

TERRELL COUNTY GROUNDWATER CONSERVATION DISTRICT

Groundwater Management Plan

Originally Adopted: July 25, 2013

Approved by the Texas Water Development Board: November 21, 2013

Re-Adopted: July 25, 2018

Approved by the Texas Water Development Board: _____

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I. DISTRICT OBJECTIVES

The mission of the Terrell County Groundwater Conservation District (“District”) is to conserve, preserve and protect the quality and quantity of the groundwater resources for the citizens of Terrell County. 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 economy maintain and improve its current condition. The District will also use the authority granted in its enabling act in Chapter 8837 of the Texas Special District Local Laws Code (the “District Act”) and all applicable state laws to protect and maintain the groundwater resources within the District’s boundaries.

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 and to meet the requirements of Chapter 36 of the Texas Water Code and Texas Water Development Board (“TWDB”) rules in Title 31 Texas Administrative Code (“TAC”) Chapter 356. This Management Plan currently contains the best available hydrogeological and technical information provided by the 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.

III. DISTRICT INFORMATION

A. District Creation

The District was created by the 82nd Texas Legislature, Regular Session, in 2011 through the enactment of House Bill 2859. The creation of the District was confirmed by the citizens located in Terrell County at an election held on November 6, 2012. The District contains the authority and responsibilities specified in the District Act, Chapter 36 of the Texas Water Code, TWDB Rules, this Management Plan, and the District Rules, as they may be adopted and amended.

B. District Board of Directors

The Board of Directors is made up of five members appointed by the Terrell County Commissioners Court in accordance with the District Act.

C. Authority of District

The District has the authority and duties given to groundwater conservation districts by Texas Water Code Chapter 36, TWDB rules in 31 TAC Chapter 356, and the District Act. The District exercises its authority to preserve and protect the groundwater resources of the District through the adoption and implementation of this Management Plan and District rules, as they may be adopted and amended.

D. Location and Extent of District Boundaries

The District's boundaries consist of the entire territory within Terrell County.

E. Groundwater Resources of District

All of the territory within the District is located in the outcrop of the Edwards-Trinity (Plateau) Aquifer.

A diagram of the Edwards-Trinity Plateau aquifer can be found at Appendix A. The TWDB generally describes the groundwater resources of the Edwards Trinity Plateau aquifer as follows:

“The Edwards-Trinity (Plateau) Aquifer is a major aquifer extending across much of the southwestern part of the state. The water-bearing units are composed predominantly of limestone and dolomite of the Edwards Group and sands of the Trinity Group. Although maximum saturated thickness of the aquifer is greater than 800 feet, freshwater saturated thickness averages 433 feet. Water quality ranges from fresh to slightly saline, with total dissolved solids ranging from 100 to 3,000 milligrams per liter, and water is characterized as hard within the Edwards Group. Water typically increases in salinity to the west within the Trinity Group. Elevated levels of fluoride in excess of primary drinking water standards occur within Glasscock and Irion counties. Springs occur along the northern, eastern, and southern margins of the aquifer primarily near the bases of the Edwards and Trinity groups where exposed at the surface. San Felipe Springs is the largest exposed spring along the southern margin. Of groundwater pumped from this aquifer, more than two-thirds is used for irrigation, with the remainder used for municipal and livestock supplies. Water levels have remained relatively stable because recharge has generally kept pace with the relatively low amounts of pumping over the extent of the aquifer.”¹

¹ George, Mace, and Petrossian, Aquifers of Texas, Texas Water Development Board Report 380, July 2011, p. 35, available at: http://www.twdb.texas.gov/publications/reports/numbered_reports/doc/R380_AquifersofTexas.pdf.

IV. CRITERIA FOR PLAN APPROVAL

A. Planning Horizon

This 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, 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.

B. Plan Adoption

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

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 C.

D. Coordination with Surface Water Management Entities

The District provided each of the surface water management entities within its boundaries with copies of this plan to coordinate on the development of this plan. Sample correspondence sent to each surface water management entity and a list of the surface water management entities who were provided a copy of the plan are attached to this plan as Appendix D.

V. ESTIMATES OF TECHNICAL INFORMATION REQUIRED BY 31 TAC § 356.52 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 Tex. Water Code § 36.1071(e)(3)(A)

Modeled available groundwater is defined in Section 36.001(25) of the Texas Water Code as “the amount of water that the executive administrator determines may be produced on an average annual basis to achieve a desired future condition established under Section 36.108.” The desired future condition of the aquifer may only be determined through joint planning with other groundwater conservation districts in the same Groundwater Management Area (“GMA”) as required by Section 36.108 of the Texas Water Code. Desired future condition is defined in Section 36.001(30) as “a quantitative description, adopted in accordance with Section 36.108, of the

desired condition of the groundwater resources in a management area at one or more specified future times.”

The District is part of GMA 7, and the groundwater conservation districts of GMA 7 last adopted desired future conditions (“DFCs”) for the Edwards Trinity (Plateau) Aquifer that were approved by the TWDB on July 29, 2010. The DFC adopted for the District is an average drawdown of no more than seven (7) feet for the Edwards Trinity (Plateau) Aquifer, and is based on Scenario 10 of the TWDB GAM Run 09-35. The Modeled Available Groundwater estimate associated with this DFC that applies to the District is 1,443 acre-feet/year. The 2016 round of joint groundwater planning is still in progress; GMA 7 last adopted DFCs on September 22, 2016, March 23, 2017, and March 22, 2018, and they were declared administratively complete by the TWDB on June 22, 2017. The District is currently waiting to receive Modeled Available Groundwater values for the Edwards Trinity (Plateau) Aquifer from the TWDB in accordance with 31 Tex. Admin. Code § 356.35. The 2010 modeled available groundwater and DFC information for the District is in Appendix E.

B. Amount of groundwater being used within the district on an annual basis — 31 TAC § 356.52 (a)(5)(B), 31 TAC § 356.10(2) and Tex. Water Code § 36.1071(e)(3)(B)

To estimate the annual amount of groundwater being used in the District, the District relies on TWDB’s Estimated Historical Water Use Survey data. Details on the total amount of groundwater use for the past 16 years based on TWDB Water Use Survey Data are attached to this plan as Appendix F.

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)

The estimate of the annual amount of recharge from precipitation to the aquifer within the District is based on Groundwater Availability Model (“GAM”) Run 13-012. GAM Run 13-012 provides that the annual amount of recharge from precipitation to the aquifer within the District is 41,490 acre feet. GAM Run 13-012 was conducted by the TWDB and is the most recent GAM Run available to assess the hydrogeology of the groundwater resources in the District. GAM Run 13-012 and the recharge data received from the TWDB are attached to this plan as Appendix G.

