

LEWES BPW

Howard Seymour Water Reclamation Plant

Operation and Maintenance Report



November 2021

Executive Summary

| | Green | Yellow | Red |
|------------------|-------|--------|-----|
| Headworks | | | |
| Oxidation Ditch | | | |
| Filters | | | |
| Generator | | | |
| Weather | | | |
| Solids Handling | | | |
| NPDES Parameters | | | |
| Pump Stations | | | |
| Personnel | | | |
| Safety | | | |
| Compliance | | | |

(New information in bold font)

- Headworks- Equalization Pump control panel replacement project moving forward with Keystone and Hills. Keystone to replace the RTU. Waiting on receipt of VFDs. Inframark continues to utilize the dewatering roll off container to capture screening while lipactor is offline. **Inframark experiencing frequent high level callouts from the screenings dumpster as temperatures decline.**
- Filters- UF Train 4 de-ragged and returned to service 3-8-2021. UF Train 1 de-ragged and returned to service 4-19-2021. De-ragging of UF Train 2 complete 5-28-2021. UF Train 3 de-ragged and returned to service 7-21-2021. **UF Train 4 de-ragging completed 12-28-2021.**
- Pump Stations- A proposal to replace the Pump Station 8 Generator Transfer Switch for \$3,690 from Curtis Power Solutions was accepted. A rental emergency generator is online at Pump Station 4 while plans for a permanent solution are being evaluated. Continue to have issues with Pump 1 maintaining prime. Inframark repaired the external check valve on 11-17-2021. Pump continued to lose prime. 11-23-2021 Inframark replaced the Gorman Rupp internal check valve. A back up diesel bypass pump is on standby at PS4. A representative from Hills Electric Motor was onsite to generate proposals for PS3 and PS8 pump rehabilitation or replacement.

Critical Issues

- Covid- Inframark is following CDC recommendations to ensure uninterrupted service to the BPW and the Lewes community.
- Condition of headworks screening equipment is in critical need of repair or replacement to decrease excessive ragging of UF membranes.
- Spare pumps are not in stock for PS11, PS15, PS16, PS17, PS17B, PS18 and PS32. Inframark does not have maintenance records for existing pumps. Based on recommendations made in Severn Trent's 2016 Annual Report, most pumps were in need of replacement within five years. We have found no evidence that these pumps had been replaced during the past five years. Many pump station control panels are in

need of repair or replacement including PS1, PS2, PS5, PS6, PS7, PS9, PS10, PS11, PS12, PS13, PS14, PS15, PS16, PS17, PS18, PS33, PS74 and PS83.

Projects

| Project | Status | Priority Level | Approval | Est. Complete Date |
|--|---|----------------|-------------|--------------------|
| Headworks Replacement | In design | High | BPW Project | QTR4 2022 |
| Replace EQ Pump Drives and Control Panel | Keystone is proceeding with replacement of the RTU. Waiting on receipt of VFDs. | High | BPW Project | QTR1 2022 |
| Replace Generator and ATS at PS4 | GMB and Keystone are evaluating size based on future needs | High | BPW Project | QTR2 2022 |
| Replace ATS at PS8 | Accepted Proposal | High | Received | QTR1 2022 |
| Rehab PS3 & PS8 | Waiting on proposal from Hills | High | Needed | QTR2 2022 |

Operations

NPDES Permit Compliance

- Please review the following tables that summarize NPDES reporting criteria for November 2021. No violations will be reported for November. The DMR will be forwarded upon completion.
- The average daily influent flow for November was 0.496 MGD with a maximum daily flow of 0.664 MGD. Precipitation totaled 1.0 inches for November with a maximum daily total of 0.4 inches.

| | Max | Sum |
|------------------------|------|------|
| Precipitation (inches) | 0.35 | 1.04 |

| Influent | Limit | Average | Min | Max | Vio |
|----------------|-------|---------|-------|-------|-----|
| Flow (MGD) | | 0.496 | 0.288 | 0.664 | |
| BOD (mg/L) | | 207 | 207 | 207 | |
| BOD Load (lbs) | | 1,146 | 1,146 | 1,146 | |
| TSS (mg/L) | | 242 | 242 | 242 | |
| TSS Load (lbs) | | 1,340 | 1,340 | 1,340 | |
| | | | | | |

