

Operation, Laboratory and Compliance and Innovation Report

December 20, 2023

Plant Loading, CSO Report, and Director’s Notes

Plant Influent Report:

| | |
|---|----------------------|
| Biochemical Oxygen Demand, 5-Day (Avg. 29494 lbs/day) | 46 percent of design |
| Total Suspended Solids (Avg. 45461 lbs/day) | 42 percent of design |
| Average Daily Flow (26.59 million gallons/day) | 65 percent of design |
| Maximum Daily Flow (37.37 million gallons/day) | 30 percent of design |
| Plant Influent Total Monthly Flow (million gallons) for October | 811.48 |
| Estimated Unbilled Total Monthly Flow (million gallons) | 173.28 |
| Total Monthly Precipitation (inches) | 3.70 |

Plant Effluent Report:

| <u>Parameter</u> | <u>Report Frequency</u> | <u>Permit Limits</u> | <u>Reported Values</u> | <u>Violations</u> |
|--------------------------------|---------------------------|----------------------|------------------------|-------------------|
| CBOD ₅ , mg/L | Mo./Wk. Avg | 20/40 | 2/2 | 0 |
| TSS, mg/L | Mo./Wk. Avg | 25/45 | 7/12 | 0 |
| NH ₃ -N, mg/L | Mo. Avg/Daily Max | 1.5/3.0 | 0.12/0.12 | 0 |
| DO, mg/L | Mo. Avg/Wk. Avg/Daily Min | 6.0/4.5/4.0 | 7.83/7.55/7.51 | 0 |
| pH, S.U. | Daily Min/Max | 6.0/9.0 | 7.77/8.47 | 0 |
| Total Nickel, mg/L | Mo. Avg | 0.0381 | 0.015 | 0 |
| Cl ₂ Residual, mg/L | Daily Max | 0.05 | <0.011 | 0 |
| Fecal Coliform CFU/100mL | Daily Max | 400 | NA | NA |

CSO Report:

| <u>Location</u> | <u>Events</u> | <u>Est. Total Duration of Discharges (hrs.)</u> | <u>Discharge (million gallons)</u> |
|----------------------------------|---------------|---|------------------------------------|
| Oakland Avenue (Outfall 003) | 1 | 1.1 | 0.21 |
| Lincoln Park (Outfall 004) | 0 | 0 | 0 |
| McKinley Avenue (Outfall 007) | 1 | 0.9 | 0.8 |
| Seventh Ward (Outfall 008) | 1 | 0.5 | 0.19 |

Director’s Notes:

Land Application Program:

Land Application has gone well this year with minimal downtime due to weather or breakdowns. District staff have transferred five to six million gallons from the west lagoon and operated the crawler for close to 270 hours.

Compliance Reporting:

In accordance with the requirements of our NPDES permit, the SDD will be submitting the annual Total P Progress Report to IEPA in mid-December.

Chemical Usage During the 2023 Disinfection Season:

| Chemicals 2023 | INF TOT | EFF TOT | 264 TOT | NH3 TOT | CL2 TOT | BIS TOT | AVG | |
|-------------------|---------|---------|------------|------------|---------|---------|------------|--------------|
| | MGD | MGD | MGD | GPD | GPD | GPD | COST/day | Cost/Month |
| May | 28.87 | 28.47 | 31.38 | 188.10 | 899.11 | 474.37 | \$3,020.11 | \$93,623.50 |
| June | 24.39 | 24.44 | 28.15 | 193.32 | 925.36 | 434.26 | \$2,967.15 | \$89,014.64 |
| July | 27.45 | 27.39 | 28.52 | 212.46 | 1018.17 | 502.16 | \$3,327.79 | \$103,161.36 |
| Aug | 28.30 | 27.97 | 28.64 | 185.27 | 972.73 | 497.91 | \$3,196.73 | \$99,098.62 |
| Sep | 22.40 | 22.00 | 23.14 | 161.13 | 963.45 | 357.76 | \$2,775.41 | \$83,262.23 |
| Oct | 26.18 | 25.59 | 26.31 | 161.31 | 1027.75 | 373.70 | \$2,922.09 | \$90,584.77 |
| Avg | 26.26 | 25.98 | 27.69 | 183.60 | 967.76 | 440.03 | | \$558,745.12 |
| | | | | | | | | \$93,124.19 |
| | | | | | | | | Avg Sum |

For reference the daily averages for 2022 were NH3=189.64, Sodium Hypochlorite= 917.1, Sodium Bisulfite =584.0. The higher Sodium Hypochlorite and lower Sodium Bisulfite numbers indicate that the Hypochlorite was being consumed at a higher rate in 2023 than 2022.

