
Chapter 1



Introduction: A Tale of Two Futures

Future one

Imagine Saline County in 2020. The Lake Ouachita Pipeline has been flowing for nine years, providing excellent quality water at reasonable rates. Population in the county has increased by 50 percent. New upscale housing developments have flourished. As professionals made the county home, they eventually located their small businesses closer to their homes to end the commute to Little Rock. The county has been successful in attracting service industries and manufacturing plants because of the excellent labor pool and the ready availability of water to support manufacturing processes.

The political cooperation achieved in creating the Saline Watershed Regional Water Distribution District to administer the water system has produced unexpected benefits. Relationships have been formed to resolve disputes between municipalities and rural areas. Water was the springboard to more regional cooperation on transportation, tourism, economic development, and growth planning.

The Saline Watershed Regional Water Distribution District is in an advantageous position for entering into partnerships and agreements with surrounding areas, including selling water to neighboring districts. The District has many options for future development and has the autonomy to pursue the course that best serves its customers. Almost weekly the water board receives requests from around the state or region from politicians and water officials seeking information on how to create a successful regional water system.

The children of the visionaries who set aside rivalries to create the Saline Watershed Regional Water Distribution District are now running Saline

"I am here representing the interests of my children and grandchildren. We have to find a long-term water source to promote the long-term vitality and growth of Saline County."





We are convinced that the leaders of Saline County stand on the threshold of a choice that will determine the future of this area.

County. No longer is water a recurring issue at City Council or Quorum Court meetings. Citizens are satisfied with the quality and price of water, and know that they and their children have a secure water future.

Future two

Imagine a different future for Saline County in 2020. Water rationing is being debated again. Water flow in the Saline River has dried to a trickle in summer months. Citizens learned during last summer's severe drought that the existing impoundments weren't enough to meet the county's demands for water. Industrial waste upstream has added to the difficulty of water treatment, and the county may not meet new stringent federal requirements for water treatment. Underground water tables have continued to drop, leading to possible state regulation. Home-owners have faced the prospect of moving away or trucking in water as wells have gone dry, and efforts to drill new ones have been unsuccessful. Environmental lawsuits add additional uncertainty regarding water supply.

The growth that Saline County experienced at the turn of the century has slowed and reversed. Water purveyors, limited in their water supply, have placed a moratorium on adding meters to their service areas. Developers, discouraged by the uncertain supply of water and high cost, have moved to other areas of central Arkansas for their upscale developments.

The county has had limited success in courting industry. One large company moved out of the county because water supplies would not support a planned plant expansion. Others have decided to locate in areas where water was more plentiful. Businesses, which had come to Saline County around 2000 anticipating dramatic growth, have now closed as population growth has stagnated and reversed. The corridor between Little Rock and Benton, once a vital area of stores and eating establishments, has declined. The erosion of the tax base has affected schools and public services in the county. Many natives have moved to areas with a brighter economic future.

Faced with the reality of water shortages, politicians have sought new long-term water supplies. Unfortunately, Lake Ouachita has now been allocated to other users. Other options have drawbacks. When leaders negotiate with nearby water systems to buy water they are at a disadvantage because of the relatively small number of customers served by each purveyor. Some face loss of autonomy over water. Fighting over water has continued to plague the relationships among cities and rural associa-



tions in the county, with legal costs draining already stretched resources. County leaders now look back in regret at how close the county had been to a long-term water solution back in 2002. Many of the county's problems could have been averted had there been the vision to create a regional water system for the county.

A choice for the future

We are convinced that the leaders of Saline County stand on the threshold of a choice that will determine the future of this area. They can choose to set aside decades-old rivalries and make the compromises necessary to work together for a long-term water source. On the other hand, they can choose to let mistrust and complacency with existing water supplies blind them to the opportunity at hand.

As we studied the history of water issues in the county, we were struck by how many times the county has been within inches of a solution, only to let the opportunity slip away. Many times the fragile cooperation has been shattered by relatively minor matters — jealousy over land deals, stand-offs on representation issues, and differences of pennies in water rates.

Although the 100+ Saline county residents we interviewed have had different ideas on water sources, administration of the system, treatment options, and rate structures, they spoke with one voice on the necessity of a long-term water source for the region. We heard the same phrase dozens of times: “We *must* find a way to work together. None of us can afford to go for a long-term water source alone. This may be our last opportunity to find a way to cooperate.”

We were impressed by a statement in the minutes of the Water Users Group from Nov. 28, 1995, as it sought countywide cooperation in seeking a long-term water source:

“Everyone agreed that the biggest deterrent for developing the most / efficient water system for the citizens of Saline County was a lack of trust between the municipal and rural water systems. The group believes that both the municipal and rural water purveyors want to do the right thing for the people they each represent. It was said again, and agreed to by all, that the key to finding a solution to long-term reliable water supply for the citizens of Saline County, whether municipal or rural, was not in engineering, but in breaking down the human barriers that prevent communication and cooperation.”

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Everyone agrees that cooperation will be necessary to take on the enormity of financing and logistics for a long-term water source for the county. No one entity can do it alone. To become a credible partner for a larger regional initiative, Saline County must also be united. We believe that the University of Arkansas at Little Rock can assist Saline County leaders in developing a framework to build that cooperation on water, a goal that has eluded the county for over 40 years. We are optimistic, based on the responses we have received during the last five months, that the time is ripe for a solution, and that in the year 2020, your children will commend the wise choices made by leaders in the year 2002.

Chapter 2



Background and Process of the Study

Request for study

On April 3, 2002 Saline County Judge Lanny Fite forwarded a request to Dr. Joel Anderson, Provost at UALR and Project Director of a water study of Little Rock/North Little Rock, to do a similar study for Saline County. The letter stated:

“ Earlier this year in my official capacity as County Judge, I convened a meeting of the water purveyors within the county . . . This meeting produced tangible results and displayed a spirit of cooperation from those represented . . . (I)t was the consensus of the group that UALR be asked to participate, offering an additional objective opinion as to the options that are available for a long-term, cost-effective water supply for our county. The purveyors in our county recognize your success and expertise as it relates to the creation of Central Arkansas Water.”

The request was signed by 14 of the 17 water purveyors in Saline County. The three non-signatories are water providers with limited service areas and small numbers of meters served. Dr. Anderson, along with Dr. Angela Brenton, Dean of the College of Professional Studies, and Dr. Roby Robertson and Ruth Crow of the Institute of Government at UALR, met with representatives of water purveyors on May 1 to discuss the project. Subsequently, the UALR group met with UALR Chancellor Charles Hathaway who made the decision to authorize the project. He agreed to a study with specific and limited objectives. In the project proposal accompanying his letter of acceptance, he wrote:

“We propose to focus on how various water entities within the county can cooperate both in seeking a long-term water source, and in the distribution of water within the county. This will necessarily involve issues relating to the cooperation of municipal and rural water purveyors. We will review engineering studies and make



Between July 1, 2002 and Nov. 1, 2002 we conducted interviews with over 100 individuals.

observations on various alternatives for long-term water sources, but would not anticipate making a specific recommendation on what that water source should be. Such a decision in the end is influenced by political as well as financial and engineering determinations, and is best made by leaders within the county. This type of focus is essentially the same as the study group took in the Little Rock/North Little Rock water study that resulted in the creation of Central Arkansas Water.”

He asked Dr. Brenton to serve as project director and appointed seven members to a Water Study Task Force. Members of the task force approached the project with objectivity and a fresh eye. Only Dr. Phyllis Moore, Professor of Biology and former Director of the Department of Pollution Control and Ecology, had experience with municipal water issues. Only Dr. Roby Robertson, Director of the Institute of Government, served on the Little Rock/North Little Rock study group. Two task force members had previously lived in Benton. We began our work with few preconceptions regarding a solution.

Between July 1, 2002 and Nov. 1, 2002 we conducted interviews with over 100 individuals. We spoke with the Saline County Quorum Court as a group. We held a public hearing for citizens. We talked to each water purveyor on at least two occasions. We spoke with public officials representing the county. We reviewed all relevant studies. We spoke with individuals in state and federal agencies and surveyed other regional water associations in the state. We reviewed national data on regional water systems. When we had tentative conclusions we went back to water purveyors to gain feedback. We sought to provide a report with credible information, candid summaries of what we heard in interviews, and conclusions based on thorough and fair analysis of options.

Water issues and needs in Saline County

Water has been a significant issue in Saline County for over 40 years. Finding ways to serve municipal and rural residents with high quality, plentiful, and reasonably priced water has been a continuing quest. County leaders have sought to create a long-term water source over that forty-year period. Two attempts to create large regional reservoirs have failed, at least partly because of an inability to reach consensus among the various water purveyors and citizen groups within the county.



Several factors led to the current water initiative:

- ◆ A countywide planning effort has identified water and sewage as one of the top two planning concerns of citizens of Saline County (along with transportation).
- ◆ The regional planning group led by Central Arkansas Water seeking a long-term water source offers new prospects for cooperative activity on Lake Ouachita.
- ◆ New political leadership within the county embraces a cooperative long-term water planning process to provide water supplies that will accommodate growth over the next 50 years.
- ◆ Controversies over rural water districts forming a partnership with Malvern to secure water from a new treatment facility on the Ouachita River give urgency to the need for a countywide water solution.
- ◆ Continuing litigation over boundaries of municipal and rural water districts calls for a solution.
- ◆ The creation of Central Arkansas Water has created perceptions of both threats and opportunities as Saline County water purveyors attempt to assess the implications for long-term water contracts.

“If we only could have gotten everyone on board in 1996, we would have Ouachita water flowing through the pipeline by now.”

Previous initiative on Lake Ouachita

In 1995-96 a group of water purveyors joined together to create a coalition to seek a long-term water source. They commissioned an engineering study to investigate a variety of water options. On the basis of that engineering study they chose Lake Ouachita as the most promising source. They sought to use the remainder of sales tax funds collected for the aborted Lake Avilla Project to build a pipeline to Lake Ouachita to serve the long-term needs of the county. At the end of that effort, only seven entities chose to participate in the collaboration. Because they could not gain a broader commitment from county water purveyors, the circuit judge declined to release the sales tax funds for the project, and the initiative failed.

Several interviewees have mentioned, “If we only could have gotten everyone on board in 1996, we would have Ouachita water flowing through the pipeline by now.” Even though this earlier effort failed, it provides a foundation to build on in this effort. Learning from the past will prevent costly mistakes for the future of Saline County.



Two themes will be woven throughout this report:

- 1) Current water sources in Saline County will be insufficient to support continuing growth of the county and
- 2) Cooperation and partnerships will be essential to secure a long-term water source for the region.

Two themes

Two themes will be woven throughout this report: 1) Current water sources in Saline County will be insufficient to support continuing growth of the county; and 2) Cooperation and partnerships will be essential to secure a long-term water source for the region.

Organization of report

The next four chapters provide context for discussion of a long-term water solution. Chapter 3 discusses the history of water in Saline County, with a chronology of near-misses in securing a long-term water source. Chapter 4 describes the patchwork of water systems currently serving the county. Chapter 5 analyzes the geology of water resources in central Arkansas, with particular insights about the capability of groundwater sources and rivers for meeting long-term water needs. Chapter 6 looks at present capacities and projects future water needs to support growth within the county.

The next section will help the reader understand the critical issues that a water plan will need to address. Chapter 7 presents perceptions we have gleaned from interviews about how various water entities have perceived each other over the years. Chapter 8 outlines five critical issues that must be addressed by any water plan in Saline County.

In Chapter 9 we make and explain our recommendations for the creation of the Saline Watershed Regional Water Distribution District, and in Chapter 10 we present a detailed implementation plan. Chapter 11 is our summary.

Chapter 3



History of Water in Saline County: A Chronology of Near Misses

Early water systems and plans for impoundments: 1914-1962

Water issues in Saline County can be documented back to the early 1900's. In 1914, water was a primary issue in the Mayor's race in Benton, with R.C. Bailey winning the election on a platform of "water works for Benton." In 1916, the first water treatment facility was built at a cost of \$90,000. The water was drawn from the Saline River and was treated alongside its banks. (1)

In the 1930's, the state built a water treatment facility on the campus of what now is known at the "Arkansas Health Center" (formerly the Benton Services Center), to support the activities of the Center and its residents. It was expanded in the 1950's.

In 1937, the Flood Control Act was passed by the Arkansas Legislature and required that every major stream of the Ouachita Basin be dammed. The Saline River was among the rivers to be dammed, but due to budget cuts the Corps of Engineers was unable to start the project on the Saline. Industrial pressure also had impact on the prospect of damming the Saline River. Alcoa and Reynolds Metal located in Saline County and leaders thought that in order to attract additional industry, damming the Saline was inevitable.

In 1953, leaders in Saline County received a \$250,000 grant from the federal government and, through a tax on the citizens of Saline County, raised approximately \$75,000 to build Lake Norrell. Lake Norrell was intended as a backup water supply to the Saline River, with water released from the lake into the Saline River to keep the flow of the river adequate to support water treatment.

In 1914, water was a primary issue in the Mayor's race in Benton, with R.C. Bailey winning the election on a platform of "water works for Benton."



This brief chronology demonstrates the often contentious relationships among water entities in Saline County and the fragmented structure for water administration that has developed in the county.

By the 1960's, Benton had a modern water treatment facility and distribution system, which drew water from two different locations on the Saline River. During this same time frame, plans to finance and build a huge reservoir (Lake Benton) in Saline County were derailed on the eve of the announcement of federal approval. Many believe that infighting among citizens of Saline County derailed the project, which would have provided water to a much larger region than the county alone.

Development of rural water associations: 1963-1972

In 1963, Benton was approached by a group of rural residents in Saline County who wanted Benton to provide treated water beyond the city's perimeters to replace the wells that most water users in the rural areas were using. Benton, still struggling to provide water to all within its city limits, declined to become the primary provider of water to the county as a whole. Instead Benton recommended that the rural groups form water districts or associations to build water infrastructures of their own to supply water to residents in their areas.

In 1966, the Town of Tull developed a water system to serve its residents and those of surrounding areas. The areas served included portions of Saline County as well as Grant County, where Tull is located.

In 1968, the Salem Water Association was established as a non-profit organization for the distribution of water in the Salem area. Salem purchased water from Benton and distributed the water through the Salem Association's lines to its customers.

West Bauxite Water Association formed in 1968 to provide needed water to the surrounding community. In 1972, the community incorporated to form the City of Bauxite and in 2002 converted from a water association to a City Water Department.

In 1969, the Haskell Water Department was developed to provide water from city wells to residents of the city. Well water was used in Haskell until 1994 when Haskell reached an agreement with the Arkansas Health Center to purchase treated water from its plant.

Within this same time frame, the idea of damming the Saline River emerged again as a viable long-term solution to the water woes of the central Arkansas area. In fact, the director of Metroplan stated in 1968 that Little Rock would run out of water by the year 2000 and a dam at Benton offered the best source of additional water.



In 1972, the Southwest Water Association was formed.

Growth, conflict, and missed opportunities: 1973 to present

In 1973, the battle over damming the Saline River went to the State Capitol, where a bill was introduced that would have banned future damming on the Saline River and preserved it as a free flowing river. The battle was fierce and tension over the issue was so high that then Governor Bumpers intervened and asked for a restudy of the issue, thus killing it once again.

In 1974, the Salem Water Association filed the first of many lawsuits over water issues. This lawsuit dealt with the annexation of Salem water customers into Benton city limits and Benton's removal of those customers from the Salem Water Association's customer rolls, even though Salem was still providing the water to those customers. The suit was decided in 1979 when a federal court ruled in favor of the Salem Water Association, and required Benton to return the questioned customers to the Salem water rolls and to reimburse the Salem Water Association the monies collected from those customers to date.

In 1975, the Corps of Engineers held a public hearing on the future water supply for Saline County. Again damming the Saline River was raised as a viable option for a long-term water source for the county.

In 1978, the Saline County Water and Sewer Public Facilities Board (doing business as Woodland Hills) was formed and, in 1979, the East End Water Association was formed.

In the early and mid-1980's, conflict between the Salem Water Association and Benton emerged again over such issues as the refurbishing of a water storage tank and Benton's practice of selling water that flowed through the Salem pipes to Bryant with no compensation to Salem.

In 1988, Paron and Owensville started work on finding a reliable, high quality source of water for their communities. Through their partnership with the North Garland County Water Association, just this year (2002) they have a fully developed water system in Paron and Owensville from a pipeline to Lake Ouachita.

In 1988, Benton attempted to raise the wholesale water rate to the water associations, from \$.78 per 1,000 gallons to \$1.70 per 1,000 gallons, a substantial increase. The water associations sued Benton for price

Near-Misses

- 1930's U.S. Army Corps of Engineers plans to build dams on Saline River halted by budget cuts
- 1960's Very large reservoir, Lake Benton, fails to gain federal approval
- 1975 Corps of Engineers considers Saline impoundment
- Early 1990's Lake Avilla Project collapses because of opposition to damming Saline River and forming reservoir
- Mid 1990's Coalition of purveyors seeking to build pipeline to Lake Ouachita, utilizing remaining sales tax funds from Lake Avilla Project, denied permission by court due to insufficient customer base



gouging and the parties settled on an increase of \$1.07 per 1,000 gallons. The court ordered the parties to settle all remaining issues, which resulted in a 1991 ruling by the court ordering Benton to pay Salem for all proceeds of water sold to Bryant that passed through the Salem Water Association waterlines and for the cost of repair to those lines as a result of the sale of water to Bryant.

