

# Ouachita River Alternative Water Supply Project

## *Union County Water Conservation Board*

The *Union County (Arkansas) Water Conservation Board's* (UCWCB) project to provide Ouachita River water as an industrial supply alternative to the rapidly depleting Sparta aquifer may be this country's only project in which residents wrote the law that created the state's first critical county conservation board, allowed themselves to be taxed once, and then voted an additional temporary sales tax on themselves to conserve the underground Sparta formation aquifer, and provide an abundant supply of water for future growth.

In yet another unprecedented action, the UCWCB asked Union County to terminate the temporary sales tax on December 31, 2005, more than three years before the tax was scheduled to sunset. Through superior fiscal and construction management, higher than projected tax revenues, lower interest rates, and by applying both federal funds and local conservation fees to project debt, the UCWCB was able to pay off the debt more than three years ahead of schedule.

The Sparta aquifer in Union County is a natural resource that all Union County industrial and residential customers depend on for industrial and drinking water. The UCWCB project is one in which local manufacturers like *Chemtura Chemical Central Plant* (formerly *Great Lakes*) and *Lion Oil Refinery* took the industrial lead by establishing what *Arkansas Natural Resources Commission* (ANRC) staff members continue to point to as an exemplary conservation effort. The UCWCB project is one in which stakeholders county wide not only exceeded the letter of the law, but wrote the law that will produce measurable, long-term results to ensure economic sustainability, benefit the environment by conserving this natural resource, and protect the public health by halting drinking water degradation. The UCWCB project provides a reliable, affordable, preferable, alternative source of industrial water from the Ouachita River.



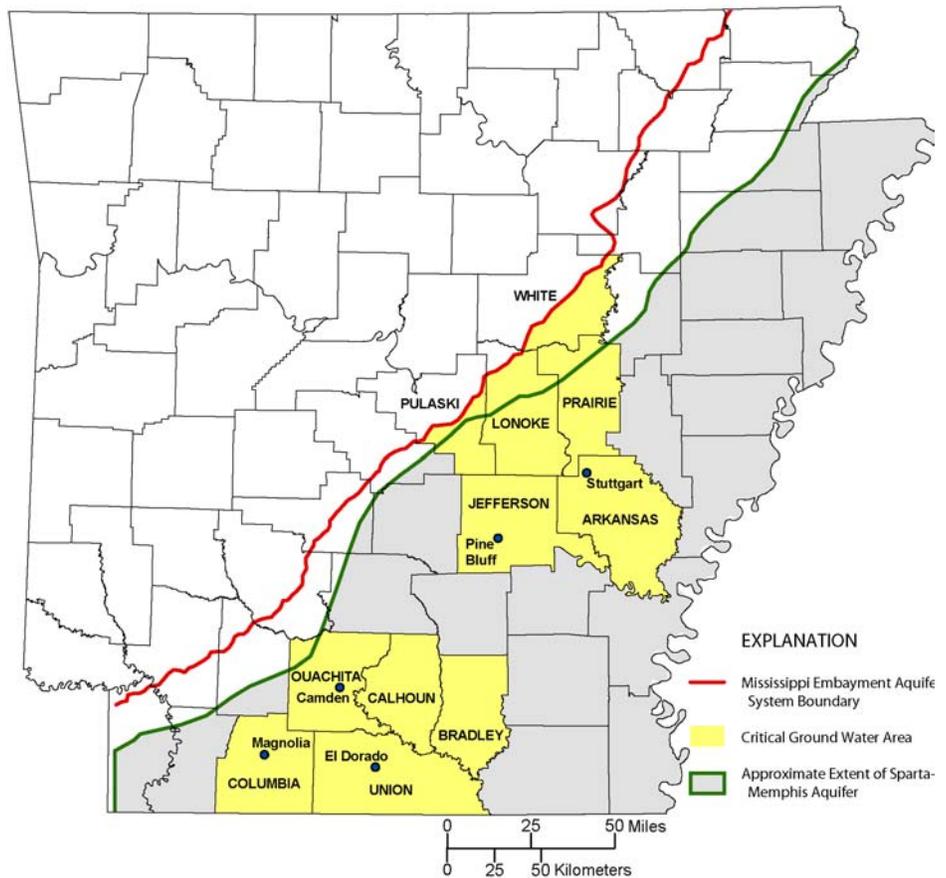
**Phase I:** 65 mgd Charles E. Thomas intake west of Ouachita River Bridge/Highway 167 (facing north)