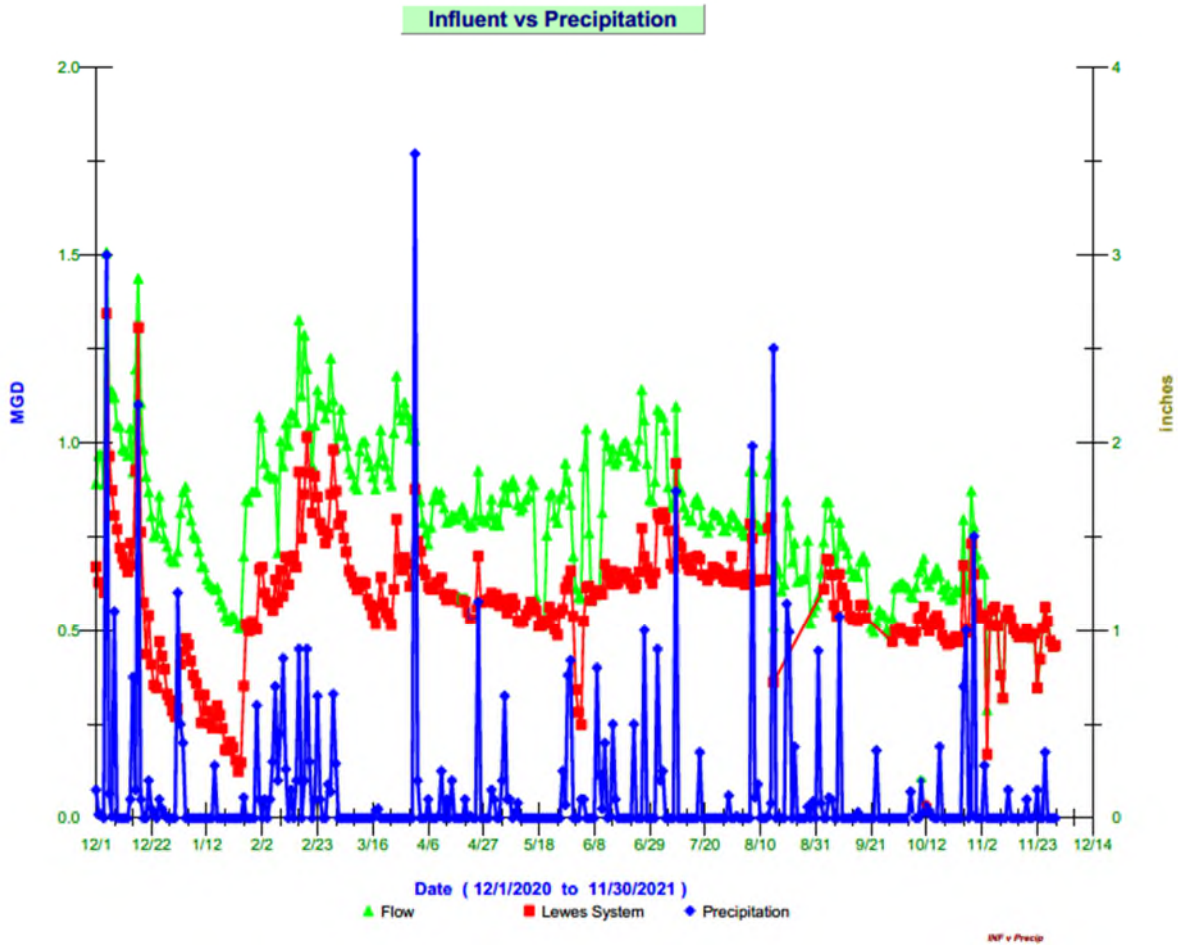
| Effluent | Limit | Average | Min | Max | Vio |
|------------------------------|------------------|---------|--------|--------|-----|
| Flow (MGD) | | 0.593 | 0.445 | 0.828 | N |
| Dissolved Oxygen (mg/L) | | 8.14 | 6.32 | 9.39 | N |
| pH (SU) | Min 6/ Max 9 | 7.32 | 7.01 | 7.56 | N |
| Enterococcus (col/100ml) | Avg 10/ Max 104 | <1 | <1.0 | <1.0 | N |
| BOD (mg/L) | Avg 15/ Max 23 | <2.4 | <2.4 | <2.4 | N |
| BOD Load (lbs) | Avg 188/ Max 288 | <11 | <9 | <15 | N |
| BOD Removal (%) | | 98.8 | 98.8 | 98.8 | |
| TSS (mg/L) | Avg 15/ Max 23 | <0.5 | <0.5 | 0.6 | N |
| TSS Load (lbs) | Avg 188/ Max 288 | <2 | <2 | <3 | N |
| TSS Removal (%) | | 100 | 100 | 100 | |
| Total Nitrogen (mg/L) | Avg 8 | 2.44 | 2.44 | 2.44 | N |
| Total Nitrogen Load (lbs) | Avg 100 | 10.52 | 10.52 | 10.52 | N |
| Total Phosphorous (mg/L) | Avg 2 | 0.12 | 0.12 | 0.12 | N |
| Total Phosphorous Load (lbs) | Avg 25 | 0.73 | 0.73 | 0.73 | N |
| Process | | | | | |
| Bio #1 MLSS (mg/L) | | 10,200 | 9,100 | 10,900 | |
| Bio #2 MLSS (mg/L) | | 10,100 | 8,700 | 11,500 | |
| Train 1 MLSS (mg/L) | | 6,000 | 300 | 11,700 | |
| Train 2 MLSS (mg/L) | | 10,033 | 9,500 | 10,300 | |
| Train 3 MLSS (mg/L) | | 9,467 | 8,900 | 10,000 | |
| Train 4 MLSS (mg/L) | | 10,600 | 9,800 | 11,900 | |
| TSS Digester 1 (mg/L) | | 20,300 | 20,300 | 20,300 | |
| TSS Digester 2 (mg/L) | | 18,100 | 18,100 | 18,100 | |

