

THE STATE OF TEXAS §
§
GROUNDWATER MANAGEMENT AREA 12 §
§
GROUNDWATER CONSERVATION DISTRICTS§

WHEREAS, the groundwater conservation districts located wholly or partially within Groundwater Management Area 12 (“GMA 12”), as designated by the Texas Water Development Board, as of the date of this resolution are as follows: Brazos Valley Groundwater Conservation District, Fayette County Groundwater Conservation District, Lost Pines Groundwater Conservation District, Mid-East Texas Groundwater Conservation District, and Post Oak Savannah Groundwater Conservation District (collectively hereinafter “the GMA 12 Districts”);

WHEREAS, the GMA 12 Districts desire to fulfill the requirements of Texas Water Code §36.108 through mutual cooperation and joint planning efforts;

WHEREAS, the GMA 12 Districts have had numerous public meetings, including stakeholder meetings for the specific purpose of receiving comments and input from stakeholders within GMA 12, and they have engaged in joint planning efforts to promote comprehensive management of the aquifers located in whole or in part in Groundwater Management Area 12;

WHEREAS, each of the GMA 12 Districts secured hydrogeologic and engineering consulting services to provide technical support in their efforts to establish requisite DFCs;

(1) groundwater availability models and other data or information for the management area;

- (2) aquifer uses or conditions within the management area, including conditions that differ substantially from one geographic area to another;
- (3) the water supply needs and water management strategies included in the state water plan;
- (4) hydrological conditions, including for each aquifer in the management area the total estimated recoverable storage as provided by the Texas Water Development Board Executive Administrator and the average annual recharge inflows, and discharge;
- (5) other environmental impacts, including impacts on spring flow and other interactions between groundwater and surface water;
- (6) the impact of subsidence;
- (7) socioeconomic impacts reasonably expected to occur;
- (8) 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 Texas Water Code §36.002;
- (9) the feasibility of achieving the desired future conditions; and
- (10) any other information relevant to the specific desired future conditions, including comments received from the Texas Water Development Board regarding the initially submitted desired future conditions;

WHEREAS, pursuant to Section 36.108(d-2) of the Texas Water Code, the GMA 12 Districts also considered the 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 in the management area;

WHEREAS, after consideration of multiple GAM simulations and other data and information relevant to the development of DFCs as required by Section 36.108 of the Texas Water Code, the representatives of GMA 12 Districts voted to approve proposed DFCs for the relevant aquifers in GMA 12 on March 18, 2021, at a publicly held meeting;

WHEREAS, the proposed DFCs approved by the representatives of GMA 12 Districts were distributed by mail to each GMA 12 District, initiating a 90-day public comment period by which each GMA 12 District held a public hearing on the proposed DFCs relevant to that district pursuant to section 36.108(d-2) of the Texas Water Code;

WHEREAS, each GMA 12 District compiled a written summary report inclusive of relevant comments received during the comment period on the proposed DFCs, any suggested revisions to the proposed DFCs, and the basis for any such revisions;

WHEREAS, the GMA 12 Districts' summary reports were submitted for review and consideration by GMA 12 district representatives at the November 12, 2021 meeting in accordance with Section 36.108, Texas Water Code;

WHEREAS, after considering the factors listed in 36.108(d), Texas Water Code, the GMA 12 Districts may establish different desired future conditions for: (1) each aquifer, subdivision of an aquifer, or geologic strata located in whole or in part within the boundaries of GMA 12; or (2) each geographic area overlying an aquifer in whole or in part or subdivision of an aquifer within the boundaries of GMA 12;

WHEREAS, the GMA 12 Districts recognize that GMA 12 includes a geographically and hydrologically diverse area with a variety of land uses and a diverse mix of water users;

WHEREAS, in accordance with Section 36.108, Texas Water Code, at least two-thirds of the GMA 12 Districts had a voting representative in attendance at the reconvened November 12, 2021 meeting; Brazos Valley Groundwater Conservation District, Fayette County Groundwater Conservation District, Lost Pines Groundwater Conservation District, Mid-East Texas Groundwater Conservation District, and Post Oak Savannah Groundwater Conservation District were in attendance to review the reports and consider any district-suggested revisions to the proposed desired future conditions and

WHEREAS, on November 30, 2021, at an open meeting duly noticed and held in accordance with law at the Post Oak Savannah Groundwater Conservation District's office located at 310 East Avenue C, Milano, Texas, all GCDs within GMA 12, having had a chance to consider this Resolution at this meeting as well as comments submitted to the individual districts during the comment period have voted on the DFCs for in the counties and districts according to the tables in Attachment A.

NOW, THEREFORE, BE IT RESOLVED BY THE AUTHORIZED VOTING REPRESENTATIVES OF THE GMA 12 DISTRICTS AS FOLLOWS:

1. Each of the above affirmations and recitals set forth herein are true and correct and fully incorporated into this resolution.
2. The authorized voting representatives of the GMA 12 Districts hereby establish the Desired Future Conditions of the aquifer(s) as set forth in Attachment B by the vote reflected in the Minutes attached hereto as Attachment D, summarized as follows:

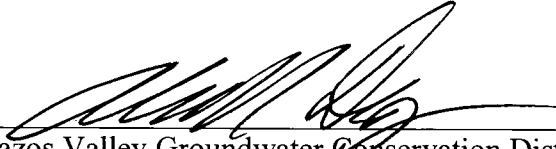
GCD	Aquifer: Sparta, Queen City, Carrizo, Calvert Bluff, Simsboro and Hooper	Aquifer: Yegua-Jackson	Aquifer: Brazos River Alluvium
Brazos Valley GCD	Y	Y	Y
Fayette County GCD	Y	Y	Y
Lost Pines GCD	N	Y	Y
Mid-East Texas GCD	Y	Y	Y
Post Oak Savannah GCD	Y with objection as to process	Y with objection as to process	Y with objection as to process

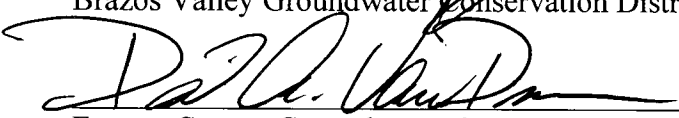
3. The authorized voting representatives of the GMA 12 Districts declare that the following aquifers are non-relevant for the purpose of adopting Desired Future Conditions in Groundwater Management Area 12, as the districts determined that aquifer characteristics, groundwater demands, and current groundwater uses do not warrant adoption of a desired future condition for the: the Gulf Coast Aquifer in Brazos County; the Trinity Aquifer in Bastrop, Lee, and Williamson counties; the Yegua-Jackson Aquifer in Bastrop and Lee counties; and the Wilcox portion of the Carrizo-Wilcox Aquifer in Fayette County. Technical justifications of the non-relevant aquifers, as required by 31 Tex. Admin. Code §356.31, is set forth in Attachment C.

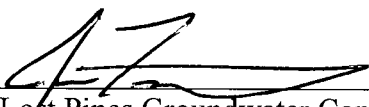
4. The GMA 12 Districts and their agents and representatives, individually and collectively, are further authorized to take all actions necessary to implement this resolution, including but not limited to additional actions required for adoption of the DFCs in accordance with Section 36.108 of the Texas Water Code.
5. The Desired Future Conditions of the aquifer(s) adopted by the GMA 12 Districts and attached hereto, along with the explanatory report, and proof of the notice of the meeting in which Desired Future Conditions adoption occurred, shall be submitted to the Texas Water Development Board and sent to the GMA 12 Districts, as required by Section 36.108(d-3), Texas Water Code.

