

BRUSH COUNTRY GROUNDWATER CONSERVATION DISTRICT

Groundwater Management Plan

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I. DISTRICT MISSION AND OBJECTIVES

The Brush Country Groundwater Conservation District (“District”) strives to preserve and protect the groundwater resources within its boundaries. The District recognizes that groundwater conservation districts are the state’s preferred method of groundwater management and will work with local stakeholders towards achieving its objectives. The District will accomplish its objectives by working to lessen interference between water wells, minimize drawdown of groundwater levels, prevent the waste of groundwater, and reduce the degradation of groundwater quality within the District while helping the local economies maintain and improve their current condition. The District will also use the authority granted in its Enabling Act and applicable state laws to protect and maintain the groundwater resources of the District.

II. PURPOSE OF GROUNDWATER MANAGEMENT PLAN

The purpose of this Management Plan is to provide a planning tool for the District as it works to manage, protect, and conserve the groundwater resources within its boundaries. This Management Plan currently contains the hydrogeological and technical information provided by the Texas Water Development Board (“TWDB”) for the groundwater resources of the District. As the District obtains more site-specific groundwater information, the District will update and amend this Management Plan as necessary.

The development of the District’s Management Plan will enable the District to comply with the requirements of state law. The Texas Legislature created a statewide water planning process with the passage of Senate Bill 1 (“SB 1”) in 1997, Senate Bill 2 (“SB 2”) in 2001, and Senate Bill 3 (“SB 3”) in 2007. The development of management plans by each groundwater conservation district in Texas is an integral part of the statewide water planning process. The District's Management Plan satisfies all the requirements established for groundwater conservation districts by SB 1, SB 2, SB 3, the requirements Chapter 36 of the Texas Water Code, and the requirements under TWDB rules.

III. DISTRICT INFORMATION

A. District Creation.

The District was created by the 81st Texas Legislature, Regular Session, in 2009 with the enactment of Senate Bill 2456 (attached to this plan as “Appendix A” now codified as Chapter 8852 Texas Special District Local Laws Code). The creation of the District was confirmed by the citizens located within the District’s boundaries in Jim Hogg, Jim Wells, Brooks, and Hidalgo Counties at an election held on November 3, 2009. The District contains the authority and responsibilities specified in its Enabling Act, Chapter 36 of the Texas Water Code, the TWDB Rules, this Groundwater Management Plan, and the District Rules, as they may be amended.

B. District Board of Directors.

The Board of Directors is made up of nine members. The directors for the District are appointed by the Commissioners Courts of Jim Hogg, Jim Wells, and Brooks Counties. The Commissioners Court of Brooks County must appoint one director to represent the municipal interests of the City of Falfurrias and two directors to represent the agricultural interests of the territory in Brooks County that is outside the City of Falfurrias and not within the Kenedy County Groundwater Conservation District and the portion of Hidalgo County within the District. The Commissioners Court of Jim Hogg County must appoint one director to represent the interests of Jim Hogg County within the service area of the Jim Hogg County Water Control and Improvement District No. 2 and two directors to represent the agricultural interests of the area of Jim Hogg County outside the service area of the Jim Hogg County Water Control and Improvement District No. 2. The Commissioners Court of Jim Wells County must appoint two directors to represent the agricultural interests of the area of Jim Wells County outside the City of Alice¹ and not within the Kenedy County Groundwater Conservation District. The Commissioners Courts of both Brooks and Jim Hogg Counties must jointly appoint one director to represent the industrial and mining interests of Jim Hogg and Brooks Counties. District directors serve staggered four-year terms that expire on June 1 of each even-numbered year.

C. Authority of District.

The District has the authority and duties given to groundwater conservation districts by Texas Water Code Chapter 36, 31 Texas Administrative Code (TAC) Chapter 356, and the District's Enabling Act. The District exercises the authority given to preserve and protect the groundwater resources of the District through the adoption and implementation of District rules.

D. Location and Extent of District Boundaries.

- i. The District's boundaries consist of the entire territory within Jim Hogg County, the area within Jim Wells County that is not within the Kenedy County Groundwater Conservation District and outside the corporate limits of the City of Alice², the area of Brooks County not within the Kenedy County Groundwater Conservation District, and a portion of northern Hidalgo County. A map of the District is contained in Appendix B.

E. Groundwater Resources of District.

The TWDB has identified the Gulf Coast aquifer as the only major aquifer within the District's boundaries. The TWDB defines major aquifers as aquifers that are capable of producing large yields to wells or that produce groundwater over a large area. The only minor aquifer recognized within the District is the Yegua-Jackson aquifer, which covers a

¹ The District does not include the corporate limits of the City of Alice existing as of January 1, 2009.

small portion of southwestern Jim Hogg County. Minor aquifers tend to be smaller and produce less water than major aquifers.

A diagram of the Gulf Coast aquifer can be found at Figure 1 below. The TWDB generally describes the groundwater resources of the Gulf Coast aquifer as follows:

The Gulf Coast aquifer forms a wide belt along the Gulf of Mexico from Florida to Mexico. In Texas, the aquifer provides water to all or parts of 54 counties and extends from the Rio Grande northeastward to the Louisiana-Texas border. Municipal and irrigation uses account for 90 percent of the total pumpage from the aquifer. The Greater Houston metropolitan area is the largest municipal user, where well yields average about 1,600 gal/min.

The Gulf Coast aquifer consists of complex interbedded clays, silts, sands, and gravels of Cenozoic age, which are hydrologically connected to form a large, leaky artesian aquifer system. This system comprises four major components consisting of the following generally recognized water-producing formations. The deepest is the Catahoula, which contains ground water near the outcrop in relatively restricted sand layers. Above the Catahoula is the Jasper aquifer, primarily contained within the Oakville Sandstone. The Burkeville confining layer separates the Jasper from the overlying Evangeline aquifer, which is contained within the Fleming and Goliad sands. The Chicot aquifer, or upper component of the Gulf Coast aquifer system, consists of the Lissie, Willis, Bentley, Montgomery, and Beaumont formations, and overlying alluvial deposits. Not all formations are present throughout the system, and nomenclature often differs from one end of the system to the other. Maximum total sand thickness ranges from 700 feet in the south to 1,300 feet in the northern extent.

Water quality is generally good in the shallower portion of the aquifer. Ground water containing less than 500 mg/l dissolved solids is usually encountered to a maximum depth of 3,200 feet in the aquifer from the San Antonio River Basin northeastward to Louisiana. From the San Antonio River Basin southwestward to Mexico, quality deterioration is evident in the form of increased chloride concentration near the coast. Little of this ground water is suitable for prolonged irrigation due to either high salinity or alkalinity, or both. In several areas at or near the coast, including Galveston Island and the central and southern parts of Orange County, heavy municipal or industrial pumpage had previously caused an up-dip migration, or saltwater intrusion, of poor-quality water into the aquifer. Recent reductions in pumpage here have resulted in a stabilization and, in some cases, even improvement of ground-water quality.

Brooks County

Excerpts from a TWDB report specific to Brooks County describe the groundwater resources of Brooks County as follows:

The rock formations that contain fresh to slightly saline water are sedimentary deposits of Tertiary and Quaternary age. They include, in order of decreasing age, the Oakville Sandstone, Lagarto Clay, Goliad Sand, Lissie Formation, Beaumont Clay, and recent windblown sand. All formations, except the Oakville and the Lagarto, crop out in Brooks County. The formations consist principally of interbedded sand and clay deposits; the sand constitutes the principal aquifer in the county.

All of the formations containing fresh to slightly saline water in Brooks County are considered to be part of the principal (Gulf Coast) aquifer. The formations are composed of non-marine sand and sandstone interbedded with clay. The sedimentary rocks become finer grained and some beds of sand grade into clay toward the coast. Correlation of individual sand or clay beds is difficult even over short distances because of the heterogenous character of the sedimentary rocks. Because the character of much of the sedimentary rocks comprising the Goliad Sand, Lissie Formation, Beaumont Clay, and windblown sand have similar electrical properties, the geologic sections, which are based on electrical logs, show only the Oakville Sandstone, Lagarto Clay, and Goliad Sand and rocks younger than the Goliad Sand.

The regional dip of the formations in Brooks County is to the east and southeast toward the Gulf. A major fault zone crosses the county along a line from near the southwest corner to the vicinity of Falfurrias. The fault was not observed at the surface. An examination of electric logs of oil wells along and near the fault zone indicates that the displacement decreases toward the surface, and that at shallow depths of less than 1,500 to 2,000 feet, hardly a trace of the fault exists. Consequently, this structural feature does not affect the circulation of groundwater in the county.

Rainfall in Brooks County and adjoining areas is the source of all fresh groundwater occurring in the county. Groundwater in Brooks County occurs under both water-table and artesian conditions, depending on whether the water is unconfined (under atmospheric pressure only) or confined. Water-table conditions usually prevail at shallow depths in the outcrop areas of the aquifers, whereas artesian conditions generally prevail down dip from the outcrop where the aquifers are overlain by less permeable material. Water in a well penetrating the artesian aquifers will rise to an altitude higher than the bottom of the confining layer. This rise is caused by the pressure from the weight of the water in the up-dip part of the aquifers and by the pressure from overlying rock formations.³

Southern Jim Wells County

Excerpts from a report addressing the groundwater resources of southern Jim Wells County describes the southern Jim Wells County study area as follows:

The geologic formations that contain fresh to slightly saline water are, in order of decreasing age, the Oakville Sandstone and the Lagarto Clay of Miocene age, the Goliad

³ Groundwater Resources of Brooks County, Texas, U.S. Geological Survey, Texas Water Development Board Report 61, by B.N. Myers and O.C. Dale, October 1967.

Sand of Pliocene age, and the Lissie Formation and Beaumont Clay (including barrier island and beach deposits) of Pleistocene age, the south Texas eolian plain deposits of Pleistocene and Holocene age, and the barrier island deposits and alluvium of Holocene age. All of these units are exposed in the report area except the Goliad Sand, Lagarto Clay, and Oakville Sandstone, which crop out in counties west of the report area.

The geologic formations, except the alluvium and south Texas eolian plain deposits, crop out in belts that are nearly parallel to the Gulf Coast. Younger formations generally crop out close to the coast and successively older ones farther inland. Because of the different ages of the formations, the outcrops are progressively eroded and dissected inland. For example, the outcrop of the Beaumont Clay and Lissie Formation, undifferentiated, which covers most of Kleberg County, is comparatively uneroded in contrast to the uneven and dissected outcrop of the Goliad Sand farther inland. The alluvium and south Texas eolian plain deposits transgress the other geologic formations and are elongated mostly normal to the Gulf Coast.

The lithology, dip, and thickness of many of the geologic formations change in the direction of the dip; and the lithology and thickness commonly change laterally along the strike. Sand beds may grade laterally into clay or silt within short distances. These sand beds and other beds containing water are interconnected with similar beds on a different level, so that a series of water-bearing beds within a formation, or even within a group of formations, function as a single aquifer. Both dips and thicknesses of the formations increase gulfward, and the clastic sediments composing the geologic formations grade from fluvial and deltaic sand, silt, and clay in inland areas to predominantly finer sediments that interfinger with brackish and marine sediments near the Gulf Coast and offshore.⁴

Southwestern Jim Hogg County

A diagram of the Yegua-Jackson aquifer can be found at Figure 2 below. The Yegua-Jackson aquifer is located only in a small portion of southwestern Jim Hogg County. The TWDB generally describes the groundwater resources of the Yegua-Jackson aquifer as follows:

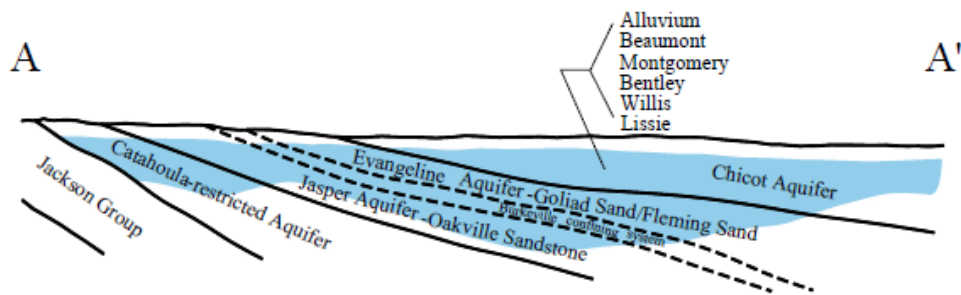
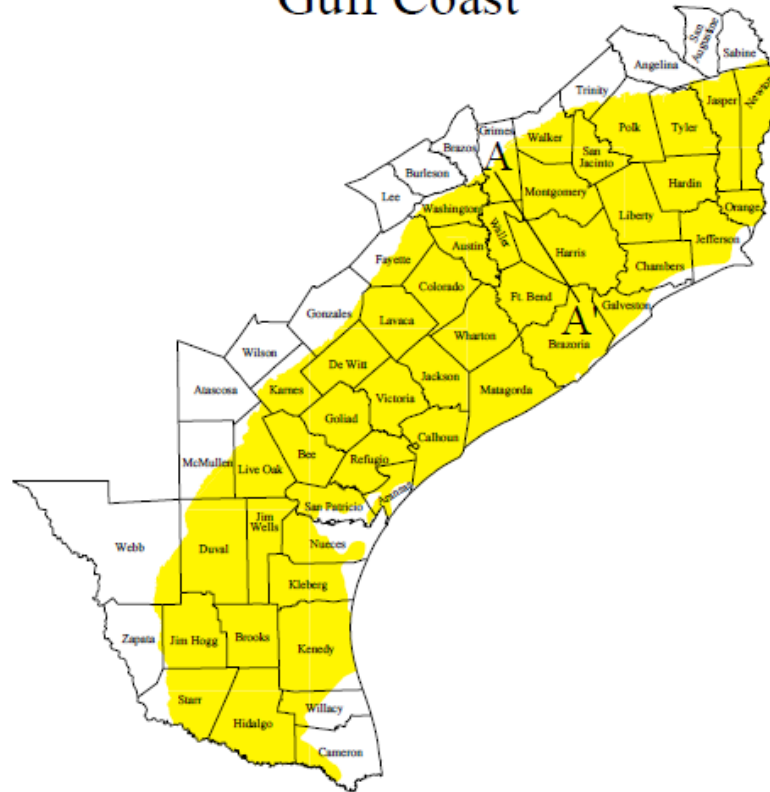
The Yegua-Jackson aquifer extends in a narrow band from the Rio Grande and Mexico across the State to the Sabine River and Louisiana. Although the occurrence, quality, and quantity of water from this aquifer are erratic, domestic and livestock supplies are available from shallow wells over most of its extent. Locally water for municipal, industrial, and irrigation purposes is available. Yields of most wells are small, less than 50 gallons per minute, but in some areas, yields of adequately constructed wells may range to more than 500 gallons per minute. The Yegua-Jackson aquifer consists of complex associations of sand, silt, and clay deposited during the Tertiary Period. Net freshwater sands are generally less than 200 feet deep at any location within the aquifer. Water quality varies greatly within the aquifer, and shallow occurrences of

³ Ground-Water Resources of Kleberg, Kenedy, and Southern Jim Wells Counties, Texas, Texas Water Development Board Report 173, U.S. Geological Survey, by G. H. Shafer and E. T. Baker, Jr., July 1973.

poor-quality water are not uncommon. In general, however, small to moderate amounts of usable quality water can be found within shallow sands (less than 300 feet deep) over much of the Yegua-Jackson aquifer.⁵

IV. FIGURE 1

Gulf Coast

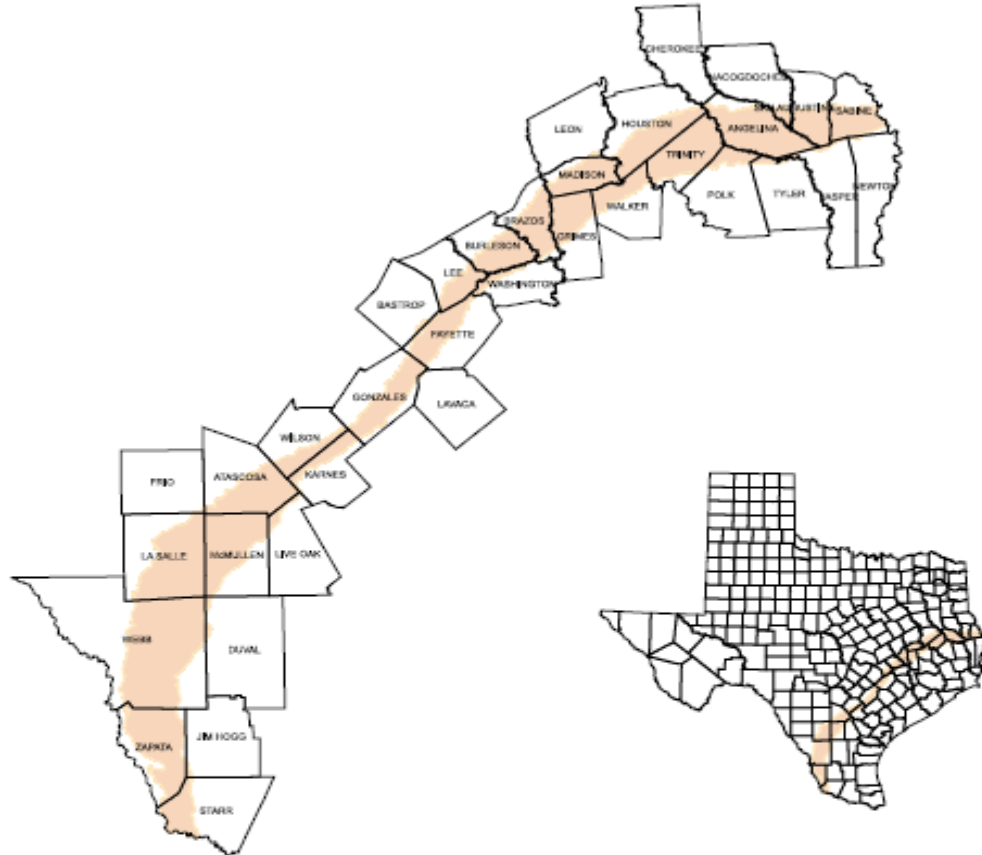


Modified from Baker, 1979



4 Aquifers of Texas, Texas Water Development Board, Report 345, by Ashworth and Hopkins, November 1995.

V.FIGURE 2

Yegua-Jackson



Explanation

-  County boundary
-  Yegua - Jackson



VI. CRITERIA FOR PLAN APPROVAL

A. Planning Horizon.

The Management Plan is adopted to be effective for a five (5) year planning period, which will begin on the date TWDB approves this plan. In accordance with Section 36.1072(e) of the Texas Water Code and TWDB Rules (in 31 TAC §356.3), the District will review and re-adopt its Management Plan, with or without amendments, every five years and will re-submit its Management Plan for TWDB approval after re-adoption. This Management Plan will be effective until replaced by a revised plan that has been approved by the TWDB.

B. Plan Adoption.

Public notices demonstrating that this Management Plan was adopted after the required public hearings and Board meeting are attached to this plan as “Appendix C”.

C. Board Resolution.

A certified copy of the resolution of the Board of Directors of the District adopting this Management Plan is attached to this plan as “Appendix D”.

D. Coordination with Surface Water Management Entities.

The surface water management entities within the District include the Nueces River Authority, the City of Corpus Christi through its ownership of Lake Corpus Christi, and the Jim Wells County Fresh Water Supply District No. 1. Sample correspondence sent to these entities, as well as Region M (Rio Grande Regional Water Planning Area) and Region N (Coastal Bend Regional Water Planning Group) and a list of recipients is attached to this plan as “Appendix E”.

VII. ESTIMATES OF TECHNICAL INFORMATION REQUIRED BY 31 TAC 356.5 AND TEX. WATER CODE § 36.1071

A. Modeled available groundwater in the district based on the desired future condition established under Tex. Water Code 36.108 — 31 TAC 356.52 (a)(5)(A) and Texas Water Code § 36.10701(e)(3)(A).

Modeled available groundwater is defined in Texas Water Code § 36.001(25) as the amount of water that “may be produced on an average annual basis to achieve a desired future condition established under Section 36.108.” Under Texas Water Code § 36.108(d), the desired future condition may only be determined through joint planning with other groundwater conservation districts (“GCDs”) in the same groundwater management area (“GMA”). The District is located in GMA-16.

On August 30, 2010 the authorized voting representatives of GMA-16 established a DFC of the Gulf Coast Aquifer of a GMA-wide average of approximately 94 feet through 2060 consistent with scenario 10 of GAM Run 09-008.

As provided under Texas Water Code § 36.108(d), at a minimum, every five years the District must revisit the adoption of its DFCs. On June 28, 2022, the authorized voting representatives of GMA-16 adopted a new DFC for the Gulf Coast Aquifer. The adopted DFCs are based on acceptable levels of drawdown for each county and the entire GMA from January 2010. The DFC for the counties in GMA-16 shall not exceed an average drawdown of 78 feet for the Gulf Coast Aquifer System in December 2080. DFCs for the Gulf Coast Aquifer in each county within the GMA (County-specific DFCs) shall not exceed the values specified in the table below:

GCD or Region	Simulated Drawdown (ft) 2010-2060				
	Chicot	Evangeline	Burkeville	Jasper	Combined
Bee GCD	106	84	73	60	93
Live Oak UWCD	79	64	60	19	45
McMullen GCD	0	0	0	9	12
Red Sands GCD	38	41	40	39	60
Kenedy County GCD	15	104	21	21	27
Brush Country GCD	47	76	68	69	89
Duval County GCD	78	133	95	85	137
San Patricio County GCD	88	60	23	22	69
Starr County GCD	0	83	74	55	94
Non-district Cameron	62	122	48	48	119
Non-district Hidalgo	143	151	96	94	138
Non-district Kleberg	7	85	10	9	21
Non-district Nueces	22	39	11	11	26
Non-district Webb	0	151	0	71	161
Non-district Willacy	28	85	23	23	44
GMA 16	47	97	49	49	62

GMA 16 submitted a DFC explanatory report to the TWDB on September 21, 2021, and again with corrections on November 23, 2021 and with minor amendments on June 28, 2022. The TWDB has not yet declared the GMA-16 explanatory report administratively complete. A copy of the District’s resolution adopting the DFCs is included in Appendix G.

Following the GMA-16 submission of the DFC to the TWDB, the TWDB produced GAM Run 17-025 MAG. This GAM Run is the total amount of pumping from the aquifer including uses of water both subject to permitting and exempt from permitting. The

pumping output from the groundwater availability model is the estimate of the modeled available groundwater under the Water Code definition. The modeled available groundwater for the District for each decade between 2010 and 2060 is: 2010-14,182 acre-feet per year; 2020-18,672 acre-feet per year; 2030-19,037 acre-feet per year; 2040-19,365 acre-feet per year; 2050-19,730 acre-feet per year; and, 2060 – 20,022 acre-feet per year.

- B. Amount of groundwater being used within the district on an annual basis — 31 TAC 356.52 (a)(5)(B) and Tex. Water Code §36.1071(e)(3)(B).

To estimate the annual groundwater being used in the District, the District relies on the June 28, 2022 TWDB report entitled “Estimated Historical Groundwater Use and 2022 State Water Plan Datasets: Brush Country Groundwater Conservation District” (Datasets). Please refer to Appendix H.

- C. Annual amount of recharge from precipitation to the groundwater resources within the district — 31 TAC 356.52(a)(5)(C) and Tex. Water Code § 36.1071(e)(3)(C).

Please refer to Appendix I.

- D. For each aquifer, the annual net volume of water that discharges from the aquifer to springs and any surface water bodies, including lakes, streams, and rivers — 31 TAC 356.52 (a)(5)(D) and Tex. Water Code § 36.1071(e)(3)(D).

Please refer to Appendix I.

- E. Annual volume of flow into and out of the district within each aquifer and between aquifers in the district, if a groundwater availability model is available — 31 TAC 356.52 (a)(5)(E) and Tex. Water Code §36.1071(e)(3)(E).

Please refer to Appendix I.

- F. Projected surface water supply in the district, according to the most recently adopted state water plan — 31 TAC 356.52 (a)(5)(F) and Tex. Water Code §36.1071(e)(3)(F).