## **BACKGROUND**

Invisible to the naked eye, Union County, Arkansas' once pristine and plentiful groundwater source, the Sparta aquifer, faced looming irreparable damage. Its depletion would have rendered the natural resource useless to the economic sustainability of Union County. On the western boundary of the Mississippi Delta, Union County was experiencing severe water level declines and water

quality degradation, and was among the first five Arkansas counties declared a critical groundwater area by the ANRC in 1996.

As more Arkansas counties were declared critical, the ANRC and *U.S. Geological Survey* (USGS) continued to agree: **Union County's situation remained the state's most critical.** The USGS recommended a consumption reduction of a staggering seventy-two percent - or 14 million gallons per day — in order to stabilize and conserve the Sparta aquifer, Union County's sole source of industrial, commercial, and drinking water. Union County



is not alone in its need to address critical groundwater issues. The stressed Sparta originates in southern Illinois and western Tennessee, enters northeast Arkansas and straddles the Mississippi/Arkansas line through the Delta, slips across the Arkansas line into Louisiana, and finally into far East Texas.

With its unique and innovative project, Union County stands alone in addressing this significant, regional economic sustainability need. In the late 1990s, stakeholders throughout the county – industry, economic development leaders, elected officials, private citizens, the *Arkansas Farm Bureau*, the *Arkansas Poultry Federation*, *Rural Water Associations*, the *Union County Conservation District*, state and federal agencies, and others – coalesced to write, support, and enact legislation authorizing the state's first and thus far only county water conservation board. Public hearings throughout the county incorporated stakeholders' input, and built consensus that resulted in unopposed legislation, even though Act 1050 of 1999 authorized a conservation fee on Sparta water consumers.

With unprecedented authority over groundwater, the newly appointed, eleven-member UCWCB adopted its mission statement on July 14, 1999. Consistent with addressing the county's economic future, the Board's mission states: **The guiding purpose and primary objective of the Union County Water Conservation Board is to conserve, protect, and maintain the Sparta Formation Aquifer as a continuing source of high quality, potable water for current and future consumers by providing for an affordable, alternative source of fresh water, pursuant to the authority and responsibility granted by the State of Arkansas.** That alternative source is the Ouachita River.

On September 1, 1999, the UCWCB began collecting a conservation fee of 24¢ per 1000 gallons pumped from all registered and significant Sparta users. In February, 2002, Union County voters approved (62 to 38 percent) a temporary 1¢ sales tax to construct infrastructure to provide Ouachita River water for Union County's three largest industrial consumers.

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**Planning for Union County's future economic development needs, the Ouachita River project has 10 million gallons per day (mgd) excess capacity and is expandable to provide an additional 19 mgd.**

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Over six years after the UCWCB's inception, its members -- first appointed, now elected by justice of the peace district -- continue to work tirelessly and without financial compensation. The project is complete and two of the three industrial customers have converted from Sparta aquifer to Ouachita River water -- Lion Oil in December 2004 and El Dorado Chemical in February 2005. The third, Chemtura Central Plant (formerly Great Lakes) -- converted over one million gallons per day from Sparta to river water in October 2005.



**Phase I:** Intake west of Ouachita River Bridge/Highway 167 N (facing south).



**Phase I:** Sherrel F. Johnson Clarification Facility (facing



**Phase I:** Clarification facility. clarified water



## PROJECT DESCRIPTION

The *Ouachita River Alternative Water Supply Project* consists of a 65-million-gallon-per-day (mgd) intake structure and pump station at the Ouachita River, a clarification facility, and a pump station and storage tank approximately nine (9) miles from the Ouachita River. Over 20 miles of pipeline connects the infrastructure to deliver clarified river water to industrial customers.

