

REDUCING OPERATIONAL COSTS AND ENVIRONMENTAL IMPACT WITH WELLAWARE ON DEMAND CHEMICAL

**Effective chemical
management is essential
in the industrial oilfield.**



Oil and gas producers need specialty chemicals to preserve critical infrastructure, maintain production throughput, promote employee safety, and much more. By investing in chemicals, oil operators can achieve key business objectives, maximize the productivity of valuable assets, and even protect the environment.

In this case study, we discuss how [ChampionX](#), the world's largest oilfield chemicals service provider helped a top 10 U.S. oil producer, reduce its operational costs and environmental impact using the WellAware On Demand Chemical platform. Today, their chemical management program supports its large production footprint and enables better fracking operations and reduced costs in the Permian Basin.



What is WellAware On Demand Chemical?

WellAware On Demand Chemical is a turnkey platform that allows operations and chemical program managers to monitor, control, and automate chemical injection systems. The solution is designed to help leaders treat the right amount of chemical at the right time.

Our platform fixes the biggest chemical dosing problems that plague industrial organizations, including pump downtime, empty tanks, injection variance, and more. Through WellAware On Demand Chemical, we provide:

- Hardware with a lifetime warranty
- Guaranteed connectivity and data quality
- Easy-to-use software
- Integrations with SCADA and other platforms
- World-class user support



We currently monitor over 2,000 chemical injection systems across the globe. Some of the largest industrial companies in the world, like ChampionX and a large independent operator, trust WellAware On Demand Chemical to optimize chemical injection systems around critical business outcomes.

The Problem

Like most unconventional oil producers in the U.S., the operator has a water problem. The company needs large volumes of water for its hydraulic fracking operations, which isn't unusual. According to the United States Geological Survey (USGS), some fractured wells require [up to 16 million gallons of water](#). Furthermore, like every drilling operator, they need its water to be of a certain quality to ensure a successful drilling program. Unfortunately, [freshwater is becoming increasingly scarce](#) and can be both inefficient and costly to obtain.



In general, fracking operators want to reduce their net consumption of water by using recycled produced water (brine). This water source is both cheaper and better for the environment, as it enables operators to pull less fresh-water from surface and underground reservoirs. To reduce their net water consumption, however, they need a way to treat, process, and reuse produced brine.

Since becoming an active unconventional driller in West Texas, the operator has developed a wide network of frac ponds in the prolific Permian Basin. Like those of many other fracking operators, the ponds store water that will eventually be used for fracking projects. In recent years, the operator has enhanced their water program through a network of water gathering and distribution lines that deliver water wherever it's needed. This permanent infrastructure has allowed the company to be much more efficient than many of its competitors in the most productive oil basin in the world.

THE OPERATOR HAD A SCALE PROBLEM.

The company's 36-inch HDPE pipes used to transport frack water were prone to scale precipitation when brine was introduced. The recycled frac water introduced sources of scale from the reservoir as it was injected into the formation and then reproduced. The operator wanted to treat its produced water to inhibit scales from depositing in HDPE pipes so that they could effectively transport brine in their infrastructure.

Scales reduce water flow, which ultimately limits water capacity. The field workers had to clean pipelines frequently to maintain throughput, which was costly and time-consuming from a labor standpoint. In some instances, the company couldn't get enough water to production sites, forcing operators to buy additional water or delay drilling schedules. Given the massive volumes needed for fracking, this approach wasn't financially sustainable.

If the operator could successfully treat its brine to remove scale precipitates, the organization wouldn't have to spend as much on water and could maintain its aggressive drilling program. The producer could also justify the capital investments it made to build its permanent water transport infrastructure.

Like most producers fighting scale, the operator turned to chemicals. However, implementing a reliable, consistent, and effective chemical management program across a vast footprint proved difficult. Enter ChampionX.

"The whole goal of the permanent infrastructure was to lower the cost of water."

Production Engineer



To successfully treat the operator's scale problem, ChampionX had to design a sophisticated and tailored inhibitor treatment solution. Scale inhibitor needed to be available in many locations so that the operator could apply it to clean brine all across the Permian Basin. The team wanted to deliver brine via mainline infrastructure, creating more complexity for ChampionX.

In the past, we only moved our freshwater municipal water or Santa Rosa water through the infrastructure, just because of the damage that the clean brine could do.”

Production Engineer

“We needed something to work so that we didn’t have to put a ton of manpower on it, because logistically it [is a challenge to be] moving tanks, moving chemical, moving pumps, setting injection points, setting rates according to flow, and you need to know what the flow is going to be. Is it a consistent flow? Are we going to be over-treating or under-treating because we aren’t sure what the [water] flow rate it is?”