Please refer to Appendix H.

- G. Projected total demand for water in the district according to the most recently adopted state water plan — 31 TAC 356.52 (a)(5)(G) and Tex. Water Code §36.1071(e)(3)(G).

Please refer to Appendix H.

VIII. CONSIDER THE WATER SUPPLY NEEDS AND WATER MANAGEMENT STRATEGIES INCLUDED IN THE ADOPTED STATE WATER PLAN – Texas Water Code § 36.1071(e)(4)

Please refer to Appendix H.

IX.DETAILS ON THE DISTRICT MANAGEMENT OF GROUNDWATER – 31 TAC 356.52(a)(4)

The Texas Legislature has established that groundwater conservation districts, such as the Brush Country Groundwater Conservation District, are the state's preferred method of groundwater management. The Texas Legislature codified its groundwater management policy decision in Section 36.0015 of the Texas Water Code, which provides that districts will manage the groundwater resources within their boundaries through rules developed and implemented in accordance with Chapter 36 of the Texas Water Code. Chapter 36 provides directives for districts and the statutory authority to carry out such directives to enable districts to have the necessary tools to protect and preserve the groundwater resources with their boundaries. The District will use the regulatory tools it has been given by Chapter 36 to properly address the groundwater issues within its boundaries, including groundwater supply and groundwater quality. While using its regulatory tools to accomplish the District's statutory objectives, the District will give strong consideration to the economic and cultural activities which occur within the District and which rely upon the continued use of groundwater.

Section 36.1072 of the Water Code requires the District to adopt rules necessary to implement this management plan. The District's proposed rules are available on the District's website at <https://brushcountrygcd.com/rules.htm>

One of the District's objectives is to lessen the interference between wells. District rules require wells to comply with spacing requirements set forth in the Texas Water Well Drillers and pump Installers Rules. The District may establish additional spacing rules which require new wells to be spaced a certain distance from existing or previously permitted wells. The District follows the statutory exemption from spacing requirements such as for wells drilled under a permit issued by the Railroad Commission or for production from wells to the extent withdrawals are required for mining activities. Another way the District can work to lessen interference between wells is to require existing and new wells not otherwise exempted from registration, to register with the District. This requirement will allow the District to have information on the location and proximity of all wells within its boundaries. The District also requires hydrogeologic reports for certain sized wells to determine well interference.

The District intends to help prevent the contamination of groundwater from abandoned and deteriorated water wells. Wells that have been abandoned or have not been properly maintained can cause surface contamination to quickly reach the groundwater resources of the District. To address this issue, the District is planning to require that all abandoned, deteriorated, or replaced wells be plugged in compliance with the Water Well Drillers and Pump Installers Rules of the Texas Department of Licensing and Regulation. The District has implemented a well plugging program to help pay for plugging such wells. As of July 21, 2022 the Brush Country Groundwater Conservation District has plugged approximately 68 wells. The District also requires capping of water wells that well owners plan to use at a later date. This will likely help to eliminate waste, prevent pollution, and stop future deterioration of well casing.

The District also uses the regulatory tools granted to districts by Chapter 36 to preserve and protect existing and historic users of groundwater within its boundaries. The Texas Legislature gives the District the authority to protect existing users of groundwater, which are those individuals or entities currently invested in and using groundwater or the groundwater resources within the District for a beneficial purpose. The Texas Legislature also provides the authority to preserve historic use by historic users, which are those individuals or entities who used groundwater beneficially in the past. Some uncertainty exists in permitting based upon historic use following the Texas Supreme Court decision in the *Edwards Aquifer Authority v. Day and McDaniel*. To the extent permitted under Chapter 36 and the case law following *EAA v. Day*, the District will strive to protect existing and historic use in accordance with Chapter 36, the District's rules, and the goals and objectives of this Management Plan. One of the tools the District uses to protect existing and historic use of groundwater is to establish a permitting process through the District's rules. Pursuant to legislative authority, including Section 36.113(e) of the Texas Water Code, the District can protect existing use by imposing more restrictive permit conditions on new permit applications and increased use by historic users. In protecting existing users, the District may establish limitations that apply to all subsequent new permit applications and increased use by historic users, regardless of type or location of use, which bear a reasonable relationship to this Management Plan and are reasonably necessary to protect existing use. In accordance with Section 36.116(b) of the Texas Water Code, the District preserves historic use when developing and implementing rules limiting groundwater production to the maximum extent practicable and consistent with this Management Plan.

The District has a well monitoring network to protect existing and historic users of groundwater. The monitoring well network enables the District to determine if new wells should be permitted based on the water levels indicated in various parts of the District's monitoring well network.

In order to better manage the groundwater resources within the District's boundaries, the District may establish management zones and adopt different rules for each subdivision of an aquifer or geologic strata located in whole or in part within the boundaries of the District or each geographic area overlying a subdivision of an aquifer located in whole or in part within the boundaries of the District. As previously stated, the District has rules to regulate groundwater withdrawals by means of spacing and/or production limits. The factors to be considered in deciding whether to grant or deny a permit or limit groundwater withdrawals should include those factors set forth in the District's Enabling Act, Chapter 36 of the Texas Water Code, and the District's rules.

Finally, the District has or may develop rules that address production of groundwater by:

- A. setting production limits on wells;
- B. limiting the amount of water produced based on acreage or tract size;
- C. limiting the amount of water that may be produced from a defined number of acres assigned to an authorized well site;
- D. limiting the maximum amount of water that may be produced on the basis of acre-feet per acre or gallons per minute per well site per acre;

- E. managed depletion; or
- F. any combination of the methods listed above in Paragraphs (A) through (E).

X. ACTIONS, PROCEDURES, PERFORMANCE AND AVOIDANCE FOR PLAN IMPLEMENTATION — 31 TAC 356.52 (a)(4) and Tex. Water Code §36.1071(e)(2)

The District will use its Management Plan to direct the District’s efforts to conserve and protect the groundwater resources within its jurisdiction. The District will make certain that all rules development, regulatory activities, and planning are consistent with this Management Plan.

Section 36.108 of the Texas Water Code requires the District to work and plan with other groundwater conservation districts in GMA-16. The District will use this Management Plan as part of its cooperation efforts with the neighboring groundwater conservation districts.

The rules for the District will be developed in coordination with the management goals and technical information provided in this Management Plan. The District’s rules will be consistent with the provisions of this Management Plan and Chapter 36 of the Texas Water Code. The enforcement of the rules will be driven by the hydrogeological and technical information available to the District, including the information provided in this Management Plan. The District has drafted proposed rules. The District’s rules are available on the website <https://brushcountrygcd.com/rules.htm>.

XI.METHODOLOGY FOR TRACKING PROGRESS TO ACHIEVE THE DISTRICT'S MANAGEMENT GOALS — 31 TAC §356.52 (a)(4)

To track its progress in achieving its management goals and objectives, the District will prepare an annual report (“Annual Report”) to be submitted to and reviewed by its Board of Directors. The Annual Report will be submitted to the Board of Directors no later than 90 days following the end of the District's fiscal year. The Annual Report will address the District's performance regarding each of the management goals and objectives in this plan for the previous fiscal year. Completion of the Annual Report began following the end of fiscal year 2012. The District will maintain a copy of the Annual Report for public review in its records after the Annual Report has been adopted by the Board of Directors.

XII. DISTRICT GOALS, MANAGEMENT OBJECTIVES AND PERFORMANCE STANDARDS — 31 TAC §356.51

Each of the District's goals, objectives, and performance standards are addressed as follows:

- A. Providing the Most Efficient Use of Groundwater - 31 TAC § 356.52 (a)(1)(A) and Tex. Water Code § 36.1071(a)(1)

1. Objective: The District requires the registration of wells not otherwise exempt from registration within the District's boundaries each year. Each year the District will locate and register a minimum of 10 wells.

Performance Standard: The number of new and existing wells registered with the District will be provided in the Annual Report for each fiscal year.

2. Objective: The District requires permits for all groundwater use considered non-exempt within District boundaries each year. The District's permitting process is in the District's rules.

Performance Standard: The District will accept and process permit applications for all non-exempt groundwater use pursuant to the permitting process described in the District Rules each year. The Annual Report for each year will contain a summary of the number of applications submitted to the District requesting authorization for the permitted use of groundwater and the number and type of permits issued by the District.

B. Controlling and Preventing Waste of Groundwater - 31TAC § 356.52 (a)(1)(B) and Tex. Water Code § 36.1071(a)(2)

1. Objective: Each year the District will provide information to the public on reducing and preventing the waste of groundwater. The District will use one of the methods set forth below to provide information to the public at least once during each fiscal year:

- a. Offer public presentations on groundwater issues, including waste prevention;
- b. Sponsor an educational program or course;
- c. Distribute literature packets or brochures;
- d. Provide information on the District's web site addressing the prevention of waste; or
- e. Submit newspaper articles to the newspapers of general circulation within the District for publication;

Performance Standard: The Annual Report will include a summary of the District's efforts during the previous year to provide information to the public on the reducing and preventing the waste of groundwater.

2. Objective: The District will prohibit waste as defined by Chapter 36 of the Texas Water Code within its boundaries and will implement this prohibition through its rules.

Performance Standard: The District's Annual Report will include a summary of the number of well owners who violated the District's prohibition on waste and any action taken by the District.

C. Controlling and Preventing Subsidence – 31 TAC § 356.52 (a)(1)(C) and Tex. Water Code §36.1071(a)(3)

1. Objective: The District will evaluate for any signs of subsidence within its boundaries.

Performance Standard: The District will indicate in its Annual Report that it has evaluated for signs of subsidence and, if evidence of subsidence is found, shall provide an explanation in its Annual Report.

2. Objective: The District will stay abreast of subsidence issues within the GMA-16 area. In that regard, the District has reviewed section 4.2.4 of the Vulnerability of the Major and Minor Aquifers of Texas to Subsidence with Regard to Groundwater Pumping – TWDB Contract Number 1648302062, by LRE Water.

Performance Standard: The District will indicate in its Annual Report that it has stayed abreast of subsidence issues within the GMA-16 area and will provide a list of those groundwater conservation districts or other entities that have experienced any new evidence of subsidence within the previous year.

D. Addressing Conjunctive Surface Water Management Issues – 31 TAC §356.52 (a)(1)(D) and Tex. Water Code §36.1071(a)(4)

1. Objective: The District will participate in the regional water planning process by sending a District representative to attend at least one meeting of the Rio Grande Regional Water Planning Group (“Region M”) and one meeting of the Coastal Bend Regional Water Planning Group (“Region N”) each year. The District will coordinate with the Nueces River Authority, a member of Region N, during attendance of the Region N Meeting.

Performance Standard: Attendance at the Region M meeting and the Region N meeting by a representative of the District will be included in the Annual Report and will provide the dates of attendance.

E. Addressing Natural Resource Issues which Impact the Use and Availability of Groundwater, and which are Impacted by the Use of Groundwater - 31TAC §356.52 (a)(1)(E); and Tex. Water Code §36.1071(a)(5)

1. Objective: Each year, the District will collect at least 10 water level measurements from District monitor wells. The ten water level measurements will be taken from 3 wells in Brooks County, 3 wells in Jim Hogg County, 3 wells in Jim Wells County, and 1 well in Hidalgo County.

Performance Standard: The District's Annual Report will include a description of the number of wells measured and the monitoring results of each well measured.

2. Objective: The District will monitor whether there are any significant impacts to wildlife common to the District that rely on the District's groundwater resources.

Performance Standard: The District's Annual Report will indicate that the District monitored any impacts to wildlife and, if any significant impacts are found, will describe such impacts in its Annual Report.

F. Addressing Drought Conditions - 31TAC §356.52 (a)(1)(F) and Tex. Water Code §36.1071(a)(6)

1. Objective: The District will access at least one updated Palmer Drought Severity Index ("PDSI") map each quarter and will check for updates to the Drought Preparedness Council Situation Report ("Situation Report") posted on the following website [Drought Index | The Texas Alliance of Groundwater Districts \(texasgroundwater.org\)](https://www.texasgroundwater.org/drought-index). The District also will access useful drought information on the TWDB website: <https://waterdatafortexas.org/drought/drought-monitor?period=2022-07-19&areaType=state&areaName=tx>.

Performance Standard: The District will include the PDSI maps and Situation Reports it has reviewed in its Annual Report each year and will include a discussion of the current drought status of the District.

G. Addressing Conservation, Recharge Enhancement, Rainwater Harvesting, Precipitation Enhancement, or Brush Control, where Appropriate and Cost Effective - 31TAC §356.52 (a)(1)(G) and TWC §36.1071(a)(7).

1. Objective: The District will provide information to the public on water conservation at least once each fiscal year by one of the following methods:
 - a. Distribute literature packets or brochures within the District;
 - b. Provide information to the public on the District's web site;
 - c. Conduct public presentations;
 - d. Submit newspaper articles to newspapers of general circulation in the District for publication; or
 - e. Present exhibits at local public events;

Performance Standard: The District's Annual Report will provide a description of the District efforts and a copy of any information provided to the public during the previous year to promote conservation.

2. Objective: The District will provide information to the public by providing literature at the District's office.

Performance Standard: The District's Annual Report will include a copy of the information provided to the public at the District's office.

3. Objective: The District will promote rainwater harvesting by providing information on rainwater harvesting on the District's web site at least once each year.

Performance Standard: The District's Annual Report will include a copy of the information on rainwater harvesting which has been provided on the District web site within the previous fiscal year.

4. Objective: The District will inform the public about the brush control activities within the District's boundaries and the benefits of brush control by providing literature at the District's office located at 732 W. Rice, Falfurrias, TX 78355.

Performance Standard: The District's Annual Report will include an update on the brush control activities within the District's boundaries and will provide a copy of the literature provided to the public at the District's office.

5. Precipitation enhancement is not an appropriate goal for the District at this time since there is not an operational precipitation enhancement program in the area or in other groundwater conservation districts in the vicinity of the District. The District recognizes the significant expense associated with precipitation enhancement programs and is currently unable to develop a precipitation enhancement program for this reason.

6. Objective: The District will begin to identify recharge areas within the District.

Performance Standard: Any recharge areas identified during the year will be discussed in the District's Annual Report.

- H. Addressing in a Quantitative Manner the Desired Future Conditions of the Groundwater Resources - 31TAC §356.52(a)(1)(H) and Tex. Water Code § 36.1071(a)(8).

1. Objective: Each year, the District will collect at least ten water level measurements from District monitor wells. The ten water level measurements will be taken from 3 wells in Brooks County, 3 wells in Jim Hogg County, 3 wells in Jim Wells County, and 1 well in Hidalgo County.

Performance Standard: Each year the District will post the water level

measurement collected and identify the aquifer from which the measurement is taken in the District's Annual Report and website. The District will include a discussion of the change in water level in each aquifer as compared to previous years' water level.

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11. GAM Run 21 – 021 MAG: Modeled, Available Groundwater for the Gulf Coast Aquifer System in Groundwater Management Area 16, by Ki Cha, Ph.D., EIT., Texas Water Development Board, October 31, 2022.

APPENDIX LIST

- Appendix A Brush Country Groundwater Conservation District Enabling Act
- Appendix B Map of Brush Country Groundwater Conservation District
- Appendix C Notices of Public Hearings and Meetings of Brush Country Groundwater Conservation District
- Appendix D Resolution of Brush Country Groundwater Conservation District Adopting Groundwater Management Plan
- Appendix E Entities Notified to Evidence Coordination with Surface Water Management Entities
- Appendix F GMA – 16 Resolution Adopting DFC
- Appendix G Brush Country Groundwater Conservation District Resolution Adopting DFC
- Appendix H Estimated Historical Groundwater Use and 2017 State Water Plan Datasets
- Appendix I GAM RUN 21-021 MAG: Brush Country GCD Management Plan
- Appendix J Projected Water Supply Needs TWDB 2012 State Water Plan Data

APPENDIX A

SPECIAL DISTRICT LOCAL LAWS CODE

TITLE 6. WATER AND WASTEWATER

SUBTITLE H. DISTRICTS GOVERNING GROUNDWATER

For contingent expiration of this chapter, see Section 8852.003.

CHAPTER 8852. BRUSH COUNTRY GROUNDWATER CONSERVATION DISTRICT

SUBCHAPTER A. GENERAL PROVISIONS

Sec. 8852.001. DEFINITIONS. In this chapter:

- (1) “Board” means the board of directors of the district.
- (2) “Director” means a member of the board.
- (3) “District” means the Brush Country Groundwater Conservation District.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

Sec. 8852.002. NATURE OF DISTRICT. The district is a groundwater conservation district created under and essential to accomplish the purposes of Section 59, Article XVI, Texas Constitution.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

Sec. 8852.003. CONFIRMATION ELECTION REQUIRED. If the creation of the district is not confirmed in at least one of the territories described by Section 8852.023 at a confirmation election held before September 1, 2011:

- (1) the district is dissolved on September 1, 2011, except that:
 - (A) any debts incurred shall be paid;
 - (B) any assets that remain after the payment of debts shall be transferred in equal amounts to Jim Hogg, Brooks, Hidalgo, and Jim Wells Counties; and
 - (C) the organization of the district shall be maintained until all debts are paid and remaining assets are transferred; and
- (2) this chapter expires September 1, 2013.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

Sec. 8852.004. INITIAL DISTRICT TERRITORY.

- (a) The district is initially composed of the territory described by Section 2 of the Act creating this chapter.
- (b) The boundaries described in Section 2 of the Act creating this chapter form a closure. A mistake made in describing the district's boundaries in the legislative process does not affect the district's:
 - (1) organization, existence, or validity;
 - (2) right to issue any type of bond for the purposes for which the district is created or to pay the principal of and interest on a bond;
 - (3) right to impose an assessment or tax; or
 - (4) legality or operation.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

Sec. 8852.005. CONSTRUCTION OF CHAPTER. This chapter shall be liberally construed to achieve the legislative intent and purposes of Chapter 36, Water Code. A power granted by Chapter 36, Water Code, or this chapter shall be broadly interpreted to achieve that intent and those purposes.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

SUBCHAPTER B. DISTRICT CREATION

Sec. 8852.021. TEMPORARY DIRECTORS.

- (a) The temporary board consists of:
 - (1) David Grall;
 - (2) Mauro Garcia;
 - (3) Robert Scott;
 - (4) A. C. Jones IV;
 - (5) Mario Martinez;
 - (6) Israel Hinojosa;
 - (7) a person appointed by the commissioner's courts of Brooks and Jim Hogg Counties within 60 days of the effective date of this Act;
 - (8) Jesse Howell;

- (9) Pearson Knolle; and
 - (10) Lawrence Cornelius.
- (b) If there is a vacancy on the temporary board, the remaining temporary directors shall select a qualified person to fill the vacancy.
 - (c) Unless the temporary director's term expires under Subsection (d), a temporary director serves until the earlier of:
 - (1) the date the temporary director becomes an initial permanent director under Section 8852.024; or
 - (2) the date this chapter expires under Section 8852.003.
 - (d) The following temporary directors' terms expire on the date of the canvass of the election to confirm the creation of the district:
 - (1) David Grall and Mauro Garcia, if the voters in the territory described by Section 8852.023(a)(3) vote not to confirm the creation of the district;
 - (2) Robert Scott, if the voters in the territory described by Section 8852.023(a)(1) vote not to confirm the creation of the district;
 - (3) A. C. Jones IV and Mario Martinez, if the voters in the territory described by Section 8852.023(a)(5) vote not to confirm the creation of the district;
 - (4) Israel Hinojosa, if the voters in the territory described by Section 8852.023(a)(4) vote not to confirm the creation of the district;
 - (5) a person appointed by the commissioner's courts of Brooks and Jim Hogg Counties, if the creation of the district is confirmed by voters of none of the territories described by Section 8852.023;
 - (6) Jesse Howell and Pearson Knolle, if the voters in the territory described by Section 8852.023(a)(6) vote not to confirm the creation of the district; and
 - (7) Lawrence Cornelius, if the voters in the territory described by Section 8852.023(a)(2) vote not to confirm the creation of the district.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

Sec. 8852.022. ORGANIZATIONAL MEETING OF TEMPORARY DIRECTORS. As soon as practicable after all the temporary directors have qualified under Section 36.055, Water Code, a majority of the temporary directors shall convene the organizational meeting of the district

at a location within the district agreeable to a majority of the directors. If an agreement on location cannot be reached, the organizational meeting shall be at the Brooks County Courthouse.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

Sec. 8852.023. CONFIRMATION ELECTION.

- (a) The temporary board shall hold an election in each of the following territories in the district to confirm the creation of the district and the imposition of a maintenance tax:
 - (1) the territory in the corporate limits of the city of Falfurrias as of January 1, 2009;
 - (2) the territory in the corporate limits of the city of Alice as of January 1, 2009;
 - (3) the territory:
 - (A) in Brooks County that, as of January 1, 2009, is:
 - (i) outside the corporate limits of the city of Falfurrias; and
 - (ii) not in the Kenedy County Groundwater Conservation District; and
 - (B) in Hidalgo County that is:
 - (i) described by a metes and bounds description in Section 2 of the Act creating this chapter; and
 - (ii) not in the Kenedy County Groundwater Conservation District as of January 1, 2009;
 - (4) the territory in the certificated retail water service area of the Jim Hogg County Water Control and Improvement District No. 2 as of January 1, 2009;
 - (5) the territory in Jim Hogg County that is outside the certificated retail water service area of the Jim Hogg County Water Control and Improvement District No. 2 as of January 1, 2009; and
 - (6) the territory in Jim Wells County that, as of January 1, 2009, is:
 - (A) outside the corporate limits of the city of Alice; and
 - (B) not in the Kenedy County Groundwater Conservation District.
- (b) Section 41.001(a), Election Code, does not apply to a confirmation election held as provided by this section.

- (c) Except as provided by this section, an election under this section must be conducted as provided by Sections 36.017(b), (c), and (e), Water Code, and the Election Code.
- (d) The ballot for the election must be printed to provide for voting for or against the proposition: "The creation of the Brush Country Groundwater Conservation District and the levy of an ad valorem tax in the district at a rate not to exceed three cents for each \$100 of assessed valuation."
- (e) If the majority of voters in a territory described by Subsection (a) voting at an election held under this section vote to confirm the creation of the district, that territory is included in the district. If the majority of voters in a territory described by Subsection (a) voting at an election held under this section vote not to confirm the creation of the district, that territory is excluded from the district.
- (f) If the majority of voters in any of the territories described by Subsection (a) voting at an election held under this section vote not to confirm the creation of the district, the temporary board or any successor board may hold a subsequent confirmation election in that territory.
- (g) The district may not impose a maintenance tax unless the tax is confirmed under this section.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

Sec. 8852.024. INITIAL PERMANENT DIRECTORS.

- (a) If the creation of the district is confirmed at an election held under Section 8852.023 in one or more territories in the district, each temporary director who represents a territory that is included in the district becomes an initial permanent director of the district.
- (b) The initial permanent directors shall draw lots to determine which directors serve a term expiring on June 1 of the first even-numbered year after the confirmation election and which directors serve a term expiring on June 1 of the next even-numbered year.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

Sec. 8852.025. GIFTS AND GRANTS. The temporary board may solicit and accept gifts and grants, including services, on the district's behalf from any public or private source to provide revenue for the district before a confirmation election is held under Section 8852.023.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

Sec. 8852.026. RIGHT OF CERTAIN LANDOWNERS TO WITHDRAW FROM DISTRICT. A person who owns a tract of land in Brooks or Hidalgo County that adjoins the boundaries of the Kenedy County Groundwater Conservation District as of the effective date of the Act creating this chapter may petition the Kenedy County Groundwater Conservation District for annexation into that district. Notwithstanding any other law, the Kenedy County Groundwater Conservation District may annex territory described by a petition under this section. Territory annexed by the Kenedy County Groundwater Conservation District under this section not later than January 1, 2010, is disannexed at that time from the district created by this chapter.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

Sec. 8852.027. LIMITATION OF POWERS OF TEMPORARY BOARD.

