



Lewes BPW WWTP InSight Report

16-Apr-25 to 16-May-25

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System Equipment

4 x ZW 500D UF trains, 4 cassettes per train, 120 modules x 370 sq. ft. per train (44,400 sq. ft. per train)
UF3 & UF4 membranes replaced 2020 Q1
Net Capacity: 1.50 MGD (avg. daily flow), 2.25 MGD (peak daily flow)

Cleaning Strategy

Maintenance Cleans:
2 x 200 ppm Sodium Hypochlorite per week
1 x 2000 ppm Citric Acid per week

Recovery Cleans:
2 x 2000 ppm dose/1000 ppm soak Sodium Hypochlorite per year
1 x 2000 ppm Citric Acid per year

Recommendations

- 1. UF2's turbidity trend is high. UF2's turbidimeter may need maintenance.

KPI Dashboard - Avg Values Through Report Period



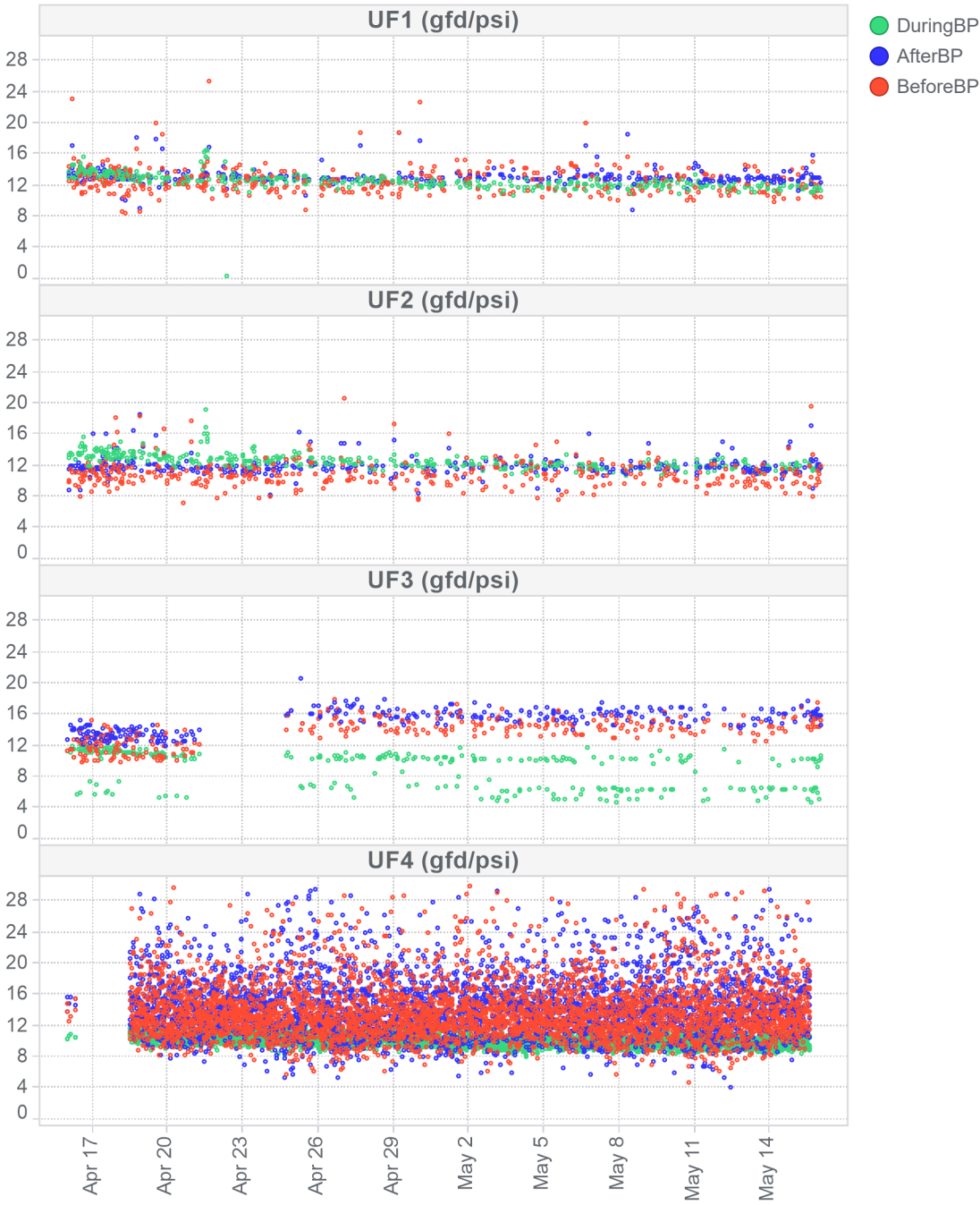
Report Highlights

- Performance is excellent on all trains (TC permeability ≥8 gfd/psi & TMP ≤1 psi).
 - TC Permeability averaged 11 - 14 gfd/psi across all trains.
 - TMP averaged 0.9 - 1.1 psi across all trains.
- Turbidity was <0.2 NTU >99% of the time on UF4.
 - UF1 had turbidity spikes >0.20 NTU in this report, and trended <0.2 NTU 94% of the time.
 - UF2's turbidity is higher than other trains, ranging 0.4 to 1.5 NTU. UF2's turbidimeter may need maintenance.
 - UF3's turbidity trend decreased on May 1, averaging 0.13 NTU since then.
- UF4 was offline over Apr 16 - 18 for a VFD permeate pump replacement. UF4 went offline again on May 15 while Veolia worked with the site to restore flow control after the new VFD installation.
- Maintenance cleans (MCs) were run regularly on all trains. Between May 1-15, MCs were run 6, 4, 6, and 7 times on UF1, UF2, UF3, and UF4 respectively.
- UF3 had a recovery clean over Apr 21 - 24, regaining +3.6 gfd/psi permeability (11.1 to 14.7 gfd/psi).
- Daily plant production averaged 0.93 MGD.
 - UF4 contributed about 40% of the permeate (greater than other trains) over Apr 20 - May 14.
 - UF4's permeate contribution reduced on May 15 back to 30%.

