

Post Oak Savannah Groundwater Conservation District

Position Paper on GMA 12

Proposed DFCs for the 3rd Joint Planning Cycle

Submitted to the Brazos Valley Groundwater Conservation District, Mid-East Texas Groundwater Conservation District, Lost Pines Groundwater Conservation District, and Fayette County Groundwater Conservation District as part of the joint planning process for providing comments on Proposed Desired Future Conditions
July 14, 2021

1.0 Review of the GMA 12 Joint Planning Process

On September 2005, House Bill 1763 became law and mandated that the groundwater conservation districts (GCDs) in Groundwater Management Areas (GMA) develop desired future conditions (DFCs). The Texas Water Code (TWC) requires GMAs to develop DFCs every 5 years. Texas is currently in their 3rd joint planning cycle. The discussion below summarizes key issues associated with the three joint planning cycles.

1st Joint Planning Cycle: During the first joint planning cycle, POSGCD presented its initial set of proposed DFCs listed in below in Table 1 to GMA 12 on May 26, 2010. These proposed DFCs were developed without using a groundwater availability model (GAM). Rather, the proposed DFCs were determined using equations in an Excel spreadsheet. Input to the Excel spreadsheet included values of drawdown for the unconfined and confined portions of each aquifer that were deemed to be consistent with the goals and objectives of the POSGCD Management Plan by POSGCD DFC committee.

Table 1 Initial set of DFCs Proposed by POSGD to GMA 12

Aquifer	Average drawdown (ft) Across the District from 2000 to 2060
Sparta	30
Queen City	40
Carrizo	120
Calvert Bluff	150
Simsboro	300
Hooper	180

During the process of working with GMA 12 member GCDs to develop a set of District DFCs that were deemed to be compatible and physically possible, POSGCD adjusted the values of the DFCs for the Queen City, Carrizo, and Calvert Bluff aquifers to the values shown in Table 2.

2nd Joint Planning Cycle: During the second joint planning cycle, GMA 12 performed several bookend GAM simulations to investigate the sensitivity of drawdowns to different assumptions regarding how to include permitted production in a DFC model simulation. After the bookend simulations were completed, POSGCD proposed to change their current DFCs as little as necessary while still meeting the requirements for DFC in TWC §36.108 (d) and §36.108 (d-2).

Table 2 shows that the adopted DFCs for POSGCD are very similar for the 1st and 2nd joint planning cycles.

Table 2 GMA 12 Adopted DFCs for POSGCD during the 1st and 2nd Joint Planning Cycles

Aquifer	1 st Planning Cycle		2 nd Planning Cycle	
	Simulated Drawdown (ft) from Jan 2000 to Dec 2059	2059 Production in GAM simulation (acre-feet/year)	Simulated Drawdown (ft) from Jan 2000 to Dec 2069	2069 Production in GAM simulation (acre-feet/year)
Sparta	30	6,734	28	6,375
Queen City	30	502	30	504
Carrizo	65	7,059	67	7,058
Calvert Bluff	140	1,038	149	1,036
Simsboro	300	48,501	318	48,503
Hooper	180	4,422	205	4,422
Total		68,256		68,258

3rd Joint Planning Cycle: During the third joint planning cycle, GMA 12 performed several bookend GAM simulations in 2019. These bookend GAM simulations were similar to those performed in the 2nd Joint Planning Cycle. GMA 12 also adopted the use of an updated GAM for the Sparta, Queen City, Carrizo, Calvert Bluff, Simsboro and Hooper aquifers. The updated GAM produced notably different drawdown responses to future pumping for all of the aquifers as a result of changes in the hydraulic properties of the aquifers. A significant finding from using the updated GAM was that POSGCD could not achieve its current DFC for the Carrizo Aquifer in 2069 even if it stopped all pumping in the Carrizo from 2010 to 2069.