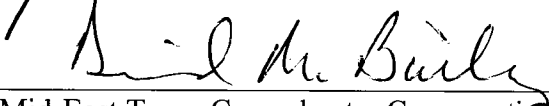
AND IT IS SO ORDERED. PASSED AND ADOPTED on this 30th day of November, 2021.

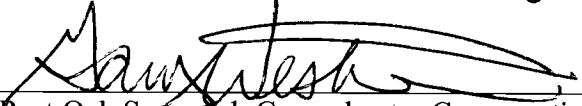
ATTEST:


Brazos Valley Groundwater Conservation District


Fayette County Groundwater Conservation District


Lost Pines Groundwater Conservation District


Mid-East Texas Groundwater Conservation District


Post Oak Savannah Groundwater Conservation

ATTACHMENTS

- A: Copies of notices of November 30, 2021, meeting
- B: Desired Future Conditions
- C: Non-relevant Aquifers
- D: Minutes of November 12, 2021

Attachment A
Notice for November 30, 2021 GMA 12 Meeting
Attachment B
GMA 12 DESIRED FUTURE CONDITIONS

A. Sparta, Queen City, Carrizo, Calvert Bluff, Simsboro, and Hooper Aquifers

The Sparta, Queen City, and Carrizo aquifers are present and used in all GCDs within GMA 12. Therefore, all GCDs submitted DFCs for these aquifers. The Calvert Bluff, Simsboro, and Hooper aquifers are present in all GCDs but not used in Fayette County. Therefore, GMA 12 declared these aquifers not relevant for Fayette County, and Fayette County GCD did not submit a DFC for these aquifers. For the purpose of establishing DFCs, the Groundwater Availability Model (GAM) for the Sparta, Queen City and Carrizo-Wilcox Aquifer (Young and others, 2020) was used to determine the compatibility and physical possibility of the DFCs proposed by each GCD. The DFCs proposed by each GCD for these six aquifers are provided in **Table 2-1**, as well as the DFC adopted by GMA 12 as a whole. The DFCs are based on the average drawdown from January 2011 through December 2070 in all instances except for the Brazos Valley Groundwater Conservation District where the DFCs are based on the average drawdown from January 2000 through December 2070. Note that the DFCs for Fayette County GCD in the Sparta, Queen City, and Carrizo aquifers are for all of Fayette County, and not just the portion of Fayette County within GMA 12. This is because GMA 15 has declared these aquifers not relevant for Fayette County, and all joint groundwater planning for these aquifers is done through GMA 12.

Table 2-1 Adopted DFCs for the Sparta, Queen City, Carrizo, Calvert Bluff, Simsboro, and Hooper Aquifers

GCD or County	Average Aquifer Drawdown (ft) measured from January 2011 through December 2070					
	Sparta	Queen City	Carrizo	Calvert Bluff	Simsboro	Hooper
Brazos Valley GCD	53	44	84	111	262	167
Fayette County GCD	43*	73*	140*	--	--	--
Lost Pines GCD	22	28	134	132	240	138
Mid-East Texas GCD	25	20	48	57	76	69
Post Oak Savannah GCD	32	30	146	156	278	178
Falls County	--	--	--	--	7	3
Limestone County	--	--	--	2	3	3
Navarro County	--	--	--	0	1	0
Williamson County	--	--	--	25	31	24

* Fayette County GCD DFCs are for all of Fayette County.
Brazos Valley GCD DFCs are for 2000 through 2070

Based on the principle of using the GAM as a joint planning tool and the fact that the GAM predictions contain uncertainty, GMA 12 considered the DFCs to be compatible and physically

possible if the difference between modeled drawdown results and the DFC drawdown targets are within a 10 percent variance for all aquifers in the Queen City-Sparta/Carrizo-Wilcox GAM of the GAM simulation. Factors considered for determining tolerance criteria include:

- model calibration results and statistics;
- information used to calibrate the GAM;
- aquifer and recharge information collected since the GAM was developed;
- sensitivity of the GAM calibration and GAM predictions to change in the model parameters; and
- range of uncertainty in the model parameters including historical and future pumping, temporal variation in recharge distribution and magnitude.

Reference:

Young, S., Jigmond, M., Jones, T., and Ewing, T., 2020. Groundwater Availability Model for the Central Portion of the Sparta, Queen City, and Carrizo-Wilcox Aquifers, prepared for the Texas Water Development Board, Austin, Texas

B. Yegua-Jackson Aquifer

The Yegua-Jackson Aquifer is present in all GCDs in GMA 12. All GCDs manage the Yegua-Jackson Aquifer as a single unit. The DFCs proposed by each GCD for the Yegua-Jackson Aquifer are provided in **Table 2-2**, as well as the DFC adopted by GMA 12 as a whole. Lost Pines GCD did not propose a DFC because the district has declared the Yegua-Jackson Aquifer as a non-relevant aquifer. For the purpose of establishing and evaluating DFCs, the GAM for the Yegua-Jackson Aquifer (Deeds and others, 2010) was used to determine the compatibility and physical possibility of the DFCs submitted by each GCD. The DFC is based on the average drawdown from January 2010 through December 2069.

Table 2-2 Adopted DFCs for the Yegua and Jackson Aquifers

GCD	Average Aquifer Drawdown (ft) measured from January 2010 through December 2069
	Yegua-Jackson
Brazos Valley GCD	67
Fayette County GCD	81
Lost Pines GCD	--
Mid-East Texas GCD	8
Post Oak Savannah GCD	61

Based on the principle of using the GAM as a joint planning tool and the fact that the GAM predictions contain uncertainty, GMA 12 considered the DFCs to be compatible and physically possible if the difference between modeled drawdown results and the DFC drawdown targets are within a 10 percent for the Yegua-Jackson Aquifer in the GAM simulation. Factors considered for determining tolerance criteria include:

- model calibration results and statistics;
- information used to calibrate the GAM;

- aquifer and recharge information collected since the GAM was developed;
- sensitivity of the GAM calibration and GAM predictions to change in the model parameters; and
- range of uncertainty in the model parameters including historical and future pumping, temporal variation in recharge distribution and magnitude.

Reference:

Deeds, N.E., Yan, T., Sungh, A., Jones, T.L., Kelley, V.A., Knox, P.R., and Young, S.C., 2010, Groundwater Availability Model for the Yegua-Jackson Aquifer, final report prepared for the Texas Water Development Board, March, 2010, 582 pp.

C. Brazos Alluvium Aquifer

In GMA 12, the Brazos River Alluvium Aquifer is only present in Post Oak Savannah GCD and the Brazos Valley GCD. For this reason, GMA 12 adopted DFCs at a county level in these two GCDs, as shown in **Table 2-3**. DFCs for the Brazos River Alluvium Aquifer were not adopted for GMA 12 as a whole.