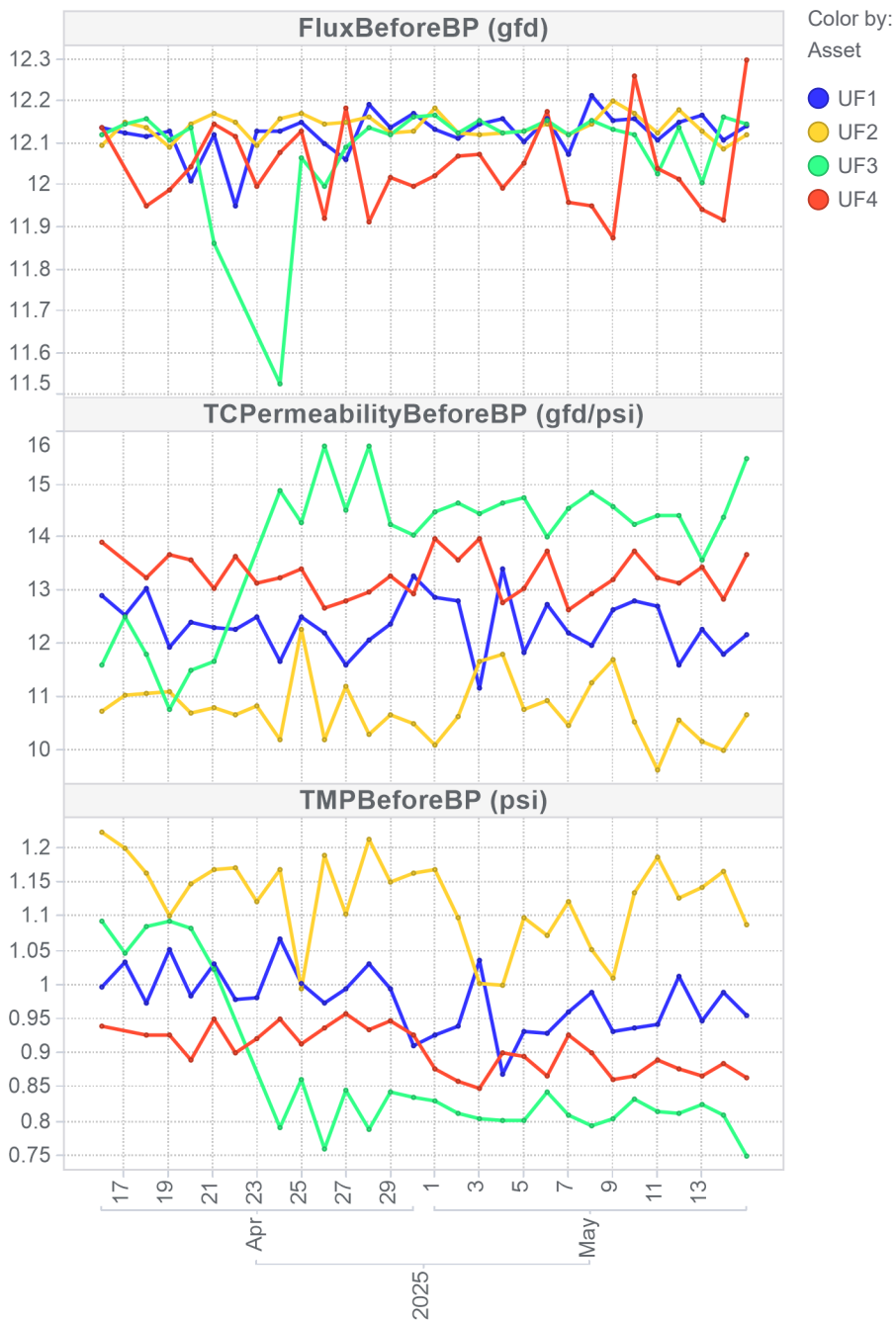
Averages Over Report Period

Parameter	Unit		UF1	UF2	UF3	UF4
FluxBeforeBP	gfd	Value	12.01	12.01	12.04	11.98
		Change	0%	0%	0%	-1%
FluxDuringBP	gfd	Value	18.65	18.46	16.03	18.67
		Change	0%	0%	-11%	0%
PermeateTurbidityAfterBP	NTU	Value	0.14	0.80	0.30	0.04
		Change	11%	29%	-37%	20%
TCPermeabilityBeforeBP	gfd/psi	Value	12.63	10.94	13.75	13.88
		Change	-2%	2%	16%	1%
TCPermeabilityDuringBP	gfd/psi	Value	12.52	12.61	9.12	10.13
		Change	-7%	-4%	-17%	-6%
TMPBeforeBP	psi	Value	0.98	1.13	0.90	0.90
		Change	-5%	-11%	-25%	-7%
TotalPermeateFlowDaily	gal	Value	207,696.10	206,285.40	157,216.30	324,990.50
		Change	-20%	1%	-60%	20%

