



**Alabama Water Resources Conference & Symposium  
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***“IMPLEMENTATION ASSESSMENT FOR WATER RESOURCE AVAILABILITY, PROTECTION, AND UTILIZATION FOR THE CHOCTAWHATCHEE, PEA AND YELLOW RIVERS WATERSHEDS”***

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*“Implementation Assessment for Water Resource Availability, Protection, and Utilization for the Choctawhatchee, Pea and Yellow Rivers Watersheds”*

**Purpose - Work Elements - Results**

**This three-year study by the Hydrogeology Division-Geological Survey of Alabama, describes the stratigraphy and hydrogeology of the Choctawhatchee, Pea, and Yellow Rivers Watershed area, a region consisting of about 3,100 square miles of surface area and encompassing all or parts of ten counties in southeastern Alabama.**

**All public, private, industrial, and agricultural sources of water in these counties are supplied from groundwater.**

**Concerns raised by the growing demands of the public on a declining groundwater supply required a thorough understanding of the area’s sources of groundwater.....its subsurface geology.**

# PURPOSE OF STUDY



The purpose of this study was to

- collect and evaluate subsurface data in order to identify and describe all currently productive aquifers and their associated bounding confining units;
- to specify and characterize their areas of recharge;
- to identify, define, and delineate deeper aquifers below current production that might have future potential as a groundwater resource;
- to offer specific recommendations regarding both short-term and long-range groundwater availability within the area.

# WORK ELEMENTS

- **Stratigraphic analysis of subsurface geology which defined aquifers available for groundwater development**
- **Twenty-four geological formations ranging in age from late Cretaceous to the recent spanning a time interval of about one hundred million years were identified and mapped**
- **Over 203,000 feet of subsurface geology was evaluated from 317 water wells and deep oil and gas test wells**
- **Microscopic analyses and detailed geological descriptions of approximately 45,000 feet of subsurface samples from 30 wells with lithologic logs of each well integrated with electric log data**

## **WORK ELEMENTS - Continued**

- **Construction of eight north-south and west-east geological cross sections depicted on 24 sheets showing the geology; depths of water production; aquifers and confining units; regional depths; and relationships of current water production from over 638 miles of section within watershed area**
- **Geologic structure and isopach maps prepared for each major aquifer providing information on depth and thickness of water bearing geologic units throughout the watersheds aiding in identification of most suitable sites for water wells**
- **Major and minor aquifers defined**
- **A county-by county summary listed current aquifer exploitation and an evaluation of the potential use, future production potential, and depth of each viable aquifer lying beneath each county**

# ADDITIONAL ASSESSMENT WORK

## Groundwater Utilization:

- Groundwater use analysis – current water use data
- Growth projections and supply development
- Supply and demand management analysis
- Alternative water source analysis

## Groundwater Hydrology:

- Groundwater level data collection and water level mapping
- Evaluation of stress on major aquifers resulting from water production
- Surface water low-flow data compilation and aquifer recharge calculations
- Groundwater supply and aquifer stress determination
- Groundwater sample collection and chemical analysis