Table 2-3 Adopted DFCs for the Brazos River Alluvium Aquifer

GCD	County	Brazos River Alluvium Aquifer
Brazos Valley	Brazos & Robertson	North of State Highway 21: Percent saturation shall average at least 30% of total well depth from January 2013 to December 2069. South of State Highway 21: Percent saturation shall average at least 40% of total well depth from January 2013 to December 2069.
	Burleson	A decrease in 6 feet in the average saturated thickness over the period from January 2010 to December 2069.
Post Oak Savannah	Milam	A decrease of 5 feet in average saturated thickness over the period from January 2010 to December 2069

D. Non-relevant Areas of Aquifers

There are four areas where aquifers were declared non-relevant during the current cycle of joint groundwater planning. The Trinity Aquifer was declared non-relevant in Bastrop, Lee and Williamson counties because of its small areal coverage, great depth and poor water quality. The Yegua-Jackson Aquifer was declared non-relevant in Lost Pines GCD because it has a minimal amount of pumpage within the district. The Gulf Coast Aquifer was declared non-relevant in Brazos Valley GCD within GMA 12 since the small outcrop in the southernmost part of Brazos County is thin, can only provide water in small quantities and is very limited in areal extent. Also, the Wilcox portion of the Carrizo-Wilcox Aquifer in Fayette County was declared non-relevant because of the great depth to these units, the poor water quality and the lack of wells in the Wilcox aquifers within the district.

Attachment C
NON-RELEVANT AQUIFER: GULF COAST AQUIFER IN BRAZOS COUNTY

I. INTRODUCTION

The Texas Water Development Board, in its May 2020 document, Explanatory Report for Submittal of Desired Future Conditions to the Texas Water Development Board, offers the following guidance regarding documentation for aquifers that are to be classified not relevant for purposes of joint planning:

Districts in a groundwater management area may, as part of the process for adopting and submitting desired future conditions, propose classification of a portion or portions of a relevant aquifer as non-relevant (31 Texas Administrative Code 356.31 (b)). This proposed classification of an aquifer may be made if the districts determine that aquifer characteristics, groundwater demands, and current groundwater uses do not warrant adoption of a desired future condition.

The districts must submit to the TWDB the following documentation for the portion of the aquifer proposed to be classified as non-relevant:

- 1. A description, location, and/or map of the aquifer or portion of the aquifer;*
- 2. A summary of aquifer characteristics, groundwater demands, and current groundwater uses, including the total estimated recoverable storage as provided by the TWDB, that support the conclusion that desired future conditions in adjacent or hydraulically connected relevant aquifer(s) will not be affected; and*
- 3. An explanation of why the aquifer or portion of the aquifer is non-relevant for joint planning purposes.*

This technical memorandum provides the required documentation to classify the Gulf Coast Aquifer as not relevant for purposes of joint planning.

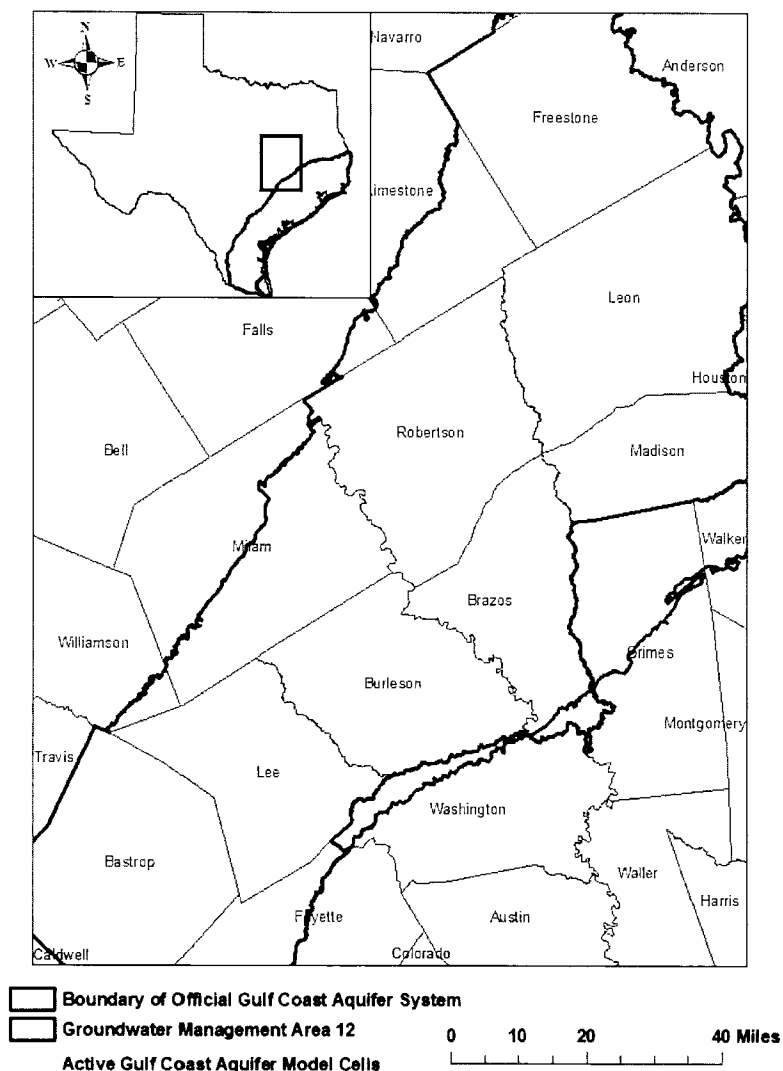
II. AQUIFER DESCRIPTION AND LOCATION

As described in George and others (2011):

The Gulf Coast Aquifer is a major aquifer paralleling the Gulf of Mexico coastline from the Louisiana border to the border of Mexico. It consists of several aquifers, including the Jasper, Evangeline, and Chicot aquifers, which are composed of discontinuous sand, silt, clay, and gravel beds. The maximum total sand thickness of the Gulf Coast Aquifer ranges from 700 feet in the south to 1,300 feet in the north. Freshwater saturated thickness averages about 1,000 feet. Water quality varies with depth and locality: it is generally good in the central and northeastern parts of the aquifer, where the water contains less than 500 milligrams per liter of total dissolved solids, but declines to the south, where it typically contains 1,000 to more than 10,000 milligrams per liter of total dissolved solids and where the productivity of the aquifer decreases. High levels of radionuclides, thought mainly to be naturally occurring, are found in some wells

in Harris County in the outcrop and in South Texas. The aquifer is used for municipal, industrial, and irrigation purposes. In Harris, Galveston, Fort Bend, Jasper, and Wharton counties, water level declines of as much as 350 feet have led to land subsidence. The regional water planning groups, in their 2006 Regional Water Plans, recommended several water management strategies that use the Gulf Coast Aquifer, including drilling more wells, pumping more water from existing wells, temporary overdrafting, constructing new or expanded treatment plants, desalinating brackish groundwater, developing conjunctive use projects, and reallocating supplies.

Figure 1 (taken from Wade and others, 2014) shows the limited extent of the Gulf Coast Aquifer in GMA 12. Note that it occurs only in a small portion of Brazos County.



II. county boundary date 02.02.11. glfc_n model grid date 02.03.14 gma boundary date 01.23.14

Figure 1. Location of Gulf Coast Aquifer in GMA 12

III. AQUIFER CHARACTERISTICS

The Catahoula Sandstone, the very basal unit to the Gulf Coast Aquifer, occurs in the very south part of Brazos County with the outcrop covering the upper part of low rolling hills with the Jackson Group below the Catahoula Sandstone. The Catahoula Sandstone is described as clay, tuff, sand, sandstone in interbedded layers with a capacity to yield small quantities of fresh to slightly saline water. The aquifer covers about 1.3 percent of the Brazos Valley Groundwater Conservation District and is less than 250 feet in thickness.

