NLTUA Operations Report – September 2023

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FROM: Mark Huggard, Jacobs

DATE: October 18th, 2023

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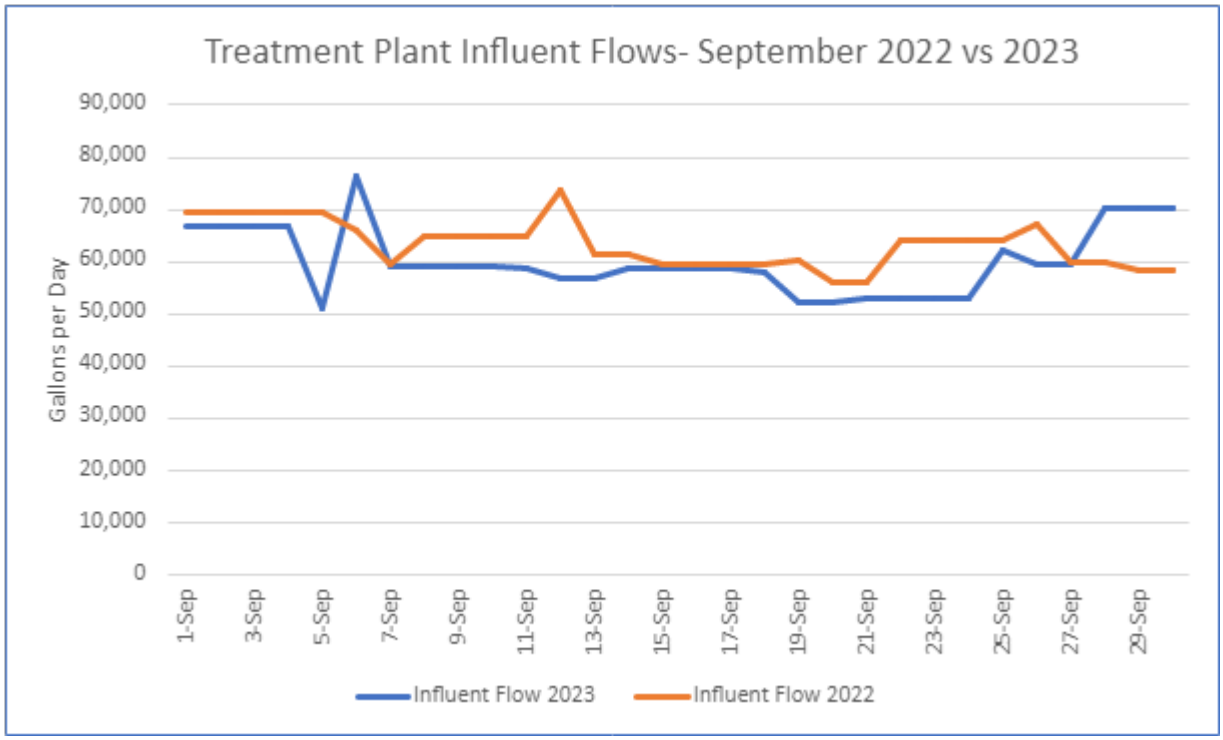
This report describes our activities during the month of September 2023. If you require additional information that would make these monthly reports more useful to you, please let us know. Permit compliance report data is submitted to the Department of Environment Great Lakes and Energy (EGLE) electronically.

Treatment Plant

	September	Last Month	Last Year
Influent flow daily average, GPD	60,164	68,589	63,236
Monthly electrical usage, Kw Hrs*	24,027	25,755	30,001

* Note: Wind turbine is permanently out of service.



The above graph compares the plant influent flows of last year to that of 2023.