Operations, Laboratory, and Pretreatment Activity Reports – November/December 2023

Operations Activities:

Normal operational activities were conducted as prescribed by standard procedures or in response to conditions within the plant. These include operating, monitoring, and adjusting facility equipment, performing process control testing, records keeping, and coordination with the other departments to realize optimal performance of the Plant.

- 1) Digester #2- Operators have removed all the sludge that they can. Maintenance will finish pumping sludge but have experienced high methane levels in the attic space creating a safety concern. We will pump the remaining sludge out as soon as possible.
- 2) Digester #3- Digester has been put back online after making manufacturer’s recommended adjustments. The oil leak reappeared and we are waiting for delivery of the new oil expansion tank.
- 3) Digester # 4 is offline due to a leak in the sludge tubes. After further investigation we have found that the sludge tubes are showing some wear and may need to be replaced. Jarvis has been on site and waiting for parts to make the needed repairs.

4) Operations staff continue to actively address PMs as time, workload, and staff levels allow.

Laboratory Activities:

Routine:

A total of 1,898 analyses were performed in the laboratory during the month of November 2023.

Monitoring of treatment plant, industrial users, and receiving stream samples for compliance purposes and process monitoring continued. Laboratory personnel continued to perform additional background nutrient monitoring to help fully characterize the nutrient loading on the plant.

Non-Routine:

- 1) The SDD laboratory continued to send samples of raw influent twice a week throughout the month of November 2023 for the "COVID-19 in Wastewater" study funded by the Illinois Department of Public Health. A Zoom call was held on November 3, 2023, with the study participants and the researchers to discuss the results of the study thus far.
- 2) Keith Richard attended the Illinois Association of Wastewater Agencies (IAWA) technical meeting at Starved Rock Lodge on November 3, 2023. The topic of discussion was the implications of pending PFAS regulations on POTWs.
- 3) The quarterly NPDES sampling of the influent, effluent, and sludge to Wyckles was conducted during the second week of November 2023.
- 4) The SDD laboratory analyzed two stormwater samples during November 2023 for the Lake Decatur Watershed monitoring study. The SDD is providing in-kind laboratory analysis of samples collected at the study's three monitoring sites after significant storm events.
- 5) Keith Richard gave tours of the plant to two Millikin University microbiology classes on November 8, 2023.
- 6) Keith Richard hosted the quarterly meeting of the Illinois Water Environment Association (IWEA) Laboratory Committee via Zoom on November 9, 2023. The purpose of the meeting was to plan for the committee's upcoming activities including the annual conference in March. Keith continues to serve as the chair of the committee.
- 7) Keith Richard attended a webinar hosted by IWEA titled "Microbiological Monitoring of PAOs and GAOs in Biological Phosphorus Removal Processes" on November 15, 2023. The webinar was very informative and taught microscopic staining techniques that will be helpful in the future to identify phosphorus accumulating organisms (PAOs) in our treatment system.
- 8) Keith Richard, Jennifer Brand, and Tishia Greve participated in the "Walk the Walk" event hosted by Dove-Homeward Bound on November 17, 2023.

Pretreatment Activities:

Pretreatment - General Activities:

- 1) Pretreatment personnel monitored ten commercial and industrial users (IU) during November 2023. Nine industry site inspections took place during November.
- 2) A permit renewal application was received from **HR Ewell**.
- 3) There was one waste hauler permit issued this month to **Environmental Works**.

Pretreatment Ordinance - Verbal Notices:

The SDD issued a total of 4 Verbal Notices to **Primient, ADM,** and **Caterpillar** in November 2023:

1. 11/6/2023 - **Primient** was issued a verbal notice with a \$1,000 fine for violating their pH limits for an hour and 45 minutes on 11/3/2023.
2. 11/6/2023 - **Primient** was issued a verbal notice with a \$1,000 fine for violating their sulfides limit of 0.34 mg/L
3. 11/20/2023 - **Caterpillar** was issued a verbal notice with no fine due for an excursion from their 4.68 mg/L Phenol limit.
4. 11/21/2023 - **ADM** was issued a verbal notice with a \$1,000 fine for an excursion from their FOG limit from the West Plant

Pretreatment Ordinance - Warning Notices (WN):

No Warning Notices were issued during November 2023.

Pretreatment Ordinance - Notices of Violation (NOV):

No Notices of Violation were issued during November 2023.

Pretreatment Ordinance - Executive Orders:

No Executive Orders were issued during November 2023.

