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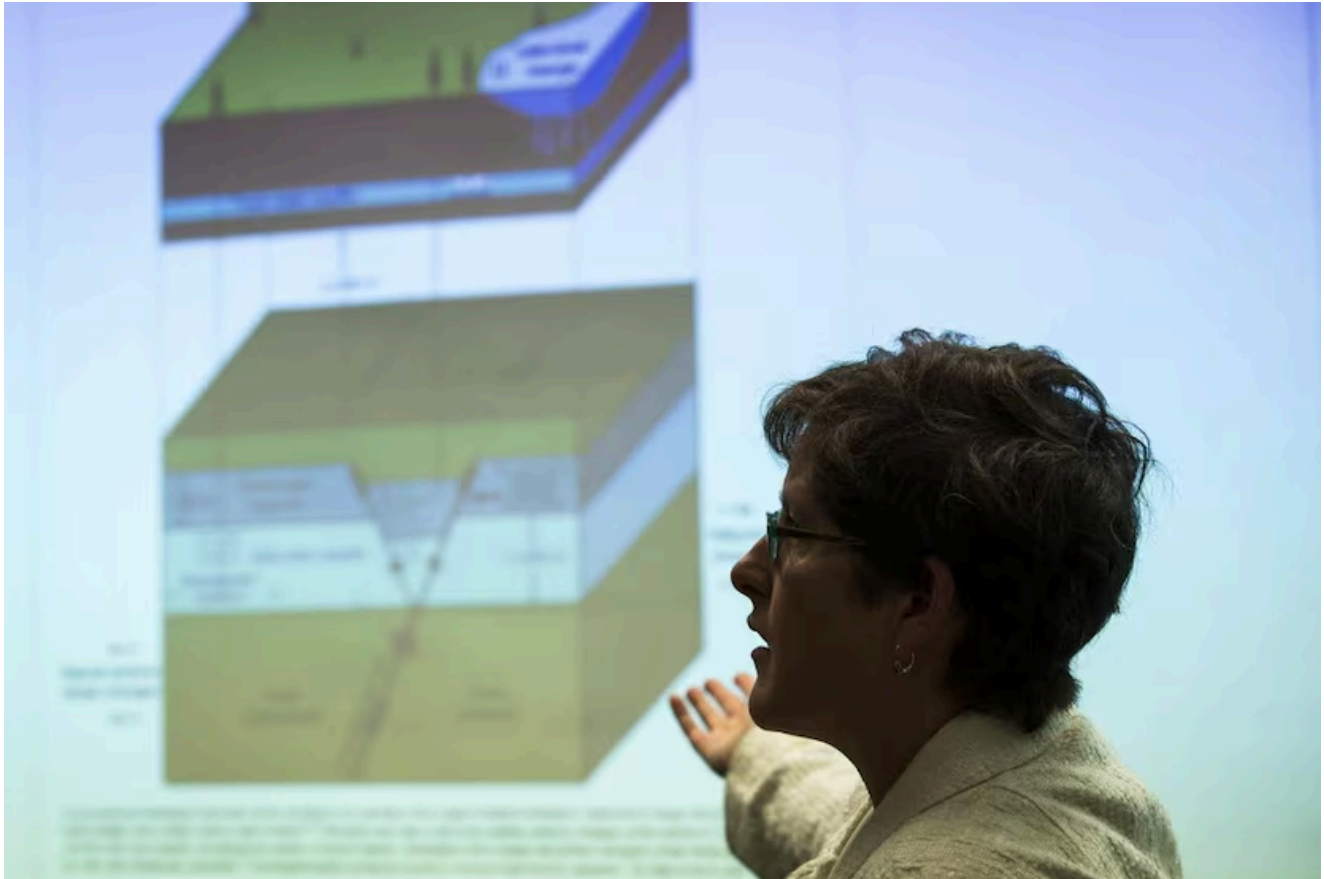
OPINION

Railroad Commission has made progress on Texas earthquakes

More research is needed to hit this moving target.