- (a) The temporary board may exercise only the powers described by Sections 8852.022, 8852.023, and 8852.025.
- (b) Except as required by a law or rule relating to participation in a groundwater management area in which the district is located, the temporary board may not:
 - (1) adopt rules, including rules regarding wells; or
 - (2) develop a draft or final management plan.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

SUBCHAPTER C. BOARD OF DIRECTORS

Sec. 8852.051. APPOINTMENT OF DIRECTORS; TERMS.

- (a) Not later than June 1 of each even-numbered year, the Commissioners Courts of Brooks County, Jim Hogg County, and Jim Wells County shall appoint directors as follows:
- (1) the Commissioners Court of Brooks County shall appoint:
 - (A) one director who represents the municipal interests of the territory described by Section 8852.023(a)(1), if the territory described by Section 8852.023(a)(1) is included in the district; and
 - (B) two directors who represent the agricultural interests of the territory described by Sections 8852.023(a)(3)(A) and (B), if the territory described by Sections 8852.023(a)(3)(A) and (B) is included in the district;
 - (2) the Commissioners Court of Jim Hogg County shall appoint:
 - (A) one director who represents the interests of Jim Hogg County in the territory described by Section 8852.023(a)(4), if the territory described by Section 8852.023(a)(4) is included in the district; and
 - (B) two directors who represent the agricultural interests of the territory described by Section 8852.023(a)(5), if the territory described by Section 8852.023(a)(5) is included in the district;
 - (3) the Commissioners Court of Jim Wells County shall appoint:
 - (A) one director who represents the municipal interests of the territory described by Section 8852.023(a)(2), if the territory described by Section 8852.023(a)(2) is included in the district; and
 - (B) two directors who represent the agricultural interests of the territory described by Section 8852.023(a)(6), if the territory described by Section 8852.023(a)(6) is included in the district; and
 - (4) the Commissioners Courts of Brooks County and Jim Hogg County jointly shall appoint one director to represent the industrial

and mining interests of Jim Hogg and Brooks Counties.

- (b) Directors serve staggered four-year terms that expire on June 1 of an even-numbered year.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

Sec. 8852.052. ELIGIBILITY.

- (a) A director is not disqualified from service because the director is an employee, manager, director of the board, or officer of a groundwater producer that is or may be regulated by the district.
- (b) A temporary director whose term of office expires under Section 8852.021(d) is not eligible for appointment as a director.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

Sec. 8852.053. COMPENSATION; REIMBURSEMENT.

- (a) Notwithstanding Section 36.060, Water Code, a director is not entitled to receive compensation for performing the duties of a director.
- (b) A director is entitled to receive reimbursement for the director's reasonable expenses incurred while engaging in activities on behalf of the district in accordance with Sections 36.060(b) and (c), Water Code.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

Sec. 8852.054. VACANCY. A vacancy in the office of director shall be filled by appointment of the board in a manner consistent with the representational requirements of Section 8852.051. The appointed director serves only for the remainder of the unexpired term to which the director was appointed.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

SUBCHAPTER D. POWERS AND DUTIES

Sec. 8852.101. GROUNDWATER CONSERVATION DISTRICT POWERS AND DUTIES. Except as otherwise provided by this chapter, the district has the powers and duties provided by the general law of this state, including Chapter 36, Water Code, and Section 59, Article XVI, Texas Constitution, applicable to groundwater conservation districts.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

Sec. 8852.102. CONTRACTS. The district may enter into a contract with any person, public or private, for any purpose authorized by law.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

Sec. 8852.103. EXEMPTIONS FROM PERMIT REQUIREMENTS.

- (a) Section 36.117, Water Code, applies to the district except that for the purposes of applying that section to the district, "domestic use" and "livestock use" have the meanings assigned by Subsection (b).
- (b) In this section:
 - (1) "Domestic use":
 - (A) means the use of groundwater by an individual or a household to support domestic activities, including the use of groundwater for:
 - (i) drinking, washing, or culinary purposes;
 - (ii) irrigating a lawn or a family garden or orchard;
 - (iii) watering domestic animals; or
 - (iv) water recreation, including aquatic and wildlife enjoyment; and
 - (B) does not include the use of water:
 - (i) to support an activity for which consideration is given or received or for which the product of the activity is sold; or
 - (ii) by or for a public water system.
 - (2) "Livestock use" means the use of groundwater for the open-range watering of livestock, exotic livestock, game animals, or fur-bearing animals. For purposes of this subdivision, "livestock" and "exotic livestock" have the meanings assigned by Sections 1.003 and 142.001, Agriculture Code,

respectively, and "game animal" and "fur-bearing animal" have the meanings assigned by Sections 63.001 and 71.001, Parks and Wildlife Code, respectively. Livestock use does not include use by or for a public water system.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

Sec. 8852.104. EFFECTS OF TRANSFER.

- (a) In reviewing a proposed transfer of groundwater out of the district in accordance with Section 36.122(f), Water Code, the district shall determine whether the proposed transfer would have a negative effect on:
 - (1) the availability of water in the district;
 - (2) the conditions of any aquifer that overlies the district;
 - (3) subsidence in the district;
 - (4) existing permit holders or other groundwater users in the district; and
 - (5) any applicable approved regional water plan or certified district management plan.
- (b) If the district determines under Subsection (a) that the transfer would have a negative effect, the district may, in addition to the conditions authorized by Section 36.122, Water Code, impose other requirements or limitations on the permit that are designed to minimize the effect.
- (c) Sections 36.122(c), (i), and (j), Water Code, do not apply to a requirement or limitation imposed under this section.
- (d) The district may impose a fee or surcharge as an export fee. The restrictions under Section 36.122(e), Water Code, do not apply to a fee or surcharge imposed under this subsection.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

Sec. 8852.105. APPLICABILITY OF DISTRICT REGULATIONS. Groundwater regulations adopted by the district under this chapter apply to all persons except as exempted under Section 36.117, Water Code, or this chapter.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

Sec. 8852.106. NO EMINENT DOMAIN POWER. The district may not exercise the

power of eminent domain.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

Sec. 8852.107. LANDOWNERS' RIGHTS. The rights of landowners and their lessees and assigns in groundwater in the district are recognized. Nothing in this chapter shall be construed to deprive or divest the owners or their lessees and assigns of their rights, subject to district rules.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

Sec. 8852.108. LIMITATION ON RULEMAKING POWER NOT APPLICABLE. Section 36.121, Water Code, does not apply to the district.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

SUBCHAPTER E. GENERAL FINANCIAL PROVISIONS

Sec. 8852.151. REVENUE. To pay the maintenance and operating costs of the district and to pay any bonds or notes issued by the district, the district may impose ad valorem taxes at a rate not to exceed three cents on each \$100 of assessed valuation of taxable property in the district.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

Sec. 8852.152. GRANTS, GIFTS, AND DONATIONS. The district may solicit and accept grants, gifts, and donations from any public or private source.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

SUBCHAPTER F. DISSOLUTION

Sec. 8852.201. SUBCHAPTER CUMULATIVE. The provisions of this subchapter are cumulative of the provisions of Subchapter I, Chapter 36, Water Code.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

Sec. 8852.202. DISSOLUTION BY ELECTION.

- (a) After January 1, 2016, the board shall order an election on the question of dissolving the district if the board receives a petition requesting that an election be held for that purpose that is signed by at least 15 percent of the district's registered voters.
- (b) Not later than the 30th day after the date the board receives the petition, the directors shall:
 - (1) validate the signatures on the petition; and
 - (2) if the signatures are validated, order an election on the next uniform election date under Section 41.001, Election Code.
- (c) The order calling the election must state the nature of the election, including the proposition that is to appear on the ballot.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

Sec. 8852.203. NOTICE OF ELECTION. Notice of an election under this subchapter must be provided by posting a copy of the order calling the election in at least one conspicuous place for at least 10 days before the day of the election at the county courthouse in Brooks County, Jim Hogg County, Jim Wells County, and Hidalgo County.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

Sec. 8852.204. BALLOT. The ballot for an election under this subchapter must be printed to permit voting for or against the proposition: "The dissolution of the Brush Country Groundwater Conservation District."

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

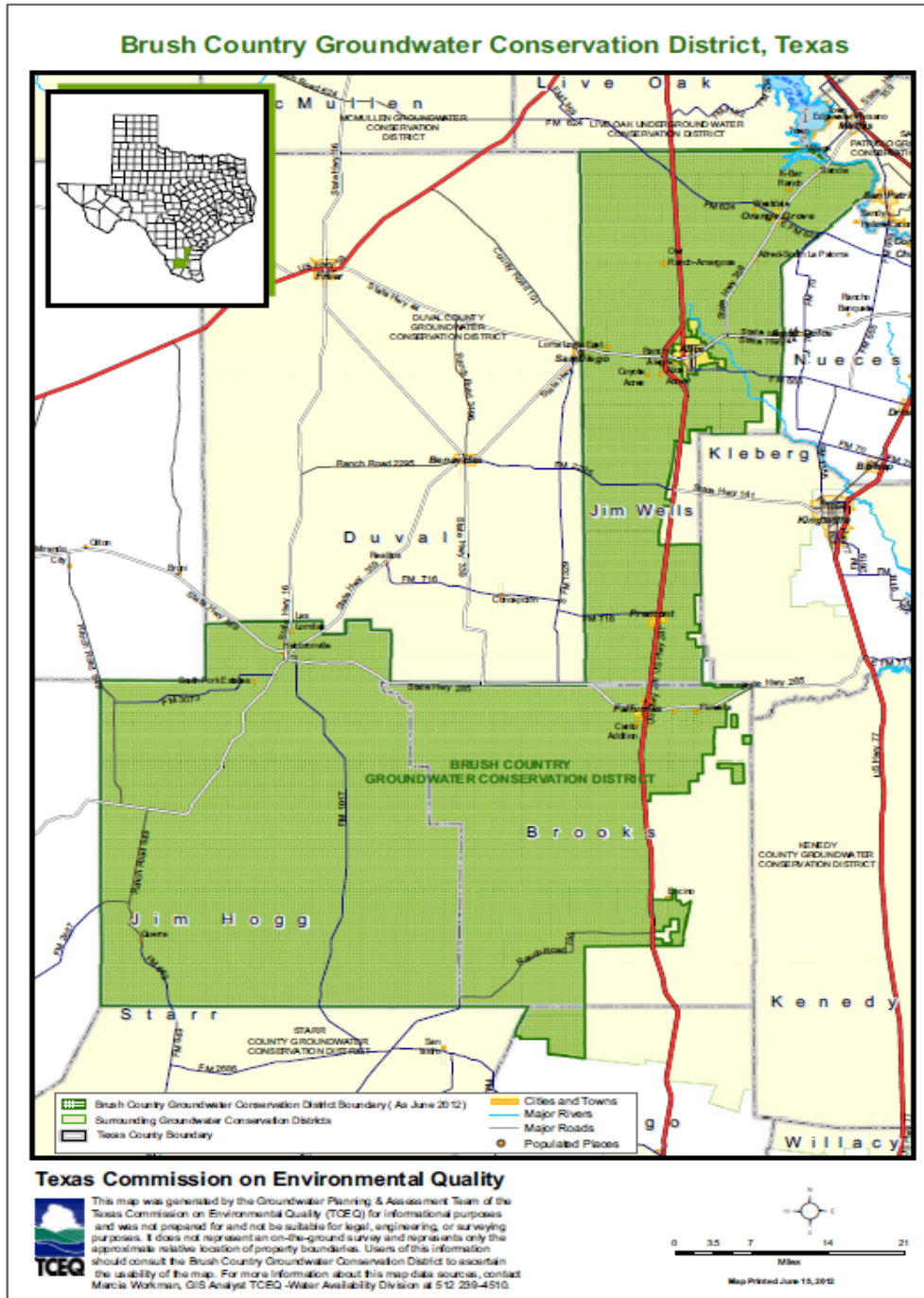
Sec. 8852.205. ELECTION RESULTS; DISPOSITION OF ASSETS. If a majority of the votes in an election under this subchapter favor dissolution:

- (1) the board shall find that the district is dissolved; and
- (2) Section 36.310, Water Code, applies for the purpose of disposition of the district's assets.

Added by Acts 2009, 81st Leg., R.S., Ch. [1396](#), Sec. 1, eff. June 19, 2009.

APPENDIX B

MAP OF BRUSH COUNTRY GCD



APPENDIX C

NOTICES OF PUBLIC HEARINGS AND MEETINGS OF BRUSH COUNTRY GCD

NOTICE OF PUBLIC HEARING

Notice is given that the Brush Country Groundwater Conservation District Board of Directors will hold a public hearing on the re-adoption of its Management Plan with proposed revisions at its regularly scheduled meeting on Tuesday, September 20th, 2022, at the Brush Country Groundwater Conservation District, located at 732 W. Rice Street, Falfurrias TX 78355. The public meeting will begin at 9:30 a.m. and the public hearing will take place during the public meeting and will begin about but no earlier than 9:35 a.m.

A copy of the proposed Management Plan is available for inspection at the District office located at 732 Street, Falfurrias TX 78355 and may be downloaded and copied from the District's website at www.brushcountrygcd.com.

***1 NOTICE OF HEARING ON MANAGEMENT PLAN AND NOTICE OF MEETING
BRUSH COUNTRY GROUNDWATER CONSERVATION DISTRICT
to be held at the
Brush Country GCD Building
732 West Rice
Falfurrias, Texas
Tuesday, September 20, 2022 at 9:30 am Public Meeting Agenda***

Notice is hereby given that a hearing on the management plan and meeting of the Board of Directors (Board) of the Brush Country Groundwater Conservation District will be held Tuesday, September 20, 2022 at 9:30 a.m. in the District Office, 732 West Rice St., Falfurrias, Texas. The agenda is:

1. Call to order, declare meeting open to the public, and take roll.
2. Pledge of Allegiance.
3. Public Comment.
4. Discuss, consider, and possibly act on Minutes of the Regular Meeting on August 23, 2022.
5. Discuss, consider, and possibly act on General Manager's Report:
 - a. Report on Kenedy County GCD meeting September 16, 2022 @ 9:00 a.m. & Duval County GCD September 28, 2022 @ 6:00 p.m.

- b. Report on TAGD Summit San Antonio August 30-September 1,2022
 - c. Well registrations in August 25, total wells registered 3,527. 1 well plugged
 - d. Received thank you plaque from Texas 4-H Ambassadors.
 - e. Submitted Application for the Texas Environmental Excellence Awards
-
- 6. Discuss, consider, and possibly act on proposal Rev.1 for computer monitors for conference room by ITC Corporation.
 - 7. Discuss, consider, and possibly act on adopting 2022 Tax Rate by resolution.
 - 8. Discuss, consider, and possibly act on conducting a public hearing followed by readopting BCGCD Groundwater Management plan for submittal to TWDB by resolution.
 - 9. Discuss, consider, and possibly act on payment of bills.
 - 10. Discuss, consider, and possibly act on legislative report from Robert Howard.
 - 11. Discuss, consider, and possibly act on GMA 16 issues.
 - 12. Discuss, consider, and possibly act on new business and select date for next meeting.
 - 13. Adjourn.

The above agenda schedule represents an estimate of the order for the indicated items and is subject to change at any time. These public meetings are available to all persons regardless of disability. If you require special assistance to attend the meeting, please call (361) 325 5093 at least 24 hours in advance of the meeting to coordinate any special physical access arrangements. At any time during the meeting and in compliance with the Texas Open Meetings Act, Chapter 551, Government Code, Vernon's Texas Codes, Annotated, the Brush Country Groundwater Conservation District Board may meet in executive session on any of the above agenda items or other lawful items for consultation concerning attorney-client matters (§ 551.071); deliberation regarding real property (§ 551.072); deliberation regarding prospective gift (§ 551.073); personnel matters (§ 551.074); and deliberation regarding security devices (§ 551.076). Any subject discussed in executive session may be subject to action during an open meeting.

APPENDIX D

RESOLUTION ADOPTING MANAGEMENT PLAN

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE BRUSH COUNTRY GROUNDWATER CONSERVATION DISTRICT AUTHORIZING READOPTION OF THE DISTRICT MANAGEMENT PLAN WITH REVISIONS

WHEREAS, the revised Management Plan of the Brush Country Groundwater Conservation District (“District”), attached hereto as Attachment A, has been developed for the purpose of conserving, preserving, protecting, and recharging the aquifers in the District, and this action is taken under the District’s statutory authority to prevent waste and protect rights of owners of interest in groundwater;

WHEREAS, after notice and hearing the Board of Directors (“Board”) of the District adopted a Management Plan on March 5, 2013;

WHEREAS, the Texas Water Development Board (“TWDB”) approved the Management Plan on April 8, 2013;

WHEREAS, after notice and hearing the Board readopted a Management Plan on November 28, 2017 and TWDB approved the November 28, 2017 Management Plan on December 19, 2017;

WHEREAS, Texas Water Code section 36.1072(e) requires the District to review and readopt the plan with or without revisions at least once every five years;

WHEREAS, the TWDB rules provide that a management plan must be adopted at least 90 days before the existing management plan expires and submitted to the TWDB for approval at least 60 days before the existing plan expires;

WHEREAS, the Board considered proposed revisions to the Management Plan at its September 20, 2022, Board meeting and submitted the proposed revisions to the TWDB for pre-review on September 20, 2022;

WHEREAS, on September 20, 2022, the Board directed that a Public Hearing regarding the Management Plan be held on September 20, 2022 and that advance notice be provided by newspaper publication and individual notice;

WHEREAS, the Notice of Public Hearing was published in the *Hebbronville Enterprise* on August 31, 2022, the *Falfurrias Facts* on September 1, 2022, and in the *Alice Echo-News* on September 4, 2022;

WHEREAS, individual notice was mailed to landowners in the District within Hidalgo County on August 24, 2022;

WHEREAS, the Board conducted a Public Hearing on September 20, 2022;

WHEREAS, following the close of the Public Hearing, the Board considered and acted on the Management Plan on September 20, 2022;

WHEREAS, the Management Plan meets the requirements of Texas Water Code § 36.1071 and § 36.1072 and 31 TAC §§ 356.52; and

WHEREAS, under no circumstances, and in no particular case will this Management Plan, or any part of it, be construed as a limitation or restriction upon the exercise of any discretion where such exists; nor will it in any event be construed to deprive the Board of an exercise of powers, duties, and jurisdiction conferred by law, nor to limit or restrict the amount and character of data or information which may be required for the proper administration of the law.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Brush Country Groundwater Conservation District that:

- 1) The “Management Plan of the Brush Country Groundwater Conservation District” contained in Attachment A is hereby re-adopted with revisions; and
- 2) This Management Plan will take effect upon approval by the executive administrator of the Texas Water Development Board. It will remain in effect until a revised District Management Plan is adopted and approved.

AND IT IS SO ORDERED.

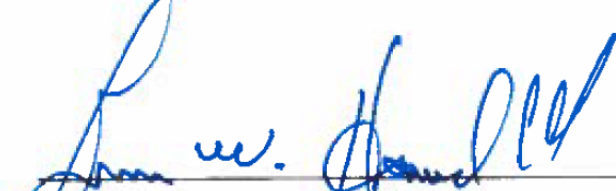
In Favor 6 Opposed 0

PASSED AND APPROVED THIS 20th DAY OF SEPTEMBER, 2022.



David Kelly, President

ATTEST:



Jesse Howell

APPENDIX E

**LETTER AND ENTITIES NOTIFIED AND EVIDENCE OF COORDINATION WITH
SURFACE WATER MANAGEMENT ENTITIES**



**Brush Country Groundwater Conservation District
732 West Rice
Falfurrias, Tx. 78355
Phone 361 325 5093
lpena@brushcountrygcd.com**

To: Region M Regional Water Planning Group
C/O LRGVDC
Attn: Debby Morales
301 W. Railroad St.
Weslaco, Tx.78596

RE: Draft Management Plan

Date: 9/22/2022

Dear Mrs. Morales,

The Brush Country Groundwater Conservation District Board of Directors adopted a review DRAFT Management Plan on September 20,2022. The Plan will now be submitted to the Texas Water Development Board for a 30 day pre- review. A copy of the review DRAFT Management Plan is enclosed.

Please feel free to call (361)325-5093 or email me at lpena@brushcountrygcd.com if you have any questions, comments, or concerns.

Respectfully,

Luis "Louie" Pena
General Manager
Brush Country Groundwater Conservation District
Mr. Lonnie Stewart, General Manager
Bee Groundwater Conservation District

PO Box 682
Beeville, TX 78104-0682

Mr. Gustavo Gonzales, Water Director
Corpus Christi ASR Conservation District
PO Box 9277
Corpus Christi, TX 78469

Mr. Alberto Garcia, Manager
Duval County Groundwater Conservation District
PO Box 506
Benavides, TX 78341

Mr. Andy Garza, District Manager
Kenedy County Groundwater Conservation District
PO Box 1433
Kingsville, TX 78363

Mr. Lonnie Stewart, Manager
Live Oak Underground Water Conservation District
3460A Highway 281
George West, TX 78022

Mr. Lonnie Stewart, Manager
McMullen Groundwater Conservation District
PO Box 232
Tilden, TX 78072

Mr. Armando Vela, President
Red Sands Groundwater Conservation District
PO Box 229
Linn, TX 78563

Mr. Duane Campion
San Patricio County Groundwater Conservation District
PO Box 1400
Sinton, TX 78387

Ms. Rose Benavidez, Manager
Starr County Groundwater Conservation District
601 E. Main St.
Rio Grande City, TX 78582

Con Mims
Nueces River Authority
PO Box 349
Uvalde, TX 78802-0349

Mr. Billy Moss, Manager
Jim Hogg County Water Control and Improvement District No. 2
PO Box 148
Hebbronville, TX 78361-0148

Ms. Melida K. Rangel, Manager
Jim Wells County Freshwater Supply District No. 1
PO Box 428
Ben Bolt, TX 78342-0000

Mr. Gustavo Gonzales, Water Director
City of Corpus Christi Water Development
2726 Holly Road
Corpus Christi, TX 78415

Mayor Carl Srp
City of Orange Grove
PO Box 1350
Orange Grove, TX 78372

Mayor Dalia Gee
City of Premont
PO Drawer 340
Premont, TX 78375

Mayor Ana Maria Garcia
City of Falfurrias
PO Drawer E
Falfurrias, TX 78355

Mr. Matias Saenz, General Manager
Falfurrias Utility Board
PO Box 518
Falfurrias, TX 78355

Mayor Ruperto Canales III
City of San Diego
404 S. Mier
San Diego, TX 78384

Mr. Vic Casas, General Manager
San Diego Municipal Utility District
200 South Drive EE Dunlap Highway
San Diego, TX 78384

Mr. Rey De Lo Santos, Jr., City Manager
City of Alice
PO Box 3229
Alice, TX 78333

Mr. Glenn Jarvis
Region M Water Planning Group
Law Offices of Glenn Jarvis
1801 S. 2nd Street, Suite 550
McAllen, TX 78503

Carola Serrato
Region N Water Planning Group
South Texas Water Authority
PO Box 1701
Kingsville, TX 78364

Mr. Scott Bledsoe, III
Region N Water Planning Group
Live Oak UWCD
PO Box 3
Oakville, TX 78060

Judge Ramon Garcia
Hidalgo County Judge
1615 S. Closner
Suite J
Edinburg, TX 78539

Judge Raul M. Ramirez
Brooks County Judge
129 East Rice Street
Falfurrias, TX 78355

Judge Guadalupe S. Canales
Jim Hogg County Judge
PO Box 729t
Hebbronville, TX 78361-0719

Judge L. Arnoldo Saenz
Jim Wells County Judge
200 N. Almond Street
Alice, TX 78332

APPENDIX F

RESOLUTION TO ADOPT DESIRED FUTURE CONDITIONS FOR GROUNDWATER MANAGEMENT AREA 16 AQUIFERS

STATE OF TEXAS

RESOLUTION # 2022-01

GROUNDWATER MANAGEMENT AREA 16

WHEREAS, Texas Water Code 36.108 requires the Groundwater Conservation Districts located whole or in part in a Groundwater Management Area (“GMA”) designated by the Texas Water Development Board to adopt desired future conditions for the relevant aquifers located within the management area;

WHEREAS, the Groundwater Conservation Districts located wholly or partially within Groundwater Management Area 16 (“GMA 16”), as designated by the Texas Water Development Board, as of the date of this resolution are as follows: Bee Groundwater Conservation District, Kenedy County Groundwater Conservation District, Brush Country Groundwater Conservation District, Duval County Groundwater Conservation District, Starr County Groundwater Conservation District, Corpus Christi Aquifer Storage and Recovery Conservation District, Live Oak Underground Water Conservation District, Red Sands Groundwater Conservation District, McMullen Groundwater Conservation District, and San Patricio County Groundwater Conservation District (collectively referred to as “Member Districts”);

WHEREAS, the Board Presidents or their Designated Representatives of districts in GMA 16 have met at various meetings and conducted joint planning in accordance with Chapter 36.108, Texas Water Code since 2015and;

WHEREAS, Section 36.108 of the Texas Water Code requires the Member Districts in GMA 16 to consider groundwater availability models and other data or information for the management area and vote on a proposal for adoption of DFC’s for each relevant aquifer within GMA 16 by January 5, 2022, which GMA Member Districts accomplished on September 21, 2021, and; again with corrections on November 23, 2021 and with minor amendments on June 28, 2022.