D. For each aquifer, the annual 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)

The estimate of the annual amount of water discharged to surface water

systems by the groundwater resources of the District based on GAM Run 13-012 is 46,671 acre feet. GAM Run 13-012 and details on the amount of water discharged to surface water systems in the District are provided in Appendix G.

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)

(1) Estimated annual volume of flow into the district within each aquifer in the district

The estimate of the amount of water flowing into the District within each aquifer in the District based on GAM Run 13-012 is 77,577 acre feet. GAM Run 13-012 and details on the amount of water flowing into the District within each aquifer are attached to this plan as Appendix G.

(2) Estimated annual volume of flow out of the district within each aquifer in the district

The estimates of the amount of water flowing out of the District within each aquifer in the District based on GAM Run 13-012 is 72,976 acre feet. GAM Run 13-012 and details on the amount of water flowing out of the District within each aquifer are attached to this plan as Appendix G.

(3) Estimated net annual volume of flow between each aquifer in the district

The estimate of the net annual volume of flow between each aquifer in the District based on GAM Run 13-012 is 0 acre feet. GAM Run 13-012 and details on the amount of water flowing between each aquifer in the District are attached to this plan as Appendix G.

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)

The most recently adopted state water plan is the 2017 State Water Plan. This Plan indicates a projected surface water supply for the District of approximately 720 acre feet per year for years 2020 through 2070. Data received from TWDB on the amount of surface water supply in the District is attached to this plan as 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)

The 2017 State Water Plan indicates a projected total water demand for the area within the District of 1,178 acre feet per year for year 2070. Details on the total demand for water in the District based on the 2017 State Water Plan are attached to this plan as Appendix I.

VI. CONSIDER THE WATER SUPPLY NEEDS AND WATER MANAGEMENT STRATEGIES INCLUDED IN THE ADOPTED STATE WATER PLAN — TEX. WATER CODE § 36.1071(E)(4)

The District has reviewed the 2017 State Water Plan data on water supply needs and water management strategies within the District. TWDB defines “water supply needs” as the projected water demands that are in excess of existing water supplies for a water user group or wholesale water provider. TWDB defines “recommended water management strategy” as a specific project or action to increase water supply or maximize existing supply to meet a specific need. The 2017 State Water Plan projects that Terrell County will have a surplus of water for its needs related to county-other, irrigation, livestock, and service to the community of Sanderson. The 2017 State Water Plan projects a water supply need in Terrell County related to mining of 449 acre-feet by 2020, rising to 552 acre-feet by 2030, and then decreasing to 161 acre-feet by 2070. There are no water management strategies identified in the 2017 State Water Plan for Terrell County. A table of the data showing the water supply needs and water management strategies contemplated for the District in the 2017 State Water Plan is attached to this plan as Appendix J.

VII. DETAILS ON THE MANAGEMENT OF GROUNDWATER SUPPLIES IN THE DISTRICT — 31 TAC § 356.52(a)(4)

The Texas Legislature has established that groundwater conservation districts are the state's preferred method of groundwater management. Chapter 36 of the Texas Water Code requires the District to work within GMA 7 to establish DFCs for the aquifers within the District’s boundaries, have management goals that address the DFCs and modeled available groundwater calculations in this Management Plan, and then adopt and enforce rules to manage the groundwater resources in a way that allows the adopted desired future conditions to be achieved. 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.

One of the District's objectives is to lessen the interference between wells. The District plans to establish spacing rules which require new wells to be spaced a certain distance from existing or previously permitted wells. Another way the District can work to lessen interference between wells is to require all existing and new wells to register with the District once the District develops permanent rules. This requirement will allow the District to have information on the location and proximity of all wells within its boundaries.

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 will also require 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 plans to use the regulatory tools granted to districts by Chapter 36 to preserve and protect the existing use 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. The District strives to protect existing and historic use in accordance with Chapter 36, the District's rules, and the goals and objectives of this Management Plan.

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 will also adopt 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 Chapter 36 of the Texas Water Code and the District's rules.

VIII. 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 120 days following the end of the previous calendar 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 will begin following the end of calendar year 2015. 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.

IX. ACTIONS, PROCEDURES, PERFORMANCE, AND AVOIDANCE FOR PLAN IMPLEMENTATION — 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.

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.

Section 36.108 of the Texas Water Code requires the District to work and plan with other groundwater conservation districts in GMA 7. The District will use this Management Plan as part of its cooperation efforts with the groundwater conservation districts in GMA 7.

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

Each of the District's management goals, objectives, and performance standards are provided in this Section X. As required by TWDB rules, each management goal is time-based and quantifiable. For each management goal, the District has a clear management objective that is specific and provides time-based statements of future outcomes and an associated performance standard that allows the District to evaluate the effectiveness of the District's activities.

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's rules will require the registration of all existing and new wells within the District's boundaries. The District will establish a well registration process in the District's rules.

Performance Standard: The District Board will review and discuss the number of existing and new wells registered with the District during at least one meeting of the Board each year.

2. Objective: The District's rules will require permits for all groundwater use located in the District that is considered to be non-exempt from the District's permitting requirements based upon Chapter 36 of the Texas Water Code and the District's rules. The District will establish a permitting process 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. The District Board will review and discuss the number of permit applications accepted and processed by the District during at least one meeting of the Board each year.

B. Controlling and Preventing Waste of Groundwater – 31 TAC § 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:
 - 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 District will provide information to the public on reducing and preventing the waste of groundwater at least once each year.

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 Board will review and discuss the number of well owners who violated the District's prohibition on waste and any action taken by the District during at least one Board meeting each year.

C. 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 send a District representative to attend meetings of the Far West Texas Regional Water Planning Group ("Region E").

Performance Standard: A representative of the District will attend at least one Region E meeting each calendar year and will provide an update to the District Board at a District Board meeting.

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

1. Objective: The District will monitor water quality on an annual basis within the District by obtaining water quality samples from at least one water well in the District.

Performance Standard: The District's Annual Report will include a summary of the number of water quality samples obtained and the results of the water quality tests for each well sampled.

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

1. Objective: The District will access the updated Palmer Drought Severity Index ("PDSI") map and will check for updates to the Drought Preparedness Council Situation Report ("Situation Report") posted on the following website: <https://www.dps.texas.gov/dem/sitrep/default.aspx>.

Performance Standard: The District will review and discuss current drought conditions based on information from PDSI maps and Situation Reports during at least one Board meeting each year.

F. Addressing Conservation, Recharge Enhancement, Rainwater Harvesting, Precipitation Enhancement, and Brush Control, where Appropriate and Cost Effective – 31 TAC § 356.52 (a)(1)(G) and Tex. Water Code § 36.1071(a)(7)

1. Objective: The District will provide information to the public on water conservation 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 will provide information to the public on water conservation at least once each year.

2. Objective: The District will promote rainwater harvesting by providing information to the public 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 will provide information on rainwater harvesting to the public at least once each year.

