

**UPPER GULF COAST AQUIFER PLANNING AREA
(GMA 14)**

Joint Planning Group Meeting

**Wednesday, April 30, 2014
9:00 AM**

MEETING MINUTES

A regular meeting of the Upper Gulf Coast Aquifer Planning Area (GMA 14) scheduled for Wednesday, January 29, 2014, at 9:00 a.m., in the board room of the Lone Star Groundwater Conservation District located at 655 Conroe Park North Drive, Conroe, Texas was canceled due to inclement weather.

A regular meeting of GMA 14 scheduled for Wednesday, March 4, 2014, at 9:00 a.m., in the board room of the Lone Star Groundwater Conservation District located at 655 Conroe Park North Drive, Conroe, Texas was also canceled due to inclement weather.

A regular meeting of GMA 14 was held Wednesday, April 30, 2014, at 9:00 a.m., in the board room of the Lone Star Groundwater Conservation District located at 655 Conroe Park North Drive, Conroe, Texas.

The meeting was called to order by Kathy Turner Jones (Lone Star GCD) at 9:10 a.m. District representatives introduced themselves. Districts represented included: Bluebonnet GCD, Lone Star GCD, Lower Trinity GCD and Southeast Texas GCD. Also in attendance at the meeting were: Larry French, Texas Water Development Board (TWDB); Mike Turco, Harris-Galveston Subsidence District; The Honorable John Brieden, Washington County Judge; 'Pudge' Willcox, Chambers County; Bill Mullican, Mullican and Associates; Jason Afinowicz, Freese and Nichols, Inc.; and members of the public. Brazoria GCD and Robert Thompson, Fort Bend Subsidence District joined the meeting at 9:40 a.m. (*see Attachment "A" for a list of attendees*).

Kathy Turner Jones began the meeting by asking for a roll call of GMA 14 participating members and any comments. Ms. Jones proceeded with receipt and requests of posted notices from the group. Ms. Jones asked for consideration of the approval of the minutes from the GMA 14 meeting on September 18, 2013. After discussion and upon a motion by Zach Holland (Bluebonnet GCD), seconded by Bill Jacobs (Lower Trinity GCD), the minutes for the September 18, 2013 meeting were approved unanimously.

Meeting convened as a meeting of the GMA 14 Joint Planning Interlocal Agreement Participants.

The GMA 14 Joint Planning Interlocal Agreement Participants meeting was called to order at 9:14 a.m.

Ms. Jones recognized Mark C. Kasmarek, representing the U.S. Geological Survey, for a presentation of information on the approach, conceptual model, model development, model calibration, and review process for the Houston Area Groundwater Model (HAGM). Mr. Kasmarek documented updates to the model packages, simulation and water use period, and aquifer parameters utilized in the HAGM. These updates, though challenging to calibrate, demonstrate simulated and measured water levels agree well, in addition to agreement between simulated and measured land-surface subsidence in the areas participating in the development of the HAGM. While the new model does indicate simulated subsidence in the outlying districts, it does not provide any data regarding measured subsidence in these areas.

At the conclusion of the presentation, the floor opened to questions and discussion. Bill Mullican asked technical questions regarding the changes in hydraulic conductivity and inelastic and elastic storativity coefficients numbers and their basis. Mr. Mullican followed up with highlighting an issue being worked on and worked through by a subcommittee of TWCA, is the role of brackish groundwater in the DFC process, specifically regarding brackish groundwater volume estimates in the estimates of Modeled Available Groundwater (MAG). Referencing knowledge of brackish areas of the Gulf Coast Aquifer layers closer to the coast, the question was asked as whether or not the brackish areas truly isolated or are they in hydrologic communication with areas containing fresh groundwater. Mr. Kasmarek answered with a specific example in Galveston County with saltwater encroachment to freshwater wells, and actually some up-coning in areas pumping high volumes. As the pumping was reduced and water levels increased due to recharge in the management area, the saltwater wedge was relaxed and pushed back down dip. The brackish-freshwater interface is continually moving and in direct hydrologic communication. Mark Lowry of Lone Star GCD opined if you were to drill brackish wells it would result in pulling the interface further inland and diminishing quality. The proximity to the coast and amount of pumping will dictate how quickly the effects are realized, Mr. Kasmarek added. Mike Turco also added that the aquifer doesn't care about the quality, but that removing water from that matrix would still be limited based on subsidence. Larry French asked about the criteria used to define fresh and brackish water in the HAGM. Mr. Kasmarek noted 1,000 mg/L as the boundary definition of fresh groundwater. Mr. French followed up with the HAGM modeled beyond that definition. Mr. Kasmarek noted that this model is specific to the freshwater only and brackish groundwater would not have an estimate of MAG. The cells which are greater than the 1,000 mg/L are turned off in the model. The lack of calibration targets was also a factor to turn the cells off.

