

Coastal counties could get fracking waste if ban lifted



MLADEN ANTONOV - AFP/GETTY

Wastewater tank trucks like this one in Waynesburg, Pa., last year could become a common sight in coastal cities if legislators repeal a 40-year-old ban on deep well injection, which is used to dispose of wastewater produced by hydraulic fracturing, or fracking.

LEGISLATORS RECONSIDER 40-YEAR-OLD LAW IN EFFORT TO DRAW INDUSTRY

By JOHN MURAWSKI
jmurawski@newsobserver.com

Forty years ago, when North Carolina banned using deep wells to permanently dump industrial waste, some thought the issue had been decided for good. Now state lawmakers who want to turn North Carolina into the nation's next fracking hotspot are reopening the case for injecting brines and toxins deep underground.

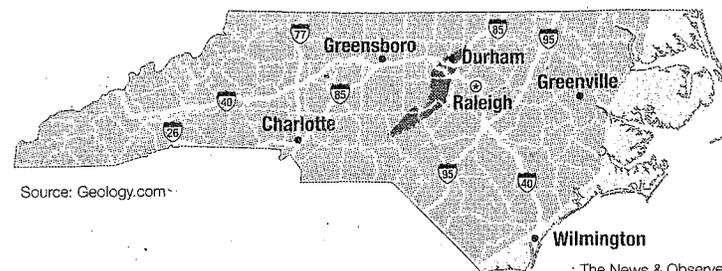
This time, the proposal is shifting the fracking debate from the center of the state, where the energy exploration and economic benefits would occur, to tourism-dependent coastal communities where the disposal wells would have to be drilled.

"That's where it would be – no doubt about it," said Rep. Rick Catlin, a Republican from Wilmington who is a hydrogeologist and environmental engineer. "It's going to be very controversial."

North Carolina shale basins and fracking waste

The legislative proposal to permit deep well injection of industrial wastes is intended to encourage fracking in Lee County, but the recipients of the toxic waste would likely be communities in eastern N.C. because the geology of central N.C. is unsuitable for deep well injections.

■ Shale basins Possible storage areas



Source: Geology.com

The News & Observer

Fracking removes natural gas trapped in prehistoric shale rock formations by pumping in water and chemicals to smash the rock – a process that creates tons of waste.

The proposal's impact on the coast is not widely known because the bill in the state legislature doesn't specify where the fracking waste would be injected. Many lawmakers assume the injection

» Online

Fracking: Find more state and local business news at nando.com/business.

wells, which can accept waste for years from multiple fracking operations, would be located near the fracking sites.

Now it's becoming clear that coastal residents and businesses could also be affected if fracking gets under way several hundred miles inland. The legislation, which is a signal to the oil-and-gas industry that North Carolina is eager to host shale gas exploration activities, would also lift the state's fracking moratorium in March 2015.

The bill has sailed through the state Senate and is now before the House, where it is likely to be assigned to the Public Utilities Committee. The chairman of the committee, Rep. Mike Hager, said the SEE WASTE, PAGE 6A

WASTE

OF THE TOP FROM PAGE 7A

implications of lifting the waste disposal ban are so far-reaching they raise serious doubts and will require further study.

“What does it do to the community that doesn’t get the revenue from the natural gas production?” asked Hager, a Republican from western Burke and Rutherford counties. “We will have to look at how these communities are compensated.”

Bill sponsor Sen. E.S. “Buck” Newton said the concerns may be premature. He said such injections are an accepted method of disposal and have been successfully done hundreds of thousands of times in the United States.

“I really don’t see it as an issue,” said Newton, a Republican representing Johnston, Nash and Wilson counties. “We’re talking about putting water into a deep area that already has that kind of water.

“All my information is that the best way to deal with these runs that come up is to reinject it,” he said. “If it went from County A to County B, I’m not sure why County B would have a major objection to that.”

