

# OLD BLACK WATER, KEEP ON ROLLIN'

TACKLING PRODUCED WATER IN UNCONVENTIONAL RESOURCE OIL AND GAS DEVELOPMENTS. BY **JUSTIN T STOLTE**, A PARTNER IN THE HOUSTON OFFICE OF **GIBSON DUNN & CRUTCHER**, AND **ASHLEY NGUYEN** AND **JORDAN SILVERMAN**, ASSOCIATES.

“Old black water, keep on rollin’... won’t you keep on shinin’ on me?” While probably not exactly what the Doobie Brothers had in mind while writing their iconic song Black Water, produced water – and the operational hurdles it creates – has many US exploration and production companies (E&Ps or producers) expressing the same sentiment, as they continue to welcome that rollin’ black water, and the issues that come with it, as a byproduct of the success they have experienced in developing unconventional oil and gas resources, predominantly shale plays, in the US.

Many E&Ps are facing a seemingly endless volume of produced water – typically a combination of formation water and frac water – in their unconventional resource operations. In the early days of such operations, E&Ps were focused on acquiring and holding acreage, optimising drilling and completion operations, and securing takeaway capacity for produced hydrocarbons – with the flood of water that would eventually be produced from these developments left as little more than an afterthought.

As time passed, the continuous flow of produced water served as an opportunity for specialised midstream and services companies, along with their investors, to develop stand-alone businesses to help these E&Ps. Soon, massive amounts of private equity capital looking for infrastructure investments in the energy sector – recently estimated at US\$34bn per year – helped spur the creation of integrated water businesses aimed at stemming the tide of produced water that continued to roll.

This article discusses the evolution of such water businesses, typical commercial structures that have been utilised therein, and issues and areas of consideration when undertaking transactions involving such businesses.

It should be noted that this article focuses on the gathering and disposal of produced water – it does not address the recycling of produced water, or sourcing of frac water, which are equally important areas of focus for E&Ps and midstream water companies.

## **The produced water problem**

While relatively moderate volumes of water have always been involved in conventional

well development and production, the industry’s somewhat recent ability to develop unconventional resources, through horizontal drilling and multi-stage hydraulic fracturing, has caused a significant increase in the amount of produced water for which E&Ps have been forced to find suitable offtake solutions.

Contrary to popular belief, in general, conventional wells generate greater amounts of produced water than unconventional wells comparatively speaking – in the Permian basin, for example, conventional wells produce 13 times more water than oil, while unconventional wells produce just 3 to 5 times more water than oil.

Despite this disparity, produced water from conventional operations has historically been reinjected into producing reservoirs to aid in enhanced oil recovery operations. In contrast, produced water resulting from unconventional operations cannot be reinjected directly into the low-permeability formations from which it came; instead, it must either be treated and recycled or injected into separate disposal wells drilled specifically for that purpose.

The prolific Permian Basin serves as a good example of how produced water considerations can potentially impact almost every aspect of development and production operations.

Larger well designs coupled with the evolution of hydraulic fracturing techniques contribute to ever-growing projections – as of January 2019, the basin’s existing 5,500 wells were projected to require 2.75 Bbbl of water to complete, with wells expected to produce more than 15 MMbbl/day of produced water.

In the Delaware Basin alone, the second-largest component basin of the Permian Basin, produced water volumes could rise from an estimated 1.9 Bbbl in 2019 to 4.8 Bbbl in 2024. The result has been water management costs for E&Ps amounting to about 15% of total well costs, with total spending expected to double to US\$22bn over the next five years.

## **Solving the problem**

In the age of conventional well dominance, storage tanks and transportation and disposal by truck served as the standard options available to producers that had little interest in the large capital outlay associated with building

producer-owned saltwater disposal systems.

With the significant increases in produced water accompanying unconventional development came a new stand-alone business – almost suddenly, large-scale produced water gathering and disposal infrastructure made financial sense, and a water-focused midstream industry was able to crystallise.

Shortly thereafter, private capital moved in, resulting in private equity-backed midstream companies focusing on acquiring produced water infrastructure from upstream producers or full-service oil and gas companies and continued equity commitments to those companies to further build out and integrate that infrastructure.

At the heart of this development, in addition to the produced water increases described above, were two important factors.

First, upstream producers looking to generate cash to deploy elsewhere in their businesses sought options to monetise their existing water infrastructure build-out – a need that water midstream companies would eagerly fill.

Second, the adoption of long-used components of typical hydrocarbons gathering contracts helped facilitate third-party water gathering and disposal transactions by giving both parties a level of comfort through familiarity.

Provisions such as acreage dedications and minimum volume commitments became standard, and served as financial incentives for midstream companies to build new infrastructure to individual E&Ps or purchase existing systems with existing committed production.

#### Transaction structures

E&Ps seeking to monetise their existing infrastructure may sell their water disposal system to a midstream company in an outright sale. As part of the transaction, the parties will enter into a services agreement whereby the producer grants the midstream company the exclusive right to provide transportation and disposal services for water produced from a specified area or specified wells for a certain period of time, commonly referred to as a dedication.

