

Rattler System Overview and Automation Challenges



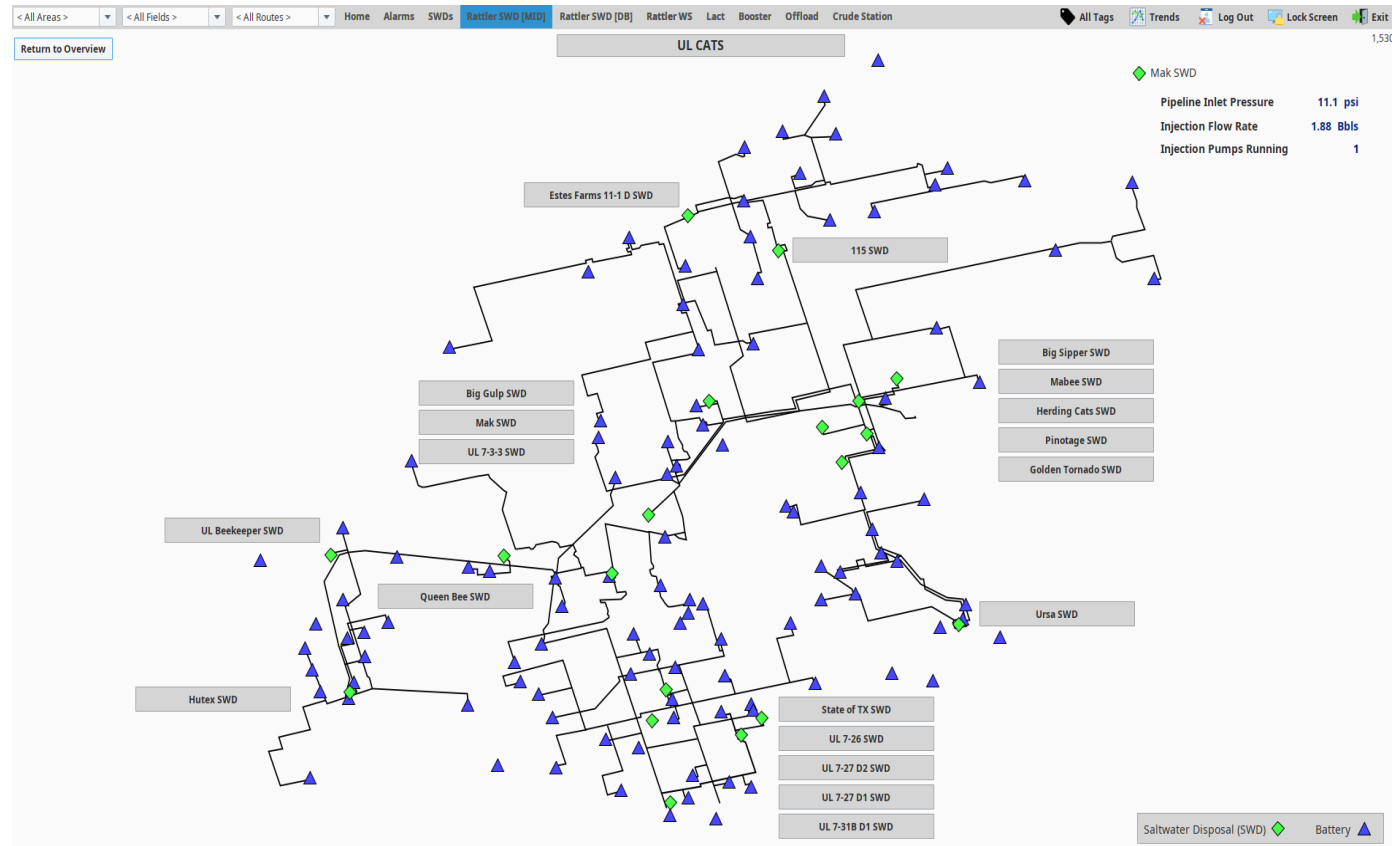
**Oil Field Water Management Symposium
March 30, 2023**



