	37.04	11.07	11.74	34.56	31.71	60.55	86.86	104.43	61.40	
Number of Final Effluent NH_3 Samples	19	8	8	16	8	14	12	8	9	9	9	11		131
Final Effluent - Monthly Average NO_3 (mg/L)	8.29	18.78	14.81	13.35	17.49	14.41	16.32	16.89	15.42	14.79	13.08	14.15	14.82	
Number of Final Effluent NO_3 Samples	19	8	8	16	8	14	12	8	9	9	9	11		131
Final Effluent - Monthly Average NO_2 (mg/L)	0.40	0.45	0.43	0.38	0.41	0.40	0.40	0.59	0.41	0.77	0.83	0.56	0.50	
Number of Final Effluent NO_2 Samples	19	8	8	16	8	14	12	8	9	9	9	11		131
Final Effluent - Monthly Geomean E.Coli (MPN/100mL)				4	6	9	4	3	3	5			5	

Measured Parameter	January	February	March	April	May	June	July	August	September	October	November	December	Total / Average	Total # of Samples
Number of Final Effluent E.Coli Samples				16	18	15	20	16	18	18				121
Final Effluent - Monthly Average TRC (mg/L)				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	31	31	30	31				214
Final Effluent - Monthly Average Temperature (°C)	11.09	11.43	10.78	12.60	16.33	18.83	20.71	20.78	20.79	18.78	17.08	13.31	16.04	
Number of Final Effluent Temperature Samples	19	8	8	15	8	14	12	8	9	9	9	11		130
Final Effluent - Monthly Average pH	7.48	7.16	7.34	7.46	7.08	7.11	7.08	7.09	7.00	7.16	7.00	6.95	7.16	
Number of Final Effluent pH Samples	19	8	8	15	8	14	12	8	9	9	9	11		130

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

TSS Monthly Compliance Limit and Organic loading Limit Exceedance – December 2024

In December 2024, the Welland WWTP failed to meet the ECA compliance monthly average concentration limit for TSS of 25 mg/L and monthly average effluent loading limit for TSS of 1,362.5 kg/d. The monthly average concentration and loading of TSS was calculated as 38.0 mg/L and 1,469.7 kg/d respectively.

The non-compliance was reported verbally to the MECP and a follow up non-compliance report was completed and submitted.

The exceedances are attributed to multiple contributing factors including:

- Restriction on removal of solids from primary clarifiers resulting in higher sludge levels
    - The primary digester was experiencing heating issues.
    - To assist in maintaining an adequate temperature in the digester, the volume of cold sludge being pumped from the primary clarifiers was reduced.
- A blockage was identified in the return activated sludge pumping.
    - The blockage restricted the volume of activated sludge being pumped out of the secondary clarifiers.
    - This increased the solids inventory in the secondary clarifiers.
- High flows from a wet weather event
    - With the increased flows and the higher sludge levels in the primary clarifiers, solids were carried over into the secondary bypass flow.
    - Similarly, the increased solids inventory in the secondary clarifiers resulted in solids carryover into the plant effluent during the high flow event.
    - The final effluent and the secondary bypass flow are both included in the final effluent sampling location contributing to the exceedance of the compliance limits.

As a corrective action, the blockage in the return activated sludge pumping was cleared, restoring the pumping capacity, and clearing the increased solids inventory from the secondary clarifiers. The digester temperature issue was resolved and the raw sludge pump cycles were increased to reduce the sludge blankets in primary clarifiers.

WW-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 Welland WWTP:

- Grit classifier gear box and coupling replacement
- Secondary clarifier #5 corner sweep and scum collection system rebuild
- Primary clarifier #4 cleaning, scum trough repairs and ongoing rebuild project
- Return activated sludge pump #6 replacement including isolation and check valves
- Screen and digester building electrical classification study and repair
- Glycol heating system repairs
- Repair of sewage lift pump #4
- Installation of digester mixing valve

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 Welland WWTP:

- Primary Digester #1 cleanout and instrumentation upgrade

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 2024, 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

All proposed works have been completed and reported on in previous years.

