

Q3 2020 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:

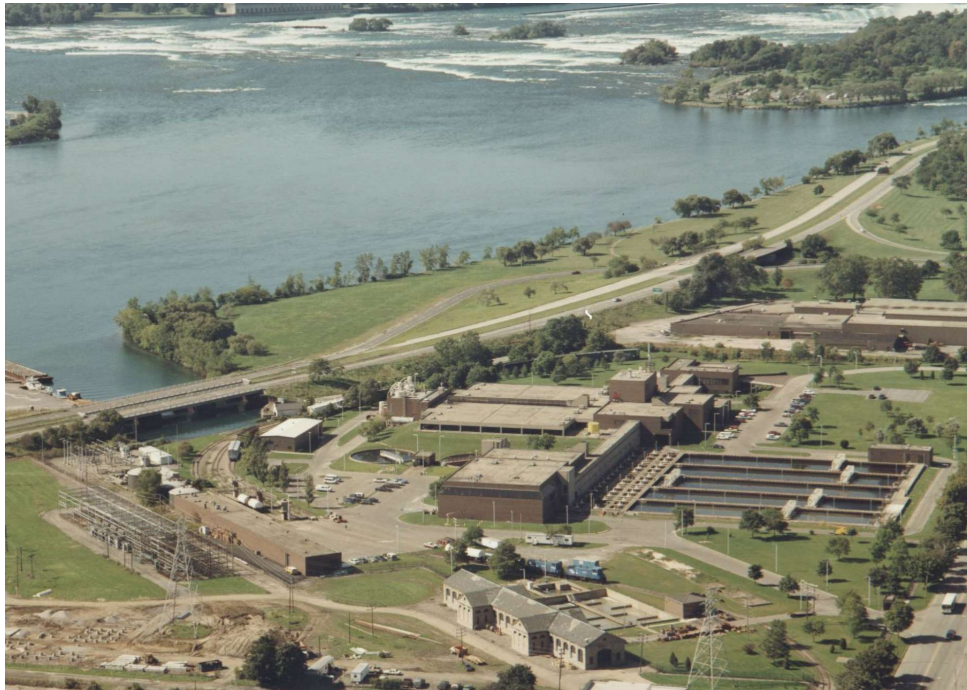
AECOM
257 West Genesee Street, Suite 400
Buffalo, New York 14202

October 31, 2020



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Executive Summary

This document is the eleventh (11th) required quarterly progress report for the Niagara Falls Water Board (NFWB) Order on Consent R9-20170906-129 (Consent Order) as required by Schedule A Item 15 of the Consent Order. This progress report covers the period from July 1, 2020 through September 30, 2020. The next quarterly progress report covering the period October 1, 2020 through December 31, 2020 is due January 31, 2020.

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 (minimal suspended solids) which has allowed the WWTP's activated carbon filters to efficiently process the plant's influent flow. This quarter the plant operated in summer mode with wastewater temperatures ranging from 70°F to 76°F. With the increased temperature, sulfide levels exiting the carbon filters have been in the 5 to 15 mg/l range. Dewatering throughput during this period has kept up with incoming solids, compared to influent solids loadings. The WWTP was operated free of significant 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. Engineering contracts are in place for eight (8) of the nine (9) capital projects (Projects 1, 2, 3, 4, 5, 6, 7 and 9) and one (1) of the capital projects has been completed by plant maintenance staff with assistance from an outside contractor under the mechanical services contract (Project 8). Construction of capital Projects No. 4 (GAC Changeout) was completed this past quarter and Project 6 (Effluent Disinfection) is approximately 95% complete and will be complete by the end of 2020. Construction is underway on Projects 2, 5, and 7; and will be underway soon on Projects 1 and 3.

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 tenth (10th) quarterly report for the second quarter of 2020 (Q2 2020) was submitted July 30, 2020 to the New York State Department of Environmental Conservation (NYSDEC) and posted on the NFWB's website (Consent Order Item 15).

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 July 1, 2020 through September 30, 2020. In the following sections, Treatment Plant Operations, Solids Removal Performance, and Treatment Plant Equipment Readiness are discussed.