WHEREAS, GMA 16, having given proper and timely notice, held an open meeting of the GMA 16 Member Districts on September 21, 2021 and again with corrections on November 23, 2021 and with minor amendments on June 28, 2022.

WHEREAS, GMA 16 has solicited and considered public comment at specially called Public Meeting, including the meeting on September 21, 2021 and again with corrections on November 23, 2021 and with minor amendments on June 28, 2022

WHEREAS, the GMA 16 Member Districts received and considered technical advice regarding local aquifers, hydrology, geology, recharge characteristics, local groundwater demands and usage, population projections, ground and surface water inter-relationships, and other considerations that affect groundwater conditions and;

WHEREAS, in developing the proposed DFC's for the relevant aquifers within GMA 16, the Member Districts considered the nine statutory factors set forth in Section 36.108 (d) of the Texas Water Code and;

WHEREAS, pursuant to Section 36.108(d-2) of the Texas Water Code the Member Districts also considered in the development of the proposed DFC's 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 GMA 16 and;

WHEREAS, following public discussion and due consideration of the current and future needs and conditions of the aquifers in question, the current and projected groundwater demands, and the potential effects on springs, surface water, habitat, and water dependent species through the year 2080, GMA 16 Member Districts have analyzed drawdown estimations from numerous pumping scenarios using the Lower Gulf Coast Groundwater Availability Model and have voted on a motion made and seconded to adopt a Desired Future Condition (DFC) stated as follows:

Groundwater Management Area 16 adopts Desired Future Conditions for each county within the groundwater management area (county-specific DFC's) and adopts a Desired Future Condition for the counties in the groundwater management area (gma-specific DFC's). The Desired Future Condition for the counties in the groundwater management area shall not exceed an average drawdown of 78 feet for the Gulf Coast Aquifer System at December 2080. Desired Future Conditions for each county within the groundwater management area (county-specific DFC's) shall not exceed the values specified in Scenario 2 at December 2080.

Table A-1: Desired Future Conditions for GMA 16 expressed as an Average Drawdown between January 2010 and December 2079.

Bee GCD: 93 feet of drawdown of the Gulf Coast Aquifer System;

Live Oak UWCD: 45 feet of drawdown of the Gulf Coast Aquifer System;

McMullen GCD: 12 feet of drawdown of the Gulf Coast Aquifer System;

Red Sands GCD: 60 feet of drawdown of the Gulf Coast Aquifer System;

Kenedy County GCD: 27 feet of drawdown of the Gulf Coast Aquifer System;

Brush Country GCD: 89 feet of drawdown of the Gulf Coast Aquifer System;

Duval County GCD: 137 feet of drawdown of the Gulf Coast Aquifer System;

San Patricio County GCD: 69 feet of drawdown of the Gulf Coast Aquifer System;

Starr County GCD: 94 feet of drawdown of the Gulf Coast Aquifer System;

Cameron: 119 feet of drawdown of the Gulf Coast Aquifer System;

Hidalgo: 138 feet of drawdown of the Gulf Coast Aquifer System;

Kleberg: 21 feet of drawdown of the Gulf Coast Aquifer System;

Nueces: 26 feet of drawdown of the Gulf Coast Aquifer System;

Webb: 161 feet of drawdown of the Gulf Coast Aquifer System;

Willacy: 44 feet of drawdown of the Gulf Coast Aquifer System.

WHEREAS, the GMA 16 Member Districts evaluated and determined that the Yegua-Jackson Aquifer in Jim Hogg, Duval, Live Oak, and Starr Counties and the Carrizo-Wilcox Aquifer in Bee, Live Oak, and McMullen Counties are not relevant for planning purposes within GMA 16 and no DFC is required.

NOW THEREFORE BE IT RESOLVED, that the Groundwater Management Area 16 Member Districts do hereby document, record and confirm a Desired Future Condition stated above was adopted by all member districts present.

AND IT IS SO ORDERD.

PASSED AND ADOPTED on this 28th day of June 2022.

ATTEST:

Bee Groundwater Conservation District

Live Oak Underground Water Conservation District

McMullen Groundwater Conservation District

Red Sands Groundwater Conservation District

Kenedy County Groundwater Conservation District

Corpus Christi Aquifer Storage and Recovery Conservation District

Brush Country Groundwater Conservation District

Duval County Groundwater Conservation District

San Patricio County Groundwater Conservation District

Starr County Groundwater Conservation District

APPENDIX G

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE BRUSH COUNTRY GROUNDWATER CONSERVATION DISTRICT AUTHORIZING READOPTION OF THE DISTRICT MANAGEMENT PLAN WITH REVISIONS

WHEREAS, the revised Management Plan of the Brush Country Groundwater Conservation District (“District”), attached hereto as Attachment A, has been developed for the purpose of conserving, preserving, protecting, and recharging the aquifers in the District, and this action is taken under the District’s statutory authority to prevent waste and protect rights of owners of interest in groundwater;

WHEREAS, after notice and hearing the Board of Directors (“Board”) of the District adopted a Management Plan on March 5, 2013;

WHEREAS, the Texas Water Development Board (“TWDB”) approved the Management Plan on April 8, 2013;

WHEREAS, Texas Water Code section 36.1072(e) requires the District to review and readopt the plan with or without revisions at least once every five years;

WHEREAS, the TWDB rules provide that a management plan must be adopted at least 90 days before the existing management plan expires and submitted to the TWDB for approval at least 60 days before the existing plan expires;

WHEREAS, the Board considered proposed revisions to the Management Plan at its September 20, 2022, Board meeting and submitted the proposed revisions to the TWDB for pre-review on September 20, 2022;

WHEREAS, on September 20, 2022, the Board directed that a Public Hearing regarding the Management Plan be held on September 20, 2022 and that advance notice be provided by newspaper publication and individual notice;

WHEREAS, the Notice of Public Hearing was published in the *Hebbronville Enterprise* on August 31, 2022, the *Falfurrias Facts* on September 1, 2022, and in the *Alice Echo-News* on September 4, 2022;

WHEREAS, individual notice was mailed to landowners in the District within Hidalgo County on August 24, 2022;

WHEREAS, the Board conducted a Public Hearing on September 20, 2022;

WHEREAS, following the close of the Public Hearing, the Board considered and acted on the Management Plan on September 20, 2022;

WHEREAS, the Management Plan meets the requirements of Texas Water Code § 36.1071 and § 36.1072 and 31 TAC §§ 356.52; and

WHEREAS, under no circumstances, and in no particular case will this Management Plan, or any part of it, be construed as a limitation or restriction upon the exercise of any discretion where such exists; nor will it in any event be construed to deprive the Board of an exercise of powers, duties, and jurisdiction conferred by law, nor to limit or restrict the amount and character of data or information which may be required for the proper administration of the law.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Brush Country Groundwater Conservation District that:

- 1) The "Management Plan of the Brush Country Groundwater Conservation District" contained in Attachment A is hereby re-adopted with revisions; and
- 2) This Management Plan will take effect upon approval by the executive administrator of the Texas Water Development Board. It will remain in effect until a revised District Management Plan is adopted and approved.

AND IT IS SO ORDERED.

In Favor _____ Opposed _____

PASSED AND APPROVED THIS 20th DAY OF SEPTEMBER, 2022.

David Kelly, President

ATTEST:

Robert Scott, Secretary

APPENDIX H

Estimated Historical Groundwater Use And 2022 State Water Plan Datasets: Brush Country Groundwater Conservation District

Texas Water Development Board
Groundwater Division
Groundwater Technical Assistance Section
stephen.allen@twdb.texas.gov
(512) 463-7317
June 28, 2022

GROUNDWATER MANAGEMENT PLAN DATA:

This package of water data reports (part 1 of a 2-part package of information) is being provided to groundwater conservation districts to help them meet the requirements for approval of their five-year groundwater management plan. Each report in the package addresses a specific numbered requirement in the Texas Water Development Board's groundwater management plan checklist. The checklist can be viewed and downloaded from this web address:

<http://www.twdb.texas.gov/groundwater/docs/GCD/GMPChecklist0113.pdf>

The five reports included in this part are:

1. Estimated Historical Groundwater Use (checklist item 2)
from the TWDB Historical Water Use Survey (WUS)
2. Projected Surface Water Supplies (checklist item 6)
3. Projected Water Demands (checklist item 7)
4. Projected Water Supply Needs (checklist item 8)
5. Projected Water Management Strategies (checklist item 9)
from the 2022 Texas State Water Plan (SWP)

Part 2 of the 2-part package is the groundwater availability model (GAM) report for the District (checklist items 3 through 5). The District should have received, or will receive, this report from the Groundwater Availability Modeling Section. Questions about the GAM can be directed to Dr. Shirley Wade, shirley.wade@twdb.texas.gov, (512) 936-0883.

DISCLAIMER:

The data presented in this report represents the most up-to-date WUS and 2022 SWP data available as of 6/28/2022. Although it does not happen frequently, either of these datasets are subject to change pending the availability of more accurate WUS data or an amendment to the 2022 SWP. District personnel must review these datasets and correct any discrepancies in order to ensure approval of their groundwater management plan.

The WUS dataset can be verified at this web address:

<http://www.twdb.texas.gov/waterplanning/waterusesurvey/estimates/>

The 2022 SWP dataset can be verified by contacting Sabrina Anderson (sabrina.anderson@twdb.texas.gov or 512-936-0886).

The values presented in the data tables of this report are county-based. In cases where groundwater conservation districts cover only a portion of one or more counties the data values are modified with an apportioning multiplier to create new values that more accurately represent conditions within district boundaries. The multiplier used in the following formula is a land area ratio: (data value * (land area of district in county / land area of county)). For two of the four SWP tables (Projected Surface Water Supplies and Projected Water Demands) only the county-wide water user group (WUG) data values (county other, manufacturing, steam electric power, irrigation, mining and livestock) are modified using the multiplier. WUG values for municipalities, water supply corporations, and utility districts are not apportioned; instead, their full values are retained when they are located within the district, and eliminated when they are located outside (we ask each district to identify these entity locations).

The remaining SWP tables (Projected Water Supply Needs and Projected Water Management Strategies) are not modified because district-specific values are not statutorily required. Each district needs only "consider" the county values in these tables.

In the WUS table every category of water use (including municipal) is apportioned. Staff determined that breaking down the annual municipal values into individual WUGs was too complex.

TWDB recognizes that the apportioning formula used is not perfect but it is the best available process with respect to time and staffing constraints. If a district believes it has data that is more accurate it can add those data to the plan with an explanation of how the data were derived. Apportioning percentages that the TWDB used are listed above each applicable table.

For additional questions regarding this data, please contact Stephen Allen (stephen.allen@twdb.texas.gov or 512-463-7317).

TWDB Historical Water Use Survey (WUS) Data

Groundwater and surface water historical use estimates are currently unavailable for calendar year 2020. TWDB staff anticipates the calculation and posting of these estimates at a later date.

Projected Surface Water Supplies

TWDB 2022 State Water Plan Data

BROOKS COUNTY

72.01% (multiplier)

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
N	Livestock, Brooks	Nueces-Rio Grande	Nueces-Rio Grande Livestock Local Supply	90	90	90	90	90	90
Sum of Projected Surface Water Supplies (acre-feet)				90	90	90	90	90	90

HIDALGO COUNTY

1.61% (multiplier)

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
M	Agua SUD	Nueces-Rio Grande	Amistad-Falcon Lake/Reservoir System	7,148	7,148	7,149	7,147	7,148	7,148
M	Agua SUD	Rio Grande	Amistad-Falcon Lake/Reservoir System	1,357	1,357	1,357	1,358	1,358	1,357
M	Alamo	Nueces-Rio Grande	Amistad-Falcon Lake/Reservoir System	1,694	1,694	1,694	1,694	1,694	1,694
M	County-Other, Hidalgo	Nueces-Rio Grande	Amistad-Falcon Lake/Reservoir System	31	31	31	31	31	31
M	County-Other, Hidalgo	Rio Grande	Amistad-Falcon Lake/Reservoir System	2	2	2	2	2	2
M	Donna	Nueces-Rio Grande	Amistad-Falcon Lake/Reservoir System	3,126	3,125	3,125	3,125	3,125	3,125
M	Edcouch	Nueces-Rio Grande	Amistad-Falcon Lake/Reservoir System	262	262	262	262	262	262
M	Edinburg	Nueces-Rio Grande	Amistad-Falcon Lake/Reservoir System	6,139	6,139	4,222	4,222	4,222	4,222
M	Elsa	Nueces-Rio Grande	Amistad-Falcon Lake/Reservoir System	568	568	568	567	567	567
M	Hidalgo	Nueces-Rio Grande	Amistad-Falcon Lake/Reservoir System	136	136	136	136	136	136
M	Hidalgo	Rio Grande	Amistad-Falcon Lake/Reservoir System	1	1	1	1	1	1
M	Hidalgo MUD 1	County Nueces-Rio Grande	Amistad-Falcon Lake/Reservoir System	604	604	604	604	604	604
M	Irrigation, Hidalgo	Nueces-Rio	Amistad-Falcon	4,212	4,211	4,210	4,203	4,207	4,206

			Grande	Lake/Reservoir System						
M	Irrigation, Hidalgo		Rio Grande	Amistad-Falcon Lake/Reservoir System	175	175	175	175	175	175
M	La Joya		Nueces-Rio Grande	Amistad-Falcon Lake/Reservoir System	288	288	288	288	288	288
M	La Joya		Rio Grande	Amistad-Falcon Lake/Reservoir System	76	76	76	76	76	76
M	La Villa		Nueces-Rio Grande	Amistad-Falcon Lake/Reservoir System	236	236	236	236	236	236
M	Livestock, Hidalgo		Nueces-Rio Grande	Amistad-Falcon Lake/Reservoir System	0	0	0	0	0	0
M	Livestock, Hidalgo		Rio Grande	Amistad-Falcon Lake/Reservoir System	1	1	1	1	1	1
M	Manufacturing, Hidalgo		Nueces-Rio Grande	Amistad-Falcon Lake/Reservoir System	7	7	7	7	7	7
M	McAllen		Nueces-Rio Grande	Amistad-Falcon Lake/Reservoir System	33,544	33,544	31,744	31,744	31,744	31,744
M	Mercedes		Nueces-Rio Grande	Amistad-Falcon Lake/Reservoir System	2,267	2,267	2,267	2,267	2,267	2,267
M	Military WSC	Highway	Nueces-Rio Grande	Amistad-Falcon Lake/Reservoir System	327	327	327	327	327	327
M	Military WSC	Highway	Rio Grande	Amistad-Falcon Lake/Reservoir System	6	6	6	6	6	6
M	Mining, Hidalgo		Nueces-Rio Grande	Amistad-Falcon Lake/Reservoir System	19	19	19	19	19	19
M	Mining, Hidalgo		Rio Grande	Amistad-Falcon Lake/Reservoir System	2	2	2	2	2	2
M	Mission		Nueces-Rio Grande	Amistad-Falcon Lake/Reservoir System	11,550	11,550	11,550	11,550	11,550	11,550
M	Mission		Rio Grande	Amistad-Falcon Lake/Reservoir System	6	6	6	6	6	6
M	North Alamo WSC		Nueces-Rio Grande	Amistad-Falcon Lake/Reservoir System	11,707	11,744	11,772	11,789	11,805	11,817
M	Pharr		Nueces-Rio Grande	Amistad-Falcon Lake/Reservoir System	7,978	7,978	7,978	7,978	7,978	7,978
M	Pharr		Rio Grande	Amistad-Falcon Lake/Reservoir System	2	2	2	2	2	2
M	San Juan		Nueces-Rio Grande	Amistad-Falcon Lake/Reservoir System	3,166	3,166	3,166	3,166	3,166	3,166

M	Sharyland WSC	Nueces-Rio Grande	Amistad-Falcon Lake/Reservoir System	13,195	13,195	13,195	13,195	13,195	13,195
M	Steam-Electric Power, Hidalgo	Nueces-Rio Grande	Amistad-Falcon Lake/Reservoir System	6	6	6	6	6	6
M	Steam-Electric Power, Hidalgo	Rio Grande	Amistad-Falcon Lake/Reservoir System	2	2	2	2	2	2
M	Weslaco	Nueces-Rio Grande	Amistad-Falcon Lake/Reservoir System	5,408	5,408	5,408	5,408	5,408	5,408
Sum of Projected Surface Water Supplies (acre-feet)				115,248	115,283	111,594	111,602	111,623	111,633

JIM HOGG COUNTY

100% (multiplier)

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
M	Livestock, Hogg	Jim Nueces-Rio Grande	Livestock Local Supply	222	222	222	222	222	222
M	Livestock, Hogg	Jim Rio Grande	Livestock Local Supply	49	49	49	49	49	49
Sum of Projected Surface Water Supplies (acre-feet)				271	271	271	271	271	271

JIM WELLS COUNTY

93.44% (multiplier)

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
N	Alice	Nueces-Rio Grande	Corpus Christi-Canyon Lake/Reservoir System	2,247	2,372	2,489	2,634	2,774	2,906
N	Alice	Nueces-Rio Grande	Texana Lake/Reservoir	2,247	2,372	2,489	2,633	2,774	2,906
N	Livestock, Wells	Jim Nueces	Nueces Livestock Local Supply	31	31	31	31	31	31
N	Livestock, Wells	Jim Nueces-Rio Grande	Nueces-Rio Grande Livestock Local Supply	167	167	167	167	167	167
Sum of Projected Surface Water Supplies (acre-feet)				4,692	4,942	5,176	5,465	5,746	6,010

Projected Water Demands

TWDB 2022 State Water Plan Data

Please note that the demand numbers presented here include the plumbing code savings found in the Regional and State Water Plans.

BROOKS COUNTY *72.01% (multiplier)* All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
N	County-Other, Brooks	Nueces-Rio Grande	161	177	194	214	233	246
N	Falfurrias	Nueces-Rio Grande	1,639	1,668	1,703	1,745	1,790	1,852
N	Irrigation, Brooks	Nueces-Rio Grande	836	836	836	836	836	836
N	Livestock, Brooks	Nueces-Rio Grande	333	333	333	333	333	333
N	Manufacturing, Brooks	Nueces-Rio Grande	1	1	1	1	1	1
N	Mining, Brooks	Nueces-Rio Grande	257	259	245	233	222	215
Sum of Projected Water Demands (acre-feet)			3,227	3,274	3,312	3,362	3,415	3,483

HIDALGO COUNTY *1.61% (multiplier)* All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
M	Agua SUD	Nueces-Rio Grande	6,198	7,465	8,781	10,138	11,533	12,904
M	Agua SUD	Rio Grande	1,177	1,418	1,668	1,926	2,191	2,451
M	Alamo	Nueces-Rio Grande	3,230	3,908	4,607	5,326	6,064	6,786
M	County-Other, Hidalgo	Nueces-Rio Grande	44	54	68	81	94	107
M	County-Other, Hidalgo	Rio Grande	2	3	4	4	5	6
M	Donna	Nueces-Rio Grande	2,610	3,126	3,659	4,218	4,802	5,374
M	Edcouch	Nueces-Rio Grande	343	401	463	531	603	675
M	Edinburg	Nueces-Rio Grande	12,974	15,730	18,573	21,484	24,459	27,374
M	Elsa	Nueces-Rio Grande	832	987	1,150	1,322	1,504	1,683
M	Hidalgo	Nueces-Rio Grande	1,841	2,233	2,637	3,051	3,473	3,888
M	Hidalgo	Rio Grande	17	20	24	28	32	35
M	Hidalgo County MUD 1	Nueces-Rio Grande	816	896	979	1,063	1,147	1,228
M	Irrigation, Hidalgo	Nueces-Rio Grande	10,645	10,303	9,961	9,620	9,278	8,936
M	Irrigation, Hidalgo	Rio Grande	443	429	414	400	386	372
M	La Joya	Nueces-Rio Grande	515	619	727	839	955	1,068
M	La Joya	Rio Grande	136	164	192	221	252	282
M	La Villa	Nueces-Rio Grande	277	332	388	448	509	570
M	Livestock, Hidalgo	Nueces-Rio Grande	11	11	11	11	11	11
M	Livestock, Hidalgo	Rio Grande	1	1	1	1	1	1
M	Manufacturing, Hidalgo	Nueces-Rio Grande	36	44	44	44	44	44
M	McAllen	Nueces-Rio Grande	39,787	48,510	57,403	66,492	75,765	84,820

M	Mercedes	Nueces-Rio Grande	2,222	2,648	3,090	3,558	4,048	4,530
M	Military Highway WSC	Nueces-Rio Grande	2,891	3,395	3,919	4,479	5,062	5,650
M	Military Highway WSC	Rio Grande	57	67	77	88	100	111
M	Mining, Hidalgo	Nueces-Rio Grande	42	54	63	72	83	96
M	Mining, Hidalgo	Rio Grande	3	4	5	6	7	8
M	Mission	Nueces-Rio Grande	20,059	24,519	29,070	33,699	38,393	42,978
M	Mission	Rio Grande	11	13	16	18	21	24
M	North Alamo WSC	Nueces-Rio Grande	26,417	32,031	37,785	43,670	49,653	55,513
M	Pharr	Nueces-Rio Grande	9,920	11,930	14,016	16,178	18,410	20,601
M	Pharr	Rio Grande	3	3	4	4	5	5
M	San Juan	Nueces-Rio Grande	4,947	5,990	7,063	8,166	9,298	10,407
M	Sharyland WSC	Nueces-Rio Grande	12,901	15,628	18,421	21,302	24,263	27,160
M	Steam-Electric Hidalgo	Power, Nueces-Rio Grande	122	122	122	122	122	122
M	Steam-Electric Hidalgo	Power, Rio Grande	64	64	64	64	64	64
M	Weslaco	Nueces-Rio Grande	7,697	9,711	11,550	13,443	15,391	17,218
Sum of Projected Water Demands (acre-feet)			169,291	202,833	237,019	272,117	308,028	343,102

JIM HOGG COUNTY

100% (multiplier)

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
M	County-Other, Jim Hogg	Nueces-Rio Grande	148	154	160	169	178	187
M	County-Other, Jim Hogg	Rio Grande	5	5	5	5	6	6
M	Irrigation, Jim Hogg	Nueces-Rio Grande	288	278	270	260	251	242
M	Irrigation, Jim Hogg	Rio Grande	72	70	67	65	63	60
M	Jim Hogg County WCID 2	Nueces-Rio Grande	643	675	702	743	783	822
M	Livestock, Jim Hogg	Nueces-Rio Grande	282	282	282	282	282	282
M	Livestock, Jim Hogg	Rio Grande	94	94	94	94	94	94
M	Manufacturing, Jim Hogg	Nueces-Rio Grande	2	2	2	2	2	2
M	Mining, Jim Hogg	Nueces-Rio Grande	84	88	65	48	31	20
M	Mining, Jim Hogg	Rio Grande	9	9	7	5	3	2
Sum of Projected Water Demands (acre-feet)			1,627	1,657	1,654	1,673	1,693	1,717

JIM WELLS COUNTY

93.44% (multiplier)

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
N	Alice	Nueces-Rio Grande	4,494	4,744	4,978	5,267	5,548	5,812

N	County-Other, Jim Wells	Nueces	385	405	423	448	471	494
N	County-Other, Jim Wells	Nueces-Rio Grande	1,573	1,652	1,729	1,825	1,923	2,016
N	Irrigation, Jim Wells	Nueces	331	331	331	331	331	331
N	Irrigation, Jim Wells	Nueces-Rio Grande	1,457	1,457	1,457	1,457	1,457	1,457
N	Jim Wells County FWSD 1	Nueces-Rio Grande	131	141	151	161	170	178
N	Livestock, Jim Wells	Nueces	138	138	138	138	138	138
N	Livestock, Jim Wells	Nueces-Rio Grande	705	705	705	705	705	705
N	Manufacturing, Jim Wells	Nueces-Rio Grande	74	89	89	89	89	89
N	Mining, Jim Wells	Nueces	4	4	3	2	1	1
N	Mining, Jim Wells	Nueces-Rio Grande	63	65	49	36	23	15
N	Orange Grove	Nueces-Rio Grande	476	506	534	566	596	625
N	Premont	Nueces-Rio Grande	709	752	791	841	886	928
N	San Diego MUD 1	Nueces-Rio Grande	174	180	186	192	198	204
Sum of Projected Water Demands (acre-feet)			10,714	11,169	11,564	12,058	12,536	12,993

Projected Water Supply Needs

TWDB 2022 State Water Plan Data

Negative values (in red) reflect a projected water supply need, positive values a surplus.