WW-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 WW-T-6 provides a summary of flow meter calibration.

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

Meter Name	Date Calibrated	Comments
Welland Influent Storm Meter	2024-12-09	Passed
Welland Influent Primary Meter	2024-12-09	Passed

Calibration certificates are available upon request.

Flows at the Welland WWTP are measured by combining the metered wastewater volumes flowing to both the conventional primary clarifiers (influent primary meter) and the storm primary clarifiers (influent storm meter).

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 WW-T-7 below.

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

Equipment Description	Date Calibrated	Comments
DR 1900 Spectrophotometer	2024-09-18	Passed
Chlorine Portable Pocket Colorimeter	2024-09-18	Passed
HQ40D Portable Meter with LDO Probe	2024-09-18	Passed

Equipment Description	Date Calibrated	Comments
COD Reactor (Hach DRB 200)	2024-09-18	Passed
Thermo Star A111 pH Meter	2024-09-18	Passed
Balance (ML204T)	2024-09-11	Passed

Calibration certificates are available upon request.

WW-T-6 Solids Handling

Processed Organics Received

868 m^3 of processed organic waste was received at the Welland WWTP in 2024. One (1) load of waste activated sludge was received from Crystal Beach WWTP during gravity belt thickener maintenance. 19 loads of waste activated sludge were trucked from Anger Avenue WWTP between May 17 and May 30 due to the gravity belt thickener being out of service for repair.

Volume Sludge Generated and Removed From Site

Solids removed from the treatment process are digested and transported from site for further processing and beneficial re-use. All sludge removed from the Welland WWTP is taken to Niagara Region's Garner Road Biosolids Facility where they are stored, further thickened and either sent for land application or for dewatering and conversion to a pelletized fertilizer. Table WW-T-8 provides a summary of 2023 and 2024 sludge volumes removed from site.

Table WW-T-8: Summary of Sludge Removed from Site 2024

Month	2024 Volume Sludge Hauled (ML)	Prior Year Volume Sludge Hauled (ML)
January	6.808	6.721
February	5.810	5.420
March	7.501	6.591
April	6.634	5.203
May	6.547	6.114
June	8.282	6.851
July	7.068	5.593
August	6.634	5.637
September	5.810	5.550

Month	2024 Volume Sludge Hauled (ML)	Prior Year Volume Sludge Hauled (ML)
October	5.984	6.547
November	6.070	5.420
December	7.068	6.808
TOTAL	**80.216**	**72.455**

An 11% increase in sludge removed from site in 2024 versus reporting year 2023 was observed. Receipt of waste activated sludge from the Anger Avenue WWTP contributed to the increased sludge removed in 2024.

No changes are anticipated for sludge handling in 2025 at the Welland WWTP.

Sludge Quality Monitoring

Digested sludge is sampled and analyzed bi-weekly to meet regulatory requirements of the Garner Road Biosolids Facility and Welland WWTP 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 2024 biosolids analysis from the Welland WWTP is included in Table WW-T-9.

WW-T-7 Complaints

Two (2) odour complaints were received in 2024 regarding the operation of the Welland 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.

