Saltwater Encroachment in Capital Area Aquifers

At the request of the Capital Region Legislative Delegation and East Baton Rouge Parish Metro Council, a public meeting was held on March 8, 2012 on the issue of saltwater encroachment in the aquifer system underlying the Baton Rouge area. The purpose of the meeting was two-fold: 1) to provide information on the issue of saltwater encroachment in the 1,500-foot and 2,000- foot sands of the Southern Hills aquifer system in the Baton Rouge area, and 2) to provide an opportunity for all stakeholders, interested parties and the general public to deliver information on this issue for the Office of Conservation and other governing authorities to consider as they proceed with evaluating, determining, and implementing the next steps to take toward managing aquifer sustainability in Baton Rouge and surrounding areas affected by saltwater encroachment. Comments from this public meeting are summarized on page 78.

A subsequent public hearing has been scheduled for April 12, 2012 to create a record, including the information obtained during and after the March 8, 2012 public meeting, all for consideration by the Commissioner of Conservation in determining what action should be undertaken to manage the sustainability of the Southern Hills aquifer system, particularly as it concerns saltwater encroachment in the 1,500-foot and 2,000-foot sands in the Baton Rouge area. At that hearing, the Commissioner will take testimony, receive evidence, and hear public comments in order to determine if the water levels in the aquifers under East Baton Rouge Parish are being lowered because of excessive pumping of groundwater, and whether the lowering of the water levels in these aquifers is causing the acceleration of the intrusion of saltwater in the 1,500-foot and 2,000-foot sands of the Southern Hills aquifer system from the saltwater aquifers south of the Baton Rouge Fault into the fresh water north of the Baton Rouge Fault.

The Issue Defined:

According to scientific publications from the United States Geological Survey (USGS), two major groundwater supply aquifers of the Baton Rouge area,namely the 1,500-foot and 2,000-foot sands of the Southern Hills aquifer system, have undergone historic high water use dating back to the 1940's and continue to be relied upon to provide large volumes of water supply. Historical observation well data indicate that water levels have declined as much as 175 feet for the 1,500-foot sand – approximately 150 feet from 1945 to 1975, and an additional 25 feet from 1975 to the present. More recent well data indicates that water levels continue to decline, and a large cone of depression in the 1,500-foot sand is centered over the Lula Street, central Baton Rouge public supply pumping station consisting of six 1,500-foot sand wells. Historic observation well data show that water levels of the 2,000-foot sand declined as much as 275 feet from 1945 to 1970, then rose 25 to 50 feet after 1975. However, more recent well data show that water levels of the 2000-foot sand have been mostly stable since 1985. A large cone of depression in the 2,000-foot sand is centered over the Baton Rouge industrial area.

The USGS published information during 1970's reporting that large withdrawals of groundwater from the 1,500-foot sand and 2,000-foot sand aquifers in the Baton Rouge area have caused groundwater flow patterns to change from their former north-to-south orientation toward the pumping centers such that saltwater now flows north across the Baton Rouge Fault System and encroaches into these formerly freshwater areas. Samples collected semi-annually from 13 public supply wells screened in the 1,500-foot sand in 2004 and following years indicate that saltwater encroachment is presently continuing and increasing in this aquifer beneath the Baton Rouge area. Similarly, samples collected semi-annually from 22 wells screened in the 2,000-foot sand in 2004 and following years indicate that saltwater encroachment is presently continuing and increasing in the 2,000-foot sand aquifer beneath the Baton Rouge area.

Legal Framework Established:

Recognizing the issues described above, the state passed legislation in 1974 creating the Capital Area Ground Water Conservation District (District), comprised of the parishes of East Baton Rouge, East Feliciana, Pointe Coupee, West Baton Rouge, and West Feliciana. The legislature also created a board of commissioners to administer the affairs of the district. The Capital Area Ground Water Conservation Commission consists of 15 members including representation from state government, district parishes, and groundwater users and stakeholders. The law provided the Commission with broad authority to manage groundwater resource sustainability in the District which includes, among other things, specific provisions to address saltwater intrusion.

In 2003, the Capital Area Ground Water Conservation Commission (Capital Area Commission) law was amended to recognize the newly established statewide governing authority granted to the Office of Conservation for groundwater resources management. Thus, since 2003, the Capital Area Commission continues to hold all previous authority to manage groundwater sustainability issues within their District with the added measure that they broadly "shall work with" the Office of Conservation as it exercises its groundwater management authority within the district, and more specifically shall have the authority to manage groundwater resources within their District "in conjunction with" the Commissioner of Conservation.