3. Objective: The District will inform the public about the benefits of brush control 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 will provide information to the public on brush control at least once each year.

G. Addressing the Desired Future Conditions Established Under Tex. Water Code § 36.108 – 31 TAC § 356.52(a)(1)(H) and Tex. Water Code § 36.1071(a)(8)

1. Objective: The District will develop a groundwater well network to monitor water well levels within the District. The District will work with the TWDB, the United States Geological Survey, and any other applicable agencies and develop a plan to utilize data from existing monitoring wells in the District for purposes of monitoring water levels. The District will also develop a plan for adding new monitoring wells into its monitoring network. The District will take periodic readings from the

monitoring wells in its monitoring well network and will utilize the information to help implement its regulatory and permitting program. The District will use the data received from its monitoring well network to monitor water level trends and actual achievement of its desired future conditions.

Performance Standard: Upon development of the District's monitoring well network, a summary of the District's monitoring well network, including the number and general location of each of the wells in the network, will be included in the District's Annual Report.

2. *Objective:* Upon development of the District's monitoring well network, the District will conduct water level measurements from at least 50% of the wells in the network on an annual basis.

Performance Standard: The District's Annual Report will evaluate water level measurements taken during the previous calendar year and will include a discussion of the water levels and progress towards achieving the District's desired future condition.

3. *Objective:* After the District adopts permanent rules, the District will monitor estimates of non-exempt groundwater production within the District for use in evaluating achievement of the desired future condition.

Performance Standard: After the District adopts permanent rules, the District will provide an update on the estimates of non-exempt groundwater production within the District and will include a discussion of the estimates in light of the desired future condition.

XI. MANAGEMENT GOALS DETERMINED NOT APPLICABLE TO THE DISTRICT

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

The District has not been advised as to any subsidence issues that exist within the boundaries of the District. Therefore, this management goal is not applicable.

B. Addressing Recharge Enhancement – 31 TAC § 356.52(a)(1)(G) and Tex. Water Code § 36.1071(a)(7).

Recharge enhancement is not an appropriate goal for the District at this time. The District was confirmed by the voters in November 2012 and the costs associated with recharge enhancement make such an effort cost-prohibitive for the District at this time.

C. Addressing Precipitation Enhancement – 31 TAC § 356.52(a)(1)(G) and Tex. Water Code § 36.1071(a)(7).

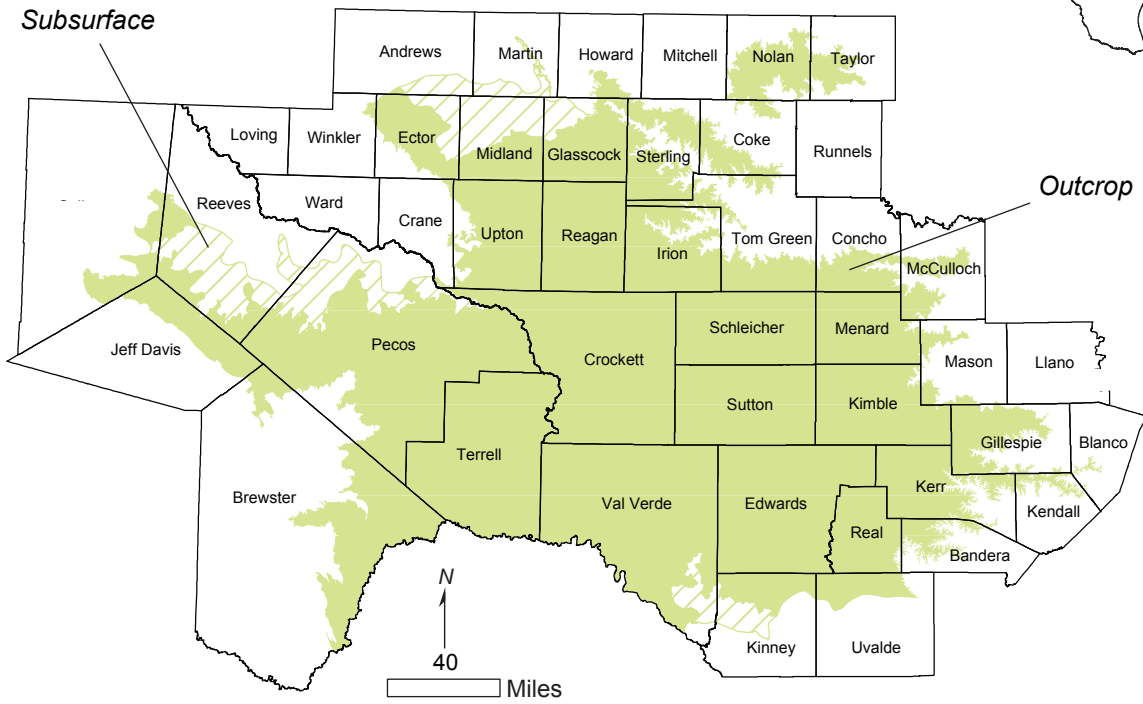
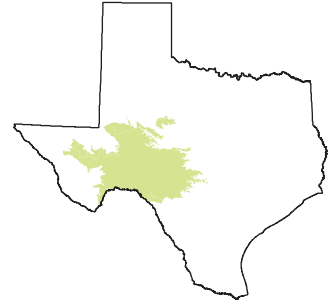
The District recognizes the significant expense associated with precipitation enhancement programs and is currently unable to develop a precipitation enhancement program for this reason.

APPENDICES LIST

- Appendix A Diagram of the Edwards Trinity (Plateau) Aquifer
- Appendix B Public Notices
- Appendix C Board Resolution Adopting Management Plan
- Appendix D Evidence of Coordination with Surface Water Management Entities
- Appendix E Information on Modeled Available Groundwater / Desired Future Conditions (31 TAC § 356.52(a)(5)(A) / Tex. Water Code § 36.1071(e)(3)(A))
- Appendix F Information on Water Use (31 TAC §§ 356.52(a)(5)(B) and 356.10(2) / Tex. Water Code § 36.1071(e)(3)(B))
- Appendix G Information in GAM Run 13-012 on Recharge, Volume of Water that Discharges to Surface Water, and Annual Volume of Flow Into the District, Out of the District, and Between Aquifers in the District (31 TAC § 356.52(a)(5)(C)-(E) / Tex. Water Code § 36.1071(e)(3)(C)-(E))
- Appendix H Information on Projected Surface Water Supplies (31 TAC § 356.52(a)(5)(F) / Tex. Water Code § 36.1071(e)(3)(F))
- Appendix I Information on Projected Total Demand for Water (31 TAC § 356.52(a)(5)(G) / Tex. Water Code § 36.1071(e)(3)(G))
- Appendix J Information on Water Supply Needs in the District (Tex. Water Code § 36.1071(e)(4))

APPENDIX A

Edwards-Trinity (Plateau) Aquifer



APPENDIX B

**TERRELL COUNTY GROUNDWATER CONSERVATION DISTRICT
NOTICE OF PUBLIC HEARING ON
PROPOSED RE-ADOPTION OF DISTRICT MANAGEMENT PLAN**

The Terrell County Groundwater Conservation District (TCGCD) will hold a public hearing on the proposed re-adoption of the TCGCD's Groundwater Management Plan on Wednesday, July 25, 2018 at 5:00 pm in the Commissioners' Courtroom at the Terrell County Courthouse located at 105 East Hackberry, Sanderson, Texas 79848. All interested parties are invited to attend.