By Jim Wright

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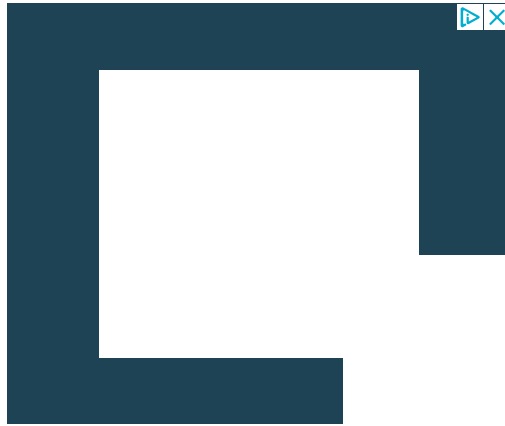
An SMU-led seismology team found that high volumes of wastewater injection combined with saltwater extraction from natural gas wells is the most likely cause of earthquakes near Azle from late 2013 through spring 2014. Texas Railroad Commissioner Jim Wright says his agency, along with industry groups, has made progress on the issue but more research is needed. (Smiley N. Pool - Staff Photographer)



More than two years ago, [I wrote about seismic activity](#) in Texas and the regulatory and legislative efforts aimed at reducing the likelihood of future seismic events. I feel it is time to provide the residents of our state with an update on those efforts.

Seismicity in oil and gas regions of Texas can be caused by the disposal of produced water, that is, water that is extracted alongside oil and gas during production.

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Since that article was published, the Railroad Commission has worked diligently to monitor and respond to seismic events in earthquake-prone regions of the state. Should any seismic events occur in a given area, the commission responds quickly to determine the conditions that may have contributed to the event. This includes examining disposal permits, geological conditions, and other relevant information before possibly making adjustments to permits. In areas with significant and repeated seismic activity, this could include the curtailment of disposal volumes, or even suspension of injection activity altogether in extreme cases.

These efforts have largely been successful where they have been implemented. We have seen industry proactively respond to the commission's actions. Operators have self-organized to investigate, share information and respond when new earthquake clusters occur. The commission now knows most of the induced seismicity is associated with injection of produced water into deep geologic strata near crystalline basement bedrock, and that it occurs along geologically controlled trends and is absent in other places. As I noted two years ago, "seismic experts warn that there is often a lag between saltwater injection and seismic movement." Those experts have proved to be correct.

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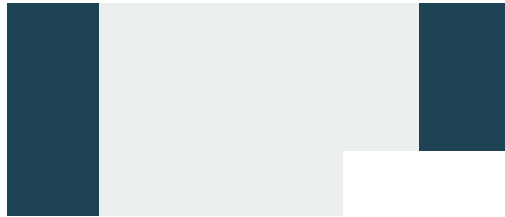
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While improvements have been made, more work remains. As the recent seismic events in Scurry County a few weeks ago exemplify, seismic activity is, quite literally, a moving target.

The problem isn't solved, but it is being solved, and the combined collaboration of the Railroad Commission, the Bureau of Economic Geology, the Center for Injection and Seismicity Research and the Texas Produced Water Consortium has vastly improved our understanding of subsurface activity.

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Nor is the issue of seismicity immune to the law of unintended consequences. In restricting the injection from deep formations, disposal has not disappeared, but has moved elsewhere, particularly in shallower disposal formations. Shallow injection brings its own set of unique challenges, specifically the potential to increase subsurface pressure. Simply put, you can't fit 20 ounces of liquid into a 12 ounce glass.

These challenges are further exacerbated by the fact that an estimated 3 million to 4 million barrels of produced water are imported each day from New Mexico into Texas for injection disposal — an economic reality the commission is currently unable to stop.

Shallow injection of produced water requires additional monitoring of formation pressures and better data collection from operators in impacted areas. The Railroad Commission is working to create a new data collection and reporting database, and working with state partners and industry to obtain the necessary data to make better decisions with respect to injection management.

Ultimately, the solution to injection is finding alternative uses for this water. Desalination and treatment of produced water has been highlighted by the Texas Water Development Board's State Water Plan and is among new water supply projects that could be funded by the voter-approved Texas Water Fund.

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In addition, earlier this year the commission issued a framework for produced water pilot programs. This framework provides a regulatory pathway for operators to assess the effectiveness and suitability of applying treated produced water for beneficial purposes.

We have made great progress over the past two years, but more work remains. Better data collection and monitoring efforts will play an important role in the near term while we pursue our shared goal of finding alternatives to underground injection. This is the ultimate solution, and one which will help us achieve better results for the citizens of our state without inflicting undue harm on a vital part of our economy.

Jim Wright is a Texas Railroad commissioner.

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By Jim Wright

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