June 16th, 2026

Texas Commission on Environmental Quality
12100 Park 35 Circle,
Austin, TX 78753
RE: The Nature Conservancy in Texas' Comments regarding the potential land application of produced water.

Chair Paup, Commissioner Gonzales, and Commissioner Miller,

Thank you for the opportunity to provide comments on the proposed rules for domestic wastewater effluent limitation and plant siting, use of reclaimed water, and land application of produced water. The Nature Conservancy in Texas (TNC) has worked in Texas for over 60 years, preserving over one million acres of land and 200+ miles of rivers and streams across our great state. Our work is committed to sustainable use and protection of Texas's water resources, wildlife, ecosystems, and communities through science-based conservation and responsible stewardship. TNC appreciates the Texas Commission on Environmental Quality's (TCEQ) efforts to develop a regulatory framework for the reuse of produced water from oil and gas operations and offers comments that support a cautious, science-based approach.

Lack of Sufficient Science to Ensure Safety

Produced water is a complex and not yet fully characterized waste stream. While threats such as extreme weather and increased demand on Texas' water resources make innovation necessary, the current state of scientific understanding may not yet provide confidence to ensure produced water can be safely released into the environment, applied to land, or used in ways that could expose ecosystems, wildlife, livestock, or human populations to potentially harmful contaminants.

Produced water contains a highly variable mixture of substances that can include salts, heavy metals, naturally occurring radioactive materials, hydrocarbons, treatment chemicals, drilling additives, corrosion inhibitors, biocides, surfactants, and other organic and inorganic compounds. Many of these constituents are not routinely monitored, and the full chemical composition of produced water is unknown due to proprietary chemical formulations and limited disclosure requirements.

Of note, there is a growing body of research indicating that produced water may contain hundreds to thousands of unidentified chemical compounds that remain unevaluated for environmental toxicity. Existing treatment technologies may reduce some contaminants but may not reliably remove all pollutants, particularly emerging contaminants, transformation products, radioactive constituents, and complex chemical mixtures. As a result, significant uncertainty remains regarding the effectiveness of treatment systems and the long-term impacts of residual contaminants.

The potential consequences of releasing produced water that has not been thoroughly studied or treated extend far beyond immediate water quality concerns. Contaminants may accumulate in soils, migrate into groundwater, enter rivers and wetlands, concentrate in sediments, and bioaccumulate through food webs. Sensitive species, aquatic ecosystems, pollinators, migratory birds, and other wildlife could face chronic exposures that are difficult to detect until substantial ecological harm is evident. Once contamination reaches groundwater aquifers or natural ecosystems, remediation may be technically challenging, prohibitively expensive, or impossible.

At this time, scientific understanding may not yet be sufficient to fully assess cumulative and long-term risks. Most available studies focus on a limited subset of contaminants rather than the complex chemical mixtures present in produced water. There is a lack of long-term field data assessing environmental impacts over decades, including impacts associated with repeated application, drought conditions, changing hydrology, and climate-related stressors.

Implications of Potential Nutrient Reduction to Soil Health

Alternatively, if treatment systems were to entirely strip produced water of naturally occurring elements,, applying water that is devoid of nutrients to agricultural land, or discharging it into streams and other surface waters, could create significant ecological and soil health concerns. Unlike water sources that often contain nutrients necessary to sustain biological productivity, treated produced water with deficient nutrients may dilute or alter existing nutrient balances in soils and aquatic ecosystems. On land, repeated application may reduce soil fertility over time, impair microbial activity, and limit plant growth unless supplemental nutrients are provided. In receiving streams, nutrient-poor discharges may disrupt food webs by affecting primary producers and other organisms that depend on adequate nutrient availability. These impacts underscore the importance of

evaluating not only the chemical quality and salinity of produced water but also its nutrient composition before beneficial reuse or environmental discharge.

Rulemaking Recommendations

Given the current scientific limitations and significant risks, TNC supports a thorough, precautionary approach to the potential land application of produced water. Before authorizing reuse of produced water outside of tightly controlled industrial settings, Texas should require:

1. Comprehensive chemical characterization of produced water streams, including identification and disclosure of all detectable contaminants, with appropriate consideration of proprietary or trade secret constituents by TCEQ.
2. Independent, peer-reviewed evaluation of treatment technologies and their effectiveness in removing known and unknown contaminants.
3. Robust toxicity testing that evaluates whole-effluent effects and chemical mixtures rather than individual compounds alone.
4. Long-term stringent environmental monitoring programs for surface water, groundwater, soils, wildlife, and ecosystem health.
5. Transparent public reporting of water quality data, treatment performance, permit compliance, and monitoring results.
6. Opportunities for public review and stakeholder engagement prior to permit approvals.
7. Clear demonstration that proposed reuse activities will not result in degradation of water resources, wildlife habitat, agricultural lands, or public health.

Texas' many water challenges call for thoughtful and innovative solutions. Such efforts should be guided by science, transparency, and a commitment to environmental protection. While produced water reuse holds potential, additional data and analysis are needed to ensure that any risks to public health and the environment are well understood and appropriately managed. The policy solutions recommended above by TNC outline a precautionary approach that encourages more scientific certainty, and if implemented, could mitigate many concerns by Texas' land and water stewards. We respectfully urge

TCEQ to prioritize strong ecological safeguards and independent scientific review as this framework continues to develop.

Thank you for your consideration of our comments,

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