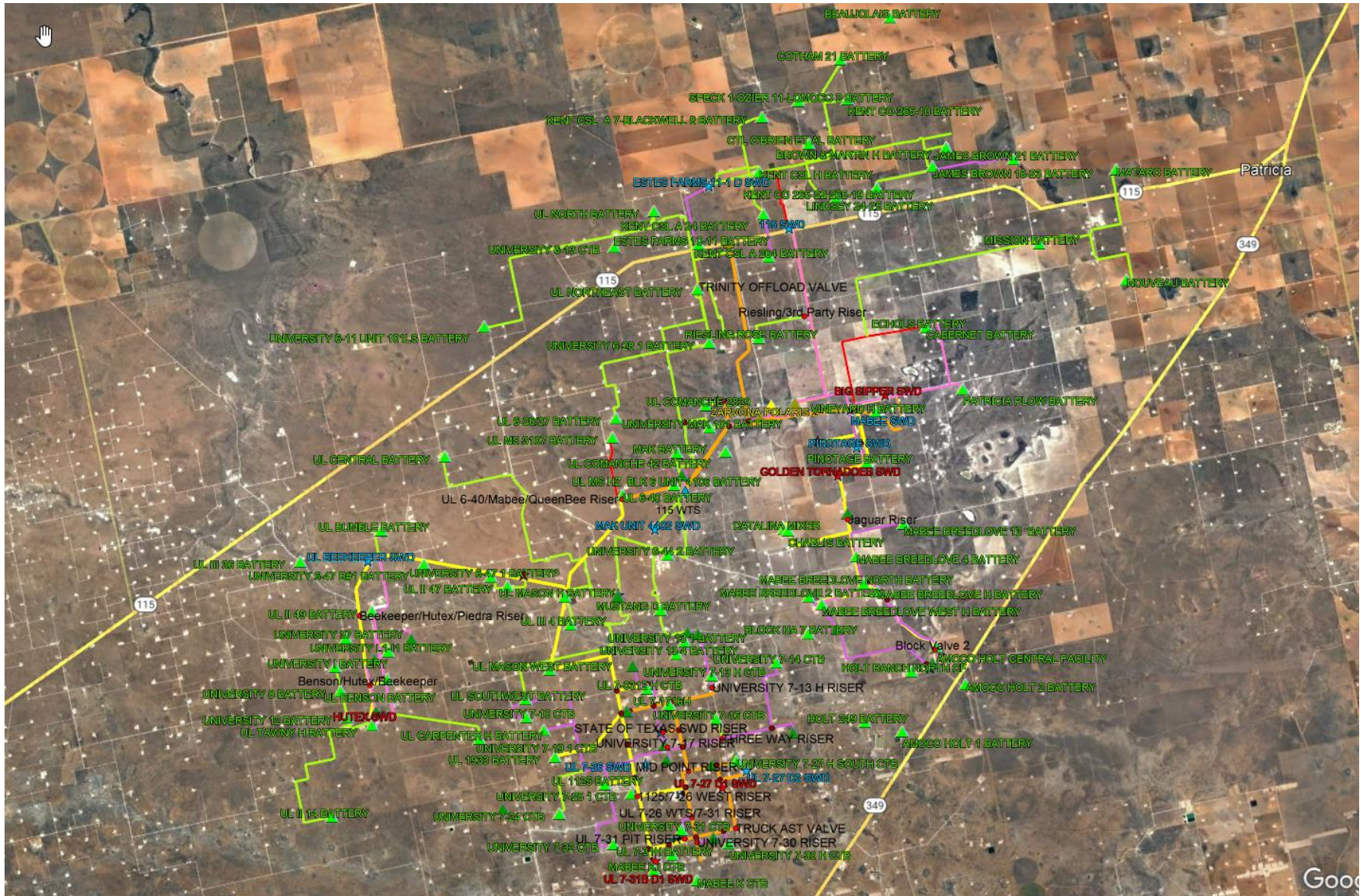
**RATTLER
MIDSTREAM**

System Overview

- 18 SWD's
- Estimated ~200 Miles of pipe between Production and Midstream.
- 27 Midstream water measurement points for 3rd parties.
- System uses approximately 200 data points per site of what we consider critical.