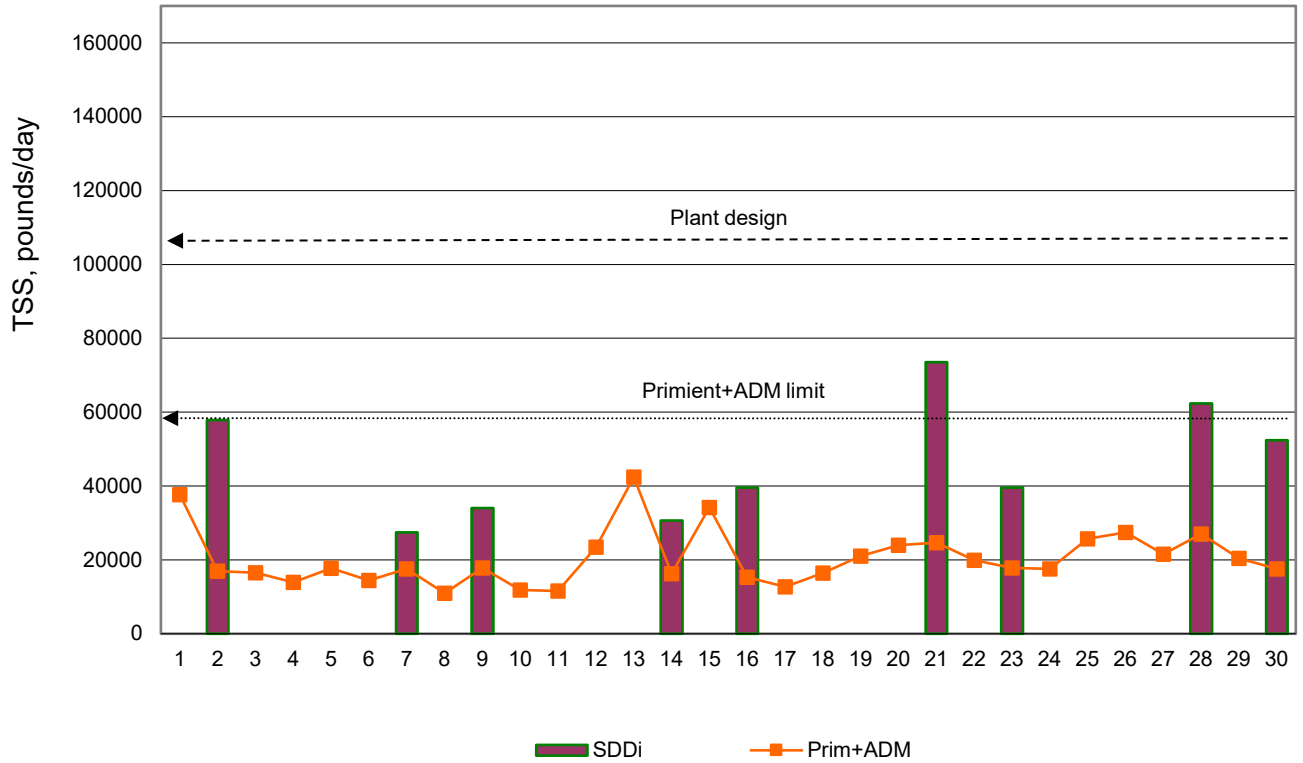
Pretreatment Ordinance - Penalty Assessments:

The following industrial penalties were assessed for November 2023:

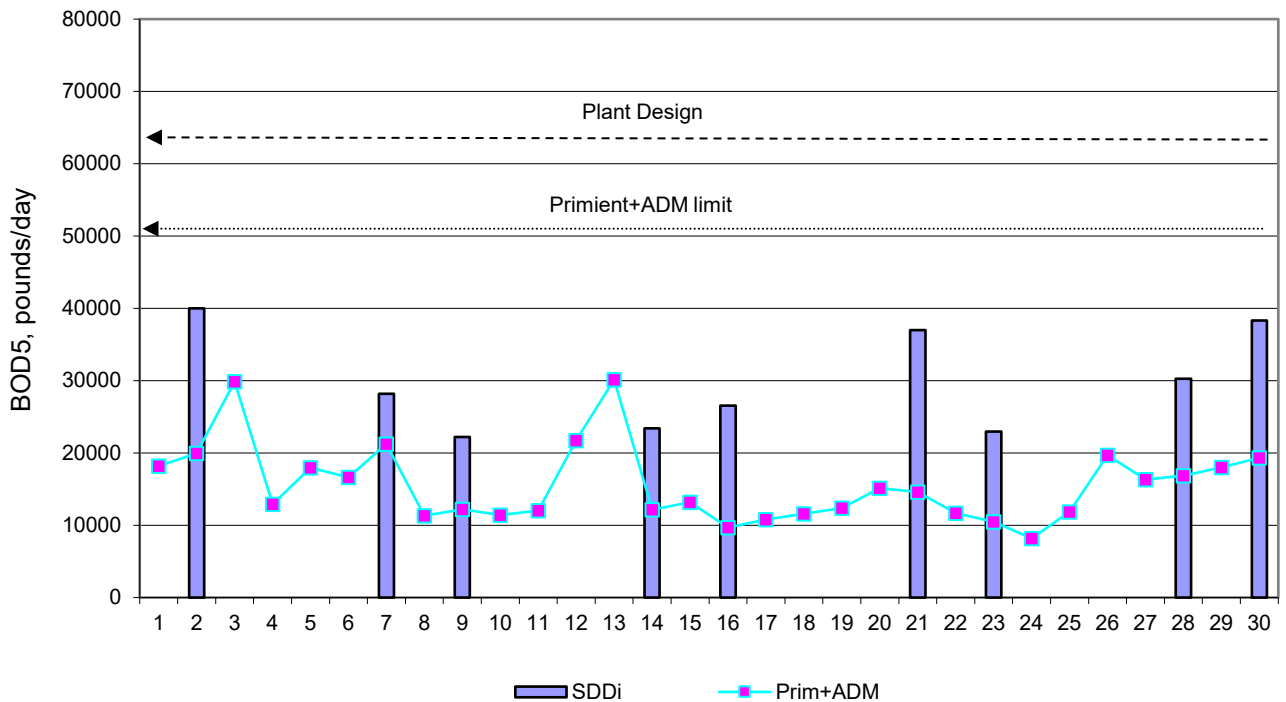
- | | |
|--------------------|----------------|
| 1) Primient | \$2,000 |
| 2) ADM | \$1,000 |

