

Q2 2024 Quarterly Progress Report

Niagara Falls Water Board

Order on Consent R9-20170906-129

Prepared for submission to:

New York State Department of Environmental Conservation Region 9
270 Michigan Avenue
Buffalo, New York 14203

Prepared by:

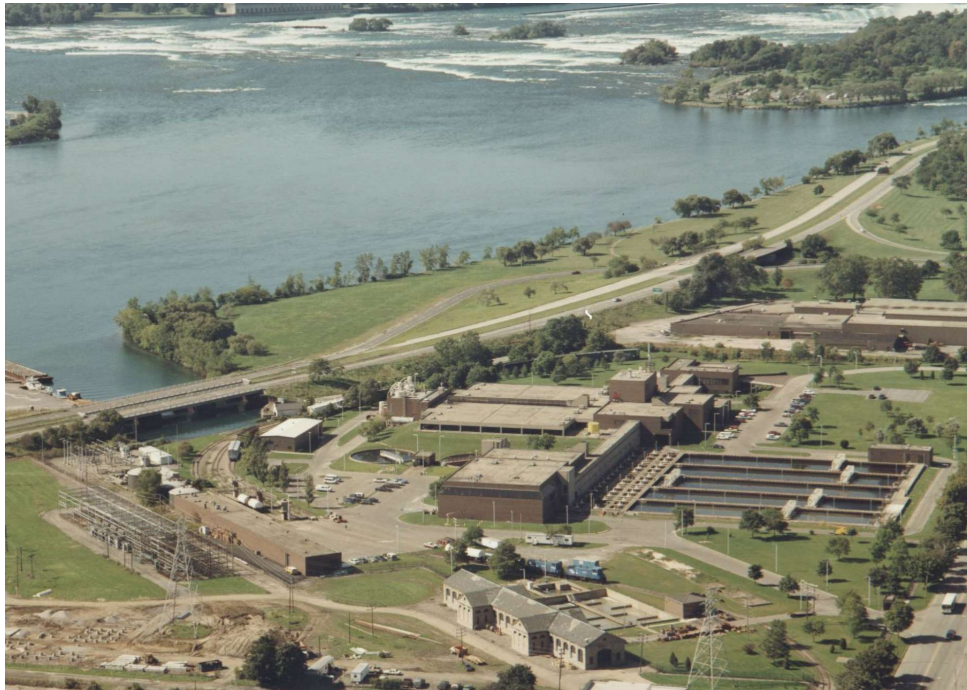
AECOM
50 Lakefront Blvd Suite 110
Buffalo, New York 14202

July 31, 2024



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Executive Summary

This document is the twenty sixth (26th) quarterly progress report for the Niagara Falls Water Board (NFWB) Order on Consent R9-20170906-129 (Consent Order) as originally required by Schedule A Item 15 of the Consent Order. This progress report covers the period from April 1, 2024 through June 30, 2024.

During the past quarter, the NFWB has properly operated the wastewater treatment plant (WWTP) and has met all State Pollution Discharge Elimination System (SPDES) permit requirements. Solids processing (settling, thickening, dewatering) during this period has functioned as intended. Primary effluent is clean which has allowed the WWTP's activated carbon filters to efficiently process the plant's influent flow. Dewatering throughput during this period has kept up with incoming solids, compared to influent solids loadings. The WWTP was operated free of odors during the past quarter.

Maintenance activities during the reporting period have been ongoing, and as of the end of the quarter major treatment systems and components are functional. The WWTP is undertaking a number of capital upgrades and improvements that are within the capability of the WWTP's maintenance staff and/or contractors awarded service contracts. In addition to the projects being undertaken by the WWTP's staff and outside contractors, project planning, design, and construction of \$27 million in major capital upgrades are taking place. Projects 2, 4, 6, 7, 8, 9, and 11 have been completed and work continues on Projects 1, 3, 5 and 10. Project 6 was reopened in Q4 2023 by the addition of sodium hypochlorite storage tank upgrades to the existing Project 6 scope. This work includes replacement of Tank 216 along with some sodium hypochlorite pump, piping, and secondary containment upgrades. Project 12 is expected to go out for Request for Proposal in the near future.