In 1988, Bryant entered into a 20-year water contract with Little Rock Water (now Central Arkansas Water).

In 1989, the Saline County Rural Development Authority was formed to identify a long-term water supply for the county as a whole. As a result of the efforts of that group, a countywide sales tax was passed in 1990 for the development of a large reservoir, “Lake Avilla.” Over the next two years \$20 million accumulated in the reservoir fund and was held for the project until citizens in Saline County filed a lawsuit in 1993, challenging the validity and enforceability of the countywide sales tax. The lawsuit challenged the reservoir project on two fronts: (1) that the amount of revenue produced by the sales tax was woefully inadequate to fund a project as large as Lake Avilla, and (2) that the reservoir project itself endangered two environmentally sensitive kinds of marine life — the fat muckle mussel and the mad tom catfish. The court ruled in favor of the plaintiffs and approximately \$8 million was refunded to citizens who could demonstrate that they paid sales tax into the reservoir account.

In 1990, the Salem and Southwest water associations and the Town of Tull formed the Water Users Limited Liability Company (LLC) to consolidate the reading of water meters, billing, distribution, and maintenance for the three water associations. It opened the door to customers in 1992.

In 1994, Shannon Hills entered into a 15-year water contract with Little Rock Water (now CAW). Also in 1994, another countywide group formed to develop a regional water plan. The group hoped to reach consensus on a long-term water source and a method of distribution so that they could tap into the \$12 million remaining in the reservoir account. Seven rural associations agreed to form the Saline County Water Users Group to participate in not only the study, but the development of the new water source. The committee ultimately recommended a pipeline to Lake Ouachita as the most viable long-term water source for the county and recommended a 9-sector water distribution grid that closely resembled the existing water distribution districts. Benton chose not to participate and the court required the participation of Benton before releasing any funds from the reservoir account. As a result, the remaining funds in the account were dispersed to various water associations and citizen groups.



In 1996, Hot Springs Village built its current water treatment facility, which was projected to serve its needs for the foreseeable future.

In 1997, the wholesale water contract between Benton and the water associations expired and Benton proposed a rate increase, from \$1.50 per 1,000 gallons to \$2.40 per 1,000 gallons. The water associations counter-offered a rate of \$1.70 per 1,000 gallons of water. Benton contended that an increase to \$2.12 per 1,000 gallons was non-negotiable and filed suit against the water associations seeking the difference between the \$1.50 and \$2.12 per 1,000 gallon price. In 2000, the court ruled in favor of the water associations and found that Benton's rate increase was unreasonable, holding that Benton could not raise water rates by more than 60 percent.

In 1999, the three members of the Water Users Limited Liability Company (LLC) formed the Quad County Water Users Association (Quadco). The leadership of Quadco petitioned the Saline County judge for designation as a public facilities board that would allow the group to issue tax-exempt bonds and carry debt guaranteed on the number of ratepayers in the combined system. The Saline County judge denied the designation as a public facilities board, so Quadco formed as a public facilities board through Grant County (through the location of member Tull) and entered into a contract with the city of Malvern for the construction of a water treatment facility on the banks of the Ouachita River that would provide water not only to Malvern, but to the members of the three water associations. The partnership was encouraged by the Arkansas Soil and Water Conservation Commission, which promotes regionalism in the development of long-term water sources.

In 2000, Benton filed suit against Quadco and Malvern seeking to stop the water treatment project. Benton's suit was based on the possible damage to the river and the potential damage to the citizens of Benton and Saline County from the diversion of water revenue from Saline County to Hot Springs County. The court dismissed Benton's lawsuit as without merit, allowing the water treatment development to continue.

In 2002, the Salem Water Board that signed the contract with the city of Malvern was ousted and an entire new board was seated. Its first order of business was to withdraw from the Quadco contract with Malvern. This action resulted in Malvern filing suit against Quadco for breach of contract. Also in 2002, the community of Shaw, which is served by the Town of Tull's water system, attempted to form a water association, citing lack of representation on the Tull city council. Most of Tull's water customers reside in the unincorporated Shaw community, which is located in Saline County while Tull is in Grant County.



Rather than giving up as a result of these setbacks, Saline County seems determined to learn from past failures and move forward.

There is also movement within the memberships of Southwest Water Association and among the water customers of the Town of Tull to prompt membership and policy change as a result of such issues as the Malvern water contract.

This brief chronology demonstrates the often contentious relationships among water entities in Saline County and the fragmented structure for water administration that has developed in the county. The timeline also chronicles a number of “near misses” in attempts to form coalitions to secure a long-term water source — the collapse of plans for Lake Benton in the 60’s, the numerous studies of impoundments by the Army Corps of Engineers, the failed attempt to build Lake Avilla in 1989, the aborted coalition to build a Ouachita pipeline in 1996, and Quadco’s efforts to secure a partnership with Malvern to gain water from the Ouachita River.

Rather than giving up as a result of these setbacks, Saline County seems determined to learn from past failures and move forward. Past efforts failed in some cases because of lack of cooperation, secrecy, failure to cultivate public support, insufficient state legislative clout, and parties’ insistence on having their own way in any agreement. Leaders know that they must avoid these mistakes if the current effort to secure a long-term water source is to succeed.

(1) A great deal of information in this chapter was taken from Steven S. Wise, “A Stream of Ever-changing Values: The Saline River prior to 1980,” unpublished document, Fall 1993.

Chapter 4



A Patchwork Quilt: Water Administration in Saline County

Currently water administration is fragmented among 17 loosely connected entities that serve the water needs of the 83,529 citizens of Saline County (91,446 counting all the residents of Hot Springs Village). We attempt in this chapter to offer a snapshot of the 14 major current water systems in the county. The three other purveyors are entities with extremely small service areas and minimal water meters.

Table 4-1 summarizes basic information from a survey of the 14 major systems. The Saline County Judge conducted the survey in June 2002. The survey information is used in Figures 4-1 and 4-2, which are comparisons of the number of residential meters by purveyor and the average water usage by purveyor.

Water sources currently in use in Saline County include Central Arkansas Water, groundwater wells, Lake Ouachita, and the Saline River, as described in the following sections:

Central Arkansas Water : City of Bryant, City of Shannon Hills

Central Arkansas Water (CAW) provides treated water to a point where the cities then distribute water to their customers. The cities are responsible for reading meters, billing customers, and maintaining the system. Bryant's current contract with CAW will end in approximately six years; Shannon Hills' contract will end in December 2014.

Shannon Hills currently has approximately 900 water meters, and there are several new housing developments at various stages of development, including one planned by the developer of Hurricane Estates.

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Table 4-1 Water System Fact Sheet

Purveyors Name	Treat Plant	Avg MGD	Peak MGD	Res Meters	Comm Meters	\$/5000 gal	Impact fee	Res Tie On	Comm Tie On	Source
Arkansas Health Center	Y	0.362	0.596	Haskell		0	\$0	\$0	\$0	Saline River
City of Bauvite	N	0.054	0.083	171	6	\$12.30		1"-,\$270		City of Benton
City of Benton	Y (1)	4.500	6.500	9,587	339	\$19.17	\$0	3/4"-,\$160	Same	Saline River
								1"-,\$270	Same	Lake Norrell
								1-1/2"-,\$500	Same	Off-Stream Res
								2"-,\$750	Same	
City of Bryant	N	1.000	1.800	3,928	298	\$14.85	\$500	\$245	\$245	CAW
East End Water Dist 1	Y (2)	0.550	0.900	1,800	25	\$23.25	\$0	5/8"-,\$425	Meter size	Wells
								1"-,\$500		
City of Haskell	N	0.250	0.330	840	10	\$16.25	\$250	\$250	Meter size	Saline River
Hot Springs Village Property Owners Assn.	Y (1)	1.931	3.200	6,802	158	\$12.94	\$0	\$400	\$400	Lake Logo & Middle Fork
Paron Water Works	N	0.128	0.177	711	4	\$36.49	\$0	\$600	\$600	Lake Ouachita
Salem Water Users	N	0.900	1.152	3,399	0	\$17.75	\$0	\$460-\$575	\$0	Benton/Saline
Saline Co. Water & Sewer dba Woodland	Y (1)	0.125	0.250	561	0	\$33.72	\$0	\$750	\$750	(2) Wells
Sardis Water Association	Y (1)	1.200	2.000	4,460	50	\$15.25	\$150	\$625	\$625-\$1,200	Wells
City of Shannon Hills	N	0.300	0.500	850	10	\$16.75	\$1,000	\$1,060	\$1,060	CAW
Southwest Water Users	N	0.697	0.948	2,250	0	\$28.20	\$0	\$475-\$590	\$0	Benton/Saline
Town of Tull	N	0.142	0.177	639	0	\$31.06	\$0	\$465-\$580	\$0	Benton/Saline

Sources: Saline County Water Purveyors' Survey, June 2002; interviews with purveyors



City of Bryant has 3,928 residential customers and 296 commercial customers. Citizens appear to be pleased with the arrangement with CAW but there is interest in a countywide development of a water source. They want an alternative when their contract with CAW ends in six years.

Groundwater wells: East End Water Association, Saline County
Water & Sewer, and Sardis Water Association

The groundwater sources consist of varying subgroups, which are part of the Sparta and Wilcox formations. Sardis wells are in the Carrizo Sands, which is one of the subgroups. The aquifer formation tends to feather out, providing water in the eastern part of the County but decreasing westward. The aquifer formation is not available in Benton.

Each of these water associations has its own groundwater wells and treatment plants for well water. They have full responsibility for the system's operation. These treatment plants are not suited for treatment of surface water.

East End is an unincorporated community. East End Water Association began in 1979 and was in full operation in 1981. Soil & Water funded the initial system. East End currently has four wells and two treatment facilities for ground water and plans to add three more wells. Water quality is low due to iron and manganese, and water levels are dropping. East End has approximately 1,900 customers and expects to have 3,200 in ten years due to population growth, with 6-7 subdivisions anticipated in the near future. Citizens identify with Saline County and want to maintain independence from Pulaski County.

The groundwater level in Sardis is dropping and the association plans to drill more wells in areas where groundwater is more plentiful. Sardis currently has three treatment plants with a combined capacity of 2 mgd and is planning a fourth plant that would double current capacity. Sardis currently has about 4,600 water customers. There is no identified industry in Sardis, but there is growth in residential areas.



Water sources currently in use in Saline County include Central Arkansas Water, groundwater wells, Lake Ouachita, and the Saline River.

Lake Ouachita: Paron and Owensville

Within the past three years, Paron and Owensville, which are not incorporated, have contracted with North Garland County Water to provide treated water from Lake Ouachita to their communities. The current contract is for 18 months.

Prior to the contract with North Garland County, Paron and Owensville had private water wells, which produced very low quality water.

North Garland County received a permit from the U.S. Army Corps of Engineers to access water from Lake Ouachita and included Paron and Owensville in the project. The treatment plant is located adjacent to the lake, and treated water is then transported by pipeline to customers. Paron and Owensville currently have 711 customers but anticipate that the northwest sector of Saline County will grow in coming years.

Middle Fork of Saline River : Hot Springs Village

The Property Owners Association (POA) owns and maintains a treatment plant for water taken from the Middle Fork of the Saline River. It has 6,802 residential customers and expects to expand to 9,000 in coming years. So, plans are underway to expand the treatment plant for surface water.

POA has received approval from the Arkansas Soil & Water Conservation Commission to construct three dams on tributaries of the Middle Fork of the Saline River for additional water, especially during dry weather. The additional water is needed particularly for recreational purposes, including watering of golf courses. This action has led to considerable controversy concerning the quality of water in the Middle Fork.

Saline River : Arkansas Health Center and City of Haskell

The Arkansas Health Center (AHC) is a state facility for treatment of the mentally ill, aged, and developmentally disabled. AHC is not expected to increase the number of beds and views its role in county water issues as minimal. AHC is under the direct supervision of the State Board of Mental Health Institutions within the



Department of Human Services. AHC, located within the city limits of Haskell, obtains water from the Saline River, treats it, and then sells treated water to the City of Haskell. The center pumps water into small holding ponds and then to a 60 year-old treatment plant.

The contract between the Center and Haskell is for 38 years. Haskell currently uses about 50% of the treated water and under the contract can negotiate for more if needed. Haskell also has a contract with Southwest Water Users to provide water for one new housing addition.

The City of Haskell Water Department is charged with the management of the distribution system. Haskell has 840 customers.

Saline River: Benton, which also provides treated water for Tull, Salem Water Users, Southwest Water Users, and Bauxite.

The City of Benton accesses water from the Saline River and treats it. Benton provides water for its residents and sells treated water to several rural water districts. The treatment plant has the capacity to treat considerably more water than is currently demanded. The Benton water system is managed by the City Council. Characteristically, there were contract disputes with wholesale customers, which resulted in lengthy periods of time before agreements were reached in renegotiating contracts. There have also been numerous lawsuits with Benton. Each purveyor that purchases water from Benton (except Bauxite) is responsible for meter reading, billing, and maintenance of individual systems. An organization called Water Users LLC performs this function for Tull, Salem, and Southwest Water Users.

Benton has approximately 9,587 residential customers and 339 commercial customers. The purveyors that receive treated water from Benton have a total of 6,459 residential customers and few commercial customers.

Tull is located in Grant County. With assistance from an FMHA loan, it installed water pipes from Benton to provide water to town residents and those of surrounding areas, including portions of Saline County. Tull has approximately 650 customers.



Salem Water Users (rural water district) purchases treated water from the City of Benton. A 1969 FHA grant was awarded to Salem to construct water lines and resulted in Salem entering into a 20 year contract with the City of Benton to purchase treated water. Salem has experienced several contract disputes with Benton and has begun to examine other sources of water. Salem has 3,399 residential customers.

Recently, the Salem Water Users became a Public Water Authority, which some individuals supported to reduce loan rates. Other citizens thought the Authority limited open public forums. The Water Authority, a member of the Quadco group, entered into a contract with the City of Malvern to support the construction of a treatment plant on the Ouachita River. Due to concerns of citizens, an annual election of members to the Water Authority resulted in all of the incumbents being defeated and a new board elected. The newly elected members oppose the contract with Malvern.

Southwest Water Users (rural water district) purchases treated water from Benton. It joined the Quadco consortium and signed a contract with the City of Malvern. Southwest is growing with small housing developments and has 2,250 residential customers. A group of members is challenging the legitimacy of the board and has filed suit for a new board election. An artifact of the original bylaws requires a quorum of 51% of membership to hold elections. This quorum is almost impossible to achieve and has resulted in a postponement of elections.

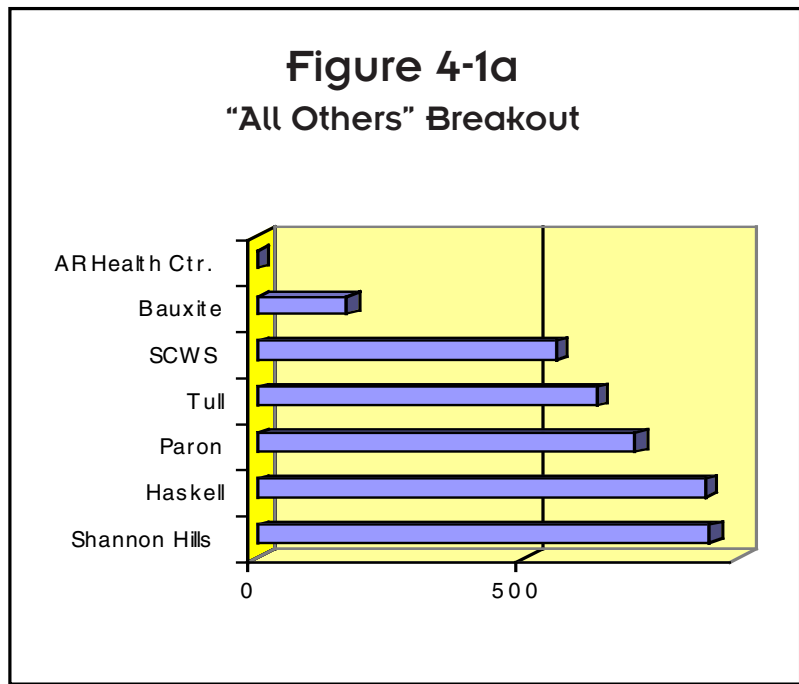
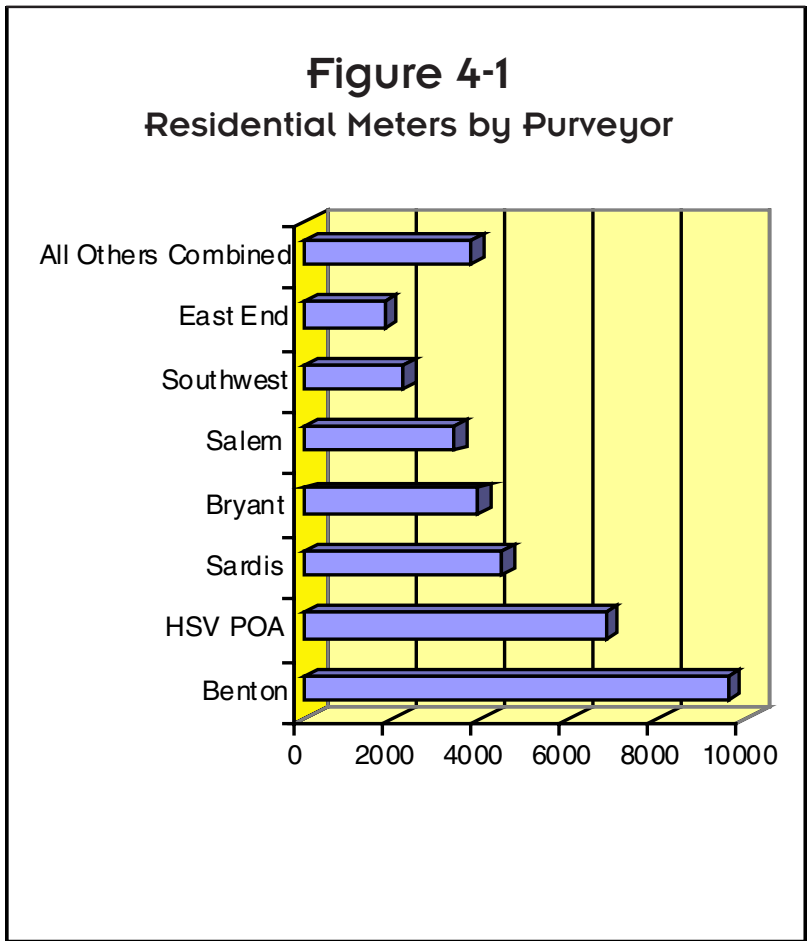
Bauxite has about 182 customers. The Bauxite Water Association will become a city department this fall and will then negotiate a new contract with Benton. Bauxite is anticipating a need for additional water to serve an industrial park and future expansion of Pulaski Tech.