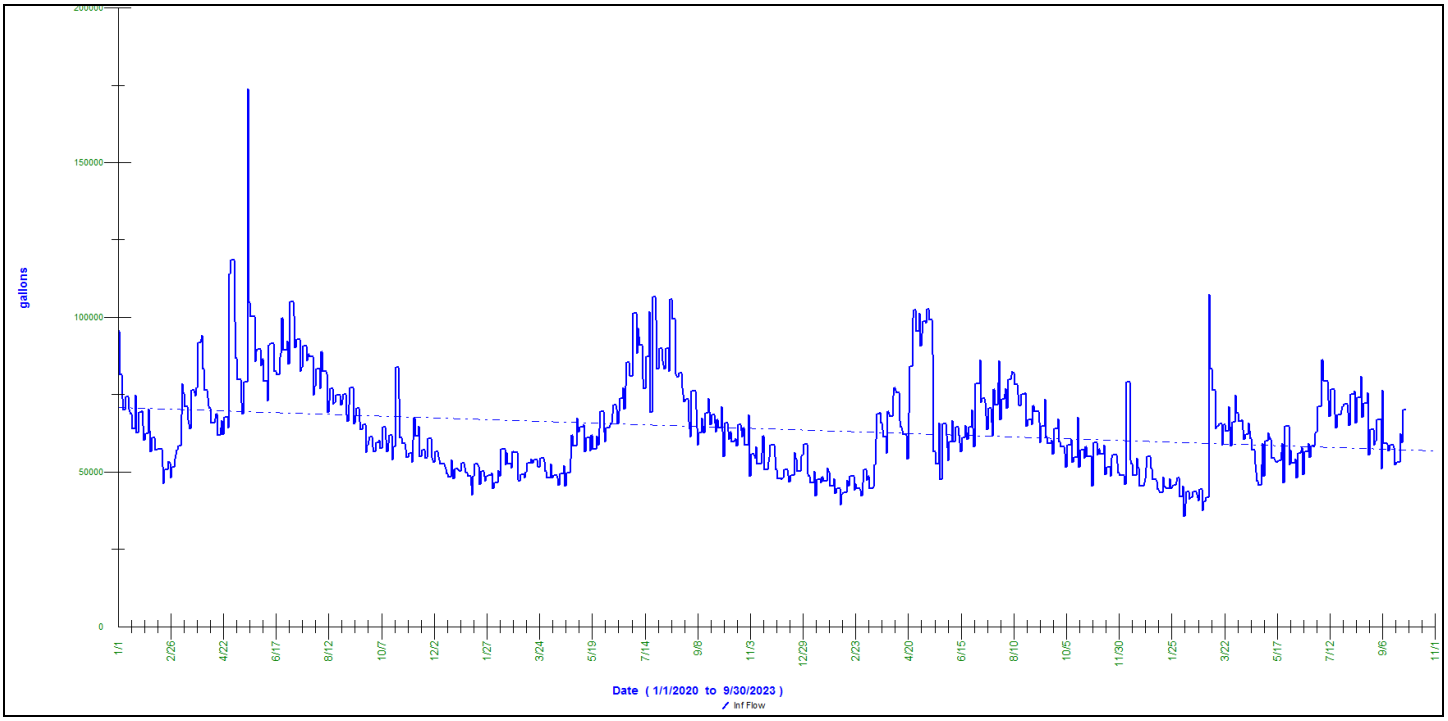
- On September 16th, we encountered a high reject chamber level alarm at the treatment plant. The reject chamber, a pump well consisting of two pumps, receives, and transfers the solids "reject" water from the sand filters to the solids holding basin for settling and storage. Typically, a high reject level is triggered by one of two factors. First, it can be caused by an issue with one or both of the reject pumps or their controls, but this wasn't the problem in this specific instance. Second, it can result from an excessive discharge of reject flow from the sand filters, which was indeed the issue on this occasion.

  The root cause of the problem was a broken air lift air supply line that eliminated the air source needed to lift the sand to the sand washer unit. This caused compaction of the sand bed that was impeding the flow through the sand, causing the flow to bypass the regular route and short-circuit through the airlift, ultimately leading to the high reject chamber level. To resolve this issue, we had to use air blasting to break up the compacted solids within the sand bed. It's worth noting that this process can require multiple attempts before achieving success, as was the case here.

  To prevent future occurrences, we have implemented a proactive measure by adding a high-level float switch upstream of the sand filter. This switch will promptly notify us of any issues, allowing us to address them earlier and mitigate the severity of compaction-related problems.

- We completed the replacement of the influent vertical fine screen brushes, which has been the need on an annual basis, for some time. However, during this latest replacement, we found that the brushes had not worn out as quickly as expected, indicating that they didn't need replacement after just one year going forward. As a result, we replaced the brushes and have made a change to our preventive maintenance schedule, extending it to every two years.

