



Response to House Natural Resources Committee Request for Information INTERIM CHARGE #3 – State Auditor Report on Selected GCDs

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Provided by Texas Alliance of Groundwater Districts

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The Texas Alliance of Groundwater Districts (TAGD) is a 501(c)(3) nonprofit organization that represents **88** of the **98** Chapter 36 Groundwater Conservation Districts (GCDs). It was created by GCDs in 1988 and works to promote and support sound management of groundwater based on local conditions and good science. TAGD provides educational and technical assistance to member districts and the public, serves as a resource on groundwater issues to state officials, assists members in keeping current with state law, and is a central point of contact for information on groundwater issues and practices. TAGD frequently collects data on GCD demographics, regulatory frameworks, and current activities from its members. TAGD distributed two surveys to GCD members to collect information relevant to this submittal. 69 of TAGD's GCD members participated in one survey, while 48 participated in the second survey. Responses reflect all 15 of the groundwater management areas where there are GDCs.

Overall, GCDs report that the joint planning process has had a positive impact on groundwater management by facilitating the establishment of mutually compatible DFCs while maintaining important local GCD management. GCDs report that it has improved coordination among GCDs, promoted open dialogue, encouraged information and data sharing, and supported the advancement of aquifer science by GMAs.

Definitions

Groundwater Management Area (GMA): The Texas Water Development Board (TWDB) has designated groundwater management areas covering all major and minor aquifers in the state. These GMAs are designated with the objective of providing the most suitable area for the management of the groundwater resources. To the extent feasible, GMAs shall coincide with the boundaries of a groundwater reservoir or a subdivision of a groundwater reservoir. All GCDs are within one or more GMA.

Desired Future Conditions (DFCs): Defined in TAC §356.10 (7) as "the desired, quantified condition of groundwater resources (such as water levels, spring flows, or volumes) within a management area at one or more specified future times as defined by participating groundwater conservation districts within a groundwater management area as part of the joint planning process." DFCs must be physically possible, individually and collectively, if different DFCs are stated for different geographic



areas overlying an aquifer or subdivision of an aquifer. The TWDB uses the DFCs established by GMAs to determine a modeled available groundwater (MAG) value for an aquifer or portion of an aquifer. DFCs are essentially planning goals that could be reached, but should not be exceeded.

Modeled Available Groundwater (MAG): Defined in TAC §356.10 (13) as “the amount of water that the executive administrator determines may be produced on an average annual basis to achieve a desired future condition.” The MAG is calculated by the TWDB using groundwater availability models (GAMs).

Groundwater Availability Models (GAMs): Groundwater availability models are developed by the TWDB and include comprehensive information on each aquifer, such as recharge (amount of water entering the aquifer); geology and how that conveys into the framework of the model; rivers, lakes, and springs; water levels; aquifer properties; and pumping. Each model is calibrated to ensure that the models can reasonably reproduce past water levels and groundwater flows. GAMs are considered to be the best available science.

Background & Overview

In 2005, the Legislature passed HB 1763, which required joint planning among GCDs within GMAs. One of the key requirements established by HB 1763 is that GCDs shall establish DFCs for all relevant aquifers in the GMA by no later than September 1, 2010 and every five years thereafter. After the first cycle of joint planning, the process was expanded and modified by the Legislature in 2011. The second five-year cycle of joint planning was completed in May 1, 2016. **The GMAs are currently nearing the end of the third five-year cycle for joint planning. GMAs must propose DFCs by May 1, 2021 and finally adopt DFCs by January 5, 2022.**

DFCs are essentially a management goal that captures the philosophy and policies addressing how an aquifer will be managed. The districts must jointly determine the DFCs for the GMA and, in doing so, are required to consider nine factors. These factors include aquifer uses or conditions, water supply needs, hydrogeological considerations, environmental impacts (including spring flow and groundwater/surface water interaction), impact on subsidence, socioeconomic impacts, impacts on private property rights, feasibility in achieving the DFC, and other relevant information.

Current and Anticipated DFCs

Expression of the DFC. DFCs can be expressed in a number of ways, as outlined in TAC 356.10(7). In selecting a metric for expressing a DFC, various considerations are taken into account including such things as aquifer conditions, local uses and priorities, and ability to measure the DFC. DFC expressions as a percentage of total DFCs are as follows:

- Drawdown - **84%**
- Water level decline - **6%**
- Percent of saturated thickness - **4%**
- Volume in Storage - **3%**



- Spring flow – **2%**
- Subsidence – **1%**

As these numbers demonstrate, the vast majority of GCDs have adopted DFCs that are expressed in terms of drawdown. When asked the reasons for using this expression, GCDs responded that measuring drawdown/water level decline is the most readily available, robust, easiest to collect and monitor, and has been historically important to address local aquifer concerns.

These water level measurements are also used to estimate aquifer storage volume and saturated thickness. Some GCDs that measure water well production have elected to express DFCs as a volume remaining in storage as a direct comparison to the MAG, while continuing to monitor water level and drawdown. Maintaining saturated thickness is particularly important in outcrop areas and thus sometimes used to express DFCs. In some areas, maintaining spring flow or reducing subsidence is the highest socio-economic and/or environmental concern, and GCDs in those areas may elect to adopt a DFC to monitor the aquifer conditions related to those concerns.

There is a large degree of consistency in the metrics used to express DFCs across the GMAs. All responding GCDs report that the metric used for DFCs is either the same or generally the same - with limited exceptions - throughout their GMA.