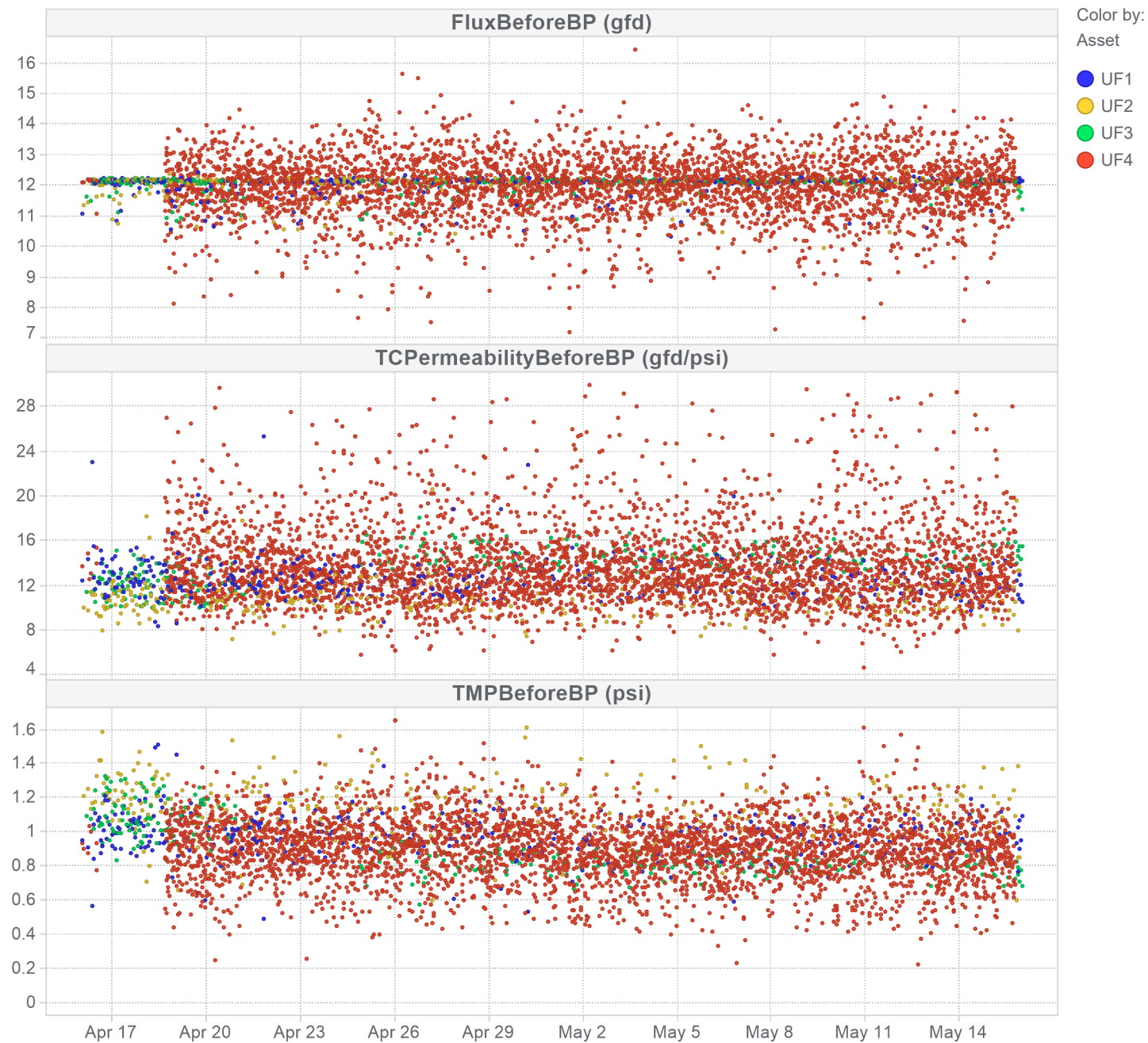
Temperature Corrected Permeability Trends



MBR KPI Daily Median Averages



MBR KPI Raw Trends



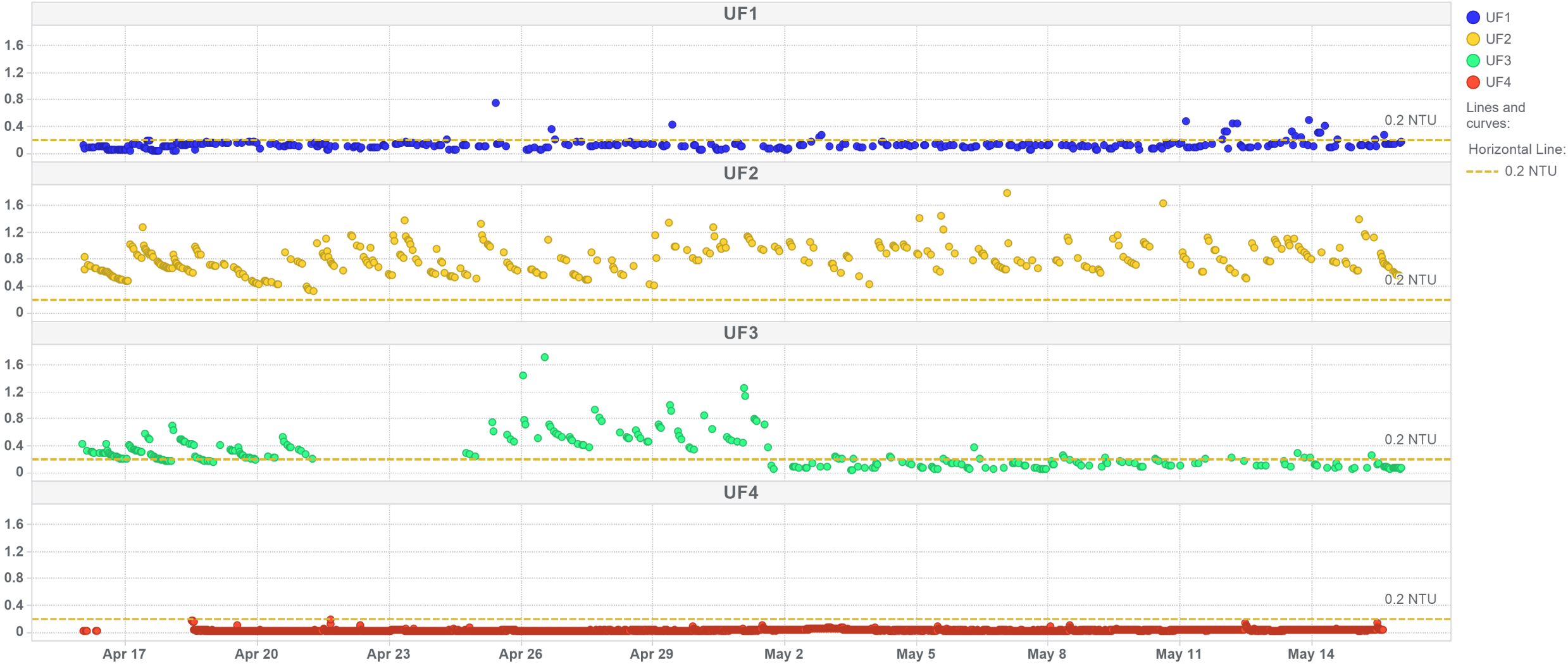
Permeate Turbidity: % Data Within Range

Parameter	Value Range	UF1	UF2	UF3	UF4
PermeateTurbidityAfterBP	< 0.20 NTU	93.78%	-	41.55%	99.97%
	> 0.50 NTU	0.52%	93.75%	17.23%	-
	0.50 NTU > x > 0.20 NTU	5.70%	6.25%	41.22%	0.03%