At the conclusion of the hearing or any time or date thereafter, the proposed TCGCD Management Plan may be adopted in the form presented or as amended based upon comments received from the public, the Texas Water Development Board, District staff, attorneys, geoscientists, or members of the Board of Directors without any additional notice. Any person who desires to appear at the hearing and present comment or other information on the proposed TCGCD Management Plan may do so in person, by counsel, or both. Comments may be presented verbally or in written form.

A copy of the proposed TCGCD Management Plan may be requested by email to hging@lglawfirm.com or downloaded at http://co.terrell.tx.us/default.aspx?Terrell_County/Ground.Water. All questions or requests for additional information may be submitted to Ty Embrey by telephone at (512) 322-5829.

The TCGCD is committed to compliance with the Americans with Disabilities Act (ADA). Reasonable accommodations and equal opportunity for effective communications will be provided upon request. Please call 254-965-6705 at least 24 hours in advance if accommodation is needed.

No. _____

FILED: TIME 11:30AM

Martha Allen
JUL 05 2018
CLERK, COUNTY COURT, TERRELL CO., TEXAS

BY: *R. Thompson* DEPUTY

FORT STOCKTON PIONEER
210 N NELSON
FORT STOCKTON, TEXAS 79735

PUBLISHER'S AFFIDAVIT

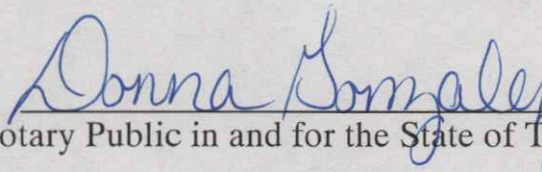
BEFORE ME, the undersigned notary public, this day personally appeared Steve Fountain, Publisher/Editor, of *The Fort Stockton Pioneer*, a newspaper having general circulation in Pecos County, Texas, who being by me duly sworn, deposes and says that the foregoing attached notice was published in said newspaper on the following dates, to wit:

July 5, 2018



Steve Fountain, Publisher

SUBSCRIBED AND SWORN TO before me this the 5 day of July, 2018, to certify which witness my hand and seal of office



Notary Public in and for the State of Texas



Notary Seal

LEGAL NOTICES

NOTICE TO CREDITORS

Notice is hereby given that original Letters Testamentary for the Estate of RUBEN DALE HOUSTON, Deceased, were issued on June 27, 2018, in Cause No. PR-3318, pending in the County Court of Pecos County, Texas, to BELVA HOUSTON.

All persons having claims against this Estate which is currently being administered are required to present them to the undersigned within the time and in the manner prescribed by law.

c/o: JEFF A. WOFFORD Attorney At Law P.O. Box 190 Fort Stockton, TX 79735

DATED the 27th day of June, 2018.

/s/ Jeff Wofford JEFF WOFFORD Attorney for BELVA HOUSTON State Bar No.: 24048895 P.O. BOX 190 FORT STOCKTON, TX 79735 Telephone: (432) 336-7015 Facsimile: (432) 336-5523

ORDINANCE NO. 18-117

AN ORDINANCE AMENDING CHAPTER 23, TRAFFIC AND VEHICLES, ARTICLE VI, STOPPING, STANDING AND PARKING, SEC. 23-113, PARKING OF CERTAIN VEHICLES, TRUCKS, TRAILERS, ETC. ON STREETS OR ALLEYS WITHIN THE CITY LIMITS, OF THE CODE OF THE CITY OF FORT STOCKTON, TEXAS; CONTAINING A SEVERABILITY CLAUSE, CONFLICTS CLAUSE, & PENALTY CLAUSE, PROVIDING FOR AN EFFECTIVE DATE; AND ORDERING PUBLICATION.

WHEREAS, the City Council has determined that the changes set forth would be in the best interest of the citizens of the City of Fort Stockton;

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF FORT STOCKTON, PECOS COUNTY, TEXAS, THAT:

CHAPTER 23, TRAFFIC AND VEHICLES, ARTICLE VI, STOPPING, STANDING AND PARKING, SEC. 23-113, PARKING OF CERTAIN VEHICLES, TRUCKS, TRAILERS, ETC. ON STREETS OR ALLEYS WITHIN THE CITY LIMITS

IS HEREBY AMENDED TO READ AS FOLLOWS:

- (a) It shall be unlawful to park any vehicle or trailer with six (6) or more wheels and with a license weight capacity of more than one (1) ton to park on any street or alley within the city limits, provided that nothing in this section shall be construed to prevent vehicles or trailers of more than six (6) wheels and a licensed weight capacity of more than one (1) ton from parking on a city street or alley when such parking is necessary for unloading or loading in connection with deliveries or pickups during the time when such a vehicle or trailer is required for those purposes.
(b) It shall be unlawful to park any vehicle, truck, trailer, boat, recreational vehicle, or other type of delivery truck with a load carrying capacity of more than one (1) ton on any street or alley within the city limits, provided that nothing in this section shall be construed to prevent such vehicles or trailers with a load carrying capacity of more than one (1) ton from parking on a city street or alley when such parking is necessary for unloading or loading in connection with deliveries or pickups, or for a maximum period of seventy-two (72) hours during a thirty (3) day period.
(c) It shall be unlawful to park any vehicle, truck, trailer, boat, or recreational vehicle having a weight of one (1) ton, or more, within the front yard of any lot in a residential district or any other lot used for residential purposes; provided that nothing in this section shall be construed to prevent the parking of any such vehicles or trailers in such front yard during the process of loading or unloading, or for a maximum period of seventy-two (72) hours during a thirty-day period. A front yard is defined as that portion of a residential lot lying between the front street right-of-way line of such lot to the nearest front exterior wall of a residential building.
(d) Enforcement. The Fort Stockton Police Department shall be responsible for enforcement of all provisions of this section pertaining to public streets, alleys and other public property. The City Code Enforcement Department shall be responsible for all other provisions of this section.

Severability. If any provision, sections, exceptions, subsections, paragraph, sentence, clause or phase of this ordinance or the application of same to any person or set of circumstances, shall for any reason be held unconstitutional, void or invalid, such invalidity shall not affect the validity of the remaining provisions of this ordinance or their application to other persons or sets of circumstances and to this end all provisions of this ordinance are declared to be severable.