ChampionX Area Manager



In the fracking world, where project schedules can change quickly, the operator’s chemical injection system had to adjust on the fly and leverage automation when possible. ChampionX also had to ensure that the operator could control many injection points without overburdening field workers.

Solution

ChampionX turned to WellAware for its On Demand Chemical injection automation solution. Using WellAware's platform, ChampionX was able to implement chemical tank monitoring for the operator to track chemical supply and usage. ChampionX also took advantage of WellAware's remote pump control capabilities for adjusting setpoint targets.

Additionally, On Demand Chemical enabled ChampionX to integrate water flow rates from nearby flow meters and automate operator's chemical injection pumps to deliver constant, proportional dosing. Now, injection rate setpoints update **six times per minute** to match water flow rates, delivering precise, repeatable concentrations of chemical.

Together, these advanced chemical injection capabilities solved the operator's scale problem and set the organization up for long-term success. ChampionX was able to focus on providing unique and novel chemistries, relying on automation to do the heavy lifting of delivering that chemical at the right dosage. With WellAware, ChampionX provided a comprehensive answer to the operator's scale problem.

The Benefits

Today, the operator has a finely tuned scale inhibition program, thanks to ChampionX and WellAware On Demand Chemical. Below are some of the operator's key successes from the last several years.

Better Overall Chemical Performance

The operator has had **zero empty chemical tanks** in nearly two years as a result of WellAware's tank level monitoring feature. And no empty tanks means **no injection loss**. This is especially impressive given the dynamic nature of the operator's fracking schedule.



The operator's chemical injection program achieved an injection variance of **less than 2% from target** in Q3 2020, far below industry baseline averages of 20–40%. Put simply, The operator is delivering the right amount of chemical at the right time with much greater efficiency and effectiveness than other industrial organizations. The company no longer overspends on specialty chemicals or has flow problems through its pipeline infrastructure.

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Lower Operating Costs & ROI Validation

Both ChampionX and the operator have reduced operating costs with WellAware On Demand Chemical. ChampionX area managers no longer need to be on location constantly to address changes in the operator's dynamic chemical system. Field technicians also don't have to monitor inventory or update injection rate setpoints manually.

Moreover, they can adjust PPM targets remotely and don't have to spend as much time in the car driving between sites. Total Recordable Incident Rates (TRIR) and Tail Value at Risk (TVAR) are down, as ChampionX personnel are safer overall.

"There is a cost associated with the disposing of produced water, so any time we can lower that cost, it is a plus for the operator."

Production Engineer

On the operator side, water costs related to fracking are much lower, as pipeline capacity has improved by 30% and water disposal costs are down. On top of that, The operator also has the tools and data it needs to prove the ROI of its decision to invest in its pipeline infrastructure.

Reduced Environmental Impact

Previously, the operator sent clean brine to salt water disposals (SWDs) for removal. Now, The operator can recycle this water for reuse, thus minimizing its environmental footprint. The company has also lessened its exposure to leaks related to clean brine transport.

Improved Visibility and Response Time

Both ChampionX and the operator report that WellAware On Demand Chemical provides better visibility and response times for tracking costs and calibrating injection systems. ChampionX appreciates the solution's real-time data streams and uses the information to evaluate the effectiveness of the operator's entire chemical treatment program.

The operator's production engineers use WellAware's reports to make informed decisions related to treatment concentration and dosing. The operator's team also incorporates daily insights into its existing SCADA system.

**The operator's
pipeline capacity
has improved by
30%**



"We used to have transfer pumps and lay-flat, and the risks associated with that are pretty high when you are moving clean brine. You need line monitors, you need to make sure we don't spill the high TDS water, and so by using the permanent infrastructure in place where we have already invested capital, we have been much more efficient."

Production Engineer

"The weekly WellAware reports have been helpful, especially for me as I do cost tracking, and I make sure we are pumping what we need. It is helpful for me to see exactly what we are injecting, how that relates to our monthly costs. I am always looking for ways to improve, and that visibility has been very helpful."

