



Wastewater Operations

Annual Performance Report ***Cookstown Water Pollution Control Plant (WPCP)*** ***Environmental Compliance Approval(ECA) #9741-B4GRWZ***

Town of Innisfil

Reporting Year – 2023

Introduction

Effective January 1, 2016, the Town of Innisfil (TOI) transferred ownership of its municipal sewage works to InnServices Utilities Inc. (InnServices). InnServices is a municipal service corporation, wholly owned by the Town of Innisfil, charged with the responsibility to operate, maintain, and expand the municipal sewage works that service the Town of Innisfil.

The Board of Directors are appointed by the Shareholder and represent the Owners of the System.

InnServices has prepared this Summary Report for the operations conducted during the 2023 calendar year.

This Performance Report has been prepared to meet the following commitments:

- To provide InnServices Utilities Inc. Board of Directors, as Owners of the sewage works, a summary of the operations and maintenance of the Cookstown Water Pollution Control Plant that took place during the reporting period of January 1 to December 31, 2023; and
- To comply with Condition 11 of ECA #9741-B4GRWZ, issued May 29, 2019.

This Performance Report, provided to the InnServices Board of Directors, conveys information related to the performance of operations and maintenance, which aids decision making related to system expansion needs.

The Cookstown Water Pollution Control Plant (WPCP) is a package extended aeration facility constructed in 1986, located at 59 Victoria Street West in Cookstown. The treated effluent is discharged seasonally, as guided by the ECA, to Innisfil Creek through a combination of force and gravity mains. The collection system consists of approximately 14 km of gravity sewers serving the community of Cookstown.

Environmental Compliance Approval (ECA)

For the reporting period covered in this report, InnServices Utilities Inc. was defined as the Operating Agency of the Cookstown Water Pollution Control Plant (WPCP) and the associated collection system.

The treatment facility and collection system are operated under the following Certificates of Classification:

Class II Wastewater Treatment Certificate #950
Class I Wastewater Collection Certificate #1479

The Cookstown WPCP operated under Environmental Compliance Approval (ECA) #9741-B4GRWZ issued May 29, 2019. The ECA identifies a design capacity with all treatment trains in operation of 825 m³/day.

Consolidated Linear Infrastructure ECA Number 1220-W601 was issued on March 28, 2023, for the Cookstown sewage collection system as part of the Innisfil Sanitary Sewer Collection System.

Influent Monitoring Data

The 2023 average daily influent flow was 646.20m³ or 78% of plant capacity.

The plant received a raw influent total of 235,863 m³ for the entire year.

The 2023 maximum daily flow occurred February 9th, when the flow recorded was 1473m³.

The overall removal efficiency is 97.7%.

Cookstown Flows	Design Capacity	80% of Rated Capacity	2023 Flows	Performance
Daily Flow	825 m ³ / day	660 m ³ / day	646.20m ³ /day Avg. Daily Flow	78.32% of Design
Peak Flow	2634 m ³ /day	2107 m ³ / day	1473 m ³ /day	56% of Design
Annual Total	-----	-----	235,863	

Chart 1 below provides a visual display of the annual average day influent flow trend for the ten-year period of 2014 – 2023.

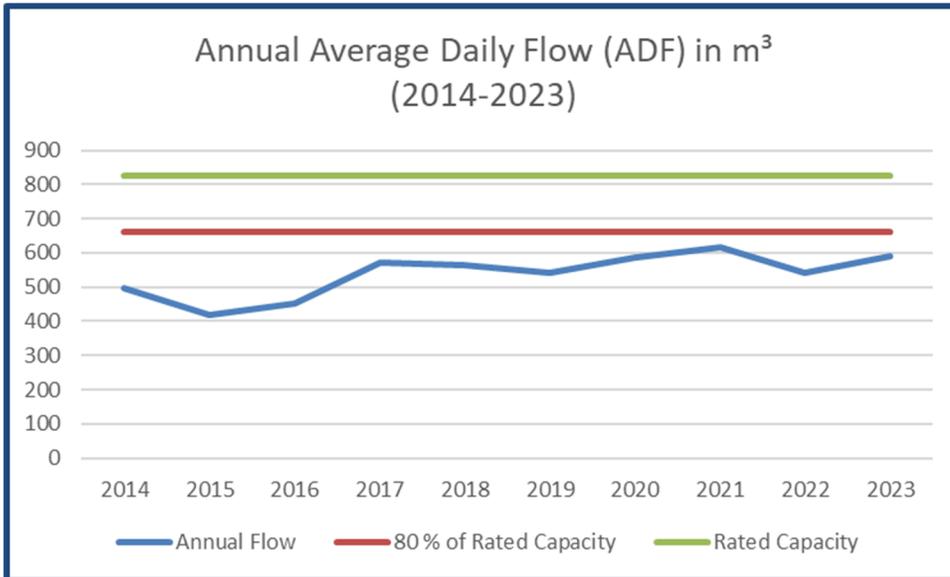


Chart 1: 10-year Annual Average Daily Flow

Monitoring of influent requires monthly sampling. The annual averages and removal efficiencies are depicted in this table:

Cookstown WPCP Parameter-Influent	Sample Type	Minimum Frequency	Monthly Average Influent(mg/L)	Monthly Average Effluent(mg/l)	Removal Efficiency
CBOD5	Grab	Monthly	200.9	2.75	98.6%
Total Suspended Solids (TSS)	Grab	Monthly	236.9	3.9	98.4%
Total Phosphorus (TP)	Grab	Monthly	4.98	0.03	99.3%
Total Kjeldahl Nitrogen (TKN)	Grab	Monthly	47.12	2.49	94.7%
Total Ammonia Nitrogen	Grab	Monthly	56.95	1.42	97.5%

Final Effluent Monitoring Data

A total of 215,831 m³ of final effluent was discharged from the polishing lagoon during the discharge periods of January through May, and October through December 2023.

Design Objectives were achieved more than 50% of the year, with no deterioration of the Final Effluent quality trending.

Annual Average Effluent Concentrations for CBOD5, Total Suspended Solids and Total Phosphorus were below Final Effluent Design Objectives as per Schedule B of the ECA.

The *annual* average concentration for Total Ammonia Nitrogen (TAN) was 1.42 mg/L, within the annual ECA limit of 4.0 mg/L.

A summary of the plant's performance and loading calculations in 2023 relative to the ECA Compliance Limits is on the following page.

Month	Total Discharge m ³	TOTAL "P" (300 kg/yr.)		NH3 + NH4 as N		CBOD		Suspended Solids	
		Monthly Avg. 1.0 mg/L	Loading Kg/month	Monthly Avg. 4.0 mg/L	Loading Kg/month	Monthly Avg. 25 mg/L	Loading Kg/month	Monthly Avg. 25 mg/L	Loading Kg/month
January	26,224	0.04	1.05	2.50	65.56	4	105	3	79
February	23,734	0.03	0.71	1.50	35.60	2	47	3	71
March	23,955	0.03	0.72	1.20	28.75	2	48	2	48
April	57,687	0.03	1.85	2.55	147.10	3.5	202	6	346
May	12,128	0.04	0.42	0.70	8.49	3.5	42	4.0	49
October	23,928	0.03	0.72	0.77	18.42	2	48	2	48
November	22,610	0.03	0.68	0.90	20.35	3	68	6	136
December	25,515	0.03	0.77	1.20	30.62	2	51	5	128
Total/year	215,781	0.0321	6.94	1.42	354.89	2.75	611	3.9	904

Chart 2 below shows the 10-year historic trend for effluent TAN:

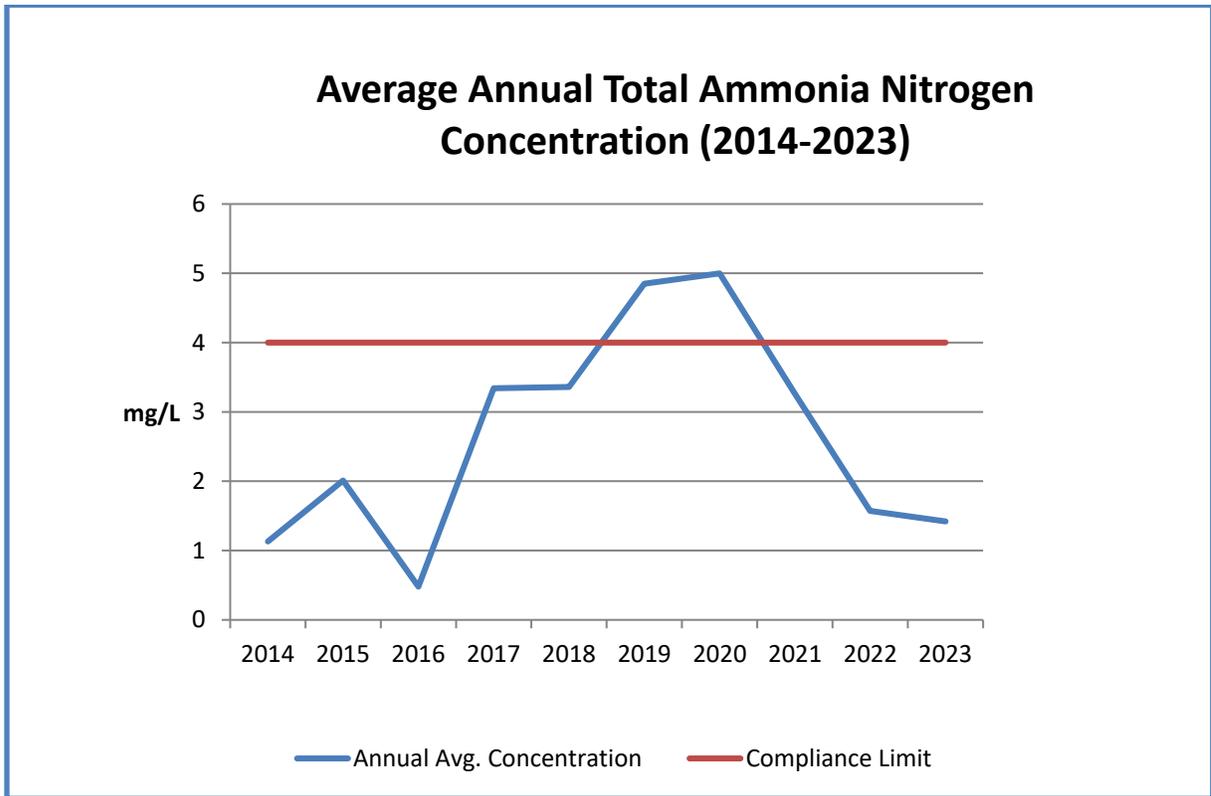


Chart 2: 10-year Annual Average Concentration-Total Ammonia Nitrogen

The table below identifies the Compliance limits and Design Objectives as set out in the ECA and the corresponding 2023 Effluent Quality data:

Cookstown WPCP Effluent Parameter	ECA Compliance Limits Annual Avg. Concentration	Design Objective Annual Avg. Concentration	2023 Treated Effluent Annual Average Concentration
CBOD ₅	25 mg/L	15 mg/L	2.75 mg/L
Total Suspended Solids	25 mg/L	15 mg/L	3.9mg/L
Total Phosphorus	1.0 mg/L	0.80 mg/L	0.03 mg/L
Total Phosphorus Load	300 kg/year	n/a	6.94 kg/year
TAN - Total Ammonia Nitrogen (Ammonia Nitrogen + Ammonium Nitrogen)	4.0 mg/L or Monthly Avg. Concentration in April, Oct. Nov.	n/a	1.42 mg/L

The table below is a summary of discharge volumes in 2023, January to May and October to December.

Effluent Discharge 2023 Cookstown WPCP		
Month	Maximum Discharge Rate	Total Discharge (m ³)
January	10 L/sec	26,224
February	10 L/sec	23,734
March	10 L/sec	23,955
April	60 L/sec	57,687
May	10 L/sec	12,128
October	10 L/sec	13,928
November	10 L/sec	22,610
December	10 L/sec	25,515
Total		215,831

Monitoring Schedule

Influent sampling is required at a minimum frequency of monthly by grab sampling. The influent sampling point is located at the Inlet Works.

Monitoring of final effluent is done during the designated discharge period (October 1 – May 31) except for April. In April, effluent is required to be sampled once per week. The first sample is collected one day after commencement of lagoon draw-down, and the last within one day before the holding level in the lagoon is attained.

The pH and temperature of the Final Effluent is determined in the field at the time of sampling.

Sampling type is determined by the parameter and includes grab, probe, or analyzer. Samples for final effluent reporting were collected from the sample ports on the discharge side of the effluent pumps at the outlet of the storage pond.

Flow rates for influent and final effluent discharge are monitored by continuous flow measuring devices.

As per Condition 9.1.b of ECA#9741-B4GRWZ, Tuesday was designated as the scheduled day for sampling, except for statutory holidays when this shifts to the next appropriate day. This schedule became effective January 2023 and maintained through the end of December. The scheduled sample day will be rotated (January 2024) to Wednesday and is expected to be maintained for the year.

Operational Issues and Corrective Actions Taken

Much of the equipment, structures mechanisms and apparatus forming the Works are aging and require frequent assessment. Repair and/or replacement is completed, when necessary, those items of larger scope are put forth as Capital Works Projects.

Maintenance Activities

The Maintenance Mechanic and Operations Staff perform a variety of scheduled, preventative, predictive and reactive maintenance on a variety of equipment throughout the year. Equipment replacement and upgrades contribute to greater process control at the Plant and increased capacity in the collection system.

Significant maintenance activities in 2023 include:

- New return flowmeter installed working to get readings back to Scada system.
- Replacement of two small effluent pumps – 10 Liter a second each.
- Continue flow monitoring of specific areas within the Cookstown sewer system.
- Maintenance and cleaning of the aeration basin within the treatment train
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Effluent Quality Assurance or Control Measures Undertaken

Analytical tests to monitor required parameters are performed by SGS Environmental Services, which is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) in accordance with the recognized International Standard ISO/IEC 17025:2005.