BROOKS COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
N	County-Other, Brooks	Nueces-Rio Grande	-192	-214	-237	-265	-292	-309
N	Falfurrias	Nueces-Rio Grande	0	0	0	0	0	0
N	Irrigation, Brooks	Nueces-Rio Grande	0	0	0	0	0	0
N	Livestock, Brooks	Nueces-Rio Grande	0	0	0	0	0	0
N	Manufacturing, Brooks	Nueces-Rio Grande	0	0	0	0	0	0
N	Mining, Brooks	Nueces-Rio Grande	-179	-182	-162	-146	-130	-120
Sum of Projected Water Supply Needs (acre-feet)			-371	-396	-399	-411	-422	-429

HIDALGO COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
M	Agua SUD	Nueces-Rio Grande	950	-317	-1,632	-2,991	-4,385	-5,756
M	Agua SUD	Rio Grande	180	-61	-311	-568	-833	-1,094
M	Alamo	Nueces-Rio Grande	-1,014	-1,692	-2,391	-3,110	-3,848	-4,570
M	County-Other, Hidalgo	Nueces-Rio Grande	-564	-1,223	-2,057	-2,850	-3,648	-4,472
M	County-Other, Hidalgo	Rio Grande	-40	-70	-113	-155	-197	-241
M	Donna	Nueces-Rio Grande	516	-1	-534	-1,093	-1,677	-2,249
M	Edcouch	Nueces-Rio Grande	-81	-139	-201	-269	-341	-413
M	Edinburg	Nueces-Rio Grande	-6,835	-9,591	-14,351	-17,262	-20,237	-23,152
M	Elsa	Nueces-Rio Grande	-264	-419	-582	-755	-937	-1,116
M	Hidalgo	Nueces-Rio Grande	-103	-331	-735	-1,149	-1,571	-1,986
M	Hidalgo	Rio Grande	-1	-3	-7	-11	-15	-18
M	Hidalgo County MUD 1	Nueces-Rio Grande	-212	-292	-375	-459	-543	-624
M	Irrigation, Hidalgo	Nueces-Rio Grande	-394,005	-372,832	-351,678	-330,853	-309,369	-288,215
M	Irrigation, Hidalgo	Rio Grande	-16,391	-15,511	-14,630	-13,765	-12,870	-11,989
M	La Joya	Nueces-Rio Grande	-227	-331	-439	-551	-667	-780
M	La Joya	Rio Grande	-60	-88	-116	-145	-176	-206
M	La Villa	Nueces-Rio Grande	-41	-96	-152	-212	-273	-334
M	Livestock, Hidalgo	Nueces-Rio Grande	0	0	0	0	0	0
M	Livestock, Hidalgo	Rio Grande	0	0	0	0	0	0
M	Manufacturing, Hidalgo	Nueces-Rio Grande	679	194	194	194	194	194
M	McAllen	Nueces-Rio Grande	-2,872	-11,595	-22,288	-31,377	-40,650	-49,705

M	Mercedes	Nueces-Rio Grande	671	245	-197	-665	-1,155	-1,637
M	Military Highway WSC	Nueces-Rio Grande	461	-43	-567	-1,127	-1,710	-2,298
M	Military Highway WSC	Rio Grande	8	-2	-12	-23	-35	-46
M	Mining, Hidalgo	Nueces-Rio Grande	-798	-1,517	-2,054	-2,630	-3,290	-4,127
M	Mining, Hidalgo	Rio Grande	-113	-170	-212	-257	-310	-376
M	Mission	Nueces-Rio Grande	-8,509	-12,969	-17,520	-22,149	-26,843	-31,428
M	Mission	Rio Grande	-5	-7	-10	-12	-15	-18
M	North Alamo WSC	Nueces-Rio Grande	-5,443	-10,798	-16,503	-22,356	-28,312	-34,151
M	Pharr	Nueces-Rio Grande	448	-1,361	-3,238	-5,184	-7,192	-9,164
M	Pharr	Rio Grande	1	1	0	0	-1	-1
M	San Juan	Nueces-Rio Grande	1	-1,042	-2,115	-3,218	-4,350	-5,459
M	Sharyland WSC	Nueces-Rio Grande	294	-2,433	-5,226	-8,107	-11,068	-13,965
M	Steam-Electric Hidalgo	Power, Nueces-Rio Grande	-1,137	-1,014	-948	-948	-948	-948
M	Steam-Electric Hidalgo	Power, Rio Grande	-655	-589	-555	-555	-555	-555
M	Weslaco	Nueces-Rio Grande	-1,519	-3,332	-5,090	-6,983	-8,931	-10,758
Sum of Projected Water Supply Needs (acre-feet)			-440,889	-449,869	-466,839	-481,789	-496,952	-511,851

JIM HOGG COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
M	County-Other, Jim Hogg	Nueces-Rio Grande	124	119	113	103	94	86
M	County-Other, Jim Hogg	Rio Grande	9	8	8	9	8	7
M	Irrigation, Jim Hogg	Nueces-Rio Grande	-8	2	10	20	29	38
M	Irrigation, Jim Hogg	Rio Grande	8	10	13	15	17	20
M	Jim Hogg County WCID 2	Nueces-Rio Grande	769	737	710	669	629	590
M	Livestock, Jim Hogg	Nueces-Rio Grande	45	45	45	45	45	45
M	Livestock, Jim Hogg	Rio Grande	15	15	15	15	15	15
M	Manufacturing, Jim Hogg	Nueces-Rio Grande	0	0	0	0	0	0
M	Mining, Jim Hogg	Nueces-Rio Grande	0	0	-34	0	0	0
M	Mining, Jim Hogg	Rio Grande	0	0	-4	0	0	0
Sum of Projected Water Supply Needs (acre-feet)			-8	0	-38	0	0	0

JIM WELLS COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
N	Alice	Nueces-Rio Grande	0	0	0	0	0	0

N	County-Other, Jim Wells	Nueces	-412	-433	-453	-479	-504	-529
N	County-Other, Jim Wells	Nueces-Rio Grande	-1,646	-1,731	-1,813	-1,916	-2,021	-2,121
N	Irrigation, Jim Wells	Nueces	-39	-39	-39	-39	-39	-39
N	Irrigation, Jim Wells	Nueces-Rio Grande	-294	-294	-294	-294	-294	-294
N	Jim Wells County FWSD 1	Nueces-Rio Grande	0	0	0	0	0	0
N	Livestock, Jim Wells	Nueces	0	0	0	0	0	0
N	Livestock, Jim Wells	Nueces-Rio Grande	0	0	0	0	0	0
N	Manufacturing, Jim Wells	Nueces-Rio Grande	0	-16	-16	-16	-16	-16
N	Mining, Jim Wells	Nueces	-4	-4	-3	-2	-1	-1
N	Mining, Jim Wells	Nueces-Rio Grande	-48	-51	-33	-19	-6	0
N	Orange Grove	Nueces-Rio Grande	0	0	0	0	0	0
N	Premont	Nueces-Rio Grande	0	0	0	0	0	0
N	San Diego MUD 1	Nueces-Rio Grande	0	0	0	0	0	0
Sum of Projected Water Supply Needs (acre-feet)			-2,443	-2,568	-2,651	-2,765	-2,881	-3,000

Projected Water Management Strategies

TWDB 2022 State Water Plan Data

BROOKS COUNTY

WUG, Basin (RWPG)

All values are in acre-feet

Water Strategy	Management	Source [Origin]	Name	2020	2030	2040	2050	2060	2070
County-Other, Brooks, Nueces-Rio Grande (N)									
Gulf Coast Supplies - Brooks County Other		Gulf Coast System [Brooks]	Aquifer	309	309	309	309	309	309
				309	309	309	309	309	309
Falfurrias, Nueces-Rio Grande (N)									
Municipal Falfurrias	Conservation	- DEMAND REDUCTION [Brooks]		0	132	266	406	546	688
				0	132	266	406	546	688
Mining, Brooks, Nueces-Rio Grande (N)									
Gulf Coast Supplies - Brooks Mining		Gulf Coast System [Brooks]	Aquifer	182	182	182	182	182	182
Mining Water Conservation		DEMAND REDUCTION [Brooks]		9	18	26	32	39	45
				191	200	208	214	221	227
Sum of Projected Water Management Strategies (acre-feet)				500	641	783	929	1,076	1,224

HIDALGO COUNTY

WUG, Basin (RWPG)

All values are in acre-feet

Water Strategy	Management	Source [Origin]	Name	2020	2030	2040	2050	2060	2070
Agua SUD, Nueces-Rio Grande (M)									
Advanced Conservation - Agua SUD	Municipal	DEMAND REDUCTION [Hidalgo]		0	0	0	338	901	1,581
Agua SUD - East Potable Reuse	WWTP	Direct Reuse [Hidalgo]		0	0	1,874	1,874	1,874	1,874
Agua SUD - West Potable Reuse	WWTP	Direct Reuse [Hidalgo]		468	468	1,874	1,874	1,874	1,874
Drought Management		DEMAND REDUCTION [Hidalgo]		0	291	347	404	460	516
Hidalgo County Conservation	ID 16	Amistad-Falcon Lake/Reservoir System [Reservoir]		236	273	308	345	382	419
Hidalgo County Conservation	ID 6	Amistad-Falcon Lake/Reservoir System [Reservoir]		603	669	737	804	871	939
Urbanization - Conversion of Irrigation	WWP Reduction	Amistad-Falcon Lake/Reservoir		0	0	1,189	2,091	2,804	3,381

Water Rights to DMI		System [Reservoir]		1,307	1,701	6,329	7,730	9,166	10,584	
Agua SUD, Rio Grande (M)										
Advanced Conservation - Agua SUD	Municipal			DEMAND REDUCTION [Hidalgo]	0	0	0	64	171	300
Agua SUD - East Potable Reuse	WWTP			Direct Reuse [Hidalgo]	0	0	356	356	356	356
Agua SUD - West Potable Reuse	WWTP			Direct Reuse [Hidalgo]	89	89	356	356	356	356
Drought Management				DEMAND REDUCTION [Hidalgo]	0	55	66	77	88	98
Hidalgo County Conservation	ID	16		Amistad-Falcon Lake/Reservoir System [Reservoir]	45	52	59	66	72	79
Hidalgo County Conservation	ID	6		Amistad-Falcon Lake/Reservoir System [Reservoir]	114	127	140	153	165	178
Urbanization - WWP Reduction - Conversion of Water Rights to DMI				Amistad-Falcon Lake/Reservoir System [Reservoir]	0	0	225	398	534	643
					248	323	1,202	1,470	1,742	2,010
Alamo, Nueces-Rio Grande (M)										
Advanced Conservation - Alamo	Municipal			DEMAND REDUCTION [Hidalgo]	0	0	46	278	587	952
Alamo - Brackish Groundwater Desalination Plant				Gulf Coast Aquifer System [Hidalgo]	0	896	896	896	896	896
Alamo - Fresh Groundwater Well				Gulf Coast Aquifer System [Hidalgo]	1,120	1,120	1,120	1,120	1,120	1,120
Drought Management				DEMAND REDUCTION [Hidalgo]	118	146	175	203	232	260
Hidalgo County Conservation	ID	2		Amistad-Falcon Lake/Reservoir System [Reservoir]	8	57	107	156	205	254
Urbanization - WWP Reduction - Conversion of Water Rights to DMI				Amistad-Falcon Lake/Reservoir System [Reservoir]	245	606	1,185	1,591	1,948	2,230
					1,491	2,825	3,529	4,244	4,988	5,712
County-Other, Hidalgo, Nueces-Rio Grande (M)										
Donna ID Conservation				Amistad-Falcon Lake/Reservoir System [Reservoir]	27	93	155	216	280	340
Urbanization - WUG Reduction - Conversion of Water Rights to DMI				Amistad-Falcon Lake/Reservoir System [Reservoir]	546	1,139	1,911	2,643	3,378	4,141
					573	1,232	2,066	2,859	3,658	4,481
County-Other, Hidalgo, Rio Grande (M)										
Donna ID Conservation				Amistad-Falcon Lake/Reservoir System [Reservoir]	12	11	13	17	18	23
Urbanization - WUG Reduction - Conversion of Water Rights to DMI				Amistad-Falcon Lake/Reservoir System [Reservoir]	29	60	101	139	179	219
					41	71	114	156	197	242

Donna, Nueces-Rio Grande (M)

Advanced Conservation - Donna	Municipal	DEMAND REDUCTION [Hidalgo]	0	0	0	69	300	578
Donna - WTP Expansion, New Raw Water Reservoir, and Raw Water Pump Station		Amistad-Falcon Lake/Reservoir System [Reservoir]	950	950	2,240	2,240	2,240	2,240
Donna ID Conservation		Amistad-Falcon Lake/Reservoir System [Reservoir]	64	170	276	382	488	594
Drought Management		DEMAND REDUCTION [Hidalgo]	0	0	147	171	195	218
Urbanization - WWP Reduction - Conversion of Irrigation Water Rights to DMI		Amistad-Falcon Lake/Reservoir System [Reservoir]	1,415	2,240	2,361	2,721	2,943	3,107
			2,429	3,360	5,024	5,583	6,166	6,737

Edcouch, Nueces-Rio Grande (M)

Advanced Conservation - Edcouch	Municipal	DEMAND REDUCTION [Hidalgo]	0	0	0	0	0	16
Drought Management		DEMAND REDUCTION [Hidalgo]	13	16	19	23	26	29
Edcouch - New Groundwater Supply		Gulf Coast Aquifer System [Hidalgo]	725	725	725	725	725	725
Hidalgo and Cameron County ID 9 Conservation		Amistad-Falcon Lake/Reservoir System [Reservoir]	14	24	35	45	56	66
			752	765	779	793	807	836

Edinburg, Nueces-Rio Grande (M)

Advanced Conservation - Edinburg	Municipal	DEMAND REDUCTION [Hidalgo]	0	0	329	1,290	2,549	4,035
Drought Management		DEMAND REDUCTION [Hidalgo]	488	606	724	843	961	1,076
Edinburg Non-Potable Reuse		Direct Reuse [Hidalgo]	3,243	3,920	3,920	3,920	3,920	3,920
Hidalgo County Conservation	ID 1	Amistad-Falcon Lake/Reservoir System [Reservoir]	259	350	216	261	305	350
Hidalgo County Conservation	ID 2	Amistad-Falcon Lake/Reservoir System [Reservoir]	11	79	146	214	281	349
Urbanization - WUG Reduction - Conversion of Irrigation Water Rights to DMI		Amistad-Falcon Lake/Reservoir System [Reservoir]	1,499	210	2,097	302	0	0
Urbanization - WWP Reduction - Conversion of Irrigation Water Rights to DMI		Amistad-Falcon Lake/Reservoir System [Reservoir]	1,737	4,862	8,661	12,109	13,824	14,969
			7,237	10,027	16,093	18,939	21,840	24,699

Elsa, Nueces-Rio Grande (M)

Advanced Conservation - Elsa	Municipal	DEMAND REDUCTION [Hidalgo]	0	0	0	0	44	128
Drought Management		DEMAND REDUCTION [Hidalgo]	30	38	45	52	60	67
Hidalgo and Cameron County ID 9 Conservation		Amistad-Falcon Lake/Reservoir System [Reservoir]	33	58	82	107	132	157

Urbanization - WWP Reduction - Conversion of Water Rights to DMI	Amistad-Falcon Lake/Reservoir System [Reservoir]	225	355	499	655	799	934
		288	451	626	814	1,035	1,286
Hidalgo, Nueces-Rio Grande (M)							
Advanced Conservation - Hidalgo	Municipal DEMAND REDUCTION [Hidalgo]	0	0	46	182	361	572
Drought Management	DEMAND REDUCTION [Hidalgo]	43	54	63	73	84	94
Hidalgo - Expand Groundwater Wells	Existing Gulf Coast Aquifer System [Hidalgo]	0	0	297	297	297	297
Urbanization - WWP Reduction - Conversion of Water Rights to DMI	Amistad-Falcon Lake/Reservoir System [Reservoir]	76	294	656	916	1,580	1,339
		119	348	1,062	1,468	2,322	2,302
Hidalgo, Rio Grande (M)							
Advanced Conservation - Hidalgo	Municipal DEMAND REDUCTION [Hidalgo]	0	0	0	2	3	5
Drought Management	DEMAND REDUCTION [Hidalgo]	0	0	1	1	1	1
Hidalgo - Expand Groundwater Wells	Existing Gulf Coast Aquifer System [Hidalgo]	0	0	3	3	3	3
Urbanization - WWP Reduction - Conversion of Water Rights to DMI	Amistad-Falcon Lake/Reservoir System [Reservoir]	2	4	6	8	14	13
		2	4	10	14	21	22
Hidalgo County MUD 1, Nueces-Rio Grande (M)							
Advanced Conservation - Hidalgo MUD 1	Municipal DEMAND REDUCTION [Hidalgo]	0	0	0	39	93	153
Drought Management	DEMAND REDUCTION [Hidalgo]	60	68	75	82	89	96
Hidalgo County Conservation	ID 1 Amistad-Falcon Lake/Reservoir System [Reservoir]	42	56	71	85	100	115
Urbanization - WWP Reduction - Conversion of Water Rights to DMI	Amistad-Falcon Lake/Reservoir System [Reservoir]	148	218	254	293	284	292
		250	342	400	499	566	656
Irrigation, Hidalgo, Nueces-Rio Grande (M)							
Arundo Control	Donax Biological Amistad-Falcon Lake/Reservoir System [Reservoir]	1,177	1,177	1,177	1,177	1,177	1,177
Delta Lake Conservation	ID - ID Amistad-Falcon Lake/Reservoir System [Reservoir]	1,387	2,481	3,573	4,666	5,757	6,848
Donna ID Conservation	Amistad-Falcon Lake/Reservoir System [Reservoir]	576	1,537	2,498	3,458	4,418	5,377
Engleman ID Conservation	Amistad-Falcon Lake/Reservoir System [Reservoir]	566	650	734	818	901	985
Hidalgo and Cameron County ID 9 Conservation	Amistad-Falcon Lake/Reservoir System [Reservoir]	1,996	3,490	4,984	6,477	7,968	9,459

			System [Reservoir]							
Hidalgo Conservation	County	ID	1	Amistad-Falcon Lake/Reservoir System [Reservoir]	1,537	2,078	2,617	3,157	3,696	4,235
Hidalgo Conservation	County	ID	13	Amistad-Falcon Lake/Reservoir System [Reservoir]	69	82	94	107	119	131
Hidalgo Conservation	County	ID	16	Amistad-Falcon Lake/Reservoir System [Reservoir]	1,045	1,205	1,366	1,526	1,687	1,847
Hidalgo Conservation	County	ID	2	Amistad-Falcon Lake/Reservoir System [Reservoir]	204	1,408	2,612	3,816	5,019	6,221
Hidalgo Conservation	County	ID	5	Amistad-Falcon Lake/Reservoir System [Reservoir]	829	829	829	829	829	830
Hidalgo Conservation	County	ID	6	Amistad-Falcon Lake/Reservoir System [Reservoir]	1,209	1,343	1,478	1,613	1,747	1,882
Hidalgo Conservation	County	WCID	18	Amistad-Falcon Lake/Reservoir System [Reservoir]	81	86	91	96	101	106
Hidalgo (Sharyland) Conservation	County	WID	19	Amistad-Falcon Lake/Reservoir System [Reservoir]	377	394	410	426	442	458
Hidalgo Conservation	County	WID	3	Amistad-Falcon Lake/Reservoir System [Reservoir]	375	375	375	375	375	375
La Feria ID Conservation				Amistad-Falcon Lake/Reservoir System [Reservoir]	6,305	6,305	6,305	6,305	6,305	6,305
On-Farm Conservation		Irrigation		DEMAND REDUCTION [Hidalgo]	12,149	12,149	12,149	12,149	12,149	12,149
Santa Cruz ID Conservation				Amistad-Falcon Lake/Reservoir System [Reservoir]	2,020	2,759	3,497	4,236	4,974	5,711
United ID Conservation				Amistad-Falcon Lake/Reservoir System [Reservoir]	2,286	2,286	2,286	2,286	2,286	2,286
Valley Acres ID Conservation				Amistad-Falcon Lake/Reservoir System [Reservoir]	300	402	503	605	706	807
					34,488	41,036	47,578	54,122	60,656	67,189
Irrigation, Hidalgo, Rio Grande (M)										
Arundo Control	Donax	Biological		Amistad-Falcon Lake/Reservoir System [Reservoir]	49	49	49	49	49	49
Delta Conservation	Lake	ID	-	ID Amistad-Falcon Lake/Reservoir System [Reservoir]	58	103	149	194	240	285
Donna ID Conservation				Amistad-Falcon Lake/Reservoir System [Reservoir]	24	64	104	144	184	224
Engleman ID Conservation				Amistad-Falcon Lake/Reservoir System [Reservoir]	24	27	31	34	38	41
Hidalgo and Cameron County				Amistad-Falcon	83	145	207	269	332	394

ID 9 Conservation			Lake/Reservoir System [Reservoir]						
Hidalgo County Conservation	ID	1	Amistad-Falcon Lake/Reservoir System [Reservoir]	64	86	109	131	154	176
Hidalgo County Conservation	ID	13	Amistad-Falcon Lake/Reservoir System [Reservoir]	3	3	4	4	5	5
Hidalgo County Conservation	ID	16	Amistad-Falcon Lake/Reservoir System [Reservoir]	43	50	57	64	70	77
Hidalgo County Conservation	ID	2	Amistad-Falcon Lake/Reservoir System [Reservoir]	8	59	109	159	209	259
Hidalgo County Conservation	ID	5	Amistad-Falcon Lake/Reservoir System [Reservoir]	34	34	34	35	35	35
Hidalgo County Conservation	ID	6	Amistad-Falcon Lake/Reservoir System [Reservoir]	50	56	62	67	73	78
Hidalgo County Conservation	WCID	18	Amistad-Falcon Lake/Reservoir System [Reservoir]	3	4	4	4	4	4
Hidalgo County (Sharyland) Conservation	WID	19	Amistad-Falcon Lake/Reservoir System [Reservoir]	16	16	17	18	18	19
Hidalgo County Conservation	WID	3	Amistad-Falcon Lake/Reservoir System [Reservoir]	16	16	16	16	16	16
La Feria ID Conservation			Amistad-Falcon Lake/Reservoir System [Reservoir]	262	262	262	262	262	262
On-Farm Conservation	Irrigation		DEMAND REDUCTION [Hidalgo]	505	505	505	505	505	505
Santa Cruz ID Conservation			Amistad-Falcon Lake/Reservoir System [Reservoir]	84	115	146	176	207	238
United ID Conservation			Amistad-Falcon Lake/Reservoir System [Reservoir]	95	95	95	95	95	95
Valley Acres ID Conservation			Amistad-Falcon Lake/Reservoir System [Reservoir]	13	17	21	25	29	34
				1,434	1,706	1,981	2,251	2,525	2,796
La Joya, Nueces-Rio Grande (M)									
Advanced Conservation - La Joya	Municipal		DEMAND REDUCTION [Hidalgo]	0	0	0	24	70	126
Drought Management			DEMAND REDUCTION [Hidalgo]	13	17	20	23	26	28
Hidalgo County Conservation	ID	16	Amistad-Falcon Lake/Reservoir System [Reservoir]	31	36	40	45	50	55
Urbanization - WWP Reduction - Conversion of Water Rights to DMI	Irrigation		Amistad-Falcon Lake/Reservoir System [Reservoir]	298	309	398	484	534	583
				342	362	458	576	680	792