The NFWB has met all scheduled requirements of the Consent Order as identified in Schedule A of the Consent Order. Specific submissions during the past quarter include:

- The twenty fifth (25th) quarterly report for the first quarter of 2024 (Q1 2024) was submitted April 30, 2024 to the New York State Department of Environmental Conservation (NYSDEC) and posted on the NFWB's website (Consent Order Item 15).

In May 2024 the NFWB and NYSDEC entered into Order on Consent R9-20230411-13, which also pertains to the WWTP. This major development must be noted here though it does not require quarterly reports or an Onsite Environmental Monitor (OEM) in connection with its requirements. The schedule in the new Order on Consent can be regarded as providing a roadmap for future improvements to the WWTP facility. The new Order on Consent is posted to the NFWB website, like these quarterly reports, and should be consulted for further details.

The NFWB is committed to working cooperatively and openly with the NYSDEC to improve the Niagara Falls WWTP and operate it to the best of its capability.

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1. WWTP Performance

This section discusses the operation of the NFWB WWTP during the reporting period of April 1, 2024 through June 30, 2024. In the following sections, Treatment Plant Operations, Solids Removal Performance, and Treatment Plant Equipment Readiness are discussed.

1.1 Treatment Plant Operations

Mr. Dennis Kirkland serves as Chief Operator of the wastewater treatment plant as of January 4, 2022. During Q2 2024, Mr. David Conti (New York State Grade 4 Licensed Operator #14329) has assumed the role as the licensed Grade 4 plant operator. Mr. Conti's principal work location is at the WWTP where he is responsible for plant operations and maintenance. Mr. Conti will serve as the licensed plant operator. Mr. Conti obtained his license while working in North Tonawanda's WWTP, so he is familiar with granular activated carbon secondary treatment. This change was previously reviewed and approved by Mr. Robert Locey (NYSDEC Region 9) on October 27, 2023 via email.

During Q1 2024 solids processing has kept up with the incoming solids, and equipment maintenance and repair activities have been conducted as promptly as possible.

Sodium hypochlorite consumption has increased during Q2 2024 (7,400 gallons per day average) and is believed to be the result of seasonal warming of the influent wastewater. The practice of chlorinating the primary effluent was stopped on January 26, 2023 due to issues with the filters and reduced sulfide generation. Chlorination of the filter backwash water continues to be practiced and is included in the above totals.

The following operational considerations were noted during Q2 2024:

- Cascades has continued to discharge relatively low amounts of both total suspended solids (TSS) and soluble organic carbon (SOC) during Q2 2024. Q2 2024 average total suspended solids (TSS) and soluble organic carbon (SOC) discharges from Cascades were 1,167 lbs./day and 709 lbs./day; respectively. Sludge processing improvements at the Cascades facility have resulted in significant decreases in their TSS discharges. Reductions in solids and organic carbon discharges from Cascades are believed to be responsible for the reduced consumption of sodium hypochlorite in 2023 (continuing into 2024) relative to 2021 and 2022; and also, for the greatly reduced sludge quantities produced at the NFWB WWTP.
- Carbon filter backwash numbers have remained low (approx. 35 to 45 per day) and backwash water has been directed to the head of the plant where it is retreated through the sedimentation basins and activated carbon. However, filter backwash water was directed to Sedimentation Basin 5 as of June 10, 2024 and continued through the end of Q2 2024. The influent channel gate between Sedimentation Basins 4 and 5 has not been put in place, so Sedimentation Basin 5 receives a mix of influent, carbon filter backwash, and belt filter press filtrate. Carbon filter backwash has been directed to Sedimentation Basin 5 in order to isolate