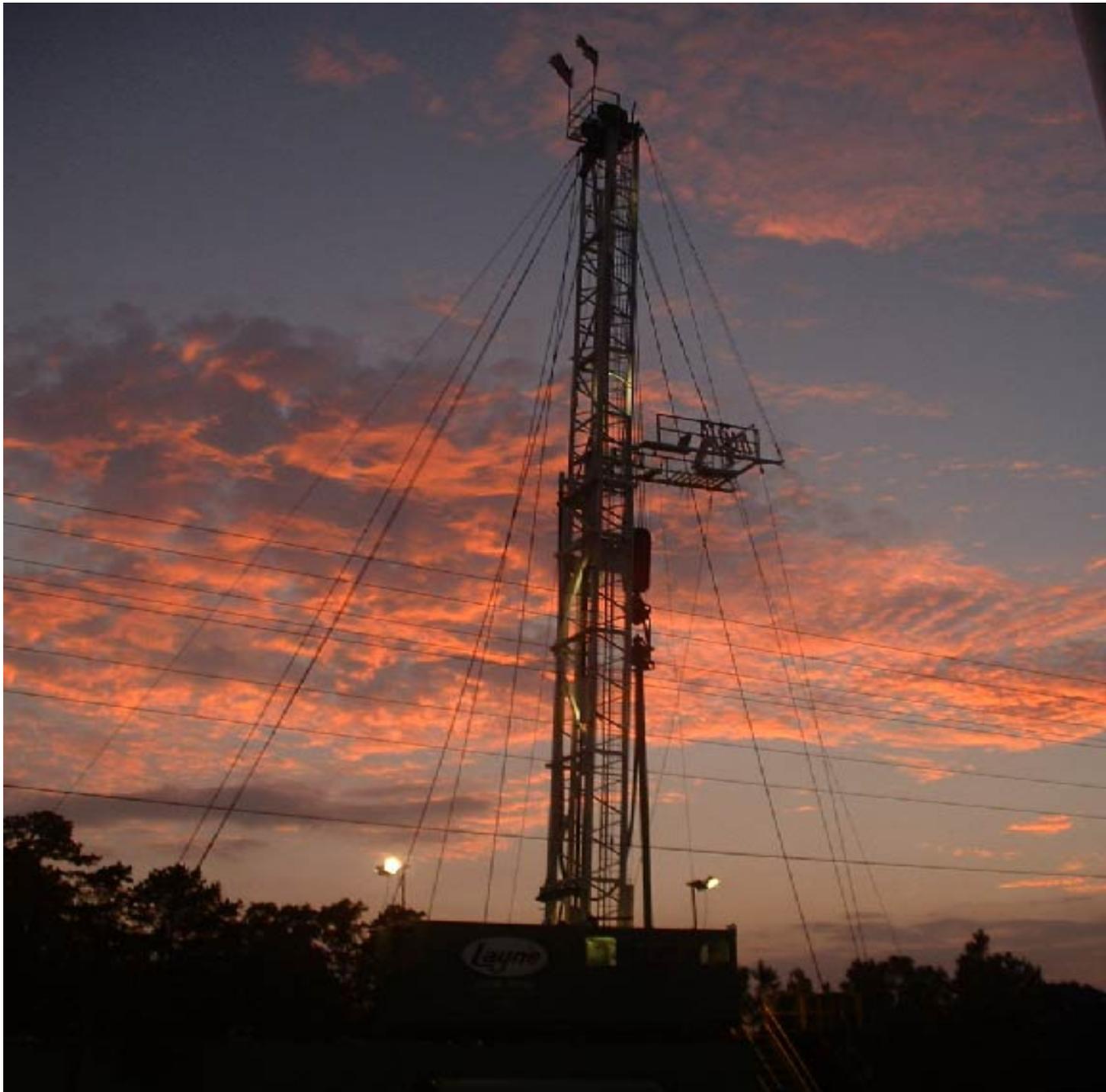
## Surface Water:

- Surface water hydrology and water utilization
- Surface water quality
- Assessment of biological resources in watersheds
- Assessment of Floodplain Development

# RESULTS

- Some of the most significant results that have come from actual implementation of the data in the study are:
- The deepest public water-supply well (over 2,700 feet) in the State of Alabama located in Ozark, AL.  
*(“Isotopic and Geochemical Assessment of Water from the Aquifers of Cretaceous Age” – GSA)*







*“Hydrogeological Assessment of Lake Jackson at Floral, Alabama” - GSA*



**“Elba Levee Pump Station Stabilization” and  
“Interior Flood Storage Basin at Elba Levee - GSA**

# Flood Warning System



# Planning for the Future



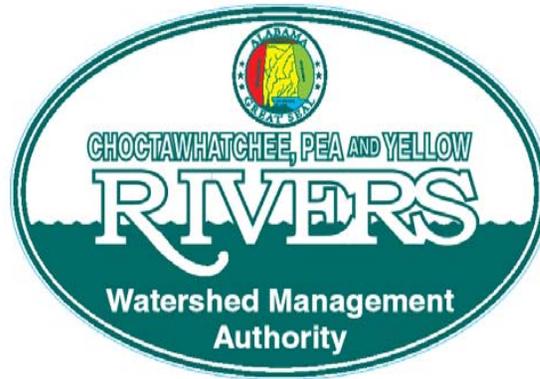
- **Enterprise, Alabama Well Site Geology Study – resulted in identifying a “well field” which has the capability of producing eight water supply wells**
- **Basis for future groundwater supply development in Dothan**
- **Surface Water Assessment for Yellow River Watershed**
- **Surface Water Assessment for Lightwood Knot Creek and Lake Frank Jackson in Covington County**
- **Guidelines for optimum well spacing for each major aquifer**
- **Assessment of Aquifer Recharge, Groundwater Production Impacts, and Future Groundwater Development in SE Alabama**
- **Comprehensive Watershed Management Plan**

# SUMMARY



**Future groundwater availability in southeast Alabama was determined by analyzing water quality; subsurface geology; groundwater recharge rates; and projected groundwater demand.**

*This assessment was designed to supply pertinent information necessary for appropriate authorities to evaluate their present water source and to implement plans for future water-source development if needed.*



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**Thank you.**