La Joya, Rio Grande (M)

Advanced Conservation - La Joya	Municipal	DEMAND REDUCTION [Hidalgo]	0	0	0	6	19	33
Drought Management		DEMAND REDUCTION [Hidalgo]	4	4	5	6	7	8
Hidalgo County Conservation	ID 16	Amistad-Falcon Lake/Reservoir System [Reservoir]	8	9	11	12	13	14
Urbanization - WWP Reduction - Conversion of Irrigation Water Rights to DMI		Amistad-Falcon Lake/Reservoir System [Reservoir]	79	82	105	127	141	154
			91	95	121	151	180	209

La Villa, Nueces-Rio Grande (M)

Advanced Conservation - La Villa	Municipal	DEMAND REDUCTION [Hidalgo]	0	0	0	6	29	59
Drought Management		DEMAND REDUCTION [Hidalgo]	8	10	12	14	16	18
Hidalgo and Cameron County ID 9 Conservation		Amistad-Falcon Lake/Reservoir System [Reservoir]	11	19	27	35	43	51
Urbanization - WWP Reduction - Conversion of Irrigation Water Rights to DMI		Amistad-Falcon Lake/Reservoir System [Reservoir]	37	97	141	188	202	218
			56	126	180	243	290	346

Manufacturing, Hidalgo, Nueces-Rio Grande (M)

Implementation of Industrial Best Management Practices		DEMAND REDUCTION [Hidalgo]	224	272	272	272	272	272
			224	272	272	272	272	272

McAllen, Nueces-Rio Grande (M)

Advanced Conservation - McAllen	Municipal	DEMAND REDUCTION [Hidalgo]	0	3,558	8,804	15,340	22,992	28,889
Drought Management		DEMAND REDUCTION [Hidalgo]	1,071	1,330	1,589	1,850	2,110	2,363
Hidalgo County Conservation	ID 1	Amistad-Falcon Lake/Reservoir System [Reservoir]	196	264	333	402	471	540
Hidalgo County Conservation	ID 2	Amistad-Falcon Lake/Reservoir System [Reservoir]	29	204	378	552	727	901
Hidalgo County Conservation	WID 3	Amistad-Falcon Lake/Reservoir System [Reservoir]	1,672	1,672	1,672	1,672	1,672	1,672
McAllen - AMI Project		DEMAND REDUCTION [Hidalgo]	1,140	1,140	1,140	1,140	1,140	1,140
McAllen Groundwater Plant	- Brackish Desalination	Gulf Coast Aquifer System [Hidalgo]	0	2,688	2,688	2,688	2,688	2,688
McAllen - North WWTP Reuse		Potable Direct Reuse [Hidalgo]	0	3,880	3,880	6,060	6,060	6,060
McAllen - Raw Water Project	Line	Nueces-Rio Grande Run-of-River [Hidalgo]	800	800	800	800	800	800
United ID Conservation		Amistad-Falcon Lake/Reservoir	1,227	1,227	1,227	1,227	1,227	1,227

		System [Reservoir]						
Urbanization - WUG Reduction - Conversion of Irrigation Water Rights to DMI	Amistad-Falcon Lake/Reservoir System [Reservoir]		0	0	0	33	0	1,085
Urbanization - WWP Reduction - Conversion of Irrigation Water Rights to DMI	Amistad-Falcon Lake/Reservoir System [Reservoir]		0	0	2,968	3,589	5,223	7,285
			6,135	16,763	25,479	35,353	45,110	54,650
Mercedes, Nueces-Rio Grande (M)								
Advanced Conservation - Mercedes	Municipal DEMAND REDUCTION [Hidalgo]		0	0	0	0	170	399
Drought Management	DEMAND REDUCTION [Hidalgo]		0	0	128	150	171	191
Hidalgo and Cameron County ID 9 Conservation	Amistad-Falcon Lake/Reservoir System [Reservoir]		95	167	239	310	382	453
Urbanization - WWP Reduction - Conversion of Irrigation Water Rights to DMI	Amistad-Falcon Lake/Reservoir System [Reservoir]		0	0	0	220	448	609
			95	167	367	680	1,171	1,652
Military Highway WSC, Nueces-Rio Grande (M)								
Advanced Conservation - Highway WSC	Municipal DEMAND REDUCTION [Hidalgo]		0	0	134	337	600	910
Drought Management	DEMAND REDUCTION [Hidalgo]		0	88	103	118	134	149
Harlingen ID Conservation	Amistad-Falcon Lake/Reservoir System [Reservoir]		17	25	34	43	43	43
Urbanization - WWP Reduction - Conversion of Irrigation Water Rights to DMI	Amistad-Falcon Lake/Reservoir System [Reservoir]		44	375	648	888	1,091	1,369
			61	488	919	1,386	1,868	2,471
Military Highway WSC, Rio Grande (M)								
Advanced Conservation - Highway WSC	Municipal DEMAND REDUCTION [Hidalgo]		0	0	3	7	12	18
Drought Management	DEMAND REDUCTION [Hidalgo]		0	2	2	2	3	3
Harlingen ID Conservation	Amistad-Falcon Lake/Reservoir System [Reservoir]		0	1	1	1	1	1
Urbanization - WWP Reduction - Conversion of Irrigation Water Rights to DMI	Amistad-Falcon Lake/Reservoir System [Reservoir]		1	7	13	17	22	27
			1	10	19	27	38	49
Mining, Hidalgo, Nueces-Rio Grande (M)								
Implementation of Industrial Best Management Practices	DEMAND REDUCTION [Hidalgo]		263	336	389	447	513	596
			263	336	389	447	513	596
Mining, Hidalgo, Rio Grande (M)								
Implementation of Industrial Best Management Practices	DEMAND REDUCTION [Hidalgo]		21	26	31	35	40	47

				21	26	31	35	40	47
Mission, Nueces-Rio Grande (M)									
Advanced Conservation - Mission	Municipal	DEMAND REDUCTION [Hidalgo]		0	1,915	4,632	7,717	10,203	12,951
Drought Management		DEMAND REDUCTION [Hidalgo]		948	1,177	1,407	1,638	1,869	2,093
Mission Groundwater Plant	- Brackish Desalination	Gulf Coast Aquifer System [Hidalgo]		0	2,687	2,687	2,687	2,687	2,686
Mission - Potable Reuse		Direct Reuse [Hidalgo]		3,913	3,918	3,918	7,556	7,556	7,556
United ID Conservation		Amistad-Falcon Lake/Reservoir System [Reservoir]		1,482	1,482	1,482	1,482	1,482	1,482
Urbanization - WUG Reduction - Conversion of Water Rights to DMI		Amistad-Falcon Lake/Reservoir System [Reservoir]		452	0	0	0	0	0
Urbanization - WWP Reduction - Conversion of Water Rights to DMI		Amistad-Falcon Lake/Reservoir System [Reservoir]		1,748	2,585	5,269	4,126	6,284	8,079
				8,543	13,764	19,395	25,206	30,081	34,847
Mission, Rio Grande (M)									
Advanced Conservation - Mission	Municipal	DEMAND REDUCTION [Hidalgo]		0	1	3	4	6	7
Drought Management		DEMAND REDUCTION [Hidalgo]		1	1	1	1	1	1
Mission Groundwater Plant	- Brackish Desalination	Gulf Coast Aquifer System [Hidalgo]		0	1	1	1	1	2
Mission - Potable Reuse		Direct Reuse [Hidalgo]		7	2	2	4	4	4
United ID Conservation		Amistad-Falcon Lake/Reservoir System [Reservoir]		1	1	1	1	1	1
Urbanization - WUG Reduction - Conversion of Water Rights to DMI		Amistad-Falcon Lake/Reservoir System [Reservoir]		0	0	0	0	0	0
Urbanization - WWP Reduction - Conversion of Water Rights to DMI		Amistad-Falcon Lake/Reservoir System [Reservoir]		0	2	3	2	3	4
				9	8	11	13	16	19
North Alamo WSC, Nueces-Rio Grande (M)									
Advanced Conservation - WSC	Municipal	DEMAND REDUCTION [Hidalgo]		0	1,265	2,910	5,142	7,916	11,105
Drought Management		DEMAND REDUCTION [Hidalgo]		711	879	1,048	1,217	1,386	1,551
ERHWSC & NAWSC - Cameron Wellfield Expansion	- North Regional WTP	Gulf Coast Aquifer System [Cameron]		0	752	754	755	756	757
Hidalgo and Cameron County ID 9 Conservation		Amistad-Falcon Lake/Reservoir System [Reservoir]		155	272	390	508	625	743
Hidalgo County Conservation	ID 1	Amistad-Falcon Lake/Reservoir System [Reservoir]		64	87	110	133	156	179

Hidalgo County Conservation	ID 2	Amistad-Falcon Lake/Reservoir System [Reservoir]	13	83	154	226	297	369
NAWSC - Delta Area Brackish Groundwater Plant		Gulf Coast Aquifer System [Cameron]	0	2,105	2,110	2,114	2,116	2,118
NAWSC - Delta WTP Expansion Phase 1-2		Amistad-Falcon Lake/Reservoir System [Reservoir]	0	0	4,220	5,813	5,819	5,825
Santa Cruz ID Conservation		Amistad-Falcon Lake/Reservoir System [Reservoir]	45	61	78	94	111	127
Urbanization - WUG Reduction - Conversion of Water Rights to DMI		Amistad-Falcon Lake/Reservoir System [Reservoir]	0	1,608	478	2,595	3,094	1,239
Urbanization - WWP Reduction - Conversion of Water Rights to DMI		Amistad-Falcon Lake/Reservoir System [Reservoir]	5,024	7,855	16,255	23,121	25,362	29,483
			6,012	14,967	28,507	41,718	47,638	53,496

Pharr, Nueces-Rio Grande (M)

Advanced Conservation - Pharr	Municipal	DEMAND REDUCTION [Hidalgo]	0	0	0	458	1,354	2,432
Drought Management		DEMAND REDUCTION [Hidalgo]	0	555	664	773	882	988
Hidalgo County Conservation	ID 2	Amistad-Falcon Lake/Reservoir System [Reservoir]	39	271	502	734	965	1,190
Pharr - Direct Potable Reuse		Direct Reuse [Cameron]	6,719	6,719	6,719	6,719	6,719	6,719
Urbanization - WWP Reduction - Conversion of Water Rights to DMI		Amistad-Falcon Lake/Reservoir System [Reservoir]	0	19	19	19	19	19
			6,758	7,564	7,904	8,703	9,939	11,348

Pharr, Rio Grande (M)

Advanced Conservation - Pharr	Municipal	DEMAND REDUCTION [Hidalgo]	0	0	0	0	0	1
Drought Management		DEMAND REDUCTION [Hidalgo]	0	1	1	1	1	1
Hidalgo County Conservation	ID 2	Amistad-Falcon Lake/Reservoir System [Reservoir]	0	0	0	0	0	7
Pharr - Direct Potable Reuse		Direct Reuse [Cameron]	2	2	2	2	2	2
Urbanization - WWP Reduction - Conversion of Water Rights to DMI		Amistad-Falcon Lake/Reservoir System [Reservoir]	0	1	1	1	1	1
			2	4	4	4	4	12

San Juan, Nueces-Rio Grande (M)

Advanced Conservation - San Juan	Municipal	DEMAND REDUCTION [Hidalgo]	0	0	93	451	928	1,491
Drought Management		DEMAND REDUCTION [Hidalgo]	0	128	153	179	204	228
Hidalgo County Conservation	ID 2	Amistad-Falcon Lake/Reservoir System [Reservoir]	10	71	133	194	255	316

San Juan - Brackish Gulf Coast Aquifer Groundwater Well and System [Hidalgo] Desalination	0	1,120	1,120	1,120	1,120	1,120
San Juan - Potable Reuse Direct Reuse [Hidalgo]	0	0	2,240	2,240	2,240	2,240
San Juan - WTP 1 Upgrade, Expansion, and BGD Gulf Coast Aquifer System [Hidalgo]	0	1,792	1,792	1,792	1,792	1,792
Urbanization - WWP Reduction - Conversion of Irrigation Water Rights to DMI Amistad-Falcon Lake/Reservoir System [Reservoir]	0	0	0	612	1,181	1,643
	10	3,111	5,531	6,588	7,720	8,830

Sharyland WSC, Nueces-Rio Grande (M)

Advanced Municipal Conservation - Sharyland WSC DEMAND REDUCTION [Hidalgo]	0	831	2,016	3,143	4,560	6,172
Drought Management DEMAND REDUCTION [Hidalgo]	287	356	425	495	565	633
Hidalgo County ID 1 Conservation Amistad-Falcon Lake/Reservoir System [Reservoir]	483	653	823	993	1,163	1,333
Santa Cruz ID Conservation Amistad-Falcon Lake/Reservoir System [Reservoir]	127	174	220	267	313	360
Sharyland WSC - Well and RO Unit at WTP 2 Gulf Coast Aquifer System [Hidalgo]	0	900	900	900	900	900
Sharyland WSC - Well and RO Unit at WTP 3 Gulf Coast Aquifer System [Hidalgo]	0	900	900	900	900	900
United ID Conservation Amistad-Falcon Lake/Reservoir System [Reservoir]	639	639	639	639	639	639
Urbanization - WWP Reduction - Conversion of Irrigation Water Rights to DMI Amistad-Falcon Lake/Reservoir System [Reservoir]	0	343	1,836	3,475	4,904	6,076
	1,536	4,796	7,759	10,812	13,944	17,013

Steam-Electric Power, Hidalgo, Nueces-Rio Grande (M)

Edinburg Non-Potable Reuse Direct Reuse [Hidalgo]	444	0	0	0	0	0
Implementation of Industrial Best Management Practices DEMAND REDUCTION [Hidalgo]	757	757	757	757	757	757
	1,201	757	757	757	757	757

Steam-Electric Power, Hidalgo, Rio Grande (M)

Edinburg Non-Potable Reuse Direct Reuse [Hidalgo]	233	0	0	0	0	0
Implementation of Industrial Best Management Practices DEMAND REDUCTION [Hidalgo]	397	397	397	397	397	397
	630	397	397	397	397	397

Weslaco, Nueces-Rio Grande (M)

Advanced Municipal Conservation - Weslaco DEMAND REDUCTION [Hidalgo]	0	547	1,219	1,924	2,829	3,844
Drought Management DEMAND REDUCTION [Hidalgo]	258	333	401	470	539	603
Hidalgo and Cameron County ID 9 Conservation Amistad-Falcon Lake/Reservoir System [Reservoir]	235	411	588	764	940	1,117
Urbanization - WWP Reduction - Conversion of Irrigation Water Rights to DMI Amistad-Falcon Lake/Reservoir System [Reservoir]	0	1,000	1,792	2,735	3,533	4,105

Water Rights to DMI	System [Reservoir]									
Weslaco - Groundwater Development and Blending	Gulf Coast Aquifer System [Hidalgo]	560	560	560	560	560	560	560	560	560
Weslaco North WWTP Potable Reuse	Direct Reuse [Hidalgo]	1,120	1,120	1,120	1,120	1,120	1,120	1,120	1,120	1,120
		2,173	3,971	5,680	7,573	9,521	11,349			
Sum of Projected Water Management Strategies (acre-feet)		84,822	132,175	190,973	241,883	285,868	328,704			

JIM HOGG COUNTY

WUG, Basin (RWPG)

All values are in acre-feet

Water Strategy	Management Source	Name	2020	2030	2040	2050	2060	2070
Irrigation, Jim Hogg, Nueces-Rio Grande (M)								
Irrigation, Additional Groundwater Wells	Jim Hogg - Gulf Coast Aquifer System [Jim Hogg]		300	300	300	300	300	300
On-Farm Conservation	Irrigation DEMAND REDUCTION [Jim Hogg]		6	6	6	6	6	6
			306	306	306	306	306	306
Irrigation, Jim Hogg, Rio Grande (M)								
Irrigation, Additional Groundwater Wells	Jim Hogg - Gulf Coast Aquifer System [Jim Hogg]		50	50	50	50	50	50
On-Farm Conservation	Irrigation DEMAND REDUCTION [Jim Hogg]		1	1	1	1	1	1
			51	51	51	51	51	51
Jim Hogg County WCID 2, Nueces-Rio Grande (M)								
Advanced Conservation - County WCID 2	Municipal DEMAND REDUCTION [Jim Hogg]		0	0	0	16	51	91
			0	0	0	16	51	91
Mining, Jim Hogg, Nueces-Rio Grande (M)								
Implementation of Best Management Practices	Industrial DEMAND REDUCTION [Jim Hogg]		8	9	6	5	3	2
			8	9	6	5	3	2
Mining, Jim Hogg, Rio Grande (M)								
Implementation of Best Management Practices	Industrial DEMAND REDUCTION [Jim Hogg]		1	1	1	0	0	0
			1	1	1	0	0	0
Sum of Projected Water Management Strategies (acre-feet)			366	367	364	378	411	450

JIM WELLS COUNTY

WUG, Basin (RWPG)

All values are in acre-feet

Water Strategy	Management Source	Name	2020	2030	2040	2050	2060	2070
Alice, Nueces-Rio Grande (N)								

City of Alice - Groundwater Desalination	Gulf Coast Aquifer System [Jim Wells]	2,369	2,825	3,251	3,360	3,360	3,360
City of Alice - Non Potable Reuse	Direct Reuse [Jim Wells]	0	897	897	897	897	897
Municipal Conservation - Alice	DEMAND REDUCTION [Jim Wells]	0	345	725	899	938	981
		2,369	4,067	4,873	5,156	5,195	5,238
County-Other, Jim Wells, Nueces (N)							
Gulf Coast Supplies - Jim Wells County Other	Gulf Coast Aquifer System [Jim Wells]	529	529	529	529	529	529
		529	529	529	529	529	529
County-Other, Jim Wells, Nueces-Rio Grande (N)							
Gulf Coast Supplies - Jim Wells County Other	Gulf Coast Aquifer System [Jim Wells]	2,121	2,121	2,121	2,121	2,121	2,121
		2,121	2,121	2,121	2,121	2,121	2,121
Irrigation, Jim Wells, Nueces (N)							
Gulf Coast Supplies - Jim Wells Irrigation	Gulf Coast Aquifer System [Jim Wells]	39	39	39	39	39	39
Irrigation Conservation - Jim Wells County	DEMAND REDUCTION [Jim Wells]	9	18	26	35	44	53
		48	57	65	74	83	92
Irrigation, Jim Wells, Nueces-Rio Grande (N)							
Gulf Coast Supplies - Jim Wells Irrigation	Gulf Coast Aquifer System [Jim Wells]	294	294	294	294	294	294
Irrigation Conservation - Jim Wells County	DEMAND REDUCTION [Jim Wells]	39	78	117	156	195	234
		333	372	411	450	489	528
Manufacturing, Jim Wells, Nueces-Rio Grande (N)							
Gulf Coast Supplies - Jim Wells Manufacturing	Gulf Coast Aquifer System [Jim Wells]	16	16	16	16	16	16
Manufacturing Conservation	Water DEMAND REDUCTION [Jim Wells]	2	5	7	10	12	14
		18	21	23	26	28	30
Mining, Jim Wells, Nueces (N)							
Gulf Coast Supplies - Jim Wells Mining	Gulf Coast Aquifer System [Jim Wells]	4	4	4	4	4	4
Mining Water Conservation	DEMAND REDUCTION [Jim Wells]	0	0	0	0	0	0
		4	4	4	4	4	4
Mining, Jim Wells, Nueces-Rio Grande (N)							
Gulf Coast Supplies - Jim Wells Mining	Gulf Coast Aquifer System [Jim Wells]	51	51	51	51	51	51
Mining Water Conservation	DEMAND REDUCTION [Jim Wells]	2	4	4	4	3	3
		53	55	55	55	54	54
Orange Grove, Nueces-Rio Grande (N)							
Municipal Conservation - Orange Grove	DEMAND REDUCTION [Jim Wells]	0	40	83	131	181	232
		0	40	83	131	181	232

Premont, Nueces-Rio Grande (N)

Municipal Conservation - DEMAND REDUCTION Premont [Jim Wells]	0	58	120	194	268	302
	0	58	120	194	268	302

San Diego MUD 1, Nueces-Rio Grande (N)

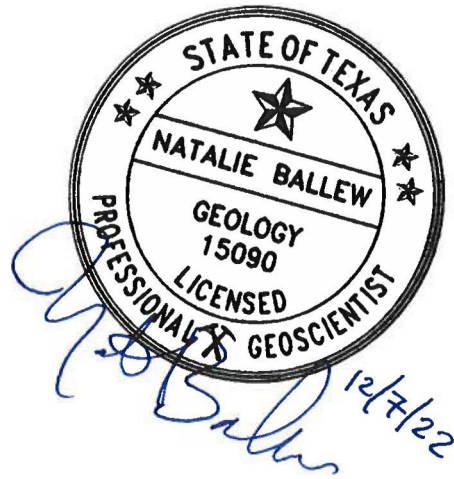
Municipal Conservation - San DEMAND REDUCTION Diego MUD 1 [Jim Wells]	0	13	21	19	19	20
	0	13	21	19	19	20
Sum of Projected Water Management Strategies (acre-feet)	5,475	7,337	8,305	8,759	8,971	9,150

Appendix I

**GAM RUN 21-021 MAG: MODELED AVAILABLE
GROUNDWATER FOR THE GULF COAST AQUIFER
SYSTEM IN**

GROUNDWATER MANAGEMENT AREA 16

**Ki Cha, Ph.D., EIT
Texas Water Development Board
Groundwater Division
Groundwater Modeling
Department
512-463-5604
October 31, 2022**



Natalie Ballew, P.G. 15090, is the Director of the Groundwater Division and is responsible for oversight of work performed by Ki Cha under her supervision.

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GAM RUN 21-021 MAG: MODELED AVAILABLE GROUNDWATER FOR THE GULF COAST AQUIFER SYSTEM IN GROUNDWATER MANAGEMENT AREA 16

**Ki Cha, Ph.D., EIT
Texas Water Development Board
Groundwater Division
Groundwater Modeling
Department
512-463-5604
October 31, 2022**

2 EXECUTIVE SUMMARY:

The modeled available groundwater for Groundwater Management Area 16 for the Gulf Coast Aquifer System is summarized by decade by groundwater conservation district and county (Table 1) and for use in the regional water planning process by county, regional water planning area, and river basin (Table 2). The modeled available groundwater estimates range from approximately 229,000 acre-feet per year in 2020 to approximately 294,000 acre-feet per year in 2080 (Tables 1 and 2). The estimates are based on the desired future conditions for the Gulf Coast Aquifer System adopted by groundwater conservation districts in Groundwater Management Area 16 on November 23, 2021 and re-adopted with minor clerical corrections on June 28, 2022. The explanatory report and other materials submitted to the TWDB were determined to be administratively complete on August 26, 2022.

3 REQUESTOR:

Mr. Scott Bledsoe, III, coordinator for Groundwater Management Area 16.

4 DESCRIPTION OF REQUEST:

In a letter dated January 22, 2022, Dr. Steve C. Young, consultant for Groundwater Management Area 16, provided the TWDB with the desired future conditions of the Gulf Coast Aquifer System adopted by the groundwater conservation district representatives in Groundwater Management Area 16. The Carrizo-Wilcox and Yegua-Jackson aquifers were declared non-relevant for joint planning purposes by Groundwater Management Area 16.