Sludge Operations and Disposal

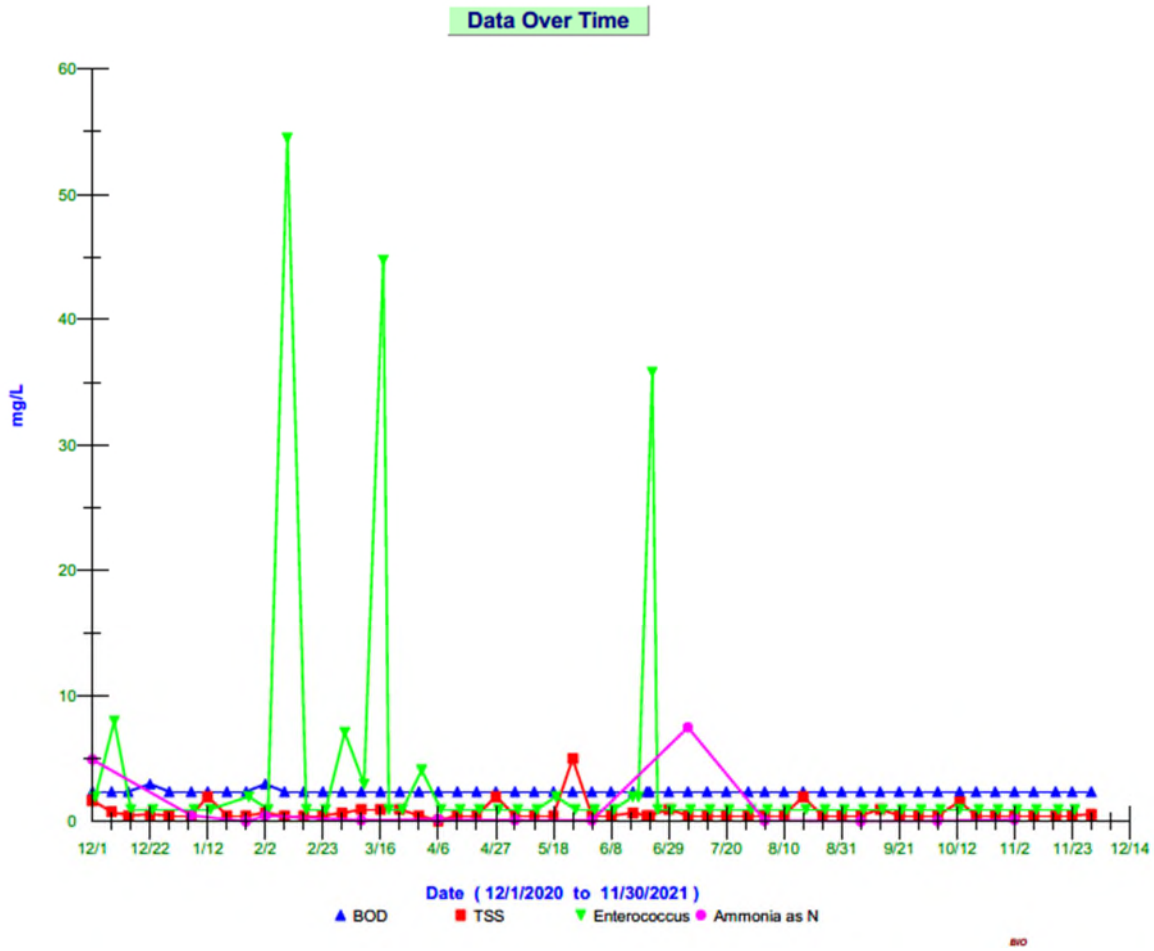
| | | | |
|-------------------------------|------|----------|---------------|
| Liquid Hauled | 0 | Gallons | DELCORA |
