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Hooking Up The Oil Patch's Water Value Chain

Leslie Haines Executive Editor At Large, Hart Energy Wednesday, October 3, 2018 - 7:00am



Oilfield Water Logistics is building this deep disposal facility to the Devonian on Highway 128 in Lea County, N.M. Capacity is 25,000 bbl/d. (Source: Oilfield Water Logistics LLC)

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There has never been a better time to be in the water sourcing, treating and disposal business for the oil field. Water handling companies that started four years ago are riding a rising wave of produced water disposal needs, and they are building infrastructure, acquiring rivals and even readying to go public.

Nowhere is produced water adding up as quickly as in the Permian Basin. If oil production is expected to top more than 3 million barrels a day (MMbbl/d) soon, then associated water output will be five or six times that amount. It's a costly problem. It's an incredible business opportunity.

A recent Duke University study said the amount of water used in fracturing in the Permian alone climbed nearly ninefold from 2011 to 2016. The study looked at six shale plays. But not only do upsized completions demand more water; the volume of the accompanying produced water is mounting even faster. In 2016, fracturing in all plays produced an estimated 574 MMbbl of water that needed to be disposed of, according to Bluefield Research.



Oilfield Water Logistics LLC intends to double its water handling volume in first-half 2019, said CEO Chris Cooper.

companies aim to change that percentage by selling treated water back to producers instead of injecting it into SWDs.

"The wall of produced water that is coming is truly staggering," said Chris Cooper, CEO of Oilfield Water Logistics LLC (OWL), based in Dallas, which has facilities in the Permian and Rockies. Backed by NGP Energy Capital Management and NGP Energy Technology Partners, OWL's goal has been to build a large-scale water company (including disposal wells, pipelines and reclamation) with its core footprint in the Permian.

In general, the Permian produces the most water per barrel of oil but is the least costly to dispose of, followed by the Eagle Ford Shale, the Canadian oil plays and then the Bakken Shale.

In the Permian, it can cost anywhere from 45 cents/bbl to 75 cents/bbl to pick up produced water and either truck it or send by pipeline for disposal, whereas in the Bakken, water volumes are lower per well, yet costs of removal are higher, up to \$2.50/bbl, due to the lack of water infrastructure.

In the Delaware Basin, where the water cut is particularly high, OWL recently connected its massive Red Hills gathering system in the core of the northern part of the play in Lea County, N.M., with capacity to move more than 200,000 bbl/d of water. Cooper said 18 of the 20 biggest producing wells in the Permian are connected to OWL's water takeaway system.

"These companies' drilling plans are so large that we are scrambling to permit and build aggressively to keep up. For us, it's all hands on deck." OWL has 82 employees.

Whether moving by truck or pipeline, water is traveling across the basin to be injected into SWD wells if it is not treated and recycled. The question is, should an E&P company tackle this task on its own, farm it out to a midstream company or engage a water specialist company?

"I see a lot of midstream teams coming into this space, but my biggest concern is their ability to understand the downhole [disposal] aspects," said one water company executive. "I know they can build pipelines, but do they get the geology?"

"We work with a lot of E&P companies that do build their own water facilities, but I'm starting to see more of them move to using third parties, compared to 2009 or 2010—there is so much water to be managed that they would need more people, whereas we are staffed up and ready," said Cory Hall, CEO of Aqua Terra Water Management, based in Houston.

OWL's Cooper agreed. "For an E&P company to trust a third party, you've got to have critical mass and build trust, and those relationships take time," he said.

"The industry has evolved. It used to be 80% trucking, and now it's reversed, and almost 90% of the water is piped," he said. "And virtually all our water is under contract, where four years ago there were almost no contracts." Cooper founded the first iteration of OWL in 2012 and sold it to NGL Partners, then set his sights on the Permian.

OWL builds and buys gathering lines and disposal facilities. It has almost no trucks. "We decided to focus on the post-drilling takeaway phase vs. the drillbit phase where you source the water. So we are not as drillbit-sensitive, and plus, water keeps getting produced as long as a well produces."

In August, OWL had broken ground on its newest facility, a 540-acre oil and gas landfill on Highway 128 in New Mexico, to handle the solids part of the post-drilling phase (drilling mud and cuttings). This will be only the fourth such facility ever permitted in the state.