On June 2, 2022, TWDB requested clarifications about the wording of the desired future conditions, as some were unachievable based on TWDB analysis of the submitted model files during administrative review. In response, the Groundwater Management Area 16 consultant and groundwater conservation district representatives submitted an amended explanatory report (Young, 2022) on July 4, 2022. Groundwater Management Area 16

adopted a revised version of the desired future conditions for the Gulf Coast Aquifer System. The final desired future conditions adopted by the groundwater conservation district representatives in Groundwater Management Area 16 as described in Resolution No. 2022-01, on June 28, 2022 (Young, 2022; Appendix C), are presented below:

“Groundwater Management Area 16 adopts Desired Future Conditions for each county within the groundwater management area (county-specific DFC’s) and adopts a Desired Future Condition for the counties in the groundwater management area (gma-specific DFC’s). The Desired Future Condition for the counties in the groundwater management area shall not exceed an average drawdown of 78 feet for the Gulf Coast Aquifer System at December 2080. Desired Future Conditions for each county within the groundwater management area (county-specific DFC’s) shall not exceed the values specified in Scenario 2 at December 2080.

Table A-1: Desired Future Conditions for GMA 16 expressed as an Average Drawdown between January 2010 and December 2079.

*Bee GCD: 93 feet of drawdown of the Gulf Coast Aquifer System;
Live Oak UWCD: 45 feet of drawdown of the Gulf Coast Aquifer System;
McMullen GCD: 12 feet of drawdown of the Gulf Coast Aquifer System; Red Sands GCD: 60 feet of drawdown of the Gulf Coast Aquifer System;
Kenedy County GCD: 27 feet of drawdown of the Gulf Coast Aquifer System;
Brush Country GCD: 89 feet of drawdown of the Gulf Coast Aquifer System;
Duval County GCD: 137 feet of drawdown of the Gulf Coast Aquifer System;
San Patricio County GCD: 69 feet of drawdown of the Gulf Coast Aquifer System;
Starr County GCD: 94 feet of drawdown of the Gulf Coast Aquifer System; Cameron: 119 feet of drawdown of the Gulf Coast Aquifer System;
Hidalgo: 138 feet of drawdown of the Gulf Coast Aquifer System;
Kleberg: 21 feet of drawdown of the Gulf Coast Aquifer System;
Nueces: 26 feet of drawdown of the Gulf Coast Aquifer System; Webb: 161 feet of drawdown of the Gulf Coast Aquifer System; Willacy: 44 feet of drawdown of the Gulf Coast Aquifer System.”*

5 METHODS:

The alternative groundwater availability model for Groundwater Management Area 16 (version 1.01; Hutchison and others, 2011) was run using the predictive model files (“Pumping Scenario #2”) submitted with the desired future condition explanatory report (Young, 2022). Model-calculated water levels were extracted for January 2010 (stress period 11) and December 2079 (stress period 81), and drawdown was calculated as the difference between these water levels. Drawdown averages were calculated for the Gulf Coast Aquifer System by county, groundwater conservation district, and the entire groundwater management area. The calculated drawdown averages were compared with the desired future conditions to verify that the submitted pumping scenario can achieve the desired future conditions within the three-foot tolerance specified by Groundwater Management Area 16.

The modeled available groundwater values were determined by extracting pumping rates by decade from the model results using ZONEBUDGET Version 3.01 (Harbaugh, 2009). The modeled available groundwater can be presented by groundwater conservation district and county within Groundwater Management Area 16 (Figure 1) and by county, regional water planning area, and river basin within Groundwater Management Area 16 (Figure 2)

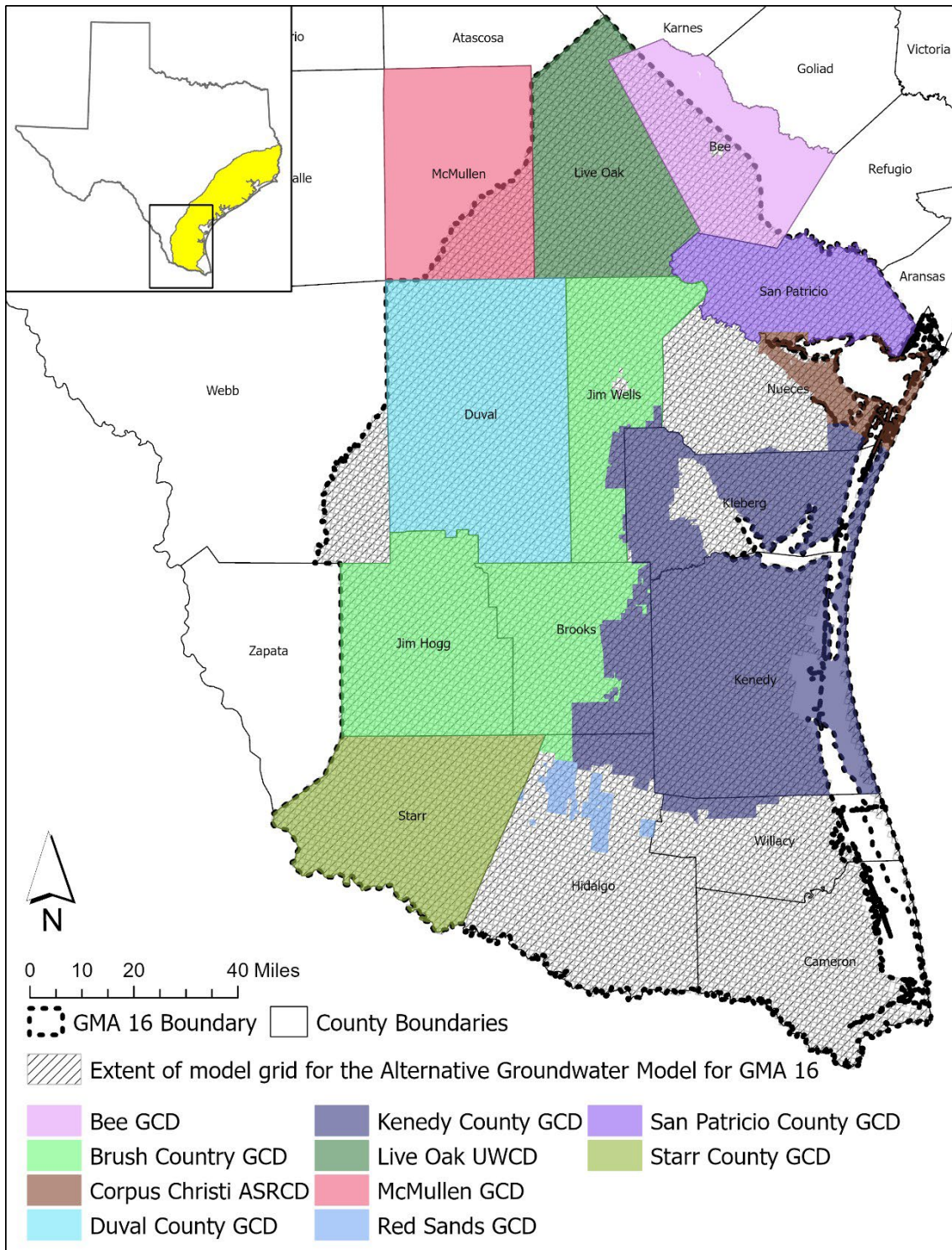


FIGURE 1. MAP SHOWING GROUNDWATER CONSERVATION DISTRICTS (GCDs) AND COUNTIES IN GROUNDWATER MANAGEMENT AREA 16, OVERLAIN ON THE EXTENT OF THE ALTERNATIVE GROUNDWATER AVAILABILITY MODEL FOR GROUNDWATER MANAGEMENT AREA 16.

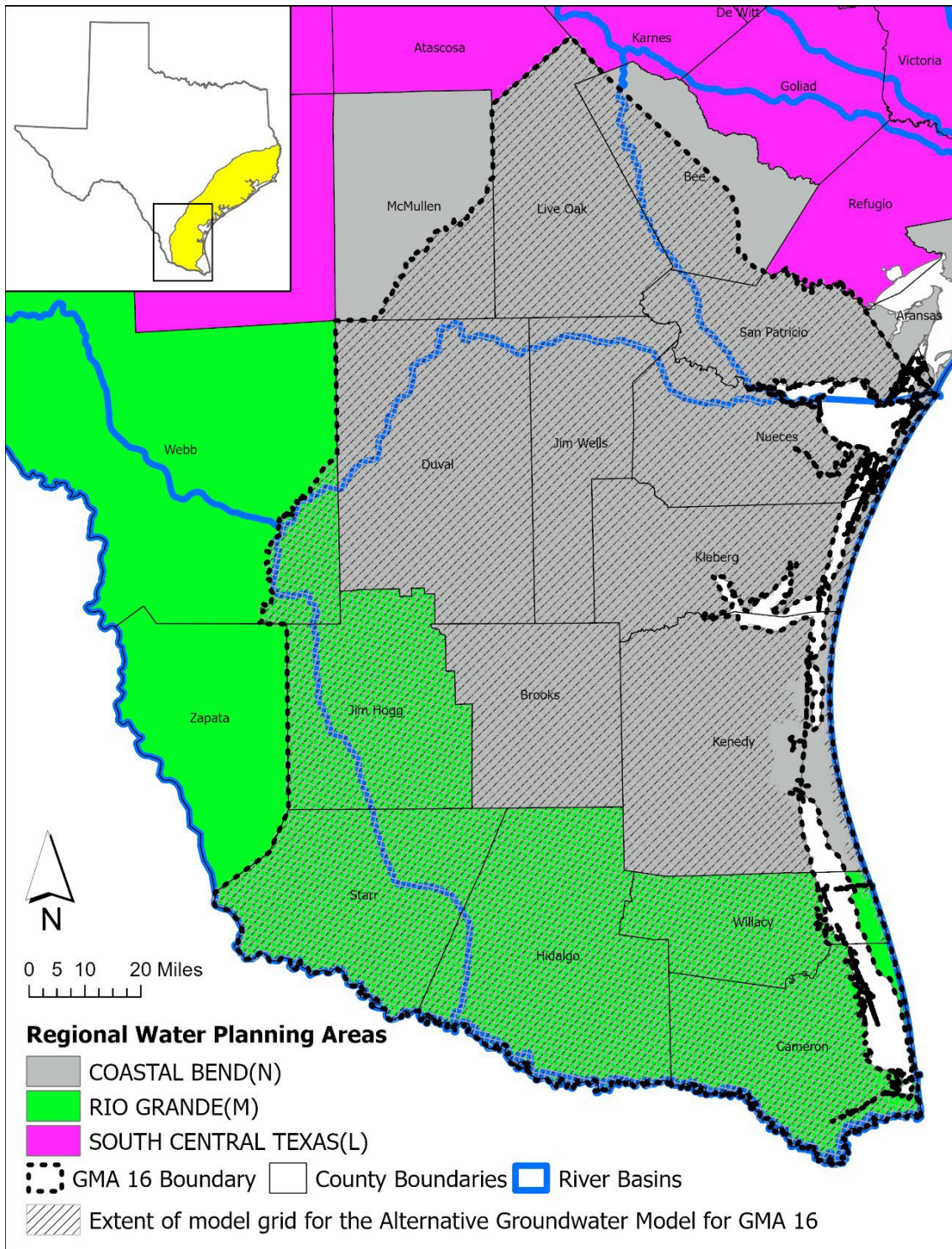


FIGURE 2. MAP SHOWING THE REGIONAL WATER PLANNING AREAS, COUNTIES, AND RIVER BASINS IN GROUNDWATER MANAGEMENT AREA 16, OVERLAIN ON THE EXTENT OF THE ALTERNATIVE GROUNDWATER AVAILABILITY MODEL FOR GROUNDWATER MANAGEMENT AREA 16.

Modeled Available Groundwater and Permitting

As defined in Chapter 36 of the Texas Water Code (2011), “modeled available groundwater” is the estimated average amount of water that may be produced annually to achieve a desired future condition. Groundwater conservation districts must consider modeled available groundwater when issuing permits in order to manage groundwater production to achieve the desired future condition(s). Districts must also consider annual precipitation and production patterns, the estimated amount of pumping exempt from permitting, existing permits, and a reasonable estimate of actual groundwater production under existing permits.

6 PARAMETERS AND ASSUMPTIONS:

The parameters and assumptions for the modeled available groundwater estimates are described below:

- **Version 1.01 of the alternate groundwater availability model for Groundwater Management Area 16 was the base model for this analysis. See Hutchison and others (2011) for assumptions and limitations of the model. Groundwater Management Area 16 constructed a predictive model simulation to extend the base model to 2080 for planning purposes. See Young (2022) for the assumptions of this predictive model simulation.**
- **The model has six layers that represent the Chicot aquifer (Layer 1), the Evangeline aquifer (Layer 2), the Burkeville confining unit (Layer 3), the Jasper aquifer (Layer 4), the Yegua-Jackson Aquifer (Layer 5), and the Queen-City, Sparta and Carrizo-Wilcox Aquifer System (Layer 6). Layers 1 through 4 were lumped to calculate modeled available groundwater for the Gulf Coast Aquifer System.**
- **The model was run with MODFLOW-2000 (Harbaugh and others, 2000).**
- **To be consistent with Groundwater Management Area 16, the TWDB model grid file dated May 1, 2014 (alt1_gma16) was used to determine model cell entity assignment (county, groundwater management area, groundwater conservation district, river basin, regional water planning area).**
- **Although the original groundwater availability model was only calibrated to the end of 1999, an analysis during the previous round of joint planning verified that the measured water levels did not change significantly for the period from 2000 to 2010 (Goswami, 2017). For this reason, TWDB considers it acceptable to use 2010 as the reference year for drawdown calculations.**
- **Drawdown averages and modeled available groundwater values are based on the official TWDB boundary for the groundwater conservation district, county, regional water planning area, river basin, and Regional Water Planning Areas within Groundwater Management Area 16 (Figures 1 and 2).**

- **Drawdown values for cells with water levels below the base elevation of the cell (“dry” cells) were included in the average drawdown calculations. The groundwater availability model for Groundwater Management Area 16 was constructed using the confined aquifer assumption (and LAYCON=0 option), meaning the transmissivity of “dry” cells remains constant and pumping from those cells continues. The desired future conditions adopted by Groundwater Management Area 16 are based on the average drawdowns that include “dry” cells. Therefore, pumping values from “dry” cells were also included in the calculation of modeled available groundwater. Please note that the confined aquifer assumption may also lead to physically unrealistic conditions, with pumping in a model cell continuing even when water levels have dropped below the base of the model cell.**
- **Drawdown was calculated as the difference in modeled water levels between the baseline date January 2010 (stress period 11) and the final date December 2079 (stress period 81). Average drawdowns were calculated as the sum of drawdowns for all model cells within a specified area divided by the number of cells in that specified area.**
- **Estimates of modeled available groundwater from the model simulation were rounded to whole numbers.**

7 RESULTS:

The modeled available groundwater for the Gulf Coast Aquifer System that achieves the desired future conditions adopted by Groundwater Management Area 16 increases from approximately 229,000 acre-feet per year in 2020 to 294,000 acre-feet per year in 2080. The modeled available groundwater is summarized by groundwater conservation district and county (Table 1) and by county, regional water planning area, and river basin (Table 2) for use in the regional water planning process.

TABLE 1. MODELED AVAILABLE GROUNDWATER FOR THE GULF COAST AQUIFER SYSTEM IN GROUNDWATER MANAGEMENT AREA 16 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2080. VALUES ARE IN ACRE-FEET PER YEAR.

Groundwater Conservation District (GCD)	County	2020	2030	2040	2050	2060	2070	2080
Bee GCD	Bee	10,338	11,849	12,593	12,944	13,146	13,146	13,146
Brush Country GCD	Brooks	3,660	3,660	3,660	3,660	3,660	4,205	4,205
Brush Country GCD	Hidalgo	131	131	131	131	131	150	150
Brush Country GCD	Jim Hogg	6,167	6,167	6,167	6,167	6,167	7,084	7,084
Brush Country GCD	Jim Wells	8,701	9,065	9,393	9,758	10,050	11,544	11,544
Brush Country GCD Total		18,659	19,023	19,351	19,716	20,008	22,983	22,983
Duval County GCD	Duval	20,571	22,169	23,764	25,363	26,963	26,963	26,963
Kenedy County GCD	Brooks	1,308	1,463	1,693	1,847	2,078	2,232	2,232
Kenedy County GCD	Hidalgo	412	460	534	582	654	703	703
Kenedy County GCD	Jim Wells	296	330	383	417	469	505	505
Kenedy County GCD	Kenedy	9,040	10,104	11,698	12,762	14,358	15,421	15,421
Kenedy County GCD	Kleberg	4,291	4,796	5,553	6,058	6,815	7,320	7,320
Kenedy County GCD	Nueces	171	191	221	241	271	291	291
Kenedy County GCD	Willacy	328	365	424	462	520	558	558
Kenedy County GCD Total		15,846	17,709	20,506	22,369	25,165	27,030	27,030
Live Oak UWCD	Live Oak	10,169	11,394	10,444	10,294	10,294	10,294	10,294
McMullen GCD	McMullen	510	510	510	510	510	510	510
Red Sands GCD	Hidalgo	1,667	1,966	2,265	2,563	2,863	2,863	2,863
San Patricio County GCD	San Patricio	43,611	45,016	46,422	47,828	49,234	49,234	49,234
Starr County GCD	Starr	3,798	4,797	5,797	6,794	7,795	7,795	7,795

TABLE 1. CONTINUED

Groundwater Conservation District (GCD)	County	2020	2030	2040	2050	2060	2070	2080
No District-Cameron	Cameron	6,688	7,999	9,311	10,620	11,932	11,932	11,932
No District-Hidalgo	Hidalgo	85,634	90,905	96,175	101,445	106,715	106,715	106,715
No District-Kleberg	Kleberg	4,051	4,243	4,436	4,629	4,822	4,822	4,822
No District-Nueces	Nueces	6,339	6,596	6,857	7,115	7,372	7,372	7,372
No District-Webb	Webb	620	789	959	1,129	1,299	1,299	1,299
No District-Willacy	Willacy	664	785	905	1,024	1,145	1,145	1,145
No District-Total		103,996	111,317	118,643	125,962	133,285	133,285	133,285
GMA 16 Total		229,165	245,750	260,295	274,343	289,263	294,103	294,103

TABLE 2. MODELED AVAILABLE GROUNDWATER FOR THE GULF COAST AQUIFER SYSTEM IN GROUNDWATER MANAGEMENT AREA 16. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN FOR EACH DECADE BETWEEN 2030 AND 2080.

County	RWPA	River Basin	2030	2040	2050	2060	2070	2080
Bee	N	Nueces	981	1,043	1,072	1,089	1,089	1,089
Bee	N	San Antonio-Nueces	10,868	11,550	11,872	12,057	12,057	12,057
Brooks	N	Nueces-Rio Grande	5,123	5,353	5,507	5,738	6,437	6,437
Cameron	M	Nueces-Rio Grande	7,536	8,771	10,005	11,241	11,241	11,241
Cameron	M	Rio Grande	463	540	615	691	691	691
Duval	N	Nueces	351	376	401	428	428	428
Duval	N	Nueces-Rio Grande	21,818	23,388	24,962	26,535	26,535	26,535
Hidalgo	M	Nueces-Rio Grande	91,421	96,658	101,867	107,103	107,171	107,171
Hidalgo	M	Rio Grande	2,041	2,447	2,854	3,260	3,260	3,260
Jim Hogg	M	Nueces-Rio Grande	5,230	5,230	5,230	5,230	6,008	6,008
Jim Hogg	M	Rio Grande	937	937	937	937	1,076	1,076
Jim Wells	N	Nueces	593	593	593	593	681	681
Jim Wells	N	Nueces-Rio Grande	8,802	9,183	9,582	9,926	11,368	11,368
Kenedy	N	Nueces-Rio Grande	10,104	11,698	12,762	14,358	15,421	15,421
Kleberg	N	Nueces-Rio Grande	9,039	9,989	10,687	11,637	12,142	12,142
Live Oak	N	Nueces	11,326	10,382	10,233	10,233	10,233	10,233
Live Oak	N	San Antonio-Nueces	68	62	61	61	61	61
McMullen	N	Nueces	510	510	510	510	510	510
Nueces	N	Nueces	756	787	816	845	845	845
Nueces	N	Nueces-Rio Grande	6,031	6,291	6,540	6,798	6,818	6,818
San Patricio	N	Nueces	4,502	4,874	5,247	5,619	5,619	5,619
San Patricio	N	San Antonio-Nueces	40,514	41,548	42,581	43,615	43,615	43,615

TABLE 2. CONTINUED

County	RWPA	River Basin	2030	2040	2050	2060	2070	2080
Starr	M	Nueces-Rio Grande	1,958	2,366	2,772	3,180	3,180	3,180
Starr	M	Rio Grande	2,839	3,431	4,022	4,615	4,615	4,615
Webb	M	Nueces	22	27	32	37	37	37
Webb	M	Nueces-Rio Grande	642	780	918	1,056	1,056	1,056
Webb	M	Rio Grande	125	152	179	206	206	206
Willacy	M	Nueces-Rio Grande	1,150	1,329	1,486	1,665	1,703	1,703
GMA 16 Total			245,750	260,295	274,343	289,263	294,103	294,103

*GCAS: Gulf Coast Aquifer System

8 **LIMITATIONS:**

The groundwater model used in completing this analysis is the best available scientific tool that can be used to meet the stated objectives. To the extent that this analysis will be used for planning purposes and/or regulatory purposes related to pumping in the past and into the future, it is important to recognize the assumptions and limitations associated with the use of the results. In reviewing the use of models in environmental regulatory decision making, the National Research Council (2007) noted:

“Models will always be constrained by computational limitations, assumptions, and knowledge gaps. They can best be viewed as tools to help inform decisions rather than as machines to generate truth or make decisions. Scientific advances will never make it possible to build a perfect model that accounts for every aspect of reality or to prove that a given model is correct in all respects for a particular regulatory application. These characteristics make evaluation of a regulatory model more complex than solely a comparison of measurement data with model results.”

A key aspect of using the groundwater model to evaluate historic groundwater flow conditions includes the assumptions about the location in the aquifer where historic pumping was placed. Understanding the amount and location of historic pumping is as important as evaluating the volume of groundwater flow into and out of the district, between aquifers within the district (as applicable), interactions with surface water (as applicable), recharge to the aquifer system (as applicable), and other metrics that describe the impacts of that pumping. In addition, assumptions regarding precipitation, recharge, and streamflow are specific to a particular historic time period.

Because the application of the groundwater model was designed to address regional scale questions, the results are most effective on a regional scale. The TWDB makes no warranties or representations relating to the actual conditions of any aquifer at a particular location or at a particular time.

It is important for groundwater conservation districts to monitor groundwater pumping and groundwater levels in the aquifer. Because of the limitations of the groundwater model and the assumptions in this analysis, it is important that the groundwater conservation districts work with the TWDB to refine this analysis in the future given the reality of how the aquifer responds to the actual amount and location of pumping now and in the future. Historic precipitation patterns also need to be placed in context as future climatic conditions, such as dry and wet year precipitation patterns, may differ and affect groundwater flow conditions.

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APPENDIX J

Projected Water Supply Needs TWDB 2012 State Water Plan Data

Negative values (in red) reflect a projected water supply need, positive values a surplus.