The nine factors that GMAs must consider embody some of the reasons why there may be multiple DFCs within a GMA. Just like aquifer conditions vary within the same formation (i.e., outcrop vs. downdip, geologic faults, transmissivity and permeability, etc.), so do the forecasted water use, water supply needs, and socioeconomic considerations. In order to allow for DFCs to reflect these localized considerations while also looking at the aquifer formation as a whole, over half of the GMAs have established “umbrella” DFCs that apply to aquifer formations throughout the extent of the GMA. These are in addition to DFCs for the same formation that may be adopted at a district or county level.

Modifications to DFCs. As a part of the current round of joint planning, GMAs are evaluating potential DFCs pursuant to the nine factors through an open process with public input. Responding GCDs indicate the following:

- **25%** indicate they anticipate one or more new or modified DFC for the GMA.
- **22%** are still investigating whether there may be one or more new or modified DFC for the GMA.
 - Only **2** GMAs have received an outside request to reconsider one or more DFC.
- Nearly all current DFCs have a base or historic year between 2000-2012
 - The majority of GCDs plan to maintain the same “base” year in this round of planning. One reason identified for this is to maintain consistency in monitoring DFCs.
- Most DFCs currently extend to 2070
 - Over **50%** plan to extend DFCs to 2080 in the current planning cycle. If a GMA does not, then TWDB will extend the DFCs out to 2080 in order provide numbers for the state and regional water planning process.



For those GCDs that do anticipate new or possible modifications to one or more DFC, articulated reasons include:

- new or updated GAMs since the last round of planning
- incorporation of new groundwater production data
- improve the ability to monitor DFC
- considering new approach for DFCs
- newly-designated aquifer with no existing DFC
- previously non-relevant aquifer now relevant
- new areas added to a district which do not have an existing DFC

Achievement of DFCs. DFCs reflect a planning goal for the GCD. Once the DFCs have been adopted, a GCD's management plan must include goals and performance standards for addressing the DFCs (among other things) and should include a methodology by which the GCD will track its progress in achieving its management goals. On this topic, responding GCDs indicate the following:

- **98%** report that their management plan sets out program to monitor DFC achievement.
- **100%** use monitoring well measurements to track DFC achievement.
 - This reflects nearly **5,400** monitoring wells used to track achievement of DFCs.
 - Monitoring networks by GCDs vary in size between **6-1,400** monitoring wells.
 - Water level monitoring from individual wells range from real-time readings with automated equipment (every 15 minutes to once a day) to monthly, quarterly, or annual manual measurements. The measurement frequency and observation well number is largely dependent on:
 - the maturity of the observation well network;
 - the data amount a GCD believes necessary to characterize aquifer conditions; and/or
 - the costs associated with investing in observation well acquisition and maintenance.
- Some GCDs also utilize groundwater production reporting and TWDB data in their efforts to monitor DFC achievement.
- When asked what may improve the monitoring of DFCs, GCDs identified expanded monitoring well networks and availability of recharge data.
- Many GCDs identified the GMA as a beneficial forum where GCDs can establish protocols for monitoring of DFCs.
- Only **one** GCD reported a brief period during which a DFC was exceeded as a result of declining aquifer levels during a period of drought.
- **40%** report having rules currently in place to address how pumping may be limited or curtailed in the event a DFC is not being achieved. Curtailment approaches include across-the-board reduction in pumping, targeted reductions on specific zones/areas, and use of conditional permits.

Reflections on Joint Planning



The current planning cycle reflects only the second planning cycle utilizing the current provisions of Chapter 36. GCDs and GMAs have expressed appreciation that this planning cycle has been able to move forward under the same statutory provisions and requirements that were in place during the previous cycle. Nevertheless, the current planning cycle provides an opportunity to identify and discuss possible ways that the joint planning process may be improved for future cycles. Survey results on joint planning provided a range of perspectives, including:

- Over **95%** of responding GCDs indicate that joint planning has increased their cooperation and coordination.
- The vast majority of GCDs report using the joint planning process to share and improve data and science, including joint efforts by GCDs within GMAs to financially support and/or undertake updates to their applicable GAMs.
- Numerous GCDs report that the GMAs can be an effective forum to evaluate how their rules are similar, and have used the GMA for that purpose.
- Some GCDs identified potential improvements to timing:
 - Whether a 10-year cycle for joint planning may be appropriate.
 - Whether the timing between joint planning process and the regional water planning process could be improved.
- Some GCDs identified challenges associated with whether and how to establish DFCs for areas within the GMA where no GCD exists.
- Some GCDs identified challenges associated with funding:
 - Responding GCDs report aggregate spending in excess of **\$3,300,000^{1*}** to complete the last joint planning cycle.
 - Responding GCDs report an anticipated **\$2,000,000*** in aggregate spending to complete the current joint planning cycle.
 - While Regional Water Planning Groups are funded by the legislature, GMAs do not receive state funding.
 - Costs for joint planning can create disproportionate burdens on smaller GCDs.

Joint planning is conducted in a transparent manner and provides a meaningful opportunity for public participation and input into the management of groundwater resources. This transparency and public participation have continued during COVID as a result of Governor Abbott's executive order suspending certain open meetings laws to allow governmental bodies to conduct meetings by telephone or video conference. The majority of GMAs have used telephonic or video meetings in order to continue the ongoing joint planning process. While that executive order has been in effect, new and expanded segments of the public have had the opportunity to access and participate in GMA meetings, thereby increasing transparency and engagement. Regardless of the platform, GCDs are committed to ensuring that the joint planning process is done transparently and with public input after with careful consideration of all relevant factors.

* Not all GCDs responded with spending figures, and many did not include their own staff time – identifying only costs paid to consultants. Therefore, these amounts most likely understate actual costs associated with the joint planning process.