Alternatively, a producer and a midstream company may elect to form a joint venture to which the producer contributes its existing infrastructure as part of the initial transaction. In a typical joint venture arrangement, the midstream company serves as the operator

of the joint venture entity and provides the capital and expertise necessary to operate the disposal system.

In return, the producer enters into a gathering and transportation services agreement with, and dedicates its produced water to, the joint venture entity.

While the producer forgoes some or all of the up-front capital that it would receive in an outright sale of its disposal system, a joint venture structure allows the producer to retain a certain degree of control in respect of the system, along with an opportunity to capture the upside of any future liquidity events such as a subsequent sale of the system or the IPO of the joint venture entity.

A joint venture arrangement is also an attractive option if the necessary infrastructure has not yet been built – producers that seek a system build-out to accommodate their upstream development plans do not have to utilise their capital, which they can now deploy to their development operations, and midstream companies can design the system to their specifications with an eye towards long-term growth through third-party volumes and interconnection opportunities.

#### Commercial considerations

As discussed above, water transportation and disposal agreements use the same structure, and many of the same components, as traditional gathering and transportation contracts. As a result, the key considerations for both the producer and the midstream company in a water infrastructure transaction are similar to those in traditional midstream transactions and joint ventures:

- **Dedication** – The scope and terms of the dedication, including (i) the type of commitment, eg all water produced from certain acreage or wells, or a mandatory minimum volume, (ii) whether it applies to produced water owned or controlled by the producer's affiliates, and (iii) any permitted exceptions to the dedication obligations.
- **Fees** – The fees payable for the gathering and/or disposal services, which are usually stated as a per-barrel amount. The agreements will also commonly address if and when the fees will increase.
- **Service level** – The producer's curtailment priority relative to other producers in the event there is insufficient capacity on the system to accept all volumes of produced water tendered.
- **Interruptions** – The producer's alternative options and remedies in the event the disposal system is unable to receive any volumes of the producer's water.

Common remedies include a temporary release of any affected volumes/wells from the dedication for the duration of the interruption, which allows the producer to deliver, without penalty, the produced water to a third party for transportation, usually by truck, and

disposal, and permanent releases for sustained interruptions.

- **Term** – The duration of the agreement and the dedication, which may be shorter than the agreement itself. The agreement may also provide for renewal periods at the end of the initial term, which may be exercised at one party's option.
- **Expansion** – The conditions upon which the midstream company is obligated to expand the system or connect the producer's future wells to the system, and how the capital costs for such expansions or new connections are allocated between the parties.

#### Producer's objectives

In negotiating the terms of the transaction and the transportation and disposal contract, producers and midstream companies often have competing objectives. Producers will seek to:

- Maximise the aggregate value of the transaction, taking into account any up-front consideration received for the sale of the system and the fees payable for transportation and disposal services following the sale.
- Pay competitive and stable rates for the duration of the contract.
- Ensure offtake certainty for all of their volumes of water to avoid any disruptions to operations or development schedules.
- Obtain an appropriately scoped dedication that is not too long in duration or geographically broad, to retain as much commercial flexibility as possible to use third-party providers for transportation or disposal services that may offer more favourable rates or terms.
- Obtain favourable provisions for temporary or permanent releases from the dedication for any volumes of produced water the disposal system is unable to accept.

#### Midstream company's objectives

In contrast, midstream companies will seek to:

- Ensure certainty of produced water volumes via the dedication and a favourable rate structure sufficient to provide an adequate return on the capital invested.
- Maintain operational flexibility to bring produced water from third-party shippers onto the system to maximise capacity utilisation and target volume growth over time.
- Maintain control over the disposal system, including flexibility in curtailing the producer's

volumes, while minimising the producer's entitlement to releases.

- Minimise capital expenditures, either by limiting obligations to expand the system or connect to additional wells drilled by the producer, or by shifting some or all of the capital costs to the producer.
- Minimise risks borne by the midstream company, particularly those relating to any infrastructure acquired from the producer.

#### Conclusion

Until very recently, produced water infrastructure had not attracted the same degree of investment as traditional hydrocarbons midstream infrastructure, potentially creating an impediment to the future pace of unconventional resource activity in the US.

As noted above, in the coming years, significant investments in such infrastructure will be required to match the expected pace of this activity – in the Permian Basin alone, for example, analysts expect that US\$17bn of water investment will be needed by 2025 to sustain such activity at current levels.

Fortunately, the midstream water business can be an attractive business model to investors looking for investment opportunities similar to those offered by traditional hydrocarbon midstream systems.

As has been the case for over a decade now, private equity and specialised service providers will be the primary forces in making these types of investments, further expanding the midstream water industry as a stand-alone business model.

This should lead to continued transactional activity for the industry, whether by way of traditional mergers and acquisitions or through producer-gatherer joint ventures, as has been evidenced by the numerous water midstream transactions that have occurred in the past several months.

We hope that our discussion in this article of the produced water problem – along with common deal structures used and typical considerations of the E&P and midstream companies involved in these transactions – helps to better prepare industry participants for the inevitable scenario in which they are involved in a produced water transaction and are left staring down a wall of that rollin' black water; or, in the words of the Doobie Brothers, "I built [you] a raft, and she's ready for floatin'." ■



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