**Phase II:** Pump station, storage tank, & portion of pipeline to industry right-of-way (facing west).

The UCWCB's Non-Riparian Permit, issued February 4, 2000 by ANRC, allows for an average annual withdrawal of 50 mgd, with a peak allowance of 65 mgd.

Phase I was completed in 2002 and serves the project's first and largest customer, *Union Power Partners*. UPP designed, built, and paid for the \$52 million water infrastructure: the 65 mgd intake at the Ouachita River, pump station, treatment plant and over five miles of pipeline — all necessary for completion of the overall Ouachita River project — during construction of its environmentally friendly 2205 MW combined cycle natural-gas fired merchant power plant. Upon completion of the water infrastructure, UCWCB reimbursed UPP \$14 million for the incremental cost of doubling the facility's capacity. UPP then deeded the entire \$52 million facility to Union County, a gift of historic proportion.

Phase II -- a pump station and storage tank approximately nine (9) miles south of the Ouachita River, and over 15 miles of pipeline -- was completed in September 2004 and began serving the first converting industrial customer -- *Lion Oil* -- in December 2004. *El Dorado Chemical* converted to river water in February 2005, and *Chemtura Central Plant* (formerly *Great Lakes*) converted 1 mgd from Sparta to river water. Converting the three industries from ground to surface water reduced aquifer water consumption by over 6 mgd, allowing for aquifer recharge, halting water quality degradation trends, and conserving the Sparta for current and future users. Planning for Union County's future economic development needs, the project has 10 mgd excess capacity and is expandable to provide an additional 19 mgd.

In another historic action, the UCWCB paid off project debt by December 31, 2005. Subsequently, the county's Quorum Court removed the 1¢ sales tax over three years earlier than the seven year sunset. The action captured the attention of Arkansas's statewide newspaper, the *Democrat Gazette*: *"But now let us praise El Dorado. Did we read the news item right? Did the paper in El Dorado, the News-Times, really say that Union County paid off a bond issue three years ahead of schedule? How do you do that? We've heard of homeowners putting an extra payment on the mortgage when they fall into some money . . . but such cases are rare. But a government being thrifty? Whoever heard of such? Well, word around the campfire is that a perfect combo helped the Union County Water Conservation Board pay*

off this particular loan: fees from water users, federal moolah, lower-than expected construction costs, sales tax revenue greater than expected, and low interest rates. But higher revenues and happy circumstances have coincided in the past. How many local governments have stopped collecting taxes early?"

*Arkansas Democrat Gazette*  
November 2, 2005

## EDUCATION

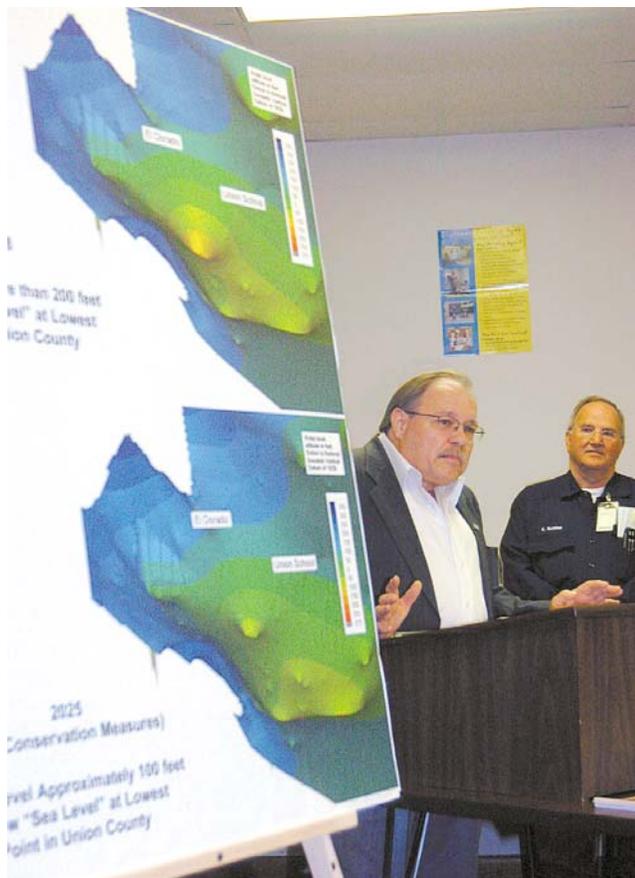
Water resources education has been permanently woven into curricula throughout Union County.



