

LEWES BPW

Howard Seymour Water Reclamation Plant

Operation and Maintenance Report



August 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. BPW waiting on for quote to replace VFDs from Hills. Inframark continues to utilize the dewatering roll off container to capture screening while lipactor is offline. Inframark accepted a proposal from K&Z Mechanical to replace the main bearings to the 5mm Band-screen. Work to be completed the week of 9-13-2021. Inframark scheduling the cleaning of the EQ tank for later in September or early October.**
- **Oxidation Ditch-Two of three blower motors to the Biological Trains failed within the past few weeks. Both motors were replaced and all three blowers are online.**
- 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. **Two of five blowers have failed since July. A new blower was ordered, one is being repaired and a third is being sent for repair. We are currently operating on three blowers, limiting us to the use of three UF Trains. The new blower is expected to be received the week of 9-20-2021.**
- Pump Stations-Pump Station 4 Emergency Generator and Transfer Switch are in need of replacement. **GMB was onsite 9-13-2021 to review electric demand to ensure a 60kW generator is sufficient for station demand. A report received 9-17-2021 indicates that replacing in kind would not be sufficient to operate both pumps. A 100kW generator is recommended for future expansion. An upgrade to electrical service equipment would also be required. The Pump Station 8 Generator Transfer Switch is in need of replacement. Inframark is waiting on proposals from three vendors. Pump #1 at PS4 became clogged again on 8-13-2021. Inframark is in discussions with GMB regarding the issue. The VFD to Pump #1 at PS4 failed during August. A new VFD and spare were ordered through Keystone. The spare VFD could be used for either pump at PS4 or PS8. There was a 30-day lead time on the VFDs. The diesel bypass pump is still hooked up at PS4. A back up diesel bypass pump is on standby at the WWTP. Inframark completed annual service on Gorman Rupp Pumps at PS3, PS4 and PS8. PS3 requires new motors, rotating assemblies and suction valves for each pump. PS8 requires a new rotating assembly and check valve for Pump #2. Spare pumps are not**

in stock for PS11, PS15, PS16, 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. Most of the pump station control panels are in need of replacement including PS1, PS2, PS5, PS6, PS7, PS9, PS10, PS11, PS12, PS13, PS14, PS15, PS16, PS17, PS18, PS33, PS74 and PS83.

- **Personnel-** One operator resigned 7-30-2021 and one maintenance tech resigned 8-5-2021. Maintenance techs were rotated in from PA and MD to fill in while vacancy being filled. One operator position filled 8-30-2021. Inframark has cold called the entire list of DE licensed operators through our recruiting efforts. Interviews for qualified applicants have been ongoing. We have also met with a retired level 4 operator familiar with the plant to bring back part time and as a backup. An offer is pending.
- **Compliance-** A noncompliance discharge was reported to DNREC on 8-15-2021 for an approximate 7500-gallon discharge into the canal during a failure at PS4. Inframark is in the process of finalizing a root cause analysis report for the incident.

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.
- Many pump station pumps and controls are in critical need of replacement.

Projects

Project	Status	Priority Level	Approval	Est. Complete Date
Headworks Replacement	In design	High	BPW Project	QTR2 2022
Replace EQ Pump Drives and Control Panel	Keystone is proceeding with replacement of the RTU. A quote from Hills for replacement of the VFDs is pending.	High	BPW Project	QTR4 2021
Replace Generator and ATS at PS4	Inframark soliciting proposals	High	BPW Project	QTR4 2021
Replace ATS at PS8	Inframark soliciting proposals	High	BPW Project	QTR4 2021
Rehab PS3	Inframark to solicit pricing	High	Needed	QTR4 2021
Clean Membranes	All trains cleaned one time 2021	High	NA	ongoing

Operations

NPDES Permit Compliance

- Please review the following tables that summarize NPDES reporting criteria for August 2021. No violations will be reported for August. The DMR will be forwarded upon completion.
- The average daily influent flow for August was 0.725 MGD with a maximum daily flow of 0.968 MGD. Precipitation totaled 7.5 inches for August with a maximum daily total of 2.5 inches.