Plant Operating Graphs:

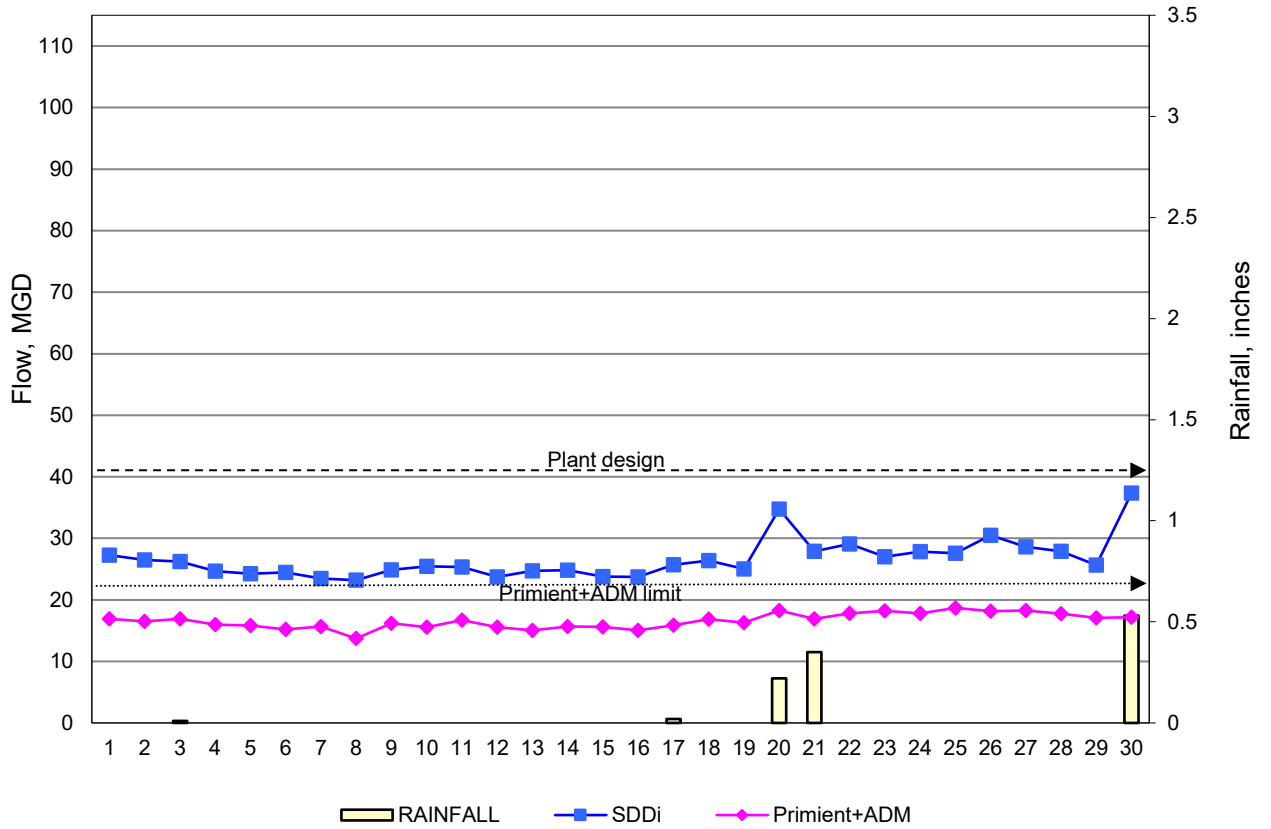
TSS Comparison: SDD Inf Primient+ADM Discharges