Sparta study well demonstration for Union School students.

In partnership with *Union County Conservation District (UCCD)*, *Arkansas Museum of Natural Resources*, *El Dorado Education Foundation*, schools

throughout the county, *Entergy*, *USGS*, the *Environmental Protection Agency (EPA)*, and other stakeholders, educators and students alike embraced the project to conserve the Sparta aquifer. In addition, the *USGS*, *UCWCB*, and the *UCCD*, with funding provided by the *EPA*, are conducting a *Sparta Recovery Study*, which began collecting data in January 2003. Two (2) of the twenty-nine (29) study wells in South Arkansas and North Louisiana are on Union County public school campuses -- the *Union School Well* and the *Charles L. Lovett Study Well* on the Strong campus, named in honor of *UCWCB* member Charles Lovett. In addition to providing on-site educational opportunities, study results are posted on the *UCWCB's* web site: [www.ucwcb.org](http://www.ucwcb.org)



As *UCWCB Vice President/UCCD Chairman Ken Rudder* looks on, *John Terry*, *USGS Director of Arkansas' Science Center*, announces at a May 2005 news conference from the *Union School Campus Computer Lab*, that the school's on-site *USGS monitoring well* has become interactive. Students can access real-time data at [www.usgs.gov](http://www.usgs.gov).