  The reason behind this change is likely linked to the decrease in flow rates over the past few years, as shown in the accompanying graph. This reduction in flow rates results in less run time on the fine screen therefore extending the longevity of the brushes.



Lift Stations / Collection System

Annual lift station inspections were completed this month.

Residential Grinder pumps

To enhance our efforts in minimizing recurring service requests for residential grinders, we conduct the following checks prior to concluding our work on-site. The grinder pump responses are summarized in Table 1 below. Additionally, Jacobs holds a stock of repair parts for residential grinder pumps, encompassing control components, float control switches, and pumps themselves. In the event of a malfunctioning pump, it is transported to a nearby repair facility, where a determination is made regarding the feasibility of repair versus replacement. Opting for a repair proves to be more cost-effective compared to acquiring a new pump. Further specifics can be furnished upon inquiry.

- ✓ Tighten all control connections within control cabinet.
- ✓ Remove grease and debris from grinder tank.
- ✓ Remove all grease buildup from float switches.
- ✓ Verify all float switches operate properly and are positioned properly.
- ✓ Confirm proper pump operation.
- ✓ Verify alarm light is operational and audible alarm, if applicable.
- ✓ Inspect wet well components.
- ✓ Replace both the start and run capacitor.
- ✓ Inform homeowner of findings and what not to put in their sewer.

Table 1: Grinder Pump Responses

Date	Location	Alarm/Issue	Resolution
9-4-23	601 South Shore Dr.	• High level	• Replaced start and run capacitor. • Repaired a bad terminal connection.
9-7-23	11231 North Shore Dr.	• No alarm light	• Replaced alarm light bulb with LED bulb
9-27-23	785 Wagon Wheel	• High level • Pump overload	• Replaced start and run capacitors. • Repaired wiring connections. • Replaced alarm flasher module. • Adjusted and secured level control float switches.

On the Horizon

Task	Update	Estimated time of completion
Aeration blower #2 repair or replacement	Scheduled for completion on Tuesday October 14th 2023.	October 2023
Monitoring well 7S repair/replacement	NLTUA's engineer is working on this project.	Unknown
Settling basin engineering evaluation	NLTUA to consult their engineer	2023
Ferric chloride room day tank relocation	NLTUA to consult their engineer	2023
Quarterly Monitoring Well Sampling	Next sampling event scheduled	November 2023
Annual settling basin cleaning	Scheduled	November 2023
Main lift station controller replacement	Complete and commissioned April 2023.	Complete
7th St. station controller replacement	Complete and commissioned July 2023.	Complete
Replace failed VFD on mixer 7	Completed July 2023	Complete

Financial Report

Current Reporting Month	Sep-23	Comments
Repairs Spending Treatment Plant Current Month	$ -	
Repairs Spending Treatment Plant Year to Date	$ 1,289.07	
Repairs Spending Residential Grinder Pumps Current Month	$ 210.95	Miscellaneous grinder pump repair parts
Repairs Spending Residential Grinder Pumps Year to Date	$ 26,370.11	
Repair Spending Collection System (lift stations/sewer) Current Month	$ -	
Repair Spending Collection System (lift stations/sewer) Year to Date	$ 1,273.36	
Repairs Hours Treatment Plant Current Month	-	
Repairs Hours Treatment Plant Year to Date	-	
Repairs Hours Treatment Plant Current Month	90.50	
Repairs Hours Treatment Plant Year to Date	229.50	
Repairs Hours Residential Grinder Pumps Current Month	19.25	
Repairs Hours Residential Grinder Pumps Year to Date	159.25	
Repair Hours Collection System (lift stations/sewer) Current Month	-	
Repair Hours Collection System (lift stations/sewer) Year to Date	71.00	
Total Repair Hours Current Month	19.25	
Total Repair Spending Current Month	$ 210.95	
Total Repair Hours Year to Date	459.75	
Repairs Hours Budget Remaining (Limit 300 Hrs)	(159.75)	Amount over limit
Total Repair Spending Year to Date	$ 28,932.54	
Repair Spending Budget Remaining (Limit $8,000)	$ (20,932.54)	Amount over limit
Total Repair Hours 2022	679.50	
Total Repair Spending 2022	$ 45,783.13	

If you have any questions or concerns, please feel free to contact us.

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