| Cake Hauled | 88.1 | Wet Tons | Sussex County |
| Dewatering Container Material | 4500 | Gallons | DELCORA |

Trends

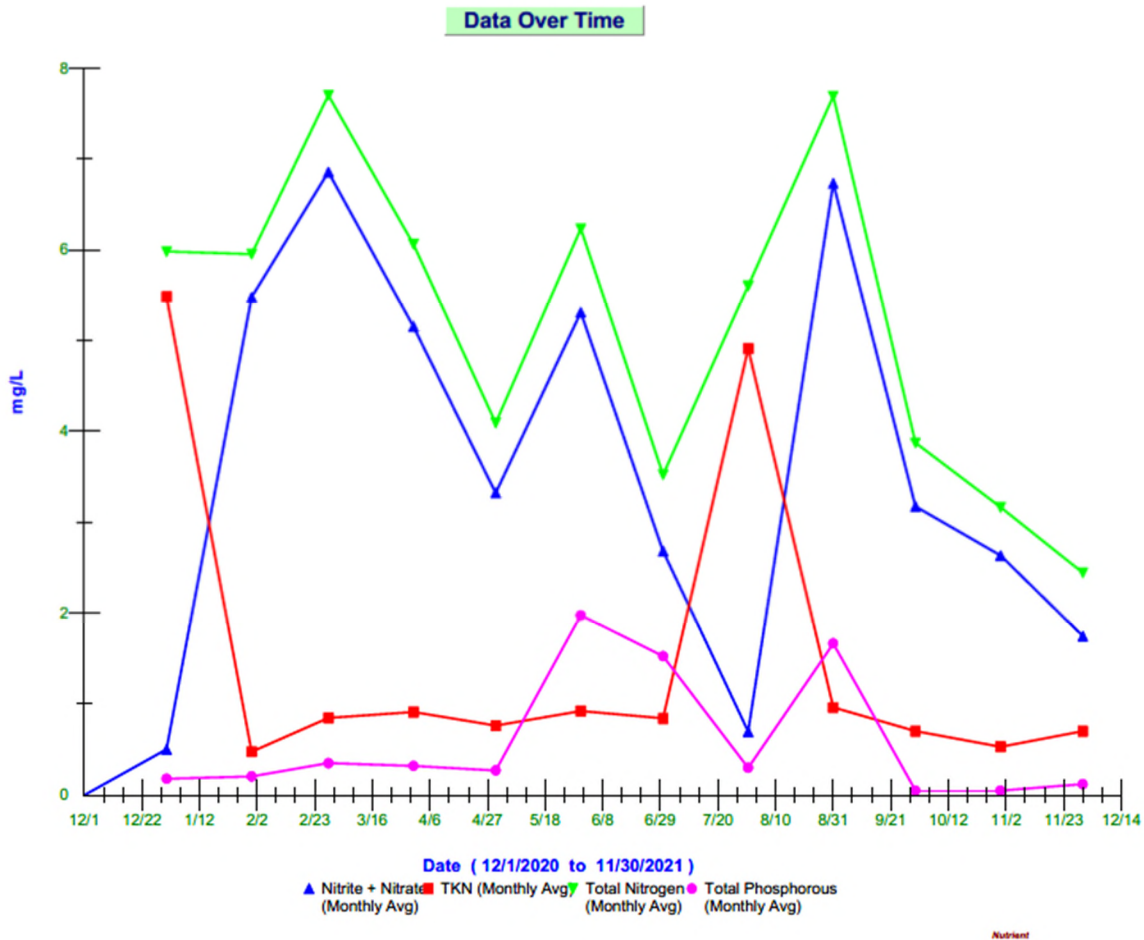
Influent vs Precipitation Trend Previous 12 Months