Saline County water purveyors include a mix of municipalities, one property owners association, one state government unit, and rural water associations. The governing structure also varies from city councils to association boards.

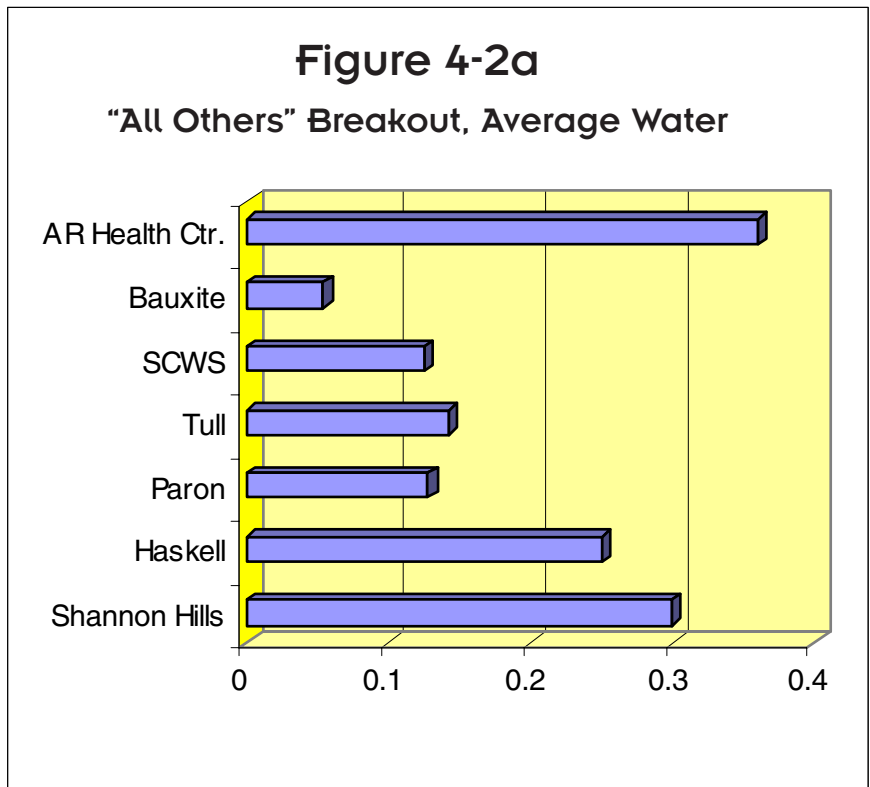
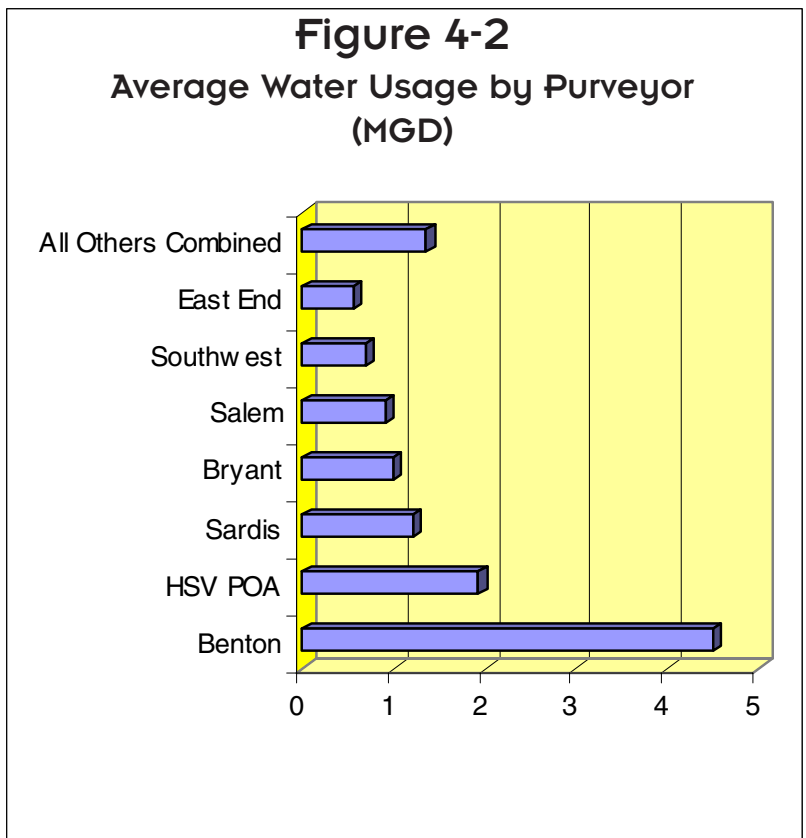


Property Owners Association	Hot Springs Village
AR State Government	Arkansas Health Center
Municipalities	Bauxite, Benton Bryant, Haskell Shannon Hills Tull
Rural Associations	East End Water District Paron and Owensville Salem Public Water Authority Saline County Water & Sewer Sardis Water Users Southwest Water Users

Most of the rural association water systems were originally financed by federal funds including FMHA and more recently by government funds allocated by the Arkansas Soil and Water Conservation Commission.



Sources: Saline County Water Purveyors' Survey, June 2002; interviews with purveyors



Sources: Saline County Water Purveyors' Survey, June 2002; interviews with purveyors



Chapter 5



Geology of Water Resources in Central Arkansas

Central Arkansas presents a variety of geological characteristics that decision makers should take into account when choosing a new long-term supply of drinking water. The relevant characteristics of central Arkansas and their implications for water policy will now be reviewed.

Where does drinking water come from? Its source is either ground water or surface water.

Ground water

Ground water is found below the surface of the earth in an aquifer and is drawn for drinking or other human purposes from wells.

Beneath the earth's surface are areas where the rock and sediment are fractured and porous and where water accumulates. One might see a similarity with a bucket of sand and gravel which will also hold a quantity of water. Such underground zones where water accumulates are called aquifers. Some aquifers are hundreds of feet deep and hundreds of miles long and wide.

In an earlier day the term "well" brought to mind a round hole, dug perhaps a dozen feet deep that filled with underground water that was drawn by a bucket on a rope. Today, a well is typically a large pipe inserted down a hole that has been drilled deep into the ground, and to which a pump has been attached to draw water for distribution.

Ground water is used for drinking water in areas where the concentration of people exceeds what can be supported by available local surface water, or where the quality of the local surface water is poor. The quantity of ground water is highly variable and is determined by the local geology.

Where does drinking water come from? Its source is either ground water or surface water.



The availability of ground water depends on the permeability, saturated thickness, and depth of the aquifer. Where geologic conditions are favorable, significant quantities of ground water may be available. If a low permeability (confining) layer is present over an aquifer, it is much less susceptible to contamination than surface water.

Surface water

Surface water is found above ground and is most often seen in streams and lakes.

Streams are usually natural. Lakes, however, may be natural or man-made impoundments produced by placing a dam at a critical point on a free-flowing stream. In Arkansas, municipal impoundments have been built as supplies of water for cities. Little Rock, Conway, and Fort Smith, for example, secure drinking water from impoundments built for that specific purpose. There are other impoundments built by the U. S. Army Corps of Engineers at the direction of the U. S. Congress for power generation, flood control, recreation and/or drinking water supply. Lake DeGray, Lake Ouachita, Greers Ferry Lake, Lake Norfolk, Beaver Lake, and Bull Shoals Lake are all examples of Federal impoundments built for multiple purposes.

Surface water is more commonly used as a drinking water supply than ground water primarily because it is more accessible in most areas. Also, if the watershed — the surrounding territory that serves as a catchment area for the water that runs into and fills the lake or stream — of the surface water supply is protected, the water quality is likely to be superior to that of ground water, as ground water typically features a higher amount of dissolved minerals. In addition, if a surface water body becomes contaminated, it is easier and less expensive to clean because of its greater accessibility and because the water is moved out and replaced in a fairly short period of time.

Disadvantages of surface water include the ease with which unprotected surface water can become contaminated. Rivers and large lakes have historically been used as disposal sites for untreated wastewater and sewage, and are highly susceptible to other types of contamination such as spills of hazardous materials and runoff of agricultural herbicides and pesticides. An additional disadvantage is the often numerous competing interests for surface water such as recreation, hydropower generation, flood control, and transportation that may limit the use of surface water as a supply of drinking water.

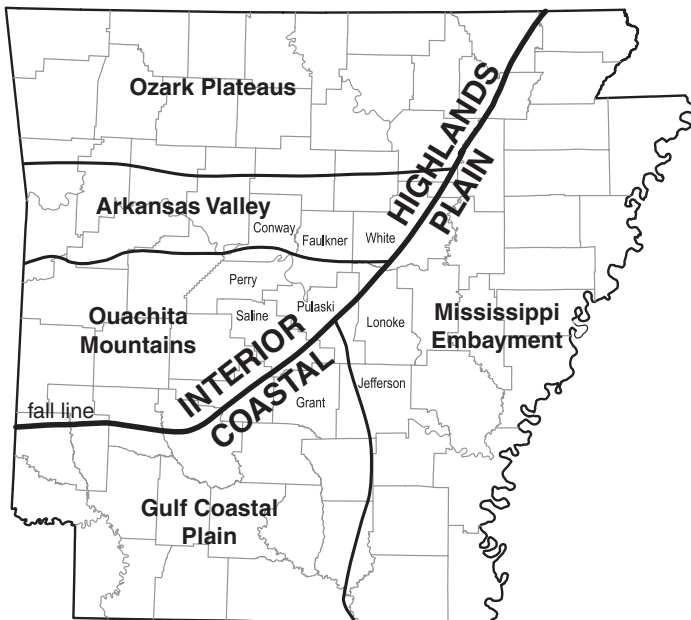


Precipitation, primarily in the form of rain, is the ultimate source of water that recharges streams, lakes, and aquifers. The average annual precipitation in central Arkansas is about 50 inches. Due to this abundant precipitation, an annual average of 18 of the 50 inches leaves central Arkansas as excess stream runoff. This excess water, however, is not always where it is needed nor is it available when needed. Surface water impoundments have been constructed for, among other purposes, collection and storage of excess stream flow during wet periods. Water from these impoundments can be used during dry periods when water use exceeds supply. Much of the water that does not leave the area as stream runoff or is not trapped by impoundments is returned to the atmosphere by evaporation and transpiration by plants. A small fraction of the precipitation infiltrates the surface of the earth and recharges aquifers underground.

Geology of water

Other than precipitation, the underlying geology is the primary influence on the surface and ground water resources of an area. Arkansas contains five geologic provinces: the Ozark Region, Arkansas Valley, Ouachita Mountains, Mississippi Embayment, and Gulf Coastal Plain (See Figure 5-1.) With the exception of the Ozark Region, each of these provinces extends into central Arkansas. Each geologic province exhibits distinctly different rock types, rock structure, and topography.

Figure 5-1 Geologic Provinces of Arkansas



Source: UALR Department of Earth Science



In contrast, Arkansas is a water-rich, population-poor state with abundant fresh water available. Central Arkansas, the most populated part of the state, is water-rich by national standards.

The Ozark Region, Arkansas Valley, and Ouachita Mountains occupy the northwestern half of the state and are often together referred to as the Interior Highlands. The Mississippi Embayment and Gulf Coastal Plain together comprise the Coastal Plain. The Coastal Plain occupies the Eastern and Southern parts of the state, and meets the Interior Highlands along a northeast-southwest trending line that runs through Little Rock called the fall line.

The contrasting geologic conditions of these two topographically distinct divisions have a profound effect on water resources. The consolidated rocks of the Interior Highlands have low permeability that limits the amount of ground water available. The steep topography of this area results in rapid runoff of surface water. Streams crest and recede quickly, inhibiting flow of water from the streams into the ground water reservoir. Many of the streams cease to flow in periods of drought. In contrast to the Interior Highlands, the higher permeability of the generally unconsolidated sediments of the Coastal Plain favors reception and transmission of water. Significant amounts of ground water are therefore available. The flat topography in this area results in slow-flowing streams. All but the larger streams cease to flow during dry periods.

Water use in central Arkansas

Population concentrations and supplies of fresh water are sometimes poorly matched. For example, in water-poor, population-rich states such as California, a relatively small amount of fresh water is available in comparison to the population. In contrast, Arkansas is a water-rich, population-poor state with abundant fresh water available. Central Arkansas, the most populated part of the state, is water-rich by national standards.

The U.S. Geological Survey collects information nationwide about the amount of ground and surface water used, categorized by the following purposes: public supply (drinking water), commercial, industrial, power, mining, agriculture, and irrigation. Nationally, most people derive their water supplies from fresh water surface bodies rather than ground water. Saline County's proportion of surface water use for all purposes, about 80 percent, is very close to the national average of 81 percent (Table 5-1). This proportion contrasts with the 37 percent statewide in Arkansas. The numbers for Arkansas are skewed by the extensive use of ground water for irrigation in the eastern part of the state.



In Saline County, nearly 80 percent of this water is used for public supply. In contrast, just six percent of the water statewide is used for public supply and almost 70 percent is used for irrigation (Table 5-2).

Table 5-1.

Comparison of total ground water and total surface water use in the United States, Arkansas, and Saline County.

	Total Ground Water	Total Surface Water
U.S.	19%	81%
Arkansas	63%	37%
Saline Co.	20%	80%

Source: U.S. Geological Survey, U.S. 1995, Arkansas and Saline 1997

Table 5-2.

Comparison of water use in the United States, Arkansas, and Saline County for various water-use categories.

	Public Supply	Irrigation	Industrial	Other
U.S.	12%	39%	6%	43%
Arkansas	6%	69%	2%	23%
Saline Co.	79%	1%	7%	13%

Source: U.S. Geological Survey, U.S. 1995, Arkansas and Saline 1997

For public supply, Saline County uses around 75 percent surface water and 25 percent ground water — similar proportions to Arkansas as a whole. Across the U.S. the proportion of public supply water, which comes from surface sources, is somewhat lower, as shown in Table 5-3.

Table 5-3.

Comparison of public supply ground water and public supply surface water use in the United States, Arkansas, and Saline County.

