Ogallala Aquifer starting to run on empty

Web Posted: 08/16/2006 03:12 AM CDT

Joseph S. Stroud
Express-News Staff Writer

DUMAS - Harold Grall plans to save water by selling it - 16.9 ounces at a time.
He has set up a bottled water factory in a white Quonset barn in the middle of his farm in the Texas Panhandle, and he hopes to sell enough Pure Element Premier Water to allow him to stop irrigating corn someday.

That would be good for the Ogallala Aquifer, the giant underground water formation that extends north from the Panhandle to South Dakota and Wyoming.

About 40 percent of the water used in Texas comes from the Ogallala, and almost all of that is poured onto farmland - in staggering amounts.

In a given year, more water is used to irrigate farms in each of a half-dozen Panhandle counties than is pumped out of the entire Edwards Aquifer, the primary water source for San Antonio and much of South-Central Texas.

Recent coverage
Water on way to being liquid gold in the state

Rainfall can't keep pace with all that pumping, so the Ogallala's water table drops by an average of nearly 2 feet per year in this part of Texas. In places where corn production is especially intense, average annual declines have been found that exceed 8 feet.

Overall, Texas has removed about 19 percent of the water in the aquifer, according to the Texas Water Development Board. The Ogallala's steady decline is by far the biggest factor in the depletion of Texas' groundwater supply - and yet the number of people living above it continues to grow.

The Panhandle will experience significant water needs beginning in 2010, meaning people would go without water if a drought occurs, according to a draft of the new State Water Plan, released last week by the Texas Water Development Board. Those needs are expected to nearly double by 2060 if no new water sources are found.

Meanwhile, existing water supplies for the Panhandle are projected to decline by 40 percent by 2060.

Enter a second consecutive hot, dry summer in the Panhandle, which has forced farmers in the northwest corner who want to stay afloat financially to drill more wells and look further underground in search of water. Many are turning to less water-intensive alternatives, from cotton to dairy cattle to sunflowers.

A lot of farmers say that's how it should be. They say natural market forces should be given a chance to sort things out, arguing the alternative - strict new limits on pumping - would cripple the regional economy and put a lot more folks out of business.

Grall, whose farm lies on a flat, mostly treeless plain near the town of Dumas, north of Amarillo, doesn't see it that way. He thinks farmers need to start conserving now.

Using water at the rate required to grow corn in the arid Panhandle makes no sense, Grall said - especially when the nation as a whole grows
more corn than it needs on a regular basis.

"This is kind of insane what we're doing here, using this precious resource to produce a commodity that's in abundance. There's something wrong with that picture. But it's something you can't get out of overnight."

With that in mind, Grall and his wife, Stacey, have invested $650,000 over the past two years in a bottled-water business. It hasn't taken off
yet, but if it does, they will pump less water and be paid more for it.

That's because the amount of water used for irrigation dwarfs the amount needed for the bottling plant, even if sales exceed their wildest
expectations.

Grall said just one of the 18 giant center-pivot sprinklers on his 6,500-acre farm could provide enough water to run the bottling plant for
a year at full capacity, filling 6 million bottles of water - in 305 minutes.

'Like crack cocaine'

Rivers, streams and wind created the Ogallala Aquifer more than 2 million years ago, when they deposited an enormous amount of sand, gravel and silt caused by erosion in the Rocky Mountains. Rainwater slowly percolated into those materials and created a giant underground reservoir.
The Ogallala stretches from Texas across the High Plains all the way to South Dakota. Once, before irrigation began, it was thought to contain as much water as Lake Huron.

Ironically, the water remained underground during the Dust Bowl years of the 1930s, when nearly a decade of dry weather drove many farmers

from their land. The water wasn't available then because there were no pumps capable of bringing it to the surface. They hadn't been invented.

That changed by the 1940s, but it wasn't until the record drought of the 1950s that using groundwater in irrigated farming really accelerated. Several consecutive years without rain left farmers desperate for new moisture, and by then they had the technology to look for it underground.

"You saw people all over, including the Edwards and the Ogallala, drilling wells to get water for their crops," said Robert Mace, head of the groundwater division at the Texas Water Development Board. "And then
once they got it, you know, it's kind of like crack cocaine. It's like, 'Holy cow! I can make a lot more money!'"

The water was cheap and abundant, and spigots flowed freely for years.

The rate of irrigation accelerated with the arrival of the center-pivot sprinkler system, a giant rotating machine that looks like a sidewinding
praying mantis and waters a circle a half-mile to a mile in diameter. Invented in 1952, the center pivot had become commonplace by the early 1970s.

