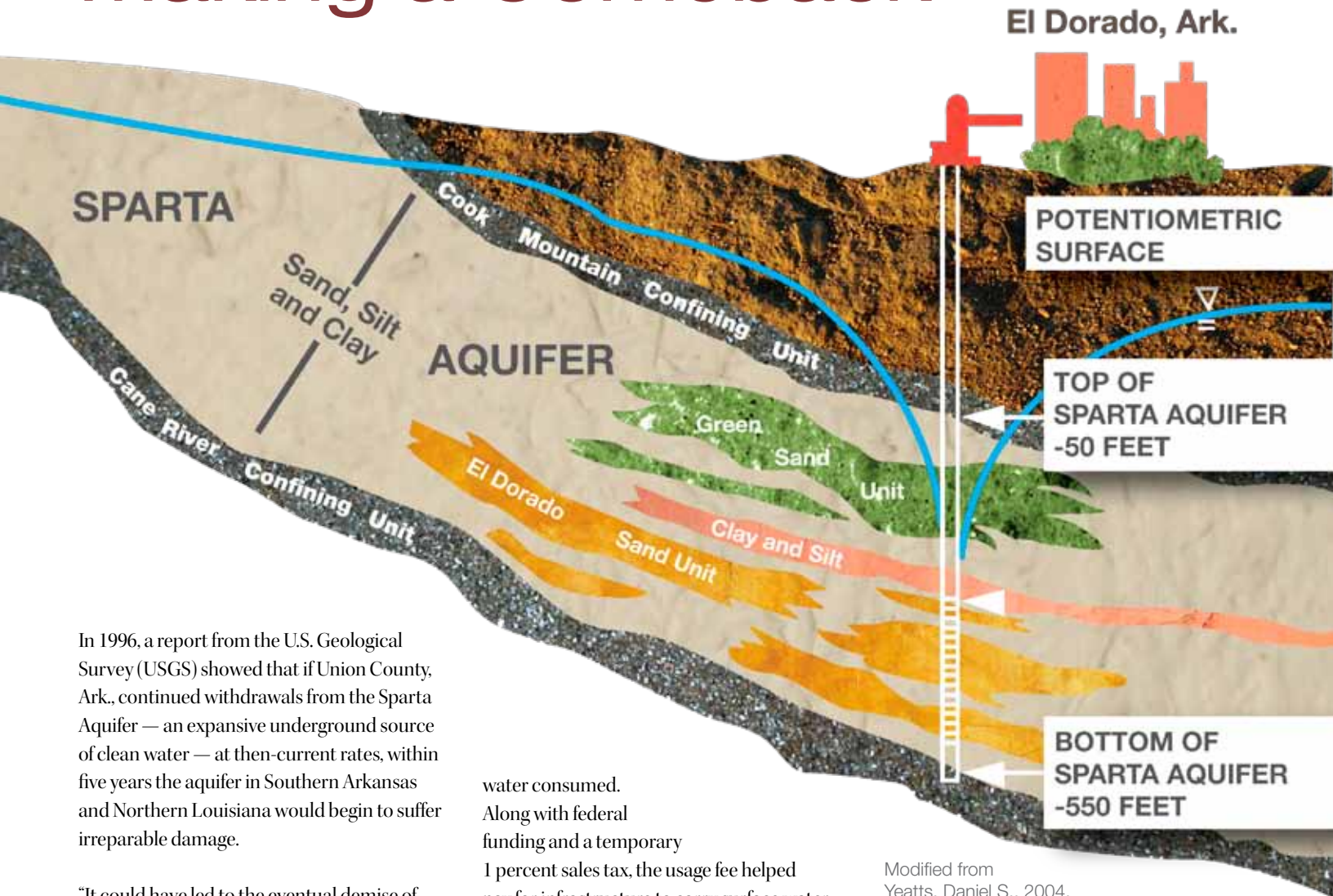


Sparta Aquifer Is Making a Comeback



In 1996, a report from the U.S. Geological Survey (USGS) showed that if Union County, Ark., continued withdrawals from the Sparta Aquifer — an expansive underground source of clean water — at then-current rates, within five years the aquifer in Southern Arkansas and Northern Louisiana would begin to suffer irreparable damage.

“It could have led to the eventual demise of the only industrial and drinking water source for Union County, and that would have threatened the livelihood of county residents,” says Pat Higgins, hydrogeologist for Burns & McDonnell.

