



South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

October 30, 2008
ABR-AE-08000079

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

South Texas Project
Units 3 and 4
Docket Nos. 52-012 and 52-013
Commitments Related to Contour Maps and the
Upper Shallow Aquifer Pathway in FSAR Subsection 2.4S.12

In References 1, 2, and 3, STPNOC made commitments to complete numerous actions in support of the Combined License Application. These tasks included Commitments #6 and #8. Commitment #6 required STPNOC to validate the assumption used in FSAR Subsection 2.4S.12 for the postulated upper shallow aquifer pathway concerning discharge to Kelly Pond using specific hydrogeologic data. Commitment # 8 required STPNOC to evaluate and update plotted contour maps provided in FSAR Subsection 2.4S.12 considering that proposed plant structures and footings could penetrate the lower shallow aquifer.

References 4 and 5 specified that the scheduled completion date for Commitment #6 was December 15, 2008 and the scheduled completion date for Commitment #8 was October 30, 2008. Attachment 1 includes information that satisfies the requirements of Commitment #8 and updates the status of efforts to satisfy the requirements of Commitment #6.

There are no commitments in this letter.

If there are any questions regarding the due date extensions, please contact me at 361-972-7136, or Bill Mookhoek at 361-972-7274.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 10/30/08

Scott Head
Manager, Regulatory Affairs
South Texas Project Units 3 & 4

Attachment 1: "STPNOC Commitments Related to Contour Maps and the Upper Shallow Aquifer Pathway in FSAR Subsection 2.4S.12"

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- References:
1. Letter, M. A. McBurnett to Document Control Desk, "Combined License Application," dated September 20, 2007 (ABR-AE-07000004) (ML072830407)
 2. Letter, G.T. Gibson to W.F. Burton, "Environmental Report Acceptance Review: Outstanding Issues," dated November 8, 2007 (ABR-AE-07000010)
 3. Letter, M.A. McBurnett to Document Control Desk, "Resolution of Docketing Issues," dated December 20, 2007 (ABR-AE-07000014) (ML073580003)
 4. Letter, G.T. Gibson to Document Control Desk, "Changes to NRC Commitments," dated February 12, 2008 (ABR-AE-08000021)(ML080460079)
 5. Letter, G.T. Gibson to Document Control Desk, "Schedule for Groundwater Well Evaluation for STP Units 3 & 4," dated July 30, 2008 (ABR-AE-08000060) (ML082170398)

cc: w/o attachment except*
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STPNOC Commitments Related to Contour Maps and
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A. Summary of STP Commitments on Groundwater and FSAR Section 2.4S.12

In a letter dated December 20, 2007 (Reference 3), STP committed to provide further information on potential critical groundwater pathways presented in the COLA. In response to Commitment #7, on July 30, 2008 (Reference 5), STP submitted a schedule of the actions planned to respond to Commitments #8 and #6 on STP Units 3 & 4 groundwater issues. That response indicated the following:

- Commitment #8 – Submittal of Revised Groundwater Contour Maps
The plotted contour maps provided in FSAR Subsection 2.4S.12 will be updated as required to consider construction of the proposed units and the plant structures and footings which could penetrate the Lower Shallow Aquifer. These revised contour maps will be submitted to the NRC by October 30, 2008.
- Commitment #6– Submittal of a Validation Of The Upper Shallow Aquifer Pathway
The assumption used in FSAR Subsection 2.4S.12 for the postulated Upper Shallow Aquifer pathway concerning discharge to Kelly Pond will be validated using specific hydrogeologic data. This will include development of a detailed groundwater model, based on groundwater data collected through October, 2008, which incorporates the revised STP Units 3 & 4 site layout, including the addition of a slurry wall, minor modifications to some building locations, changes to the design, and relocation of the Ultimate Heat Sink (UHS). The results of this evaluation will be submitted to the NRC by December 15, 2008.