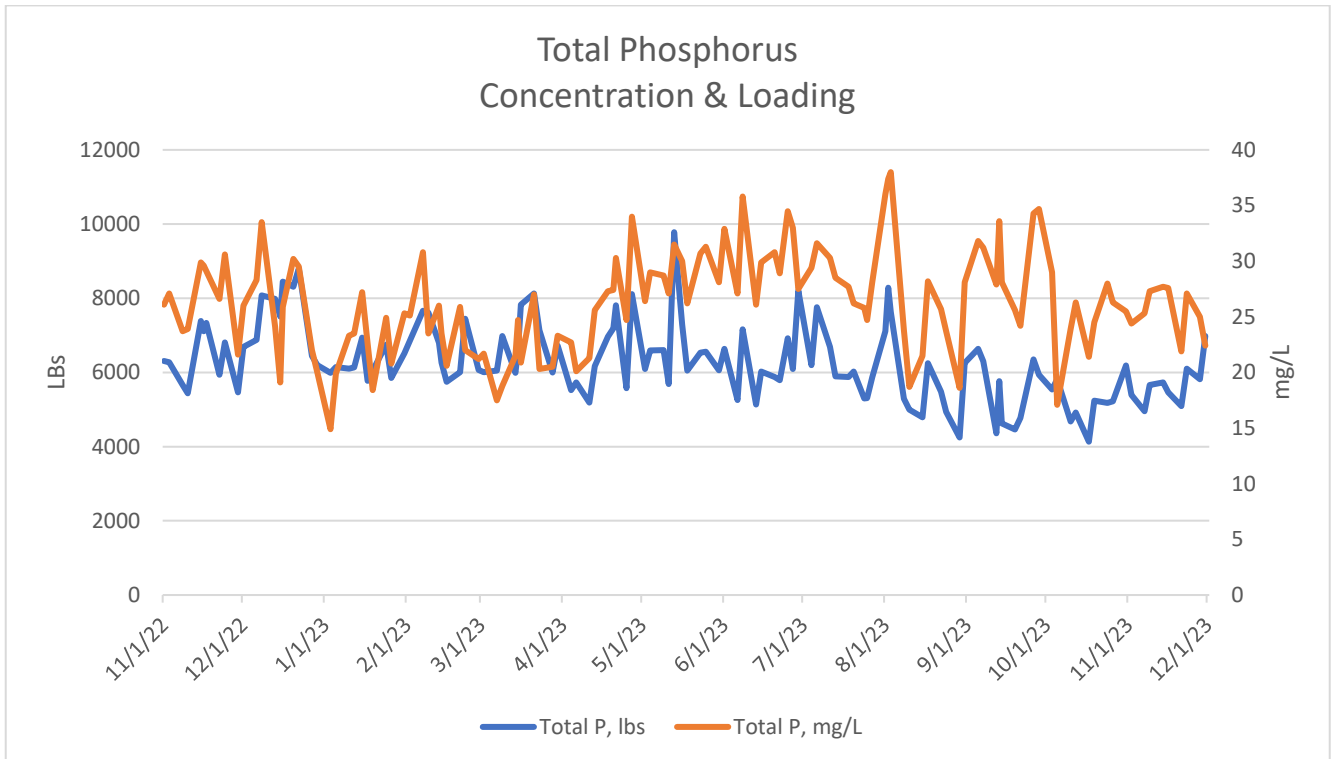
BOD Comparison: BOD Inf vs. Primient + ADM Discharges