Photo by **JOSEPH OXENDALE**  
Courtesy of **EL DORADO NEWS TIMES**

*Continued on Page 8*

# Ouachita River Alternative Water Supply Project

Funding Partners

***\$65 Million Estimated Total Cost***

## Local – 90%

**Chemtura Chemical** (formerly Great Lakes)

**El Dorado Chemical**

**El Dorado Education Foundation\*\***

**Lion Oil Company**

**Sparta Aquifer Consumers** – *24¢/1000 gallons Conservation Fee*

**Linda & Stan Sweeney**

**Gladys & Clayton Taylor Grandchildren**

**Charles E. Thomas**

**Union County Conservation District (UCCD)\***

**Union County Taxpayers** - *1¢ County-Wide Sales Tax*

**Union Power Partners (Entegra)** - *Phase I; largest single investment*

## Federal – 8%

**Economic Development Administration (EDA)**

**Environmental Protection Agency (EPA)**

**Housing & Urban Development (HUD)**

**U.S. Army Corps of Engineers**

**U.S. Geological Survey (USGS)\***

## State – 2%

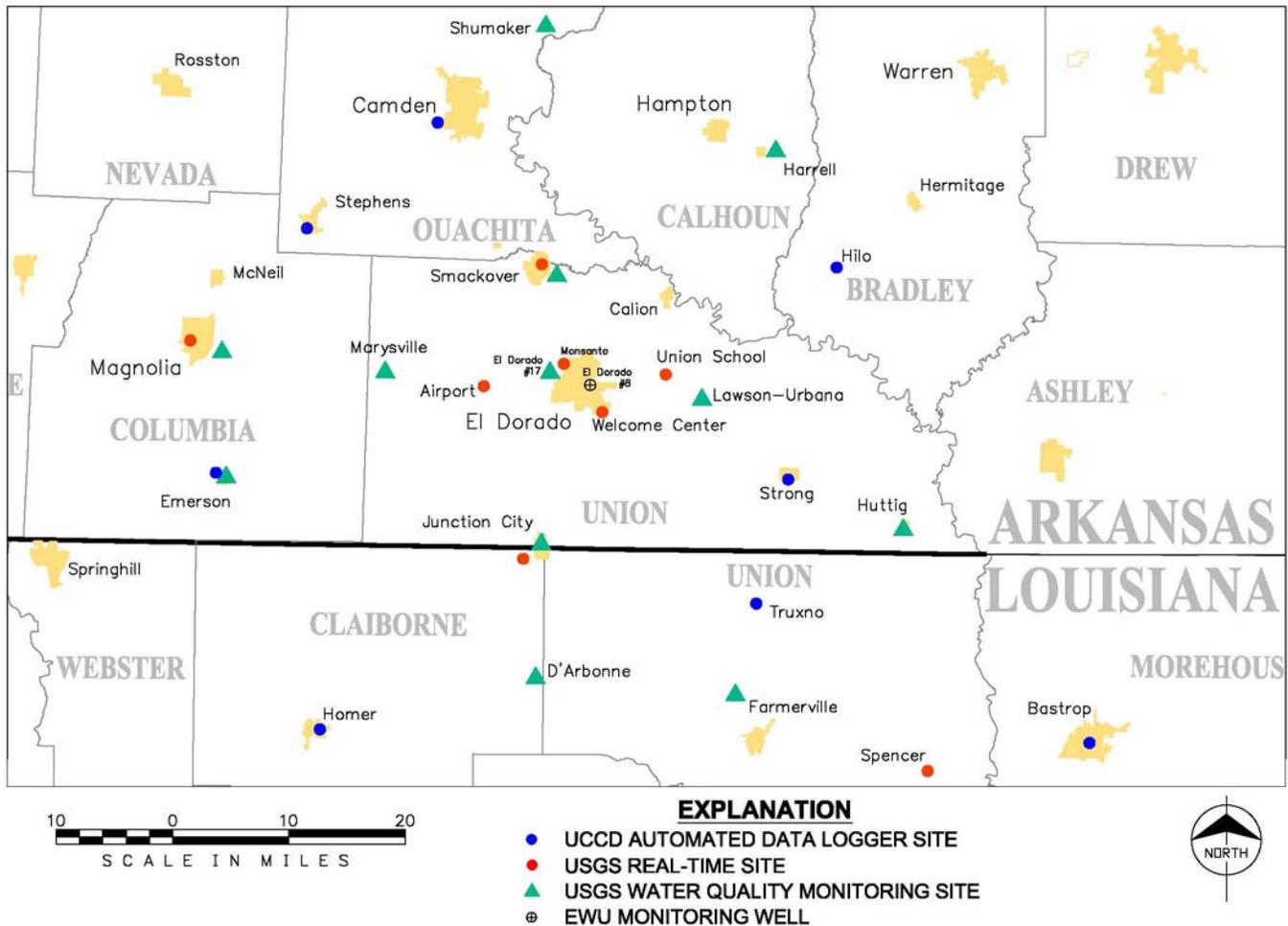
**Arkansas Natural Resources Commission (ANRC)\***

**Economic Dev of Arkansas Fund Commission** – *no longer exists*

\*Although ANRC, UCCD, & USGS invested no direct infrastructure funding, the agencies have contributed priceless support, data, education, and resources since the onset of this project.

\*\*EDEF funded no infrastructure, but supported extensive education efforts through funding multiple public school water resource education projects

## Sparta Recovery Study Wells in South Arkansas & North Louisiana



### Union County Conservation District Automated Data Logger Well:

Automatically measures water levels once daily. Measurement data is posted to the Union County Water Conservation Board web site - [www.ucwcb.org](http://www.ucwcb.org)

**U.S. Geological Survey Real-Time Well:** Automatically measures and transmits well water levels in real time four times (4X) daily to the USGS web site. One of the eight (8) real-time wells is on the grounds of the new Welcome Center south of El Dorado on U.S. Highway 167. USGS web site: <http://waterdata.usgs.gov/ar/nwis/current/?type=gw>

**U.S. Geological Survey Water Quality Monitoring Well:** Tests for chlorides twice (2X) annually. Results are included in semi-annual reports to the *Environmental Protection Agency* (EPA). Chlorides most commonly occur as a component of sodium chloride, with minor amounts of calcium chloride, potassium chloride, and magnesium chloride.



