What Lies Beneath

The threat from oilfield waste injection wells

by Rusty Middleton
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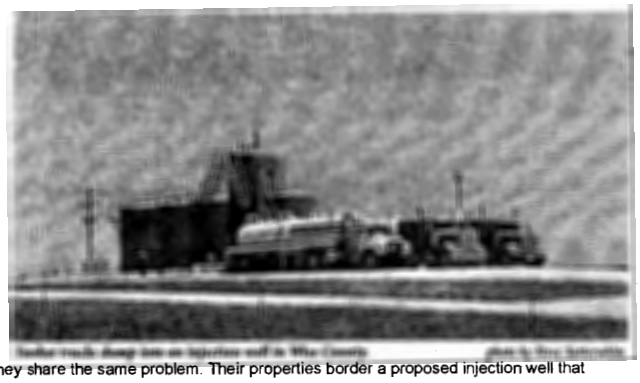
Cecile Carson's property has an aura of rural homeyness. The neat yard, happy dogs, and blooming flowers along her fence rails suggest a love of place. She's a high school art teacher who picked a little swath of Wise County near the small town of Decatur, about 35 miles north of Fort Worth, to settle down. She lived in a travel trailer for the first three years while she designed and built her home. The place is well thought out—its colors blend with the surrounding landscape of green, rolling hills.

It took Carson 10 years to get to this point. But it took the Railroad Commission of Texas about 45 seconds to put it all in jeopardy. On April 11, at an administrative hearing in Austin, it took less than a minute for a public reading of Carson's and her neighbor's protests against the placement of an oilfield waste injection well just a few hundred feet from their property. Then the three commissioners immediately voted "denied" without discussion.

Carson had planned to work about 10 more years and then retire here. Now she doesn't know. Her neighbor, Jim Popp, has postponed his plan for a new house. Other neighbors, Bob Burke and his wife Deborah, have stopped planting grapevines for the vineyard they are developing. A little farther away, Tracy Smith worries about whether exposure to gases from the well might make her asthma worse.



They share the same problem. Their properties border a proposed injection well that could pump hundreds of thousands of gallons a day of oilfield waste into the ground. This waste, known in the industry as "production water," is mostly oily saltwater used in drilling. But it also contains substances such as waste crude, sludge from storage pits and tank bottoms, used glycol, amine, and hydrogen sulfide scrubber liquid, to name only a few. There are at least 26 acknowledged chemicals in the waste, including such known carcinogens as benzene and one category unhelpfully listed as "other." It's not the kind of stuff Carson wants in the drinking water she brings up from her well. Yet the Railroad Commission doesn't classify oil and gas waste as hazardous. That means the

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commission, by Texas law, can place "production water" just about anywhere. These wastes must be disposed of—mostly they end up underground.

Suddenly Carson and her neighbors face property values cut by as much as half, according to the appraisers and local real estate agents they've checked with. The future quality of their ground water is now in question. The curvy, narrow, unpaved county road to their homes will soon be crowded with 50 to 80 tanker trucks a day heading in and out of the well site. And Tracy Smith, an asthmatic who is unusually vulnerable to toxic fumes, now lives in fear of a hydrogen sulfide gas release strong enough to suffocate her before help could arrive.

"I can hardly get beyond my fear of the pollution," says Carson, "but the added reality of it is, you either stay and be polluted, or you try to sell out. But then, who's going to buy your property?"

Such stories are not unusual. Just minutes before the Railroad Commission denied Carson's complaint on April 11, the commission denied a similar complaint against an injection well in Hood County. And near the town of Lipan, also in Hood County, residents recently learned of an application for an injection well less than half a mile from the town's only source of water. William T. Richardson, who lives next door to the site, describes it as "right out my back door. They say 150 tanker trucks a day could be coming in here. My wife called them, and they said as long as they followed [Railroad Commission] rules, we couldn't do nothing about it. Then they hung up on her." That permit application is pending.

The idea behind an injection well is to blast waste deep enough underground that it can't cause problems. An injection well consists of a deep hole and a long pipe. But once the waste is underground, there are no barriers to prevent it from migrating into drinking wells, ground water, or in some cases, even bubbling back to the surface and killing vegetation.