B. Commitment #8 Response – Basis For Revised Groundwater Contour Maps

The initial groundwater information presented in COLA Rev 0 was based on an analysis using conventional techniques. Results from this analysis, documented in COLA Subsection 2.4S.12.2.2, show that the Upper Shallow Aquifer groundwater flow direction in the vicinity of STP Units 3 & 4 is in general southeasterly towards the Colorado River. A less predominate flow direction is to the southwest from Unit 4.

To improve the accuracy of groundwater analysis for STP Units 3 & 4, STP elected to develop a detailed groundwater model. Development of the model has been completed, based on data from the initial phase. These results are documented in the attached contour maps. The conclusion from the model simulations of groundwater flow and particle tracking is that pre-construction groundwater pathways in the Shallow Aquifer from the Units 3 & 4 power block area flow east-southeastward towards the Colorado River.

The Shallow Aquifer is represented by three sand layers in the model based on information collected from the Units 1 & 2 and the Units 3 & 4 geotechnical borings. The sand layers are identified as Stratum C, the Upper Shallow Aquifer and Stratum Layers E and H, which compile the Lower Shallow Aquifer.

Figures 1 through 3 show the simulated groundwater level contours for post-construction conditions, accounting for both the installation of slurry walls and for excavations through clay and sand strata in the Shallow Aquifer, which includes the placement of structural backfill at Units 3 & 4 in the power block area. Particle tracking is included to identify the groundwater pathways of potential liquid effluent releases within the power block area (Figure 4). One particle was released from each corner of each reactor building for a total of eight particles within Layer C. With time, the water particle tracks eventually enter the Lower Shallow Aquifer (Stratum E) as shown in Figure 4.

These results do not include data from the 13 new groundwater observation well pairs (26 wells) that were recently installed at STP to provide additional data for groundwater modeling.

STPNOC Commitments Related to Contour Maps and the Upper Shallow Aquifer Pathway in FSAR Subsection 2.4S.12

C. Groundwater Model Development

The groundwater flow model of the STP 3 & 4 Project site has been developed to provide an accurate assessment of groundwater flow and to respond to STP NRC Commitments #6 and #8 for the resulting NRC RAIs. The model is a three-dimensional representation of the Shallow Aquifer, using multiple layers to simulate flow in the Upper Shallow Aquifer and Lower Shallow Aquifer, and includes confining and intervening clay layers. The model is developed using the numerical code MODFLOW 2000 developed by the U.S. Geological Survey, as it is implemented in the user-interface software Visual MODFLOW developed by Waterloo Hydrogeologic Inc.

Hydrostratigraphic layer elevations are developed from geotechnical borings for Units 1 and 2, from geotechnical borings for Units 3 and 4, from additional on-site borings and well logs, and from logs for off-site wells in the State of Texas groundwater database.

Hydraulic conductivity values are based on results from nine historical on-site pumping tests in the Shallow Aquifer, from slug tests in observation wells at Units 3 and 4, and from laboratory tests of clay and compacted structural backfill.

The interaction between surface water and groundwater is simulated by including in the model the Main Cooling Reservoir, the Essential Cooling Pond, the Colorado River, Kelly Lake, Little Robbins Slough, and various unnamed tributaries and drainage ditches within the model area.

Spatially-variable groundwater recharge is considered based on land use, vegetation, and surficial soil permeability. However, because of the widespread and persistent surficial clay strata through the model area, direct recharge by precipitation within the model area is not a significant factor affecting groundwater levels or flow paths.

The model is calibrated for existing site conditions using groundwater level data through June, 2008. The mass balance difference between groundwater model inflow and outflow is less than one percent. This is achieved through the use of small head convergence criterion and by adjusting other parameters of the numerical solver.

The initial model was developed based on the site layout shown in the initial submittal of the STP 3 & 4 COLA (Reference 1). The model has now been updated to include several changes that have occurred since development of the initial COLA, including revised site layout, redesign and movement of the UHS structure(s), implementation of a slurry wall and installation of new water wells.