Table WW-T-9: Summary of Monthly Average Biosolids Results

Analyte	Units	NMA Limits	January	February	March	April	May	June	July	August	September	October	November	December
Total Solids	%	-	2.95	2.95	2.70	3.17	2.05	2.80	2.43	1.95	2.33	2.53	2.25	2.00
Ammonia as N	mg/kg	-	680	715	680	717	730	510	590	560	640	440	635	520
Nitrate+Nitrite	mg/kg	-	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00
Phosphorus	mg/kg	-	26,900	22,350	22,933	20,066	26,850	18,650	17,602	22,000	24,633	31,400	25,950	27,050
Arsenic	mg/kg	170	7.55	7.57	8.80	5.42	4.15	7.65	6.50	6.60	6.07	2.43	0.80	8.35
Cadmium	mg/kg	34	0.50	0.50	0.50	0.37	0.55	0.60	0.90	0.50	0.50	0.50	0.50	0.50
Chromium	mg/kg	2,800	79.95	80.85	66.57	70.53	66.60	56.15	57.03	65.95	57.93	96.47	85.65	100.15
Cobalt	mg/kg	340	4.10	3.00	3.60	3.57	3.35	3.10	3.78	2.70	3.60	3.80	4.15	3.35
Copper	mg/kg	1,700	420	345	343	373	388	354	300	366	402	467	390	375
Lead	mg/kg	1,100	75.50	149.00	175.33	111.57	75.50	35.50	31.25	14.00	17.00	17.33	14.50	13.50
Mercury	mg/kg	11	0.18	0.22	0.18	0.16	0.14	0.23	0.21	0.17	0.25	0.18	0.27	0.15
Molybdenum	mg/kg	94	15.00	15.00	13.67	14.13	14.00	9.50	10.75	13.50	11.67	22.00	16.50	20.50
Nickel	mg/kg	420	59.75	15.90	14.13	18.87	16.30	20.20	21.43	21.05	16.93	20.67	18.60	19.25
Potassium	mg/kg	-	3,655	4,945	4,207	3,823	4,010	3,165	5,350	3,725	2,886	2,543	5,415	3,240
Selenium	mg/kg	34	1.82	1.70	1.94	2.17	2.60	2.10	2.60	2.10	2.50	1.77	0.30	2.60
Zinc	mg/kg	4,200	552	487	508	517	532	457	495	561	599	617	527	478

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

Bypasses and Overflows

There were 16 secondary bypass events at the Welland WWTP in 2024. Secondary bypasses from this facility receive partial treatment prior to discharge to the environment including screening, grit removal, phosphorus removal, settling (solids removal), chlorination and dechlorination (from April 1 to October 31). Table WW-T-10 provides a monthly breakdown of bypass events occurring at the Welland WWTP during the reporting period.

Table WW-T-10: Annual Summary of Secondary Bypass Events by Month

Month	Number of Secondary Bypass Events	Total Volume (ML)
January	3	272.260
February	0	0.00
March	0	0.00
April	3	183.050
May	1	17.108
June	4	66.480
July	1	65.010
August	0	0.00
September	0	0.00
October	0	0.00
November	1	18.783
December	3	69.244
Total	**16**	**691.935**

The ECA for the Welland WWTP requires that a sample of the final effluent combined with secondary bypass flow be sampled every day the facility is in bypass mode. All results are to be included in the calculation of the final effluent monthly average compliance results.

Secondary bypass results are included in the Final Effluent sampling and monitoring covered in section WW-T-2 above.

In general, the Welland WWTP continues to meet ECA compliance limits sampling final effluent during secondary bypass events.

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 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, 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 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 WW-T-11 summarizes spills that occurred at the Welland WWTP in 2024.

Table WW-T-11: Summary of spills occurring at the Welland WWTP during the reporting year

Spill Date	MECP Incident Number	Short Description of Spill	Link to Public Spill Report
2024-05-21	1-6WWYK4	Spill of Sewage - Welland Wastewater Treatment Plant	CWCD 2024-107 (https://www.niagararegion.ca/council/CouncilDocuments/2024/council-correspondence-june-14-2024.pdf)
2024-06-20	1-7VMZBY	Spill of Sewage – Mechanical Failure	CWCD 2024-126 (https://www.niagararegion.ca/council/Council%20Documents/2024/council-correspondence-july-19-2024.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 during 2024.

WW-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 demonstrated above in section WW-T-2, Welland WWTP provides effective secondary treatment. The Final Effluent annual average quality achieved in 2024 were below the secondary treatment equivalent MECP design objectives.