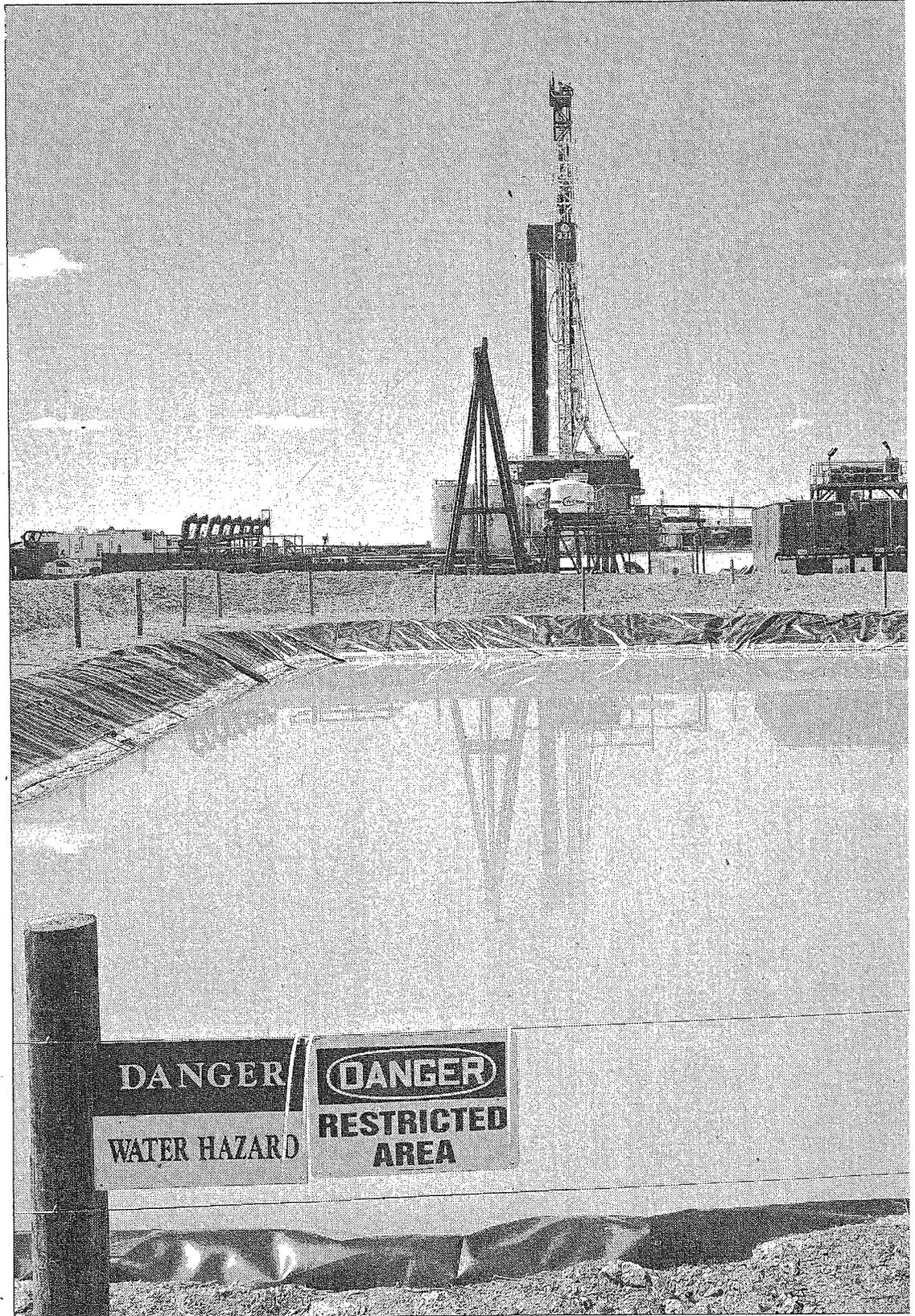
Other options complicated

Deep injection into wells is the industry’s preferred method of getting rid of fracking waste and is approved by the federal Environmental Protection Agency. The other options are much more expensive and logistically complicated. They include trucking the fluids to municipal water treatment plants, which are increasingly rejecting fracking residues, or using open-air evaporation in large impoundments.

Injection wells are not immune from spills and accidents, but they may be best known for their linkage to earth tremors where fluid is stored and pressurized underground near faults. The concerns in this state include aquifer damage below, as well as potential property damage on the surface.

“You’re basically contaminating an aquifer forever,” Catlin said. “Please don’t inject any down here.”

The state’s environmental agency, in a 484-page report published last year on the risks and benefits of shale gas exploration, urged against legalizing deep disposal of fracking wastes.



MLADEN ANTONOV - AFP/GETTY

Rigs like this one, which explored the Marcellus Shale outside Waynesburg, Pa., in 2012, would operate in the center of North Carolina. But their waste could only be disposed of in coastal areas.

The report by the N.C. Department of Environment and Natural Resources focused on the risks to deep storage in Lee, Moore and Chatham counties, where the energy exploration is most likely to take place.

The underground geology west of Raleigh is not porous enough to absorb fluids, forcing the pressurized injections to seek fissures and faults, said Tyler Clark, the N.C. state geologist from 2002 to 2006.

What's more, the rock is blasted throughout with magma sheets called diabase dikes, which serve as the region's natural plumbing system and lead water to freshwater aquifers.

"One you put it in the ground, it's not going to stay there, it's going to go somewhere," Clark said. "It would be hard to predict where it could travel."

Hundreds of these magma sheets break up the rock, often protruding on the surface. Geological maps show that some dikes run for several miles, and parts of Lee County have as many as 10 dike intrusions per mile.