Resource Management Actions:

From its inception in 1974 to present, the Capitol Area Ground Water Conservation Commission has developed and implemented strategies to address groundwater issues within its District including the issues of water level decline and saltwater encroachment in the 1,500-foot and 2000-foot foot sands in the Baton Rouge area. Details of those actions are found in Appendix I. The latest effort will be delivery of a regional groundwater flow and solute-transport model to simulate past, current and a variety of possible future conditions in the 2000-foot sand in the Baton Rouge area, with similar evaluation capabilities for the 1,500-foot sand. The model and simulation results are expected to be delivered and available to the public within nine months, with a target delivery date of October 2012.

Next Steps:

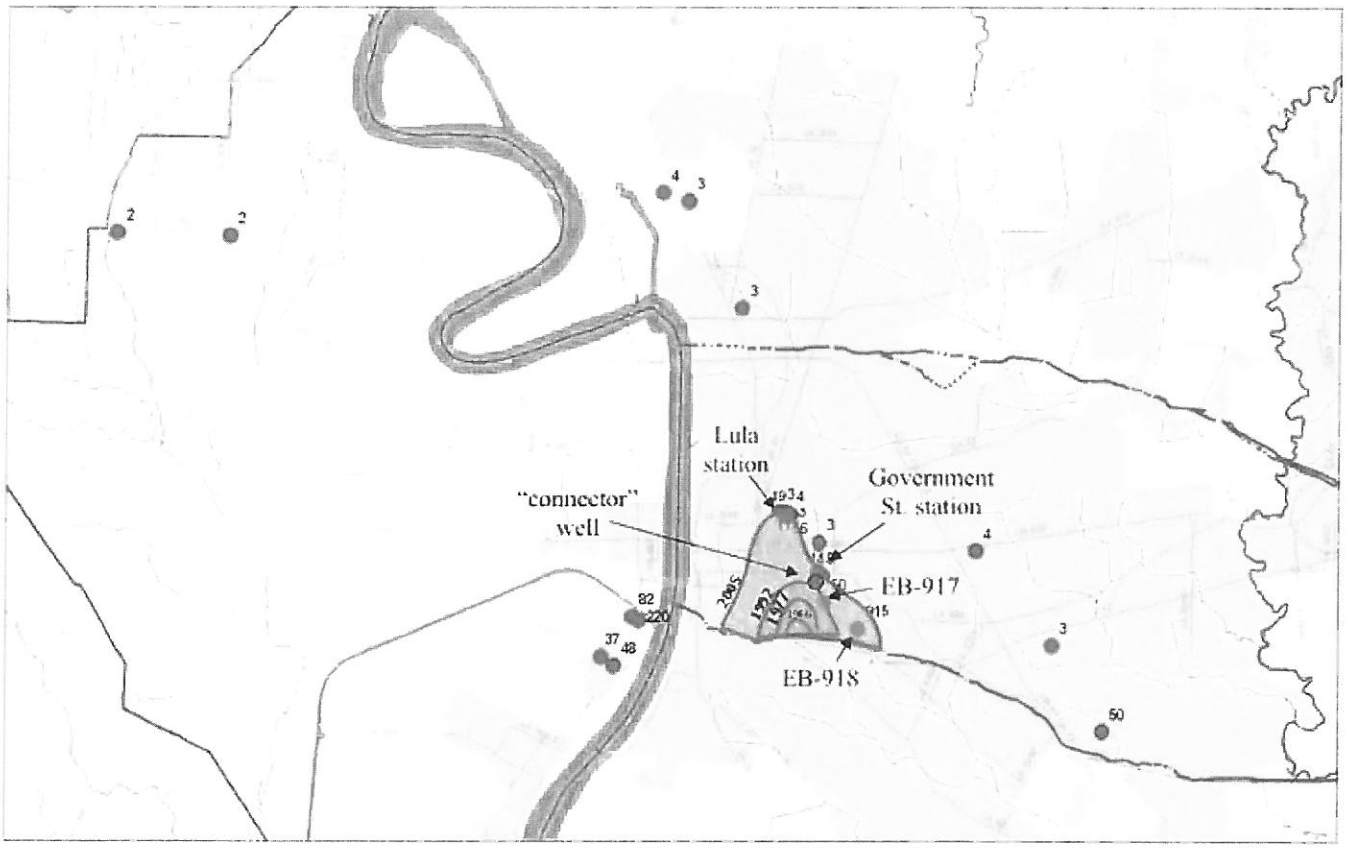
The Office of Conservation will continue to work with the Capital Area Ground Water Conservation Commission, providing the necessary guidance, governance and action, as needed, within our statutory authority to manage the sustainability of the aquifers in the Baton Rouge area. The knowledge gained from the USGS model, in addition to relevant findings of the hearing record, will be considered by the Commissioner in determining what future actions may be necessary to address saltwater encroachment and sustainability of the 1500-foot and 2000-foot sands of the Southern Hills aquifer system.