	Max	Sum
Precipitation (inches)	2.50	7.54

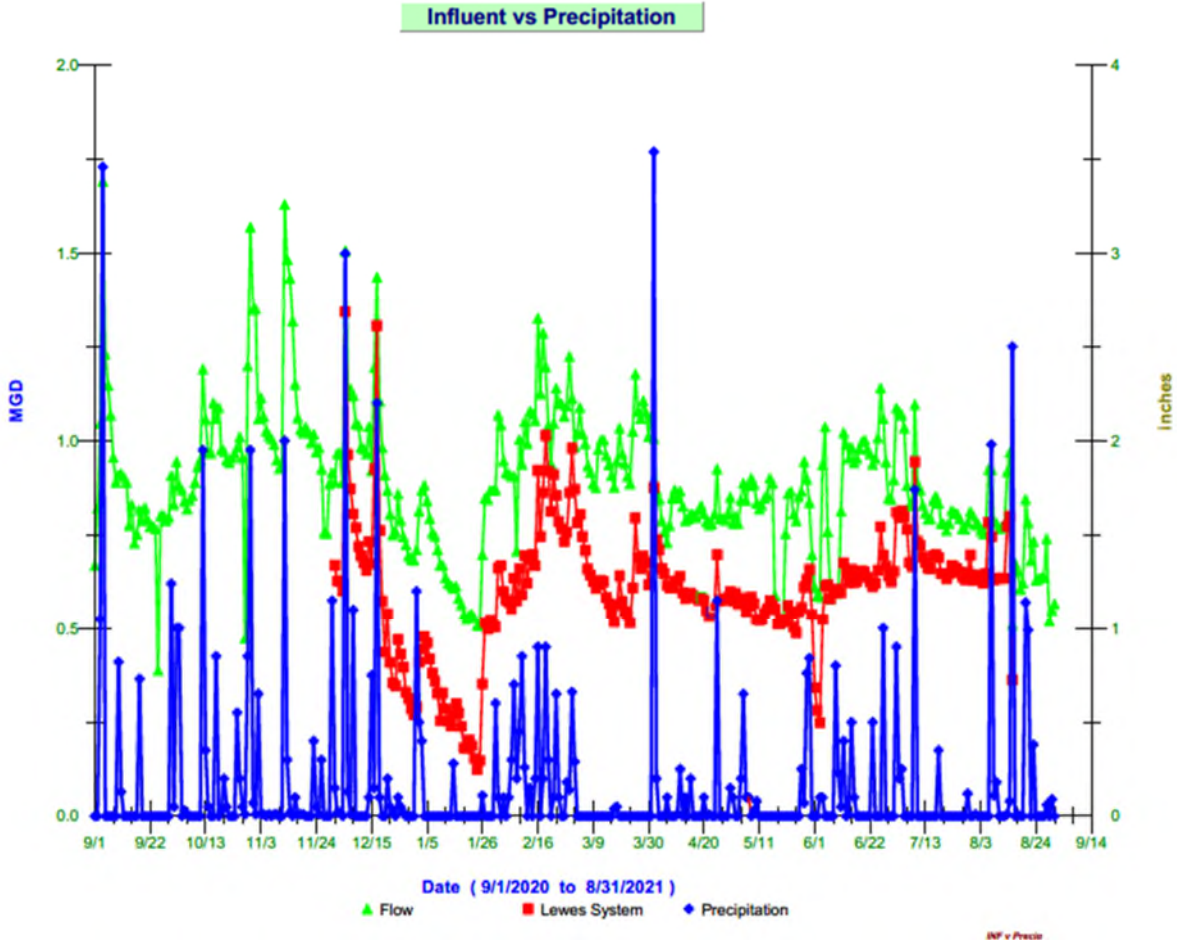
Influent	Limit	Average	Min	Max	Vio
Flow (MGD)		0.725	0.510	0.968	
BOD (mg/L)		188	188	188	
BOD Load (lbs)		1,195	1,195	1,195	
TSS (mg/L)		172	172	172	
TSS Load (lbs)		1,093	1,093	1,093	
Effluent					
Flow (MGD)		0.758	0.541	0.939	N
Dissolved Oxygen (mg/L)		7.16	6.32	8.46	N
pH (SU)	Min 6/ Max 9	7.45	6.99	8.09	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	<14	<12	<17	N
BOD Removal (%)		98.7	98.7	98.7	
TSS (mg/L)	Avg 15/ Max 23	<0.8	<0.5	<2.0	N
TSS Load (lbs)	Avg 188/ Max 288	<5	<3	<11	N
TSS Removal (%)		100	100	100	
Total Nitrogen (mg/L)	Avg 8	7.69	7.69	7.69	N
Total Nitrogen Load (lbs)	Avg 100	45.18	45.18	45.18	N
Total Phosphorous (mg/L)	Avg 2	1.66	0.33	4.20	N
Total Phosphorous Load (lbs)	Avg 25	11.00	2.36	28.20	N
Process					
Bio #1 MLSS (mg/L)		8,775	8,300	9,400	
Bio #2 MLSS (mg/L)		8,075	5,200	9,400	
Train 1 MLSS (mg/L)		9,900	9,100	11,300	
Train 2 MLSS (mg/L)		11,440	10,000	12,800	
Train 3 MLSS (mg/L)		13,420	9,400	21,500	
Train 4 MLSS (mg/L)		10,460	7,300	12,300	
TSS Digester 1 (mg/L)		21,775	20,200	23,700	
TSS Digester 2 (mg/L)		19,350	17,100	21,200	