D. Future Groundwater Model Developments and Commitment # 6 Response

Drilling of 13 new groundwater observation well pairs (26 wells) at STP has been recently completed and data collection has been started. Two months of data from these wells will be incorporated into the model. The STP response to NRC Commitment #6 will present the final results of the STP Units 3 & 4 Site groundwater model and will include revised contour maps. These results will be incorporated into FSAR Subsection 2.4S.12 in a future COLA revision.

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E. List of Figures

- Figure 1: Simulated Groundwater Contours – Units 3 & 4 With Slurry Walls – Upper Shallow Aquifer (Stratum C)
- Figure 2: Simulated Groundwater Contours – Units 3 & 4 With Slurry Walls – Lower Shallow Aquifer (Stratum E)
- Figure 3: Simulated Groundwater Contours – Units 3 & 4 With Slurry Walls – Lower Shallow Aquifer (Stratum H)
- Figure 4: Simulated Groundwater Pathways – Particle Tracking from Units 3 & 4 - With Units 3 & 4 Excavation and Slurry Walls – Released from Model Layer 2 (Stratum C)

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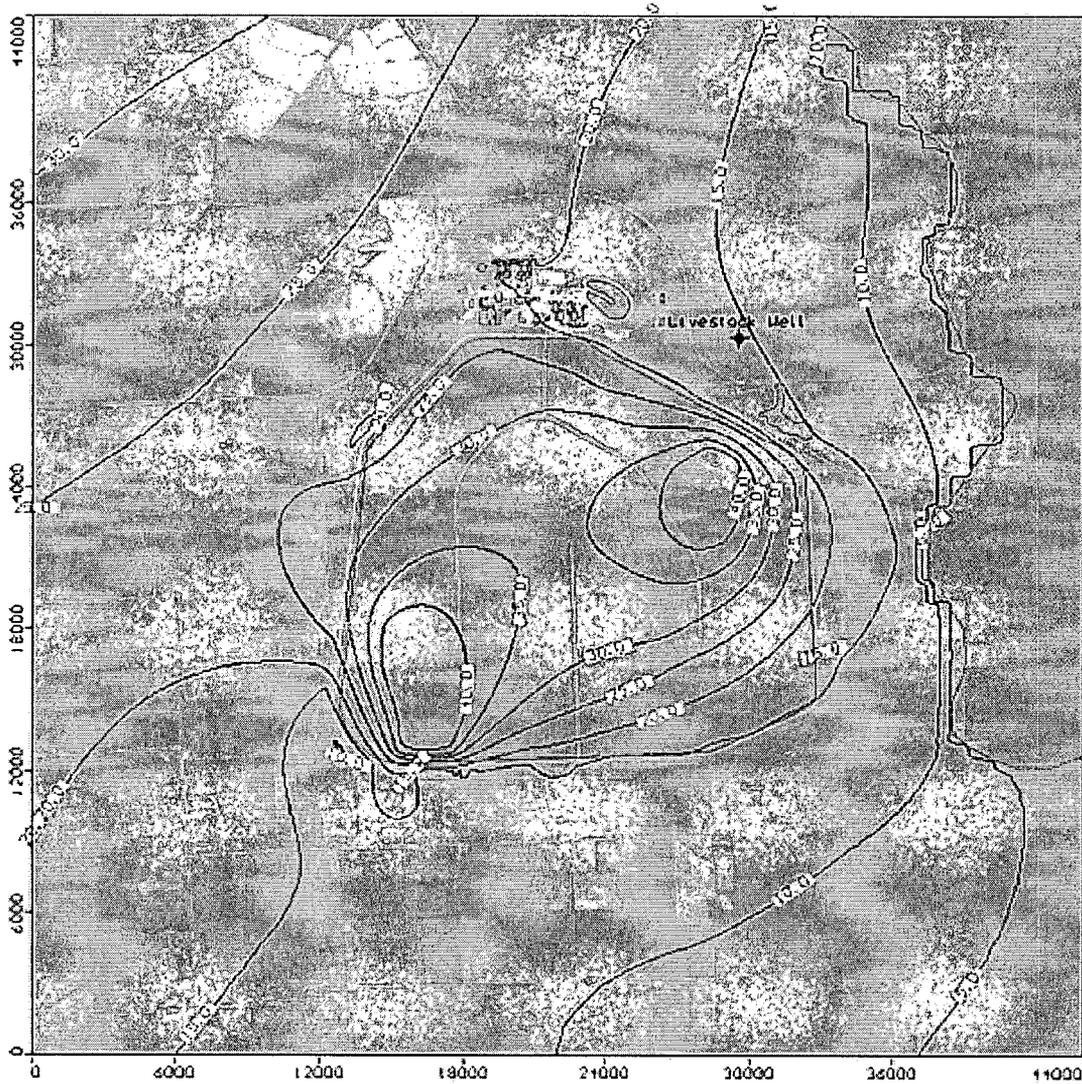