Plant operation and performance is monitored by licensed operators.

An in-house lab facility has been set up in the Cookstown WPCP Control Building. There is a dedicated operator assigned to analyze regular monitoring parameters to assist plant operation. Use of a high-range Total Ammonia Nitrogen analyzer has enabled operators to evaluate the state of the lagoon on site. The frequency of in-house testing for parameters has been increased. The non-regulated parameter Dissolved Oxygen (DO) is being closely monitored at the aeration tank.

Calibration & Maintenance on all Influent and Final Effluent Monitoring Equipment

Annual verifications/calibrations of flow monitoring equipment were performed in October 2023 by a third-party instrumentation and controls technician. This included influent and final effluent monitoring equipment.

All results were in compliance with the recommendations provided in the manufacturer manual.

Summary of efforts made to achieve Design Objective

Design Objectives were achieved more than 50% of the year.

The 2023 average daily influent flow was 646 m³, which equates to 78% of the plant's design rated capacity of 825 m³ per day.

An operator has been dedicated to the Cookstown WPCP full-time to provide consistent operations and monitoring activities.

An on-site lab has been set up, including a high-range TAN analyzer, for analysis of regular monitoring parameters to assist in plant operation.

Sludge Generation and Removal

There were no sludge removal activities in 2023. Anticipated volumes to be generated in the next reporting period is zero (0).

Complaints Received & Steps taken to address Complaints

Customer Service inquiries are received and logged through the Town of Innisfil. There was one (1) customer service inquiry logged in 2023. It was a floor drain trap odour issue which was resolved by advising the resident to flush the drain.

Bypasses, Overflows, other situations outside Normal Operating Conditions and Spills

There was one (1) planned bypass event in 2023. It occurred on October 10 to accommodate the cleaning and maintenance of the aeration basin within the treatment train. A total of 825 m³ of partially treated wastewater was discharged from the aeration basin and 181 m³ of raw wastewater from the intake directly to the West Lagoon over one day. The conditions of the Planned Bypass were met, and documentation was submitted to the MECP.

Notices of Modifications to Sewage Works

There were zero (0) Notices of Modifications to Sewage Works in 2023.

Efforts to Achieve Conformance with Procedure F-5-1 Determination Of Treatment Requirements For Municipal And Private Sewage Treatment Works

InnServices Utilities (IUI) Engineering group have been working on several projects and initiatives to eliminate Bypass/Overflow incidents. These include, but are not limited to the following in 2023:

- Flow Monitoring of active subdivisions (no new subdivisions in Cookstown are being monitored).
- Install bulkheads from unoccupied subdivision/condominium phases to the existing sewer system. The condo development at 34 King Street is under construction, complete with a bulkhead MH at the property line. All internal MH are externally wrapped.
- Policy requiring CCTV inspections in subdivision developments: mainline twice - prior to Underground Certificate and after Above-ground Certificate, but before top asphalt; and once for laterals (prior to occupancy).
- Sanitary exfiltration testing of new sewers; low-pressure air testing is a requirement for subdivision developments, new development is subject to infiltration/exfiltration testing in accordance with OPSS 410.
- Required as per Town Standards section 5.15, external MH wrapping of horizontal joints and frame/moduloc on all projects (Capital and Development)

Operations have proposed the following for 2023.

- Regular flushing and inspection program; CCTV inspection is required 5 years as per ECA# 4098-BC2SMK, Condition 3.2.b
- Condition assessment of approximately 150 maintenance holes (MH) during CCTV works completed in 2022.
- Influent flowmeter replacement and chamber upgrade

IUI Engineering has identified the following practices and projects continuing into 2023:

- MH Lids in grassed, low lying, or in areas with regular flooding require waterproof MH frame/cover.
- Bulkhead and water-tight plug required in downstream MH of subdivision until first occupancy, developer's engineers to do regular inspection and pumping as required one planned for construction in 2023.
- Seek opportunities for more MH rehabilitation.
- Pursue opportunities for more Sanitary Sewer rehabilitation.
- Consider Wrapping of pipe to MH Connections (similar to Region of Peel).
- Explore Rebate program for disconnection of sump pump from sanitary (similar to City of Barrie).
- Add Inflow & Infiltration (I & I) information and education to the Town/IUI website.
- Flow monitoring of new developments from first occupancy until assumption and emergency measures to be established for high flow events.
- MH condition assessment program (Private and Municipal) to be developed.
- Internal non-penetrating frost straps on new MH installation
- InnServices Engineering is also carrying out I and I flow monitoring until June 2024 on Cookstown sanitary mains.