Sludge Operations and Disposal

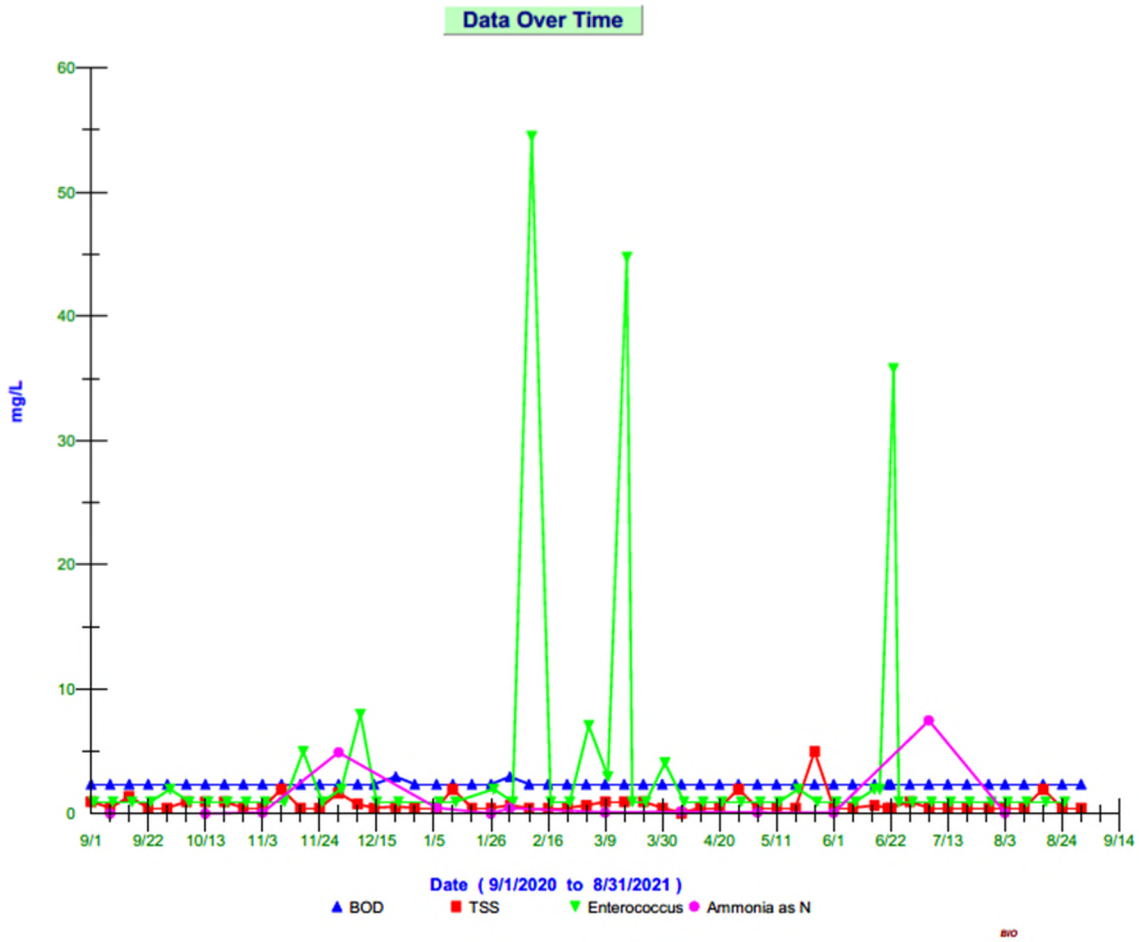
Liquid Hauled	14,000	Gallons	DELCORA
Cake Hauled	67.4	Wet Tons	Sussex County