Flow Comparison: SDD vs. Primient + ADM Discharges and Rainfall

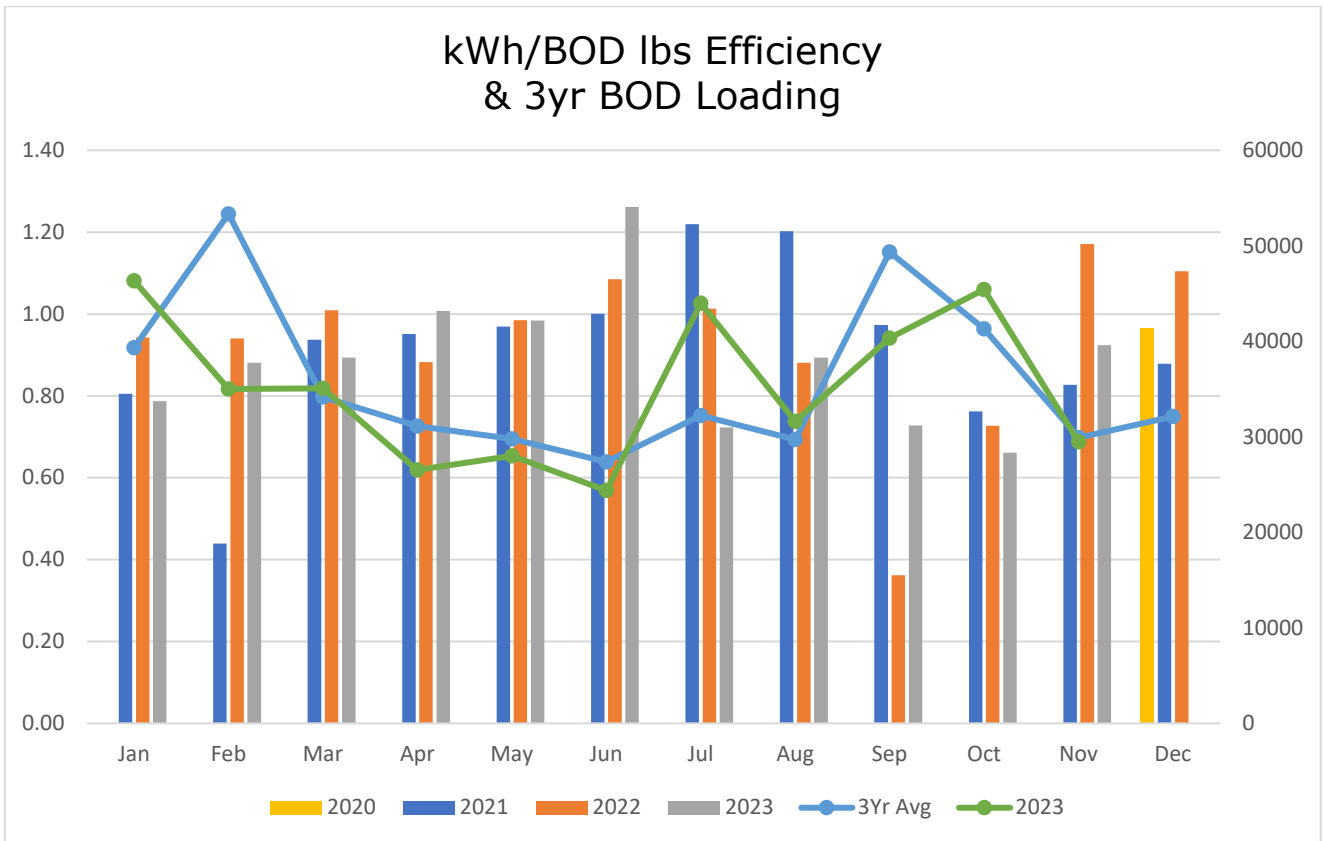
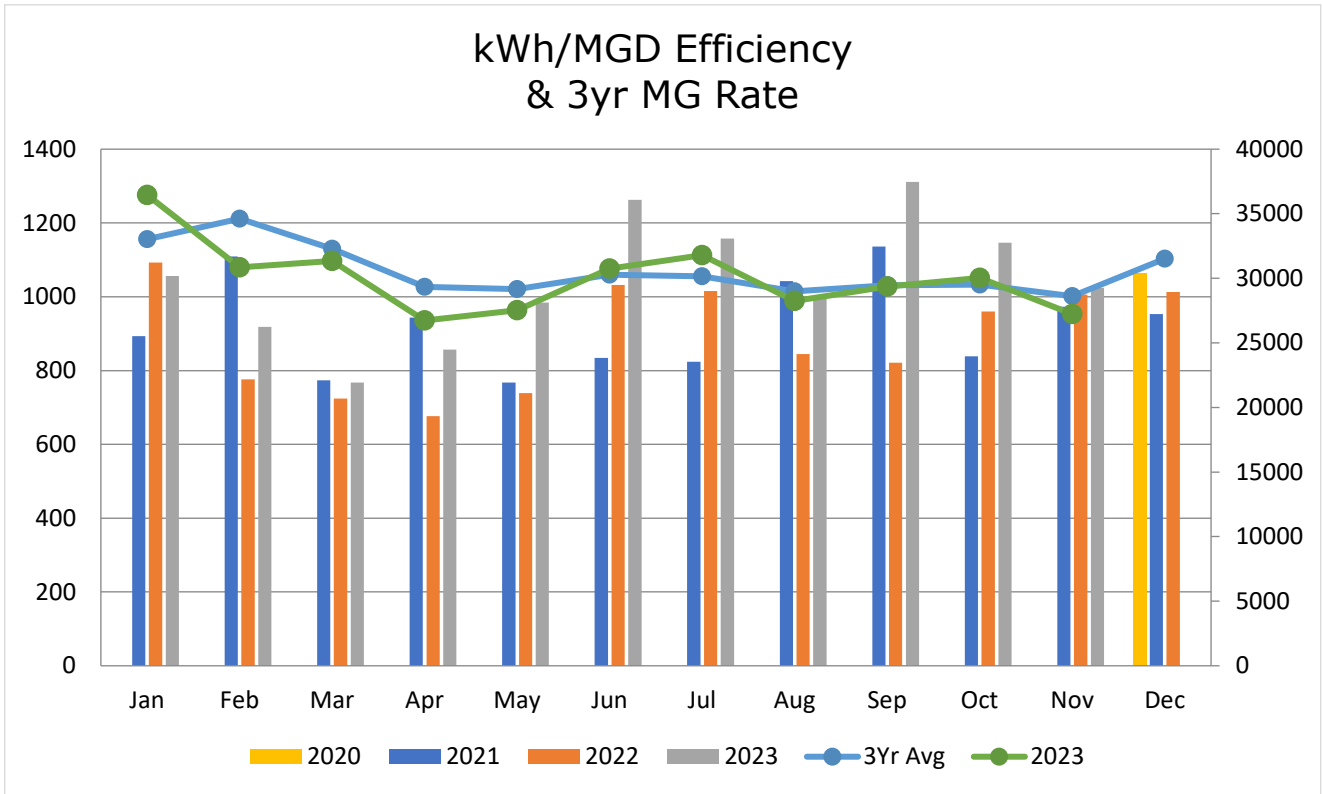