	Public Supply Ground Water	Public Supply Surface Water
U.S.	38%	62%
Arkansas	23%	77%
Saline Co.	25%	75%

Source: U.S. Geological Survey, U.S. 1995, Arkansas and Saline 1997

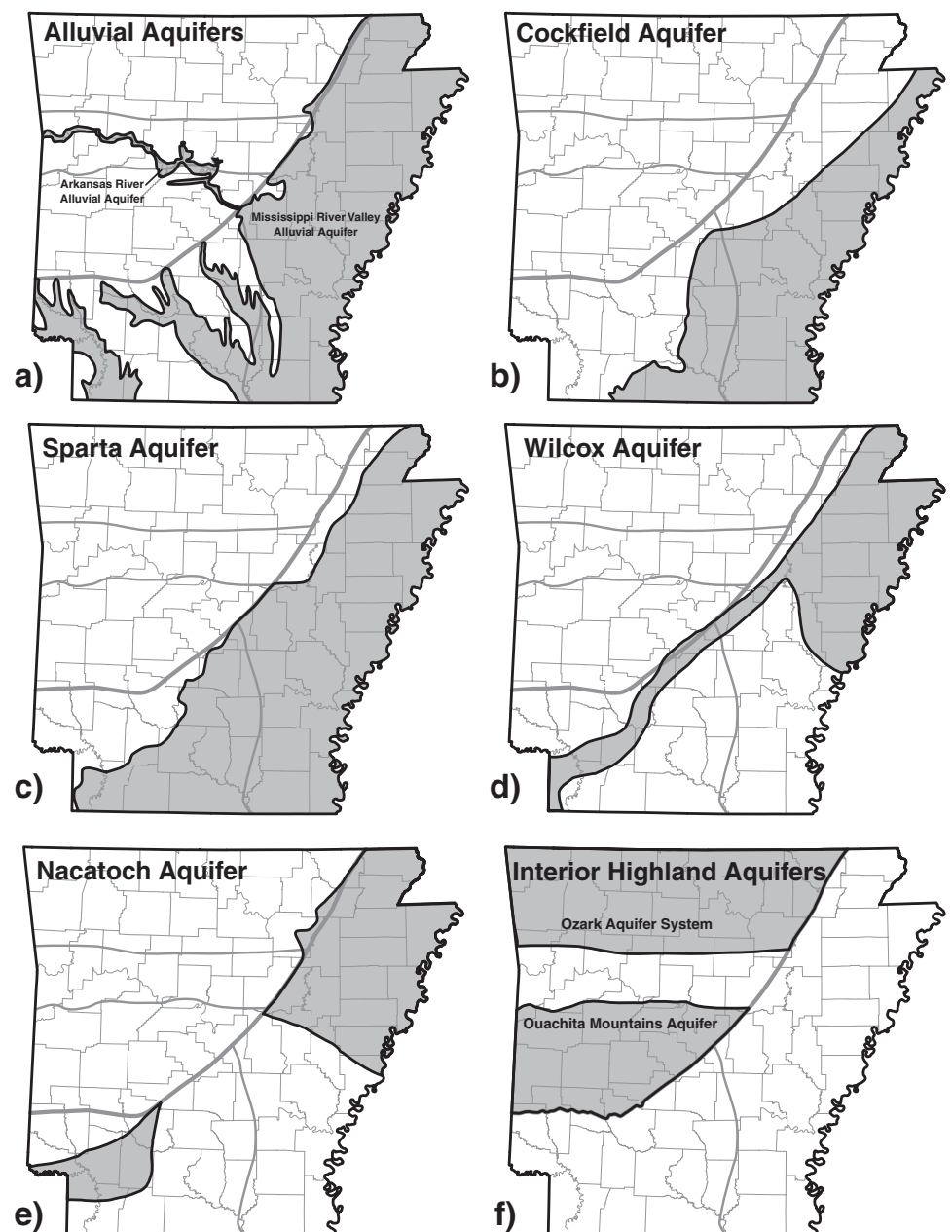


Ground water in central Arkansas

Water-yielding rocks within the central Arkansas region belong to several aquifer systems including the uppermost aquifer system (the alluvial aquifers), the deeper and older Mississippi embayment aquifer system (the deep Tertiary aquifers), and the Ouachita Mountains aquifer. Figure 5-2 shows the approximate aerial location of aquifers across Arkansas.

Figure 5-2

Approximate Aerial Extent of Major Aquifers in Arkansas



Source: UALR Department of Earth Science



Western and central Saline County lie within the Ouachita Mountains aquifer, shown on the Interior Highlands Aquifers map. This aquifer essentially coincides with the Ouachita Mountains geologic province, an 80-mile wide belt composed mostly of highly deformed shale, sandstone, and chert that extends from central Arkansas westward into Oklahoma. The Ouachita Mountains are topographically characterized by alternating east-west trending ridges, with sandstone or chert and parallel valleys underlying them, and with a layer of shale under the sandstone and chert.

Only limited quantities of water for domestic and non-irrigation farm use can be obtained from wells completed in the Ouachita Mountains aquifer. Most wells completed in the aquifer yield less than 50 gallons per minute, and many wells yield less than 10 gallons per minute. Wells with the highest yields are found in areas where extensive fracturing has occurred due to the folding and faulting of the rocks. Water quality is suitable for drinking purposes in most areas of the Ouachita Mountains aquifer.

Extreme southeastern portions of Saline County lie above the Sparta Aquifer and the Wilcox Aquifer. These aquifers are part of the Mississippi Embayment aquifer system, the most extensive aquifer system in Arkansas. It underlies the large portion of the state (the Mississippi Embayment and Gulf Coastal Plain provinces) east and south of the fall line. The Mississippi Embayment aquifer system comprises several aquifers of poorly consolidated to unconsolidated sand, silt, and clay that are separated by thick, regionally extensive clay and shale confining units. Aquifers within this system include the Nacatoch, the Wilcox, the Sparta, and the Cockfield. Each of these aquifers occurs in the subsurface of central Arkansas. Communities in central Arkansas that utilize aquifers of the Mississippi Embayment aquifer system include Sardis (Wilcox), East End (Sparta), Cabot (Sparta), Grand Prairie (Sparta), Coy (Sparta), England (Cockfield), and Ward (Cockfield). The Sparta is the most productive aquifer in the Mississippi Embayment aquifer system and the only aquifer with potential as a significant water source for central Arkansas.

The Sparta aquifer is capable of producing water in properly constructed wells at a rate of 300 to over 1000 gallons per minute. Although well yields can be high, the Sparta has a much lower storage capacity than the alluvial aquifers. The Sparta is therefore used primarily for municipal and domestic purposes rather than for large-scale irrigation of crops.

Water within the Sparta aquifer in central Arkansas is suitable for drinking purposes in most areas. The dissolved solids concentration is less than 500 milligrams per liter in most areas, and concentrations of all constituents that could adversely affect water quality are below maximum contaminant levels for drinking water. Dissolved solids, iron, and manganese

Western and central Saline County lie within the Ouachita Mountains aquifer. Only limited quantities of water can be obtained from wells completed in the Ouachita Mountains aquifer.



Aquifers recharge very slowly. If an aquifer is subjected to excessive withdrawals of water on a continuing basis, it is not renewable in any practical sense. Wells in it will run dry, and the aquifer itself can actually collapse and be lost permanently.

concentrations in some areas, however, exceed secondary maximum contaminant levels (SMCL). SMCL's are established by the U. S. Environmental Protection Agency and represent concentration levels that may cause undesirable cosmetic effects (such as skin or tooth discoloration) or undesirable aesthetic effects (such as bad taste, odor, or color) in drinking water. These secondary standards are not mandatory and are used as guidelines only.

Communities in central Arkansas east of Little Rock are within the alluvial aquifer system, which includes the Mississippi River Valley alluvial aquifer and the Arkansas River alluvial aquifer. This aquifer system lies above the Mississippi Embayment aquifer system. The extensive Mississippi River Valley alluvial aquifer is the principal source of water for irrigation in Arkansas. It underlies most of Arkansas east of Little Rock (the Mississippi Embayment province) and is up to 250 feet thick. Communities in central Arkansas that utilize this aquifer for public water supply include Lonoke, Carlisle, Ward, and Grand Prairie in Lonoke County and Jacksonville in Pulaski County. The Arkansas River alluvial aquifer occurs as a thin band along the Arkansas River from Little Rock westward to Fort Smith and is less than 100 feet thick at most locations. The City of Maumelle uses this aquifer for water supply. The aquifer system is capable of yielding large quantities of water through wells, especially when the saturated thickness of the aquifer is large. Although water quality within this aquifer is suitable for most uses, large concentrations of iron and excess hardness in some locations make the water undesirable for some public supply and industrial uses.

Surface water in central Arkansas

Numerous streams, including the Arkansas River, drain runoff water from central Arkansas southeastward to the Mississippi River and on to the Gulf of Mexico. The stream flow is lowest during June through October, the period of highest water demand. The ability of a stream to satisfy water demand depends primarily on the amount of flow that is available during extended dry periods. Smaller tributary streams, and some larger streams, are often unable to provide sustained year round stream flow.

A dependable year round water supply may require storage of water in a reservoir. Dams and their accompanying reservoirs are usually designed to serve multiple purposes. Water stored in these reservoirs may be used for recreation, flood control, hydropower generation, irrigation, and public water supply. In the case of Federal reservoirs, a change in authorized use can be made through Federal action. Several major reservoirs have been



constructed that serve or could serve central Arkansas. Those with the sole purpose of water supply include Lake Winona and Lake Maumelle built and owned by Little Rock. Corps of Engineers reservoirs constructed with multiple purposes include Lake Ouachita, Lake DeGray, and Greers Ferry Lake. Smaller side stream reservoirs, such as one constructed along the Saline River for the City of Benton, are used for water supply only. Recent Federal environmental legislation and policy changes make it unlikely that any new large reservoirs will be constructed in the near future. A summary of the dimensions and capacities of these reservoirs is provided in Table 5-4.

Table 5-4.

Comparison of selected impoundments in central Arkansas.

	Watershed (Sq.Mi.)	Surface Area (Acres)	Volume (acre-ft.)	Max. Depth (feet)	Avg. Depth (feet)
Lake Winona <i>Alum Fork</i> 1938	44.4	1,216	41,730	100	34.7
Lake Ouachita <i>Ouachita River</i> 1953	1,105.0	40,000	2,151,000	200	60
Lake Maumelle <i>Maumelle River</i> 1956	137.0	8,896	219,440	45	24.7
Greers Ferry Lake <i>Little Red River</i> 1964	1,146.0	31,500	2,844,000	190	-
Lake DeGray <i>Caddo River</i> 1972	393.0	13,824	635,000	200	46

Source: U.S. Geological Survey

Water in most streams originating in the Ouachita Mountains and the Arkansas Valley is generally of exceptional quality. Because rocks in these areas are consolidated, have relatively thin soil cover, and often are heavily vegetated, most streams contain only small amounts of sediment and dissolved minerals. In contrast, runoff in streams flowing over the unconsolidated rocks of the Mississippi embayment and the poorly consolidated rocks of the Gulf Coastal Plain generally contains more sediment and is more mineralized. Much more easily eroded surface materials and agricultural activity contribute to the poorer quality of surface water in these areas.



The largest stream in central Arkansas, the Arkansas River, has a naturally high content of suspended and dissolved solids. In addition, the river receives agricultural runoff and industrial and municipal discharges. However, the quality of the river's water has been improving in recent decades, and with proper treatment, water from the Arkansas River can be made suitable for drinking.

Ground water problems in Arkansas

Ground water problems in Arkansas are fairly widespread and include declining water levels, poor natural quality, and contamination. As a result of large-scale water withdrawals for irrigation (largely for rice cultivation), significant declines in ground water levels have occurred in the Coastal Plain of Arkansas. The most dramatic area of water level decline is within the Grand Prairie area of east central Arkansas, where water level declines of over 90 feet have been reported. The large water withdrawals have resulted in the formation of a "cone of depression" in underground water levels between the Arkansas and White Rivers. This depression extends as far westward as eastern Pulaski County, where water-level declines of up to 20 feet have occurred. Significant declines in water levels have also occurred in the Sparta aquifer. Where this aquifer is used for industrial purposes, such as in El Dorado, Magnolia, and Pine Bluff, large withdrawals have resulted in large declines in water levels, which in the El Dorado area exceed 250 feet. In southeast Pulaski County, declines of about 40 feet have occurred.

The safe yield of an aquifer is the amount of water that can be withdrawn from that aquifer on a continuing basis without causing serious depletion effects. If the safe yield is exceeded, well yields are reduced, an influx of water of poor quality (e.g., saltwater intrusion) may occur, and loss of the aquifer (dry wells) may ultimately occur. Because of the excessive withdrawals of water for irrigation, the safe yield has been approached or exceeded in parts of the alluvial aquifer and Sparta aquifer. In 1998, the Arkansas Soil and Water Conservation Commission (ASWCC) declared aquifers in parts of six counties of east-central Arkansas (including Lonoke and eastern Pulaski Counties) critical ground water areas. A critical ground water area is an area where the quantity of ground water is rapidly becoming depleted (declines of over one foot per year are occurring or the water level drops below the top of a confined aquifer) or the quality is being degraded. A five county area of the Sparta aquifer in southern Arkansas was designated a critical ground water area in 1996.



Poor natural water quality due to salinity occurs at several places in the surface aquifer system including the Arkansas River in central Arkansas. Most occurrences of saline ground water are the result of migration of natural brines from deep sources. The saline water in the Arkansas River alluvial aquifer, however, may be the result of recharge from the Arkansas River, which at times contains saline water derived from salt beds in Kansas and Oklahoma. In recent years, saline water occurrences have increased in areas such as Union County as a result of decline in fresh water levels caused by large withdrawals.

Aquifers exposed at the surface, such as the alluvial aquifers, are susceptible to various types of contamination. The lack of an extensive confining unit overlying the aquifer makes these aquifers vulnerable to contaminants such as industrial and agricultural by products. Also, salt-water contamination from deep brines or from Arkansas River water may contaminate these aquifers, especially in those areas of excessive ground water withdrawal.

Surface water problems in Arkansas

The safe yield of a stream or river is the amount of water available on a dependable basis that can be developed for a surface water supply. Dependable stream flow is the flow that is present in a stream 95 percent of the year. Not all of this dependable stream flow is actually available for use, however, as some flow must be maintained to satisfy minimum stream flow requirements. Minimum stream flow requirements may need to be maintained for various purposes including navigation, hydropower generation, interstate compacts, and maintenance of fish and wildlife habitat, water quality standards, and aesthetic quality of the stream. The safe yield of a stream, therefore, is the amount which can be withdrawn 95 percent of the time above the amount necessary to maintain minimum stream flow conditions.

All streams in central Arkansas have little to no safe yield. The instream flow requirements for these streams equal or exceed the dependable flow of the stream. Direct diversion from streams in central Arkansas, therefore, is not possible during low flow conditions. For example, the dependable flow of the Arkansas River is less than 3000 cubic feet per second, which is the instream flow requirement for navigation on the river. Because the Arkansas River has no safe yield, an accompanying storage impoundment would be required for this stream to supply water year round.

The safe yield of a stream or river is the amount of water available on a dependable basis that can be developed for a surface water supply...All streams in central Arkansas have little to no safe yield.



First, from a conservation perspective, surface water can be viewed as a renewable resource and ground water a nonrenewable resource.

The water supply problem in this area is the limited availability of good quality ground water in relation to local needs, in addition to the constraints that exist in the development of tributary streams as sources of supply.

Policy implications

The preceding review of the geology of water in central Arkansas suggests three broad observations that decision makers should consider when choosing a new water supply.

First, from a conservation perspective, surface water can be viewed as a renewable resource and ground water a nonrenewable resource. Water levels of lakes and streams fall in dry seasons but then rise again when the rains return in a more or less annual cycle in Arkansas. In contrast, ground water in a number of areas in the state is a finite and dwindling resource. Aquifers recharge very slowly. If an aquifer is subjected to excessive withdrawals of water on a continuing basis, it is not renewable in any practical sense. Wells in it will run dry, and the aquifer itself can actually collapse and be lost permanently.

Second, because Arkansas has been a water-rich state, there has been only limited attention to water conservation. Use of surface water can be one means of conservation of ground water. Evolving Federal regulations appear likely to require that public supply systems give more attention to conservation of water.

Third, the dependence of Arkansas on ground water for agricultural use, as shown clearly in Table 5-2, strongly suggests that any time surface water can be used for other purposes in the state, surface water should be used for those purposes. If costs of irrigation rise due to a scarcity of ground water, a rise in food prices is likely to follow.

Key points

Here are key points which emerge from a review of the geology of central Arkansas:

- ◆ The geology of the central Arkansas area is diverse and controls the location of ground water and, to a lesser extent, surface water resources.



- ◆ Surface water is more commonly used for public water supply primarily because it is more accessible and, if the watershed is protected, of better quality than ground water.

- ◆ The only aquifers in central Arkansas potentially prolific enough for large-scale public supply, the alluvial and Sparta Aquifers, are severely stressed by overuse for irrigation and industrial purposes. Ground water quality of these aquifers is also questionable in some locations.

- ◆ Approximately 79 percent of the total water used in Saline County is for public supply, most of which (80 percent) comes from surface water. In contrast, only 6 percent of water used statewide is for public supply, as irrigation (69 percent) dominates water use in Arkansas. Over 90 percent of water for irrigation is derived from ground water sources.

- ◆ Streams in central Arkansas, including the Arkansas River, have little to no safe yield. Use of surface water from a stream, therefore, requires that impoundments be constructed near streams to receive and store water for later use.

- ◆ Existing impoundments near central Arkansas with potential to supply additional water to the region include Greers Ferry Lake, Lake Ouachita, and Lake DeGray. Water from each of these lakes is of exceptional quality.

- ◆ Because of high water quality, minimal additional environmental impact, and abundance of available water, each of the three existing impoundments deserves a high ranking as a possible choice for future water supply for central Arkansas. Proximity and relative elevation conducive to gravity flow make Lake Ouachita the logical choice for Saline County.

Chapter 6



Water Capacity and Future Needs

Water and need

You awake in the middle of the night and go turn on the faucet. Out comes a nice steady stream of clear and cool water. For many of us, that is where we start and stop thinking about water and its availability. But there are parts of Saline County, indeed there are whole areas of Arkansas (especially in the East), where that simple assumption faces a daily test.

Arkansans, and especially those of us in central Arkansas, are comfortable in the availability and the relative inexpensive cost of water. We have a history of effective wells drawing groundwater into our rural areas and expanding them into rural water districts, and we have well-established surface water systems as well.

The reality of central Arkansas (including Saline County) is not only the abundance but also the high quality of water available. Given current problems in the eastern part of our state, and more dramatic stories of divisive conflicts over water in our Western states, one might wonder what the “need” is at all.

One distinction is required. *What is a short-term need versus a long-term need for water?* There will be little agreement about the specifics of such a question. Most of us in our daily life, however, consider short-term issues to be less than a year. Such a definition is not adequate when discussing water systems. One can even suggest that a solution of 10-20 years is still short-term in the water arena. There are two obvious reasons: a) it often takes over a decade to truly develop a new source of water; b) it requires an enormous amount of planning and development to make such a solution operational — from issues as complex as long-term financing to seemingly simple matters as providing rights-of-way to lay pipes to move the water.