Eastern N.C. geology

DENR concluded that the dikes permeating the state's midsection make fracking itself problematic because the dikes could transmit fracking fluids – a mixture of water and chemicals – to underground drinking sources.

The geology in Eastern North Carolina, however, is unlike the rest of the state. It contains saline aquifers separated by layers of clay, a layer cake formation in some areas reaching 10,000 feet deep to the bedrock. The saline aquifers could potentially accept the waste injections because they are highly absorbent, said retired UNC-Wilmington geology professor Paul Thayer, who has worked for BP, Amoco, Chevron and Mobil.

But Thayer added that it would require comprehensive studies and analysis to prove the area could accept the waste without spreading.

What would be put into the ground?

Each fracked well requires 3 million to 5 million gallons of water, chemicals and sand to break up the shale rock and release the natural gas.

The chemicals include those used in food additives and household cleansers, as well as toxins and carcinogens that have been blamed for fish kills and livestock deaths in states that have experienced surface spills, well blowouts and other fracking-related accidents.

After a well is fracked, up to a third of the fluid is regurgitated back to the surface in a mixture that includes brine, minerals, metals and dissolved solids. This slurry is called "produced water" and is recycled for other fracking operations. Eventually it is injected into deep wells for permanent disposal.

ACCIDENTS DO HAPPEN

Deep injection wells, known as Class II wells, are regulated by the EPA under the Safe Drinking Water Act. They are not immune from accidents. Last year, the EPA fined Exco Resources of Texas \$159,624 after the company discovered one of its injection wells was leaking and continued pumping fracking wastes for four months.

STAFF WRITER JOHN MURAWSKI

N.C. Senate Bill 76

The primary sponsors of the bill are Republican state Sens. Andrew Brock of Mocksville, Bob Rucho of Matthews and E.S. "Buck" Newton of Wilson.

Among the bill's provisions:

- Lifts the state's fracking moratorium.
- Allows fracking waste to be injected into wells deep in the ground.
- Bans out-of-state waste from being brought to North Carolina for disposal.
- Prohibits local governments from taxing energy exploration and drilling.
- Requires state royalties from offshore energy development to go into a \$50 million emergency fund for cleanup of oil spills.

The coastal aquifers have been used just once for chemical injection in the only such deep injection site permitted in the state's history.

Those wells, about four miles from Wilmington, were created by Hercules, a company that manufactured the raw materials used in the production of polyester fabrics. Hercules began injecting acids in 1968 at a rate of 300,000 gallons a day and continued pumping through 1972.

The wells, set between 850 and 1,050 feet deep, clogged and leached chemicals into a sand, gravel and limestone aquifer. Monitoring wells in upper aquifers later showed that the chemicals traveled past a clay

containment zone and contaminated upper aquifers.

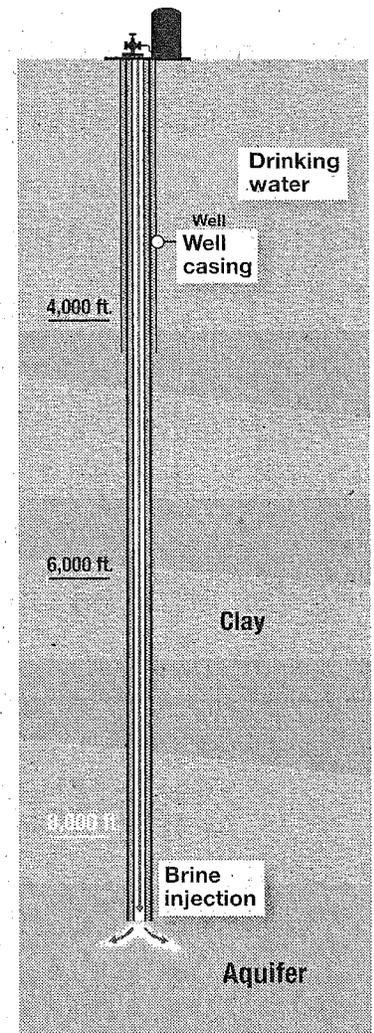
That underwater leakage led to the state's ban on deep injection wells. Modern well construction standards and other advances would make such an accident less likely today, but many will not want to take the risk.

Rep. Catlin said some of the coastal aquifers have low salinity and could potentially be tapped as drinking water sources if desalination plants are built. Furthermore, he said the barriers between the aquifers are not watertight, as the Hercules accident exposed.

A deep subject

Disposal wells inject brine and fracking fluid for permanent underground storage. The fluid and brine flow out of wells used in shale gas drilling and are injected in separate wells drilled for permanent disposal.

Brine/fracking fluid well



SOURCE: ProPublica, N.C. Department of Environment and Natural Resources The News & Observer

Murawski: 919-829-8932