1.1 Treatment Plant Operations

Mr. Robert Dunn serves as the Chief Operator of the wastewater treatment plant. Until such time as Mr. Dunn achieves the necessary operator's license, Mr. Fred Kasper (New York State Grade 4 licensed Operator 12489) is serving as the licensed plant operator. Mr. Kasper spends at least 4 hours per day on average at the facility on a Monday through Friday basis and assists Mr. Dunn with his duties. During the reporting period there were no reported SPDES permit excursions. This marks a consecutive 33-month period with no SPDES permit excursions. Solids processing has kept up with the incoming solids, and equipment maintenance and repair activities have been conducted as promptly as possible.

The sodium hypochlorite demand of the plant effluent has remained high throughout much of the past quarter, although effluent turbidity has not been that high, indicating that something other than sulfide is causing the elevated chlorine demand. This situation is being monitored as it adds significant operating cost for sodium hypochlorite. Adding to the sodium hypochlorite use for effluent disinfection is the continuing practice of chlorinating the plant's primary effluent (carbon filter influent) and dosing all filter backwashes with sodium hypochlorite. The practices of chlorinating the primary effluent and backwashing with sodium hypochlorite has continued to result in longer filter run times, and a reduced number of backwashes compared to historical levels. As a result of the changes that were made to filter operation, all backwash water is being directed to the head of the plant, where it can be retreated through the sedimentation basins and carbon filters. As a result, Sedimentation Basin No. 5 is no longer being used for backwash flow management and has sat idle during the past quarter. The plant has operated continuously in this mode without any incidence of 100' weir flow since the practice was initiated on February 3, 2020. Thus far this mode of operation has been shown to be technically viable and is believed to be the only time this plant has been able to be operated in this mode since it was placed into operation. Unless something changes, all backwash water will continue to be directed to the head of plant.

1.2 Solids Removal Performance

A solids balance for July, August, and September 2020 is presented in Table 1. The data is based upon effluent flow meter measurements and sample results generated by the facility. The data shows that the quantity of solids sent to the landfill has generally met or exceeded the amount of solids removed from the wastewater plus chemical solids added (ferric chloride and lime). Results near or greater than 100% generally indicate the plant is operating as intended.

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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 sedimentation basins with fully functional sludge removal equipment have been available to treat all incoming flows. As of the close of Q3 2020, the following can be said regarding treatment equipment operability:

- Four (4) Main Pumps are operational.
- Four (4) Intermediate Pumps are operational.
- All sedimentation basins are functional. 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. Sedimentation Basin 5 is empty and clean and could be placed in service if it is determined that backwash to head of the plant is not working as intended.
- Twenty-eight (28) activated carbon filters are functional, and with Project 4 completed as of the end of Q3 2020, a total of 15 filters have had their carbon replaced in 2020.
- The filter backwash system is functional including two backwash pumps and two air scour blowers.
- Two (2) pugmills, two (2) lime feed systems, and two (2) lime storage silos are fully functional.

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Table 1
NFWB WWTP Solids Balance
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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	%
Jul-20	20.6	114	9.8	8.9	1.3	2.85	13.1	27.0%	48.4	12.6	96%
Aug-20	19.5	151	7.4	11.6	1.4	3.27	16.3	27.2%	59.9	14.2	87%
Sep-20	18.9	98.2	8.4	7.1	1.3	2.56	10.9	30.3%	36.1	14.43	132%

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
July 30, 2020	AECOM	Item 15	The tenth quarterly progress report for the second quarter of 2020 (Q2 2020) was submitted.

2.1.1 Existing WWTP Optimization Efforts

A work plan to evaluate chlorine dioxide as an alternative oxidizer/disinfectant for use in the facility's carbon filters was submitted to the NYSDEC on April 30, 2020. AECOM has been approved by the NFWB to proceed with the project. Approval of the work plan by the NYSDEC was received in Q3 2020, however the NYSDEC has agreed that the timing of the approval was such that the 2020 warm weather season was missed, therefore the NYSDEC agrees that the work plan will be executed during warm weather in 2021.

2.2 Deliverables in Next Quarter

All deliverables required under the Consent Order have been submitted. No deliverables are pending or due in Q4 2020 other than the routine quarterly report.

2.3 Routine Communications in Past Quarter

There have not been any significant correspondence or written communications between the NFWB and the NYSDEC during the reporting period.

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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 – Mollenberg Betz, Electrical Contractor – Ferguson Electric) are being utilized for larger projects. Lastly, design is 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. Capital Project 4 (GAC Changeout) was completed in Q3 2020 and Capital Project 6 (effluent Disinfection) is approximately 95% complete, with only implementation of controls (i.e. automation) to be completed.

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