Conflicts. All ordinances or parts of ordinances inconsistent with the terms of this ordinance are hereby repealed; provided however, that such repeal shall be only to the extent of such inconsistency and in all other respects this ordinance shall be cumulative of other ordinances regulating and governing the subject matter covered by this ordinance.

Penalty. The penalty for violation of this ordinance shall be in accordance with the General Penalty Provisions contained in Section 1-14 of the City Code of Fort Stockton, Texas, which provides for a fine not to exceed one thousand dollars (\$1,000.00).

Publication. The City Secretary is hereby authorized and directed to publish the descriptive caption of this ordinance in the manner and for the length of time prescribed by the law as an alternative method of publication.

This ordinance shall become effective upon first & final reading and its publication pursuant to law. PASSED AND APPROVED THIS 26th day of June, 2018.

Frank Rodriguez III, City Manager; Joe Chris Alexander, Mayor; Doreen A. Gonzalez, City Secretary; Approved As To Form & Legality; John (Jack) M. Smith, City Attorney

LEGAL NOTICES

TERRELL COUNTY GROUNDWATER CONSERVATION DISTRICT NOTICE OF PUBLIC HEARING ON PROPOSED RE-ADOPTION OF DISTRICT MANAGEMENT PLAN

The Terrell County Groundwater Conservation District (TCGCD) will hold a public hearing on the proposed re-adoption of the TCGCD's Groundwater Management Plan on Wednesday, July 25, 2018 at 5:00 pm in the Commissioners' Courtroom at the Terrell County Courthouse located at 105 East Hackberry, Sanderson, Texas 79848. All interested parties are invited to attend.

At the conclusion of the hearing or any time or date thereafter, the proposed TCGCD Management Plan may be adopted in the form presented or as amended based upon comments received from the public, the Texas Water Development Board, District staff, attorneys, geoscientists, or members of the Board of Directors without any additional notice. Any person who desires to appear at the hearing and present comment or other information on the proposed TCGCD Management Plan may do so in person, by counsel, or both. Comments may be presented verbally or in written form.

A copy of the proposed TCGCD Management Plan may be requested by email to hgning@glawfirm.com or downloaded at http://co.terrell.tx.us/default.aspx?Terrell_County/Ground.Water. All questions or requests for additional information may be submitted to Ty Embrey by telephone at (512) 322-5829.

The TCGCD is committed to compliance with the Americans with Disabilities Act (ADA). Reasonable accommodations and equal opportunity for effective communications will be provided upon request. Please call 254-965-6705 at least 24 hours in advance if accommodation is needed.

ORDINANCE NO. 18-119

AN ORDINANCE OF THE CITY OF FORT STOCKTON, PECOS COUNTY, TEXAS, ADOPTING A GENERAL RESIDENTIAL HOMESTEAD TAX EXEMPTION ON A PERCENTAGE OF A PROPERTY'S APPRAISED VALUE IN A TAX YEAR WITH A \$5,000 GUARANTEED MINIMUM TO A 20% MAXIMUM ON AD VALOREM TAXATION, AS AUTHORIZED BY SECTION §11.13(n) OF THE TEXAS PROPERTY CODE; PROVIDING FOR A SEVERABILITY CLAUSE; PROVIDING FOR OPEN MEETINGS AND EFFECTIVE DATE CLAUSES; AND PROVIDING FOR RELATED MATTERS.

WHEREAS, The City of Fort Stockton, Texas (herein the "City"), desires to amend and implement certain Ad Valorem Tax Exemptions to Residence Homesteads within the City; &

WHEREAS, Section § 11.13(n) of the Texas Property Tax Code provides that the City Council may adopt a General Residential Homestead Exemption from Ad Valorem Taxes, entitling Residential Homestead Owners to an exemption from taxation by a taxing unit of a percentage of the appraised value of the individuals residence homestead; &

WHEREAS, it is determined by City Council that this exemption is in the best interest of the citizens of the City to enact such exemption as detailed and specified herein from Ad Valorem Property Taxes.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF FORT STOCKTON, PECOS COUNTY, TEXAS, THAT:

SECTION 1. Findings of Fact. The foregoing recitals are hereby found to be true and correct and are hereby adopted by the City Council and made a part hereof for all purposes as findings of fact.

SECTION 2. Adoption of Homestead Exemption. As authorized by Texas Property Tax Code Section § 11.13(n), the City Council hereby adopts an allowance from Ad Valorem Taxes for City Property Owners on their property's appraised value in a tax year with a \$5,000 Guaranteed Minimum Or 20% (20% Maximum) of the appraised value of a residence homestead, whichever is greater.

SECTION 3. Conflicting Ordinances. All prior ordinances of the City are hereby amended only to the extent of any conflict with the exemptions set forth herein, and all ordinances or parts thereof conflicting or inconsistent with the provisions of this Ordinance adopted and amended herein are hereby amended to the extent of such conflict. In the event of a conflict or inconsistency between this Ordinance and any other code or ordinance of the City, the terms and provisions of this Ordinance shall govern.

SECTION 4. Severability. Should any section or part of this Ordinance be held unconstitutional, illegal, or invalid, or the application to any person or circumstance thereof ineffective or inapplicable, such unconstitutionality, illegality, invalidity, or ineffectiveness of such section or part shall in no way affect, impair or invalidate the remaining portion or portions thereof; but as to such remaining portion or portions, the same shall be and remain in full force and effect and to this end the provisions of this Ordinance are declared to be severable.

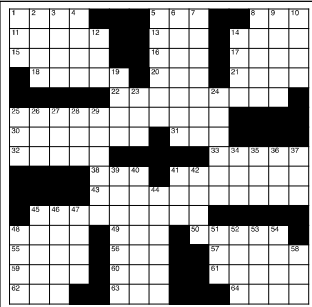
SECTION 5. Effective Date. This Ordinance shall take effect October 1, 2018 from and after its passage. The City Council hereby instructs the City Secretary to provide a certified copy of this Ordinance to the Pecos County Appraisal District and Pecos County Tax Assessor Collector.

SECTION 6. Open Meetings. It is hereby officially found and determined that the meeting at which this Ordinance is passed was open to the public as required and that public notice of the time, place, and purpose of said meeting was given as required by the Open Meetings Act, Chapter 551, Tex. Gov't Code.

PASSED AND APPROVED this 26th day of June, 2018.