Phosphorus Tracking Graph:



Plant Efficiency Graphs:

November 2023



**Sanitary District of Decatur
Nutrient Program Management Report**

December 20, 2023

During the month of November District personnel attended meetings with members of the Black & Veatch Team to affect progress in nutrient reduction planning and activities.

Currently, activities continue to surround the gathering and sharing of data and information so that all parties can assist in how to move the projects forward as efficiently as possible. In the month of November, the District continued to gather and forward all requested industrial special sampling lab results and plant performance data as requested by the B&V.

B&V has continued the development of their full facility model, continued to develop aged infrastructure evaluation including reviewing evaluation with District staff. In addition, B&V continued to assistance with construction phase services of the Frac Tank Pilot Study including leading the construction progress meetings.

Below you will find a list of the actual meetings conducted in chronological order. The information covers the subject, date, and agenda items of each meeting. Additional information related to any of these meetings or specific agenda items can be supplied to the Board upon request including meeting minutes and documentation used during the meeting as it is all being stored as part of the permanent record.

Nutrient Reduction Program Meetings Conducted during November 2023

| <u>Subject</u> | <u>Date</u> | <u>Agenda Items</u> |
|---|--------------------|---|
| Nutrient Program Management Bi-weekly Meeting | 11/08/2023 | <i>Objective:</i> Provided Status Update on Program Tasks 1. Frac Tank Pilot 2. Power BI 3. Pretreatment Program Update 4. PDOP/Annual Progress Report 5. Watershed Services 6. Aging Infrastructure 7. WRRF Upgrade Plan |
| Fermentation Reactor Pilot Construction Progress Meeting | 11/09/2023 | 1. Submittal Status 2. Status of Owner Supplied Equipment 3. Request for Information 4. Work Change Directive / Change Orders 5. Pay Applications 6. Construction Schedule/Activities 7. Additional Questions / Discussion 8. Next Meeting |
| Aging Infrastructure Workshop | 11/14/2023 | <i>Objective:</i> Review and Discuss the Aging Infrastructure Evaluation with District Staff |
| Fermentation Reactor Pilot Construction Progress Meeting | 11/21/2023 | 1. Submittal Status 2. Status of Owner Supplied Equipment 3. Request for Information 4. Work Change Directive / Change Orders 5. Pay Applications 6. Construction Schedule/Activities 7. Additional Questions / Discussion 8. Next Meeting |

| Subject | Date | Agenda Items |
|--|-------------|---|
| Nutrient Program Management Bi-weekly Meeting | 11/22/2023 | <i>Objective:</i> Provided Status Update on Program Tasks 1. Frac Tank Pilot 2. Power BI 3. Pretreatment Program Update 4. PDOP/Annual Progress Report 5. Watershed Services 6. Aging Infrastructure 7. WRRF Upgrade Plan |

**Sanitary District of Decatur
Watershed Management Report**

December 20, 2023

During the month of November District personnel attended meetings with members of the Black & Veatch and Geosyntec Teams to affect progress in meeting the NARP requirements as listed in the NPDES permit as well as moving forward on the formation of a future watershed workgroup for the Middle Sangamon River.