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the Rapid Mix Tanks so they could be taken offline to allow inspection and cleaning of the Rapid Mix Tanks and to facilitate pipe repairs to the outlet pipe and valve from the West Rapid Mix Tank. As part of this work, it was determined that both Rapid Mix Tank impellers were damaged and require servicing. The impellers have been removed from the two tanks and sent to Lightnin in Rochester, New York for assessment and repair. The work thus far in the Rapid Mix Tanks has been performed by in-house maintenance staff. As of the end of Q2 2024 the Rapid Mix Tanks are not in service, and carbon filter backwash is being directed to Sedimentation Basin 5.

- Construction on Sedimentation Basin 2 (Project 1) continues and as of the end of Q1 2024 the facility is using Sedimentation Basins Nos. 1, 3, 4 and 5.
- In late November 2023, the NFWB potable water treatment plant (WTP) began discharging its solids generated in sedimentation basins and filter backwash to the sewer which transports the material to the WWTP for treatment. The solids result from the use of an alum coagulant at the WTP. Thus far with seven months of operational experience the WTP solids have not caused any issues at the WWTP.
- Intermediate Pump #1 has been put back in service at the end of June 2024. The pump had its rotating assembly replaced with an available spare, magnetic drive and motor rebuilt, along with replacing the influent isolation valve.
- During June 2024, Main Pump #3 suffered an electrical failure of its motor control center breaker and variable frequency drive. In-house staff replaced both these components with available spares and Main Pump 3 was back in service by the end of Q2 2024.

1.2 Solids Removal Performance

A solids balance for April, May, and June 2024 is presented in Table 1. The data is based upon effluent flow meter measurements and influent/effluent total suspended solids sample results generated by the facility. The data shows that the quantity of solids sent to the landfill has exceeded the amount of solids removed from the wastewater plus chemical solids added (ferric chloride and lime).

Influent suspended solids have continued to be lower than historical averages. The trend of lower influent solids began in November 2021 and appears to correlate with major reductions in suspended solids discharged from Cascades. During the past quarter influent suspended solids loadings averaged 193 dry tons per month (DTPM) which is consistent with the 2023 annual average of 195 DTPM.

1.3 Treatment Plant Equipment Readiness

During the reporting period there were several treatment plant equipment breakdowns that required maintenance staff to repair or replace equipment. Minor repairs have been made this past quarter for pumps, belt filter presses, and sedimentation basin equipment to address issues that have arisen. Although these repairs may have kept equipment out of service for periods of time during the past quarter, it has not significantly affected the plant performance. In general, a sufficient number of

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sedimentation basins with fully functional sludge removal equipment have been available to treat all incoming flows. As of the close of Q2 2024, the following can be said regarding treatment equipment operability:

- Four (4) Main Pumps are operational.
- Four (4) Intermediate Pumps are operational and control/drive issues are being monitored. As discussed above Intermediate Pump #1 has been returned to service.
- Four of the five sedimentation basins are functional, with Sedimentation Basin No. 2 out of service for construction. During the past quarter, two (2) sedimentation basins have been used for flows up to 40 mgd, three (3) basins used for flows between 40 mgd and 60 mgd, and four (4) basins for flows over 60 mgd.
- Twenty-seven (27) activated carbon filters are functional, with Filter 27 requiring replacement activated carbon which should occur in Q3 2024.
- The filter backwash system is functional including two backwash pumps and two blowers.
- Three (3) belt filter presses and related equipment (sludge and polymer feed pumps) are operational.
- Two (2) pugmills, two (2) lime feed systems, and two (2) lime storage silos are fully functional.