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

The Welland WWTP receives sewage from portions of the City of Welland 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 Welland, Town of Pelham and City of Thorold to reduce bypasses 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 I&I 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 2024, Niagara Region had an approved budget totaling $2.0M for the overflow reduction cost sharing program. Two (2) projects were approved for cost sharing in the City of Welland with Niagara Region contributing $116,500 to support Inflow and Infiltration (I&I) reduction study and flow monitoring.

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 Welland WWTP services a collection system that is impacted by wet weather flow, fully treating the combined sewage and stormwater is not feasible. Welland is equipped with storm treatment for flows greater than 65,000 m^3/d, up to a

maximum flow of 118,000 m^3/d. Two Primary clarifiers provide storm treatment to wet weather flow. Flows greater than the plant design peak flow of 65,000 m^3/d are diverted around the secondary treatment process and recombine with the final effluent prior to discharge to the Welland River. Flows to the storm treatment system receive screening, grit removal, phosphorus removal, settling (solids removal), chlorination and dechlorination (from April 1 to October 31). It recombines and is sampled with the final effluent prior to discharge to the environment.

In general, samples collected and tested of the combined secondary bypass and final effluent continue to meet ECA compliance limits.

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

WW-C-1 Overview of the Welland WWTP Collection System

The Welland WWTP collection system is a class III system that collects wastewater from domestic, commercial and industrial sources from the City of Welland, the southwest portion of the City of Thorold and the Town of Pelham. The collection system consists of the following:

- Local sanitary sewers
- 35.1 kilometres of regional gravity mains
- 22.5 kilometres of regional force mains
- 12 pumping stations:
    - Daimler Woods Sewage Pumping Station
    - Dain City Sewage Pumping Station and Sewage Detention Tank
    - Feeder Road Sewage Pumping Station
    - Foss Road Sewage Pumping Station
    - George Street Sewage Pumping Station
    - Hurricane Road Sewage Pumping Station
    - Kelly Street Sewage Pumping Station and Sewage Detention Tank
    - Ontario Road Sewage Pumping Station
    - Park Lane Sewage Pumping Station
    - Seaway Heights Sewage Pumping Station
    - South Street Sewage Pumping Station
    - Towpath Road Sewage Pumping Station
- Lyons Creek Sewage Detention Facility
- 2 Sanitary Sewer Overflows (SSOs) on Niagara Region infrastructure