Indeed, complaints about wells gone bad are common. The Railroad Commission has long been charged with regulating injection wells for "nonhazardous" oilfield waste. The Texas Commission on Environmental Quality oversees injection wells of hazardous waste. [See related story, page 19.] The Railroad Commission received 320 permit applications for commercial injection wells in 2005, according to the agency. Of those, the commission temporarily denied only 15, mostly for technical errors or missing information from the applicant. Injection wells can also be operated for commercial purposes. Commercial wells accept waste from multiple sources, including from outside the state. Private injection wells inject only the wastes of one operator. There are hundreds of applications for private injection wells every year, and the Railroad Commission admits it checks on only a small percentage of them. There are more than 31,000 injections wells in Texas—the most of any state.

A check of Railroad Commission records reveals hundreds of recent complaints—and thousands over the years. Coming from at least 85 counties, the complaints are almost all about ground water contamination, mostly by sodium, crude oil, and hydrocarbons. In fact, because of past waste disposal practices, including the practice of simply dumping the waste above ground, it would be fair to say that for decades, oil and gas drilling wastes have polluted ground water across vast areas of Texas. Even though Railroad Commission regulations and oversight have improved, the problems continue.

In 2005, near Chico, about 20 miles from Carson's home, fluids from a commercial injection well came bubbling to the surface in other wells nearby. "We were afraid something like this might happen," says Chico Mayor James Robinson. Previously, city officials had written letters and gone to Railroad Commission meetings to plead for stronger regulations and monitoring to protect their water wells.

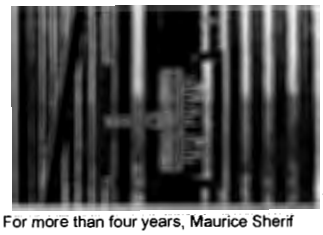
"You all need to be looking at this," Chico Director of Public Works Ed Cowley told the Railroad Commission staff during one of the meetings. "They said it would never happen, and it happened twice."

Injection fluids came up from two abandoned wells and from one active oil well. All three were more than a quarter mile away from the source injection well. Residents in the area were also worried about their water wells and contaminated ground water. In spite of family and financial connections to the local oil and gas industry, many residents signed a petition expressing opposition and concern about the well. One Chico area resident says he has seen a long line of trees die near the injection well "just a couple of months after they started dumping." And near Boyd, not far from Chico, many residents complain of too much salt and the rotten-egg smell of hydrogen sulfide, a byproduct of oil and gas production, in their well water. There are reports of people actually touching a match to their running faucet and lighting their water on fire.

After the problems in Chico were discovered and reported, the Railroad Commission ordered the injection well owner to seal the leaks and reduce the pressure at which waste fluids were forced underground.

Outside of DeBerry, a small community near the Louisiana-Texas border, a group of families suffered for years from well water contaminated with salt and hydrocarbons until the leader of a local church decided to fight back. Rev. David Hudson began to make calls to regulatory agencies about an abandoned, leaking injection well in the middle of his neighborhood. "We got every agency you can imagine out here," says Hudson, "including EPA and even [the Texas] Parks and Wildlife [Department]." The EPA

The American Wall



For more than four years, Maurice Sherif documented the construction of the 700-mile fence along nearly 2,000 miles of international border from California to Texas. His photos and essays culminated in a book called *The American Wall*. Click the above image to see a few of his photos in this slide show.

documented both saltwater leaking from the well casing and contaminated ground water. [See "The DeBerry Debacle"]

These discoveries played an important role in the Railroad Commission's order to Basic Energy Services Inc., the operator of the well, to remediate the problems and monitor the ground water. As of this writing, Basic Energy is in negotiations to settle a lawsuit filed against it by Hudson and the affected families.

But many times the exact source of ground water contamination is not easy to identify. Often oil and gas drilling wastes are suspected, but absolute proof is hard to come by. For example, Bolivar Water Supply Co., a drinking water distributor northwest of Fort Worth, drilled a water well around the same time a new injection well was also drilled not far away. The water from the Bolivar well had an unusual spike in sodium chloride. "We had a big rise in sodium," says Jerry Stell, an administrator for Bolivar. "Everybody I talked to about it, including hydrologists and engineers, said sodium shouldn't ever rise unless it's contamination." Bolivar had to install screens and plug the bottom of the new well to get the sodium levels down to an acceptable level. The company couldn't prove it was the injection well, but none of its other wells have had similar problems. "They're putting those injection wells right down through the Trinity Aquifer, and you know it's going to contaminate the water eventually, whether it's in five years or 50 years, it's going to happen. I hate those things," says Stell.