Mr. French was given the floor to present information from the TWDB of items of interest to GMA 14. First, since the last meeting, TWDB has a new board member. Kathleen Jackson came to the Board about 6 weeks ago from Beaumont. She is eager to hear from and interact with folks around the State. Second, TWDB should be completing and submitting a report to the GMA regarding the total estimated recoverable storage. This report is statutorily required for all of the management areas. The report is currently under management review and will give volumetric estimates for all relevant aquifers in the region. However, they will not address any issues related to subsidence or quality resulting from attempts to produce the water. Finally, TWDB approved the HAGM as the updated GAM in February 2014 and the HAGM is now the adopted model for the region. As part of that approval package, information of the initial request to consider the HAGM as the state's GAM and technical analysis between the previous model and HAGM are provided to outline and inform the reasoning on how the HAGM addresses the criteria and is a

better representation for joint planning purposes. In addition, Mr. French outlined the review process and responses to stakeholder comments.

Ms. Jones began discussion and briefing of the approach and results from the predictive simulations utilizing GMA 14 approved pumping amounts in the updated GAM (also referred to as the HAGM) by turning the floor to Jason Afinowicz of Freese and Nichols, Inc. Mr. Afinowicz noted the presentation would cover the next few agenda items, but all would be covered individually for comment and discussion. Discussion began with review of the GAM run simulation of drawdowns with the approved pumping for the region by GMA 14 members. The second part of moving forward with the simulations is using the GAM run to define desired future conditions (DFCs), which will be the cornerstone of the formulations needed in the explanatory report. Again, this GAM run utilized the updated GAM. As part of the model development, updated projections of pumping were developed for Fort Bend, Harris, Galveston, and Montgomery counties. These updated estimates were utilized in this initial predictive simulation and the rest of the region utilized pumping numbers from GAM Run 10-023. A series of figures demonstrating the drawdowns for the predicted periods were shown for review. Significant updates to aquifer parameters, pumping packages and simulation of predictive periods were noted for the model. Drawdown in the Chicot Aquifer demonstrated expected trends and impacts from pumpage and some aquifer parameter adjustments. Drawdown in the Evangeline Aquifer is somewhat more dramatic, indicative of the adjustments made to aquifer parameters during the model update process. The Burkeville Aquitard also illustrated these trends. As the Jasper Aquifer contained the greatest aquifer parameter and pumping adjustments, the largest variations were subsequently documented for the Jasper Aquifer. This resulted in all drawdowns being greater in all counties for the Jasper Aquifer in the updated GAM than in the previous GAM. Each county was highlighted as to their changes and alterations based on the new, updated GAM. In this initial predictive simulation, it was typical for the pumping projections to go from the currently measured pumping directly to the fixed projected pumping rather than a staged, phased, or gradual increase over the 50-year predictive period. There was also a handout package which detailed all of the pumping and drawdown simulations for the predictive periods for reference comparing the previous and new model simulations.

After this review of results from the updated model, Mr. Mullican began a discussion of the need for any adjustments and additional model simulations based on alternative scenarios. He noted the step function of pumping is having a cumulative effect on the drawdowns and DFCs. Mr. Mullican again specifically highlighted the stepped pumping function, in place for the majority of the area, could be addressed in a subsequent alternative scenario for later consideration. This item on the agenda was intended to allow anyone to ask additional questions of the updated GAM and the desire to revisit how the pumping was put into the predictive simulation to perhaps, at a minimum, change the way the pumping increases over time for the counties based on 10-023. John Martin of Southeast Texas GCD asked with all of his counties encountering significant changes between the models, was the old model that “bad or wrong” to give such differences. Mr. French explained there wasn’t a function of the model being flawed, but an update and differences in the data used. He also mentioned the question of the stepped pumping function which the GMA may want to address and may yield some of the desirable changes and better agreement with previous drawdown predictions.