IV. GROUNDWATER DEMANDS AND CURRENT GROUNDWATER USES

The Texas Water Development Board pumping database lists limited pumping from the Gulf Coast Aquifer in Brazos County that ranged from 6 to 23 acre-feet/year between 2007 and 2016.

V. TOTAL ESTIMATED RECOVERABLE STORAGE

Wade and others (2014) developed total estimated recoverable storage for the Gulf Coast Aquifer in GMA 12 as follows:

<i>County</i>	<i>Total Storage (acre-feet)</i>	<i>25 percent of Total Storage (acre-feet)</i>	<i>75 percent of Total Storage (acre-feet)</i>
Brazos	450,000	112,500	337,500
Total	450,000	112,500	337,500

Total storage is given in the first column. Lower percentages of storage are given in the next two columns.

VI. EXPLANATION OF NON-RELEVANCE

Due to its very limited areal extent, shallow depth and low use, the Gulf Coast Aquifer is classified as not relevant for purposes of joint planning in Groundwater Management Area 12.

VII. REFERENCES

George, P.G., Mace, R.E., and Petrossian, R., 2011. Aquifers of Texas. Texas Water Development Board Report 380, July 2011, 182p.

Wade, S. and Shi, J., 2014. GAM Task 13-035 Version 2: Total Estimated Recoverable Storage for Aquifers in Groundwater Management Area 12. Texas Water Development Board, Groundwater Resources Division, May 16, 2014, 43p.

NON-RELEVANT AQUIFER: THE TRINITY AQUIFER IN BASTROP, LEE AND WILLIAMSON COUNTIES

I. INTRODUCTION

The Texas Water Development Board, in its May 2020 document, Explanatory Report for Submittal of Desired Future Conditions to the Texas Water Development Board, offers the following guidance regarding documentation for aquifers that are to be classified not relevant for purposes of joint planning:

Districts in a groundwater management area may, as part of the process for adopting and submitting desired future conditions, propose classification of a portion or portions of a relevant aquifer as non-relevant (31 Texas Administrative Code 356.31 (b)). This proposed classification of an aquifer may be made if the districts determine that aquifer characteristics, groundwater demands, and current groundwater uses do not warrant adoption of a desired future condition.

The districts must submit to the TWDB the following documentation for the portion of the aquifer proposed to be classified as non-relevant:

- 1. A description, location, and/or map of the aquifer or portion of the aquifer;*
- 2. A summary of aquifer characteristics, groundwater demands, and current groundwater uses, including the total estimated recoverable storage as provided by the TWDB, that support the conclusion that desired future conditions in adjacent or hydraulically connected relevant aquifer(s) will not be affected; and*
- 3. An explanation of why the aquifer or portion of the aquifer is non-relevant for joint planning purposes.*

This technical memorandum provides the required documentation to classify the Trinity Aquifer as not relevant for purposes of joint planning.

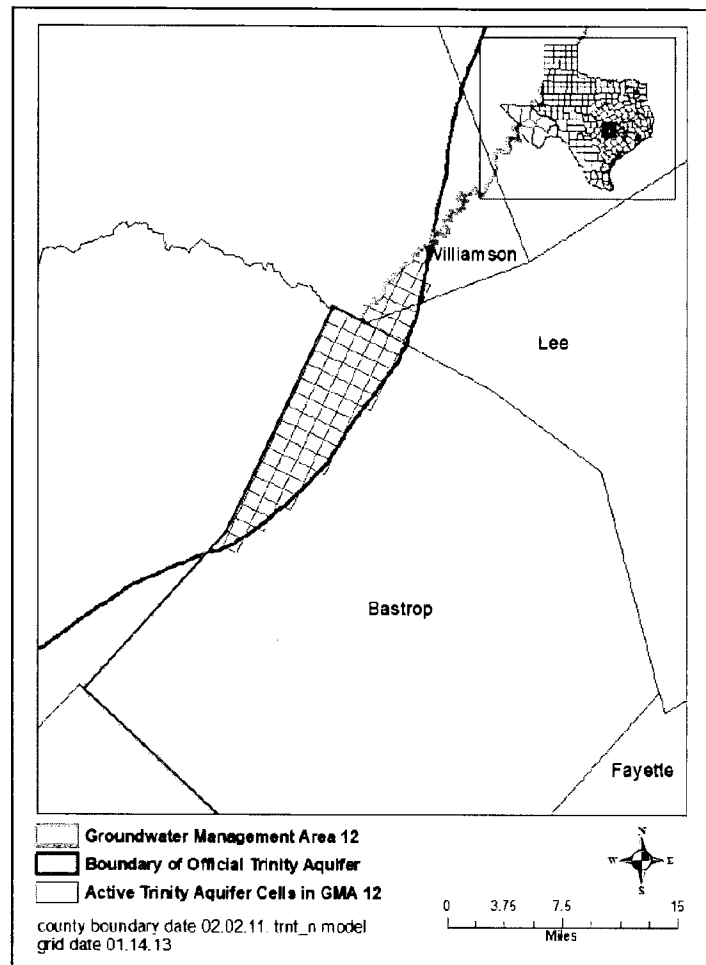
II. AQUIFER DESCRIPTION AND LOCATION

As described in George and others (2011):

The Trinity Aquifer extends across much of the central and northeastern part of the state. It is composed of several smaller aquifers contained within the Trinity Group. Although referred to differently in different parts of the state, they include the Antlers, Glen Rose, Paluxy, Twin Mountains, Travis Peak, Hensell, and Hosston aquifers. These aquifers consist of limestones, sands, clays, gravels, and conglomerates. Their combined freshwater saturated thickness averages about 600 feet in North Texas and about 1,900 feet in Central Texas. In general, groundwater is fresh but very hard in the outcrop of the aquifer. Total dissolved solids increase from less than 1,000 milligrams per liter in the east and southeast to between 1,000 and 5,000 milligrams per liter, or slightly to moderately saline, as the depth to the aquifer increases. Sulfate and chloride concentrations also tend

to increase with depth. The Trinity Aquifer discharges to a large number of springs, with most discharging less than 10 cubic feet per second. The aquifer is one of the most extensive and highly used groundwater resources in Texas. Although its primary use is for municipalities, it is also used for irrigation, livestock, and other domestic purposes. Some of the state's largest water level declines, ranging from 350 to more than 1,000 feet, have occurred in counties along the IH-35 corridor from McLennan County to Grayson County. These declines are primarily attributed to municipal pumping, but they have slowed over the past decade as a result of increasing reliance on surface water. The regional water planning groups, in their 2006 Regional Water Plans, recommended numerous water management strategies for the Trinity Aquifer, including developing new wells and well fields, pumping more water from existing wells, overdrafting, reallocating supplies, and using surface water and groundwater conjunctively.

Figure 1 (taken from Wade and others, 2014) shows the limited extent of the Trinity Aquifer in GMA 12. Note that it occurs only in a small portion of Bastrop, Lee, and Williamson Counties.



I.

Figure 1. Location of Trinity Aquifer in GMA 12

III. AQUIFER CHARACTERISTICS

The Trinity Aquifer is a highly prolific aquifer across much of the northern part of the state. However, within GMA 12 it is only found at extreme depths in a very small portion of the GMA. There are no known wells in this area that produce from the Trinity, and therefore the aquifer characteristics within GMA 12 are unknown.