If injection wells were sited farther away from municipal and private wells, or if they were much deeper and were adequately monitored and regulated, they might not pose as much of a threat to shallower ground water and surface water. Louisiana requires that no ground water well can be within 2 miles of an injection well.

In Texas, injection wells can be sited just about anywhere. The main regulations require the upper part of the pipe to be cemented and for certain pressure and volume levels to be maintained.

As the incidents in Chico and DeBerry show, these regulations are sometimes inadequate. The response of the Railroad Commission is to react after pollution is apparent. "If there's a problem we go fix it, but if we don't know about it, then it's not a problem," says Steve Seni, assistant director of Environmental Services at the commission. Asked if the commission has enough inspectors, Seni says, "We have as many inspectors as the Legislature gives us funds to have."

Nick Nichols of the Wichita Falls office of the Railroad Commission contends his office and staff are doing an exceptional job with the resources they have, but he admits he can't begin to check everything. He has 10 inspectors for the 12 counties in his district who are supposed to monitor all oil and gas drilling activities and waste disposal. "If you got 12,000 wells (including old and abandoned wells that can date back decades) in just one county and just one person covering it, it takes a long time to look at them," says Nichols.

Generally, the focus of commission inspectors is on new drilling activity, not waste disposal. "We had over 200 new wells last month. We looked at 110 of them, and that was quite an accomplishment," Nichols says.

With disposal wells, mechanical breakdowns, leaks, deliberate violations, and illegal injection are part of the picture. Nichols says that "breakouts"—injected fluids coming back to the surface—are "common. We used to have them happen every day." If they have a hole in the casing or a packer (material that is supposed to seal the injection fluid at the point of injection) failure, the fluid is going to channel up and come out somewhere nearby. He says that many times there are no records of old wells, "and when it starts coming up, you'll know." Injection wells are also supposed to adhere to certain limits on the pressure used to inject in order to reduce the likelihood of breakouts. Operators are caught using too much pressure "pretty regular," says Nichols. "We have operators that will hide a saltwater pump in the bushes and drag it out on the weekend, thinking we will not be around. In fact, we just caught one two weeks ago, and we caught him a couple times this year."

Part of the commission's enforcement problem is a lack of effective penalties. After the commission field staff goes through an elaborate protocol of voluntary compliance with an offending operator, the inspector must dot every "i" and cross every "t" in order to file a legal enforcement package that will, at most, result in a fine of between $500 and $3,500.

In addition, according to the sworn testimony of one of its own staff, the Railroad Commission must rely on the honesty of the companies it regulates for compliance. Yet in the case of Carson's protest hearing, the injection company, Pioneer Exploration Ltd., was caught omitting information about one of its wells just 1,100 feet from the proposed injection well. Pioneer was fined $500, and the permit was granted.

Many in Wise County refer to the Railroad Commission as a "sham regulator." Wise County commissioners and Chico officials have spent years meeting and negotiating with the Railroad Commission, to little effect. Bolivar Water considered suing, but decided it would be a waste of money. Most people simply give up, lacking the resources to hire the lawyers and experts to take the commission to court. Meanwhile, with the certain backing of an overwhelmingly pro-industry Legislature, the Railroad Commission sits like a stone in a river, calmly deflecting a torrent of complaints and pleas from citizens. Occasionally it will issue a bland news release touting some plan to marginally improve its conservation measures or procedures, but without ever conceding any failures or deficiencies.

Even in the DeBerry case, where Rev. Hudson found documents in Railroad Commission records indicating the agency knew about the saltwater leaks all along and failed to act until forced to do so by pressure from other agencies (the file even included a letter from the governor), the commission still hasn't admitted fault. Nor is blame assigned to Basic Energy. "They [the commission] will not admit the fact that that contamination comes from that injection well, because if they do, then they have a fight with the company," says Rev. Hudson. "And they are not going to waste attorney fees on a small community proving our point for us. They're not going to help us. We're going to have to do this ourselves."

Against long odds, another group is also determined to help itself. Carson and her neighbors aren't giving up. They formed a nonprofit organization to take the Railroad Commission to state district court. "We've done everything the RCT has required, and they've turned a deaf ear to us," Carson says. "They've essentially said it doesn't matter what predicament we put you people in, it's the oil and gas industry that really matters. They simply consider us expendable. But we are going to keep fighting because we have to protect our homes and our lives."