Headlines

Drought in Northeast begins to impinge on businesses

New York, NY
Wall Street Journal, 1999

Clean Cars, Long Baths: the Victims of Drought

New York, NY
New York Times, 1991

Ban issued on outside use of water

Worcester, Mass.
Telegram & Gazette, 1999

Florida drought scares officials, residents face water shortages

USA Today, 2001

With drying creeks, Marion faces water shortage

Morganton, NC
The McDowell News, 2002

Panel: Water shortage might limit growth

Reno, NV
Reno Gazette-Journal, 2002

Extreme water shortage calls for extreme measures

Almagordo, NM
Almagordo Daily News, 2002



“The development of water supply resources is an extremely lengthy process...”
Preliminary Engineering Report to Benton, 2002

So, what really is long-term in the water system business? Again, no source would define total agreement. But planning for water must look beyond a decade, even beyond two decades. Frankly, when possible, engineers in this arena urge fifty-plus year solutions so that children and grandchildren have sufficient and safe water.

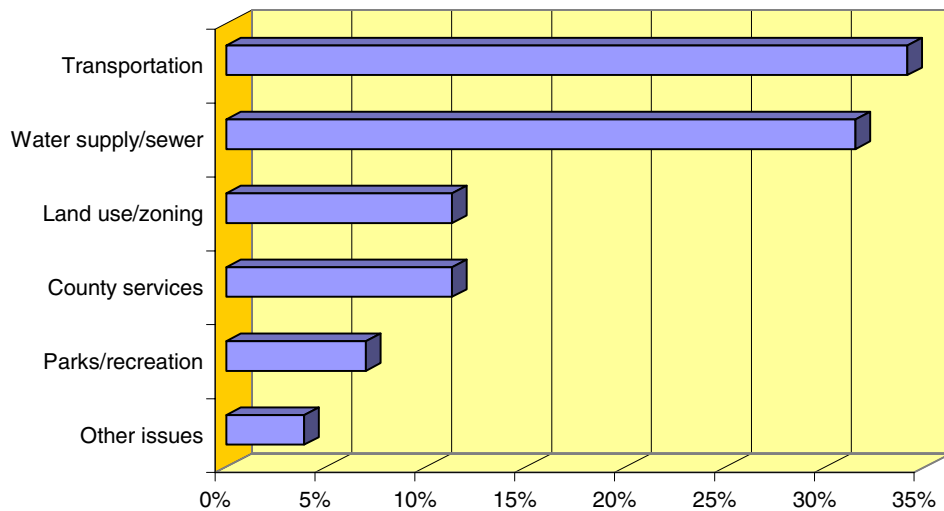
Water and public perception

What does the public in Saline County think about water? Obviously there are multiple views on an issue as complex as water. However, we have found almost complete agreement that a new water source is needed in Saline County.

The general public’s attitude on a range of long-term policy issues was recently examined by a special study commissioned by the County Judge and the Quorum Court for its Comprehensive Master Plan. The top two issues were clear in both a broad public survey as well as follow-up focus groups: *transportation and water*. (see Figure 6-1). Water was widely regarded as an essential commodity. In fact, 70 percent of respondents to the survey ranked developing a long-term water supply plan as “definitely needed.” (Saline County Comprehensive Master Plan Citizen Survey, 2002).

Figure 6-1

Top Priorities of Master Plan



Source: National Research Service - July 2002 Mail Survey of 715 Saline County residents

...we have found almost complete agreement that a new water source is needed in Saline County...



In a public hearing the UALR Task Force held in September in the County Courthouse, the overwhelming consensus of those present was that Saline County needed a new water source — and specifically that it meet needs of generations to come.

Finally, in our numerous interviews with elected officials, water purveyors, engineers, state officials, local business groups, and all the technical people concerned with water, there was a consistent theme — major change must occur to secure a long-term water solution for all customers in the county.

On this question there seems little controversy. New water is needed in Saline County to meet its long-term future.

Water and growth in Saline County

All demographic/population estimates of Saline County suggest considerable growth over the coming 50 years. Of course, estimating population growth is a very inexact science, but many experts believe Saline County will grow over 100 percent in the next 50 years. Table 6-1 shows growth over the past 30 years and how it has surpassed the state average. The map in Figure 6-2 shows the growth rates of Arkansas counties between 1990 and 2000, with Saline County as one of the fastest-growing counties in the state.

Table 6-1.

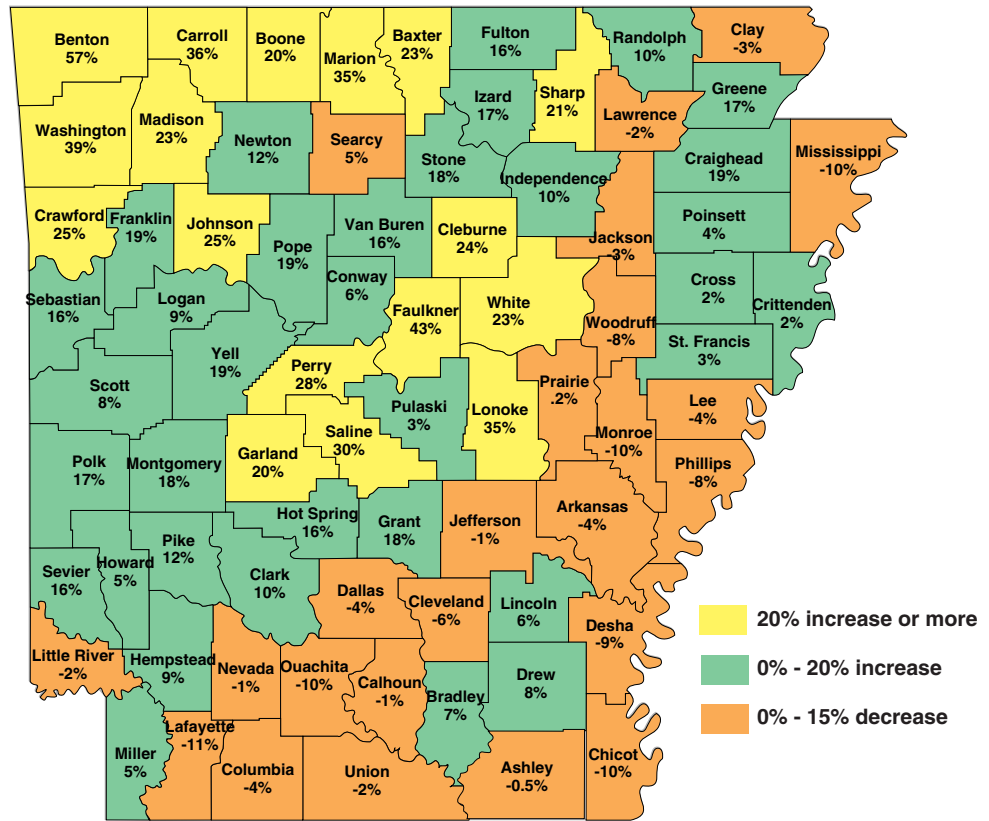
Saline County and Arkansas Population with Percentage Change, 1970-2000				
	2000 Population	% Change		
		70-80	80-90	90-00
Saline	83,539	47.2	20.7	30.1
Arkansas	2, 673,400	18.9	2.8	13.7

Source: Arkansas Statistical Abstract, 2002



Figure 6-2

Population Growth Rates 1990-2000



Because of the rapid and continuing growth, Saline County's water needs are real and critical.

Source: UALR Institute of Government

At UALR, the Institute of Economic Development has two different estimates of Saline County growth over the coming decades. The more conservative model suggests that Saline County will grow to 93,300 by 2010; the other model posits that the County may reach 102,000 by 2010. Table 6-2 summarizes these population projections.

**Table 6-2.**

Projected Population Growth for Saline County through 2010: Two Estimates

	Trendlong 0302 Simulation	Projections from Time Series Extrapolations
2001	85,830	85,775
2002	87,230	87,577
2003	88,440	89,380
2004	89,520	91,183
2005	90,480	92,985
2006	91,250	94,788
2007	91,890	96,591
2008	92,420	98,393
2009	92,880	100,196
2010	93,270	101,999

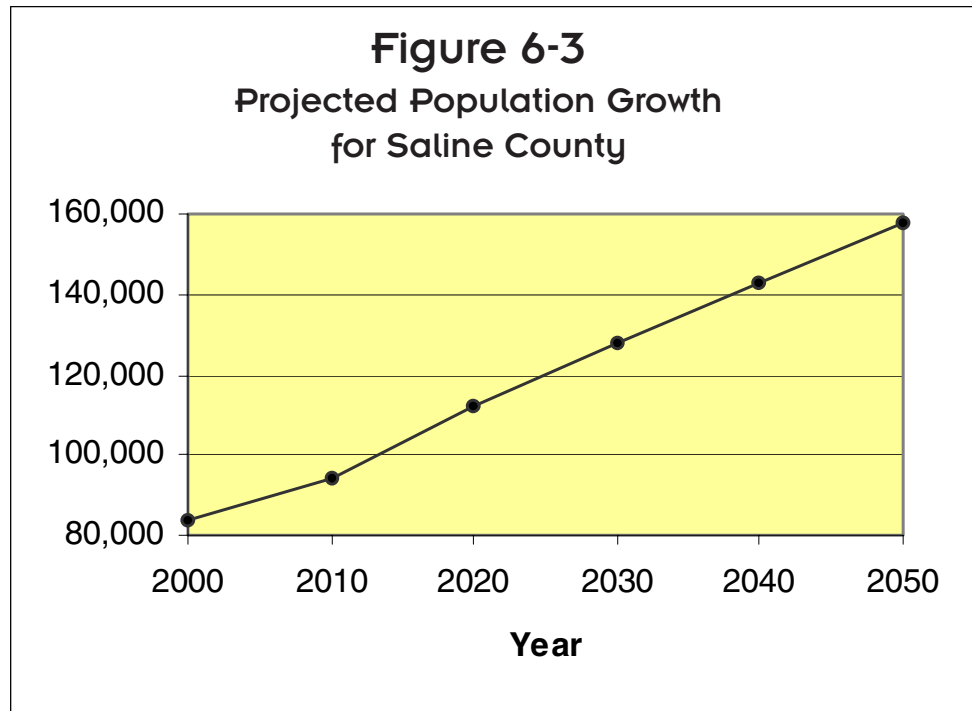
Source: UALR Institute for Economic Advancement.
Trendlong Simulation provided by Dr. John Shelnett,
Time Series Extrapolations provided by Dr. Gregory Hamilton.

Recently, Black and Veatch Engineering was commissioned by the water systems throughout central Arkansas to estimate water needs through 2050. Its calculations were based on current population, estimates of population growth, and production of water through the middle of the 21st century. These estimates suggest that Saline County's population will double by 2050. (Figure 6-3.)

However one projects growth, Saline County will continue to grow at a rate much faster than the state, as well as much faster than Pulaski County to its north. For the most part, county leaders we interviewed welcomed continued growth in Saline County, recognizing that a larger tax base will provide better schools, more city services, and more jobs for its citizens. Because of the rapid and continuing growth, Saline County's water needs are real and critical. Numerous engineering studies we have reviewed have estimated how much more water will be needed for that growth and it is their conclusion that existing systems cannot meet that growth. We agree.



We have not attempted to estimate long-term commercial and industrial needs, but this economic fact must be considered. Although not all industry and commercial developments require more than average amounts of water, many do. Those who seek to develop property for commercial and/or residential use consider quality and affordable water central to the infrastructure development of any project.



Source: Metroplan

As researchers, we have been impressed with how effectively individual water systems in the county have provided the necessary water as development has gone forward, although there has been controversy in that process (e.g. various impoundments in and around Benton, environmental controversies around the Middle Fork). It is apparent from our research that a thoughtful process of developing future water for Saline County is essential for its growth and prosperity.



Inadequacy of current water sources to support growth

Is there enough water? Can the current supply, treatment and distribution systems meet the county's needs? As we noted previously, with some exceptions, the answer in the short term is yes, but only in the short term. Long-term development is required. Even with upgrades of existing systems under consideration or underway in Benton, Sardis, and Hot Springs Village, these plans do not meet the long-term needs of Saline County. Whether it is major upgrades required in treatment facilities (Hot Springs Village), new wells in ground water systems (Sardis), or upgrades to treatment capacity (Benton), all still meet the "short-term" needs of the county. However, the long-term needs have not been as carefully documented. Benton, through its own engineering study reported this year, had recommended:

The development of water supply resources is an extremely lengthy process, requiring adherence to extensive government regulation and environmental considerations. It also requires participation and cooperation of various governmental entities and the general populace. The city's 20-year water supply availability is not necessarily long-term in terms of lead-time required to additional source provision. It is therefore recommended that work be initiated now to ensure that an additional source of water will be available when it is needed. (Preliminary Engineering Report to Benton, 2002, pg. 15)

Ground water

Three water associations in Saline County rely on groundwater. Most have been forced to drill new wells to meet continuous growth in water needs. Water tables are dropping even in the abundant Sparta aquifer, causing problems in water quality and volume. The U.S. Geological Survey wrote in a recent publication:

The Sparta and Mississippi River Valley alluvial aquifers are major water sources for municipal, industrial and agricultural uses. Recently the demand for water in some areas has significantly exceeded recharge to the aquifers,



Definitions

Treatment capacity - the amount of water that can be treated (to the extent necessary to meet Federal safe drinking water standards) and made available for consumption on a daily basis

Daily safe yield - the amount of water that can be drawn daily without a net depletion of the water supply (lake, stream, or wells)

MGD-maximum day - millions of gallons of water used on the highest demand day of the year

MGD-average day - the average millions of gallons of water used per day throughout the year

and water users and managers have begun to question the ability of aquifers to supply water for the long term . . . The USGS and Arkansas Soil and Water Conservation Commission developed a regional-scale computerized ground water flow model in the mid-1980's for testing water-use strategies that could affect the Sparta aquifer. Modeling shows that the aquifer cannot supply water for more than 30 years at the currently increasing demand. (USGS, Science for a changing world: Arkansas, July 1999 p. 2)

While the most urgent concern about groundwater resources centers on eastern Arkansas, the general principle of the limits of groundwater resources apply to Saline County as well. Since groundwater aquifers “recharge” much more slowly than lakes as a result of rainfall, they are considered a finite resource, while surface water impoundments are renewable based on the plentiful rainfall in the state. In a recent study of long-term water resources, Black and Veatch engineers wrote this about groundwater options:

“As a result of large-scale groundwater withdrawals primarily for rice farming, groundwater levels in the state are declining. Declining aquifer water levels create a multitude of problems for everybody. Because of excessive withdrawals of ground water, the safe yield has been approached or exceeded in the alluvial and Sparta aquifers. Due to the safe yield concerns, concerns relating to poor water quality due to saline incursions consistent with declining groundwater levels . . . alternatives using groundwater sources will not be considered.” (Black and Veatch, Mid-Arkansas Regional Water Supply Study Draft Report, October 2002, p. 4-1)

Saline River options

Both Benton and Hot Springs Village draw their water from the Saline River — Benton from the North Fork and Hot Springs Village from the Middle Fork. The major issue in the requirement for long-term water is not in the “use” of the Saline River, but in the various determinations of “safe yield.” The Arkansas Department of Environmental Quality (ADEQ) defines “safe flow” as the amount of water available from dependable



stream flow 95 percent of the time as reduced by the amount of discharge necessary to maintain a minimum stream flow. Both Benton and Hot Springs have constructed impoundments to store river water for use during low flow summer months. Benton has such a facility in the Chenault Reservoir that has a storage volume of approximately 190 million cubic feet (or put in capability terms, the ability to supply raw water at a rate of 12 mgd for 120 days). The City of Benton also is able to release water from Lake Norrell, a city-owned impoundment and a tributary of the North Fork of the Saline River. Hot Springs Village uses Lake Lago for the same purpose.

Current impoundments can meet short-term needs but both Benton and Hot Springs Village understand that limits of the River, especially in times of low flow and drought, make any meaningful safe yield problematic for the long term. Hot Springs Village realizes that it needs not only a potable water supply but also water for recreational purposes. Indeed, in the Black and Veatch study just completed, both Benton and Hot Springs Village preferred to take the river “off the table” for consideration of long-term needs.

Summary

Saline County does not face the desperate short-term water needs that many areas of the country are experiencing. Streams, lakes, and underground water tables provide a variety of options for meeting water needs. However, the county has grown rapidly and by most projections will continue to grow faster than the state as a whole. Most water sources in the county will be sufficient for five to 20 years. However, water systems are complex to authorize and construct. A longer planning time frame is necessary on water issues. Leaders in the county are wise in looking for water sources that will be sufficient 50 to 100 years in the future.

Leaders in the county are wise in looking for water sources that will be sufficient 50 to 100 years in the future.



Chapter 7



To See Ourselves as Others See Us: Perceptions About Water in Saline County

Saline County is in transition and transitions can be rocky. Thorny, persistent problems often erupt, hampering the ability to trust people who live in different cities, towns, and municipalities as conflicts widen and biases soar. As one interviewee put it, “We need to rebuild trust in this county, work on interpersonal issues.” Problems as they have existed in the past, however, need not become a barrier to making wise decisions that embrace the entire county tomorrow.

Researchers involved in this investigative report listened to the voices of the people who live in Saline County, and as they listened, major issues affecting county residents unfolded. Careful listening also uncovered several solutions to those critical issues. For 100 or more interviews, researchers adopted a neutral mindset to get inside multiple issues and record what the interviewees were actually saying in a way that fully represented their points of view.