Trends

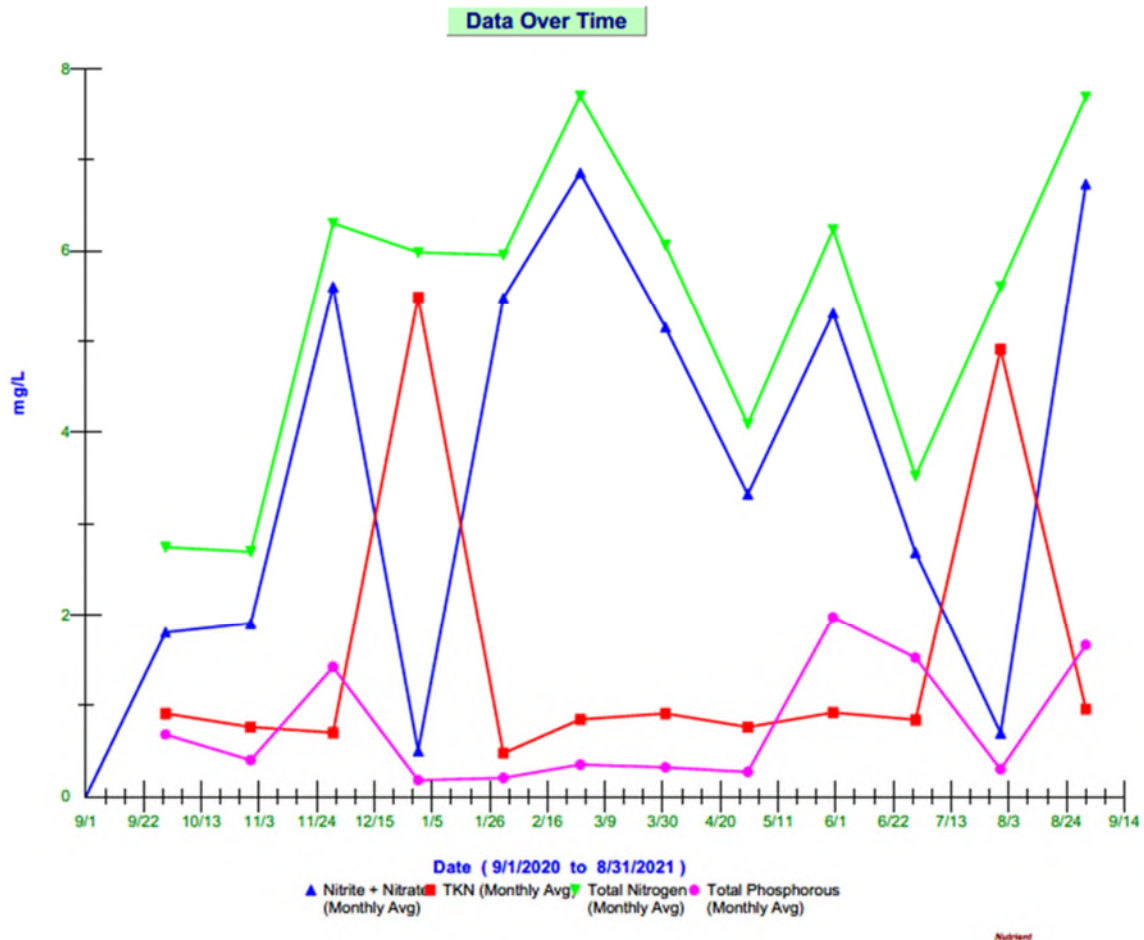
Influent vs Precipitation Trend Previous 12 Months



Effluent Biological Contaminants Trend Previous 12 Months



Effluent Nutrient Trends Previous 12 Months



Maintenance, Repair and Activities

- 8-04-2021 Replaced four blower filter elements to UF Membrane Blowers
- 8-05-2021 Inland Water Watch was onsite to add the EQ Tank Level to the WWTP Pointwatch
- 8-06-2021 Inframark replaced compressor to UF Air Compressor 2 with a temporary spare from Harbor Freight to be utilized as backup until the new unit is received from Quincey.
- 8-10-2021 Inframark pulled rotating assembly to EQ Pump #3 to unclog. Replace and returned to service.
- 8-13-2021 Inframark found Pump #1 at PS4 not pumping. Pulled rotating assembly. No clog observed. Contacted United Rentals for bypass pump.
- 8-16-2021 Inframark completed annual service to EQ Pumps #1,#2.
- 8-17-2021 Inframark completed annual service to Pumps #1 at PS8.
- 8-17-2021 Inframark completed annual service to Pumps #1 at PS4.
- 8-18-2021 Inframark completed annual service to Pumps #1 at PS3.
- 8-18-2021 Hills replaced motor to Pumps #1 at PS4.