Photo from Page 1, December 21, 2005. *El Dorado News Times* by Joseph Oxendale.

**Turnin' on the Tap! December 20, 2005.** Robert Reynolds, UCWCB President; Randy Young, Executive Director Arkansas Natural Resources Commission; Joel Holt, Chief Plant Engineer at Union Power Station (Entegra Power Group); and the plant managers from the three major industries that have converted from Sparta to river water during the past year: Greg Withrow, El Dorado Chemical (February 2005); Ed Mills, Chemtura (partial conversion 1 mgd October 2005); and Steve Cousins, Lion Oil (December 2004), turn on the ceremonial tap for the Union County project that provides Ouachita River water as an alternative source to the three large industries and major Union County employers.

Developed and built on a parallel path with the Ouachita River project, Union Power Station was the first to use Ouachita river water when its 2205 MW environmentally friendly merchant power plant became operational in early 2003. Entegra made a gift of historic proportions to the project: \$38 million in infrastructure and fast track construction from the river to its plant. Entegra's gifts allowed the project to be built in time to save the aquifer.

The standing room only event in the El Dorado Chamber of Commerce Charles H. Murphy Jr. Boardroom celebrated this historic project that has reduced Sparta aquifer consumption by over 6 mgd.

The Board also celebrated paying off Union County's \$23 million bond indebtedness by "drowning" the mortgage, removal of the temporary 1¢ sales tax that funded repayment, receiving \$1.1 million from the EPA (the check was deposited just hours before the celebration), and most importantly, Sparta aquifer levels that are, according to Randy Young, "rising for the first time in 100 years . . . in Union County the water level has risen 10.3 feet."



Glenn Mechanical of El Dorado built and donated the pipeline model. The Celebration was sponsored by the Board's engineer firm of record, Burns & McDonnell Engineers of Kansas City.



Union County school children could, with few exceptions, explain to some degree the challenges Union County faces with the Sparta aquifer. As study well data is collected and

reported, it is being recorded on the USGS and UCWCB web sites. Data indicates that water well levels are rising for the first time in decades.

## INDUSTRY PARTICIPATION

Significant early industry efforts to conserve the Sparta aquifer include two of the county's largest employers – *Chemtura Central Plant* and *Lion Oil*. These major Arkansas industries provide over 1000 jobs for South Arkansas and North Louisiana residents. They set the industrial conservation example in 1999 by constructing a water pipeline between their plants. By using *Chemtura's* once-used cooling tower water for *Lion's* refining process, they reduced Sparta consumption by 10 percent, or 2.3 mgd.