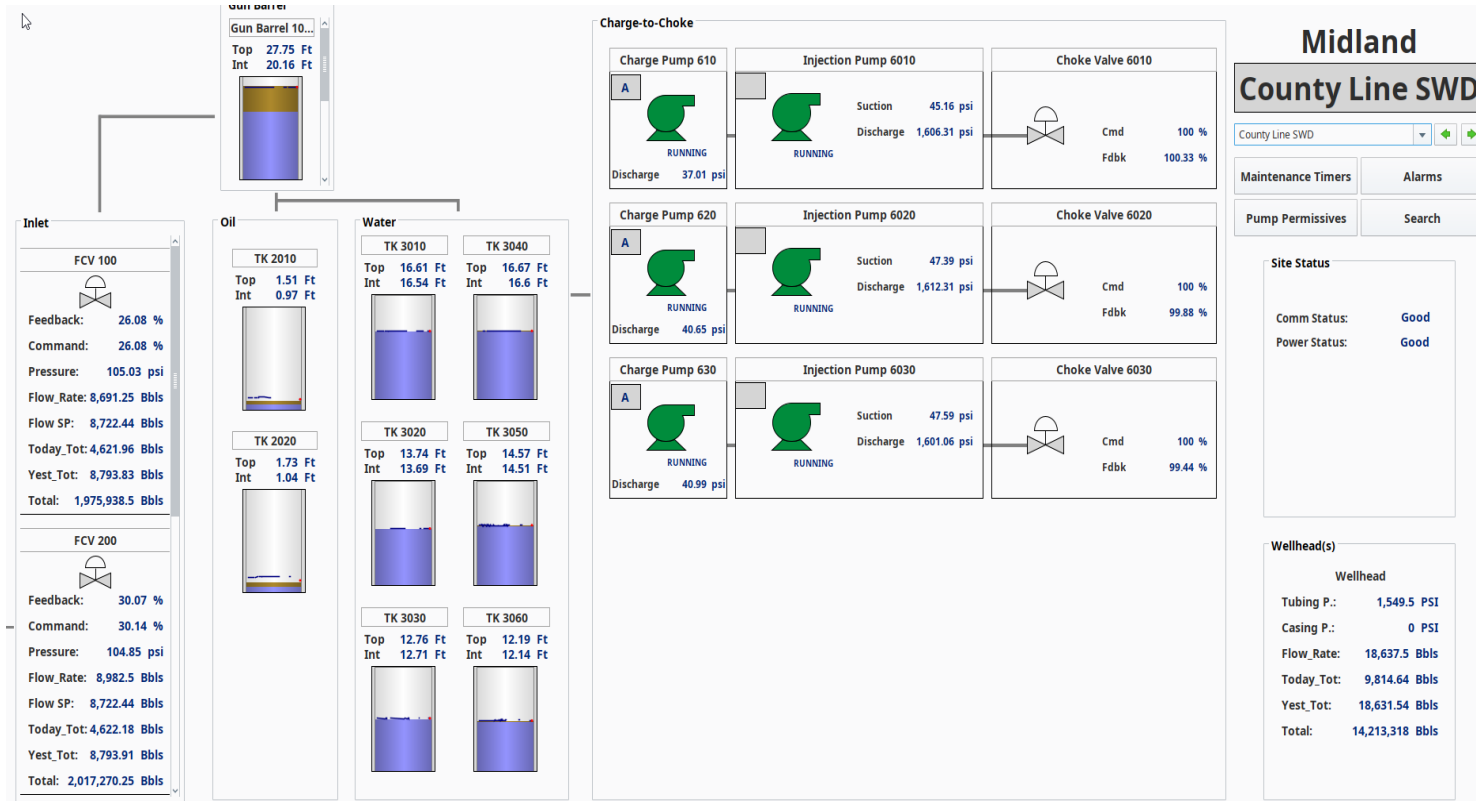


Geographic System Overview



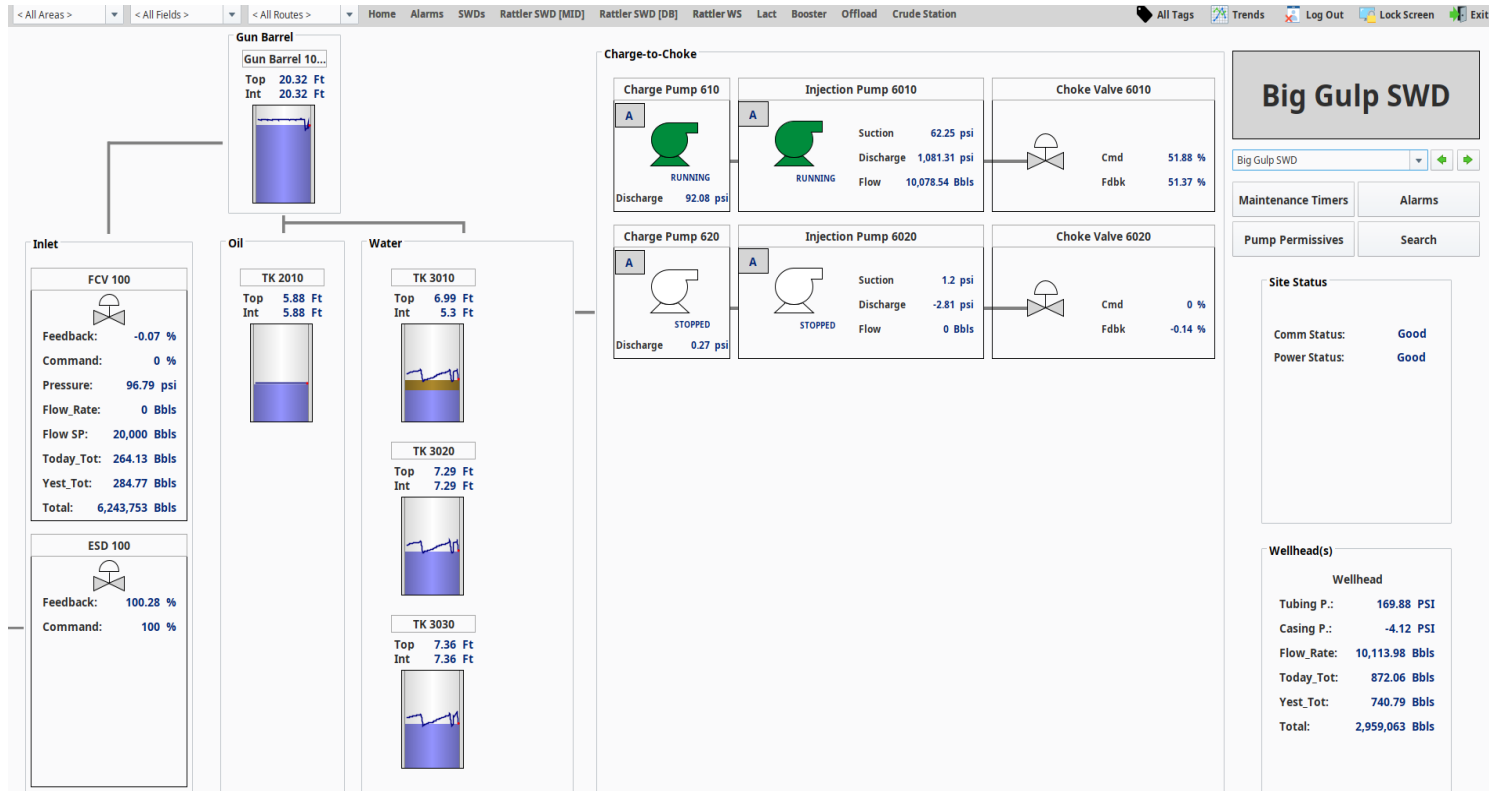
Facility Screen Overview

- Typical SWD overview that displays all KPIs at a glance.
- Integrated flow path design for new operators.
- Sparkline trends on all tanks to be able to catch problems early.



Facility Screen Overview

- SWD overview that displays a high line pressure with inlet valves closed to redirect water to pits.
- Pipeline Psi protection in place to prevent line breakage.

