

MEETING MINUTES

MEETING: TWDB Mining Water Use Study Progress Meeting
RECORDED BY: Amanda Covington
DATE: October 18, 2021
LOCATION: Microsoft Teams
ATTENDEES: TWDB staff, UTBEG staff, and various stakeholders.

AGENDA ITEM	DISCUSSION
1.	Welcome – Katie Dahlberg (TWDB) <ul style="list-style-type: none"> • TWDB & UTBEG Mining Water Use Study Contract • Housekeeping and virtual meeting mute + chat feature • Agenda: <ul style="list-style-type: none"> ○ Remarks from Director Jackson ○ Purpose of the mining water use study ○ BEG will provide progress overview ○ Upcoming tasks ○ Q&A
2.	Remarks from Director Kathleen Jackson <ul style="list-style-type: none"> • Thank you to USGS for the funding for this study • Thank you for the support from other groups, including Texas Oil and Gas Association
3.	Study Background – Katie Dahlberg (TWDB) <ul style="list-style-type: none"> • This study is an update to the previous mining water use study that was conducted by BEG in 2011. • Grant received from the U.S. Geological Survey. • TWDB contracted with BEG to complete the work and is providing data support to BEG. • The purpose of the study is to provide a comprehensive and quantitative assessment of mining water use in Texas: <ul style="list-style-type: none"> ○ Develop historical water use estimates and demand projections which will be used in the 2026 Regional Water Plans ○ Develop historical water use estimates and demand projections for hydraulic fracturing, including water sources. ○ Develop historical water use estimates and projections for coal & lignite mining, and aggregates. ○ Compare the results of this study to the mining water use estimated USGS has developed for Texas. • At the end of the project, TWDB will develop an interactive dashboard to share on the TWDB website, which will include water use estimates and projections by county and mining type.
4.	Study Progress – Bridget Scanlon (UTBEG) Development of Water Use Estimated and Projections in the Texas Mining and Oil and Gas Industries (FY2020) -Bridget Scanlon, JP Nicot, Robert Reedy, and Qian Yang Task 1: Historic Water Use <ul style="list-style-type: none"> • BEG has historically used the IHS database because it included well completion data, but shifting to FracFocus because it was discovered IHS was also using FracFocus

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	<ul style="list-style-type: none"> • Including data up to 2020 (2009-2019) • Limited data available for extent of produced water <ul style="list-style-type: none"> ○ Midstream ○ Oil and gas companies ○ Texas Railroad Commission • Focus on Unconventional reservoirs • Update on existing data, well locations and a time series of water use for Delaware (5-27 million gallons per well, avg 15 million gallons) and Midland (10-25 million gallons per well, avg 20 million gallons) Basins • Water intensity per foot of lateral well (1-3 thousand gallons per foot) • Water use per lateral foot has leveled out after 2017 • 1lb proppant per gallon of water, industry shift to a new proppant source may explain the increase in water use prior to 2017 and subsequent leveling off • Good correspondence between FracFocus and IHS • Produced water volumes in the Permian Basin (by 2019 roughly 150 million gallons of water was produced from both conventional and unconventional reservoirs each, which exceeded the water used for fracking in the Permian Basin) • Additional information about produced water to oil ratio and salt water disposal volumes. <p>Task 2: Source Water</p> <ul style="list-style-type: none"> • Texas Department of Licensing and Regulation requires the depth of wells, which were used by BEG to determine aquifer source • Nearly 1200 wells drilled in the Ogallala in 2019, possibly because they need to drill more wells to produce the same amount of water • Comparison of rig/frac/industrial supply to other sectors (rig/frac/supply wells are the dominant sector) <p>Task 3: Projections</p> <ul style="list-style-type: none"> • Working with the energy group at BEG who develop a projected well inventory for unconventional reservoirs • Technically Recoverable Resource estimate (TRR) assuming all wells will be drilled • Recent well spacing and vertical stacking used to develop projections • Input from Texas Oil and Gas Association • Reference to 2020 produced water study <p>Future Work:</p> <ul style="list-style-type: none"> • Looking at groundwater hydrograph • Estimate how much produced water is being recycled • Relative cost of disposal/reuse • Water quality info from sources other than the TWDB database [groundwater database] • Mapping produced water ponds
5.	<p>Q&A</p> <ul style="list-style-type: none"> • Fresh/brackish/reuse reported in sustainability reports <ul style="list-style-type: none"> ○ 2017-2020 available ○ 2020 not being included in TWDB-BEG study due to decrease in oil production as a result of the global pandemic • Water quality data <ul style="list-style-type: none"> ○ TWDB database

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	<ul style="list-style-type: none"> ○ Need to connect with GCDs – data accuracy ● Treatment cost for disposal of brines <ul style="list-style-type: none"> ○ Texas Produced Water Consortium will be working to answer this question (TxTech, New Mexico Produced Water Consortium) ○ Scope of the current study focused on the estimates and did not include cost ● Water quality of the receiving aquifer vs the produced water <ul style="list-style-type: none"> ○ Environmental Defense Fund and other individual researchers are investigating ○ Treatment companies want to process the higher TDS water in order to make byproducts ○ Option to store produced water for future fracking use ● 2017-2019 trend flattening <ul style="list-style-type: none"> ○ Transition the lower quality proppant prior to 2017 and then stabilized after the prime balance was found ● Water source data is harder to find <ul style="list-style-type: none"> ○ Groundwater fresh/brackish, surface water, and reuse water ○ Potential to collaborate with the Texas Railroad Commission ○ TCEQ might have data on municipal reuse for fracking ● Cost of treatment and disposal of brines will make an impact on the amount of demand for produced water.