Exhibit A
Response to Comments Submitted by the Brazos River Authority

Comment #1. In comparison of the water budgets within the shallow groundwater system (Layers 1 and 2) from both the current GAM (2018) and the modified GAM (2020) as a result of simulated production over time, it appears that there is no significant variation to the surface water-groundwater interaction between the recently updated model and the currently approved model. In addition, a review of the inflow-outflow water flux budget of the Brazos River as calculated by MODFLOW's River package, which is adjacent to the modified model cells, and noted no significant changes to stream gain-loss from previous model to the modified model.

Response to Comment #1. We acknowledge the comment. The update of the GAM was narrowly focused on improving the GAM capability to predict drawdown caused by pumping the Vista Ridge Simsboro wells. The only change in the updated GAM was made to the hydraulic conductivity values for the Simsboro aquifer in the vicinity of the Vista Ridge well field so that the GAM would more accurately simulate the aquifer test drawdown response measured in nine Vista Ridge Simsboro Aquifer screened wells. Very little to no changes were expected to occur in the inflow-outflow water flux budget of the Brazos River as a result of changes in the Simsboro transmissivity values near the Vista Ridge well field.

Comment #2. There is an apparent box-shaped transition zone between the modified and unmodified cells within the Simsboro Aquifer layer (Layer 9), which is likely a result of the parameter estimations and the methods by which those values were integrated into the original transmissivity field, that should be re-analyzed and possibly corrected.

Response to Comment #2. An important point associated the modified transmissivity values is that they were generated by PEST for a very different set of model calibration criteria than used by PEST to generate the unmodified transmissivity values. Thus, the magnitude and spatial variation in the modified transmissivity values should be different than for the unmodified transmissivity values. A second important point is that, along the outermost column or row where the transmissivity values were modified, the average change is less than 25% difference along three out of the four sides. A difference of less than 25% is a relatively small amount given that differences in transmissivity much larger than 25% occur across a mile distance in many regions of the unmodified transmissivity field such as in Robertson County (Attachment A, Figure 3) and among transmissivities that were calculated among the Vista Ridge Simsboro Aquifer screened wells (see Table 1 in the Updated GAM report).

Within the area contained in the box drawn around the pilot points used to modify the Simsboro transmissivity field, the transmissivity values were increased by an average multiplier of 1.7, or 70%, with the smallest and greatest changes in the updip (Northwest) and downdip (Southeast) portions of the box, respectively. Unlike updip portions of the box, where the transition between modified and unmodified transmissivity values are difficult to distinguish, across the downdip portion of the box, the transition between unmodified and modified transmissivity values is easily distinguishable. This boundary is marked by the line A-A' in Figure 4 in Attachment A.

The modified transmissivity values are about twice the values of the unmodified transmissivity value. To explain this increase, we have modified Section 3 of the report to include the following discussion.

> "As part of the recalibration of the GAM, several attempts were made to reduce the amount of increase in the Simsboro transmissivity values in the vicinity of line A-A' shown in Attachment C. These investigations showed that notable reductions in transmissivity values in the vicinity of line A - A' adversely affected the match between the calculated transmissivity values from the aquifer pumping test and the GAM simulation. Based on these results, we deduced that the Simsboro transmissivity values in the unmodified GAM and in the vicinity of Line A-A' and down-dip of Line A-A' were likely a result of a combination of too great of a trend of decrease in hydraulic conductivity with depth that was built into the GAM (Young and others, 2018) and a possible underestimation of net sand thickness down dip of Line A-A'.
>
> We did not pursue additional studies to adjust Simsboro transmissivity values down in the vicinity and downdip of Line A-A' for several reasons. One reason is that the additional studies is beyond the scope of GMA 12's directive to modify the GAM by adjusting the hydraulic conductivity values of the Simsboro Aquifer in the vicinity of the Vista Ridge well field. Another reason is that the pursuit of additional studies would likely prevent the completion of the modified GAM for use by GMA 12 for the current planning cycle. In addition, the GMA 12 consultants are unsure if there is sufficient hydrogeological data to properly guide the changes in the Simsboro transmissivity field down dip of Line A-A' at this time."

Comment #3. Transmissivity values near the modified area (notably to the west-northwest of the Vista Ridge wellfield area) do not match reported values and, therefore, it is recommended that the field measured values for the Simsboro layer in other large-scale permitted project areas across the GMA-12 be evaluated and incorporated as part of this modification.

Response to Comment #3. The update of the GAM was limited to adjustment transmissivity values to improve the GAM capability to predict the changes in water levels caused by pumping the Vista Ridge Simsboro Aquifer screened wells. We agree with the suggestion that the model would benefit by additional adjustments of the transmissivity field based on simulating of aquifer pumping tests from other large-scale permitted project areas. However, such additional work is beyond the scope of the GAM update completed by the GMA 12 consultants.

Attachment A:

Mapped Simsboro Transmissivity Values from the Original GAM and the Updated GAM

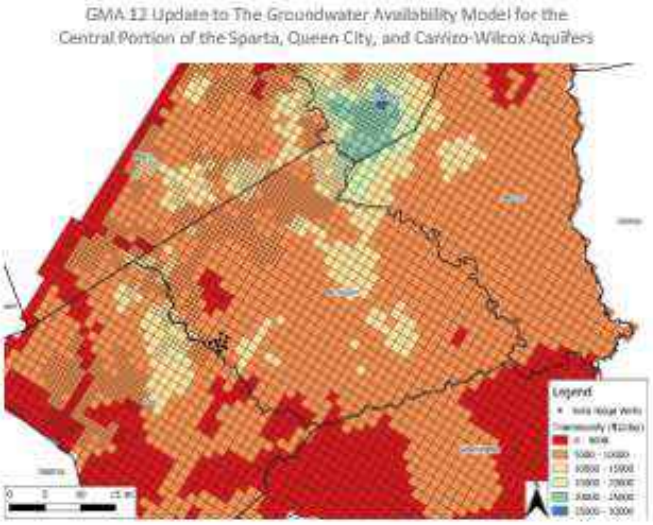

Figure 3 Simsboro Transmissivity Field in the GAM (Young and others, 2018)

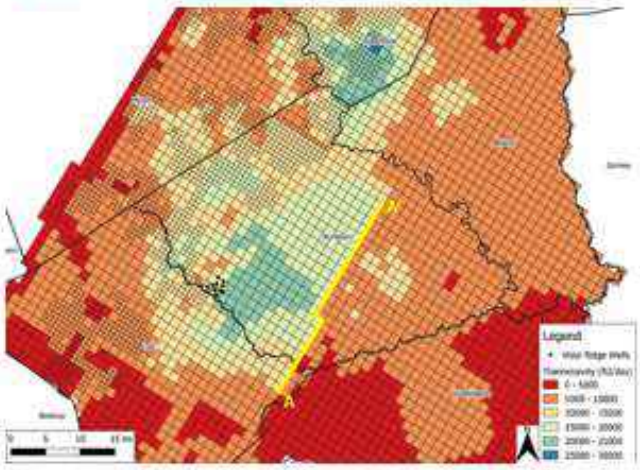

Figure 4 Simsboro Transmissivity Field in the Modified GAM. Line A-A' marks the location between the modified and unmodified Simsboro transmissivity values along in the down dip of the Vista Ridge well field.