In the winter of 2020, POSGCD determined that an appropriate DFC for the Carrizo for POSGCD to implement its management strategies and achieve its management goals would be an average drawdown of about 145 feet in 2070. The analysis used to support the drawdown of 145 feet was based on multiple considerations, including:

- assumptions used to develop the proposed DFCs in Table 1
- the exceedance of a level 2 threshold in POSGCD Rule 16.4 in 2020 for the Carrizo Aquifer
- DFC requirements listed in the Texas Water Code (TWC)

On January 15, 2021, POSGCD requested that GMA 12 support a DFC of about 145 feet of drawdown in 2070 for the portion of the Carrizo Aquifer in POSGCD. A simulation with the updated GAM indicated that to achieve a DFC of 145 feet of drawdown, the maximum production from the Carrizo Aquifer in Milam and Burleson counties must be limited to approximately 12,000 acre-feet per year. On January 19, 2021, POSGCD Director Steven Wise sent a letter to the Board of the Directors of Brazos Valley GCD, Lost Pines GCD, Fayette County GCD, and Mid East Texas GCD to request their support in a lowering POSGCD maximum production rate in the Carrizo Aquifer from 18,205 AFY to 12,000 AFY. Among the points made by Director Wise supporting a lower production rate are:

- Since approximately August of this past year, we have been apprised of 28 wells – 26 of which are in the Carrizo – which needed their pumps lowered or the well redrilled. We have measured water levels in approximately 20 additional Carrizo wells located in the District. Of those, about 10 will need servicing in the next couple of months.
- Based on results from modeling and field studies, POSGCD estimates that if the Carrizo pumping is not reduced below 18,205 AFY, there could be as many as 140 Carrizo wells in our district that will need to have their pumps lowered or wells redrilled by 2050.
- As a result of these concerns, POSGCD will be asking Districts in the next GMA 12 meeting to support a modification of run S-7 to set a maximum production rate of 12,000 AFY in the Carrizo for POSGCD. This change will result in less drawdown in the Carrizo across the entire GMA and result in management of the aquifer consistent with intentions of our Board.
- It is important to note that we are not requesting any of the pumping files for other GCDs in GMA 12 to be changed, and no DFCs for any of the districts in GMA 12 will be increased in the Carrizo Aquifer.

In a vote of 4 to 1 (with POSGCD being the 1 nay vote), GMA 12 approved the proposed DFCs listed in **Table 3** for POSGCD. The DFCs listed in Table 3 are based on drawdown predicted from GAM run S-12 (Scenario 12), which included a maximum Carrizo production rate of 18,206 AFY in 2070. In developing the pumping for GAM Run S12, GMA 12 used the Carrizo pumping from GAM Run S-7, which was one of the bookend GAM simulations developed by GMA 12 in 2019. GMA 12’s rationale for using the Carrizo pumping of 18,206 AFY in 2070 was that it included “known pumping.”

Table 3 GMA 12 Proposed DFCs for POSGCD for the 3rd Joint Planning Cycle

Aquifer	3 rd Planning Cycle	
	Simulated Drawdown from Jan 2010 to Dec 2069	2069 Production in GAM simulation (acre-feet/year)
Sparta	32	4,105
Queen City	31	7,838
Carrizo	172	18,206
Calvert Bluff	179	4,761
Simsboro	336	79,433
Hooper	214	3,126
Total		117,469

2.0 Rationale of POSGCD’s Position on Proposed Carrizo DFCs

POSGCD assessed the process used to develop the proposed DFCs for the Carrizo Aquifer to be unreasonable because it does not meet the requirements set out in Chapter 36 of the TWC for establishing DFCs. The discussion below provides the rationale and support for POSGCD’s position. The discussion is divided into the following three subject areas of concern.

- Development and Use of GAM Run S12
- Chapter 36 of the Texas Water Code requirements for establishing DFCs
- POSGCD Management Strategies, Policies, and Rules to locally manage groundwater

Development and Use of the GAM Run S12: The pumping rates used to define the GAM runs for GMA 12 are prepared by the Districts’ Consultants under directions provided by the GMA 12 members. The POSGCD pumping rate of 18,205 AFY in GMA Run S12 for the Carrizo Aquifer is based on the pumping rates developed by the GCD Consultants for GMA Runs S1 and S7, which were presented in GMA meetings in August 2019 and September 2019, respectively. GAM runs S1 and S7 were developed by the GCD consultants to represent production from existing permits.

