

The Edwards Aquifer Recovery Implementation Program

HDR Engineering, Inc. (HDR) & Todd Engineers (Todd) - Supplemental Scope of Work

Task 6 – Technical Evaluation of Recharge Credits

(Est. Fee = \$18,100)

- a) The technical evaluations of up to four (4) recharge alternatives may include recharge credits as a source of water to be included in the groundwater modeling described in Task 4. Definitions of alternatives are expected to include identification and details of the placement of the well field for pumping recharge credits, pipeline capacity of pipeline designed to connect the well field to the recharge zone, and the location of the recharge. These elements will be coarsely optimized based on conceptual understanding of the structure of the Edwards Aquifer during the technical evaluation. Promising engineered components may be qualitatively optimized outside the modeling environment.
- b) The availability of recharge credits will be determined from the recharge recovery curves developed and presented by Todd Engineers in the 2008 report. The recovery rates predict the portion of recharge remaining in the aquifer based on the location of recharge and elapsed time. In addition to the recovery rates, a framework will be developed to determine when pumping for recharge credits will occur. While recharge credits are not subject to critical period rules, some supplemental constraints may be defined as necessary and appropriate for the technical evaluation of recharge alternatives as defined in EAA rules to provide minimum springflow. Quantitative calculations of the amounts of recharge credits that maybe available will be handled manually through a post processing software exercise such as Excel as a post-processor.
- c) The MODFLOW well package will be revised using database tools to reflect the simulated pumping of the available recharge credits. The pumping will occur at a hypothetical well field, the location of which will be identified as part of the definition of each recharge alternative. This pumping will not be subject to critical period rules and the management modules will be edited to reflect this as outlined in EAA rules. The recharge package will also be revised to reflect the additional water source at specified recharge locations from recharge credits.
- d) Groundwater modeling of recharge alternatives will be performed and analyzed as described in Task 4 of the EARIP-approved (December 2, 2009) scope.

Task 7 – Revision of Recovery Curves (Optional)

(Est. Fee = \$9,900)

- a) If a revised version of the recovery curves based on the revised baseline is needed after receipt of an updated permit distribution (if applicable), additional model simulations will be required. Using procedures similar to those described by Todd Engineers in the 2008 report, one time hypothetical recharge slugs will be simulated at each recharge location at two time periods. The effects of these recharge slugs over baseline will be calculated as the percent of recharge remaining in the aquifer. The model results will be averaged to determine time dependent recovery curves for up to five (5) recharge sites.