IV. GROUNDWATER DEMANDS AND CURRENT GROUNDWATER USES

The Texas Water Development Board pumping database lists limited pumping from the Trinity Aquifer in Williamson County that ranged from 1,353 and 3,116 acre-feet/year between 2007 and 2014. However, all of this is from the portion of Williamson County that lies outside of GMA 12. As noted above, there are no known wells producing from the Trinity Aquifer within GMA 12. The Texas Water Development Board pumping database shows no production from the Trinity Aquifer in Bastrop or Lee Counties.

V. TOTAL ESTIMATED RECOVERABLE STORAGE

Wade and others (2014) developed total estimated recoverable storage for the Trinity Aquifer in GMA 12 as follows:

<i>County</i>	<i>Total Storage (acre-feet)</i>	<i>25 percent of Total Storage (acre-feet)</i>	<i>75 percent of Total Storage (acre-feet)</i>
Bastrop	9,000,000	2,250,000	6,750,000
Lee	500,000	125,000	375,000
Williamson	1,600,000	400,000	1,200,000
Total	11,100,000	2,775,000	8,325,000

Total storage is given in the first column. Lower percentages of storage are given in the next two columns.

VI. EXPLANATION OF NON-RELEVANCE

Due to its very limited areal extent, extreme depth and no known use within GMA 12, the Trinity Aquifer is classified as not relevant for purposes of joint planning in Groundwater Management Area 12.

VII. REFERENCES

George, P.G., Mace, R.E., and Petrossian, R., 2011. Aquifers of Texas. Texas Water Development Board Report 380, July 2011, 182p.

Wade, S. and Shi, J., 2014. GAM Task 13-035 Version 2: Total Estimated Recoverable Storage for Aquifers in Groundwater Management Area 12. Texas Water Development Board, Groundwater Resources Division, May 16, 2014, 43p.

NON-RELEVANT AQUIFER: THE YEGUA-JACKSON AQUIFER IN BASTROP AND LEE COUNTIES

I. INTRODUCTION

The Texas Water Development Board, in its May 2020 document, Explanatory Report for Submittal of Desired Future Conditions to the Texas Water Development Board, offers the following guidance regarding documentation for aquifers that are to be classified not relevant for purposes of joint planning:

Districts in a groundwater management area may, as part of the process for adopting and submitting desired future conditions, propose classification of a portion or portions of a relevant aquifer as non-relevant (31 Texas Administrative Code 356.31 (b)). This proposed classification of an aquifer may be made if the districts determine that aquifer characteristics, groundwater demands, and current groundwater uses do not warrant adoption of a desired future condition.

The districts must submit to the TWDB the following documentation for the portion of the aquifer proposed to be classified as non-relevant:

- 1. A description, location, and/or map of the aquifer or portion of the aquifer;*
- 2. A summary of aquifer characteristics, groundwater demands, and current groundwater uses, including the total estimated recoverable storage as provided by the TWDB, that support the conclusion that desired future conditions in adjacent or hydraulically connected relevant aquifer(s) will not be affected; and*
- 3. An explanation of why the aquifer or portion of the aquifer is non-relevant for joint planning purposes.*

This technical memorandum provides the required documentation to classify the Yegua-Jackson Aquifer as not relevant for purposes of joint planning in Bastrop and Lee Counties (the Lost Pines GCD).

II. AQUIFER DESCRIPTION AND LOCATION

As described in George and others (2011):

The Yegua-Jackson Aquifer is a minor aquifer stretching across the southeast part of the state. It includes water-bearing parts of the Yegua Formation (part of the upper Claiborne Group) and the Jackson Group (comprising the Whitsett, Manning, Wellborn, and Caddell formations). These geologic units consist of interbedded sand, silt, and clay layers originally deposited as fluvial and deltaic sediments. Freshwater saturated thickness averages about 170 feet. Water quality varies greatly owing to sediment composition in the aquifer formations, and in all areas the aquifer becomes highly mineralized with depth. Most groundwater is produced from the sand units of the aquifer, where the water is fresh and ranges from less than 50 to 1,000 milligrams per liter of total dissolved solids. Some

slightly to moderately saline water, with concentrations of total dissolved solids ranging from 1,000 to 10,000 milligrams per liter, also occurs in the aquifer. No significant water level declines have occurred in wells measured by the TWDB. Groundwater for domestic and livestock purposes is available from shallow wells over most of the aquifer's extent. Water is also used for some municipal, industrial, and irrigation purposes. The regional water planning groups, in their 2006 Regional Water Plans, recommended several water management strategies that use the Yegua-Jackson Aquifer, including drilling more wells and desalinating the water.

Figure 1 (taken from Wade and others, 2014) shows the limited extent of the Yegua-Jackson Aquifer in GMA 12.

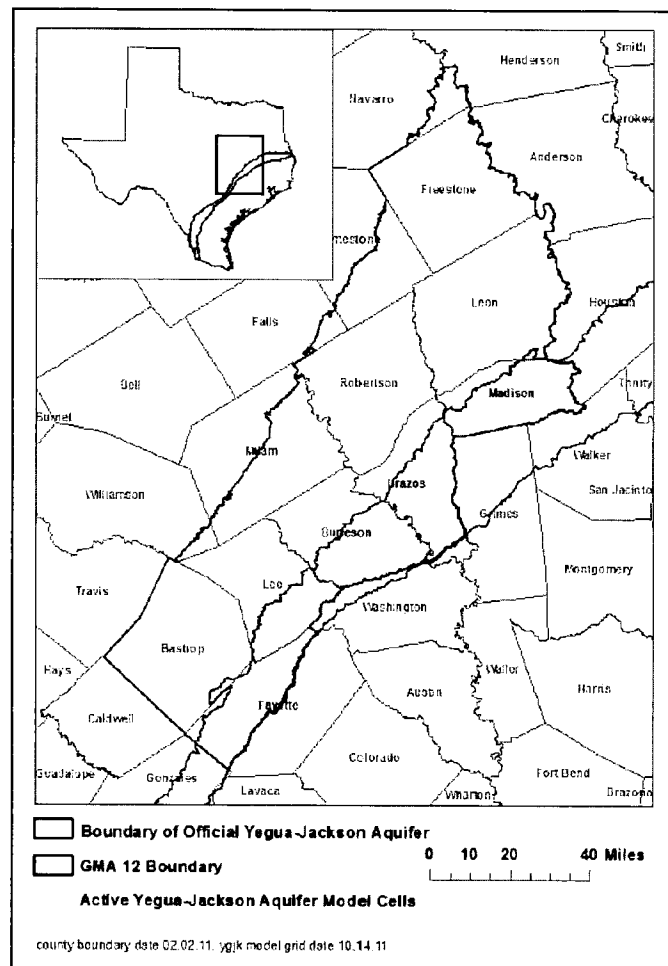


Figure 1. Location of Yegua-Jackson Aquifer in GMA 12

III. AQUIFER CHARACTERISTICS

The Yegua-Jackson Aquifer occurs in the very southern part of Bastrop County and the lower third of Lee County. The aquifer is described as interbedded layers of sand, silt, and clay with a capacity to yield small quantities of fresh to moderately saline water. Wells producing from the Yegua-Jackson Aquifer can produce as much as 500 gpm, although well capacities are typically much lower than that.