Part of the function of any credible study is to reflect to the people involved their own attitudes and perceptions about each other in an unedited, unencumbered fashion. In this way, participants get to see themselves as others see them. We hope the clarity of these perceptions becomes one of the first steps in developing unity throughout the county.

As our research group heard negative comments about parties within the county, we recognized these perceptions often were generated through having access only to partial information, through discussions held behind closed doors, and through a lack of representation of all parties in key decisions. Because our only recourse is to develop perceptions based on the information we are given, lack of information yields perceptions that are necessarily more biased than those generated from full, complete, and open information.

Part of the function of any credible study is to reflect to the people involved their own attitudes and perceptions about each other in an unedited, unencumbered fashion. In this way, participants get to see themselves as others see them.



Embedded in the comments below is a struggle to change how Saline County perceives itself.

We were gratified to learn that representatives from all municipalities and water associations of Saline County seemed committed to finding a long-term solution to water issues. Even after expressing distrust of certain parties involved in the conflicts, people interviewed closed with statements such as, “But now is the time we need work together,” and “We’ve got to make it work. We’ve got to make it happen this time.” People seem willing to pierce the dense veil of resentment and distrust that has swirled around the county for so long, to attain a clearer, brighter, water-enriched future.

Embedded in the comments below is a struggle to change how Saline County perceives itself. County perceptions are transforming. Formerly, individual loyalty was only to the water associations or municipalities. Now people are beginning to view all entities as a part of a larger whole, the whole of Saline County. This broader perspective of a sense of county or even regional ownership will ultimately foster a solution.

Below we have categorized comments about various water entities and subjects. The comments we have presented in some instances are direct quotes and in others are close paraphrases of opinions we heard during the interview process.

Perceptions of Benton

- ◆ Benton has used water as a tool to control growth in surrounding areas. Because they controlled the water, they could put a moratorium on the number of new meters that rural water associations could add.
- ◆ Benton would not try to deal fairly with rural areas. Rural people are people, too.
- ◆ Benton has been arbitrary in setting water rates for wholesale customers. They could not provide good rationales to justify rate increases.
- ◆ Benton has excellent water quality and has supported much of the growth in Saline County.
- ◆ We could have had a cooperative water effort to get water from Lake Ouachita in 1996 if Benton had been willing to cooperate in any way. Even though the group bent over backwards to let Benton join the group without paying a fee, it refused. It even refused to sign on the agreement when all that had to be done was hook on its water main to the Ouachita pipeline.
- ◆ Water is a cash cow for the city of Benton.



- ◆ Benton opposed Malvern and Quadco because it couldn't afford to lose 40 percent of its customer base.
- ◆ We might have trouble with Benton and other systems if we work for a countywide solution, but Benton needs to come in for a countywide solution to work. There is a long history of acrimony with the city of Benton.
- ◆ We have had no problems with Benton as our water provider.
- ◆ Benton can't dictate everything for the rest of the county, but it tries to.
- ◆ Benton would not provide water to rural areas in the 70's and encouraged rural water associations to form to meet the need. Now that those associations have grown and become large and successful and the rural associations have built all the infrastructure, Benton wants to pick off the profitable developments to serve.

Benton appears to be in the position of being the “big dog” in the Saline County fight. Other water providers realize that Benton is essential to any regional solution, but resent it when Benton seems to dictate terms of the collaboration. In the past, Benton has had little need to negotiate with smaller towns and municipalities and encouraged them to form their own water associations to meet their water needs. As we enter the 21st century, however, water issues have become critical to the county and to the nation as a whole. Most entities in Saline County are rethinking their previous stances and most recognize the need for a different organizational structure to meet future needs.

Comments about rural water associations and smaller municipal water systems

- ◆ Rural water associations do not serve their customers well when they deny them the ability to go on city water systems when they voluntarily annex into city limits. The customer could get better water rates, fire flow water pressure, cheaper homeowners' insurance and other benefits.
- ◆ We would favor any resolution that would take us out of Tull. We don't have a say about our water and we have four times as many people as they do. They slap on a \$3.00 charge and make us pay for their new fire equipment which will change their fire rating from a 9 to a 3.
- ◆ Many of our rural water systems and smaller municipalities have substandard water infrastructure — 2 inch pipes and smaller water mains. These do not support fire flow pressure. When these areas are annexed into the city limits and the rural associations will not let the cities take over the retail customers, the city cannot do the

Other water providers realize that Benton is essential to any regional solution, but resent it when Benton seems to dictate terms of the collaboration.



Rural associations should spend more of their money extending service to new rural customers and less in legal fees trying to hang onto customers and developments better served by cities.

If it weren't for rural water associations, we'd all still be on well water.

Bryant has become a suburb of Little Rock. It has more in common with Little Rock than with Saline County.

expensive upgrade necessary to improve the infrastructure. This, over time, could affect the overall city fire rating.

- ◆ Rural associations should spend more of their money extending service to new rural customers and less in legal fees trying to hang onto customers and developments better served by cities.
- ◆ Rural water associations now ring the city limits of Benton and Bryant and provide no area for the cities to grow.
- ◆ If it weren't for rural water associations, we'd all still be on well water. They have contributed to the health and growth of the county. When no one else would get us water, they were there to meet the need.
- ◆ They charge us \$800 for a connection fee. \$800! Our association is making lots of money off of us and we are bigger than they are!
- ◆ We need representation on the board of our association. Right now, the board tells us only what they want us to know. So much is done behind closed doors and we feel powerless. That's the problem. Our voice is not being heard.
- ◆ People in our association speak out of both sides of their mouth. They tell you one thing and then they tell someone else something different about the same issue. They are not honest and above board.

While Benton has had its problems dealing with the smaller water associations and municipalities, these same entities have also experienced frictions of their own. Most of the issues seem to revolve around some form of lack of representation, self-perpetuating boards, and secrecy. Time and time again we heard comments about meetings taking place behind closed doors and about water customers' voices not being heard in decision-making processes.

Comments about Bryant

- ◆ Bryant has become a suburb of Little Rock. It has more in common with Little Rock than it has with Saline County.
- ◆ Bryant doesn't seem to care about the rest of the county. It only looks at its self-interest.
- ◆ Bryant doesn't seem to have a vision for the future. It has to renegotiate a contract with Central Arkansas water in six years, but it's not looking seriously at other options. Bryant residents may get a shock when they see the terms of the next agreement.
- ◆ Bryant is an example to the rest of the county of how to attract investment and growth.
- ◆ I used to shop at Bryant, but it seems too much like Little Rock to me now, so I go to Benton.



Comments about Hot Springs Village

- ◆ Hot Springs Village is not a part of Saline County. The Northerners who retire there don't understand the culture here.
- ◆ Cooper Communities only cares about profit. It is not going to invest in a pipeline to Ouachita as long as it can get water from the Middle Fork for free.
- ◆ Hot Springs Village has a wealth of talent and expertise. If we could harness the brain power of the residents there, they could go a long way toward solving the county's problems.
- ◆ The impoundments built on tributaries of the Middle Fork of the Saline River are killing the stream.
- ◆ We would understand the impoundments created by Hot Springs Village and the environmental damage they have caused if residents needed them for drinking water, but they don't. It's all about building more golf courses and lakes for boating.

As these comments indicate, many citizens of the county see Bryant and Hot Springs Village as somehow "separate" from the county in their culture and interests. Yet many interviewees stressed the importance of bringing Bryant and Hot Springs Village into the regional water system. They felt that if all of the county could cooperate on water then other cooperative activity on transportation, economic activity, and tourism would follow.

On the importance of water for Saline County

- ◆ The importance of water in the growth of Saline County is an absolute necessity. In the past several years several industries have chosen not to locate in Saline County specifically due to the lack of available water.
- ◆ The Saline River will not be a good source of water in 50 years; we may even face a water shortage in 30 years.
- ◆ Surveys indicate the Saline River will dry up under drought conditions.
- ◆ We've got a good water supply right here in Saline County; we don't need to go anywhere else.
- ◆ Our district is growing, with 800 new homes approved.
- ◆ Water is the issue of the 21st century; we need to be thinking 100 years down the road, not 50.
- ◆ I am not at this meeting for myself. I am here for my children and great grandchildren and water is their future.
- ◆ We expect 500 new homes to go up in our area. To grow more, we'll need water.

We would understand the impoundments created by Hot Springs Village and the environmental damage they have caused if residents needed them for drinking water, but they don't. It's all about building more golf courses and lakes for boating.



The importance for water in the growth of Saline County is an absolute necessity. In the past several years several industries have chosen not to locate in Saline County specifically due to the lack of available water.

It would be stupid not to join with CAW, not unfortunate, not short sighted, just plain stupid.

- ◆ We're growing, but our wells will provide for us for the next 20 years.
- ◆ In the near future, primary growth will be in residential developments; Weyerhaeuser and International Paper are all selling off tracts of land for housing.

One of the bright spots in our research concerned everyone's agreement that water is a critical issue for the long-term future. Saline County is growing. While housing developments abound, industry is declining to locate within the county, primarily for lack of water accessibility. This seems to be the golden moment to come together.

On joining with Central Arkansas Water

- ◆ We wouldn't take water from LR if it were free.
- ◆ It would be stupid not to join with CAW, not unfortunate, not short sighted, just plain stupid.
- ◆ Little Rock water today — Little Rock schools tomorrow.
- ◆ CAW has been extremely difficult to negotiate with over water issues.
- ◆ Nothing in Pulaski County can have a controlling interest in any water plan.
- ◆ Many people are thinking parochially but need to be thinking regionally.
- ◆ This has got to be Saline County's idea.
- ◆ No one would be for it if Little Rock had anything to do with it.
- ◆ People move to Saline County because they want to be out of Little Rock. We don't need to let them control the county by relying on them for our water supply.
- ◆ If I have to deal with anyone, I want it to be Saline County.
- ◆ If we don't work out a partnership, we'll end up having to buy water from Little Rock.
- ◆ We must promote regionalism. Better quality water. Cheaper rates.
- ◆ There still exists a faction in Saline County which is reluctant or even opposed to entering into a relationship with CAW.
- ◆ I think it would be a grave mistake for anyone to exclude CAW from being a partner with residents of Saline County and outlying areas.
- ◆ It's hard to predict what CAW will do. This uncertainty over a "development" fee being \$1,500 per connection, and now down to \$300, is one example.



- ◆ We have been very pleased with our association with Central Arkansas Water. We hate to leave a partnership that is working well for our citizens to take the risk of higher costs and less certain operation with a county system.

As distasteful as it may seem to some individuals within Saline County, others recognize that finding an affordable source of clean water for the next hundred years may require Saline County to build a relationship of some kind with Central Arkansas Water, at least to defray the costs of building a pipeline to Lake Ouachita or some other water source.

Saline County on the importance of working together at this moment

- ◆ We are excited about the future possibilities of working together as a county and as a region.
- ◆ Teamwork among all the water purveyors in Saline County is important; we work together and EVERYONE benefits.
- ◆ Any obstacles in Saline County are the result of strong personalities who want their way; they see water as a control issue.
- ◆ People need to forget turf battles and just start working together. We're all in this together; we're all a part of Saline County.
- ◆ I would support all interested parties working in a concerted and consensus effort toward finding a long term good, safe, economical water supply, one that is fairly represented and everyone has a say.
- ◆ We've had I don't know how many lawsuits against each other; we've circulated petitions; we've had meetings; we've yelled at each other. Now is the time to stop all that and develop a plan that will help the entire county.

We were gratified to see that residents and officials throughout the county seem committed to finding a long-term solution to their water issues. We live in a state where water is plentiful and of high quality. All the people we talked to expressed a genuine desire to work in concert with the rest of the county to solve the issues which have divided them for so long.

While the above comments seem to illustrate a turn toward unity and collaboration to foster growth in Saline County, thorny issues of how to manage a countywide solution remain to be resolved. Critical issues for resolving conflicts seem to focus on representation of the entire county and providing fair and open information.



We've had I don't know how many lawsuits against each other; we've circulated petitions; we've had meetings; we've yelled at each other. Now is the time to stop all that and develop a plan that will help the entire county.



Attitudes such as the ones described in these pages have been influencing the climate in Saline County for a number of years. Decision makers have heard and have responded. All water entities and municipalities in the county must find a way to ease the effects of these negative attitudes. They perpetuate division. They divide loyalties. They make it impossible to make important decisions about the county objectively. Ultimately they prevent growth.

The above comments reveal a county in transition, moving from a city where local entities' partisan loyalties predominate to a county that envisions the future in terms of broader loyalties, a future where Saline County folks embrace others in the county rather than exclude them.

This study reveals three seminal issues that the county needs to address together:

Attitudes such as the ones described in these pages have been influencing the climate in Saline County for a number of years....Ultimately they prevent growth.

1. Most people in Saline County agree that water is the key to the future of Saline County. Water stimulates growth and development. Most people also recognize that current sources of water will not fuel growth in the 21st century. Other water sources must be sought.
2. In order to access a source of clean, affordable, potable water for Saline County, everybody needs to forget old hurts and rivalries, put aside the acrimony that went on before and work in concert to allow Saline County to flourish for the good of all.
3. Any future water system in Saline County needs to ensure that its management fairly reflects the needs of everyone in the county. People need adequate representation to look after their own interests; they need to feel they have some control in what happens to them and around them.



Chapter 8



Five Key Principles

As we have digested the studies and documents, talked in depth to the citizens and leaders of the county, and analyzed the history of water efforts, five principles seem essential to any successful effort to sustain cooperation toward a long-term water source. They include: fairness, cost, autonomy, representation/accountability, and security.

Fairness

It is apparent that some of the previous efforts broke down because one or more of the parties perceived that the collaboration was not fair. The challenging part of this principle is that different entities within the county have different standards for what they consider fair in a partnership agreement. The smaller water entities perceive fairness as equality. Each water provider should have an equal representation and an equal vote. They are judging fairness at the system level. A representative quote from this perspective is, “If we all support the commitment to create a county-wide water collaboration, then we should all be in it together and we should all be treated equally.”

On the other hand, the larger water entities perceive “fair” to be proportional. If Benton has 9,000 customers and Bauxite has 170, and they both have the same vote, that seems unfair. They are judging fairness at the individual citizen level. It seems to them if the Bauxite representative is speaking for 170 households and the Benton representative is speaking for 9,000, and they both have the same vote, then the 9,000 households in Benton do not have the same voice as the 170 households in Bauxite. Individual interests are not represented fairly.

The same divergence applies to ideas about water rates. The reality is that it costs at least marginally more to transport water to distant parts of the county than to transport it to areas closer to the water source or the treatment plant. Entities further from the water plant feel that everyone should be treated equally by paying the same wholesale water rate. Entities closer

It is apparent that some of the previous efforts broke down because one or more of the parties perceived that the collaboration was not fair. The challenging part of this principle is that different entities within the county have different standards for what they consider fair in a partnership agreement.



to the water source or treatment plant say it is unfair for their citizens to pay rates which subsidize the cost of service for transmission to more distant locations.

A final solution must balance these different conceptions of fairness and produce an outcome which all parties can see as equitable.

Table 8-1.

Arkansas Water Rates in May 2000, Selected Purveyors	
Purveyor	5,000 Gallons Min.
Washington Water Auth.	45.55
El Dorado	40.00
Conway	31.25
Saline County Water Works	28.00
Maumelle Water Corp.	23.24
St. Francis Rural Water Assoc.	20.03
Arkansas Average	19.16
Benton	17.70
Malvern Water Works	13.22
North Little Rock	12.17
Fort-Smith	12.05
Cabot	10.75
Clark County	9.63
Jacksonville Water Dept.	8.87
Hot Spring Water Works	7.99
Little Rock Water Works	7.27
Jonesboro Water System	7.00
Arkadelphia	6.05
Searcy Water Works	5.5

Source: Allen & Hoshell, "Arkansas Water & Sewer Rate Survey" for all rates except North Little Rock, whose rates were provided by the

Cost

Even though water rates vary widely within the county, most water purveyors acknowledged that cost would be a key consideration in whether they chose to join a regional effort. Most said their water users would be willing to pay some amount more for a secure, high quality, and long-term water source. However, price elasticity had limits. Many stated that water users revolted against the Quadco agreement to buy water from Malvern partly because water rates would rise so significantly. Water purveyors tend to evaluate cost only in comparing it to current wholesale and retail water rates. Some, however, pointed out that the cost for a long-term water solution should not be compared only to current water rates but also to potential rates if current water resources are exhausted. They recognize water will cost more in the future whether or not water systems band together to seek a new water source.

Autonomy

We learned very quickly in interviews that control over water resources and distribution systems within the county was a strong value. Many dismissed the possibility of buying water from Central Arkansas Water under any condition because they did not want to give control over water resources to an outside entity. Some water associations within the county reached a sticking point in negotiations with Central Arkansas Water over autonomy issues, such as allowing outside inspection of lines and equipment, or getting permission to add new meters or service areas. In the same way, we soon concluded that even though creating a true countywide water system had merits, it was a politically untenable option. Most of the existing water entities would not enter into a cooperative if it meant giving up their autonomy over water distribution to their retail customers. Any workable solution, therefore, must balance coordination and efficiencies of scale with preservation of autonomy of existing water systems.



Representation

As comments in the Perception chapter of this report indicated, citizens of Saline County expect leaders and water officials to be accountable to them. They want negotiations that affect them to be open. They want a voice in discussions. They want water boards to be elected by the people rather than appointed or self-perpetuating. This value may be so strong among citizens in the county because secrecy in the past has bred mistrust. Interestingly and paradoxically, two phrases we heard most often were, “We’ve got to get politics out of water decisions,” and “The people have a right to elect the people who are making water decisions for the county.” Recognition of the strong value of representation within the county led us to change our preconception that a small appointed board would be the most feasible administrative structure for a county-wide water entity. Any solution acceptable to the majority of citizens in the county must meet their expectations for representation and accountability.

