

Rocky Mountain News

Rocky Mountain News (CO)

November 22, 2003

SERIES: SPECIAL REPORT: RUNNING DRY

FIRST IN A FOUR-PART SERIES

RUNNING DRY

MUCH OF DOUGLAS COUNTY'S WELL WATER, ONCE THOUGHT ABUNDANT ENOUGH FOR A CENTURY, COULD DROP OUT OF REACH IN 10 TO 20 YEARS

Author: Lou Kilzer, Jerd Smith and Burt Hubbard

ROCKY MOUNTAIN NEWS

When Keith Lehmann moved to Douglas County in the early 1980s, the last thing he was worried about was water.

He had a well dug into the vast and seemingly inexhaustible Denver Basin, an aquifer that experts said held enough water to fill Lake Erie.

Today, Lehmann's wife, Valerie, hauls dirty clothes into town to a Laundromat. Their home doesn't have enough water to waste on spin cycles.

They can't turn on more than one faucet at a time. "I have to set a timer for 15 minutes for one little lousy sprinkler," he says. "I have to use a half-inch hose because the well pressure won't handle a three-quarter-inch hose. And after I sprinkle for 15 minutes, I have to wait an hour before I can sprinkle again."

Lehmann and many of the 150 homeowners in the Chatfield East and Chatfield Acres subdivisions are hoping to hook up with the Highlands Ranch water system.

But Highlands Ranch says it doesn't have water to spare at the moment.

Lehmann says he could dig a deeper well for \$25,000 but that would just delay the inevitable by a few years. His well is going dry, he says.

Lehmann could have company in the next decade.

Shortages already plaguing western Douglas County threaten to march east into heavily populated areas, home to some of the most exclusive real estate in the United States.

Officials and water experts have known for decades that the wells supplying water to the growing south metro area could deplete eventually, but many have relied on a prediction of 100 to 500 years for the life of this nonrenewable underground resource.

Those predictions are changing.

Most experts agree that the natural pressure that pushes water toward the surface of wells will be lost in two to 10 years. After that, sucking water to the surface will become more difficult and expensive.

Some experts have said there is a silver lining to the news - wells that have been plummeting by 30 feet a year will at least stabilize, their theory suggests.

But that theory is now being challenged by several experts based on new understanding of the Denver Basin and data from some wells that have already been depressurized. If they're right, the more populated areas of Douglas County could begin running out of usable underground water from their main source within 10 to 20 years, some experts say. Even sooner, water in some areas could become too expensive to pump.

Early data, these experts say, suggest the pessimistic scenario may be playing out.

Wells in the affluent community of Castle Pines North have been dropping an average of 34 feet a year in the past eight years, according to its water consultant, Theresa Jehn-Dellaport. Parker and Castle Rock are seeing declines of 20 to 30 feet a year.

Key wells in Castle Pines North will depressurize in one to two years, Jehn-Dellaport says. If nothing is done, they could begin to experience a serious loss of production or the wells could become too expensive to pump in less than a decade, these experts say.

But Castle Pines North is planning conservation, re-use of water, acquisition of surface water rights and other measures to make sure it has enough water, Jehn-Dellaport says.

Even water officials in Parker - which sits above the deepest part of the Denver Basin - say they will reach the same critical point within 10 years. If well declines of 30 feet a year don't slow down or only slow by half, its wells could become economically unfeasible in 15 years. Parker plans to build a reservoir as a backup.

Water consultant Pat Mulhern disagrees that south metro residents are going to run out of water anytime soon. Mulhern is leading a major study of the area's needs and a water-sharing plan to meet them.

If the other experts are right, he said, "The aquifer would be drained in 20 years." He doesn't believe that's possible given the vast amount of water below Douglas County.

Water district officials involved in the study believe they are on the verge of a breakthrough agreement on the water-sharing plan with Denver Water and West Slope water interests. The plan to pump surplus Denver water back into the aquifers would secure Douglas County's water future for the next century and beyond, they say.

But many experts say the plan comes up short.

The cause of Douglas County's water predicament?

Physics.

Except for Highlands Ranch, which uses large amounts of river water from other places, Douglas County gets more than 90 percent of its water from the Denver Basin's aquifers, says water consultant John Halepaska. And almost all that water is encased in sandstone, where it moves very slowly.

Sealed deep below the surface, the water isn't replenished annually by rain and snow, as are wells near rivers or the surface. Once it's sucked out, it's basically gone for good.