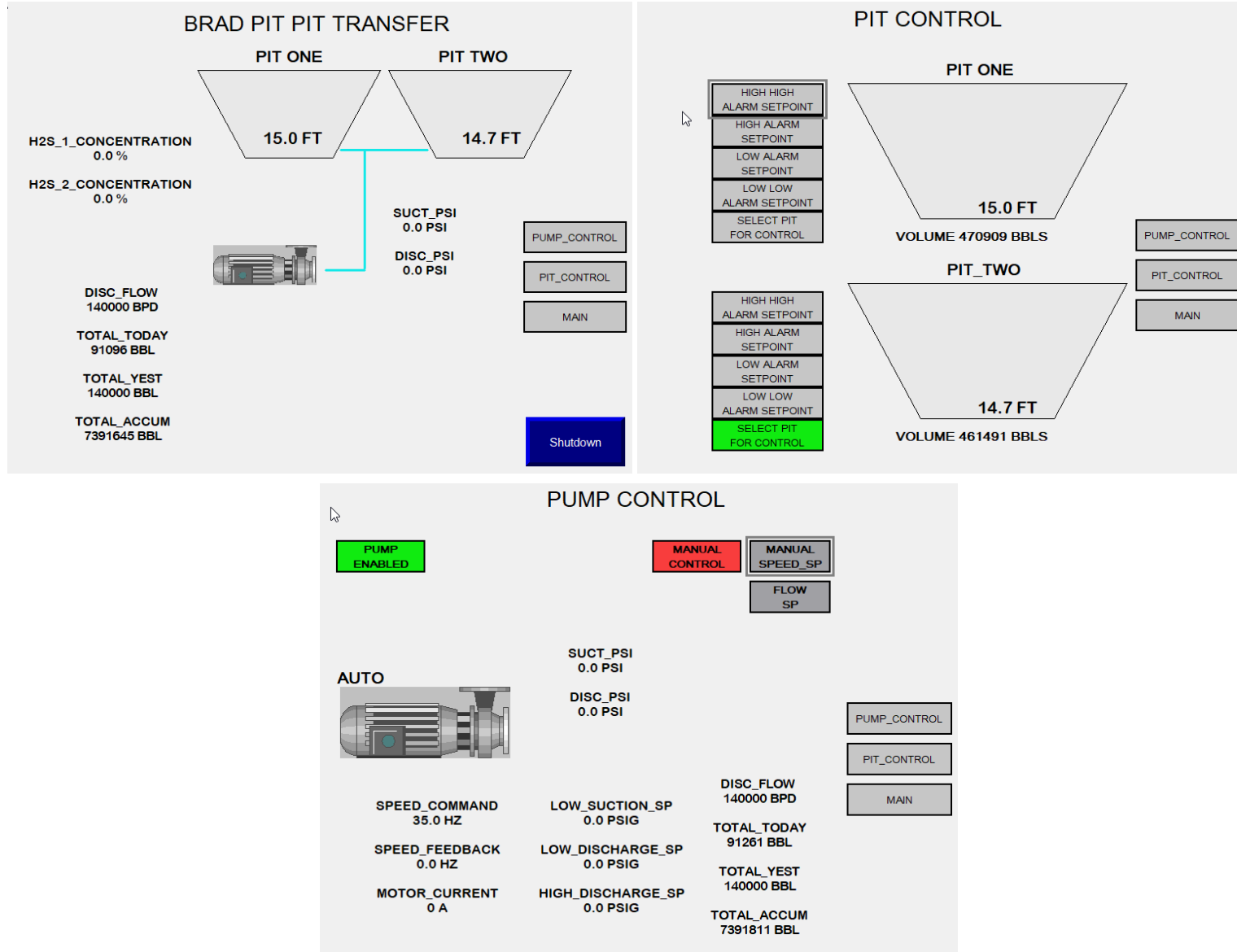


Water Treatment Facility Overview



Pit Transfer Overview

- Pit to Pit transfer
- Pit level monitoring
- Volumetric balancing
- Remote control of water transfer assets



Water KPI / Goals

DAF Water KPI

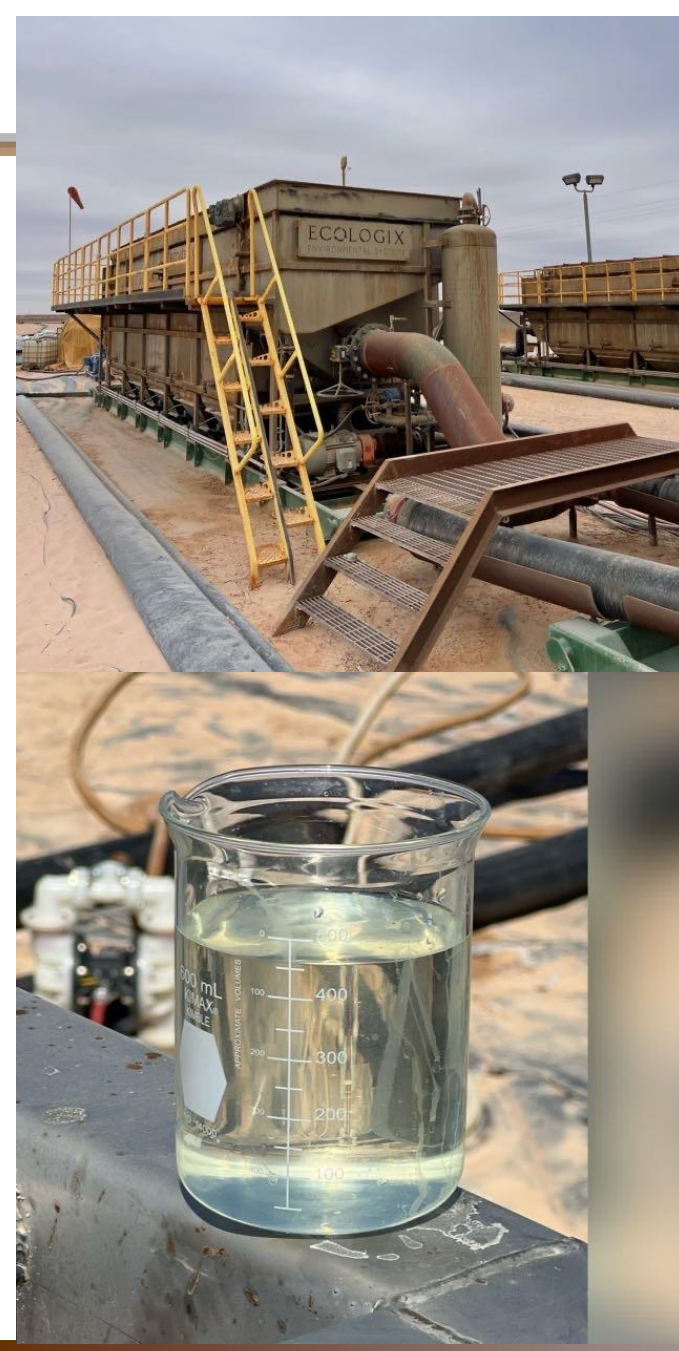
- Iron > 5
- PH 6-7
- NTU > 15
- ORP < 250
- TPH > 3