"We do not know the value of water until we go dry."

- IRISH PROVERB

Saltwater Encroachment in the Capital Area

Images provided by USGS



Location of saltwater and chloride concentrations at sampled wells and in the "1,500-foot" sand. (Note: The location of the saltwater interface in 2005 is unpublished and subject to revision.)

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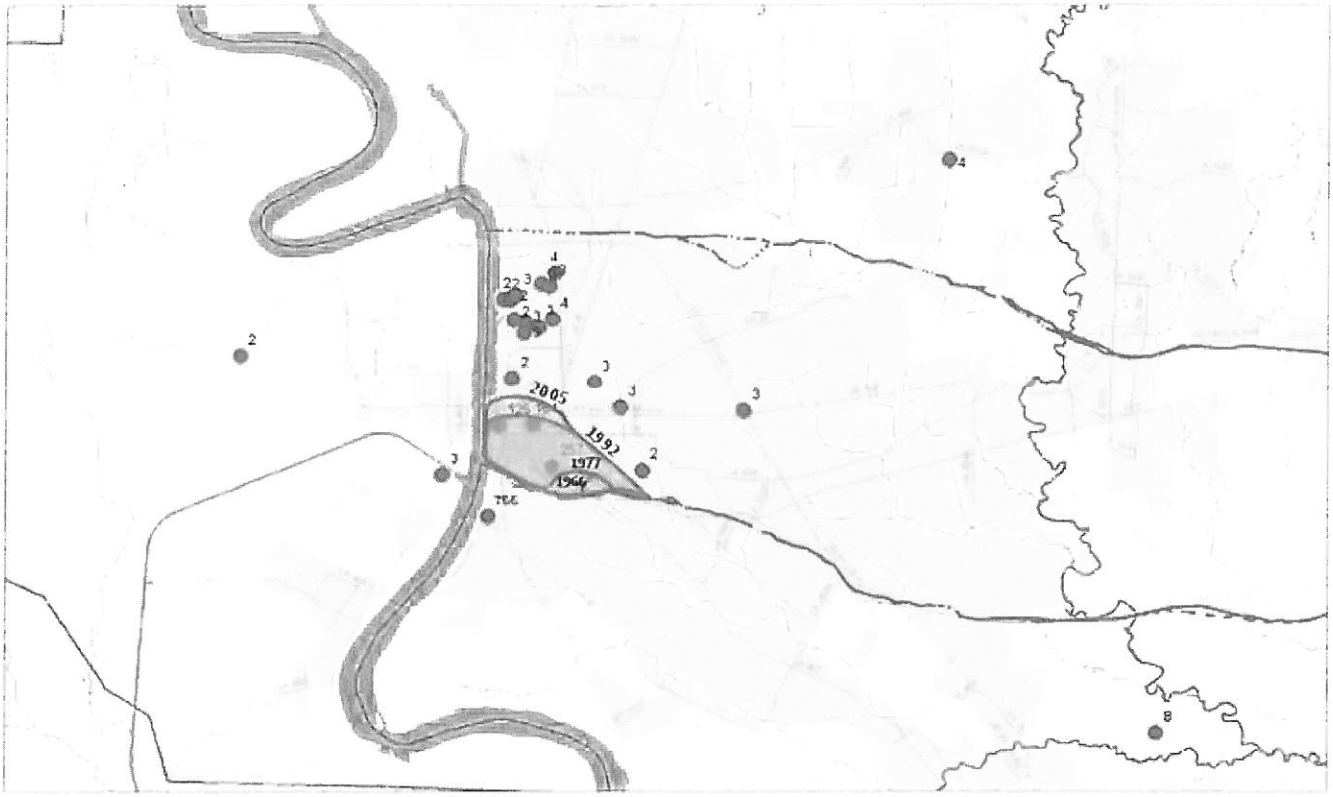

Location of saltwater and chloride concentrations at sampled wells and in the "2,000-foot" sand. (Note: The location of the saltwater interface in 2005 is unpublished and subject to revision.)