- 8-19-2021 Inframark pulled rotating assembly to EQ Pump #3 to unclog. Replace and returned to service.
- 8-20-2021 Inframark replace all 5 floats at PS5. Staff bypassed the flooded junction box and ran the directly into the panel.
- 8-21-2021 Inframark observed that the VFD to Pump #1 at PS4 failed on ground fault. Staff checked to ensure ground wires were secure. Called Dauphin Electric to check VFD. VFD is shot. Staff contacted Keystone to order a replacement.
- 8-21-2021 Dauphin Electric onsite to troubleshoot Scum Pump and EQ Mixer #2 faults and also hook up EQ Mixer 1.
- 8-24-2021 Inframark installed a replacement Blower Motor to Bio Train Blower A.
- 8-29-2021 Dauphin Electric onsite to repair EQ Mixer #2. The disconnect was fried.

Callouts

- 8-02-2021 Digester Trouble Alarm
- 8-06-2021 2MM Screen High Level Alarm
- 8-15-2021 High Level PS3 and PS4
- 8-20-2021 High Level PS5 and PS6
- 8-21-2021 EQ Mixer Fault
- 8-25-2021 2MM Screen High Level Alarm
- 8-28-2021 Anoxic Mixer Fault

Maintenance Budget

Monthly Budget	August Expenses 2021	Contract Year to Date	Remaining Balance
\$7,500	\$ 11,141	\$ 148,261	\$ (63,665)

Maintenance Expenditures

Vendor	Description	Expense
LOWES	Materials for installing Influent EQ mixer	93.70
GRAINGER	Hoses for skid steer Brush	55.28
LOWES	Parts for point watch panel box installation	68.78
HOMEDEPOT	Replacement impact kit	579.00
USA BLUE BOOK	LDO meter parts	270.89
AMZN	Garage door opener switch	12.89
GRAINGER	Timer for grit system	151.36
GRAINGER	Hose adapters for pumps	49.27
UNITED RENTALS	Influent Screening Dumpster liner's	960.00
BESTS ACE HDWE	Parts for station 2 repair	10.58
BESTS ACE HDWE	Hardware for Inf. EQ mixer installation	12.28
IRON SOURCE	Skid steerer repair, replaced hydraulic hoses.	313.32

THE HOME DEPO	Sample fridge, Buckets	276.16
USA BLUE BOOK	Containment for Dewatering Dumpster	1,317.35
LOWES	2-inch split ring clamps	26.80
AERZEN USA CORP	Blower filter elements for BIO Train Blowers	731.67
THE HOME DEPOT	Impact wrench/ junction box, extension cord	244.30
LOWES	2 pc adjustable wrench set, 13 pc impact sockets	173.88
MOTION INDUSTRIES	Blower oil	301.67
United Rentals North America Inc	Dewatering dumpster rental August	1,522.38
GRAINGER	Belts for EQ Gorman Rupp's EQ (3)	900.00
EXTRA PACKAGING LLC	Filter Liners for Dewatering Container	418.05
TRACTOR SUPPLY	Sample buckets	31.75
AERZEN USA CORP	Blower filter elements UF and Solids Blowers	1,420.33
Ovivo USA	5mm Screener Bearings	2,893.80

Health & Safety

Inframark Training and Presentations

- Employee Handbook
- Signs & Tags

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
Kurt Brittingham	Operator II	NA
Open	Maintenance Technician II	NA
Loran George	PT Operator III	DE Class IV WW
Tom Callahan	Regional Safety Advisor	NA

Attachments

- August County Flow Totals
- July DMR
- Zenon InSight Report- 9-8-2021
- Zenon InSight Report- 8-25-2021

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- Pump Station Flow vs Rain Graphs
 - 2021-09-17 - GMB - Lewes PS #4 Generator Review Letter