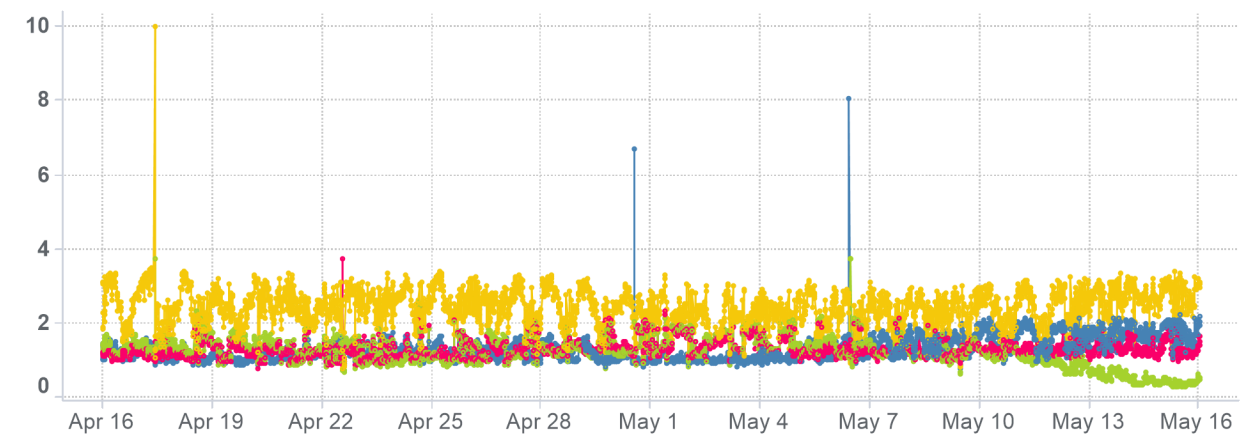
Permeate Turbidity Distribution

Parameter - Unit	Asset	Average	Min	Max
PermeateTurbidityAfterBP (NTU)	UF1	0.14	0.05	0.76
	UF2	0.80	0.34	1.78
	UF3	0.30	0.05	1.72
	UF4	0.04	0.03	0.20