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Table 1

Month & Year	Average Daily Flow	Average Influent TSS	Average Effluent TSS	TSS Removed (Dry)	Ferric Chloride Added to Wastewater (Dry)	Lime Added to Sludge (Dry)	Total Solids (Dry) (TSS + Lime + Ferric)	Solids Content of Landfilled Sludge	Total Solids (Wet)	Solids Landfilled (DRY)	% Landfilled
	mgd	mg/l	mg/l	Tons/day	Tons/day	Tons/day	Tons/day	%	Tons/day	Tons/day	%
Apr-24	29.4	50.7	5.9	5.5	1.55	1.58	8.6	30.1%	28.7	10.4	121%
May-24	20.7	72.2	11.4	5.3	1.20	1.13	7.6	21.5%	35.2	7.9	104%
Jun-24	24.9	64.3	10.3	5.6	1.36	1.35	8.3	24.7%	33.7	9.73	117%

NOTES: mgd million gallons per day
 TSS Total Suspended Solids

¹ % Greater than or equal to 100 indicates all incoming solids plus all chemicals added are removed and sent to landfill.

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2. Deliverables and Routine Communications

This section presents a listing and discussion of deliverables prepared by the NFWB for submission to the NYSDEC. In addition, other related written communications between the NYSDEC and the NFWB are also discussed.

2.1 Deliverables Status

All deliverables required under the consent order have been submitted to the NYSDEC in accordance with the schedule in the Consent Order. Deliverables submitted during the past quarter are listed in Table 2.

Table 2
NFWB Submissions to NYSDEC per Schedule A of the Consent Order

Date	Prepared By	Consent Order Schedule A Items	Comment
April 30, 2024	AECOM	Item 15	The twenty fifth quarterly progress report for the first quarter of 2024 (Q1 2024) was submitted.

2.1.1 Existing WWTP Optimization Efforts

The plant is using Sedimentation Basin No. 5 as a “normal” treatment basin for processing of influent wastewater. Filter backwash water is temporarily being directed to the east end of the influent channel where it primarily goes to Sedimentation Basin 5. Once the Rapid Mix Tanks mixer impellers are repaired or replaced, filter backwash water will again be directed to the Rapid Mix Tanks (head-of-plant). In light of the five years of successful operation of the WWTP in this mode, the NFWB will not be pursuing separate treatment of backwash water in Sedimentation Basin 5 using alternative chemistry due to the high capital cost of implementing new chemical storage and feed systems for this purpose (coagulant plus flocculant storage and feed systems).

2.2 Deliverables in Next Quarter

All deliverables required under the Consent Order have been submitted. No other deliverables are pending or due under the consent order other than this quarterly report.

2.3 Routine Communications in Past Quarter

There were no significant communications with the NYSDEC in the past quarter.

2.4 Unresolved Issues/Delays

There are no unresolved issues or delays.

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3. Capital Improvement Program

In this section, progress on WWTP capital upgrades is discussed. Capital upgrades are proceeding on several fronts. Projects that are within the capability of in-house maintenance staff are being undertaken as quickly as possible. Additionally, outside contractors selected for WWTP work (Mechanical Contractor – Danforth, Electrical Contractor – Ferguson Electric) are being utilized for larger projects. Lastly, design and construction are underway to perform a number of capital upgrades that are necessary to stabilize the operation of the existing treatment plant. Each of these items is discussed in this section.

3.1 In-House Capital Upgrades Completed/Underway

This category of projects includes work being undertaken by plant maintenance staff or outside contractors without the need for extensive design and engineering documents. This work is generally considered repair and/or replace in kind and therefore NYSDEC approval is not generally required prior to performing the work. At this time all work slated to be performed in-house has been performed.

3.2 Capital Improvement Projects

A schedule for the ongoing capital projects is shown in Figure 1. Note that the NFWB has sought and obtained approval from the NYSDEC to upgrade certain chemical bulk storage facilities under the existing Project 6 engineering services agreement, therefore Project 6 (effluent disinfection upgrades) was reopened in Q4 2024 to facilitate engineering and eventual construction of sodium hypochlorite improvements to Tank 216 and its secondary containment system.

Figure 1