Figure 1: Simulated Groundwater Contours – Units 3 & 4 With Slurry Walls – Upper Shallow Aquifer (Stratum C)

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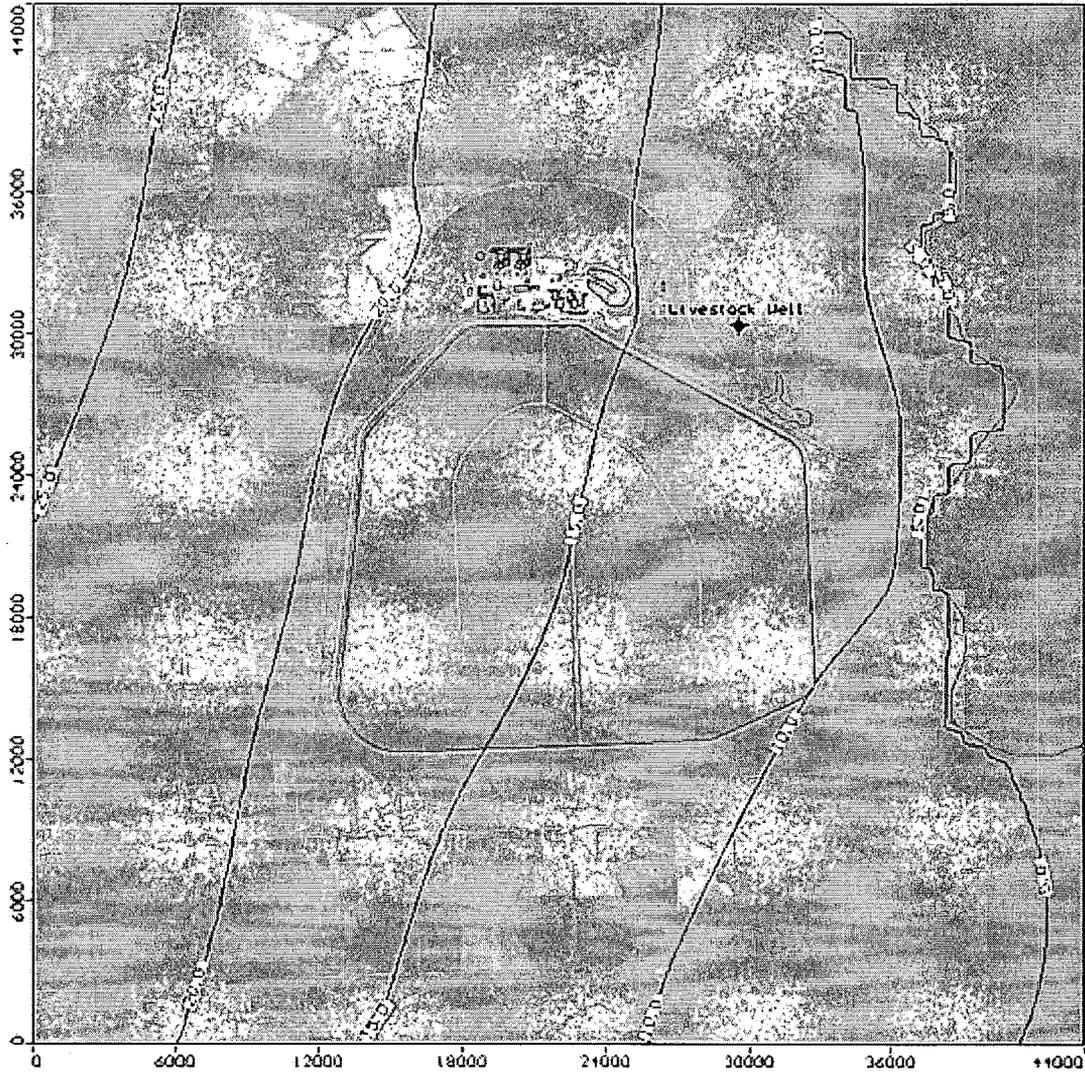