That was fine when the county was a sleepy rural area in 1980. But it's a problem today.

Douglas County grew faster than any other county in the nation throughout the 1990s, and rapid growth continues today. With each new well drilled, the pressure that sustains water levels in this prehistoric water bank weakens, making water supplies harder to reach and much more expensive to pull to the surface.

A Rocky Mountain News examination of the water future for this booming south metro area shows that parts of Douglas and Arapahoe counties could, indeed, be in danger of having much of their water supplies slow to a trickle well within the life of a 30-year mortgage.

* The Douglas County commissioners have already imposed strict development standards for the western part of the county because of water shortages and problems with homeowner wells. The area is home to about 9,000 residents.

* Many municipal wells are dropping 20 to 35 feet a year. As the water level falls, so does the pumping rate, even before wells reach the depressurized point. That means less water is coming out and more wells must be drilled just to stay even. Last year, cities in Douglas County drilled twice as many wells as the year before, the state engineer's office says.

* Demand for water is increasing, even as water levels decline.

Douglas County, home to 219,000 people, is projected by the state demographer to double to 440,000 by 2030. Water needs of the county's major communities will grow more than 60 percent in the next decade, according to preliminary results of an unreleased study of south metro water needs.

* The major solution on the table would cost more than \$1 billion, according to consultants conducting the study for the county's major water districts. The plan calls for obtaining surface water from Denver, using some of it to recharge underground supplies and building a system of reservoirs and pipelines within the county. Whether the plan would work scientifically, legally and politically is in question.

* Even if the plan can pass those tests, surface storage would have to be built. It took 18 years for the town of Parker to get close to final approval for its proposed reservoir. And parts of Douglas County may not have 18 years.

* Continuing to rely primarily on dwindling underground supplies will cost even more - \$2.3 billion to keep digging hundreds of new wells, Mulhern said. But he said that's not an option.

* At best, homeowners and home buyers will pay higher water bills and tap fees on new homes. Water rates in the county, already among the highest in the metro area, could double or triple in the next decade as cities are forced to drill hundreds of new wells at \$500,000 to almost \$1 million each, Mulhern and others said. Parker, for instance, with 26 wells, will eventually need 177 more to keep pace with growth and declining well production.

* All of this is happening with little public awareness. A Rocky Mountain News poll of 300 people who bought homes in Douglas County in the last two years found that 81 percent were not told anything about their water supply before they made their purchase.

Paper water

The common wisdom from real estate agents and some water districts is that the county has at least a 100-year supply of water. But experts told the News that significant parts of the county could face water problems much sooner.

"They are living a lifestyle that is not sustainable," said one of the experts, Robert Raynolds. He is a geologist at the Denver Museum of Nature and Science who is using a National Science Foundation grant to study the aquifers underlying Douglas County. "The metaphor I use is you are driving down the interstate highway in your SUV, and there aren't any gas stations."

Raynolds said experts take the 100- to 500-year estimates with great humor.

That water, he said, is called “paper water,” because it exists only on paper.

Douglas County Commissioner Jim Sullivan acknowledges the county faces a dilemma.

“You can say, ‘I have a 500-year supply of water.’ The point is, you just can't recover it,” Sullivan said.

Yet, optimists remain. Castle Rock Utilities Director Ron Redd - like others - acknowledges that the county needs more water, but he thinks it has plenty of time to work out a solution.

“I think it will be 50 years before the groundwater becomes too costly to pump,” he said. That would give Castle Rock and other communities time to launch aggressive conservation programs and recharge the aquifers with water from Denver, he said.

The timing may be debatable, but not the bottom line, said Mulhern, the consultant who is leading the \$1.2 million water study for 11 major water providers in the Douglas County Water Resource Authority.

“It really doesn't matter whether we're talking about a problem in six years or 20 years,” he said. “We're going to have a problem.”

Breakneck growth

In 1970, the picture in Douglas County was much different. A paltry 8,400 people called this rural place home.

Within a decade, the county had already made a great leap in size, but it still claimed only 25,000 residents. Castle Rock was a sleepy town between Denver and Colorado Springs. Highlands Ranch was a working cattle ranch, and Parker was still a year away from becoming an incorporated town.

Growth picked up speed in the early 1980s, hit a temporary speed bump during the recession in the mid-'80s, then took off during the 1990s. Today, Douglas County's population is almost 10 times larger than it was in 1980.