BROOKS COUNTY

All values are in acre-feet/year

RWPG	WUG	WUG Basin	2010	2020	2030	2040	2050	2060
N	COUNTY-OTHER	NUECES-RIO GRANDE	0	0	0	0	0	0
N	FALFURRIAS	NUECES-RIO GRANDE	0	0	0	0	0	0
N	IRRIGATION	NUECES-RIO GRANDE	0	0	0	0	0	0
N	LIVESTOCK	NUECES-RIO GRANDE	0	0	0	0	0	0
N	MINING	NUECES-RIO GRANDE	0	0	0	0	0	0
Sum of Projected Water Supply Needs (acre-feet/year)			0	0	0	0	0	0

HIDALGO COUNTY

All values are in acre-feet/year

RWPG	WUG	WUG Basin	2010	2020	2030	2040	2050	2060
M	ALAMO	NUECES-RIO GRANDE	-59	-762	-1,548	-2,415	-3,407	-4,424
M	ALTON	NUECES-RIO GRANDE	0	0	-2,446	-3,419	-4,482	-5,602
M	COUNTY-OTHER	NUECES-RIO GRANDE	1,028	-2,179	-5,775	-9,722	-14,197	-18,779
M	COUNTY-OTHER	RIO GRANDE	60	-187	-409	-652	-927	-1,210
M	DONNA	NUECES-RIO GRANDE	1,729	1,435	1,117	759	347	-103
M	EDCOUCH	NUECES-RIO GRANDE	-129	-188	-255	-332	-420	-516
M	EDINBURG	NUECES-RIO GRANDE	6,216	3,826	1,029	-1,805	-5,151	-8,580
M	ELSA	NUECES-RIO GRANDE	659	603	534	460	364	258
M	HIDALGO	NUECES-RIO GRANDE	594	209	-219	-685	-1,206	-1,740
M	HIDALGO	RIO GRANDE	-2	-18	-20	-27	-49	-71
M	HIDALGO COUNTY MUD #1	NUECES-RIO GRANDE	-1,130	-1,814	-2,588	-3,421	-4,342	-5,287
M	IRRIGATION	NUECES-RIO GRANDE	-179,009	-127,739	-61,663	-64,971	-68,279	-71,333
M	IRRIGATION	RIO GRANDE	-14,526	-12,328	-9,540	-9,567	-9,594	-9,619
M	LA JOYA	NUECES-RIO GRANDE	46	-5	-59	-120	-189	-265
M	LA JOYA	RIO GRANDE	19	-2	-25	-51	-80	-113
M	LA VILLA	NUECES-RIO GRANDE	256	258	259	261	261	258
M	LIVESTOCK	NUECES-RIO GRANDE	0	0	0	0	0	0
M	LIVESTOCK	RIO GRANDE	0	0	0	0	0	0
M	MANUFACTURING	NUECES-RIO GRANDE	912	589	297	5	-255	-594
M	MCALLEN	NUECES-RIO GRANDE	2,627	-2,501	-8,474	-14,830	-21,932	-29,453
M	MCALLEN	RIO GRANDE	0	-1	-1	-2	-3	-4
M	MERCEDES	NUECES-RIO GRANDE	3,231	3,123	2,988	2,846	2,652	2,434

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RWPG	WUG	WUG Basin	2010	2020	2030	2040	2050	2060
M	MILITARY HIGHWAY WSC	NUECES-RIO GRANDE	-8	-143	-422	-780	-1,120	-1,479
M	MILITARY HIGHWAY WSC	RIO GRANDE	0	0	0	0	-4	-9
M	MINING	NUECES-RIO GRANDE	183	182	181	179	177	175
M	MINING	RIO GRANDE	23	22	21	21	21	20
M	MISSION	NUECES-RIO GRANDE	-1,470	-4,468	-7,824	-11,365	-15,469	-19,674
M	NORTH ALAMO WSC	NUECES-RIO GRANDE	8,983	5,627	1,853	-2,345	-7,180	-12,150
M	PALMHURST	NUECES-RIO GRANDE	0	0	209	-296	-929	-1,633
M	PALMVIEW	NUECES-RIO GRANDE	0	0	0	0	-447	-906
M	PENITAS	NUECES-RIO GRANDE	5	3	2	-1	-7	-16
M	PHARR	NUECES-RIO GRANDE	376	-1,754	-4,152	-6,799	-9,649	-12,695
M	PROGRESO	NUECES-RIO GRANDE	0	0	0	0	0	0
M	SAN JUAN	NUECES-RIO GRANDE	-478	-1,642	-2,933	-4,361	-6,008	-7,697
M	SHARYLAND WSC	NUECES-RIO GRANDE	1,624	-391	-397	-1,331	-2,296	-3,335
M	STEAM ELECTRIC POWER	NUECES-RIO GRANDE	1,816	-1,980	-4,374	-7,291	-10,847	-15,183
M	SULLIVAN CITY	RIO GRANDE	159	186	184	13	-197	-411
M	WESLACO	NUECES-RIO GRANDE	1,043	286	-579	-1,537	-2,622	-3,787
Sum of Projected Water Supply Needs (acre-feet/year)			-196,811	-158,102	-113,703	-148,125	-191,288	-236,668

JIM HOGG COUNTY

All values are in acre-feet/year

RWPG	WUG	WUG Basin	2010	2020	2030	2040	2050	2060
M	COUNTY-OTHER	NUECES-RIO GRANDE	-60	-66	-70	-73	-71	-65
M	COUNTY-OTHER	RIO GRANDE	-7	-7	-8	-8	-8	-7
M	HEBBRONVILLE	NUECES-RIO GRANDE	169	141	120	108	122	152
M	IRRIGATION	NUECES-RIO GRANDE	0	0	0	0	0	0
M	LIVESTOCK	NUECES-RIO GRANDE	0	0	0	0	0	0
M	LIVESTOCK	RIO GRANDE	0	0	0	0	0	0
M	MINING	NUECES-RIO GRANDE	8	5	4	3	2	1
Sum of Projected Water Supply Needs (acre-feet/year)			-67	-73	-78	-81	-79	-72

JIM WELLS COUNTY

All values are in acre-feet/year

RWPG	WUG	WUG Basin	2010	2020	2030	2040	2050	2060
N	ALICE	NUECES-RIO GRANDE	0	0	0	0	0	0
N	COUNTY-OTHER	NUECES	0	0	0	0	0	0
N	COUNTY-OTHER	NUECES-RIO GRANDE	-167	-238	-262	-241	-210	-170
N	IRRIGATION	NUECES	0	0	0	0	0	0
N	IRRIGATION	NUECES-RIO GRANDE	0	0	0	0	0	0
N	LIVESTOCK	NUECES	0	0	0	0	0	0
N	LIVESTOCK	NUECES-RIO GRANDE	0	0	0	0	0	0
N	MINING	NUECES	0	0	0	0	0	0
N	MINING	NUECES-RIO GRANDE	0	0	0	0	0	0
N	ORANGE GROVE	NUECES-RIO GRANDE	0	0	0	0	0	0
N	PREMONT	NUECES-RIO GRANDE	0	0	0	0	0	0
N	SAN DIEGO	NUECES-RIO GRANDE	0	0	0	0	0	0
Sum of Projected Water Supply Needs (acre-feet/year)			-167	-238	-262	-241	-210	-170

Projected Water Management Strategies TWDB 2012 State Water Plan Data

BROOKS COUNTY

WUG, Basin (RWPG)

All values are in acre-feet/year

Water Management Strategy	Source Name [Origin]	2010	2020	2030	2040	2050	2060
FALFURRIAS, NUECES-RIO GRANDE (N)							
MUNICIPAL WATER CONSERVATION	CONSERVATION [BROOKS]	1	38	95	156	228	309
Sum of Projected Water Management Strategies (acre-feet/year)		1	38	95	156	228	309

HIDALGO COUNTY

WUG, Basin (RWPG)

All values are in acre-feet/year

Water Management Strategy	Source Name [Origin]	2010	2020	2030	2040	2050	2060
ALAMO, NUECES-RIO GRANDE (M)							
ACQUISITION OF WATER RIGHTS THROUGH CONTRACT	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	5	10	14	19	24
ACQUISITION OF WATER RIGHTS THROUGH PURCHASE	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	100	200	277	381	471
ACQUISITION OF WATER RIGHTS THROUGH URBANIZATION	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	400	800	1,330	1,700	2,100
ADVANCED WATER CONSERVATION	CONSERVATION [HIDALGO]	25	25	25	25	125	225
BRACKISH WATER DESALINATION	GULF COAST AQUIFER-BRACKISH [HIDALGO]	0	83	288	469	882	1,304
NON-POTABLE REUSE	DIRECT REUSE [HIDALGO]	34	150	225	300	400	500
ALTON, NUECES-RIO GRANDE (M)							
ADVANCED WATER CONSERVATION	CONSERVATION [HIDALGO]	59	82	2,446	3,419	4,482	5,602
COUNTY-OTHER, NUECES-RIO GRANDE (M)							
ACQUISITION OF WATER RIGHTS THROUGH PURCHASE	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	1,090	3,888	5,860	10,099	14,390
ADVANCED WATER CONSERVATION	CONSERVATION [HIDALGO]	94	257	395	554	736	942
EXPAND EXISTING GROUNDWATER WELLS	GULF COAST AQUIFER [HIDALGO]	0	1,089	1,887	3,861	4,098	4,389

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WUG, Basin (RWPG)		All values are in acre-feet/year					
Water Management Strategy	Source Name [Origin]	2010	2020	2030	2040	2050	2060
COUNTY-OTHER, RIO GRANDE (M)							
ACQUISITION OF WATER RIGHTS THROUGH PURCHASE	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	187	409	652	927	1,210
ADVANCED WATER CONSERVATION	CONSERVATION [HIDALGO]	50	100	200	300	400	483
DONNA, NUECES-RIO GRANDE (M)							
ADVANCED WATER CONSERVATION	CONSERVATION [HIDALGO]	15	32	51	72	95	118
BRACKISH WATER DESALINATION	GULF COAST AQUIFER-BRACKISH [HIDALGO]	0	50	50	50	50	50
EXPAND EXISTING GROUNDWATER WELLS	GULF COAST AQUIFER [HIDALGO]	0	25	25	25	25	25
EDCOUCH, NUECES-RIO GRANDE (M)							
ACQUISITION OF WATER RIGHTS THROUGH PURCHASE	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	65	118	175	246	299	360
ADVANCED WATER CONSERVATION	CONSERVATION [HIDALGO]	65	70	81	86	121	156
EDINBURG, NUECES-RIO GRANDE (M)							
ACQUISITION OF WATER RIGHTS THROUGH PURCHASE	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	1,631	3,114	4,591	6,619
ADVANCED WATER CONSERVATION	CONSERVATION [HIDALGO]	74	328	500	686	889	1,097
NON-POTABLE REUSE	DIRECT REUSE [HIDALGO]	0	0	500	1,500	3,000	4,000
ELSA, NUECES-RIO GRANDE (M)							
ACQUISITION OF WATER RIGHTS THROUGH PURCHASE	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	50	50
ADVANCED WATER CONSERVATION	CONSERVATION [HIDALGO]	2	5	7	10	14	17
BRACKISH WATER DESALINATION	GULF COAST AQUIFER-BRACKISH [HIDALGO]	0	100	100	100	100	100
PROPOSED ELEVATED STORAGE TANK AND INFRASTRUCTURE IMPROVEMENTS FOR CITY OF ELSA	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	105	105	105	105	105	105
HIDALGO, NUECES-RIO GRANDE (M)							
ACQUISITION OF WATER RIGHTS THROUGH CONTRACT	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	8	29	51

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WUG, Basin (RWPG)		All values are in acre-feet/year					
Water Management Strategy	Source Name [Origin]	2010	2020	2030	2040	2050	2060
ACQUISITION OF WATER RIGHTS THROUGH PURCHASE	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	154	558	973
ADVANCED WATER CONSERVATION	CONSERVATION [HIDALGO]	32	66	104	145	189	235
EXPAND EXISTING GROUNDWATER WELLS	GULF COAST AQUIFER [HIDALGO]	110	235	334	427	506	585
HIDALGO, RIO GRANDE (M)							
EXPAND EXISTING GROUNDWATER WELLS	GULF COAST AQUIFER [HIDALGO]	2	18	20	27	49	71
HIDALGO COUNTY MUD #1, NUECES-RIO GRANDE (M)							
ACQUISITION OF WATER RIGHTS THROUGH CONTRACT	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	66	100	139	181	227	274
ACQUISITION OF WATER RIGHTS THROUGH PURCHASE	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	1,051	1,684	2,401	3,173	4,026	4,901
ADVANCED WATER CONSERVATION	CONSERVATION [HIDALGO]	14	30	48	68	89	112
IRRIGATION, NUECES-RIO GRANDE (M)							
IRRIGATION CONVEYANCE SYSTEM CONSERVATION	CONSERVATION [HIDALGO]	5,976	20,246	34,268	48,044	61,572	74,904
ON- FARM WATER CONSERVATION	CONSERVATION [HIDALGO]	795	5,385	13,673	25,560	40,946	59,773
IRRIGATION, RIO GRANDE (M)							
IRRIGATION CONVEYANCE SYSTEM CONSERVATION	CONSERVATION [HIDALGO]	62	207	354	498	639	779
ON- FARM WATER CONSERVATION	CONSERVATION [HIDALGO]	8	56	142	265	425	621
LA JOYA, NUECES-RIO GRANDE (M)							
ACQUISITION OF WATER RIGHTS THROUGH URBANIZATION	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	2	87	185
ADVANCED WATER CONSERVATION	CONSERVATION [HIDALGO]	7	14	21	49	62	73
BRACKISH WATER DESALINATION	GULF COAST AQUIFER-BRACKISH [HIDALGO]	50	48	75	69	40	7
LA JOYA, RIO GRANDE (M)							
BRACKISH WATER DESALINATION	GULF COAST AQUIFER-BRACKISH [HIDALGO]	0	2	25	51	80	113

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WUG, Basin (RWPG)

All values are in acre-feet/year

Water Management Strategy	Source Name [Origin]	2010	2020	2030	2040	2050	2060
LA VILLA, NUECES-RIO GRANDE (M)							
ADVANCED WATER CONSERVATION	CONSERVATION [HIDALGO]	0	1	1	1	1	1
MANUFACTURING, NUECES-RIO GRANDE (M)							
ACQUISITION OF WATER RIGHTS THROUGH PURCHASE	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	55	194
EXPAND EXISTING GROUNDWATER WELLS	GULF COAST AQUIFER [HIDALGO]	0	0	0	0	100	200
NON-POTABLE REUSE	DIRECT REUSE [HIDALGO]	0	0	0	0	100	200
MCALLEN, NUECES-RIO GRANDE (M)							
ACQUISITION OF WATER RIGHTS THROUGH CONTRACT	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	225	329	393	432
ACQUISITION OF WATER RIGHTS THROUGH PURCHASE	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	998	4,083	5,718	7,341
ADVANCED WATER CONSERVATION	CONSERVATION [HIDALGO]	191	382	925	1,250	2,177	3,423
BRACKISH WATER DESALINATION	GULF COAST AQUIFER-BRACKISH [HIDALGO]	3,360	3,360	6,139	6,600	8,121	8,821
EXPAND EXISTING GROUNDWATER WELLS	GULF COAST AQUIFER [HIDALGO]	0	0	487	619	945	1,543
NON-POTABLE REUSE	DIRECT REUSE [HIDALGO]	0	0	0	2,349	5,578	9,893
MCALLEN, RIO GRANDE (M)							
ACQUISITION OF WATER RIGHTS THROUGH PURCHASE	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	1	1	2	3	4
MERCEDES, NUECES-RIO GRANDE (M)							
ADVANCED WATER CONSERVATION	CONSERVATION [HIDALGO]	7	14	23	32	43	53
BRACKISH WATER DESALINATION	GULF COAST AQUIFER-BRACKISH [HIDALGO]	560	560	560	560	560	560
EXPAND EXISTING GROUNDWATER WELLS	GULF COAST AQUIFER [HIDALGO]	0	560	560	560	560	560
MILITARY HIGHWAY WSC, NUECES-RIO GRANDE (M)							
ACQUISITION OF WATER RIGHTS THROUGH CONTRACT	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	5	14	16	18

GAM Run 21-021 MAG: Modeled Available Groundwater for the Gulf Coast Aquifer System in Groundwater Management Area 16
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WUG, Basin (RWPG)		All values are in acre-feet/year					
Water Management Strategy	Source Name [Origin]	2010	2020	2030	2040	2050	2060
ACQUISITION OF WATER RIGHTS THROUGH PURCHASE	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	139	353	561	789
ADVANCED WATER CONSERVATION	CONSERVATION [HIDALGO]	8	18	28	38	43	47
EXPAND EXISTING GROUNDWATER WELLS	GULF COAST AQUIFER [HIDALGO]	0	125	250	375	500	625
MILITARY HIGHWAY WSC, RIO GRANDE (M)							
ADVANCED WATER CONSERVATION	CONSERVATION [HIDALGO]	0	0	0	0	4	9
MISSION, NUECES-RIO GRANDE (M)							
ACQUISITION OF WATER RIGHTS THROUGH URBANIZATION	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	299	2,633	4,901	7,236	10,014	12,118
ADVANCED WATER CONSERVATION	CONSERVATION [HIDALGO]	260	637	598	789	1,394	2,135
BRACKISH WATER DESALINATION	GULF COAST AQUIFER-BRACKISH [HIDALGO]	560	560	560	560	560	560
NON-POTABLE REUSE	DIRECT REUSE [HIDALGO]	352	839	1,765	2,780	3,909	5,321
NORTH ALAMO WSC, NUECES-RIO GRANDE (M)							
ACQUISITION OF WATER RIGHTS THROUGH CONTRACT	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	0	48
ACQUISITION OF WATER RIGHTS THROUGH PURCHASE	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	0	902
ADVANCED WATER CONSERVATION	CONSERVATION [HIDALGO]	248	538	863	1,215	3,098	4,000
BRACKISH WATER DESALINATION	GULF COAST AQUIFER-BRACKISH [HIDALGO]	11,201	11,201	11,201	11,201	11,201	11,201
PALMHURST, NUECES-RIO GRANDE (M)							
ACQUISITION OF WATER RIGHTS THROUGH CONTRACT	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	15	46	82
ACQUISITION OF WATER RIGHTS THROUGH PURCHASE	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	281	883	1,551
ADVANCED WATER CONSERVATION	CONSERVATION [HIDALGO]	32	68	110	155	203	254

GAM Run 21-021 MAG: Modeled Available Groundwater for the Gulf Coast Aquifer System in Groundwater Management Area 16
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WUG, Basin (RWPG)		All values are in acre-feet/year					
Water Management Strategy	Source Name [Origin]	2010	2020	2030	2040	2050	2060
PALMVIEW, NUECES-RIO GRANDE (M)							
ACQUISITION OF WATER RIGHTS THROUGH CONTRACT	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	22	45
ACQUISITION OF WATER RIGHTS THROUGH PURCHASE	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	425	860
ADVANCED WATER CONSERVATION	CONSERVATION [HIDALGO]	16	34	55	78	102	128
PENITAS, NUECES-RIO GRANDE (M)							
ADVANCED WATER CONSERVATION	CONSERVATION [HIDALGO]	1	1	2	2	7	16
PHARR, NUECES-RIO GRANDE (M)							
ACQUISITION OF WATER RIGHTS THROUGH CONTRACT	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	89	205	311	423	554
ACQUISITION OF WATER RIGHTS THROUGH PURCHASE	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	698	2,478	4,721	7,086	8,895
ACQUISITION OF WATER RIGHTS THROUGH URBANIZATION	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	400	766	928	1,067	2,003
ADVANCED WATER CONSERVATION	CONSERVATION [HIDALGO]	143	392	478	589	798	943
EXPAND EXISTING GROUNDWATER WELLS	GULF COAST AQUIFER [HIDALGO]	100	150	175	200	225	250
NON-POTABLE REUSE	DIRECT REUSE [HIDALGO]	50	50	50	50	50	50
PROGRESO, NUECES-RIO GRANDE (M)							
ADVANCED WATER CONSERVATION	CONSERVATION [HIDALGO]	11	24	38	54	71	89
SAN JUAN, NUECES-RIO GRANDE (M)							
ACQUISITION OF WATER RIGHTS THROUGH CONTRACT	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	24	82	147	218	300	385
ACQUISITION OF WATER RIGHTS THROUGH PURCHASE	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	454	1,560	2,786	4,143	5,708	7,312
ADVANCED WATER CONSERVATION	CONSERVATION [HIDALGO]	95	206	330	465	612	762

GAM Run 21-021 MAG: Modeled Available Groundwater for the Gulf Coast Aquifer System in Groundwater Management Area 16
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WUG, Basin (RWPG)		All values are in acre-feet/year					
Water Management Strategy	Source Name [Origin]	2010	2020	2030	2040	2050	2060
SHARYLAND WSC, NUECES-RIO GRANDE (M)							
ACQUISITION OF WATER RIGHTS THROUGH CONTRACT	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	20	20	67	115	167
ACQUISITION OF WATER RIGHTS THROUGH PURCHASE	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	372	377	1,264	2,181	3,168
ADVANCED WATER CONSERVATION	CONSERVATION [HIDALGO]	29	62	100	141	186	231
STEAM ELECTRIC POWER, NUECES-RIO GRANDE (M)							
ACQUISITION OF WATER RIGHTS THROUGH PURCHASE	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	980	2,374	3,291	3,847	5,183
NON-POTABLE REUSE	DIRECT REUSE [HIDALGO]	0	1,000	2,000	4,000	7,000	10,000
SULLIVAN CITY, RIO GRANDE (M)							
ACQUISITION OF WATER RIGHTS THROUGH CONTRACT	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	10	21
ACQUISITION OF WATER RIGHTS THROUGH PURCHASE	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	186	390
ADVANCED WATER CONSERVATION	CONSERVATION [HIDALGO]	11	25	39	55	73	91
WESLACO, NUECES-RIO GRANDE (M)							
ACQUISITION OF WATER RIGHTS THROUGH CONTRACT	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	0	100
ACQUISITION OF WATER RIGHTS THROUGH PURCHASE	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	0	100
ADVANCED WATER CONSERVATION	CONSERVATION [HIDALGO]	44	82	124	217	793	1,048
BRACKISH WATER DESALINATION	GULF COAST AQUIFER-BRACKISH [HIDALGO]	100	100	100	100	250	350
EXPAND EXISTING GROUNDWATER WELLS	GULF COAST AQUIFER [HIDALGO]	0	0	0	100	429	899
POTABLE REUSE	DIRECT REUSE [CAMERON]	1,120	1,120	1,120	1,120	1,150	1,290
Sum of Projected Water Management Strategies (acre-feet/year)		28,037	61,436	109,705	165,287	233,014	306,209

JIM HOGG COUNTY

WUG, Basin (RWPG) All values are in acre-feet/year

Water Management Strategy	Source Name [Origin]	2010	2020	2030	2040	2050	2060
COUNTY-OTHER, NUECES-RIO GRANDE (M)							
ADVANCED WATER CONSERVATION	CONSERVATION [JIM HOGG]	0	1	1	1	1	1
EXPAND EXISTING GROUNDWATER WELLS	GULF COAST AQUIFER [JIM HOGG]	60	66	70	73	71	65
COUNTY-OTHER, RIO GRANDE (M)							
ACQUISITION OF WATER RIGHTS THROUGH PURCHASE	AMISTAD-FALCON LAKE/RESERVOIR SYSTEM [RESERVOIR]	7	7	8	8	8	7
HEBRONVILLE, NUECES-RIO GRANDE (M)							
ADVANCED WATER CONSERVATION	CONSERVATION [JIM HOGG]	2	4	6	8	7	6
Sum of Projected Water Management Strategies (acre-feet/year)		69	78	85	90	87	79

JIM WELLS COUNTY

WUG, Basin (RWPG) All values are in acre-feet/year

Water Management Strategy	Source Name [Origin]	2010	2020	2030	2040	2050	2060
ALICE, NUECES-RIO GRANDE (N)							
MUNICIPAL WATER CONSERVATION	CONSERVATION [JIM WELLS]	50	133	219	306	438	585
COUNTY-OTHER, NUECES-RIO GRANDE (N)							
GULF COAST AQUIFER SUPPLIES	GULF COAST AQUIFER [JIM WELLS]	565	565	565	565	565	565
ORANGE GROVE, NUECES-RIO GRANDE (N)							
MUNICIPAL WATER CONSERVATION	CONSERVATION [JIM WELLS]	3	8	14	18	28	38
PREMONT, NUECES-RIO GRANDE (N)							
MUNICIPAL WATER CONSERVATION	CONSERVATION [JIM WELLS]	9	22	36	49	70	92
Sum of Projected Water Management Strategies (acre-feet/year)		627	728	834	938	1,101	1,280

Brush Country Groundwater Conservation District Management Plan Submitted for review by General Manager Luis “Louie” Pena 732 W. Rice Street Falfurrias, Texas 78355 361-325-5093 lpna@brushcountrygcd.com

SIGNED: 

Luis “Louie” Pena, General manager