Mr. Martin also inquired if the districts could reference the old model or if they had to use the new model. Mr. French noted that the Board will only use the new model, and to keep the point of reference and comparison, the new model should be used. TWDB did consider allowing the individual districts to reference one model or the other for their DFC expressions, but it was decided that since they have to focus on things on a regional scale where one district could affect another, a consistent and uniform model across the region would be the most beneficial tool. Mr. Holland voiced that the changes in the model are attributable to changes in pumping or aquifer parameter and overall bettered the modeling process. In a recent Bluebonnet GCD Board meeting considering this model and its best use and incorporation for the district's objectives and goals (i.e. permitting considerations, preventing and controlling subsidence), Bluebonnet GCD wished to express their DFCs not only with drawdowns but also with a subsidence statement. In Bluebonnet GCD's opinion, a subsidence-based DFC would highlight one of the greatest tools of the model in the subsidence calibration. Mr. Holland acknowledged that this may be more appropriate for discussion in the next item, but "maximum allowable" language referencing and expressing subsidence as the most limiting impact was the wish of Bluebonnet. Mr. Holland noted that although the district does not have extensometers to directly measure subsidence, incorporating the drawdown estimates into thresholds to ensure that conditions do not reach the limit of causing subsidence would be their strategy. Although projections of subsidence have not been provided to the GMA yet, Mr. Holland reported that Bluebonnet GCD has already performed this analysis, Mr. Afinowicz acknowledged that the numbers would be available in a future meeting regarding discussion of subsidence as part of the explanatory report criteria. Mr. Mullican stated that the 36.108 conditions require the GMA to consider the impacts of the proposed DFC on subsidence and asked for clarification that Bluebonnet GCD seeks subsidence to be a condition of the MAG also. Mr. Holland reiterated it was not a function of the MAG but an expression of the DFC. The expression would be for the entire county rather than the layer-by-layer format used for the drawdown expressions. Mr. French added that it would definitely be a first, but there shouldn't be any reason why it couldn't be done. Mr. Holland further added that a subsidence based DFC would be consistent with the quantifiable criteria of a DFC, highlight the key components of the model, and emphasize the charge of a GCD to prevent subsidence. Mr. French illustrated that the creation of management zones would likely be the management path in implementing this type of DFC, Mr. Holland agreed.

Mr. Jacobs inquired about which model, HAGM or the old GAM, would be or should be used with his Management Plan which is due in January 2015. Mr. French replied that the HAGM would be expressly used. Mr. Jacobs again questioned the explanation to be given when the drawdowns have changed and district pumping has not. Mr. French echoed the previous discussion and Mr. Jacobs understanding of a different model produces different numbers, aquifer parameters and pumping changes outside of your district are the primary cause for the differences. Drawdowns are also relative to the point in time which you began or started the measurement. Mr. Jacobs would follow up and begin the dialogue regarding his Management Plan with the appropriate TWDB staff. Judge Brieden asked for further clarification on the implementation of the predictive pumping as it immediately jumps from measured to projected pumping rather than a staggered or gradual increase over the 50 year planning window. He

questioned if that process would over exaggerate the drawdown and other changes from the model. Mr. Afinowicz answered that it would certainly have an impact. Judge Brieden mentioned that Harris, Galveston, Fort Bend, and Montgomery counties have the gradual changes in pumping projections, while all others don't. Mr. Mullican added that the step function of pumping is how the model handles the numbers. It is okay in a way, but a gradual increase would reduce impacts. Another reason these numbers are important, currently, is that regional water planning relies solely on the MAG which has to be utilized for groundwater availability. This is the reason why the estimates of MAG really matter to local communities as they are the basis for availability and State funding assistance. The parameters that GMA 14 adopts as DFCs are correlated to the MAG and both must be evaluated. The step function does allow for more water to be available upfront in the current and future State Water Plan and could allow for the short term projects to get off the ground quicker. Reality is this is what makes the GMA process so much more interesting. The GMA must weigh the effects of the numbers, both predicted and simulated, on the region. Mr. French added the Board's high attention to this issue as it continues to be fleshed out and implemented. The conundrum is between the planning and the technical elements. As a district goes about managing groundwater resources, the MAG is one component of consideration. In regional planning, the MAG is a cap. The Board has pulled staff together to develop policies moving forward reacting to the frustration concerns and complaints from around the State on how these numbers will be used as they update previous plans. Dedicated review of the pumping, its step function, and implementation are critical to ensuring that the numbers will be beneficial. Unintended consequences are the goal to avoid, but what is being dealt with, not just here but around the State.