Handwriting On The Wall

Trace Hight recognized the opportunity set around water infrastructure a while ago, leaving a water disposal consulting firm to go out on his own. "As more horizontal completions were being done, this idea of produced water midstream quickly became an emerging business model. I saw the handwriting on the wall, that these E&Ps had a big-time problem that needed to be solved," said the CEO of On Point Oilfield Holdings LLC, formed in October 2016 with private equity from White Deer Energy.

"We're doing our best to keep up with market demand. In our opinion, the end game for all this water in the Midland Basin is going to be deep disposal to the Ellenburger Formation," Hight said.

Based in Austin but with a focus solely on deep disposal in the Midland Basin via pipelines, the company recently engaged Texas Capital Bank to provide additional growth capital for expansion. "We have earned a variety of contracts ranging from long-term acreage dedications or minimum volumes and wellsite commitments. We recently peaked above 165,000 bbl/d but we'll be above 200,000 bbl/d later this year and will grow rapidly into 2019, when additional contracted volumes come online," Hight said.

On Point has more than 20 different produced water pipelines adding up to 107 miles connected to its SWDs. By year-end, it will own and operate 17 SWDs, 11 of them injecting in to the Ellenburger with 250,000 bbl/d of permitted capacity, and it has the rights to develop more than 20 new deep disposal well permits, thus adding an additional 500,000 bbl/d of permitted capacity to its system. It plans to continue drilling new deep-disposal wells to the Ellenburger, which is found between 10,000 and 15,000 feet, below the Wolfcamp, by operating one 1,500-HP rig. It is also building long-term pipeline infrastructure in order to keep up with strong market demand. Securing rights-of-way is going on now with a plan to add 20 to 30 more miles of pipeline by the end of the year, Hight said.

Customers prefer pipeline over trucks whenever possible and want to be connected to deep SWDs, he said. "Our customers seem to be focused on asking us to add more deep disposal capacity for them, but not necessarily to treat or recycle water. They're also asking us to build pipelines to their assets."

On Point has four projects underway right now, and it just turned on another 10-mile line that connects three different E&P companies to one of its deep disposal systems.

"The end game for all this water is eventually going to have to be deep disposal. If E&P companies decide to treat and recycle their water for their next set of completions, they're essentially just doubling down each time on the amount of produced water that will need to be disposed of from that same area."

Hight said he thinks disposal of water to shallow formations is becoming a bigger issue in the Midland Basin. "Historically, the industry had been disposing of water in the San Andres Formation, but it's quickly becoming overpressured. E&Ps have to drill through it to get to their targets below, but they're having trouble going through that overpressured zone due to all the water in it.

"The answer is to go deeper."

On Point is also evaluating opportunities to joint venture and acquire existing disposal and pipeline infrastructure from E&P companies that may see the chance to monetize a noncore asset, Hight said.

Rolling Up Rivals

Cory Hall, CEO of Aqua Terra Water Management in Houston, oversees water handling facilities in Texas, North Dakota, Alberta and British Columbia. With about 175 employees, the company operates 13 facilities in Texas, two in the Bakken and 11 in Canada. Most have multiple wellbores tied into them. The company is backed by Bregal Partners LP, a New York generalist investment firm that has been buying up assets in the oilfield service space. It named Hall as CEO two years ago. He formerly ran water management company CJ Energy LLC from 2004 until it was sold in 2013.

"We have a lot of companies giving us opportunities because they realize we have a strong team that can manage their water needs properly, and so they feel comfortable turning that over to us," Hall said. "We are already disposing of over 4 million barrels a month, or close to 150,000 bbl/d."

Rolling up several water handling companies or facilities is the next wave as this sector of the industry evolves, to be followed by more mergers of size. "I think starting a company from scratch is easier than putting several existing ones together," he said.

Nevertheless, he definitely welcomes the opportunity. "Let's say you drill 200, 2-mile lateral wells. We'd put in an SWD facility by working with your production engineer, effectively cutting out trucking. Depending on the injection zone we use, you'd need three, maybe four disposal wells for 200 producing wells." (In the Eagle Ford, water needs are still mainly truck-oriented, he added. That's the only play where Aqua Terra owns trucks, about 65 in this case.)

This water disposal company is now moving in a new direction, using the infrastructure it has placed to treat and recycle water. To that end, in July it unveiled a partnership with De Nora Water Technologies Texas LLC. The latter is an affiliate of De Nora, an Italian company that serves clients in 119 countries. Its processes remove virtually all total suspended solids (TSS), iron sulfide and other biological activity from produced water for more than 90 days, resulting in brine that is suitable for fracking purposes.