All of the pumping rates for the GMA 12 GAM Runs prior to 2021 were generated through a process whereby each GCD was responsible for developing the pumping rates over time for their counties and the GCD hydrogeologic consultants merged the pumping rates into a single file. Also prior to 2021 each GCD created their pumping rates independently of each other. In 2021, GMA 12 voted to accept GAM Run S12 and to prevent POSGCD from reducing the Carrizo pumping in Milam and Burleson counties because, ostensibly, any reduction in the POSGCD Carrizo pumping would prevent the Run S12 from representing “known pumping.” In particular, several GCDs specifically identified the need to include the “known pumping” for the Vista Ridge project. Among the concerns that POSGCD has with GMA 12’s requirement that “known pumping” needs to be included in a GAM Run used for supporting and justifying the proposed DFCs are:

- GMA 12 has not defined “known pumping” nor have the GMA consultants discussed a workable definition or meaning for “known pumping” and to date this discussion has only been applied to one GCD and one aquifer in the GMA.
- If GMA 12 is to include “known pumping” in GAM runs then GMA 12 needs to have written protocols for how “known pumping” will be represented and documented in a GAM pumping file. More importantly, GMA 12 would need to show that the incorporation of ‘known pumping’ is consistent with the requirements and intent of Chapter 36 in TWC for establishing DFCs. Currently, GMA 12 has no written protocols for determining how any pumping will be presented in its GAM simulations.
- The vast majority of the pumping rates in GAM Run S12 are based on GAM Run S7. Run S7 developed by the GCD consultants used permitted pumping amounts and the assumption that permits would be remain in full effect through 2070 even though the term of many permits expires decades prior to 2070.
- If GAM runs are to include “known pumping” and GAM runs are used to establish DFCs that exist 50 years into the future, then the process ensures drawdown-based DFCs will gradually get larger with each 5-year planning cycle if no curtailment can be affected and production increases as existing permits reach their limits and new permits are granted. Such a process wherein DFCs would tend to gradually increase over time will prevent POSGCD (or really any of the GCD’s) from effectively managing groundwater using their existing policies and strategies or developing new ones as necessary.

Chapter 36 of the Texas Water Code requirements for establishing DFCs: The TWC lists two key requirements for DFCs. TWC §36.108 (d) states that the districts shall consider nine factors when

developing the DFCs, which are listed in the statute. Section 36.108 (d-2) states that DFCs “must provide a balance between the highest practicable level of groundwater production and the conservation, preservation, protection, recharging, and prevention of waste of groundwater and control of subsidence.” Among the concerns that POSGCD has with the GMA 12 process used to develop the proposed DFC are the following:

- POSGCD used the results from its 2020 GANA report (Young and others, 2020) and related groundwater model simulations to determine that an appropriate DFC would be 145 feet of average drawdown in the Carrizo aquifer to achieve the *balance* described in TWC §36.108 (d-2). Results of this analysis were provided to GMA 12 through POSGCD presentations and were sent to each GCD by Director Wise. The previously mentioned 4-1 vote by GMA 12 essentially disregarded POSGCD’s analysis. Therefore GMA 12 did not achieve an appropriate “balance” and provided no basis for why the DFC should be raised from 145 feet to 172 feet.
- GMA 12 has not yet provided any evidence or discussion to show that the proposed DFCs in Table 3 achieve the balance required in TWC §36.108 (d-2).
- TWC §36.108 (d) states that the districts *shall* consider nine factors before voting on the proposed DFCs. GMA 12 consultants’ presented information on these nine factors. However, the nine factors were not included in the discussion when determining the Carrizo DFC in 2070 for POSGCD. Instead, GMA 12 voted to use the drawdowns predicted from GAM Run S12 as the overriding factor for the establishing the 2070 DFC for the Carrizo for POSGCD.
- The GMA 12’s discussion of the nine factors did not address the potential 140 Carrizo wells in POSGCD that will need to be redrilled or have pumps lowered by 2050 if the “known pumping” is used to determine the Carrizo DFC for POSGCD. POSGCD therefore argues that GMA 12 did not meet the intent of the TWC §36.108 (d) requirement to consider *all* nine factors, which include the socioeconomic impacts as well as impacts to the interest and rights in private property.

POSGCD Management Strategies, Policies, and Rules to Locally Manage Groundwater: POSGCD’s management strategy based on draw down and water level decline has been crafted and refined since 2005. Part of POSGCD’s management strategy includes evaluating water levels relative to existing well screens. Studies have reviewed these management strategies and found merit. These strategies have undergone challenges and scrutiny – not once but twice – at TCEQ through the petition process.