IV. GROUNDWATER DEMANDS AND CURRENT GROUNDWATER USES

The Texas Water Development Board pumping database lists limited pumping from the Yegua-Jackson Aquifer in Bastrop County that ranged from 2 to 3 acre-feet/year and 46 to 76 acre-feet/year in Lee County between 2007 and 2014. There is no permitted pumpage from the Yegua-Jackson Aquifer within the Lost Pines GCD and all use listed in the TWDB database is estimated to be rural domestic and livestock use.

V. TOTAL ESTIMATED RECOVERABLE STORAGE

Wade and others (2014) developed total estimated recoverable storage for the Yegua-Jackson Aquifer in the Lost Pines GCD as follows:

<i>County</i>	<i>Total Storage (acre-feet)</i>	<i>25 percent of Total Storage (acre-feet)</i>	<i>75 percent of Total Storage (acre-feet)</i>
Bastrop	290,000	72,500	217,500
Lee	10,000,000	2,500,000	7,500,000
Total	10,290,000	2,572,500	7,717,500

Total storage is given in the first column. Lower percentages of storage are given in the next two columns.

VI. EXPLANATION OF NON-RELEVANCE

Due to its very low use, lack of permitted production, and no anticipated permitted production in the future, the Yegua-Jackson Aquifer is classified as not relevant for purposes of joint planning in Bastrop and Lee Counties (the Lost Pines GCD) in Groundwater Management Area 12.

VII. REFERENCES

George, P.G., Mace, R.E., and Petrossian, R., 2011. Aquifers of Texas. Texas Water Development Board Report 380, July 2011, 182p.

Wade, S. and Shi, J., 2014. GAM Task 13-035 Version 2: Total Estimated Recoverable Storage for Aquifers in Groundwater Management Area 12. Texas Water Development Board, Groundwater Resources Division, May 16, 2014, 43p.

THE WILCOX PORTION OF THE CARRIZO-WILCOX AQUIFER

IN FAYETTE COUNTY

I. INTRODUCTION

The Texas Water Development Board, in its May 2020 document, Explanatory Report for Submittal of Desired Future Conditions to the Texas Water Development Board, offers the following guidance regarding documentation for aquifers that are to be classified not relevant for purposes of joint planning:

Districts in a groundwater management area may, as part of the process for adopting and submitting desired future conditions, propose classification of a portion or portions of a relevant aquifer as non-relevant (31 Texas Administrative Code 356.31 (b)). This proposed classification of an aquifer may be made if the districts determine that aquifer characteristics, groundwater demands, and current groundwater uses do not warrant adoption of a desired future condition. The districts must submit to the TWDB the following documentation for the portion of the aquifer proposed to be classified as non-relevant:

- 1. A description, location, and/or map of the aquifer or portion of the aquifer;*
- 2. A summary of aquifer characteristics, groundwater demands, and current groundwater uses, including the total estimated recoverable storage as provided by the TWDB, that support the conclusion that desired future conditions in adjacent or hydraulically connected relevant aquifer(s) will not be affected; and*
- 3. An explanation of why the aquifer or portion of the aquifer is nonrelevant for joint planning purposes.*

This technical memorandum provides the required documentation to classify the Wilcox portion of the Carrizo-Wilcox Aquifer in Fayette County as not relevant for purposes of joint planning.

II. AQUIFER DESCRIPTION AND LOCATION

As described in George and others (2011):

The Carrizo-Wilcox Aquifer is a major aquifer extending from the Louisiana border to the border of Mexico in a wide band adjacent to and northwest of the Gulf Coast Aquifer. It consists of the Wilcox Group and the overlying Carrizo Formation of the Claiborne Group. The aquifer is primarily composed of sand locally interbedded with gravel, silt, clay, and lignite. Although the Carrizo-Wilcox Aquifer reaches 3,000 feet in thickness, the freshwater saturated thickness of the sands averages 670 feet. The groundwater, although hard, is generally fresh and typically contains less than 500 milligrams per liter of total dissolved solids

in the outcrop, whereas softer groundwater with total dissolved solids of more than 1,000 milligrams per liter occurs in the subsurface. High iron and manganese content in excess of secondary drinking water standards is characteristic of the deeper subsurface portions of the aquifer. Parts of the aquifer in the Winter Garden area are slightly to moderately saline, with total dissolved solids ranging from 1,000 to 7,000 milligrams per liter. Irrigation pumping accounts for slightly more than half the water pumped, and pumping for municipal supply accounts for another 40 percent. Water levels have declined in the Winter Garden area because of irrigation pumping and in the northeastern part of the aquifer because of municipal pumping. The regional water planning groups, in their 2006 Regional Water Plans, recommended several water management strategies that use the Carrizo-Wilcox Aquifer, including developing new wells and well fields, withdrawing additional water from existing wells, desalinating brackish water, using surface water and groundwater conjunctively, reallocating supplies, and transporting water over long distances.

Figure 1 (taken from Wade and others, 2014) shows the extent of the Carrizo-Wilcox Aquifer in GMA 12.

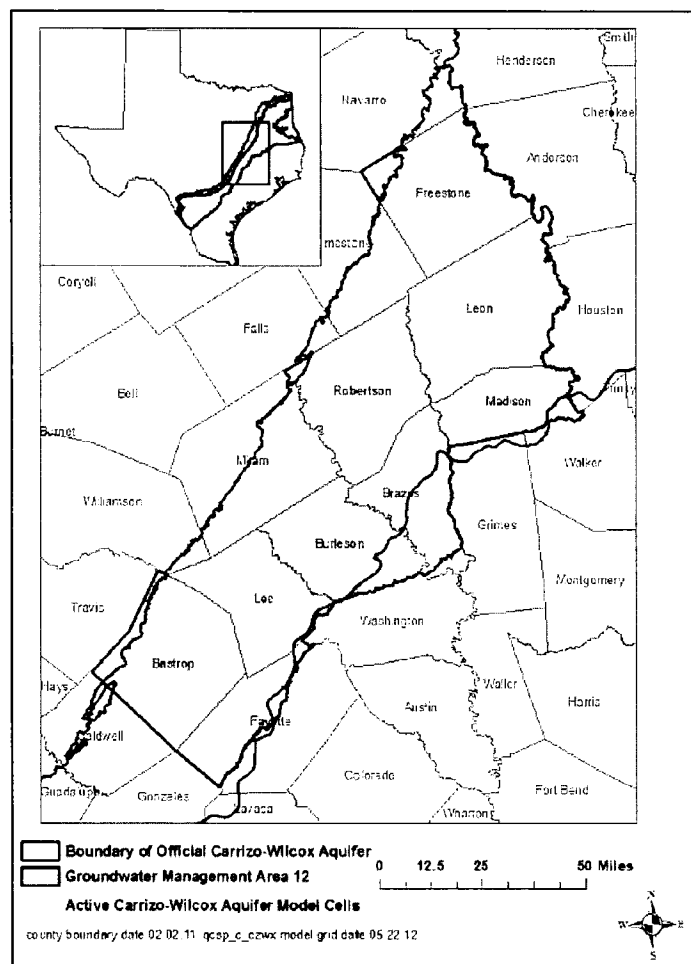


Figure 1. Location of Carrizo-Wilcox Aquifer in GMA 12

III. AQUIFER CHARACTERISTICS

The Wilcox portion of the Carrizo-Wilcox Aquifer occurs below the Carrizo Aquifer. In Fayette County, the depth of wells producing from the Carrizo Aquifer ranges from 1,700 to 3,200 feet. The Wilcox units (including the Calvert Bluff, Simsboro, and Hooper) occur below the Carrizo, and therefore wells producing from these units would be at least 2,000 feet deep. Water quality in these Wilcox units is estimated to be brackish to saline. There are no known wells in the Wilcox units within Fayette County, and therefore the aquifer characteristics within the county are unknown.