DB Style KPI

- THP > 5
- No bacteria 30,60,90 Day Testing

Diamondback TW Goals

- 2023 – 50%
- 2024 – 55%
- 2025 – 65%



SWD Discharge Overview

- Typical high-pressure side of an SWD.
- Power is filtered to keep harmonic distortion out of distribution lines.
- Choke valves keep the pump in the curve when the well is on a vacuum.
- Long-term logging of injected volumes and pressures.



Inlet Management System

- Skidded inlet water flow.
- Easily deployable to existing sites.
- Skid is built with an integrated ESD butterfly valve and FCV ball valve.
- All values are monitored using Ethernet I/P and logged to enable remote diagnosis of problems.



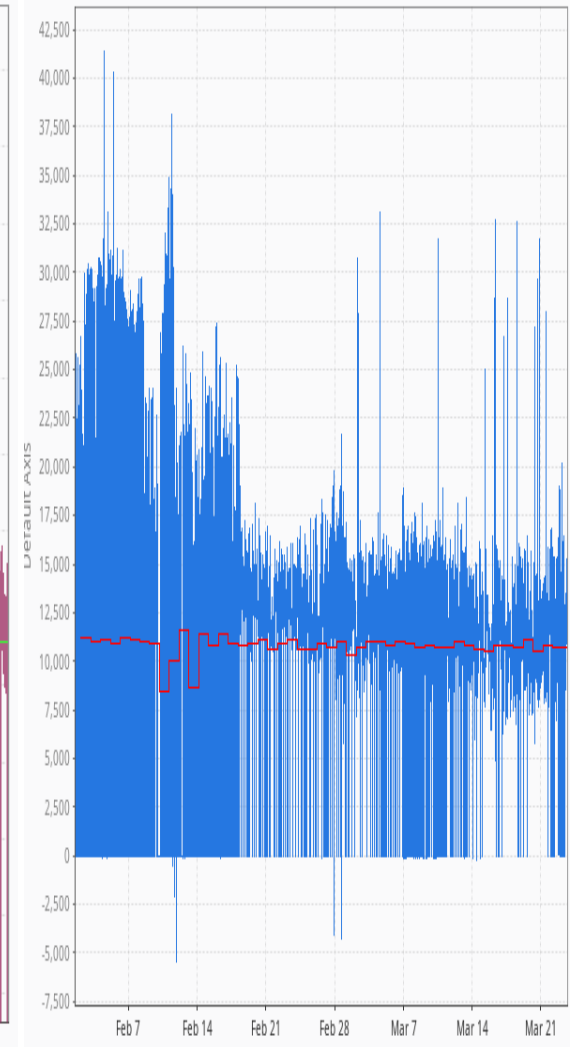
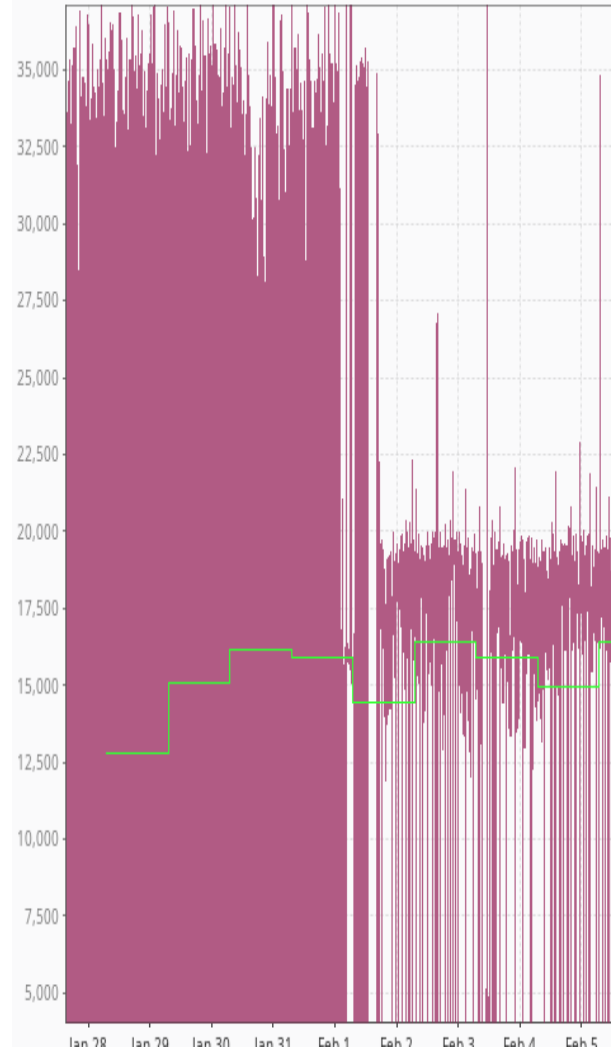
Offload Meter