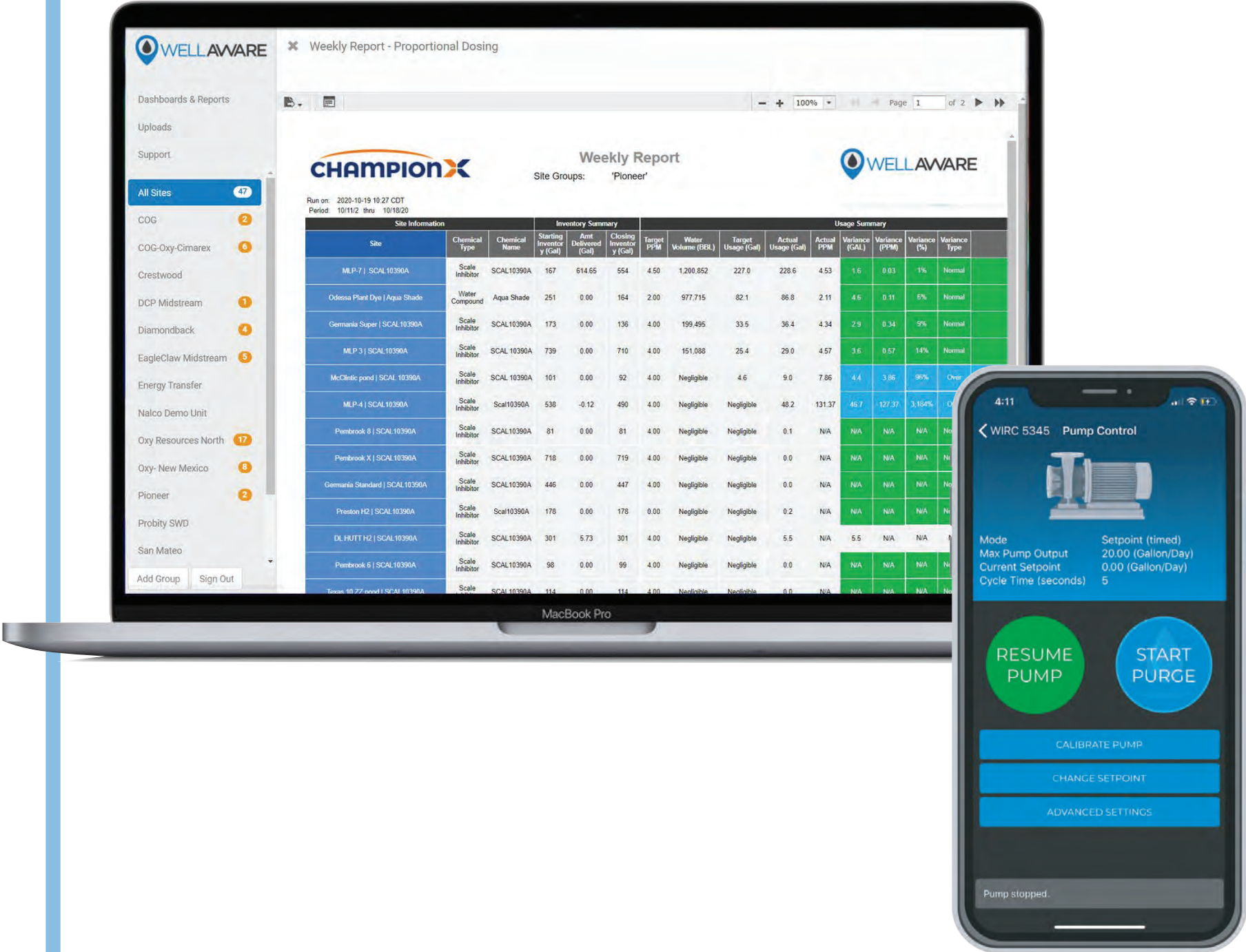
Production Engineer

Stronger Working Relationship

Finally, WellAware On Demand Chemical was instrumental in strengthening the relationship between the operator and ChampionX. In the competitive Permian Basin, the platform helped both companies stay ahead of the competition. On Demand Chemical was a crucial part ChampionX's solution for optimizing the operator's chemical management operations.

"There are a lot of companies out there that have come to us with a number of solutions to these problems, whether it be automation, pumps, or monitoring, and overall we have been very happy with what ChampionX and WellAware have provided. Overall, it has been very, very good."

Production Engineer



LEARN MORE ABOUT WELLAWARE ON DEMAND CHEMICAL

In summary, WellAware On Demand Chemical played an important role for ChampionX in helping the operator reduce its fracking operational costs and environmental impact. The platform continues to serve the operator and its production infrastructure well.

To learn more about why thousands of oil & gas companies use WellAware On Demand Chemical, visit our website [here](#).

30%

WATER CAPACITY INCREASE

10X

BETTER TREATMENT ACCURACY

27%

LOWER CHEMICAL COSTS



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