Unlike most Front Range cities that rely on a fresh supply of melting mountain snow each year for their water, Douglas County drilled wells for thousands of new homes, confident there was enough water for at least a century. Only Highlands Ranch bought significant surface, renewable water that now accounts for up to 70 percent of its annual supply.

Using nonrenewable water seemed like a good idea for a long time. It was cheap and clean. And seemingly plentiful.

Engineering studies during the 1970s and 1980s put the amount of groundwater underneath the Denver Basin stretching from Greeley to El Paso County at around 300 million acre-feet. One acre-foot - the equivalent of 326,000 gallons - can supply one or two families for a year.

“When we think about a number that gets into the hundreds of millions of acre-feet, it creates a mind-set that there is a massive amount of water out there,” said Peter Binney, Aurora's utilities director.

But development based on the ancient aquifers of the vast Denver Basin has an Achilles' heel. Each new well drilled into the aquifer weakens it, and once the water is pumped out, it's essentially lost forever.

In describing the problem, hydrologists liken the aquifer to a champagne bottle. Once the cork is popped, or a well is drilled, the fizz pushes water close to the surface.

The Denver Brown Palace Hotel used this artesian pressure to power its elevators for decades until the fizz went away.

Douglas County has been using water pushed toward the surface by this so-called fizz for decades, too. But just as a champagne bottle left open too long goes flat, hundreds of new wells drilled in the past 30 years have bled off the fizz. Once it's gone, wells begin to draw from the champagne itself.

But unlike the free-flowing liquid in a champagne bottle, water in the Denver Basin is encased in sandstone, in four layered formations known as aquifers. It takes a lot of energy to literally suck the water out.

Once a well has reached the top of an aquifer - meaning it's drawing water without the fizz - experts disagree about what happens next. Some have thought, and still think, that water levels will stabilize; others think the water declines will slow, perhaps in half. And at least one expert has predicted that water declines will continue at the same rate.

Data from two Castle Rock wells that have reached the critical line in the aquifer where pressure is lost show the water levels continuing to fall rapidly. Those wells support the more pessimistic theory.

Water consultant Halepaska said the four aquifers are actually laced with largely impermeable layers of shale, making production below the fizz even less predictable. A cross section of the whole aquifer could reveal 30 layers, not just four, he says.

Living without fizz

Today, the Chatfield subdivisions and a few other areas in the western part of the county sit on portions of an aquifer whose fizz is gone. Many of their household wells have reached the top of the aquifer, residents say. And the results have not been good.

A municipal well producing 600 gallons of water a minute may slow to a half or a quarter of its rate when it hits the top of the aquifer, Aurora's Binney said. That requires drilling more wells just to keep up with demand, he said.

"Whereas, initially you might have one 600 gallon-a-minute well, as the pressure drops, you will need two 300 gallon-per-minute wells to keep up, and eventually you'll need four 150-gallon-a-minute wells," Binney said.

And that's just to maintain the status quo. Supplying water for all the new residents - Douglas County added 44,000 from 2000 to 2003 - poses another major challenge.

The unreleased study on possible solutions estimates that the needs of the county's major water providers will jump 62 percent during this decade alone because of growth, from 39,000 acre-feet to 63,000 acre-feet a year.

By 2050, those providers will need nearly 118,000 acre-feet - 87 percent more than they will use in 2010, according to Mulhern.

The high cost of drilling new wells likely will translate into increases in homeowners' water fees, which already top the scale in the metro area.

Parker residents, for instance, pay an average of \$70 a month for water, while Denver residents pay just \$21. Experts expect water bills and tap fees could double or even triple to pay for a countywide water system.

The cost per home could reach \$10,000 to \$15,000 or more just in one-time tap fee increases, experts said. Or property tax rates could go up.

"People will start personalizing it at that point. It's not some kind of abstraction that a future generation is going to have to worry about," Binney said. "It's going to have a direct impact on the marketability of real estate down there."

It could also mean severe watering restrictions, said state water engineer Hal Simpson.

"If we do nothing, I can't predict, but it could reach a point where we'll really restrict outside use so the water is just used for drinking and sanitation purposes," Simpson said.

How much will people pay?

"That number is pretty high," said Steve Boand, a hydrologist and former mayor of Castle Rock. "Would I pay the price of a new car? You bet. Thirty thousand dollars per household is not out of the realm of reason."