"This will allow us to turn our disposal wells into recycling plants where we can strip out the nitrogen sulfide and other chemicals and then sell the water back to the E&P companies for their re-use. We started a pilot recycle operation in August in Glasscock County, Texas," Hall said.

Aqua Terra is also adding three new recycle facilities in the Permian by year-end and one or two more in Canada's Montney play as well. "We have plans for aggressive growth in front of us in 2019 for pipelines and recycled water facilities," Hall added.

Pre- Or Post-Frack Water?

A lot of the midstream discussion these days is mainly about the handling of post-frack or produced water, but XRI is focused on the pre-frack end of the spectrum, sourcing and distributing water.

Founded in Midland in 2013, XRI intends to become the leading provider of large-scale non-potable water in the Midland and Delaware basins. With a more recent equity infusion from Morgan Stanley Energy Partners in 2016, the company has been expanding its footprint

Our thesis is to continue building what we call source water super systems, which are regionalized networks that incorporate non-potable water sources and midstream infrastructure, with permanently buried pipelines to deliver frack water to the most active producers in the basin."

At the request of customers, XRI recently expanded into flowback and recycling services, which enable the company to seize additional commercial growth opportunities across the post-frack spectrum, Gabriel said. "What we like about this is that as produced water expands we can take that and treat it, pipe it and sell it back to the E&P companies.

"Our recycling platform allows us to traverse from pre-frack to post-frack. Instead of moving water to disposal wells, we see recycling and re-use as a fully integrated solution to create an environmentally conscious, zero-waste water business."

XRI has existing super systems spanning the Permian now and will have additional capacity completed by year-end. "By the end of the year, we'll have 250 miles of buried infrastructure and be able to distribute 300 million barrels of water in 2018. But our capacity is approaching double that with the construction we have in place now," Gabriel said.

COO Chris Harich said he looks to expand further and is considering a range of commercial opportunities, admitting that other basins have come up in conversation, "but we are focused on the Permian because there is so much demand—it's almost insatiable."

To differentiate XRI, he cited the larger scale of its facilities and pipeline footprint, the company's use of automation and electrification, and finally, its use of data acquisition to drive decisions and save costs.

Pricing is developed based on the economics of a customer's wells, and XRI gets involved in their plans and needs early on. "Because of the infrastructure tethered to our contracts, we've been able to sign longer-term contracts; some are seven years-plus," Gabriel added.

For all these players, the challenge has been keeping up with the fact that water demand has increased six, seven or eightfold, what with the mega-pad concept and the longer lateral well completions; and the fact that more water midstream players are entering the space. Complexity is growing, but so too is the sophistication of the water providers.

Consolidation Calls

Private-equity firms, emerging water companies and established ones say there is more than enough business for all concerned, as the fracturing business booms and oil production surges. Still, consolidation among water companies is looming large for everyone *Investor* spoke with.

"There are definitely some good companies out there, solid teams backed by strategic capital partners, but it is still a highly fragmented industry," observed On Point's Hight. "I definitely see consolidation over the next 12 to 18 months. It only makes sense. But for us, until we see an opportunity we can't pass up, we will continue to build our business to keep up with this strong market demand."

Meanwhile, in June, Solaris Water Midstream LLC, backed by private-equity firm Yorktown Partners, acquired a New Mexico water supply business owned by Vision Resources Inc., a family-owned business. It's operated in the Delaware Basin for many years, and its customer base includes some of the largest oil and gas producers there.

On Point Oilfield Holdings' 846 SWDs and pipeline system in Howard County can process up to 70,000 bbl/d from multiple customers for disposal into the Ellenburger Formation.

In June, WaterBridge Partners LP filed its confidential draft S-1 with the SEC to go public. Backed by Five Point Energy LLC with a \$500-million equity commitment, the Houston company is active in the southern Delaware Basin and in Oklahoma, providing water supply and disposal services.

It's made five acquisitions in 2018. WaterBridge supports "multiple blue-chip upstream operators" in Reeves and Ward counties, according to its website. This includes 19 SWD facilities, more than 70 miles of produced-water pipelines and more than 500,000 bbl/d of disposal capacity. In the Arkoma Basin it has five SWD facilities.

What sort of economics are possible? For the answer, we looked to a public company whose trading symbol is WTTR: Select Energy Services Inc. Its water solutions and chemical treatment segment, formerly known as Rockwater Energy Solutions, may provide a benchmark. The latter earned \$274 million in the second quarter of this year, an increase of \$16 million sequentially. Operating margin was 25.6%, analysts said.

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