Interestingly and paradoxically, two phrases we heard most often were, “We’ve got to get politics out of water decisions,” and “The people have a right to elect the people who are making water decisions for the county.”

Security

Citizens of the county want a water source that will provide a secure foundation for growth and will assure adequate water supplies for the next 50-100 years. They have experienced wells going dry. They have seen industry and residential developments relocating to areas with plentiful assured water supplies. They don’t want to worry about tanker spills on I-30, industrial waste upstream, environmental lawsuits, or zero flow in the Saline River or Middle Fork during droughts. To a reasonable extent, they are willing to pay more for the security.

Summary

We see a great deal of interaction among these values. Citizens know, for example, that there is a trade-off between cost and autonomy. The cheapest alternative may not allow them to keep control over their own water decisions. Fairness may increase costs or lead to a different representational system than an individual water system might prefer. However, taken as a group, the values of fairness, cost, autonomy, representation, and security must be considered in a solution that will be acceptable to the water purveyors in the county.

Chapter 9



A Proposed Solution

In this chapter we propose, and build a case for, a regional water system that will procure a long-term water source and assume responsibilities for treating water for most residents of the county, and for some contiguous areas outside the county. Existing water entities would be wholesale customers of the regional entity and would continue to be responsible for water distribution to retail customers. The rationale for a regional approach is clear and compelling. Water users in the county need a reliable and reasonably priced long-term water source. None of them can afford the high price tag of going to a renewable water source alone. Equally certain are the high requirements for treatment imposed by new federal standards. Few smaller entities will be able to meet the stringent new federal requirements.

In constructing this plan, we considered a myriad of alternatives for organization and function of the regional water system. We considered a countywide (or beyond) system, which would be responsible for water acquisition, treatment, and distribution (eliminating the current water systems in the county). We considered a number of legislative frameworks for the organizational structure. We considered, and discussed with water purveyors, a number of governance formats for the board overseeing the new regional system. We have decided on the framework outlined in this chapter because we believe it offers the most practical alternative for developing and maintaining regional cooperation on water. We would not argue it is the most *ideal* solution for water in the county. We do believe it is the most *workable*.

In this plan, no individual entity has everything it wanted. We are *fair* in disappointing everyone in one or more aspects. We try in this chapter to lay out our rationales for each part of the recommendation. In the end an implementation committee will hammer out the final details. We would, however, encourage it to alter the major components of this plan very carefully. It is a carefully crafted compromise of competing viewpoints. In the end each water entity will have to answer the question, “Would we be better off overall with this plan or where we are now?”

We do not argue this is the most ideal solution for water in the county. We do believe it is the most workable.

In this plan, no individual entity has everything it wanted.



The goal: a long-term water source

At the beginning of this study process we made clear that we would not recommend a specific long-term water source for Saline County, only develop the cooperative framework that could lead to a long-term water source. We were specific about these limits because we did not have resources to update engineering studies of various alternatives. However, it has become clear to us during the course of this study that the most ideal long-term water source for the region is Lake Ouachita. Ninety percent or more of the interviewees we spoke with stated their conviction that Lake Ouachita was the best water source. The 1996 study compared all available alternatives — the Ouachita River, Lake DeGray, Central Arkansas Water, and Saline impoundments. After an exhaustive study, Lake Ouachita was chosen as the most desirable alternative.

Black and Veatch has recently completed a draft of its study for a loose consortium of water providers led by Central Arkansas Water and Metroplan. Benton, Bryant, Hot Springs Village, Sardis, and Saline Water and Sewer are part of this consortium. Black and Veatch's report is entitled, "Mid-Arkansas Regional Water Supply Study." It compared a broad range of possible water sources for central Arkansas, including Lake Ouachita, Lake DeGray, Greer's Ferry, the Ouachita River, Lake Nimrod, the Arkansas River, and an impoundment on Bull Creek. At a meeting to discuss the options on Oct. 24, all representatives agreed that Lake Ouachita provided the best long-term water source to serve Hot Springs Village, Saline County, and western Pulaski County. The preferred engineering options adopted from the study involved a combination of Lake Ouachita and Greer's Ferry for serving water users in the southern and northern parts of central Arkansas. Lake Ouachita was also identified as a superior water source in a study for Benton in March 2002 conducted by Affiliated Engineers, Inc.

Lake Ouachita has emerged in all these studies as a superior source for a number of reasons: 1) the huge volume of the lake, and the minute portion presently allocated for drinking water; 2) the superb quality of water in the lake, reducing treatment costs; and 3) the fact that water from Lake Ouachita could be brought to most of Saline County through gravity flow rather than pumping, reducing operations and maintenance costs. In the Black and Veatch study, Lake Ouachita water could be delivered at a wholesale rate of \$1.00 less per thousand gallons than water from Lake DeGray.

We cannot offer a definitive engineering plan or firm cost estimate in this study. That was not our purpose, and not our area of expertise. However, James Tanner, Public Works Manager of Carter Burgess Engineering, volunteered to do a cost update of options contained in the 1996 engineer-

It has become clear to us during the course of this study that the most ideal long-term water source for the region is Lake Ouachita.



ing study of long-term water options. We would stress that these are very rough ballpark projections. He did not reexamine the assumptions or methods of the 1996 study. The Ouachita intake, transmission pipes and 8 mgd treatment plant outlined in the 1996 study that was estimated at \$55,358,000 in 1996 would now cost \$66,102,847. The \$12 million from the Lake Avilla sales tax that the 1996 water users group had hoped to apply to the Ouachita costs has long since been dispersed. However, the capital construction costs could be spread over a much larger user base in 2002. Only seven water associations were included in the 1996 study.

When Tanner estimated 2002 costs at 19 mgd rather than 8 mgd, and took out the cost for a new treatment plant, the cost of a Lake Ouachita pipeline to Saline County was \$71,284,683. When he developed a very rough estimate of how that would translate to wholesale water costs, he calculated that debt service on bonds, storage fees at the lake and O&M costs would put a wholesale water rate at \$2.23 per thousand gallons. This is considerably less than the \$2.80 per thousand gallons that was figured in 1996. However, it does not include costs for either constructing a new treatment plant or expanding existing treatment plants in the county to be used in the new regional water system. Cost estimate accounting is included in Appendix D.

The engineering study completed for Benton in 2002 by AFI Consulting Engineers placed the cost of a pipeline from Lake Ouachita at \$37,000,000. This estimate is considerably lower since it involved a smaller pipeline project to serve as a supplementary source for Benton only and did not include a treatment facility in the cost estimate.

The Black and Veatch study also included cost estimates for its long-term water options in the draft report. Option 1 was the desired option of most attending the meeting. It involved a pipeline from Lake Ouachita to Lake Winona with a new 14 mgd treatment plant adjacent to Lake Winona, which would serve Saline County as well as parts of west Little Rock. Hot Springs Village would receive raw water from the pipeline. Option 1 also included bringing water to areas north of the Arkansas River from Greer's Ferry. The total cost of this option was \$923,000,000, producing a wholesale water rate of \$3.04 per thousand for all customers that would be served by a larger regional system.

The purpose in calculating these projected costs is not to offer any assurance of exact costs, but simply to provide a ballpark range to enable leaders in the county to judge the feasibility of the project. A new engineering study would certainly be required to establish exact plans and costs for the project, as well as to examine hydraulics and adequacy of the existing water systems to become part of a countywide system.



We propose that the entities in Saline County form a Regional Water Distribution District to procure a long-term water source for the region and to treat water for residents. The system would be called the Saline Watershed Regional Water Distribution District.

The first step toward a Lake Ouachita solution will be to seek a discretionary reallocation from the Vicksburg office of the U.S. Army Corps of Engineers. When Lake Ouachita was created, none of its water was allocated for drinking. It is now allocated for hydroelectric and for flood control. The local district engineer has the discretion, after study, to allocate up to 15% of volume or 50,000 acre feet, toward another purpose. With conservative calculations of safe yield, those 50,000 acre-feet would probably yield at least 30.1 mgd. Mike Biggs of the Little Rock office of the Corps explained at a recent Metroplan meeting that the 30.1 limit would come into play only in an extreme drought when lake levels were extremely low. As long as regular rainfall is refilling the lake and the level doesn't drop to the conservation level, the water users would not be charged against their 30.1 limit. They could use as much water as they wanted. They would be charged the storage fee for the water used.

Biggs explained that if an entity wished to seek a discretionary allocation of up to 30.1 mgd, it would petition the Vicksburg ACE office for a study. The study for discretionary allocations is less intense than for a larger non-discretionary allocation, but can take up to one year. Part of the study involves certification by Arkansas Soil and Water Conservation Commission of water need, and part involves an impact study to determine if other designated purposes of the lake would be compromised by the allocation. An entity could seek a discretionary allocation and at the same time be working through Congress for a non-discretionary allocation of a larger amount. This would take several years, but in the meantime, a water entity could be starting construction to begin the smaller 30.1 mgd or less allocation. Actually having a pipe in the lake would help in the larger request before Congress.

The regional system

We propose that the entities in Saline County form a Regional Water Distribution District to procure a long-term water source for the region and to treat water for residents. The system would be called the Saline Watershed Regional Water Distribution District (henceforth referred to as Saline Watershed District). We chose the name "Saline Watershed" for the district because it implies an area larger than the county. Many residents outside the county are already served by Saline County water entities, and they need to feel full membership in this regional system. We also think the name "Saline Watershed" would accommodate growth of the regional system over time to serve additional areas outside Saline County.



The Regional Water Distribution District Act was created in 1957 as enabling legislation for the Beaver Water District in northwest Arkansas. It is used as an organizational framework by a number of regional water systems around the state including the Conway County Regional Water Distribution District. Appendix C contains a copy of the legislation. We think that this framework is ideal for the umbrella organizational structure envisioned for the Saline Watershed District for a number of reasons:

- ◆ The legislation is flexible in the number of individuals on the board and how they are selected, in contrast to legislation for public facilities boards or public water authorities.
- ◆ The legislation gives all necessary powers to the water district – issuing public bonds, eminent domain, setting up improvement districts, constructing water systems, and entering into federal contracts and grants.
- ◆ Districts are exempt from sales tax and from oversight of the Public Service Commission.
- ◆ Legislation is flexible in allowing districts to enlarge over time to a larger regional entity.
- ◆ Districts are not as involved in county politics since they are created by a circuit court.

In the process of reviewing this legislation and its appropriateness for the Saline Watershed District, we received opinions from Earl Smith at the Arkansas Soil and Water Conservation Commission; Steve Wear, Assistant Director of the Conway County Regional Water Distribution District; and David Menz, an attorney with extensive experience in helping organize regional water distribution districts. All concurred that it would be well suited to the goals of Saline County. They did suggest two areas which the implementation committee might consider:

- ◆ The law specifies that the board may not meet in executive session (Arkansas Code Annotated 14-116-308d). This would preclude the board from considering personnel matters in executive session.
- ◆ The law requires a petition with a 51% vote for any assessment imposed on people within the district. This provision would limit not the ability to charge water rates, but to levy taxes for the improvement of the system.

When asked about the provision on assessments, David Menz wrote:

Arkansas Code Annotated 15-116-501, et seq., provides for assessment-based water projects. The board cannot unilaterally impose assessments. Those people who would benefit from a project would have to petition for the improvement to be paid by assessments. Actually this is an

Can It Be Done?

Can it be done? Can the Saline County water purveyors join together to obtain a new water source?

Forming a coalition of as many as 14 purveyors who have different ways of doing business will be complex, no doubt about it.

If each governing board says, "Let's work out the details first, then we'll decide," it will never happen. It will be nit-picked to death. If that approach is taken, the matter will bog down and die at the end of a slow and painful effort.

If each governing board decides, "We are going to do this," chooses its representative for the implementation committee, and instructs that representative "Go work it out and bring back a plan for us to approve," then it will happen. All the crucial details, and there will be a number of them, will be resolved to the general satisfaction of everyone in a reasonably short period of time.



Benefits of Saline Watershed Regional Water Distribution District

1. Provide good quality water and plenty of it for children and grandchildren
2. Take the politics out of water decisions
3. Set water rates equitably
4. Decrease the time/money spent on conflict
5. Place purveyors in good position for regional cooperation
6. Facilitate the extension of service to county residents not presently served by a water system

ingenious statutory scheme, which would give people the option of paying for improvements to the water system in a specific area within the district by special assessments rather than rate surcharges.

The implementation committee should certainly seek legal counsel on the adequacy of the existing legislation as an organizing framework and could work with legislators in the next legislative session to amend any sections deemed insufficient for the purpose of the Saline Watershed District.

Functions of the Saline Watershed District

The Saline Watershed District would be charged to:

- ◆ Seek a long-term source of water to meet the watershed's projected needs for 50 years or more;
- ◆ Explore the feasibility and cost of a pipeline to Lake Ouachita as the first option;
- ◆ Be responsible for water treatment for the county. This could be accomplished either through taking over and expanding treatment facilities in Benton and Hot Springs Village to serve the district or by building a large new treatment facility;
- ◆ Sell water wholesale to existing water systems, which would continue to be responsible for water distribution to their current retail customer base;
- ◆ Sell treated water at the same wholesale rates to all purveyors who are part of the system;
- ◆ Sell bonds for infrastructure construction, to be repaid through water rates;
- ◆ Establish water rates that would pay for debt service and operation and maintenance of the system;
- ◆ Facilitate cooperation among water entities for extending service to individuals in the county not presently served by a water system;
- ◆ Hire and supervise a director; and
- ◆ Set all policies and procedures of the water distribution district.



Several parts of this list require some explanation.

Water treatment

One option would involve using and expanding current treatment plants in the county to serve the needs of the Saline Watershed District. Hot Springs Village and Benton would sell or donate their plants to the district. The Hot Springs Village plant would be expanded to meet the needs of the western part of the county and the Benton plant would be expanded to serve the rest of the district. The district would assume any debt associated with the plants and would build expansion costs into the infrastructure costs of creating the Saline Watershed District.

If this option were chosen, we would encourage Benton and Hot Springs Village to consider donating rather than selling their plants to the district. This would keep initial costs for creating the district lower and enable the district to charge lower rates. Capital equity in the treatment plants has been created by water ratepayers within the district, and the same ratepayers would benefit from the lower water rates. Benton would be able to shift the debt of its water treatment plant to the district, as would Hot Springs Village. Both would benefit by having needed plant expansion and renovation assumed by the district as a whole. We recognize the legal and practical hurdles that would have to be cleared if a private entity such as the Hot Springs Village Property Owners' Association decided to donate, sell, or lease its treatment facility to a public entity like the Saline Watershed District. It may be, after investigation, that this option would not be feasible or advantageous. If it did not work out to incorporate the treatment plant in Hot Springs Village into the regional water system, then it would want to purchase raw water from Saline Watershed District to serve Hot Springs Village. An implementation committee (described in Chapter Ten) would need to determine at that point if an expanded Benton treatment facility would have enough capacity to serve all the wholesale customers or whether an additional treatment facility would need to be added at some location in Saline County.

A second option for water treatment for the district would involve construction of a new water treatment plant. The 1996 study called for a new treatment plant near Lake Ouachita with a pipeline to carry treated water throughout the county. The recent Black and Veatch study for the Middle Arkansas group calls for water to be piped from Lake Ouachita to Lake Winona with a new 14 mgd water plan near Lake Winona to serve both Saline County and western portions of Little Rock. This might be an option if the Saline Watershed District decided to pursue a partnership arrangement with a larger regional cooperative. A new treatment plant could be built at other sites in the county.

Ultimately a decision on using existing treatment facilities or building a new one at some site should be based on both engineering data and costs and on considerations of cementing the cooperative arrangements among parties.



Using Benton's treatment plant might better promote Benton's participation in the cooperative than requiring it to continue to pay off debts on a treatment plant that is now redundant in the system.

Ultimately a decision on using existing treatment facilities or building a new one at some site should be based on both engineering data and costs and on considerations of cementing the cooperative arrangements among parties. Renovating and expanding the existing treatment facilities might be cheaper than building a new one or might not. Building a new treatment facility might be superior in meeting new federal standards for treatment or it might not. A treatment plant near the lake might require retreatment of water nearer the site of use. Using Benton's treatment plant might better promote Benton's participation in the cooperative than requiring it to continue to pay off debts on a treatment plant that is now redundant in the system. Taking over Hot Springs Village's treatment plant might be more cost effective than selling it untreated water, or it might not. Being part of a regional consortium and buying treated water might be cheaper than developing independent treatment capacity. All of these considerations should be taken into account when deciding on how the Saline Watershed District will approach water treatment. Engineering and cost data will help clarify the best option.

Selling water wholesale to existing water systems

Existing water entities would become wholesale customers of Saline Watershed Regional Water Distribution District. They would bear whatever costs were required in upgrading their internal distribution system to be able to connect to the Saline Watershed District pipelines. In some cases, the existing water associations might have to relocate water mains, upgrade pipes to handle system hydraulics, or make other improvements. Wholesale customers could purchase all or part of their existing water needs from the district. Mandatory minimums would have to be established for each wholesale customer, which would permit the district to be financially viable.

