
Produced Water Reuse

Produced water is a toxic byproduct of oil and gas production, and Texas generates enormous amounts of it every day. Most of it is disposed of via underground injection, but this practice has increased earthquakes, while underground disposal capacity is becoming limited. Now Texas is looking at whether this wastewater could become a new water supply, even as scientists are still working to understand how to safely reuse it.

Produced Water in Texas

- Produced water – wastewater that comes to the surface during oil and gas production – includes water naturally present in underground formations and chemicals used in hydraulic fracturing.
- Texas generates about 1 billion gallons of produced water every day, mostly in the Permian Basin, and volumes are expected to increase.
- Oil and gas wells continue to generate produced water throughout their productive lives, typically 20-30 years.
- Produced water can contain heavy metals, organic and inorganic compounds, naturally occurring radioactive materials (NORMs), and chemicals used in oil and gas operations, among other constituents of concern.
- Produced water is very salty and can be several times saltier than ocean water, depending on the location where it is generated.
- Some produced water is recycled in the oilfield to support oil and gas production. Most produced water is injected into deep underground disposal wells – a practice that has recently been linked to increased seismic activity (earthquakes) – while available underground disposal capacity is becoming more limited.
- Underground injection can also cause “zombie wells” – inactive, abandoned oil and gas wells that were poorly plugged or left unplugged – to leak injected produced water, potentially polluting groundwater, rivers, and streams.
- Responsibility for produced water management is divided between the Railroad Commission of Texas (RRC) and Texas Commission on Environmental Quality (TCEQ): RRC regulates produced water and treatment activities, while TCEQ regulates reuse outside the oilfield, including the potential for land application and treated direct discharge into rivers and streams.

Produced Water As A New Water Supply

- Texas is exploring ways to treat and reuse produced water to expand existing water supplies.

- The 87th Legislature established the Texas Produced Water Consortium (TxPWC) to study beneficial reuse of produced water, including the feasibility of its treatment and long-term impacts on public health and ecosystems.
- Beneficial reuse includes uses outside the oilfield, such as discharging treated produced water into rivers and streams to supplement flows, using it for irrigation or rangeland restoration, and potentially, even as a source of drinking water.
- There's a significant push at the Legislature to move produced water reuse beyond research and pilot studies to commercial scale, including by making projects easier to permit and deploy.
- The oil and gas industry is looking for alternatives to underground disposal as disposal capacity is shrinking and costs are increasing.
- To reduce liability concerns around beneficial reuse, the 89th Legislature expanded liability protections for companies involved in treating, transporting, and reusing produced water outside the oilfield.
- Following the passage of Proposition 4 in 2025, produced water treatment and reuse projects became eligible for significant state funding.
- The 89th Texas Legislature authorized TCEQ to regulate the use of treated produced water on land, including for irrigation and rangeland restoration; prior to that, this type of reuse fell under the RRC's jurisdiction.
- TCEQ is already reviewing the total of 8 permit applications to discharge treated produced water into the Pecos River watershed and 7 applications to use it on land; however, none of the permits have been approved.
- The 2027 State Water Plan includes produced water only as onsite recycling within the oil and gas industry, not as a new water supply outside the oilfield.

Reuse Challenges

- Research on produced water treatment and reuse is still underway as scientists continue to study treatment feasibility, toxicity, and long-term impacts on people and ecosystems.
- TxPWC researchers don't have complete information about all chemicals that may be present in produced water because some chemicals used in hydraulic fracturing are legally protected as trade secrets.
- Despite ongoing research and existing knowledge gaps, TCEQ is already reviewing permits and developing rules for reuse of treated produced water.
- TCEQ's proposed rules for reuse on land don't set clear treatment standards, monitoring requirements, enforcement mechanisms, or address how contaminants could build up in the environment with repeated applications. The proposed setbacks don't appear to be based on science and may be insufficient.
- Texas doesn't have surface water quality standards specifically developed for treated produced water discharges into rivers and streams.
- Technology to treat produced water at a large scale is still unavailable, and treatment is expensive, with earlier TxPWC estimates at about \$2.55 per barrel, or nearly \$20,000 per acre-foot.

- The division of authority between RRC and TCEQ remains unclear, which can create potential gaps in regulatory oversight as produced water is treated and moved outside the oil and gas field.
- Texas doesn't have a comprehensive database for tracking how much produced water is generated, recycled, or disposed of, which complicates its management and regulation. The 89th Legislature provided funds to RRC to create such a database, but it is still unavailable, and the agency is requesting additional funds.

Proposed Solutions

- Continue funding TxPWC work and let the best available science guide policies and regulations related to produced water reuse; don't deploy large-scale reuse until research determines that it's safe for people and the environment.
- Provide scientists at the TxPWC with access to full information about chemicals used in oil and gas operations, including information currently hidden behind trade secrets.
- Direct TCEQ to develop science-based standards to ensure discharges of treated produced water into waterways and its use on land are safe over the long term.
- Require monitoring that can effectively detect impacts on rivers, soil, and groundwater before and after produced water reuse begins, including the accumulation of contaminants.
- Clarify where RRC's authority ends and TCEQ's begins so produced water reuse doesn't fall through regulatory gaps.
- Continue maximizing produced water recycling within the oilfield.
- Develop a comprehensive database to track produced water volume and disposal methods, and require oil and gas companies to utilize it.
- Provide additional funds (approximately \$3.6 million) requested by RRC to fully fund the development of the produced water database and tracking system.
- Invest in public outreach and education about produced water reuse, whether through TxPWC, the statewide water awareness campaign, or other programs.