Irrigation pumping in Texas hit its peak in 1974 and has declined about 20 percent since then.

In many respects, current groundwater policy in Texas is a function of decisions made - or not made - years ago. Senate Bill 1, the landmark 1997 water law, made it harder to move surface water from places where it is plentiful to places where it is needed. That had the unintended consequence of stirring new interest in groundwater.

Minimal regulation

The 1997 law made locally elected groundwater conservation districts the primary regulator of groundwater. Legislators who supported it touted the wisdom of having decisions made locally.
In areas like the Panhandle, though, where agricultural interests remain a dominant political force, the net effect was minimal regulation.

"The boards that run each of the groundwater conservation districts are typically made up of irrigating farmers, and so they are unlikely to limit the ability of irrigating farmers to be irrigating farmers," said Ken Rainwater, director of the Water Resource Center at Texas Tech University.

That description fits the North Plains Groundwater District, which covers most of the land in Texas' eight northernmost counties. The district, governed by a board of seven farmers, has drafted proposed annual pumping limits of 2 acre-feet per acre but has yet to enforce them in any significant way.

An acre-foot is the amount of water needed to cover an acre of land with a foot of water, or 325,851 gallons. Two acre-feet is roughly the amount of water needed to grow corn in the northwest counties of the Panhandle, which, with warm days and cool nights, otherwise is well suited to the crop.

Rainfall in the area has been running below normal for two years, and normal is only 18 inches a year. Richard Bowers, the North Plains district's general manager, estimates 60 percent of the farmers in the district will exceed the 2-foot limit this year because it's been so dry.

Bowers said the North Plains district has successfully discouraged some drilling through well-spacing requirements and by engaging people suspected of using too much water in constructive dialogue. But he acknowledged it never has taken anyone to court.

"For the most part, I think they all want to comply," he said of the area's farmers. "They realize they're using a pretty precious resource."

The new pumping limits won't go into effect until January at the earliest. Bowers thinks restrictions on pumping will become more stringent then.

"We'll have a lot of people tell us, 'You should have done this 10 years ago when you adopted new rules in '95,'" Bowers said. "Well, yeah,
there's a lot of things I should have done 10 years ago."

Although it has been clear for years that water levels were declining, the number of people living in the Panhandle continues to grow.

According to the most recent regional water plan, completed earlier this year, the area's population will increase by another 52 percent by 2060, to 541,035. The plan predicts regional water use will drop during that period by 26 percent, mostly through declining irrigation.

That may occur as farms continue to fall by the wayside. Harvested cropland in the Panhandle has dropped from 2.3 million acres in 1978 to 1.5 million in 2002, with 44 percent fewer farms, according to the new plan.

High gas prices

This year, capitalism has delivered another restraint on the market: the high cost of fuel it takes to pump water from underground. Gas prices have been soaring, forcing farmers to make decisions they otherwise might not have made.
"The greatest water conservation tool that exists on the High Plains right now is the price of natural gas," said Bill Mullican, head of planning for the Water Development Board. "In a lot of cases, they just simply cannot afford to irrigate because of the cost of the gas. It costs more than the crop that they're raising."

That's exactly as it should be, says Rodney Bohlender, a 48-year-old

corn farmer in Dallam County, whose house sits 13 miles from the New Mexico state line.

Over a recent lunch at the Bar H Steakhouse in Dalhart, Bohlender, whose father and son both are farmers, said he sees little need for government intervention.

He said farming will disappear long before municipal supplies are exhausted.

"Being on the side that I am, knowing what it takes to use it up, that will never happen," he said. "Economically, you can't use it all up. There will always be drinking water."

When he took off his Senninger Irrigation cap, Bohlender bore a resemblance to Tim Russert, the television news broadcaster. He spoke in
low, even tones, with perhaps an air of resignation. He seemed not so much defensive as having made peace with the government involvement he thinks is inevitable. That doesn't mean he likes it, though.

Farmers, Bohlender said, need a lot of water pressure underground to irrigate crops. When the pressure drops below a certain level, "our business ceases to exist. But there's always drinking water left after you do that. So the idea that there's going to be zero is not realistic."

Bohlender said he used to believe in leaving the market completely unfettered by government. He still thinks too much intervention amounts to socialism.

Still, knowing the water table at his Dallam County farm has dropped some 50 feet in 20 years, he has softened his views somewhat.

"I don't think anybody ever dreamed 40 years ago when they drilled the first irrigation wells that we could actually pump this thing out. And now all of a sudden we woke up and said, 'Yeah, we could. We really could pump it out.' And so now we've got to go try to figure out some kind of an equitable way to ration it out. And none of it's any fun. You
know, we all love excess."