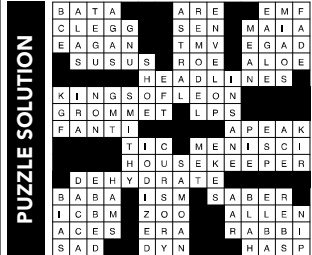
Frank Rodriguez III, City Manager; Joe Chris Alexander, Mayor; Doreen A. Gonzalez, City Secretary; Approved As To Form & Legality; John (Jack) M. Smith, City Attorney

GARAGE SALES DUE BY: TUESDAY @ NOON



- CLUES ACROSS
1. Guinea seaport
5. They
8. Electromotive force
11. "McVicar" director
13. Monetary unit
14. Mother of Hermes
15. Broadway actress Daisy
16. Tobacco mosaic virus
17. Expression of surprise
18. African financial intermediaries
20. Fully ripe egg
21. Surgical tube
22. Editors write them
23. Nashville-based rockers
30. Surgical tube
31. Lasting records
32. Member of Ghanaese tribe
33. Being in a vertical position
38. Spasmodic contraction
41. Carriage docks
43. Domestic help
45. A way of drying out
48. Small sponge cake
49. Distinctive practice or philosophy
50. Sword
55. Type of missile (abbr.)
56. Home to various animals
57. American comedian Tim
59. Scores perfectly
60. A major division of geological time
61. Spiritual leader
62. Unhappy
63. Unit of force (abbr.)
64. Door part

- CLUES DOWN
1. Academic degree
2. Expression of sorrow or pity
3. Large, stocky lizard
4. Romanian river
5. Stellar
6. A way to change
7. Surround completely
8. A Philly footballer
9. Dinosaur shuang...urus
10. Slowly disappear
12. Large antelope
14. Not nice
19. Piece of footwear
23. Newt
24. Seriously mentally ill
25. Kilograms force (abbr.)
26. Terrorist group
27. Negative
28. Time zone
29. A blacksmith's workshop
34. Raked desert
35. A way to penetrate uniquely
36. Breeze through
37. Dry white wine drink
39. Treated with iodine
40. Not thorough
41. Famous museum
42. Supplements with difficulty
44. Polynesian language
45. Bangladesh capital (var. sp.)
46. ...and flowed
47. Excessively theatrical actors
48. Prejudice
51. Swiss river
52. Nonsense (slang)
53. "Luther" actor
54. Resist authority (slang)
58. Pinch



TRAILERS/RVS ARE YOU ADVERTISING? You have to fish where there are fish. WE'RE THE BIG POND. For sale: 1998 Mobile Scout all aluminum 31' long bumper pull. New A/C and Refrigerator. Call 432-224-7782.

TRAILERS/RVS TRAILERS/RVS HOME AWAY FROM HOME COMFORT in the OIL PATCH 1991 - 28-FOOT DUTCHMEN - SKAMPER Bumper Pull Set-up 4x bunk beds - easily convert to queen. Currently sleeps 6x; full kitchen, shower bath, etc. Always Garage Protected - Good condition View Fort Stockton, Texas Sell - NOT rent PH: (214) 912-2262 Reasonable offers entertained

PUBLISHER'S NOTICE: All real estate advertising in this newspaper is subject to the Fair Housing Act which makes it illegal to advertise "any preference, limitation or discrimination based on race, color, religion, sex, handicap, familial status or national origin, or an intention or discrimination." Familial status includes children under the age of 18 living with parents or legal custodians, pregnant women and people securing custody of children under 18. This newspaper will not knowingly accept any advertising for real estate which is a violation of the law. Our readers are hereby informed that all dwellings advertised in this newspaper are available on an equal opportunity basis. To complain of discrimination call HUD toll-free at 1-800-669-9777. The toll-free telephone number for the hearing impaired is 1-800-927-9275.

Business & Service Directory Come by to see us, or give us a call to have your business ad placed here. JUST \$19 A WEEK The FORT STOCKTON PIONEER Call 432-336-2281

TERRELL COUNTY SUN
P.O. BOX 389
SANDERSON, TEXAS 79848

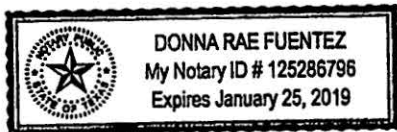
PUBLISHER'S AFFIDAVIT

BEFORE ME, the undersigned notary public, this day personally appeared Sharon Wolfe, Publisher/Editor, of the Terrell County Sun, a newspaper in Terrell County, Texas, who being by me duly sworn, deposes and says that the foregoing attached notice was published in said newspaper on the following dates, to wit:

July 5, 2018

Sharon Wolfe
Publisher

SUBSCRIBED AND SWORN TO before me this the 15th day of August, 2018, to certify which witness my hand and seal of office



Donna Fuentez
Notary Public in and for the State of Texas

Notary Seal

TERRELL COUNTY GROUNDWATER
CONSERVATION DISTRICT
NOTICE OF PUBLIC HEARING ON
PROPOSED RE-ADOPTION OF DISTRICT
MANAGEMENT PLAN

The Terrell County Groundwater Conservation District (TCGCD) will hold a public hearing on the proposed re-adoption of the TCGCD's Groundwater Management Plan on Wednesday, July 25, 2018 at 5:00 pm in the Commissioners' Courtroom at the Terrell County Courthouse located at 105 East Hackberry, Sanderson, Texas 79848. All interested parties are invited to attend.

At the conclusion of the hearing or any time or date thereafter, the proposed TCGCD Management Plan may be adopted in the form presented or as amended based upon comments received from the public, the Texas Water Development Board, District staff, attorneys, geoscientists, or members of the Board of Directors without any additional notice. Any person who desires to appear at the hearing and present comment or other information on the proposed TCGCD Management Plan may do so in person, by counsel, or both. Comments may be presented verbally or in written form.

A copy of the proposed TCGCD Management Plan may be requested by email to hging@lglawfirm.com or downloaded at http://co.terrell.tx.us/default.aspx?Terrell_County/Groundwater. All questions or requests for additional information may be submitted to Ty Embrey by telephone at (512) 322-5829.

The TCGCD is committed to compliance with the Americans with Disabilities Act (ADA). Reasonable accommodations and equal opportunity for effective communications will be provided upon request. Please call 254-965-6705 at least 24 hours in advance if accommodation is needed.

Submit news and information to
news@tcsun.org
120 W. Oak St. (432) 345- 2147
or drop in drop box

Terrell County
For...

**NOTICE OF PUBLIC HEARING AND REGULAR MEETING
OF THE
TERRELL COUNTY GROUNDWATER CONSERVATION DISTRICT**

at the
**Commissioners Courtroom, Terrell County Courthouse
105 East Hackberry, Sanderson, TX 79848**

Wednesday, July 25, 2018 at 5:00 p.m.

Public Hearing on District Management Plan Agenda

1. Call to order, declare hearing open to the public, and take roll.
2. Hearing and public comment on 2018 Management Plan Revisions.
3. Discuss and possibly take action on Re-Adoption of Revised District Management Plan.
4. Adjourn.