- Monitor and control water coming in from 3rd parties to keep from overrunning systems.
- Site is an off-grid set-up to enable installation away from existing power lines and communication towers.



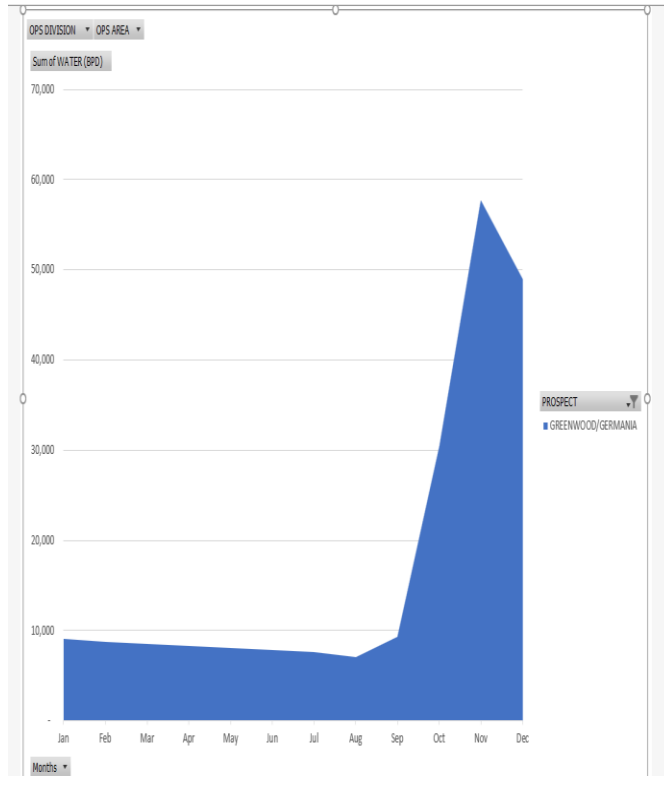
Instantaneous Rate Challenges

- High instantaneous rates make level-loading the system difficult.
- Better utilization of VFDs on production CPFs help keep pressure spikes out of the system.
- Communication between SWD systems and CPF to limit rates into a loaded system based on CPF water tank levels.

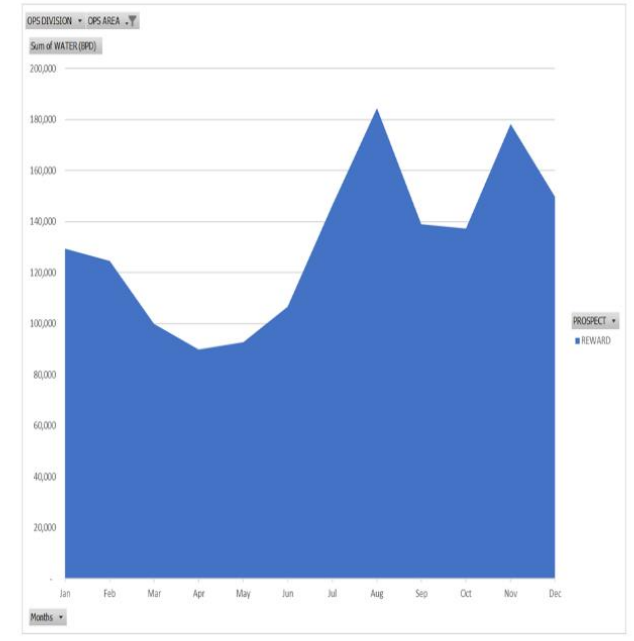


Peak Challenges

- Peak shaving of newly drilled wells.
- Collaboration between SWD midstream and Treatment groups helps to shave high peak volumes.