Mr. Mullican re-centered to further discussions regarding the model or the need for additional model runs. Lone Star GCD wishes to pursue an additional model run to better align the pumping package with the current regulatory plan for the district. The only changes will be those requested within those counties, others will keep their current pumping numbers. Mr. Martin expressed wanting to bring the entire model numbers up to 2013 from 2009. Mr. Afinowicz and Mr. French stated that would be a change to the model which would have to be tested, calibrated, peer reviewed and essentially start the entire process over. The changes and differences in the drawdowns will be even more varied, and for a very short time frame, would not add anything to the overall goal and project of the tool. Mr. Turco added that considerations should stay within the bounds of different scenarios of the model, rather than altering the model which again is simply a predictive tool. Mr. Martin expressed confusion on the difficulty of adding four years of pumping to improve the accuracy of the model. Mr. Afinowicz restated it wouldn't be hard, but gathering the data and the time used would not add much in the way of results from the current model. Before moving discussions forward, Mr. Mullican reiterated Lone Star GCD's interest in an additional model run and encouraged anyone else who may have or want changes to get their information in quickly so one additional predictive simulation can be done. Members were encouraged to contact Ms. Jones and Mr. Mullican with their intent or factors to consider. Mr. Martin inquired about the cost of additional model runs. Mr. Mullican noted they would be dependent on the extent of the model run but would only be the responsibility of those participating in the new model run. Mr. Afinowicz noted that the bulk of those costs would be in data collection and its addition. Ms. Jones suggested any who were interested to email their desired changes and allow Mr. Afinowicz to put together a specific cost estimate. Mr. Holland suggested

placing a deadline for changes to be submitted. Acknowledging communications which must occur at the district level and the meetings lost to weather, the deadline for the Participant's request was set for May 21, 2014 in an effort to get back on track with the heavy load to be covered.

Discussions transitioned to briefing and consideration of draft statement of DFCs based on execution of the updated GAM. The draft document provided by the consultants was referenced with the understandings that, at least partially, due to the additional model run that the specific DFC expressions would change. The consultants used the template from the last adoption of the DFC, additional language required by 36.108, and specific DFCs for the subsidence districts to reflect changes. Mr. Holland again voiced Bluebonnet GCDs desires for a subsidence-based DFC statement. He also asked the requirements for deeming aquifers non-relevant, specifically noting the alluvium aquifers in the district. Mr. French detailed that process and justification required. Mr. Mullican encouraged all of the Participants to thoroughly review their numbers and expressions to ensure they are relevant or if changes need to be made that action is taken to resolve those issues now. He also referenced a specific template in the TWDB rules which address Mr. Holland's inquiry. Questions were asked regarding the use of total estimated recoverable storage received from the Board. The numbers are one of the 36.108 factors of considerations, but the GMA has not received the numbers to date. Mr. French added that they were in the final stages of being approved and should be available soon.

The group moved their discussions onto a briefing of the process for GMA 14 agreement for proposed DFCs during joint planning process. Mr. Mullican began discussion referring to the changes in the joint planning process in SB 660 from the 2011 Legislative Session. He noted that the further we get into and through the process, the more questions and clarifications we stumble upon. Mr. Mullican noted that there are more things that we want to think about proactively, rather than reactively, with one of those being the discussion of all the conditions and alternatives considered but not adopted and an explanation, per 36.108(d-3). The concern raised is, what does that mean? What is formal and informal consideration? There seems to be a need for the GMA to establish these criteria to be on the same page. He turned the floor to Shauna Fitzsimmons of Sledge Fancher law firm. One of the main focuses is not limited to ensuring that adopted DFCs are properly documented through the explanatory report, but more importantly the documentation of the alternatives which were considered but not adopted. If there is no control over what constitutes consideration or alternatives, the explanatory report can become unwieldy and overly burdensome. Ms. Fitzsimmons stated that It will be critical for GMA 14 to adopt procedures which state the time and process for considering DFCs versus those just discussed. A bright line rule or test will determine formal and informal discussions regarding considerations of DFCs. Ms. Fitzsimmons stated that it is very important, legally, to understand what the explanatory serves as; an administrative record for everything the GMA works on. She continued by stating that you can't go through this process then produce an explanatory report after the fact, it must be a running record book of the process and the steps taken. The statute is unclear on the detail required or needed. It is the GMAs ability to set the boundaries for formal DFC adoption to help the defense of the DFCs adopted. The process should be clear cut and streamlined to ensure that the GMA has done everything necessary procedurally to prevent challenges to the DFCs based on this clarity issue. She noted that this is important for three reasons. First, we don't want to have holes in our explanatory report regarding the formality of

DFC considerations whether approved, denied, or discussed. Second, we want to steer away from having explanations informally discussed or considered as any discussions at the district level (i.e. district board, staff, consultants, attorneys, etc), district to district, or district to GMA consultant. These criteria should be limited to discussions of the group and not an individual. Third, statements explaining considerations rejected must be careful not be used to discredit the adopted DFCs. Ms. Fitzsimmons used the example of agency rulemaking procedures. She proposed the GMA consider administrative procedures to be presented at the next GMA meeting and adopted by resolution to assist in this process. Ms. Jones added her support and highlighted the concerns and uncertainty of this process.