IV. GROUNDWATER DEMANDS AND CURRENT GROUNDWATER USES

The Texas Water Development Board pumping database lists limited pumping from the Carrizo-Wilcox Aquifer in Fayette County that ranged from 10 to 390 acre-feet/year between 2007 and 2018. However, this use is all from the Carrizo portion of the Carrizo-Wilcox Aquifer, as there are no known wells producing from the Wilcox units within Fayette County.

V. TOTAL ESTIMATED RECOVERABLE STORAGE

Wade and others (2014) developed total estimated recoverable storage for the Carrizo-Wilcox Aquifer in GMA 12 as follows:

<i>County</i>	<i>Total Storage (acre-feet)</i>	<i>25 percent of Total Storage (acre-feet)</i>	<i>75 percent of Total Storage (acre-feet)</i>
Fayette	95,000,000	23,750,000	71,250,000
Total	95,000,000	23,750,000	71,250,000

Total storage is given in the first column. Lower percentages of storage are given in the next two columns.

VI. EXPLANATION OF NON-RELEVANCE

Due to its extreme depth, poor water quality, lack of use and zero anticipated use in the future, the Wilcox portion of the Carrizo-Wilcox Aquifer is classified as not relevant for purposes of joint planning in Fayette County in Groundwater Management Area 12.

VII. REFERENCES

George, P.G., Mace, R.E., and Petrossian, R., 2011. Aquifers of Texas. Texas Water Development Board Report 380, July 2011, 182p.

Wade, S. and Shi, J., 2014. GAM Task 13-035 Version 2: Total Estimated Recoverable Storage for Aquifers in Groundwater Management Area 12. Texas Water Development Board, Groundwater Resources Division, May 16, 2014, 43p.

GROUNDWATER MANAGEMENT AREA 12 MEETING

This meeting was held in person with virtual attendance and participation.

The meeting recording may be viewed at
<https://posgcd.org/gma-12-agendas-minutes/>

November 12, 2021 – 10:00 am

GMA 12 Members Present in Person

Gary Westbrook	POSGCD
Jim Totten	LPGCD
David Van Dresar	FCGCD
David Bailey	METGCD
Alan Day	BVGCD

GMA 12 Members Absent

None

Others Present in person

	<u>Entity</u>
Larry French	TWDB
John Seifert	Groundwater Consultants, LLC
Andy Donnelly	DB Stephens
Monique Norman	BVGCD, FCGCD
Shan Rutherford	Terrill & Waldrop
Phil Cook	Lost Pines GCD
Sheril Smith	Lost Pines GCD
John DeGomez	Landowner
Nancy McKee	Self
Ronnie McKee	Self
Don Hardy	Self
Steve Box	Environmental Stewardship
Bill Rhodes	Self
Andy Wier	SAWDF
Steve Young	INTERA
James Bene	R.W. Harden
Barbara Boulware-Wells	The Knight Law Firm, LLP

Others Present online

Blaire Parker	SAWS
Doug Box	POSGCD
Doug M	
George Rice	Groundwater Hydrologist
James Beach	Advanced Groundwater Solutions

James Bene	R.W. Harden
Jennifer Nations	City of College Station
Jevon Harding	TWDB
Jim Harris	
Jon King	BRA
Leah Martinsson	TAGD
Linda Curtis	League of Independent Voters
Liz Ferry	R.W. Harden
Mike Wiles	
Natasha Martin	LPGCD
Paul Brandenburg	BRA
Peggy	
Shirley Wade	TWDB
Stefan Schuster	EPCOR
Steven Siebert	SAWS
Suzanne Ragan	
512-461-3179	
512-608-8342	

MINUTES

1. Invocation

The invocation was given by Gary Westbrook.

2. Pledge of Allegiance

Alan Day led the pledges to the flags of the United States and Texas.

3. Call meeting to order and establish quorum

Mr. Westbrook, serving as chair for this meeting, called the meeting to order at 10:05 a.m. and noted that all voting members of GMA 12 were present in person.

4. Welcome and introductions

Mr. Westbrook welcomed everyone to the hybrid meeting, both available in person and with virtual attendance and participation and thanked them for their attendance. He then introduced the members of GMA 12 and Larry French of the Texas Water Development Board.

5. Public Comment on Agenda Items

Mr. Westbrook reminded everyone the GMA encouraged comment and questions on each item. He then invited public comment on agenda items from those in person at this time.

James Bene expressed concerns about the Lost Pines S-19 and S-20 project being a radical departure from S-12 and that adoption of DFCs using values from the S-20 GAM run would require another 90-day posting for comments.

Shane Rutherford shared similar concerns to those of James Bene.

Nancy McKee owns a well and states since Vista Ridge pumping, her water level in her well has dropped 72.8' as of 9/22/2021. She dropped her pump 100' and she has concerns over an eventual dry well.

Andy Wier with Simsboro Aquifer Water Defense Fund states that the economic impact of the future drawdowns on production from wells with depths of 200' or less are not receiving due consideration in the process. He would like that countered. He also stated it is the desire of Lost Pines Board to go with S-20 scenario.

Monique Norman, legal council of Brazos Valley GCD and Fayette GCD, provided clarification on a statement made by Mr. Wier regarding whether or not due consideration was given by the BVGVD and GCGCD to domestic wells. Ms. Norman also reiterated that GMA 12 is in compliance with 36.108 and are at the point to adopt the DFCs.

Don Hardy is a Lee County resident who owns a 44 acre lake with a spring that has run for 100 years. Mr. Hardy expressed concerns over the pumping affecting Lost Pines GCD area.

John DeGomez purchased a ranch in 2011 and has a 940' well. His well water level has dropped almost 20' since Vista Ridge Project came online. Mr. DeGomez expressed concern over this drop and requests very cautious steps be taken going forward with granting of permits to take water out of aquifers over which he is situated.

No additional comments were made by those attending in person or online.

6. Minutes of October 13, 2021 Groundwater Management Area (GMA 12) Meeting

After brief discussion, Alan Day moved to approve the minutes as presented. Jim Totten seconded the motion. The motion passed unanimously.

7. Discussion of and possible action on comments received from stakeholders and summary reports during this round of joint planning to adopt Desired Future Conditions (DFCs)

Mr. Westbrook noted that all summary reports from each GCD in GMA 12 had been received and would be posted to the GMA 12 page on the POSGCD website. He then asked for discussion on the summary reports. The GMs discussed whether changes to the proposed DFCs would require an additional notice and posting before action. After discussion of TWC 36.108 it was agreed there is no requirement for a new posting to consider different DFCs. After further discussion, no action was taken.

8. Evaluation, discussion, and consideration of past and future pumping scenarios using the Sparta/Queen City/Carrizo-Wilcox Groundwater Availability Model (GAM) and results, including predicted water levels and water budgets

Mr. Westbrook invited Andy Donnelly to address GMA 12. Mr. Donnelly gave a presentation entitled, "GMA12- S-12, S-19, and S-20 Model Results." After discussion, and questions of Mr. Donnelly Mr. Westbrook opened Agenda items 9, 10, and 11 simultaneously.