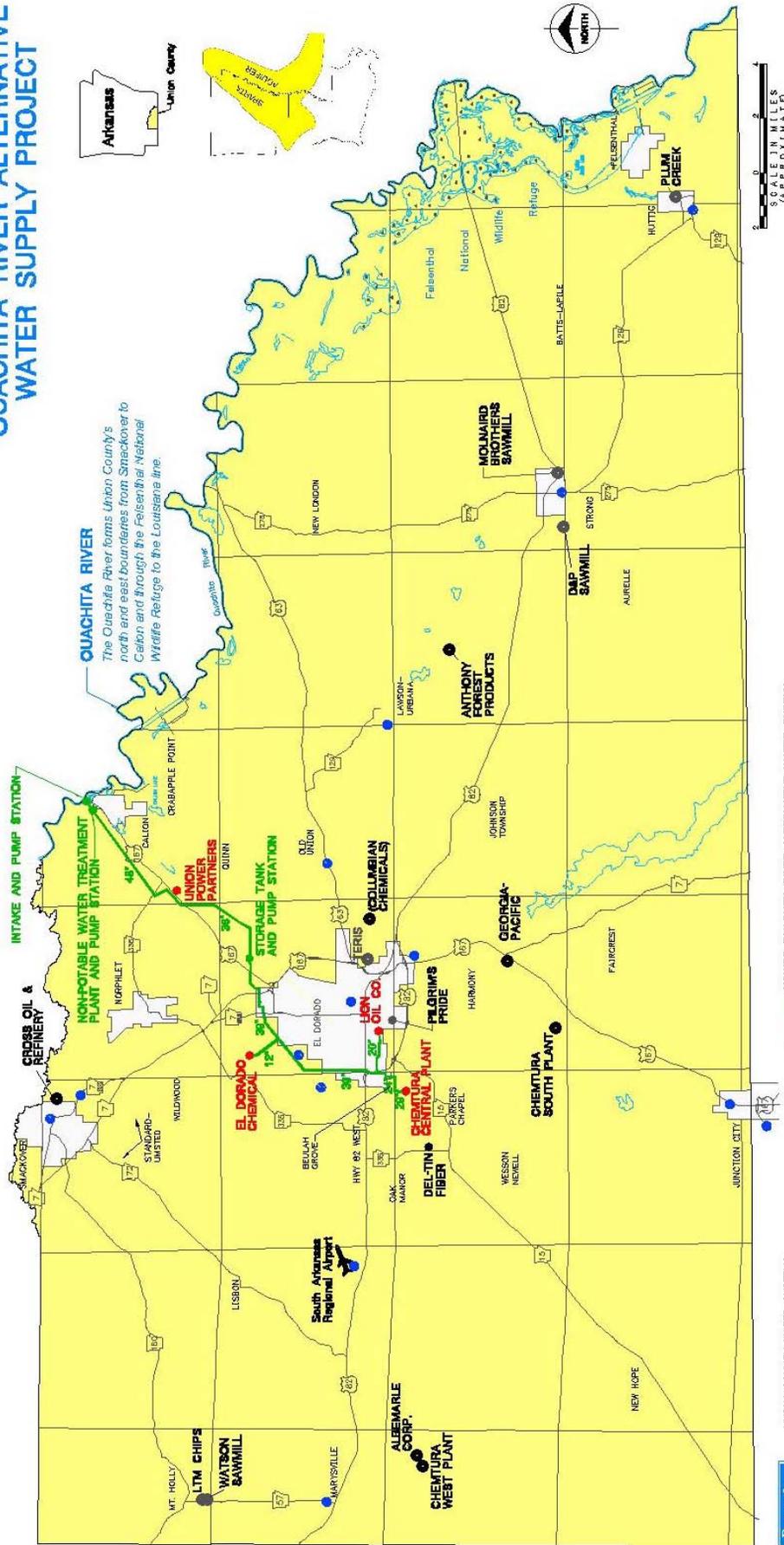
During December 1999 ceremonies celebrating project completion, sixth grade "Water Watcher" Nolan Mock thanked the two companies, noting that it was his generation that would benefit most from the companies' efforts.

Also, Lion Oil, El Dorado Chemical, and Chemtura have invested over \$1.8 million in on-site infrastructure to convert from Sparta aquifer to clarified Ouachita River water, thus preserving the jobs they currently provide, and ensuring an abundant water supply for additional jobs in the future.

On December 20, 2005, ANRC Executive Director Randy Young turned on the

**The Union County Water Conservation Board completed the Ouachita River Alternative Water Supply Project pipeline to industry in September 2004.** In December 2004, Lion Oil Refinery became the first industrial customer to totally convert from Sparta to river water. In February 2005, El Dorado Chemical followed suit. Chemtura (formerly Great Lakes Chemical) Central Plant converted 1 mgd from Sparta to surface water in December 2005. In early 2003 Union Power Station, now owned by Tampa based Entegra Power Group, completed \$52 million worth of infrastructure -- intake at the river, clarification facility, and pipeline from the Ouachita River to its environmentally friendly, natural gas fired 2205 MW merchant power plant five miles south of the river. In May 2003 Union Power sold the infrastructure to Union County for incremental costs of over sizing only -- \$14 million -- making its contribution the largest single investment in the project, and a gift of historic proportions. Through conservation fees and a temporary 1¢ sales tax, Union County citizens and businesses -- including Union Power -- funded 90% of project costs, with federal and state dollars funding the balance. See Page 6 for funding breakdown.