Discussion shifted to funding levels, participation, and any other aspects of the Interlocal Agreement. Updated financial documents of invoices and payments on work performed were presented by Ms. Jones. She reiterated that those participating in the additional model run would be responsible for those charges and would not affect or be factored into the current agreement. Also of note is the GMA shows a deficit for the overall task. Mr. Burkett proposed an allocation amendment to disperse the costs to those financially able to contribute additional funds be placed on the next agenda. Mr. Martin inquired if there would be additional costs from the consultants as there are phases which went over budget. Mr. Afinowicz stated that the budget and quote for the project would be final. Ms. Jones also suggested that all participants, districts especially, begin to budget a given amount every year to accrue the funds which will be necessary for future joint planning.

Recent activities of interest to or impacting the GMA 14 planning group were the focus of subsequent discussions. Mr. Holland documented that the contested case hearing before his district had been dismissed as the applications had been withdrawn in late January. Mr. Turco mentioned that as a follow up to the Bluebonnet GCD contested case hearing process, Fort Bend Subsidence District had been sued by parties related to that hearing. Mr. Holland added future rulemaking revisions the district would be undertaking in the near future. Ms. Jones furthered some clean up and clarification of Lone Star GCDs rulemaking and regulatory plan implementation. They have also audited their GRPs to ensure they are moving toward their goals of groundwater reduction. Mr. Nelson also announced an upcoming meeting of the Gulf Coast/Montgomery County Water Efficiency Network.

The GMA 14 Joint Planning Committee Meeting was re-opened at 11:37 AM.

Mr. Mullican gave a review of progress to date for the GMA 14 joint planning area. We have completed two of the nine consideration criteria, water use and water supply needs/water management strategies. Now that the HAGM is complete, the GMA can move forward to other criteria. The next meeting will have the results from that additional simulation, and three additional criteria considerations and the possibility of another. If there are any aquifers you don't have a DFC and you want one for this round of planning, we must get these addressed now. Alternatively, if you are looking to designations of non-relevant aquifers, we need to address these and get those into the proper format for the explanatory report. Mr. Martin inquired if there were non-relevant aquifers last time, do they need to be documented this round. Mr. Mullican recommended that if the source is a major or minor aquifer which has a DFC, it should

be documented. He requested that all those wishing to participate in an additional model run notify him by May 21, 2014.

A proposed date for the next meeting was discussed. Mr. Mullican suggested June 25, 2014. Mr. Martin inquired again about the storativity numbers being ready from the Board. Mr. French was confident the numbers would be available and dispersed before that meeting. Mr. Mullican added that if we can meet and tackle the lengthy and detailed agenda, we would be back on track after missing the last couple of meetings with only one or two criteria remaining to complete. Ms. Jones confirmed with consultants and Mr. French that June 25, 2014 at 9:00 AM was good, in addition to the districts and participants. She followed up a question on the length of meeting with Mr. Mullican. He mentioned that if he was able to include the extra criteria, the meeting would likely be longer than today's. Ms. Jones asked for any other agenda items which need to be addressed on future agendas. Mr. Burkett had finished an initial divvying of the remaining funding deficit and presented it to the group for initial consideration to be typed up for the next meeting. Mr. Willcox questioned if there was any way to require participation by non-GCD counties as this group sets numbers for them and yet they don't contribute. Mr. French stated that there isn't any way to require that participation. Discussion went into the efforts which have been undertaken to bring non-GCD areas to the table and the reason why GMA 14 set itself up accordingly. Mr. French suggested identifying water plan strategies tied to groundwater for those non-participating counties as a starter to understand where they may have a more direct link into this process. All counties and representatives are provided notice of all GMA 14.

Without further discussion and there being no further business, the meeting was adjourned at 12:00 PM.

PASSED, APPROVED AND ADOPTED THIS 24TH day of June, 2014

—

Chairman

ATTEST:

Secretary