Effluent Biological Contaminants Trend Previous 12 Months



Effluent Nutrient Trends Previous 12 Months



Maintenance, Repair and Activities

- 11-02-2021- Inframark replaced oil to UF permeate pumps to Trains 1,2&4.
- 11-04-2021- A major power failure occurred to the Headworks MCC. An emergency generator was brought in and hooked up to power the Headworks Building. Inframark staffed the WWTP around the clock to monitor the generator and Headworks equipment. The plant was staffed around the clock on 11-05-2021 and two shifts on 11-06-2021.
- 11-07-2021- Inframark was called out to PS9 for power failure. One leg of power was out. Staff contacted BPW to resolve the issue at the transformer.
- 11-09-2021- KZ Mechanical was onsite at PS8 to install bypass valves and fittings.
- 11-10-2021- The Headworks emergency generator was replaced with another rental unit.
- 11-10-2021- LDO Probe 2A controller was found to be malfunctioning. Staff discovered and repaired a loose connection to the controller circuit board.
- 11-17-2021- Inframark cleaned debris from impeller and check valve to Pump 1 at PS4.
- 11-17-2021- Inframark replaced pump tubing to the Effluent Composite Sampler.
- 11-19-2021- Inframark replaced the oil to Pump 2 at PS3.

- 11-23-2021- Inframark replaced the internal flapper check valve to Pump 1 at PS4.
- 11-23-2021- Inframark serviced Air Compressor #1 in the Blower Building.
- 11-29-2021- Inframark discovered a failure of the air relief valve at PS4. The valve was taken out of service until the unit can be repaired or replaced.

Callouts

- 11-04-2021- Power Failure Headworks Building
- 11-07-2021- PS9 Power Failure
- 11-08-2021- Headworks Temporary Emergency Generator Fault
- 11-09-2021- Headworks Temporary Emergency Generator Fault
- 11-10-2021- Headworks Temporary Emergency Generator Fault
- 11-22-2021- 5mm MaciPump Fault
- 11-29-2021- PS3 High Temp Alarm

Maintenance Budget

| Monthly Budget | November Expenses 2021 | Contract Year to Date | Remaining Balance |
|----------------|------------------------|-----------------------|-------------------|
| \$6,667 | \$ 38,379.37 | \$ 38,379.37 | \$ 41,620 |