PermeateTurbidity Trends



Dissolved Oxygen and pH Trends

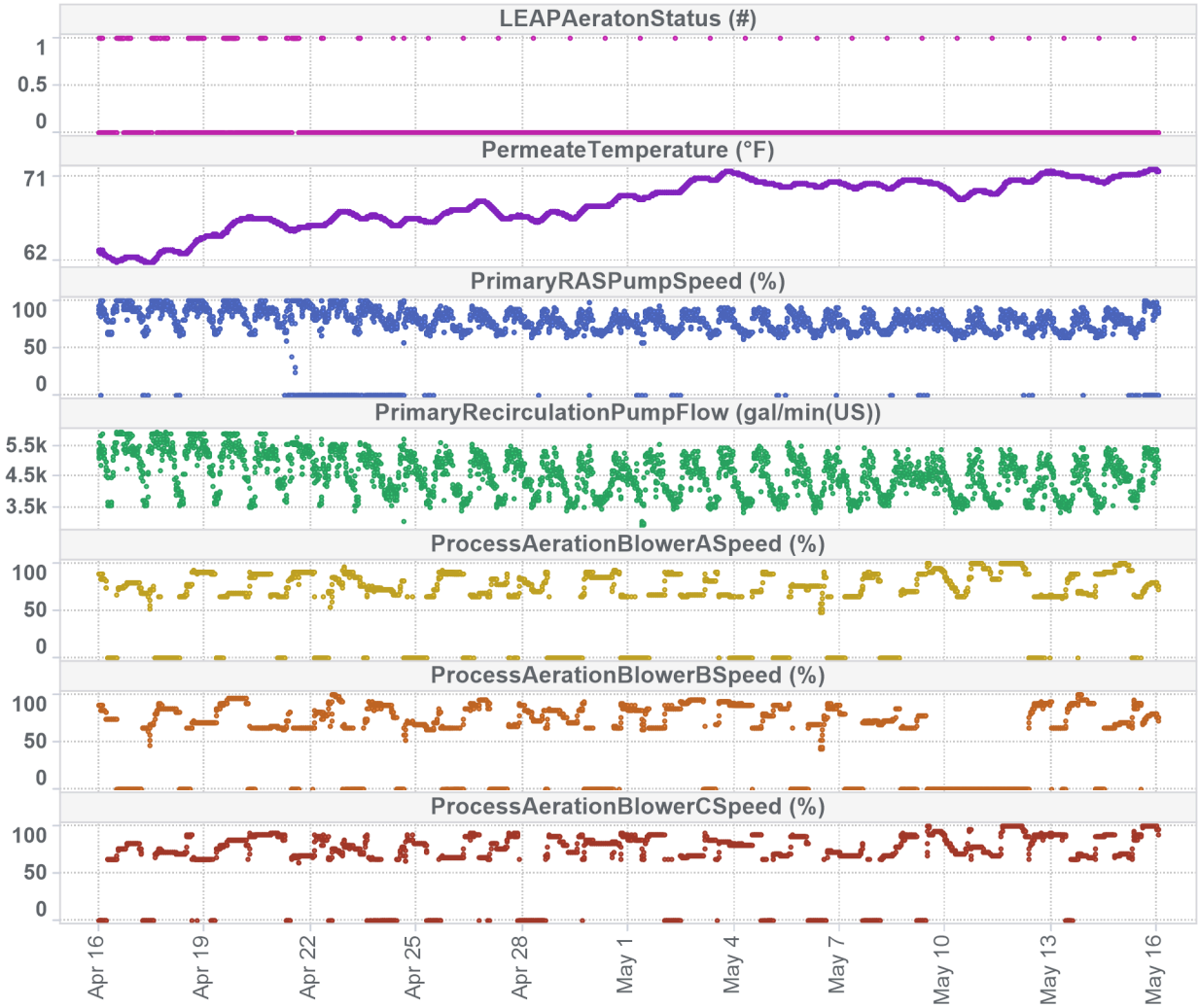


Process Control Parameter Distribution

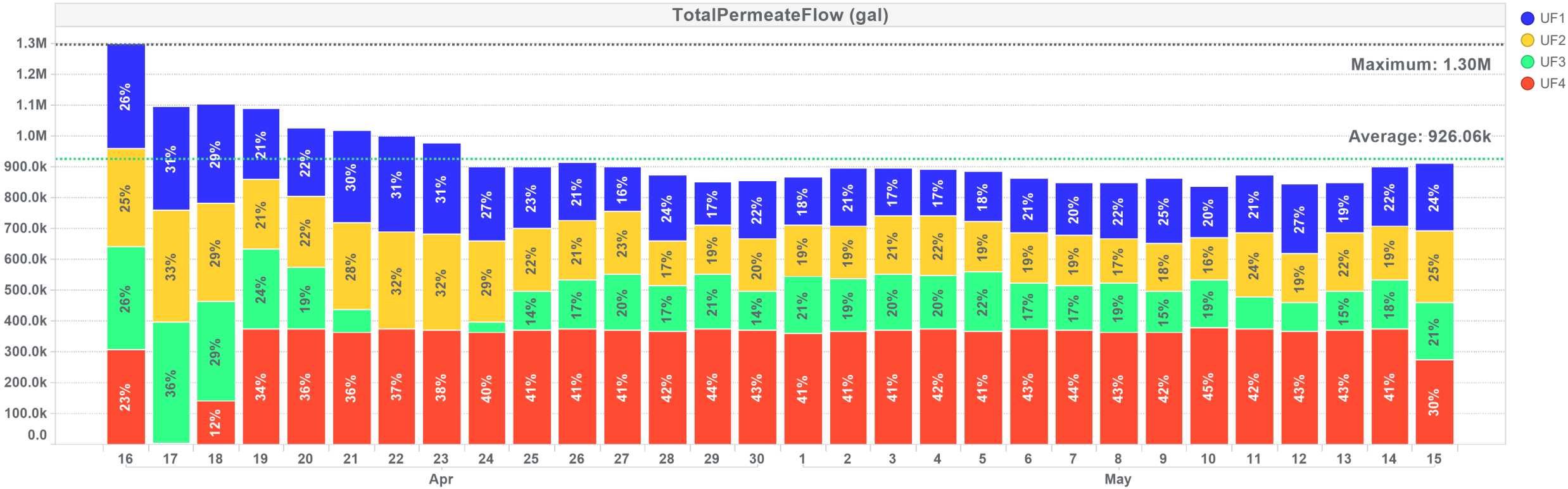
Parameter - Unit	Asset	Average	Min	Max
FeedFlowRate (gal/min(US))	UF1	375.69	0.00	1193.00
	UF2	439.18	0.00	599.00
	UF3	361.93	0.00	562.00
	UF4	520.04	0.00	1165.00
FoamPumpFlow (gal/min(US))	UF Plant	0.01	0.01	2.89
MembraneAerationAirFlow (scfm)	UF Plant	1255.51	0.00	3347.45
PermeateTemperatureAfterBP (°F)	UF1	64.77	59.62	71.69
	UF2	64.96	59.63	71.67
	UF3	64.33	59.62	71.67
	UF4	67.82	59.62	71.52
PrimaryRASPumpSpeed (%)	UF1	78.91	0.00	100.00
	UF2	73.14	0.00	100.00
	UF3	74.05	0.00	100.00
	UF4	78.08	0.00	100.00
PrimaryRecirculationPumpFlow (gal/min(US))	UF Plant	4523.26	2363.64	5936.30
ProcessAerationBlowerASpeed (%)	UF Plant	56.41	0.00	100.00
ProcessAerationBlowerBSpeed (%)	UF Plant	53.32	0.00	100.00
ProcessAerationBlowerCSpeed (%)	UF Plant	59.88	0.00	100.00
TotalWASFlowDaily (gal)	UF Plant	181.82	0.00	10000.00
WasteSlugWASFlow (gal/min(US))	UF Plant	9.66	0.03	300.00