Doing the math

That's exactly the figure quoted to homeowners in Chatfield Acres when they asked if they could hook up to the Highlands Ranch system run by the Centennial water district - and were turned down.

How long before the rest of the county experiences the same fate?

In Castle Pines North, daily readings of three wells in the past eight years show an average drop of 34 feet a year, according to data from Jehn-Dellaport, the consultant for the Castle Pines North Metro District.

That is among the fastest rates of decline in the county.

Within a year or two, the water levels will reach the depressurized point - the top of the Arapahoe formation, the principal aquifer in the Denver Basin, she said.

At that point, the wells lose their fizz and pumping becomes more difficult.

What happens next is critical.

Jehn-Dellaport and Reynolds agree that once the aquifer is breached, well declines are likely to slow, but not nearly as much as experts had thought.

Both estimate the declines will continue in the 15-feet-per-year range - far faster than the decline of 1 to 2 feet a year forecast last summer by George VanSlyke, a geologist for the state engineer's office. Even VanSlyke has more recently revised his view.

"Theoretically, it should slow tremendously. But what is it really going to be? Somewhere between the theoretical value and what it is now," VanSlyke said this week.

Data from a few wells in the Denver aquifer that have just recently reached the depressurized point indicate that the water levels may fall at the faster rate, though it will take another year or two to confirm. Similar behavior is showing up in Castle Pines North wells that reach into the Arapahoe aquifer, but the data is even more preliminary.

The Arapahoe aquifer averages a thickness of 250 feet in northern Douglas County. A drop of 15 feet a year could spell trouble - the aquifer would theoretically get used up

in 20 years, but water would become uneconomical to mine long before that, experts say. And aquifer depths are uneven and may not be as thick as the average in that particular area.

"You do the math," said Reynolds.

To try to slow the decline, Castle Pines North is drilling a municipal well with horizontal drilling adapted from the oil industry. Whether it will work is unknown. A similar experiment in Arapahoe County failed.

Jehn-Dellaport points out that the district can draw on other aquifers, even if they aren't as productive as the Arapahoe aquifer. The dire predictions also don't take into account conservation, re-use and the proposed water-sharing plan that south metro districts are working on, she said.

"Districts are not going to survive on groundwater. There must be a surface water alternative," she said.

Castle Pines North expects to move ahead with building 1,300 more homes, said district manager Judy Dahl. Using recycled water on The Ridge golf course next season will save 500,000 gallons a day, she said.

She doesn't view the well declines as a serious problem. "I think it's my responsibility as a manager to continue to look for sources of water, to continue to better manage the water that we have. But I don't see it as a major threat to our community."

The district doesn't really educate residents about well issues because they are too complex.

"Their bottom line is, 'Is there water at the tap?'" Dahl said.

The view from Parker

In nearby Parker, water and sanitation district manager Frank Jaeger says his wells are dropping an average of 30 feet per year. He thinks his district has 10 years before it hits the depressurized point.

And he's not pleased. "We're driving a Cadillac off of a cliff," he said.

What gives some pause is that Parker sits above the very deepest reaches of the Denver Basin. Parker has more water than anyone.

And Jaeger is still very worried.

Even before reaching the top of the aquifer, Jaeger's wells are sputtering to keep up. One Parker well was producing 780 gallons per minute in 2001. A year later, it was down to 450 gallons per minute. Another well went from 1,000 gallons per minute to 645 in the same period. And a third well went from 1,000 gallons per minute to zero. Numbers for 2003 were not available.

Jaeger is frantically drilling new wells, and he is just as frantically trying to get final approval for a surface reservoir called Reuter Hess just south of Parker.

He knows it's just a Band-Aid, but a necessary one.

Parker needs to increase its number of wells roughly sevenfold to meet expected demand and offset dwindling production, Jaeger said.

A recent well drilled down 1,560 feet by Parker at a cost of \$400,000 produced a weak 25 gallons per minute, barely enough for a handful of families.

What happens after 10 years, Jaeger doesn't know.

But he's not waiting around to find out.

Jaeger's district has bought 4,000 acres of farmland in eastern Colorado to acquire senior water rights to help fill Reuter Hess Reservoir.

The reservoir would contain both surface water and water from the deepest aquifer - the Laramie Foxhills. Typically, water from that aquifer is the least desirable because of high sulfur concentrations. But much of the sulfur, Jaeger said, will dissipate while it's in the reservoir.