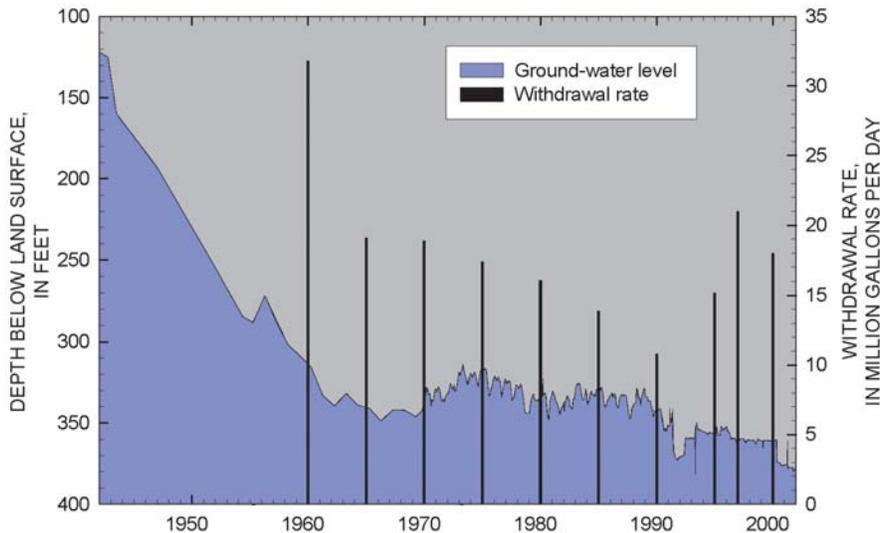
## OUACHITA RIVER ALTERNATIVE WATER SUPPLY PROJECT



## UNION COUNTY (ARKANSAS) WATER CONSERVATION BOARD

- UNION COUNTY WATER SYSTEMS
- INDUSTRIES SERVED BY OUACHITA RIVER ALTERNATIVE WATER SUPPLY
- INDUSTRIES SERVED BY EL DORADO WATER UTILITIES
- INDUSTRIES WITH SPARTA WELLS
- NOT OPERATING
- SPARTA AQUIFER RECOVERY STUDY MONITORING WELL

- UNION COUNTY WATER SYSTEMS
  - JOHNSON TOWNSHIP\*\*\*
  - AURELIA\*
  - BELLAIR GROVE\*
  - CALON\*
  - EL DORADO
  - FAIRCREST
  - HARMONY\*
  - HWY 52 WEST
  - NEW HOPE
  - NORPHLET
  - OLD UNION\*\*\*\*
  - WILSON-URBANA
  - QUINN\*
  - SMACKOVER
  - STANDARD-UNITED
  - WILDWOOD
  - WESSON-HENELL
  - WILPODCA
  - YOUNG-JUSTIS\*\*
- \* Purchases water from El Dorado Water Utilities  
 \*\* Purchases water from another association or municipality  
 \*\*\* Both associates that sell and purchase from another association or municipality.



**Union County groundwater withdrawal rates 1960 through 2000, and water depth below land surface 1940 through 2003.** Post WWII industrial growth accounts for the dramatic decline in water levels beginning in the early 1940s.

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ceremonial tap to industries, noting that ANRC had "seen the water levels in the Sparta Formation rise for the first time in almost 100 years." *See inset photo and story Page 8.*

River Alternative Water Supply Project.

The Union County Water Conservation Board; the citizens it serves; and local, state and national public and private funding and resource partners have created a national model for practical application of public policy and natural resource conservation that strengthens Union County's economic future.

**CONCLUSION**

There is no aquifer recovery project in the state, the region, and perhaps the country, comparable to the Ouachita

**Mission Statement:** The guiding purpose and primary objective of the Union County Water Conservation Board is to conserve, protect, and maintain the Sparta Formation Aquifer as a continuing source of high quality, potable water for current and future consumers by providing for affordable, alternate sources of fresh water pursuant to the authority and responsibility granted by the State of Arkansas.

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