Dissolved Oxygen Distribution

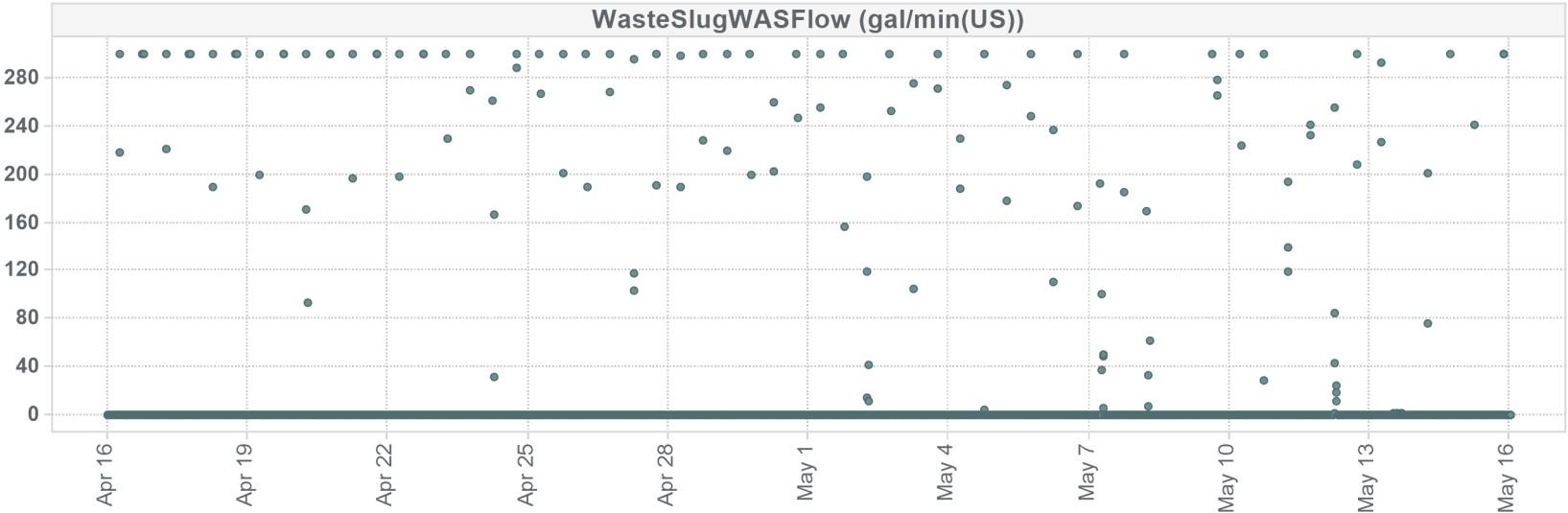
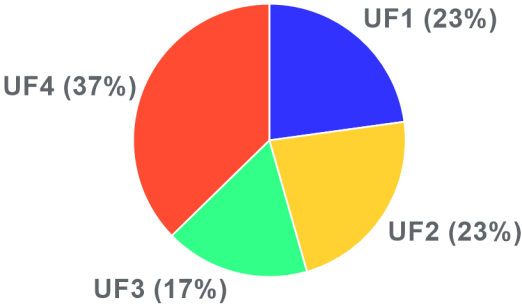
	Parameter - Unit	Average	Min	Max
	AerobicZoneTank1 DissolvedOxygen (mg/L)	1.31	0.82	3.75
	AerobicZoneTank2 DissolvedOxygen (mg/L)	1.31	0.81	8.04
	PreAnoxicZone1Tank DissolvedOxygen (mg/L)	1.24	0.31	3.74
	PreAnoxicZone2Tank DissolvedOxygen (mg/L)	2.43	0.81	10.00