With the new wells and Reuter Hess, Jaeger says Parker can grow as planned, but not faster.

Other districts think they can simply keep pumping until the water-sharing plan becomes reality.

Meanwhile, time is running out.

Douglas County is just now beginning to face the problem. Almost everyone in the water world has abandoned the notion - popular just five years ago - that it sits atop a lake of nearly endless water.

But the myth still survives. In an interview several months ago, Douglas County Commissioner Sullivan said the county had the best reservoir of all for its water supply - the Denver Basin. He said it would last for 100 to 500 years.

In a more recent interview, Sullivan, a former developer who also heads the Douglas County Water Resource Authority, acknowledged immediate and pressing needs.

"Nothing is perfect, and there are no truly great answers," he said.

A watershed moment

Sullivan said he was shocked to learn that Parker's wells were dropping 30 feet per year, and that North Castle Pine's wells are dropping even faster.

Raynolds does not expect the majority of wells to go dry, though he does expect problems with production and price.

"You're trying to get water out of the ground as fast as you can, but the ground will only yield it at a certain rate. If you want to accelerate the rate, you are going to have to drill more wells.

"And you get into a vicious cycle where the cost per unit gets to the point where you can't afford it anymore."

Given the iffy science around it all, Raynolds says someone should have been studying the behavior of the aquifer long before now.

He complains that the state is testing too few wells and not enough in the western parts of the county where the aquifers are shallowest.

The state engineer's office said it is likely to drill fewer test wells, not more, because of state budget cuts.

"Bob's a real scientist, and he's right," VanSlyke said of Raynolds. "The more data you have, the better off you are. I agree with that. The only problem is in the world we live in, data costs money."

Keith Lehmann in Chatfield East knows about money, too. He shopped this week for a 350-gallon storage tank to help relieve his water problems.

And he got more bad news. Any hope of hooking up with the Highlands Ranch water system is gone for at least a year. "They told us don't even bother," he said.

INFOBOX THE LANGUAGE OF WATER

* Acre-foot An acre of water one foot deep that contains about 326,000 gallons of water, enough for one or two families for a year.

- * Aquifer A body of underground water that is part of a river system. Under the South Platte River, for instance, the Ogallala aquifer spreads out in eastern Colorado and western Nebraska. Other aquifers, such as those underneath Douglas County and much of the metro area, consist of water trapped far underground thousands of years ago.
- * Aquifer recharge A process in which water is injected into an aquifer to store it for reuse later.
- * Artesian pressure Water trapped underground will often rise above the top of an aquifer if it is tapped by a well. The force driving the water upward is called artesian pressure.
- * Denver Basin A system of four aquifers covering 6,700 square miles from south of Colorado Springs to Greeley and from the foothills eastward to near Limon.
- * Groundwater Water found underground. It may come from a deep aquifer such as those in the Denver Basin, or it may be water that has spread underground from a surface river system.
- * 100-year rule A legal formula set out in state law that is used to determine how much water can be pumped from an aquifer. A landowner can extract water at a rate that will ensure that water will remain underground for 100 years, which means pumping no more than 1 percent per year of the estimated subterranean water. The formula uses a computer model created during the mid-1980s that estimates how much water is in each aquifer.

Lou Kilzer

WHAT THE EXPERTS ARE SAYING

- * John Halepaska of Halepaska and Associates, consultant for the Parker Water and Sanitation District: Based on what he is seeing at the edges of the aquifer, he expects the water level declines of 30 feet a year to continue at the same rate after reaching the top of the aquifer. If nothing is done, water rates will skyrocket, forcing people to stop using water, he says. He does not see the wells running dry, but more and more wells will be drilled just to stay even as production declines. Rates will go up, and production will decline "until there is enough political pressure to buy surface water."
- * John E. Moore, retired hydrologist, U.S. Geological Survey: He says he agrees with Halepaska's estimate of 10 years before Douglas County wells hit the top of the aquifer. After that, he says, the water level "will fall at the same rate as it is falling now. It will vary from place to place, but in the Parker-Castle Pines-Castle Rock area, it's going to get extremely bad in 15 years."
- * John Bredehoeft, founder of The Hydrodynamics Group: Bredehoeft says he also agrees with the 10-year estimate for reaching the depressurized point. "Well yields will continue to go down. And as wells interfere with one another, it will compound the problem. If well levels continued to decline at 30 feet per year, you begin to run out of water. Looks like in 10 years there would be no water (in the Arapahoe aquifer)." ...But he points out that the life of the aquifer can be extended with water reuse and

conservation. "You've got a critical problem in Douglas County. The developers don't want to hear this, and the bankers don't want to hear this."