Maintenance Expenditures

| Vendor | Description | Expense |
|-----------------------------|--|----------|
| AMZN MKTP | Lockout tag out kit | 53.00 |
| AMZN MKTP US | Tie down for screening dumpster filter | 13.69 |
| BELAIR ROAD SUPPLY CO | PS8 Bypass connection materials | 494.52 |
| BELAIR ROAD SUPPLY CO | PS8 Bypass connection materials | 473.32 |
| BESTS ACE HDWE | Keys for new employees | 53.79 |
| Freemire & Associates, Inc. | Onsite to troubleshoot issues with E-One Pumps at PS22-25 | 518 |
| GRAINGER | Belt Filter Press Parts | 177.15 |
| GRAINGER | Maintenance supplies oil spill prevention | 63.08 |
| GRAINGER | Fuses for 5mm screening | 154.60 |
| GRAINGER | Chemical feed parts | 44.88 |
| GRAINGER | Plumbing supplies and panel lamps | 552.11 |
| IN *ENVIROZONE, LLC | Filter liners for dewatering container | 680.80 |
| K & Z Mechanical, Inc. | 9/23/2021 Dolphin Electrical WWTP disconnect screener motor, disconnect zone mixer, 2 nd trip reconnect screener motor- unit locked up would not run- disconnect screener motor, 3 rd trip reconnect screener motor- replace fuses and adjust magnetic trip. Replaced fuse units with circuit breakers. Materials two 3 pole circuit breakers. | 1,752.00 |
| K & Z Mechanical, Inc. | UF Train 4 filter cleaning | 5,800.00 |

| | | |
|----------------------------------|--|----------|
| K & Z Mechanical, Inc. | 10/08/2021 Electrical work- disconnect grit pump, reconnect zone mixer, check VFD at PS8 | 760.00 |
| K & Z Mechanical, Inc. | Install bypass connection at PS8 | 1,500.00 |
| K & Z Mechanical, Inc. | Troubleshoot blower issue. Replaced air sensor. | 475.00 |
| K & Z Mechanical, Inc. | Emergency call to replace floats PS8 | 1,140.00 |
| KTOOL | Parts for station 17 | 61.98 |
| LOWES | Screening dumpster, membrane cleaning, pump station and drying bed supplies | 335.56 |
| OVIVO USA- LLC | Seal for screener | 105.00 |
| THE HOME DEPOT | Tools and parts organizer | 105.34 |
| United Rentals North America Inc | PS4 Generator rental August | 1,639.06 |
| United Rentals North America Inc | Bypass Pump | 4,760.33 |
| United Rentals North America Inc | Dewatering dumpster rental November | 1,522.38 |
| United Rentals North America Inc | Broom rental for skid steer | 1,200.64 |
| Xylem Dewatering Solutions, Inc. | Bypass pump rental August/Sept | 4,554.89 |
| Xylem Dewatering Solutions, Inc. | Bypass pump rental Sept/Oct | 4,760.33 |
| Xylem Dewatering Solutions, Inc. | Bypass pump rental Oct/Nov | 4,064.89 |
| Xylem Dewatering Solutions, Inc. | Bypass pump rental Nov/Dec | 4,554.89 |

Health & Safety

Inframark Training and Presentations

- Medical Exposure Records
- Personal Protective Equipment
- Winter Weather 2021-2022

Personnel

| Name | Title | DE Certification |
|-------------------|----------------------------|--------------------|
| Jerry Shupe Jr. | Regional VP | NA |
| Michael Wolgemuth | Regional Manager | DE Class IV WW |
| Richard Plack | Project Manager | DE Class IV WW |
| Paul Smith | Operator II | DE Class II WW |
| Vince Catalano | Operator II | DE Class II OIT WW |
| Kurt Brittingham | Operator II | NA |
| Michael Mazzetti | Maintenance Technician III | NA |
| David Weed | PT Operator III | DE Class IV WW |
| Loran George | PT Operator III | DE Class IV WW |

| | | |
|--------------|-------------------------|----|
| Tom Callahan | Regional Safety Advisor | NA |
|--------------|-------------------------|----|

Attachments

- November County Flow Totals
- November DMR
- Zenon InSight Report- 12-02-2021
- Zenon InSight Report- 12-15-2021
- Pump Station Flow vs Rain Graphs