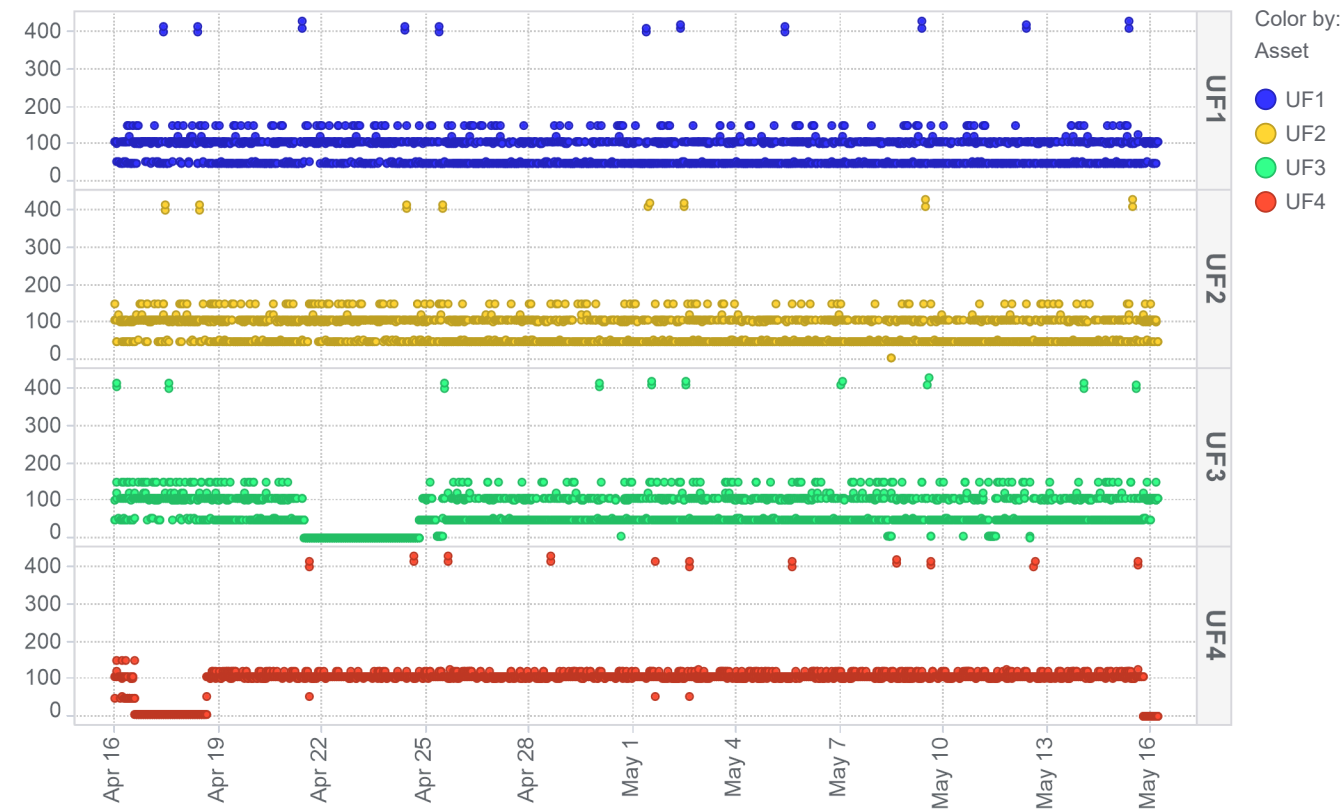
Production Summary



Flow Division



Train Status Plot



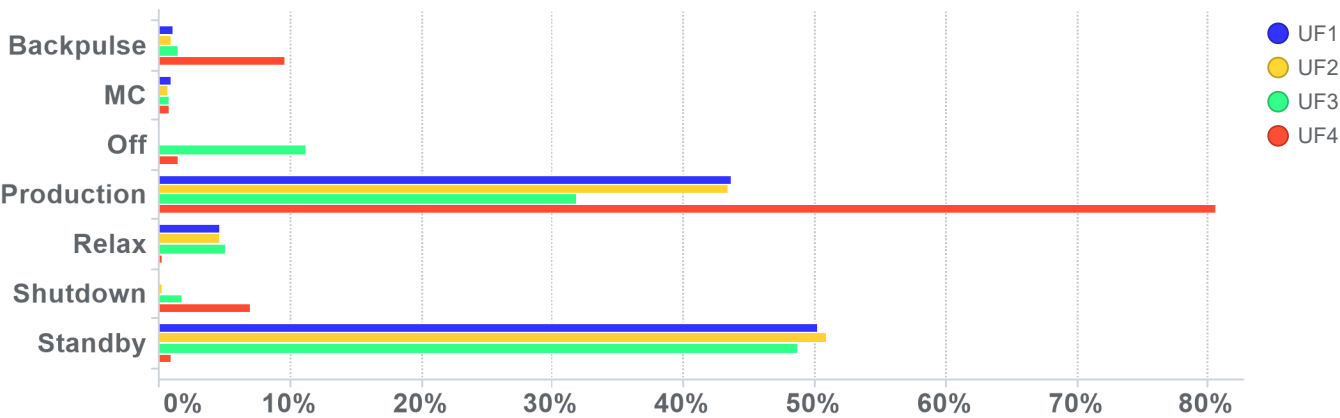
Train Status Legend

- 2 = Off (includes manual recovery cleans)
- 7 = Shutdown
- 52 = Standby
- 102 = Production
- 152 = Relax
- 400 = Maintenance Clean
- 500 = Recovery Clean

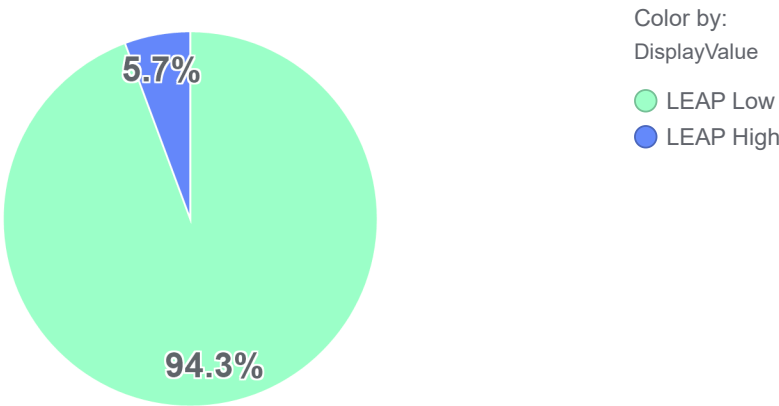
Train Status Analysis

Mode	UF1	UF2	UF3	UF4
Backpulse	0.93%	0.76%	1.38%	9.51%
MC	0.76%	0.55%	0.69%	0.73%
Off	-	-	11.06%	1.42%
Production	43.55%	43.24%	31.77%	80.50%
Relax	4.56%	4.49%	4.91%	0.14%
Shutdown	-	0.07%	1.62%	6.88%
Standby	50.19%	50.88%	48.57%	0.83%