* Steve Board, hydrologist, former mayor of Castle Rock: "In theory, after the wells decline to the water table, which means all the artesian pressure is pulled off, we should start to see the water level decline start to taper off. In reality, we are seeing something more complex. Perhaps we've been too optimistic. "We're in the initial phase of replacing wells. It will get much more severe in the next 15 years."

* John Hendrick, head of the Centennial Water and Sanitation District that supplies Highlands Ranch: "There's no abrupt break or anything that's too alarming. You get a downtrend in productivity of the wells, and it continues down at a slower rate once you reach the aquifer. You can go 50 years and still have half a can left."

WATER'S LONG JOURNEY THROUGH THE EARTH . . .

The water coming out of most wells in Douglas County today probably fell as rain tens of thousands of years ago and slowly trickled down to the four deep underground sandstone formations called aquifers that make up the Denver Basin. Each aquifer represents a different geological era.

A water droplet travels just tens of feet a year through the compacted sediment that forms the aquifers.

This photograph shows a section of rock that makes up an aquifer near Parker in Douglas County. The water is encased in the sandstone. It would take a drop of water as much as a month to pass through the length of this section

. . . TO AQUIFERS THAT SUPPLY WELLS IN DOUGLAS COUNTY

The rate of groundwater movement through an aquifer depends upon how tightly the sandstone is compacted and how many interfering layers of shale and clay there are. Four aquifers make up the Denver Basin and vary significantly, giving each a unique 'personality.'

THE AQUIFERS UNDER DOUGLAS COUNTY

Dawson aquifer

Area: 1,200 square miles between Denver and Colorado Springs

Well depth: Wells typically can draw water from 300 feet down, making this uppermost aquifer the most popular for homeowners who drill their own wells.

Yield: Typically 50 to 150 gallons per minute

Thickness: A few inches to 400 feet

Denver aquifer

Area: 3,000 square miles underlying the metro area

Well depth: A typical well in northern Douglas County goes 1,250 feet down.

Yield: Typically 50 to 200 gallons per minute

Thickness: Ranges from 350 feet near Larkspur to 200 feet in the northernmost parts of Douglas County. Narrows to a thickness of less than 50 feet from just west of Louviers to Chatfield.

Arapahoe aquifer

Area: 4,300 square miles, the second largest in the Denver Basin

Well depth: A typical well in northern Douglas County reaches down 1,800 feet.

Yield: Typically 250 to 600 gallons a minute, with some more than 1,000 gallons per minute, making this the favorite aquifer for municipal and community wells, particularly since the water is of exceptional quality. Denver's Deep Rock artesian water comes from the Arapahoe.

Thickness: Varies from 400 feet near Castle Rock to 200 feet at its northern, southern and eastern boundaries.

Laramie-Fox Hills aquifer

Area: 6,700 square miles.

Well depth: A typical wells in northern Douglas County is 2,350 feet deep.

Yield: Typically 100 to 250 gallons per minute, but because of heavy concentrations of minerals, this is the least popular aquifer in the Denver Basin.

Thickness: As much as 300 feet

Sources: Bishop-Brogden Associates Inc.; U.S. Geological Survey; Colorado Geological Survey

EVIDENCE OF DECLINE

Daily measurements of these three wells in Castle Pines North since 1997/1998 show an average annual drop of 34 feet in water levels, which vary by season. Theresa Jehn-Dellaport, its water consultant, says in a year or two, wells across the community will reach the top of the aquifer, a sandstone formation that holds water collected from eons ago. This is a critical point, because natural pressure that pushes water toward the surface no longer exists at the top of the aquifer, making it much harder to pump water. Many scientists once thought that declining water levels would stabilize when they reach this point, but Dellaport says early data for these wells show the decline continuing. The result, scientists say, could be wells that become useless or too expensive to pump in 10 years or less in this community.

***CORRECTION PUBLISHED NOVEMBER 25, 2003 FOLLOWS: ***

Stories that appeared Saturday in a special section on Douglas County water misspelled the name of Parker's proposed reservoir. It is Rueter-Hess Reservoir.

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