As a result, the Arkansas Natural Resources Commission (ANRC) designated five counties in southern Arkansas as the state’s first critical groundwater area, and the residents of Union County took action. In 1999, the late Jodie Mahony, an Arkansas legislator, led the charge to pass legislation creating the Union County Water Conservation Board (UCWCB). With unprecedented authority over groundwater use, the UCWCB imposed a fee of 24 cents per 1,000 gallons of Sparta Aquifer

water consumed. Along with federal funding and a temporary 1 percent sales tax, the usage fee helped pay for infrastructure to carry surface water from a new 65-million-gallons-per-day Ouachita River intake to three local industries previously relying on Sparta.

The UCWCB teamed with the ARNC, Burns & McDonnell, the U.S. Environmental Protection Agency (EPA), the Union County Conservation District, and the USGS to monitor the aquifer. Once water from the Ouachita River began flowing in October 2004, dependence on the Sparta was reduced or eliminated. Water levels in some wells spiked during the first few months after the switch and have continued gradually rising. The study results are invaluable to determine whether the aquifer could make a full recovery.

Modified from Yeatts, Daniel S., 2004, Monitoring water-level and water-quality response to conservation measures in the Sparta Aquifer of the Union County area: U.S. Geological Survey Fact Sheet 2004-3086, 4 p.

Challenges

While the initiatives taken by the residents, legislators and study partners put the Sparta on the right track, part of ensuring a full recovery is continued monitoring of the aquifer’s water levels and quality. If the Sparta Aquifer didn’t show vast improvements relatively quickly, additional costly infrastructure and more extreme conservation measures could have been



Wells in and around El Dorado, Ark., serve as monitoring sites to collect data on the recovery efforts to save the Sparta Aquifer.

required. The monitoring wells needed to be placed in certain locations throughout Union County — specifically around the Sparta's deepest cone of depression beneath El Dorado — and they needed to meet strict testing criteria to support the integrity of the results. Some existing wells met the criteria, and some needed to be constructed. That meant the team needed property owners' permission or right-of-way access onto personal and municipal property.

Additionally, constructing the monitoring network and establishing a data recording system required funding beyond the significant contribution the residents and industries of Union County had already given.

Solutions

From the beginning, the residents of Union County supported efforts to save the Sparta Aquifer. So gaining property owners' permission and access to use or build wells was largely a time challenge to determine well locations and if existing wells met the criteria as monitoring sites. The team then had to complete any needed construction.

"Local residents and industries were very cooperative," Higgins says, "and the UCWCB wanted to maintain good relations and avoid using its authority to assess fees, while continuing to preserve the valuable public support the project had earned."

Instead, Sherrel Johnson, UCWCB grants administrator, secured federal funding with a grant from the EPA to cover monitoring costs from 2002 through 2007. Information collected would provide benchmark data before project completion in 2004, and early impact data following completion.

The UCWCB assumed all monitoring costs between December 2007 and September 2009 as Johnson continued to identify funding sources using the project's initial success, scientific credibility and unique local support as evidence of its worthiness for subsequent state and federal grants. "The project's case



While some existing wells met the criteria as testing sites to monitor the recovering Sparta Aquifer, some new wells had to be dug in and around El Dorado, Ark.

for public funding proved successful and resulted in recent funding from both the states of Arkansas and Louisiana and the federal government totaling more than \$380,000, which will allow the UCWCB to continue monitoring Sparta Aquifer recovery through September 2011," Johnson says.

"It could have led to the eventual demise of the only industrial and drinking water source for Union County."

Results

Because of Union County residents' resolve, the responsibility taken by the industries operating there and the hard work of the UCWCB, the Sparta's recovery to date has been a success. Well water levels have risen more than 60 feet around El Dorado, and 11 feet as far out as 56 miles southeast of the city. Irreparable damage to the aquifer and water quality has so far been avoided.

Arguably the most impactful outcome of the project and monitoring is the ripple effect it could have on other communities using Sparta groundwater, as Union County has given them a frame of reference for the steps they need to take. The aquifer is massive, and while the counties and parishes within the monitoring area are experiencing the Sparta Aquifer recovery, other Sparta users outside the project area are experiencing significant water level declines.

"If these communities continue pumping water from the Sparta Aquifer faster than it can recharge naturally, they will not be able to save the Sparta for their own benefit as a future source of high-quality, dependable water," says Robert Reynolds, UCWCB president.

For more information, contact Pat Higgins, 816-822-3887.



To learn more about the Sparta Aquifer recovery efforts, visit www.ucwcb.org.