

Memorandum

**Resource Agency Meeting
on
Supplemental Aquifer Studies**

Savannah Harbor Expansion Project

A meeting was held on 8 October, 2004 at the office of the Savannah District, US Army Corps of Engineers to update GAEPD, SCDHEC and USGS (Georgia and SC Districts) on recent progress and findings regarding supplemental studies relating to potential impacts to the Floridan aquifer as a result of the proposed Savannah Harbor Expansion Project (SHE).

The following persons attended the meeting:

Bill McLemore – GAEPD (GGS)
Camille Ransom - SCDHEC
John Clarke – USGS, Georgia District
Jim Landmeyer – USGS, South Carolina District
Mark Maimone – Camp Dresser & McKee
John Cox – Applied Technology & Management
Mackie McIntosh - USACE, Savannah District
Matthew Delano- USACE, Savannah District
Cardwell Smith - USACE, Savannah District

The meeting began at 0900 with Mr. Smith welcoming the other attendees and explaining that the purpose of the meeting was to update the attendees on progress and findings to date, obtain feedback on the findings and discuss any potential changes that may be needed in the remainder of the proposed work.

Mr. Smith then spent about an hour presenting the findings of recent work. Particular emphasis was placed on the supplemental paleochannel seismic survey and the latest data from the paleochannel/confining layer pore water investigation.

Data from the 60+ miles of seismic survey have allowed various profile sections and fence diagrams to be constructed of the paleochannel areas between Fields Cut and Tybee Island.

Pore water data collection along the Savannah Harbor channel is nearing completion and the data suggests that distinctive pore-water chloride (salinity) “profiles” exist through the surficial and confining unit sediments above the limestone of the upper Floridan aquifer.

Following the pore-water data presentation, Mr. Maimone spent about 30 minutes presenting the conceptual approach and construction of the 3-D solute-transport ground-water model CDM is working on. He explained that the modeling objectives were to:

- Develop a modeling tool to explore aquifer system response;
- Assess the full range of plausible aquifer responses to harbor dredging; and
- Provide information on expected impacts of dredging on Upper Floridan Aquifer water quality (worst case, most likely, best case).

The model will make use of data from regional USGS aquifer investigations and models and will replicate USGS model layering, properties, boundaries, and pumping conditions, but the model grid structure will focus on the Savannah Harbor channel.

The next step for the model will be to run various simulations to:

- Test the model's ability to simulate existing conditions;
- Test range of Miocene Kv (rate of salt water penetration, impact on heads);
- Test range of Miocene Confining Unit Thicknesses;
- Test range of values for porosity and storativity; and
- Examine feasibility of pump test

After lunch, Mr. Ransom gave a presentation on recent work SCDHEC has done regarding saltwater intrusion using GIS to map the results of analytical flow and transport calculations within the area of influence of the drawdown cone of depression created by pumping from the Floridan aquifer in the Savannah area.

The area within the "0" contour of the drawdown cone was divided into 4-square mile grid cells. A spreadsheet with analytical equations was used to calculate flow and transport values for each grid cell, based on heads, confining unit thickness and confining unit hydraulic properties. The resultant values were then contoured in a GIS to reveal areas that might be expected to be of concern regarding saltwater intrusion.

Following Mr. Ransom's presentation, Dr. Landmeyer presented several slides representing some initial work he has done on the analysis of pore-water samples from the upper Floridan confining unit, regarding the possible role of diffusion in the movement of pore-water through the confining unit.

A general discussion was then held on all of the presentations and the status of the SHE supplemental work. Mr. Smith noted that nested wells are presently being installed in the confining unit and surficial sediments near the Floridan well at SHE-10. These multi-level wells will be used to confirm potentiometric heads in these units. Ground-water samples for chlorides may also be taken from the wells.

The nested multilevel wells intended to be installed near the GGS Floridan wells on Hutchinson Island (across the river from IP) have been held up waiting on right-of-entry from CSX. Pore-water samples from the surficial and confining unit will also be collected at this location.

Nested wells may also be installed at the far western end of Cockspur Island (Ft. Pulaski) on property owned by GADOT.

The following action items resulted from the meeting:

1. Mr. Smith and Ms. McIntosh will continue installing nested wells and compiling sample data as it is received from the labs.
2. CDM will begin running simulations with the model and will prepare for a presentation on the model at an upcoming SEG Aquifer Committee meeting on 29 October.
3. USACE will continue to keep GAEPD, USGS and SCDHEC informed on project findings.

Project coordination will continue to be maintained via e-mail and telephone, and additional meetings will be held as needed.

The meeting concluded about 1530.

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