Figure 2: Simulated Groundwater Contours – Units 3 & 4 With Slurry Walls – Lower Shallow Aquifer (Stratum E)

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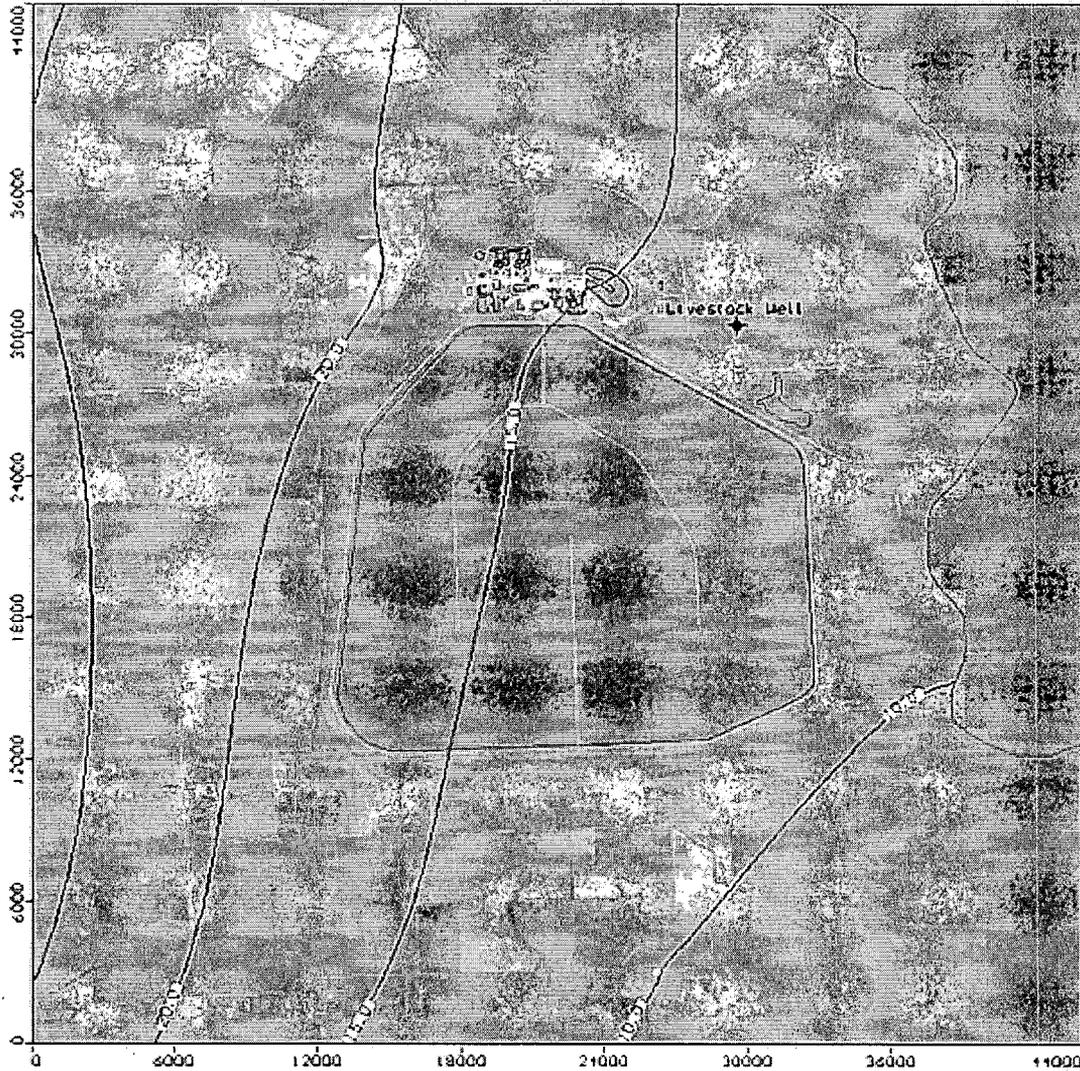
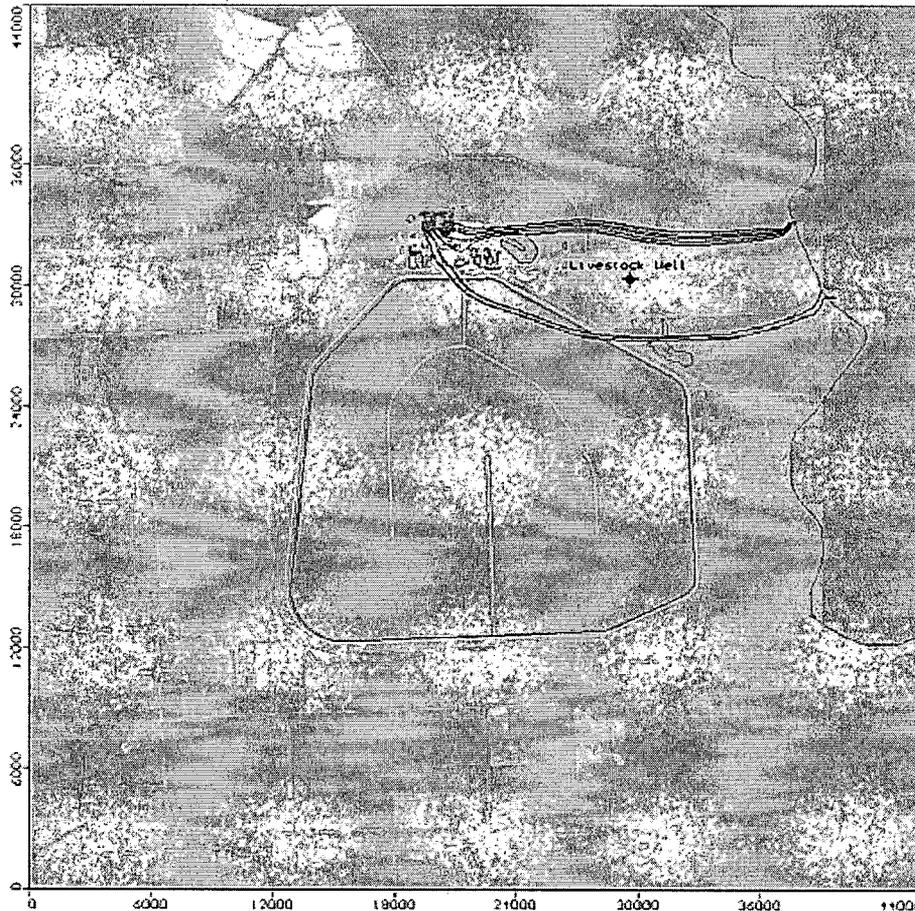


Figure 3: Simulated Groundwater Contours – Units 3 & 4 With Slurry Walls – Lower Shallow Aquifer (Stratum H)

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Note: Particles released from Stratum C migrate into Stratum E before discharging to the Colorado River.

Figure 4: Simulated Groundwater Pathways – Particle Tracking from Units 3 & 4 - With Units 3 & 4 Excavation and Slurry Walls – Released from Model Layer 2 (Stratum C)