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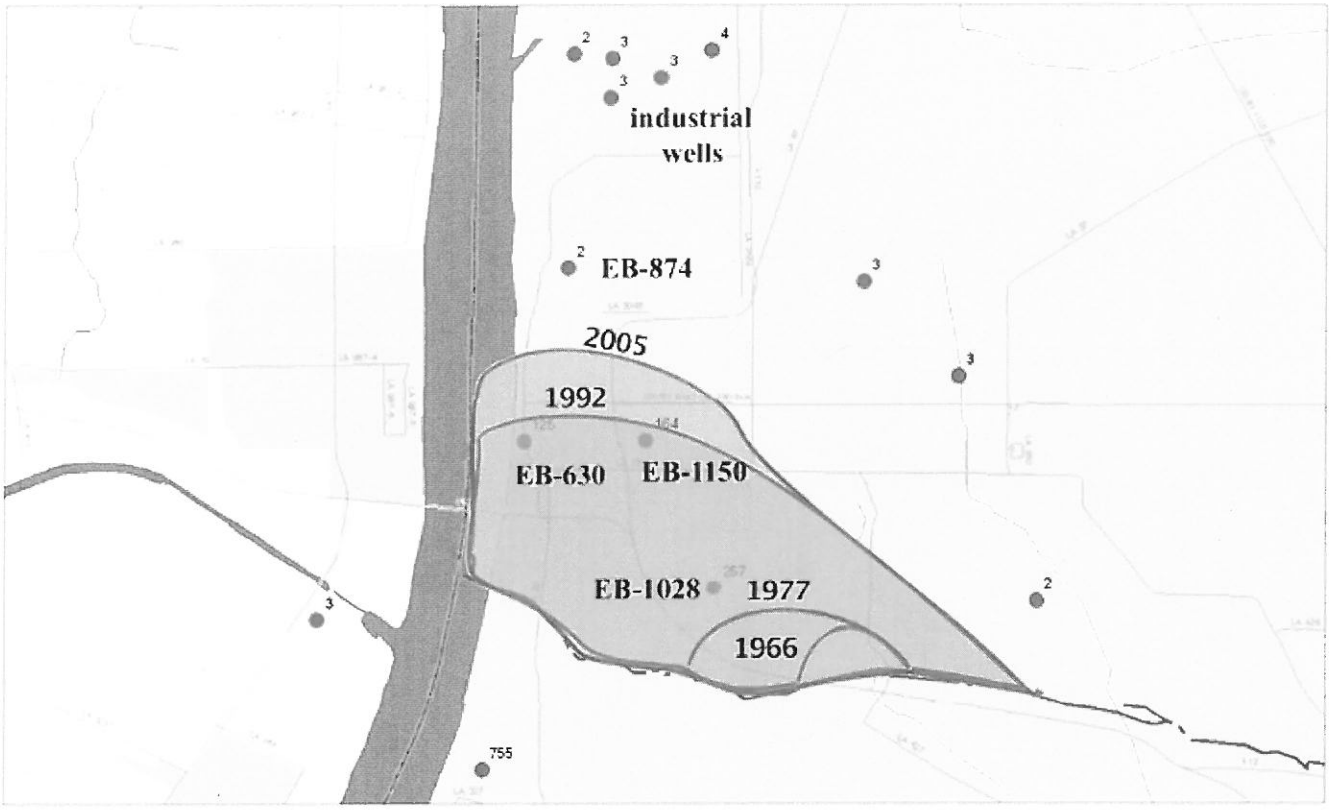
Saltwater Encroachment in the Capital Area

Images provided by USGS



Location of saltwater and chloride concentrations at sampled wells and in the "2,000-foot" sand. (Note: The location of the saltwater interface in 2005 is unpublished and subject to revision.)

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Comments from March 8, 2012 Capital Area Public Meeting

A public meeting was held on March 8, 2012 on the issue of saltwater encroachment in the aquifer system underlying the Baton Rouge area. Approximately 70 people attended the meeting including local and state officials, state agency and legislative staff, industry and public water supply representatives, media representatives, other interested parties, stakeholders, and members of the general public.

The meeting opened with assurances from the Commissioner of Conservation that the issue of saltwater encroachment and aquifer sustainability in the Baton Rouge area is taken very seriously and will be addressed as necessary within the Office's legal jurisdiction based on sound, objective science. Office of Conservation, Capital Area Ground Water Conservation Commission, and United States Geological Survey (USGS) staff then proceeded with providing information on: 1) the history of saltwater encroachment in the Baton Rouge area dating back to the 1940's, 2) legislative action taken in the 1970's establishing a groundwater resource management governing body, i.e., the Capital Area Ground Water Conservation Commission (Capital Area), 3) legislative action taken in 2003 for statewide groundwater management under the Office of Conservation, 4) actions implemented by the Capital Area from 1974 to present including development of an aquifer sand-specific groundwater flow and saltwater transport model by the USGS, and 5) specific use of the model as a management tool to aid in the management of saltwater encroachment in the Baton Rouge area.

Eight persons in attendance elected to speak during the public meeting, which was being transcribed by a court reporter. Although no specific aquifer remediation plans were discussed in detail, timely action was urged by a majority of speakers. The hearing officer announced that the transcript of the March 8 public meeting would be placed into the official record, and that the information contained in this transcript would assist Conservation staff in preparing for its public hearing on April 12, 2012.