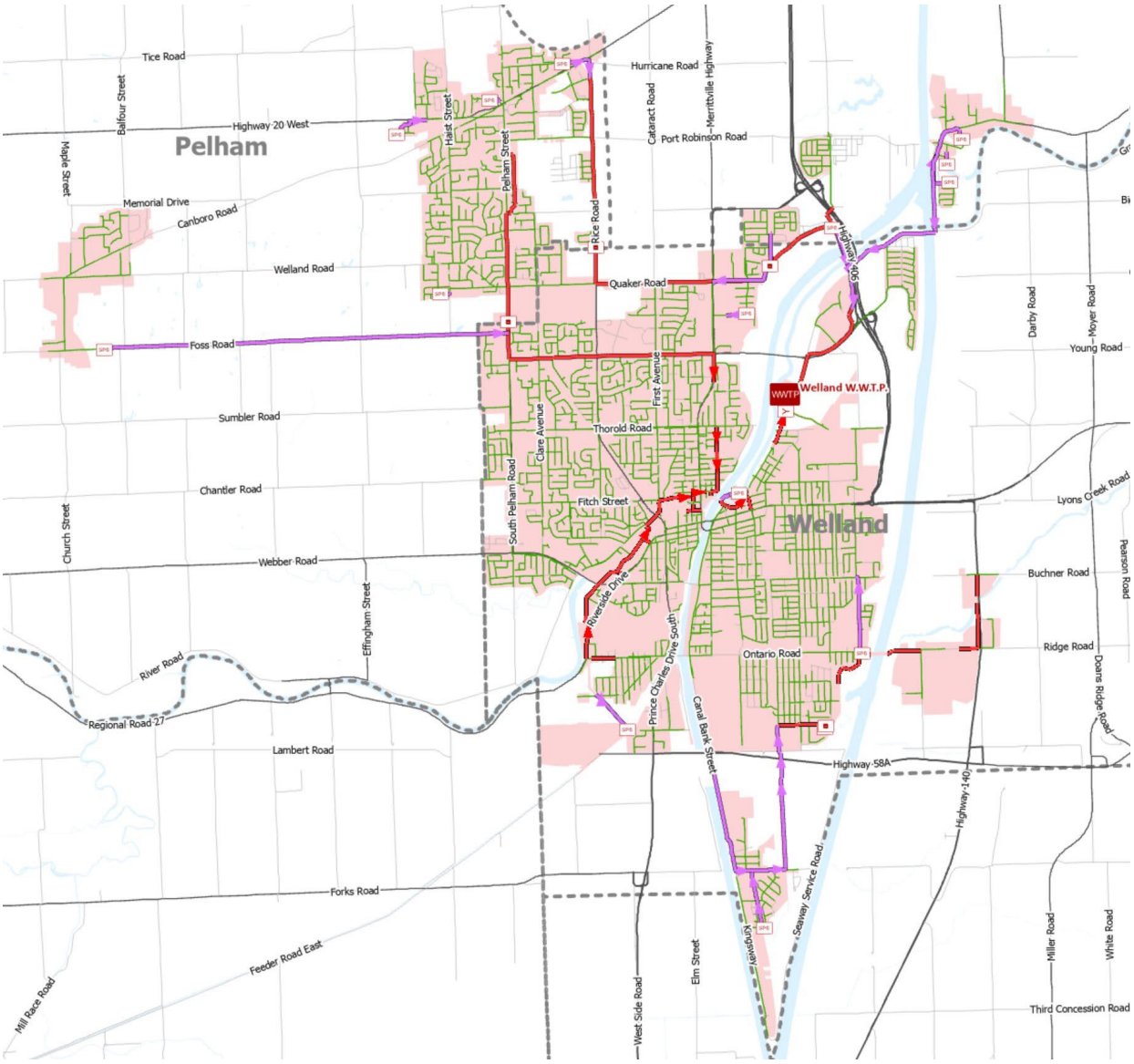

Figure WW-C-1: Map of Welland WWTP Collection System

The collection system is operated under a two-tier system, where the area municipalities owns and operates local gravity sanitary sewers and Niagara Region owns and operates sewage pumping stations, forcemains, larger gravity sanitary sewers or trunk sewers and some sewage detention facilities. It is classified as a combined sewer system. This means there are a small portion of 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 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:

- Welland Wastewater Catchment System, 007-W604, issue number 1

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

WW-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 Welland 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 2024, operations staff conducted Four (4) visual inspections of sanitary sewer overflow locations and wet weather storage tanks.

Sanitary Sewer Closed-Circuit Television Inspection Program

Niagara Region owns and maintains 145 kilometers of trunk sanitary gravity sewers, 161 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 WW-C-1 details the total length of sewers inspected over the past four years.

Table WW-C-1- CCTV Program Summary

Measurement in Kilometers (km)	2021[3]	2022	2023	2024
Inspection Length (km)	18.5	59.3	33.0	31.3

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.

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

Pump Stations and Forcemains

No operational issues were experienced at the pump stations or associated forcemains in 2024.

Gravity Trunk Sewers

Increased monitoring of the siphon that conveys sewage below the Welland Canal from the east side of Welland continued in 2024. A blockage of the siphon occurred in March of 2022 causing a surcharge of the sewers downstream of the siphon and a spill to the environment. Smartcovers were installed in 2023 to notify Niagara Region staff of high levels in the sewer upstream of the siphon. An enhanced cleaning schedule is in place for the siphon. Cleaning is occurring on an approximately monthly basis.