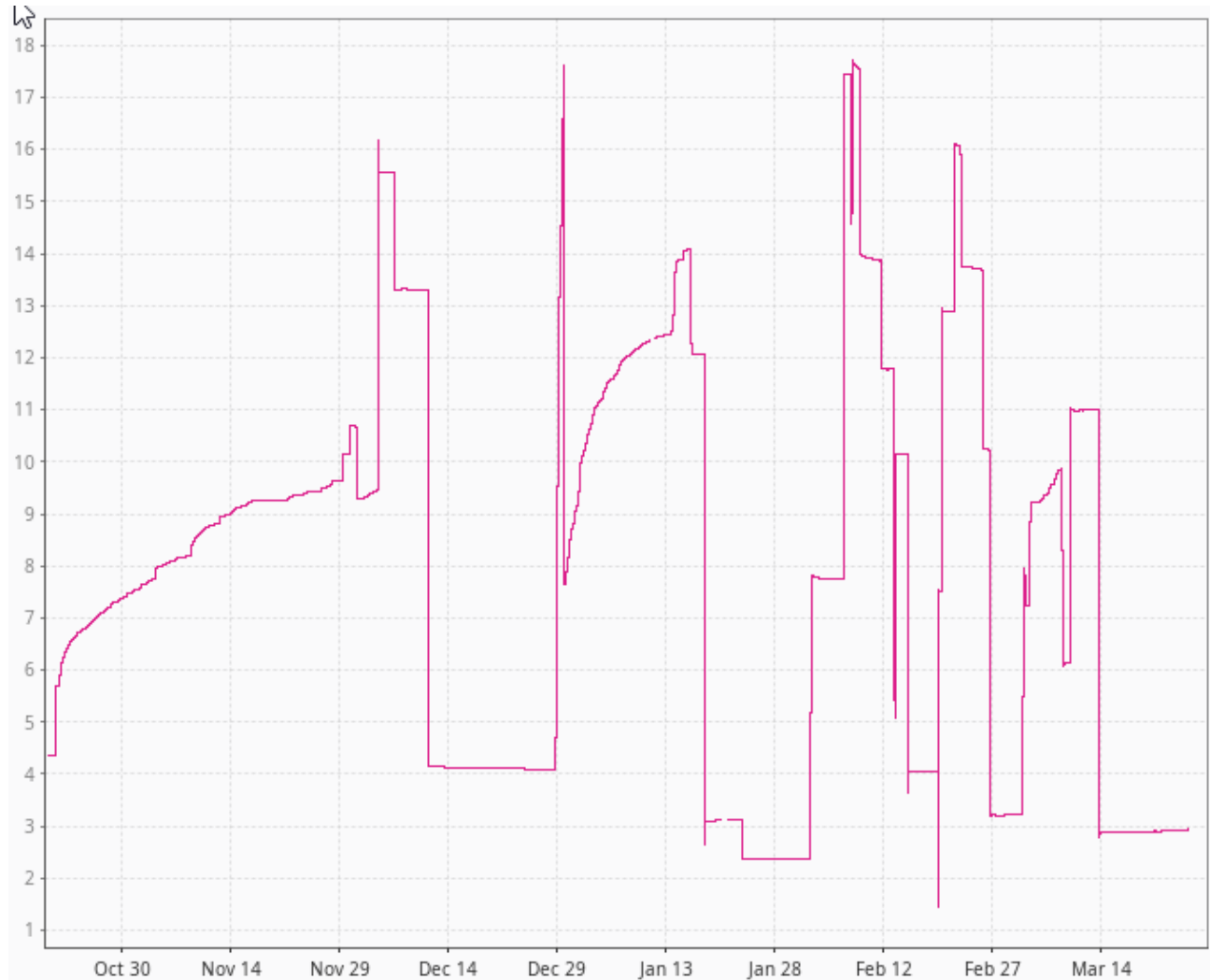


Reward SWD Forecast



Oil Challenges

- 160-day view of combating oil incoming from production assets.
- Systems shuts in due to high tank levels.
- Pressure spikes in an already loaded system.
- Mag meter measurement errors causing PID loop disruption.
- Costly tank and pit cleanouts.



“WHISKEY IS FOR
DRINKING
&
WATER IS FOR
FIGHTING”

- Mark Twain



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