Rusty Middleton is a freelance journalist who has written widely on natural resource and environmental topics. He continues to collect information on problems associated with injection wells and polluted ground water. He can be contacted at natureoftexas@aol.com.

'We are living on top of a time bomb' (sidebar)

Some injection wells contain more hazardous waste than others. Oil and gas injection wells are classified by the Railroad Commission as Class II nonhazardous waste, although that status has been hotly disputed for many years. Texas is also one of the largest injectors in the nation of Class I hazardous waste. This waste includes industrial wastes (though not medical and radioactive waste). Class I wells are regulated by the

Texas Commission on Environmental Quality under authorization and monitoring by the federal Environmental Protection Agency. The TCEQË†â€šs regulation and scrutiny of these wells is notably more intense than that of the Railroad Commission. In fact, there have been no known pollution incidents from Type I hazardous wells since 1997Ë†â€žwhen a hazardous waste injection well polluted the water in Winona.

There are currently 103 active hazardous waste injection wells in Texas, concentrated mostly along the coast. The volume of the waste being put into the ground is staggering. Near Beaumont, chemical giant DuPont Co. is injecting around a billion gallons of hazardous waste a year. The company has been disposing of waste underground in the area for about 30 years. As one resident living near the DuPont plant and who didnË†â€št want to be identified said, "We are living on top of a time bomb. I donË†â€št even like to think about whatË†â€šs down there under our feet." ***—Rusty Middleton***

Sidebar: The DeBerry Debacle

Text by Jonathan York | Photos by Amber Novak

After living in California for years, in 2002 David Hudson came home to Deep East Texas, where his family has owned farmland since 1911. Since then the Rev. Hudson, 60, has spent much of his time trying to bring clean water to 55 residents of an unincorporated community near DeBerry. The enclave sits on County Road 329 in Panola County, near the Louisiana border.

In this area, every other road seems to lead to an oil lease. For decades, companies have pumped wells dry, then filled them with saltwater waste from drilling, a process regulated by the Texas Railroad Commission.

When things go wrong—and they did go wrong on County Road 329—determining responsibility and cleaning up the mess involves a long, difficult road through state and federal bureaucracies that sometimes leads nowhere.

As early as 1997, Hudson's mother Gladies complained about contaminated water. That year, 52 of her newly planted peach trees died. Another resident, Earnestene Roberson, found green stains in the sink and oily film on her water. In 2003, tests of Hudson's well revealed, among other things, high concentrations of benzene and petroleum hydrocarbons—contaminants related to oilfield waste. Basic Energy Services Inc., a leading well contractor, had been operating in the area, and Hudson began making calls to regulatory agencies about an abandoned, leaking injection well in the neighborhood.

In 2004, the Texas Commission on Environmental Quality acknowledged there were problems with the Midland-based company's operations. The federal Environmental Protection Agency documented saltwater leaking from the injection well's casing and contaminated groundwater around it. The EPA began supplying residents with bottled water on what was supposed to be a temporary, emergency basis. Hudson and several other residents filed suit against Basic Energy, asking a state district court to order the company to provide clean drinking water, clean up damage, and pay medical costs of people who drank polluted water. The suit also asked that Basic Energy remove its pipelines and equipment from the area.

In court papers, Basic Energy denied the allegations. Repeated phone calls to the company's attorney were not returned, and the company's East Texas manager said that he could not comment.

As recently as June 2005, Railroad Commission tests found two contaminants under Basic Energy's disposal site in the area. The same two also showed up in the families' wells. Two months later the three-member commission dismissed the complaints of Hudson and other residents. Hudson and his attorney, John Stover—himself a former railroad commissioner—used open-records requests to obtain documents indicating that state officials had concluded there were problems at Basic Energy's site. Early this year, state inspectors wrote that documentation of the company's cleanup efforts was incomplete and that a new leak had been discovered. "[T]he matter of complete assessment, cleanup and/or control of barium and chloride detected in groundwater remains a concern for RRC staff," a commission official wrote to the company in January.

Meanwhile, Hudson has continued to pursue other remedies. He traveled to Washington, D.C., to arrange a Department of Agriculture loan that would link residents along County Road 329 to a nearby water system. System officials rejected the loan because they doubted residents could pay their share of the bill. "'Cause it is a small amount of people, we ain't really people," Hudson says. "Your life ain't worth anything."

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