9. Discuss requirements of Chapter 36.108(d) in adopting DFCs

10. Discussion and consideration of expressions of DFCs and compatibility, including acceptable variances in values between GCDs in GMA 12

11. Discussion and possible action on adoption of Desired Future Conditions (DFCs) for aquifers in GMA 12

- (a) Sparta**
- (b) Queen City**
- (c) Carrizo**
- (d) Calvert Bluff**
- (e) Simsboro**
- (f) Hooper**
- (g) Yegua-Jackson**
- (h) Brazos River Alluvium**

After discussion, Alan Day moved and David Bailey seconded to use values in S-19 GAM Run with previously adopted 10% variance for use in adoption of DFCs in the Sparta, Queen City, Carrizo, Calvert Bluff, Simsboro, and Hooper Aquifers in GMA 12. Mr. Westbrook stated that POSGCD still has great concern about the process used during this round of joint planning to adopt DFCs and would be voting today on all actions with objection against the process used. He further noted that POSGCD looked forward to continued discussions of improving the process in preparation for the next round of joint planning. After discussion which included the values of the S-20 GAM Run, Mr. Day withdrew his motion. Mr. Bailey concurred with withdrawing the motion. Mr. Westbrook stated the motion had been withdrawn.

After discussion, a motion was made by Jim Totten and seconded by Gary Westbrook to use values in S-20 GAM Run with previously adopted 10% variance for use in adoption of DFCs in the Sparta, Queen City, Carrizo, Calvert Bluff, Simsboro, and Hooper Aquifers in GMA 12. Mr. Westbrook asked each member for their vote. Voting in favor were Mr. Totten and Mr. Westbrook. Voting against the motion were Mr. Van Dresar, Mr. Bailey, and Mr. Day. Mr. Westbrook stated the motion had failed 2-3.

After discussion, Mr. Day moved and Mr. Bailey seconded to use values in S-19 GAM Run with the previously adopted 10% variance for use in adoption of DFCs in the Sparta, Queen City, Carrizo, Calvert Bluff, Simsboro, and Hooper Aquifers in GMA 12. Mr.

Westbrook again reminded all of POSGCD's concerns and objection of the process followed to date. Mr. Westbrook asked each member for their vote. Voting in favor were Mr. Westbrook, Mr. Van Dresar, Mr. Bailey, and Mr. Day. Voting against the motion was Mr. Totten. Mr. Westbrook stated the motion had passed 4-1, reaching the necessary 2/3 vote required to adopt DFCs.

After discussion, Mr. Van Dresar moved and Mr. Day seconded, to adopt the proposed DFCs as noticed with the previously adopted 10% variance for use in adoption of DFCs for the Yegua-Jackson Aquifer in GMA 12. Mr. Westbrook asked each member for their vote. Voting in favor were Mr. Westbrook, Mr. Totten, Mr. VanDresar, Mr. Bailey, and Mr. Day. Mr. Westbrook stated the motion had passed 5-0, reaching the necessary 2/3 vote required to adopt DFCs.

After discussion, Mr. Westbrook moved and Mr. Day seconded, to adopt the proposed DFCs as noticed with the previously adopted 10% variance for use in adoption of DFCs for the Brazos River Alluvium Aquifer in GMA 12. Mr. Westbrook asked each member for their vote. Voting in favor were Mr. Westbrook, Mr. Totten, Mr. Van Dresar, Mr. Bailey, and Mr. Day. Mr. Westbrook stated the motion had passed 5-0, reaching the necessary 2/3 vote required to adopt DFCs.

After discussion of the previous motion to adopt DFCs for the Sparta, Queen City, Carrizo, Calvert Bluff, Simsboro, and Hooper Aquifers in GMA 12, it was noted that the values expressed in the S-19 GAM Run contained values for all GCDs in GMA 12 for the time period of years 2010 through 2070, and that the DFCs for BVGCD should be expressed from the year 2000 through 2070, while all other GCDs in GMA 12 would use the time period of the year 2010 through 2070.

After discussion, John Seifert, representing BVGCD addressed the values to be used for BVGCD for the corrected time period. He stated those values from the S-19 GAM Run, corrected for BVGCD for years 2000-2070 were as follows: Sparta 49, Queen City 42, Carrizo 80, Calvert Bluff 108, Simsboro 243, and Hooper 163.

After discussion, Mr. Day moved to rescind the previous motion to adopt the DFCs for the Sparta, Queen City, Carrizo, Calvert Bluff, Simsboro, and Hooper Aquifers in GMA 12 so that the appropriate adjustments to the values for BVGCD could be included in the motion as explained. Mr. Bailey seconded that motion to rescind the previous motion. The motion to rescind passed unanimously.

After discussion and clarification, Mr. Day moved and Mr. Bailey seconded to use values in S-19 GAM Run, with corrected values for BVGCD for the time period year 2000-2070 as identified by Mr. Siefert, and with the previously adopted 10% variance for use in adoption of DFCs in the Sparta, Queen City, Carrizo, Calvert Bluff, Simsboro, and Hooper Aquifers in GMA 12. Again, Mr. Westbrook expressed concerns and protest against the process on behalf of POSGCD. Mr. Westbrook asked each member for their vote. Voting in favor were Mr. Westbrook, Mr. Van Dresar, Mr. Bailey, and Mr. Day. Voting against the motion was Mr. Totten. Mr. Westbrook stated the motion had passed 4-1, reaching the necessary 2/3 vote required to adopt DFCs.

After further discussion it was agreed GMA 12 would schedule another meeting to consider adoption of a formal resolution with the approved values to submit to the Texas Water Development Board.

12. Schedule and process moving forward for adoption of DFCs

The schedule and process for moving forward was discussed.

13. Public Comment on non-agenda items

Mr. Westbrook invited additional comment on non-agenda items. No comments were offered.

14. Update from Texas Water Development Board

Mr. Westbrook invited Larry French of the Texas Water Development Board (TWDB) to discuss any updates from TWDB. Mr. French provided updates on the Recorded Well Program, Texas Sunset Commission review of TWDB and noted the committee is seeking public comment until December 15, 2021. Mr. French also stated the highlights of the Water for Texas '21 Conference are on the TWDB website and that Cindy Ridgeway will be retiring in about a month.

15. Agenda items and Date for next meeting

An Agenda similar to this one will be prepared for the next meeting to be scheduled November 30, 2021 at 10:00 am.


16. Adjourn

The meeting was adjourned at 12:03 pm.

THE ABOVE MINUTES OF THE MEETING OF GROUNDWATER MANAGEMENT AREA 12 HELD ON ~~OCTOBER~~ ^{November} 12, 2021, WERE APPROVED AND ADOPTED BY GMA 12 ON November 30th, 2021.

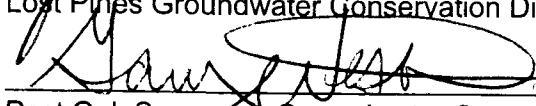
ATTEST:


Mid-East Texas Groundwater Conservation District


Fayette County Groundwater Conservation District


Brazos Valley Groundwater Conservation District


Lost Pines Groundwater Conservation District


Post Oak Savannah Groundwater Conservation District