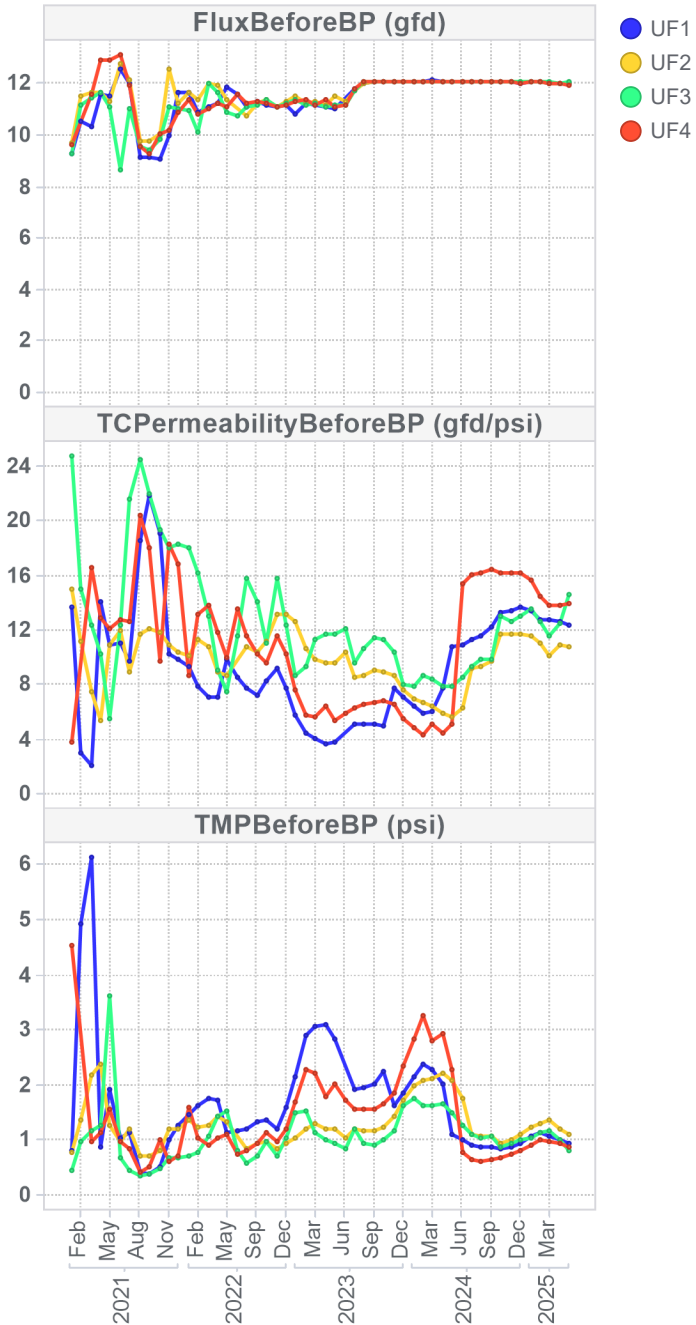
Train Status Distribution % Time



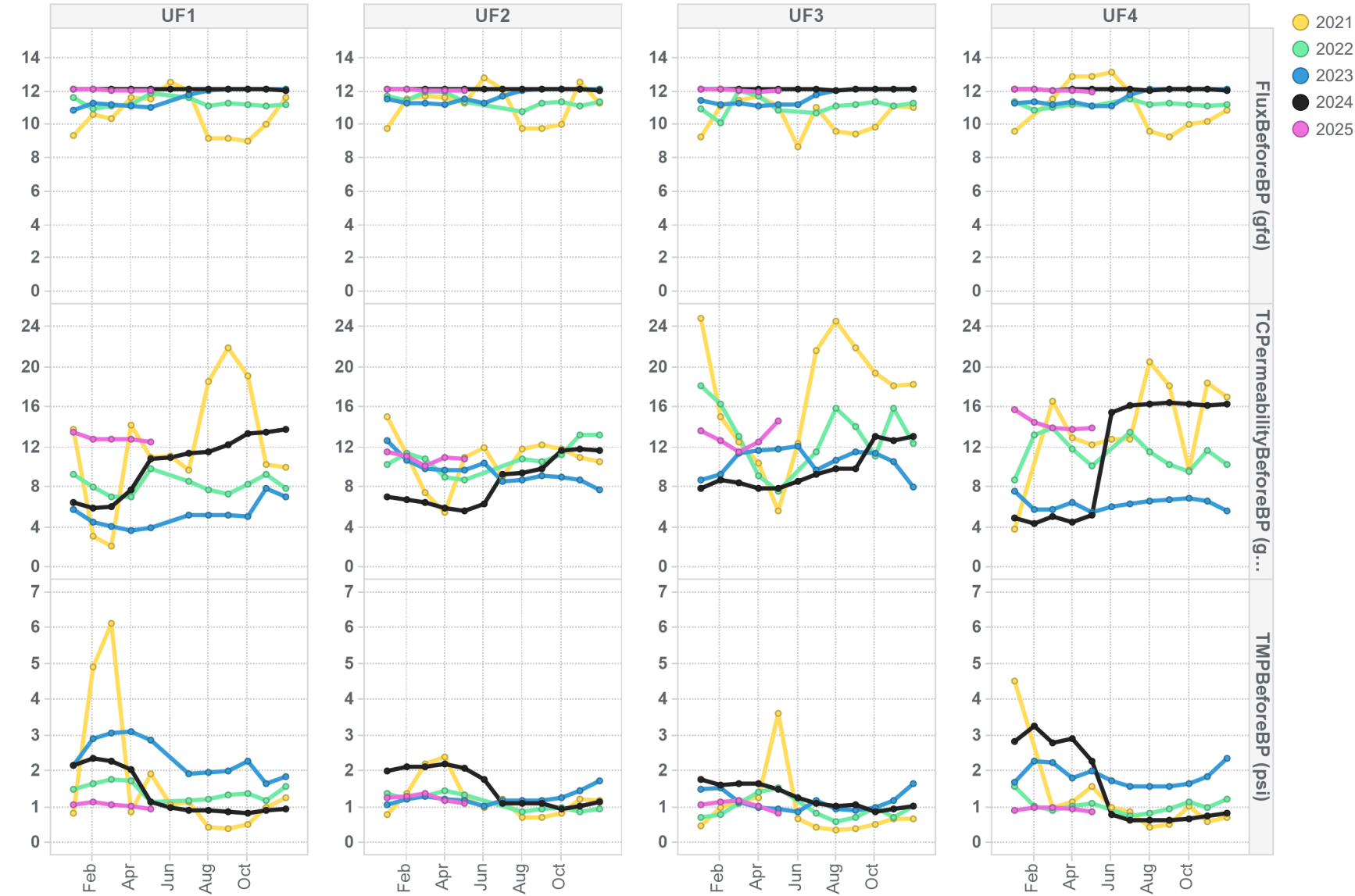
LEAP Aeration Distribution



Long-term KPI Trends



Comparing Data Year to Year







The graphs to the left are chronological in time. The graphs above on the right of the page are coloured by year (ex. black for 2024, blue for 2023). Both are used to track long-term performance. Comparing year to year additionally accounts for seasonality (ex. comparing Dec 2023 to Dec in 2022 and 2021).

Bite-Sized Safety Moment

2.4.1 Locking out components

Components need to be locked out or tagged out to help prevent:

- Contact with a hazard where safe guarding devices need to be temporarily bypassed, removed, or deactivated.
- The unintended release of hazardous energy (stored energy).
- The unintended startup or motion of equipment, machinery, or processes.

⚠ WARNING	
	General Hazard All relevant local guidelines and procedures must be observed.
	Not to be Serviced by Users Only operators qualified to work with the device must perform a lockout procedure.
	Lock Out / Tag Out Equipment Locks and lockout tags must be applied before performing the lockout procedure and must be removed only after work has been completed and by the person who applied them.
	Equipment Hazard Never bypass an interlock.

For InSight technical assistance please email insight.dcs@veolia.com or please call technical support at 1 866 271 5425 or 905 469 7723 and follow the prompts, if you require after hours assistance please contact the 24/7 Emergency number provided in your plant documentation. This email is a summary of issues identified during a manual review of InSight data from the time period above. This review is an analysis of data that is logged by InSight and identifies key plant performance issues determined from this data. This data review was not focused on minor data issues but on identifying possible existing and/or upcoming critical operational issues.

This review was prepared by Veolia Water Technologies & Solutions solely to assist water treatment plant owners and/or operators in analyzing and optimizing plant performance and is not intended to be used or relied upon for regulatory compliance or any other purpose. The content of this review is based in whole or in part on operation data obtained from the plant using InSight software. Veolia Water Technologies & Solutions makes no representations or warranties as to the accuracy of the plant data utilized in the preparation of this review. Veolia Water Technologies & Solutions accepts no liability for consequences or actions taken in whole or in part by any person on the basis of this review or its contents.