SIMSBORO AQUIFER WATER DEFENSE FUND

To: Groundwater Management Area 12 Representatives
From: Simsboro Aquifer Water Defense Fund
Subject: Recommendations for GMA-12 Joint Planning Process
Date: September 1, 2022

The Simsboro Aquifer Water Defense Fund [SAWDF] works with business and government to protect the Carrizo-Wilcox Aquifer and private property rights in groundwater. The best, and most immediate way GMA-12 can address these two objectives is through planning for "sustainable" production of groundwater. The recommendations below are based on "best available science" and the Groundwater Management Area's [GMA] statutory authority laid out in §36.108, Texas Water Code.

Agreed definition for sustainable groundwater production
First, SAWDF recommends that GMA-12 representatives discuss and decide on a definition of sustainable groundwater production that can be presented to their respective boards. Dr. Robert Mace's recent study on sustainability, Five Gallons in a Ten Gallon Hat: Groundwater Sustainability in Texas[1] offers three definitions[2] and discusses their ramifications on the planning process. GMA-12 representatives may find a review of this material helpful.

If GMA-12 Uses Bookends
Second, GMA-12 representatives have discussed using "bookend" pumping files to narrow the range of decisions regarding the DFCs. The high bookend used in the previous planning process was a pumping file with all current permitted production. There is no science behind adopting all current permitted production as the high bookend. The management plans for all five districts in GMA-12 allow them to approve total permits for more than the Modeled Available Groundwater [MAG]. Districts justify this management strategy by stating "not all current permits will be producing at the same time." There appears to be no scientific or management rationale for create pumping files where all current permits are pumping at the same time.

It is reasonable to expect that districts will approve more permits during each 5-year planning process. Under this methodology, with each planning cycle, the high bookend will rise without regard to production the aquifers can sustain given recharge, inflows, and discharges to surface water. GMA-12 representatives noted, in their review of the previous planning cycle, that they had essentially "reverse engineered" the desired future conditions and vowed to seek a better methodology in the current round of planning. SAWDF supports this decision.

Hydrologists George Rice and William Hutchison, in independent research, have noted that the GAM reduces pumping in the computer model when drawdown in a formation approaches the top of a saturated layer. [Environmental Stewardship gives a much better explanation of this research in their GMA-12 recommendations.] Suffice it to say, that through successive runs of the GAM, a maximum sustainable pumping level can be identified; one that is not attenuated by the computer model. SAWDF recommends GMA-12 use this methodology to determine maximum pumping levels for the high bookend. This scientifically addresses §36.108(d-2) which states the DFC will be "a balance between the highest practicable level of groundwater production and the conservation, preservation, protection, recharging, and prevention of waste of groundwater…"

[1] https://gato-docs.its.txst.edu/jcr:0abd33a2-0fcf-4af7-8b6b-e888b54508af
[2] Five Gallons in a Ten Gallon Hat: Groundwater Sustainability in Texas; pgs. 19, 26-29

There was significant disagreement among representatives regarding an appropriate pumping file representing the low bookend. SAWDF recommends that GMA-12 representatives again review Dr. Mace's sustainability study. The study notes that the 2017 DFCs in the Carrizo-Wilcox/Queen City/Sparta/Yegua-Jackson aquifers are approximately 2.2 times what may be sustainable for the aquifers[3]. However, after updates to the GAM in the last planning, it requires 2 times the pumping to generate drawdown equivalent to the 2017 DFCs.

SAWDF recommends that GMA-12 adopt a pumping file for the low bookend based on the 2017 MAGs for DFC year 2070 as published by TWDB. This gives the board for each district an idea of "sustainable" production that addresses the nine considerations under §36.108(d).

If bookends are used in this round of the joint planning process, SAWDF recommends that when a member district submits a pumping file within the established bookends, the pumping file be respected and supported by all member districts. SAWDF contends that there are "substantial" differences in "aquifer uses" between the member districts and these differences require a wide berth for each board to properly manage groundwater within their respective districts. Expansive bookends, based on best available science, will allow each member district sovereign management while also achieving compatible DFCs for GMA-12.

§36.108(d)(1) "aquifer uses or conditions within the management area, including conditions that differ substantially from one geographic area to another;"
In the recently concluded planning process, representatives for Fayette County GCD, Brazos Valley GCD and Mid-East Texas GCD all noted that their districts do not currently have export permits. In contrast, approximately 58% of permits at Post Oak Savannah GCD and 35% of permits at Lost Pines GCD are for export of groundwater. SAWDF recommends that GMA-12 recognize this as a "substantial" difference in "aquifer uses."

§36.108(d)(4) "other environmental impacts, including impacts on spring flow and other interactions between groundwater and surface water;"
SAWDF strongly supports the recommendations of Environmental Stewardship in evaluating environmental impacts, spring flow and surface water interactions.