Wholesale customers could also request to set peak maximums above the mandatory minimum they agreed to purchase. However, there could not be too large a range between minimums and maximum or the system would have to build a system to accommodate maximums while having a guaranteed rate base of the minimum amounts. Jerry Martin, an engineer with ESI who was instrumental in establishing the Two-Ton Water Association in Northwest Arkansas, suggested that if contracts involve mandatory minimums, there should be a clause in the initial contract to automatically adjust the mandatory minimum based on the previous year average use. If Hot Springs Village does not incorporate its treatment plant into the Saline Watershed Distribution District, it would most likely buy untreated water from the system.



Same wholesale rate to all

Some water associations advocated a cost of service basis in determining the wholesale water rates for each wholesale customer. Under this approach, wholesale water customers further from the water source or treatment plant would pay a surcharge to the basic wholesale rate to cover additional O&M costs of the system. In discussing this issue with all water purveyors, we have come to a conclusion that for many of the water systems, this issue is a deal-breaker. We advocate that the same wholesale rate for treated water apply to all wholesale customers. Some water systems with greater existing debt burdens may have to pass along these costs to their customers, so retail rates for water across the county will vary.

Board structure

A Board of Directors will administer the Saline Watershed District. We propose that the initial board be appointed by Circuit Judge Gary Arnold as part of the petition process for creating the water distribution district. This appointed board will serve until the election process can be set up and carried out. The appointed board should represent the entire county and include approximately 14 members, to represent each of the Quorum Court Districts and Hot Springs Village. A flowchart of the implementation process is included in the next chapter.

We propose that each of the 13 existing JP districts within Saline County be used as the representational unit for the water board. Any area outside Saline County served by the Saline Watershed District could petition the Circuit Court for a representative on the board if it had population equivalent to a JP District. These representatives from outside the county could be appointed or elected by a mechanism in their county. Since Hot Springs Village would meet this requirement, we propose that it be granted a board seat in addition to the 13 JP District positions on the initial board. In the appendix we provide a map, which shows JP districts superimposed in red lines over a map of water service areas. We would suggest that water board members serve staggered six-year terms, and that elections be handled as part of the regular electoral process. Board members would be required to be a resident of the district they represent. Board members would elect a chair and chair elect. The chair would serve a term of two years and will be succeeded by the chair elect. The initial elected board would draw terms of two, four, and six years. Board members would be eligible to serve successive terms if re-elected. There would be a process for petitioning the circuit court to remove a member who displayed malfeasance or misfeasance in the execution of duties.

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Direct election will allow all citizens to be represented in decisions about water, and will enhance the credibility of the board.

Rationale for using JP Districts

After considering a number of ways to elect board members, we decided on the existing JP districts for a variety of reasons:

- ◆ JP districts are sensitive to both population and geography, and thus strike a nice balance between the interests of municipal and rural districts;
- ◆ Several water associations have several JP districts which represent part of their service area, creating the possibility that an existing water entity might have multiple representatives; however, with 13 members no entity could control decisions of the board;
- ◆ Since JP districts are existing political entities, the Saline Watershed District could avoid divisive political battles in drawing new boundaries for water districts. It would also avoid a confusing array of additional ballots by adding another political layer to a complex political landscape;
- ◆ JP districts are automatically altered when population patterns change;
- ◆ All areas of the county would be represented, including those without water resources at present. Water board members from these areas could be advocates for extending water resources;
- ◆ The provision for petitioning for areas outside the county served by the water distribution district would allow for extending service areas beyond the county in the future and provide immediate representation for Hot Springs Village; and
- ◆ Direct election would allow all citizens to be represented in decisions about water, and enhance the credibility of the board.

It is worth noting that few of us on the study task force would have chosen such a large elected board at the start of this study. However, after listening to the citizens and leaders of the county, we are convinced that a sense of representation is critical enough that the board should be large and representative, at least to start. The board could be modified at a later date if county citizens agreed.

Rationale for staggered six-year terms

Not all water leaders liked the idea of six-year terms. Some suggested three — or four — year terms. We decided on staggered six year terms for several reasons:

- ◆ Water issues are complex and take time to learn. Planning is long-term and continuous. The county would be best served if board members serve long enough to learn the issues and have sufficient time to plan and implement policies.



- ◆ Continuity is critical to be sure that leaders understand the reason for decisions that may take years to implement. We thought it was important that no more than 1/3 of the board rotate off at a time. This would be more difficult to do with terms shorter than six years.
- ◆ Since regular elections take place in two-year cycles, having elections for water board members take place each two years would avoid special elections.
- ◆ The initial board would have shorter terms. 1/3 of the board would draw two years terms and have to stand for re-election if they choose to run again. Another 1/3 would draw four-year terms and those positions would be up for election. Therefore in the critical early period in which much of the structure would be developed, citizens would have multiple chances to elect board members.
- ◆ We talked with regional water boards around the state that credited stability of board membership as a major factor in their success.
- ◆ We have suggested a procedure by which board members who are not doing their jobs, or who have betrayed the public trust, could be removed.

The county would be best served when board members serve long enough to learn the complex issues and have sufficient time to plan and implement policies.

Incentives for commitment to Saline Watershed District

To encourage all entities to become a part of Saline Watershed Regional Water Distribution District, parties who do not choose to join should be responsible for a pro-rated share of the initial costs as well as any incremental costs required to facilitate their entry into the system at the time they chose to join.

Partnerships and cost sharing

Through our reading and research, we have all become convinced that regionalism will be the foundation of successful water systems of the future. Saline County would be taking a huge step forward by being able to cooperate regionally within the county. However, the costs and complexity involved with the Lake Ouachita project would suggest that broader regional partnerships should be considered. Central Arkansas Water and Metroplan have organized a regional planning group that began meeting last April. We refer to this group as the Middle Arkansas

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consortium in this study. Several Saline County entities have participated in that planning effort, including Benton, Bryant, Hot Springs Village, Sardis, and Saline Water and Sewer. Other water systems in the consortium include City of Cabot, Conway Corporation, Jacksonville Water Works, Maumelle Water Corporation, North Pulaski Waterworks, and Conway County Regional Water Distribution District.

Black and Veatch was commissioned to perform an engineering study of long-term water options for the middle Arkansas region. It has returned a preliminary draft that would involve a large-scale pipeline from Lake Ouachita to Lake Winona. A treatment plan at Lake Winona or elsewhere in Saline County would give options for providing either raw or treated water to Hot Springs Village, the rest of Saline County, and to portions of western Pulaski County served by Central Arkansas Water.

Central Arkansas Water obviously wants to develop partnerships for gaining a water foothold both in Greer's Ferry as well as Lake Ouachita. Its main rationale for the Ouachita option involves a partnership with Saline County entities. This could offer significant bargaining strength for Saline County if all the entities develop a united presence.

It seems to us that several levels of partnership with a larger regional entity might be considered and possibly explored:

- ◆ At the most minimal level, the Saline Watershed District and Central Arkansas Water or the Middle Arkansas group could together seek both a discretionary allocation from Lake Ouachita (with an available discretionary allocation of about 30.1 mgd) as well as an additional non-discretionary allocation which would require a more extended study by the Army Corps of Engineers and Congressional re-authorization for purposes of the lake. In pursuing a joint application, they would increase the political force of the application and could share the costs required by the ACE. They could develop an agreement for splitting the allocation, and could share the cost of the intake facilities and pipeline. Then pipes to carry raw water could go to Hot Springs Village and to Benton for treatment (or to a new treatment plant if one is built). The Saline Watershed District could share pro-rated O&M costs with CAW or the Middle Arkansas group. The Saline Watershed District would then operate independently, exactly as outlined in the plan. It might also be negotiated as part of this plan that the Saline Watershed District would own and operate a plant that would sell treated water to CAW for service to portions of northern Saline and western Pulaski counties.



- ◆ A second, more involved partnership would involve letting the Middle Arkansas group pay for and lay the pipeline to Ouachita and then having the Saline Watershed District purchase raw or treated water from this regional consortium. In this arrangement, the Saline Watershed becomes a wholesale customer of the Middle Arkansas consortium and becomes the negotiating and purchasing agent for the county in water issues.

- ◆ A third level would actually involve becoming part of CAW or an expanded Middle Arkansas regional consortium and seeking a seat or seats on its board. Water systems in Saline County would become part of a larger regional system. In this conception, the Saline Watershed Regional Water Distribution District might or might not have a role. Individual water distribution systems within the county might or might not continue to exist.

Figure 9-1
Location of Lake Ouachita, Greers Ferry Lake,
Lake Maumelle, Lake Winona, and Lake DeGray



Source: University of Arkansas at Little Rock GIS Applications Laboratory



We sincerely believe that the cooperative relations established on a countywide water system will help in opening the lines of communication and in helping parties see common interests on a great many issues.

Even though we can see many advantages of a large regional approach to water, we doubt whether Saline leaders would consider the last option at this point. The second might be difficult to sell as well. However, we think that the first level of partnership — sharing costs and allocations from Ouachita — is absolutely essential. The project is large, complex, and expensive. It would be to the advantage of water systems to work together. In fact, it may be a requirement when Saline Watershed District seeks approval from Arkansas Soil and Water Conservation Commission when it reviews the water plan, and when the U.S. Army Corps of Engineers considers a discretionary re-allocation request. Both operate under a mandate of regionalism and will encourage sharing resources whenever possible.

The Saline Watershed District could also work to establish regional partnerships by reaching out to contiguous counties who might like to be part of a regional water system going to Lake Ouachita.

Resolving issues of litigation

Even though we make no specific recommendations regarding some of the current issues under litigation among various water entities in Saline County, it is important that these disputes be resolved in order that parties may move forward to work cooperatively with one another in the Saline Watershed District. Old disputes have the potential of bogging down negotiation or reviving distrust. As we are completing this project, a resolution of one of the most contentious issues between rural and municipal water systems seems close. Benton and Salem are near agreement on a royalty framework which would settle (hopefully forever) the issue of assuming new water customers in voluntary annexations or in instances in which developers want city water in an area that was part of a rural association's planning district. We commend the openness of both sides in seeking an equitable solution to this difficult issue, and hope that other entities in the county will follow their lead. We sincerely believe that the cooperative relations established on a countywide water system will help in opening the lines of communication and in helping parties see common interests on a great many issues. When a GIS system is operational within the county, in another year, it will also be easier to establish service boundaries of various water systems.



Summary

We have outlined a plan that we believe offers all water purveyors in Saline County a reasonable opportunity to become part of a regional water entity capable of seeking a long-term water source. It is a framework for a solution that balances concepts of fairness, enhances representation of water users, provides a secure water source at a reasonable cost and preserves autonomy of current water distribution systems over water supply and pricing. Without doubt, some water purveyors might like to debate at least some parts of this plan. However, we think as a whole it balances the interests of rural and municipal water providers in the county. In talking to each provider before the release of this report, we are confident that it is a plan that can gain widespread agreement. Arguing over small differences has been the source of 40 years of frustration. It is time for Saline County to come together around a solution.



Chapter 10



Implementation Guidelines

In this chapter we offer suggestions and a timeline for implementing the recommendations in this report. It is a tight timeline. We feel that time is of the essence for several reasons.

- ◆ Some of the water purveyors in the county are on the verge of making decisions about long-term contracts and capital expenditures. These decisions could foreclose, in some cases, the ability to become part of the Saline Watershed District.
- ◆ We believe that the Middle Arkansas consortium will soon seek a reallocation of Ouachita to serve regional water needs. Several Saline County entities are presently part of the study group. Saline County as a whole should decide if it wants to be part of that venture.
- ◆ A biennial legislative session starts in January. If there is a need to amend the Regional Water Distribution District legislation, the legislation must be drawn up promptly.

For these reasons, we recommend the following time frame:

By the end of November

Water entities commit to becoming part of Saline Watershed Regional Water Distribution District. We include a draft agreement in Appendix E.

This commitment on the front end is very important. Little Rock and North Little Rock representatives confirmed to us that, without a prior commitment, there would have been a number of times during the implementation process that things could have fallen apart.



Month of December

Each water entity that has committed to be part of the Water District will select a representative to be part of an implementation committee.

The committee will meet with legal counsel to explore provisions of the Regional Water Distribution Act (14-116) and to prepare any amendments which should be introduced in the next legislative session.

The committee will commence discussions with CAW and the Middle Arkansas consortium about a partnership arrangement in sharing costs of a reallocation study and pipeline construction.

The committee will initiate procedures (either alone or with CAW or the Middle Arkansas consortium) for a discretionary allocation from Lake Ouachita of 30.1 million gallons or less.

The committee will commission an engineering study of the Lake Ouachita option and any other option which it wishes to further explore, including Central Arkansas Water.

Month of January

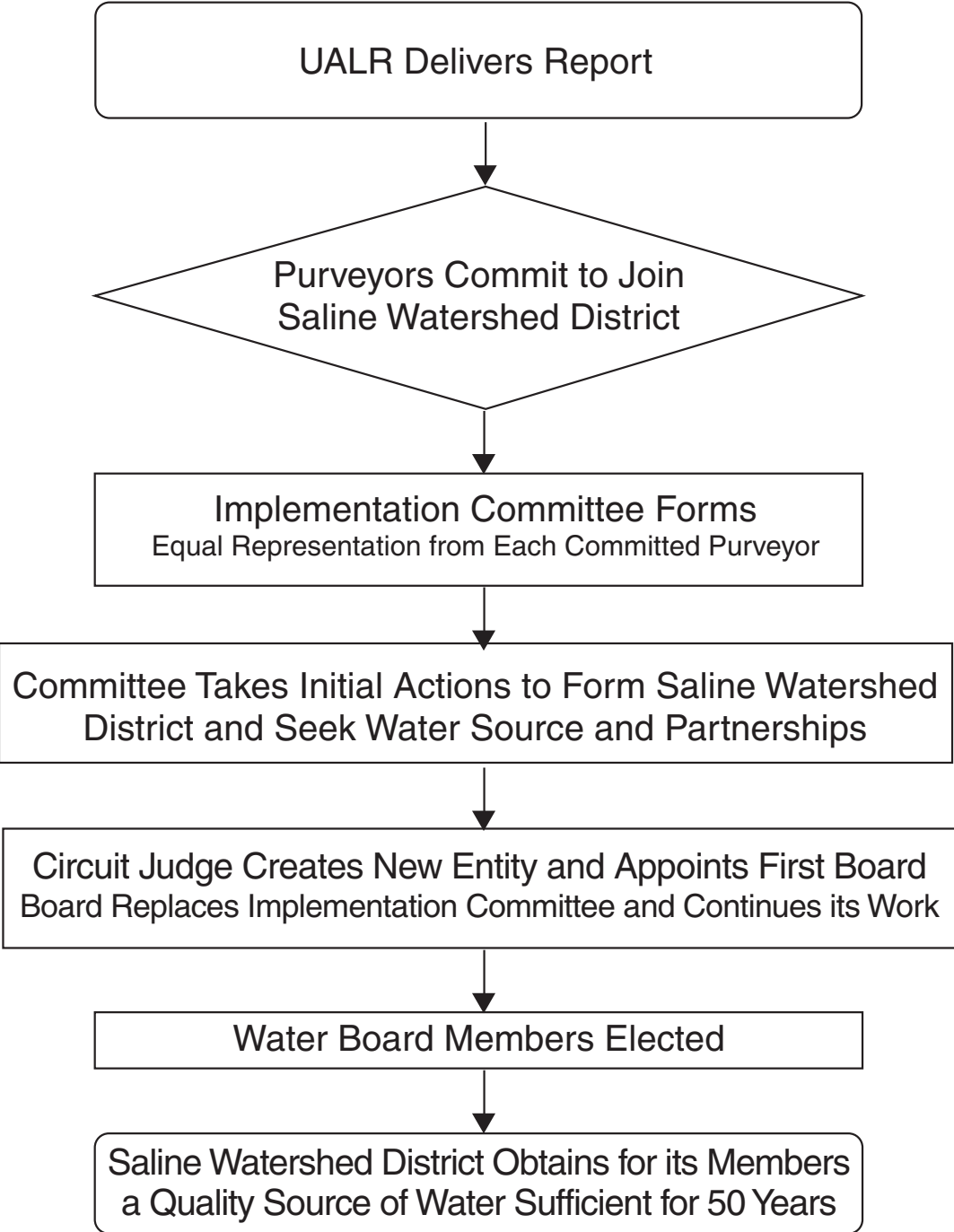
The Committee will conduct a public information campaign about the Saline Watershed Water Distribution District and will gather signatures on a petition that will accompany a request to the Circuit Court to create the water district.

The Committee will finalize the structure and roles of the board to be part of the request, and will suggest names for appointment to the first board.



At the time that the Water Distribution District is created by the Circuit Court and the first board is appointed, the Implementation Committee will cease to exist and will transfer planning activities to the board.

Figure 10-1
Implementation Process Flow Chart



Chapter 11



Summary

It has been our privilege to work with leaders of Saline County in fashioning a blueprint for cooperation. The time is ripe for a solution. Rarely if ever will there be an opportunity for all the same conditions aligning at the same time: visionary leaders willing to put public need above private agendas, public perception of the need for a new water source, strong regional partners willing to share expenses, availability of an outstanding long-term water source, and a credible neutral report laying out a plan.

We truly hope that this report sets into motion a chain of events that future generations will see as a turning point in the history of Saline County, rather than one more entry in a history of near misses. We envision a bright and positive future for Saline County in the year 2020 and beyond. We place this report in your hands with the confidence that leaders will make wise decisions to assure a secure water supply for your children and grandchildren.

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