Environmental Enforcement staff continue monitoring of the area. A condition assessment was completed that identified siphon chambers and valving in poor condition. A capital project has been initiated to rehabilitate the siphon chambers and valving. The design is currently at 90%.

[3] 2021 marked the end of one inspection contract and the start of a new contract. Delays in the procurement process due to competing priorities resulted in a gap in inspection contracts. As a result, the length of sewers inspected in 2021 was less than in prior years.

WW-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 Welland Collection System:

- Dain City Air Relief Valve Replacement
- Ontario Road and Ridge Road siphon condition assessments

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 Welland Collection System:

- Ontario Road and Ridge Road siphon sustainability design
- New Quaker Road Trunk Sewer Installation
- Dain City SPS upgrades
- Mill Street Area Sanitary Sewer Improvements (in partnership with City of Welland) - Complete
- Broadway trunk sewer replacement (in partnership with City of Welland)

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 2024, 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.

WW-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 WW-C-2 below provides a summary of calibrations completed in the collection system in 2024.

Table WW-C-2 - Summary of Calibration Activities Undertaken in the Welland Collection System

Equipment Description	Date Calibrated	Comments
Dain City SPS Station Discharge Flow Meter	2024-04-24	Passed
Foss Road SPS Station Discharge Flow Meter	2024-11-05	Passed
Hansler Flume	2024-12-09	Passed
Kelly Street SPS Station Discharge Flow Meter	2024-11-06	Passed
Pelham Flume	2024-12-10	Passed
Rice Road Flume	2024-12-11	Passed
Towpath Road SPS Pump 1 Discharge Flow Meter	2024-11-05	Passed
Towpath Road SPS Pump 2 Discharge Flow Meter	2024-11-05	Passed

Calibration certificates are available upon request.

WW-C-6 Summary of Complaints

One (1) odour complaint was received in 2024 regarding the operation of the Welland collection system. When a complaint is received, Operations staff attend the site to verify the complaint. Corrective actions are taken as needed upon verification of any issue. All complaints and corrective actions taken are recorded and available.

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

Collection System Overflows

The Welland 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 WW-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.

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

Table WW-C-3: Collection System Overflow Event Details

Overflow Location	Overflow Date	Overflow Volume (ML)	Overflow Duration (hhh:mm)	BOD Loading (kg/d)	TSS Loading (kg/d)	TP Loading (kg/d)	TKN Loading (kg/d)	E.Coli (MPN/100 mL)	Was the Overflow Disinfected (Yes/No)	Were Any Adverse Impacts Observed (Yes/No)	Corrective Actions Taken
No Collection System Overflow Events in 2024											

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 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 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 WW-C-4 summarizes spills that occurred in the Welland collection system in 2024.

Table WW-C-4: Summary of Spills Occurring in the Welland Collection System

Spill Date	MECP Incident Number	Short Description of Spill	Link to Public Spill Report
2024-06-24	1-827OVP	Spill of Sewage- Air Release Valve Failure	CWCD 2024-126 (https://www.niagararegion.ca/council/Council%20Documents/2024/council-correspondence-july-19-2024.pdf)

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

Projects Undertaken to Reduce Bypasses or Overflows

Being a two-tier system, Niagara Region works closely with the City of Welland, Town of Pelham and City of Thorold 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 2024, Niagara Region had an approved budget totaling $2.0M for the overflow reduction cost sharing program. Two (2) projects were approved for cost sharing in the City of Welland with Niagara Region contributing $116,500 to support Inflow and Infiltration (I&I) reduction study and flow monitoring.

There were no overflows from the Niagara Region portion of the Welland collection system in 2024.

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)

An active project is underway to improve public reporting of bypasses and overflows including making the data available in near real time.

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.

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