Recent activities pertained to items necessary to complete the NARP Study. Foremost in these efforts included Geosyntec continuing their Instream modeling efforts and the completion of baseline scenarios as well as potential watershed management scenarios and alternatives. This month focused on the review of the model and alternative scenarios while receiving District feedback.

Below you will find a list of the meetings conducted. The information covers the subject, date, and agenda items of each meeting. Black & Veatch provided a written summary. Additional information related to any of these items can be supplied to the Board upon request including meeting minutes and documentation used during the meeting as it is all being stored as part of the permanent record.

Watershed Management Meetings Conducted during November 2023

| Subject | Date | Agenda Items |
|--|-------------|--|
| Instream Model Scenario Discussion | 11/01/2023 | <i>Objective:</i> Geosyntec presented/reviewed the initial results of the baseline and alternative scenarios of the Instream Model and discussed baseline scenarios. |
| Watershed Services Bi-weekly Meeting | 11/15/2023 | <i>Objective:</i> Provided Status Update on Watershed Services Tasks |
| Instream Model Final Scenario Discussion | 11/29/2023 | <i>Objective:</i> Geosyntec presented/reviewed the results of the final scenarios and further determine if there are sufficient scenarios to address concerns. |



December 5, 2023

Sanitary District of Decatur (SDD)
501 Dipper Lane
Decatur, IL 62522

Nutrient Program Manager
BV Project No. 411502

Attention: Don Miller, P.E., Director of Engineering

Subject: SDD Nutrient Program Management
November Monthly Progress Update (November 1, 2023 – November 30, 2023)

Dear Mr. Miller:

This letter summarizes the work associated to the SDD Nutrient Program Management project for services from November 1, 2023, through November 30, 2023.

1. Program Management, Administration, and Coordination
 - Conducted bi-weekly program conference calls to update progress and discuss key issues.
 - Provided Monthly Project Update.
 - Provided ongoing management of the project including program management, preparation/monitoring of the program schedule and budget as well as program administrative duties.
 - Updated Power BI dashboard with most recent plant monitoring data.
2. Pretreatment Program Update
 - Continued to evaluate special sampling data
 - Continued to update the full facility process model with the industrial special sampling results.
 - Completed incorporation review comments to finalize the Industrial Pretreatment Analysis Report.
3. Phosphorus Discharge and Optimization Plan (PDOP)
 - No Services were completed this period.
4. Watershed Support Services
 - Conducted bi-weekly progress update meeting.
 - Geosyntec continued to refine the Instream Model providing a review summary of the results of baseline and alternative scenarios of the Instream model.
 - Geosyntec presented/reviewed the results of the final scenarios and further determine if there are sufficient scenarios to address concerns and determine next steps for model development
 - Continued initial planning efforts for the Watershed Group formation development.
5. WRRF Upgrade Plan
 - Aged Infrastructure Evaluation

- i. Completed initial rehabilitation and replacement cost estimates.
- ii. Continued to develop rating score for each asset evaluated to determine criticality and timing of upgrades.
- iii. Completed summarizing structural assessments and incorporate into overall aging infrastructure evaluation.
- iv. Completed Draft Aging Infrastructure Evaluation TM
- v. Led Aging Infrastructure workshop with SDD staff to review the evaluation.
- Plant Facility Evaluation
 - i. Continued detailed modeling efforts to evaluate and provide whole plant process model simulations related to the alternatives identified for nutrient removal.
 - ii. Continued development of upgrades needed for each unit process to meet nutrient limits including multiple plant loading scenarios which will be considered to identify improvement costs for ADM and Primient.

6. Pilot and Demonstration Testing

- Continued to review for contractor submittals
- Prepared for and conducted the Construction Progress Meeting with Burdick (Contractor).
- Continued to prepare Pilot Testing Plan

| FRAC TANK PILOT PROJECT SCHEDULE | |
|--|------------------------|
| MILESTONE/ACTIVITES | DATE |
| Bi-weekly Construction Progress Meetings | August – December 2023 |
| Early Receipt of Pre-purchased Equipment Primary Sludge Pumps Big Bubble Mixing Frac Tank | November 2023 |
| Substantial Completion (pending equipment delivery times) | December 2023 |
| Final Completion | January 2023 |

Please feel free to contact me with any questions, comments or if you need additional information.
Sincerely,

Diane Grossenheider, P.E.
Project Manager, Black & Veatch

Enclosure(s): SDD Nutrient Program Manager Schedule and Anticipated Cost Forecast