The GCDs in GMA 12 have different approaches for establishing DFCs, demonstrating compliance with DFCs, and managing groundwater to achieve a DFC. As a result of these different approaches, the DFC process must account for and accommodate *all* the different approaches to the extent that is practicable and consistent with TWC statutes and with judicial rulings related to groundwater management.

Prior to, and throughout the Joint Planning Process, POSGCD has used drawdown-based conditions to guide groundwater management strategies and decisions. These conditions have been, and continue to be, primarily determined using a multi-decision process that avoids using a GAM to determine a DFC from pumping inputs. The multi-decision process allows POSGCD the

option of selecting the same, or similar DFCs for adjacent DFC planning cycles even if production and/or permitted pumping increases over time. Among the concerns that POSGCD has with the GMA 12 process used to develop the proposed DFC are the following:

- Introducing the undefined term of “known pumping” as a factor and considering it “in perpetuity” at this juncture; this approach makes it such an overriding factor, it creates a situation wherein POSGCD’s long term management strategies have been made virtually obsolete.
- Use of this “known pumping” as a factor – even an overriding factor – to be considered is NOT one of the nine factors that the GCDs are required per TWC 36.108, and as such is potentially a misapplication of state law.
- Inputting “known pumping” which appears to some GCDs to equate to permitted pumping in perpetuity in the joint planning process to determine a DFC is not consistent with the underlying principles for groundwater management as set out in TWC Sec. 36.108.
- Prior to, and throughout the Joint Planning Process, POSGCD has included curtailment of groundwater production as the key management strategy in achieving the “balance” of conservation and production/protection of groundwater and property rights therein. POSGCD’s rules tie the District’s authorization for curtailment to reaching thresholds that are expressed as a percentage of the DFCs. In order for POSGCD to properly maintain its well-established management strategies, GMA 12 needs to develop a methodology that allows a District to achieve (or maintain) a DFC for a set period of time. The GMA 12 recent process of incorporating “known pumping” used to create the proposed DFC is not conducive for managing toward a specific DFC; rather, this new GMA 12 process with this additional factor is conducive for adjusting a DFC to allow current production and permitted production to continue, or perhaps expand, indefinitely.
- The proposed DFCs are for a time that is approximately 50 years into the future. GMA 12’s proposed methodology would require that “known pumping,” associated with all permits, be continued for such 50-year period in a GAM Run no matter what the term associated with the permit. This creates a situation where DFCs will tend to favor higher drawdowns and indirectly handicap a GCD’s ability to implement curtailment if the GCD’s rules for curtailment require that the 2070 DFC not be exceeded.
- GMA 12 has adopted a 10% variance between the average drawdown predicted by a GAM Run and a DFC. POSGCD demonstrated to the GCDs within GMA 12 that the 10% variance would be sufficient for all GCDs to keep their proposed DFCs in Table 3 for the Carrizo for a modified GMA 12 Run and that POSGCD’s Carrizo maximum pumping rate could be reduced to about 12,000 AFY. As a result of the previously mentioned 4-1 vote, GMA 12 representatives did not accept the modifications presented by POSGCD.

3.0 Summary

Based on the foregoing, POSGCD assesses the process used to develop the proposed DFCs for the Carrizo Aquifer to not be reasonable. Further, and perhaps more importantly, the process does not meet the requirements set out in Chapter 36 of the TWC for establishing DFCs. POSGCD supports its evaluation based on the above set-out discussions with the three subject areas of concern.

- Development and Use of GAM Run S12
- Chapter 36 of the Texas Water Code requirements for establishing DFCs
- POSGCD Management Strategies, Policies, and Rules to locally manage groundwater.

Attempting to give reason to GMA 12's rejection of the POSGCD-suggested solution supports the notion that the end goal of the 3rd joint planning cycle is more about developing precedents for enforcing an unwritten rule of including the undefined term "known pumping" into GMA methods used to develop DFCs together with an idea that such undefined term is perpetual rather than adopting DFCs that assist all Districts with achieving their management goals. Such actions may require one District to curtail unnecessarily while others benefit from such curtailment. Such rejection also seems to belie what true "management" and the nine requirements set out in 36.108(d) mean to those Districts within GMA 12.