NO. _____
FILED: TIME 11:45 AM

Regular Board Meeting Agenda

1. Call to order, declare meeting open to the public, and take roll.
2. Discuss, consider, and act on minutes of the June 27, 2018 Regular Board Meeting.
3. Discuss, consider, and act on status of well registration and permit application processes.
4. Discuss, consider, and act on District financial and revenue issues, including:
 - a. Update on funds received from Terrell County Appraisal District and District Bank accounts.
 - b. Payment of bills.
 - c. District financial audit for fiscal year 2018.
5. Conduct Public Meeting on Desired Future Conditions (DFCs) of Relevant Aquifers within the District in Groundwater Management Area (GMA) 7.
6. Discuss, consider, and act on Resolution to Adopt DFCs of Relevant Aquifers within the District in GMA 7.
7. Discuss, consider, and act on GMA 7 activities.
8. Discuss, consider, and act on pending Texas Water Development Board and/or Texas Commission on Environmental Quality matters.
9. Discuss, consider, and act on date and time for next meeting of Board of Directors.
10. Discuss, consider, and act on new business for next meeting agenda.
11. Public comment (3 minute limit per person not to exceed 30 minutes total).
12. Adjourn.

JUL 19 2018
MARTHA ODOER
CLERK, COUNTY COURT, TERRELL CO., TEXAS
DEPUTY

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 (512) 322-5829 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 Terrell County 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 C

WHEREAS, the Board met in a public meeting on July 25, 2018, properly noticed in accordance with appropriate law, after holding a public hearing on the attached revised Management Plan, considered the readoption of the Management Plan, and considered approval of this resolution.

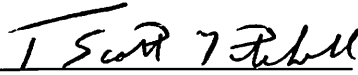
NOW, THEREFORE, BE IT RESOLVED THAT:

1. The above recitals are true and correct.
2. The Board of Directors hereby readopts the attached Management Plan as the Management Plan of the District, including any revisions made based on comments received from the public at the public hearing or Board meeting, or based on recommendations from the District Board, legal counsel, or TWDB.
3. The Board, legal counsel, and/or any District staff are further authorized to take all action necessary to implement this resolution and submit the revised Management Plan to the TWDB for its approval.
4. The Board, legal counsel, and/or any District staff are further authorized to take all action necessary to coordinate with the TWDB as may be required in furtherance of TWDB's approval pursuant to the provisions of Section 36.1072 of the Texas Water Code.

AND IT IS SO ORDERED.

PASSED AND ADOPTED on this 25th day of July, 2018.

TERRELL COUNTY GROUNDWATER CONSERVATION DISTRICT

By: 
Scott Mitchell
Board President

ATTEST:


Thaddeus Cleveland
Board Secretary

APPENDIX D

August 21, 2018

Mr. Tom Lowrance
Terrell County WCID No. 1
P.O. Box 569
Sanderson, Texas 79848

RE: Terrell County Groundwater Conservation District Management Plan

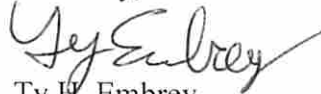
Dear Mr. Lowrance:

Enclosed please find a copy of the revised Management Plan readopted by the Terrell County Groundwater Conservation District (the District). The District's mission is to conserve, preserve, and protect the quality and quantity of the groundwater resources for the citizens within Terrell County. The Texas Legislature created the District in 2011 and the voters of Terrell County confirmed the creation of the District on November 6, 2012.

The District submits the enclosed Management Plan to you pursuant to Section 36.1071(a) of the Texas Water Code and the Texas Water Development Board's rules (Title 31 Texas Administrative Code, Section 356.51). The District asks for your review and comment as part of the District's effort to coordinate and seek input on the District's comprehensive groundwater management goals. The District's Board of Directors (Board) held a public hearing and subsequently readopted the enclosed Management Plan at its Board meeting on July 25, 2018.

The District is committed to working with the Terrell County WCID No. 1 to manage the groundwater resources within its boundaries. Please contact me at (512) 322-5829 or tembrey@lglawfirm.com if you have any questions regarding the District's Management Plan or other District activities.

Sincerely,



Ty H. Embrey
Attorney for the District

Enclosure: Copy of District's Adopted Management Plan

cc: Mr. Scott Mitchell, Board President
Terrell County Groundwater Conservation District

Mr. Embrey's Direct Line: (512) 322-5829
Email: tembrey@lglawfirm.com

August 21, 2018

Independence Creek Preserve / Lower Pecos
The Nature Conservancy
P.O. Box 150
Dryden, Texas 78551

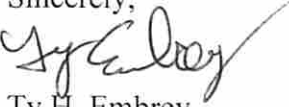
RE: Terrell County Groundwater Conservation District Management Plan

To Whom It May Concern:

Enclosed please find a copy of the revised Management Plan readopted by the Terrell County Groundwater Conservation District (the District). The District's mission is to conserve, preserve, and protect the quality and quantity of the groundwater resources for the citizens within Terrell County. The Texas Legislature created the District in 2011 and the voters of Terrell County confirmed the creation of the District on November 6, 2012.

The District submits the enclosed Management Plan to you pursuant to Section 36.1071(a) of the Texas Water Code and the Texas Water Development Board's rules (Title 31 Texas Administrative Code, Section 356.51). The District asks for your review and comment as part of the District's effort to coordinate and seek input on the District's comprehensive groundwater management goals. The District's Board of Directors (Board) held a public hearing and subsequently readopted the enclosed Management Plan at its Board meeting on July 25, 2018.

The District is committed to working with The Nature Conservancy to manage the groundwater resources within its boundaries. Please contact me at (512) 322-5829 or tembrey@lglawfirm.com if you have any questions regarding the District's Management Plan or other District activities.

Sincerely,

Ty H. Embrey
Attorney for the District

Enclosure: Copy of District's Adopted Management Plan

cc: Mr. Scott Mitchell, Board President
Terrell County Groundwater Conservation District

APPENDIX E

GAM RUN 10-043 MAG (VERSION 2): MODELED AVAILABLE GROUNDWATER FOR THE EDWARDS-TRINITY (PLATEAU), TRINITY, AND PECOS VALLEY AQUIFERS IN GROUNDWATER MANAGEMENT AREA 7

by Jerry Shi, Ph.D., P.G.
Texas Water Development Board
Groundwater Resources Division
Groundwater Availability Modeling Section
(512) 463-5076
November 12, 2012



The seal appearing on this document was authorized by Jianyou (Jerry) Shi, P.G. 11113 on November 12, 2012.

