

Sparta Aquifer Capital Project

Nature of the Problem: The Sparta Aquifer is a subsurface water bearing formation that covers 6920 square miles in north Louisiana. Sixteen parishes in that geographic area rely either in whole or in part on the Sparta Aquifer as their source of drinking water.

While anecdotal information has existed for years indicating a decline in the water level in the Aquifer, a large-scale state funded study of the Sparta conducted in 2000 documented the seriousness of the situation. According to that study, the outflow (pumpage) from the Aquifer exceeds the inflow (recharge) by approximately 17 million gallons per day (MGD). As a result, water levels in the Aquifer are dropping, in some parts of the study area, by annual amounts of two feet or more, with the level in one well in Lincoln Parish falling 129 feet (an average of 3.2 feet per year) since it was drilled in 1958.

Of special concern is the existence of “cones of depression” in areas of extremely high pumpage. Both Lincoln and Jackson parishes have such areas, but the most alarming is the “cone of depression” centered in western Ouachita parish. Further complicating this situation is the known line of saltwater on the eastern side of the aquifer, moving westward at an undetermined rate. Water wells that are contaminated by saltwater are rendered useless for industrial, agricultural, and potable water systems. According to the Sparta study, “It is important to the future of the Sparta aquifer that saltwater intrusion on the eastern side of the water bearing formation be stopped as soon as possible.”

The study recommended that pumpage from the Sparta be reduced from 70 MGD to 53 MGD by 2005, and further reduced to 52 MGD by the year 2025. In order to accomplish this reduction, the study recommended a series of projects that would provide 17 MGD of surface water to replace water drawn from the Sparta. Their recommendations had a total cost \$244,000,000. The recommendation for Ouachita parish alone had an estimated price tag of over \$55,000,000. Estimates are that inflation since

the study was done will increase to cost associated with these projects so somewhere in the area of \$325 million. To date, none of the suggested projects is either underway or in the planning stage, and no source of funds to build any of the projects has been identified.

The Wastewater Re-Use Project: For over 6 years the City of West Monroe has been searching for a process that would allow us to treat effluent from our wastewater treatment plant to a level that it could be substituted for Sparta water now being used by Graphic Packaging in its West Monroe paper mill. Graphic Packaging has obtained permission from the FDA to pursue this project. However, because Graphic Packaging produces paper that is used in the packaging of food, the effluent will have to be treated to the level of drinking water standards established by the Environmental Protection Agency. Graphic Packaging, our largest industrial employer, uses approximately 10 MGD of water from the Sparta in its process.

Following a series of bench scale tests that produced very promising results, the City obtained a grant of \$600,000 from the State to conduct a full-scale test of the technology. That test is currently underway, and the preliminary results indicate that we can efficiently and consistently produce drinking quality water from wastewater effluent. While the current test involves only 1 MGD, the process equipment being used is modular and, therefore, can be replicated without any reduction in results being obtained in the smaller volume test. We will continue the testing for several months while we seek funding for the full scale facility, which is estimated to cost \$16-18 million.

Advantages of the Sparta Re-Use Project: The primary purpose of the original testing was to determine if we could reduce the stress on the Sparta by recycling wastewater in place of water being taken from the Sparta. West Ouachita has the most significant problem, due to its large cone of depression and its proximity to the line of saltwater currently moving westerly from the eastern edge of the Sparta.

- This one project has the potential to reduce the over pumpage of the Sparta by 59%, and at a cost of about 1/3 of the cost estimated in the Sparta study for the project in west Ouachita.
- A byproduct of this project would be to expand the capacity for wastewater treatment from its current rate of approximately 6 MGD up to 10 MGD. This would allow for the consolidation of some

inefficient wastewater treatment facilities in community and give us “room to grow” in the future.

- The reuse of the wastewater effluent would allow West Monroe and west Ouachita to go “no discharge” into the Ouachita River, a environmental benefit to the river.
- The project would provide a source of water for Graphic Packaging that would not require them to make significant capital expenditures in the event of loss of the Sparta for their uses.
- The technology developed in this study is applicable for use in other parts of the Sparta area to produce water that meets EPA drinking water standards that could be used treat surface water either for use in potable water systems or to be injected directly in the Sparta through injection wells. Further study needs to be done immediately to identify locations where sufficient surface water exists to use in either or both of these applications.

What Next? Anecdotal information indicates that the migration of saltwater from the east is affecting the deepest wells in west Ouachita parish. The timetables established by the Sparta study have largely been forgotten and, with the exception of this re-use project, there is no significant activity taking place to address the problem. The lead time for all suggested projects is long, and the implications of doing nothing could be catastrophic. This situation is a significant quality of life issue, and its adverse impact on economic development is difficult to overestimate. Ouachita parish is the largest user of Sparta water by a large margin, and the impact of failure of the aquifer on our community would be tremendous.

In order to implement the reuse project the City and the West Ouachita Sewer District #5 will have to negotiate the agreement with Graphic Packaging and then construct the facility. The cost of the treatment facility upgrade required is estimated to be \$18 million, and the cost of the pipeline to Graphic Packaging is in the range of \$3-4 million.

While the project will eventually benefit much of the Sparta area, the immediate impact will be on the closest and most stressed area served by the aquifer—west Ouachita parish. We need to come together to identify funding sources and start the project as soon as is practically possible.