§36.108(d)(6) "socioeconomic impacts reasonably expected to occur."
SAWDF suggests this section should be read to include "reasonably expected to occur *within GMA-12*." In the recently concluded planning process for desired future conditions [DFCs], SAWDF initiated an economic impact study[4] on domestic & livestock wells by using GIS software to map the location & depth of known exempt wells, estimate the current depth of submersible pumps, estimate the maximum depth for a submersible pump and the predicted drawdown levels from GMA-12 GAM runs. Such a basic study can identify exempt wells that are at-risk of losing access to groundwater as artesian water levels decline from the proposed DFCs. Post Oak Savannah GCD conducted similar studies with much greater detail, especially in the Carrizo formation. The methodology for identifying at-risk, exempt wells is reasonable and within the capabilities of each district in GMA-12. SAWDF recommends conducting such analysis across GMA-12.

[3] Five Gallons in a Ten Gallon Hat: Groundwater Sustainability in Texas; pg. 33
[4] https://posgcd.org/wp-content/uploads/2021/10/Economic-Impacts-to-Domestic-Livestock-Wells-from-proposed-DFC.pdf

Attaching socioeconomic impacts to affected wells is a much more difficult process. The SAWDF study attempted to quantify mitigation, loss of income and loss of property value. Mitigation costs can be calculated using current mitigation costs adjusted for inflation through the year/decade that a well is reasonably predicted to need mitigation. Loss of income due to disruption in farming or livestock operations will require some research with farmer/rancher organizations, auction barns, chambers of commerce, and/or Tx AgriLife extension agents. Loss of property value will require research with real estate professionals and tax appraisal districts.

The more ephemeral calculation of loss of a "way of life" if water can't be accessed and inheritances for future generations cannot be realized. may be difficult but must be recognized. Judge Thomas Lee in his ruling in the case of Glenn and JoLynn Bragg v. Edwards Aquifer Authority stated:

> I believe this is as much about the taking away of a lifestyle as it is about the decrease in the value of land. The Braggs invested their lives, labor and money in a good family farm **that could be passed on to their heirs.** That life plan has been undermined, and their investment severely damaged (emphasis added).

Socioeconomic impacts are not all negative. Groundwater production does generate local, individual landowner income from leases of groundwater rights and increases in agribusiness and economic growth from in-district groundwater use. These factors need to be examined, as well.

The widespread impacts from the Vista Ridge project demonstrate that there are intangible factors that should be included in a 'socio-economic' impact study. For example, the shock from sudden water level declines after years, even decades, of near-static water levels, impacting a dozen residents on one county road, within a few weeks, eroded confidence in groundwater policy, groundwater conservation districts, professional assessments, and government in general. How do you assess the anxiety landowners experienced regarding both their and their livestock's immediate need for water, and their long-term dream of passing productive property on to their children and children's children?

GMA-12 may wish to seek consultant services for a socioeconomic impact study from Rice University's Baker Institute for Public Policy and/or the non-profit Texas Water Trade. SAWDF recommends the following items be included in a socioeconomic impact study under §36.108(d)(6)

1. Well mitigation costs, adjusted for inflation over the DFC time period.
2. Potential loss of landowner income, adjusted for inflation over the DFC time period.
3. The loss of property value. While drawdown is legally allowed under Rule of Capture, none of that changes the fact that farm and ranch property values go down when water becomes unavailable or inaccessible, physically or economically [a fact acknowledged by Senator Perry at the May 2022 interim hearing.]
4. Disruption to farm and livestock routines, e.g., forced sale of livestock, the need to buy and haul water, and damages suffered while landowners look for both emergency and long-term solutions.
5. The need for some sort of "consumer confidence" impact factor, like how the government monitors the economy --- public loss of confidence in a county's water supply can result in less investment in the county, including residential, agricultural, and industrial, the latter being as water sensitive as agricultural endeavors. Drought just exacerbates the crises of confidence that uncertain water supply creates.

6. The human impacts of water anxiety result in mental health issues, loss of public confidence in government, and financial worries caused by well costs that were never anticipated and are downright unaffordable for many.
7. Income realized from leases of water rights.
8. Economic growth within the district from groundwater used for in-district irrigation, livestock, steam-electric, industrial, and municipal.

§36.108(d)(7) "the impact on the interests and rights in private property, including ownership and the rights of management area landowners and their lessees and assigns in groundwater as recognized under Section 36.002;"

SAWDF continues to stress that mitigation of wells is not a substitute for aquifer protection, which must be GMA-12's ultimate objective. However, Texas water policy made a statutory promise to landowners when they invested landowners with a private property right in the groundwater beneath their land. This was not a gratuitous promise, intended only to make clear water marketers could safely lease water rights; it was not qualified that non-leasing or non-selling groundwater "owners" had no protected property rights. Therefore, impacts of such property rights are deserving of recognition in the planning process.

Best Available 'Satellite' Science

SAWDF's executive director attended the 2022 TAGD Groundwater Summit and heard a promising presentation on new developments in the use of satellite data[5] [VIC & GRACE] to model groundwater recharge and storage up to depths of 1,000 feet. SAWDF urges GMA-12 representatives to empower their consultants to explore these new developments which can better inform the DFC planning process.

Thank You

Thank you to GMA-12 representatives and respective board members for your openness to public comment in this round of planning. The Simsboro Aquifer Water Defense Fund looks forward to collaborating with all stakeholders in protecting the Carrizo-Wilcox Aquifer and private property rights in groundwater.

[5] Model-data Fusion of Hydrologic Simulations & Satellite Observations to Estimate Changes in Water Table Depth; Dimitrios Stampoulis, Southwest Research Institute