Bohlender said he would like to see government use more carrots than sticks. That might mean incentives to grow less water-intensive crops or
use seed varieties that use less water. It might mean a government program to buy back private wells, an idea he likes better.

Bohlender said he's thinking about getting involved in the dairy business, growing more corn for feed and less for human consumption. That would use significantly less water than he currently applies to his
crops.

Plans for a new cheese plant in Dalhart, spurred on by state economic development incentive money, have made dairy farming a big topic of conversation among farmers in recent months. Out-of-state dairies are

moving in.

Whether he goes that way or not, Bohlender knows more change is on the way because of water.

"Where I live, 40 years ago there was just pasture, and now we're producing feed there like you can't imagine," Bohlender said. "But that won't always stay that way, because we've got a finite resource. So you're going to have to do something else with that land, and the dairy thing, I think, is the next step. I think it's a good thing."

'It's good water'

A few days later, Bohlender led two visitors on a 130-foot climb to the top of the grain storage bins and elevator on his farm along County Road
13 in western Dallam County.
He moved quickly up the steps, joking that if you did that enough, you wouldn't need to exercise. He doesn't do it often but wasn't breathing hard.

From the platform at the top, the landscape stretched out flat and low in every direction. New Mexico was off to the west, though it looked much like the fields in between. Commercial grain elevators - the tallest buildings in any community in this part of the state - identified Dalhart, 17 miles to the east.

Down below, center-pivot sprinklers moved slowly through giant, golden circles of corn. The hoses, hung low to the ground to prevent evaporation loss, were invisible from above.

The circles on Bohlender's farm extended 4 miles south to another county road, across from some ranchland the city of Amarillo bought a few years ago for its groundwater rights.

After pointing out the sites, Bohlender shrugged.

"This is kind of what we do here, right or wrong," he said.

He said it as if he wasn't sure.

Earlier, he conceded the argument that the Panhandle might not be the best place to grow a surplus crop like corn is a hard one to refute. But
he fell back on the principles this country was founded on.

"There is that point to be made, that most of the corn in this country is grown where they don't irrigate, so why are we spending this precious
water irrigating the corn? I can't answer that question. There is no good answer for that.

"But everything we've done up to this point in this country has been based on economics and freedom, and when you go meddling with that, then
you really don't know where you're at."

Bohlender said Grall's idea - selling water by the bottle - might be a good way to go.

"The best thing to do with that water - it's good water - is put it in a bottle and drink it," he said. "But you can't dictate everything. You've got to let economics and business operate. You just can't tell everybody what to do."

Grall, who celebrated his 50th birthday earlier this month, hopes Bohlender is right about what should be done with the water. He has staked his future on it, and the commitment seems to be taking up a lot of his time these days.

Recently, he spent the better part of two days trying to fix a sensor on a labeling machine. The new labels for Pure Element were so clear that the sensor couldn't read them. It kept slapping multiple labels on each one. Call it an unanticipated cost of going "pure."

A brown-eyed farmer with a neatly-trimmed moustache and a taste for Polo shirts, Grall came to Dumas from El Paso in 1979. He serves as president of the board of the local YMCA, is active in Grace Through Faith, a nondenominational Christian church in Dumas, and sits on the board of Panhandle Energies, which is planning a new ethanol plant in the region.

That would give the region's corn a new purpose, though it might not do much for the water supply.

Still, Grall has always had a reputation for being more conservation-minded than most. He was one of the first area farmers to move to no-till corn production, a planting method that saves water by plowing the previous crop's stalks back into the ground. Now pretty much
everybody does that.

Whether he's growing corn or putting water into bottles, Grall figures the product is pretty much the same.

"We're basically doing the same thing, we're selling water either through an ear of corn or in a bottle of water," he said. "We're just trying to add some value to that resource."

As he said this, Grall was standing just outside the water plant, talking over the thrum of a pump strong enough to draw water from 700 feet below ground. Less than 100 yards away, an enormous center-pivot sprinkler stretched a half-mile across a giant, golden circle of corn.

The stalks stretched 8 feet or more into the air, all but enveloping the enormous machine as it tiptoed through. Beside the circle, off to the east, a second pump the size of a pickup's engine throbbed, gulping water from the ground.

Grall said he always has loved growing corn but thinks it shortchanges the water's value. As things stand now, he said, water is the cheapest element in the Pure Element product, costing less than a penny out of the 15 cents that goes into each bottle.

"It's more valuable than that; it just hasn't realized it yet," he said. "We're just trying to stay ahead of the game here by hopefully being involved in something that, when people do realize the value of it, you know, we'll be there to take advantage of it."