Fracking with Recycled Produced, Frac Flowback, and Drilling Waste Water: A case study in Integrated Water Management
The oldest problem in the oilfield

Produced water

- 111 billion bbl produced annually worldwide
- 5 bbl of water produced per bbl of hydrocarbon
- $51 billion annually in water management costs
The newest problem in the oilfield

Water supply and disposal

- New regulations in West Virginia
- Disposal ban in Pennsylvania
- EPA intent to regulate
- ~5 million gallons needed per shale well
Water varies over different wells in the same field
And changes over time

![Graph showing changes over time for Ion Concentration, ppm vs. Days of flow back. The graph includes lines for Boron, Magnesium, Sulfates, and Strontium.](image-url)
Reuse 100% of produced or flowback water for drilling and frac operations
Treating water ‘just enough’ for reuse

- 17% Flowback water
- 28% Pit reserve water
- 56% Produced water

H2prO frac water recycler

100% Fe removal
99% TSS removal
≈20% other cations
Reduction in O&G
Results guaranteed

Compatible Viking Frac fluid

100% Reuse… No dilution!
Testing to determine the best operating variables
Before & After Treatment
The value of integration

Water Reuse Solutions
- Frac Flowback
- Produced Water
- Drilling Waste Water

Centralized Processing
- Treatment
- Disposal

Sub-Surface Solutions
- Diagnostics
- Mechanical Shutoff
- Chemical Shutoff

Reservoir Modeling
- Planning
- Avoidance
- Conformance
Focus on production

We’ll take care of the water

For more information, contact Kent Dawson, 832-559-1336, kent.dawson@bakerhughes.com
Water Management can be scary

Our Application Engineers love the scary parts