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GAM RUN 10-043 MAG (VERSION 2): MODELED AVAILABLE GROUNDWATER FOR THE EDWARDS-TRINITY (PLATEAU), TRINITY, AND PECOS VALLEY AQUIFERS IN GROUNDWATER MANAGEMENT AREA 7

by Jerry Shi, Ph.D., P.G.
Texas Water Development Board
Groundwater Resources Division
Groundwater Availability Modeling Section
(512) 463-5076
November 12, 2012

EXECUTIVE SUMMARY:

The modeled available groundwater values for Groundwater Management Area 7 for the Edwards-Trinity (Plateau), Trinity, and Pecos Valley aquifers are summarized in Table 1. These values are also listed by county (Table 2), river basin (Table 3), and regional water planning area (Table 3). The modeled available groundwater values for the relevant aquifers in Groundwater Management Area 7 were initially based on Scenario 10 of GAM Run 09-035. In GAM Run 09-035, the Edwards-Trinity (Plateau), Trinity, and Pecos Valley aquifers were simulated and reported together. Though the desired future condition statement, specifying an average drawdown of 7 feet, only explicitly references the Edwards-Trinity (Plateau) Aquifer, it is the intent of the districts to also incorporate the Trinity and Pecos Valley aquifers. This was confirmed by Ms. Caroline Runge of Menard Underground Water District acting on behalf of Groundwater Management Area 7 in an e-mail to Ms. Sarah Backhouse at the Texas Water Development Board on June 6, 2012. The results here, therefore, contain information for each of these three aquifers. The modeled available groundwater from the Edwards-Trinity (Plateau), Trinity, and Pecos Valley aquifers in Groundwater Management Area 7 that achieves the requested desired future conditions is approximately 449,400 acre-feet per year from 2010 to 2060.

Earlier draft versions of this report showed modeled available groundwater for portions of the Edwards-Trinity (Plateau) Aquifer within the Lipan-Kickapoo Water Conservation District, the Lone Wolf Groundwater Conservation District, the Hickory Underground Water Conservation District No. 1, and the portion of the Trinity Aquifer within the Uvalde Underground Water Conservation District. However, Groundwater Management Area 7 declared those counties “not relevant” for joint planning purposes. Since modeled available groundwater only applies to areas with a specified desired future condition, we updated this report to depict modeled available groundwater only in counties with specified desired future conditions.

The modeled available groundwater for Kinney County Groundwater Conservation District previously reported in Draft GAM Run 10-043 MAG (Shi and Oliver, 2011) dated January 26, 2011, has been updated in a new model run and is presented in this report. The new model run is an update of Scenario 3 of Groundwater Availability Modeling Task 10-027, which meets the desired future conditions for the area adopted by the districts of Groundwater Management Area 7.

REQUESTOR:

Mr. Allan Lange of Lipan-Kickapoo Water Conservation District on behalf of Groundwater Management Area 7.

DESCRIPTION OF REQUEST:

In a letter dated August 13, 2010, Mr. Lange provided the Texas Water Development Board (TWDB) with the desired future conditions of the Edwards-Trinity (Plateau) Aquifer in Groundwater Management Area 7. On June 6, 2012 TWDB clarified through e-mail with Ms. Caroline Runge of Menard Underground Water District acting on behalf of Groundwater Management Area 7 that the intent of the districts within Groundwater Management Area 7 was to also incorporate the Trinity and Pecos Valley aquifers, except where explicitly stated as non-relevant in the desired future conditions of the Edwards-Trinity (Plateau) Aquifer. The desired future conditions for the aquifer[s], as described in Resolution # 07-29-10-9 and adopted July 29, 2010 by the groundwater conservation districts within Groundwater Management Area 7, are described below:

- 1) An average drawdown of 7 feet for the Edwards-Trinity (Plateau)[, Pecos Valley, and Trinity] aquifer[s], except for the Kinney County [Groundwater Conservation District], based on Scenario 10 of the TWDB [Groundwater Availability Model] run 09-35 which is incorporated in its entirety into this resolution; and*
- 2) In Kinney County, that drawdown which is consistent with maintaining, at Las Moras Springs, an annual average flow of 23.9 [cubic feet per second] and a median flow of 24.4 [cubic feet per second] based on Scenario 3 of the Texas Water Development Board's flow model presented on July 27, 2010; and*
- 3) the Edwards-Trinity [Aquifer] is not relevant for joint planning purposes within the boundaries of the Lipan-Kickapoo [Water Conservation District], the Lone Wolf [Groundwater Conservation District], and the Hickory Underground Water Conservation District No. 1; and*
- 4) the Trinity (Hill Country) portion of the aquifer is not relevant for joint planning purposes within the boundaries of the Uvalde [Underground Water Conservation District] in [Groundwater Management Area] 7.*

METHODS, PARAMETERS AND ASSUMPTIONS:

The desired future condition for Kinney County was evaluated in a new model run (Shi and others, 2012). The new model run is an update of Scenario 3 of Groundwater Availability Modeling (GAM) Task 10-027 (Hutchison, 2010a). Both model runs were based on the MODFLOW-2000 model developed by the TWDB to assist with the joint planning process regarding the Kinney County Groundwater Conservation District (Hutchison and others, 2011b). In both model runs, the total pumping in Kinney County, which lies within Groundwater Management Areas 7 and 10, was maintained at approximately 77,000 acre-feet per year to achieve the desired future conditions at Las Moras Springs. Details regarding this new model run are summarized in Shi and others (2012).

The desired future condition for the remaining areas in Groundwater Management Area 7 was based on Scenario 10 of GAM Run 09-035 using a MODFLOW-2000 model developed by the TWDB (Hutchison and others, 2011a). Details regarding this scenario can be found in Hutchison (2010b). In GAM Run 09-035, the Edwards-Trinity (Plateau), Trinity, Pecos Valley, and Trinity aquifers were simulated and reported together. The desired future condition statement specifying of an average drawdown of 7 feet, which is achieved in the above simulation, only explicitly references the Edwards-Trinity (Plateau) Aquifer. By stating that the above simulation is “incorporated in its entirety” into the resolution, it is the intent of the districts to also incorporate the Trinity and Pecos Valley aquifers. The results below, therefore, contain information on the Trinity and Pecos Valley aquifers in addition to the Edwards-Trinity (Plateau) Aquifer. This interpretation has been confirmed by Ms. Caroline Runge on behalf of Groundwater Management Area 7 to Ms. Sarah Backhouse at the Texas Water Development Board.

The locations of the Edwards-Trinity (Plateau), Trinity, and Pecos Valley aquifers are shown in Figure 1.

RESULTS:

The modeled available groundwater values from aquifers in Groundwater Management Area 7 that achieve the desired future conditions is approximately 445,000 acre-feet per year for the Edwards-Trinity (Plateau) aquifer, 2,500 acre-feet per year for the Trinity Aquifer, and 1,600 acre-feet per year for the Pecos Valley Aquifer (Tables 1, 2, and 3). These tables contain the modeled available groundwater for the aquifers subdivided by county, regional water planning area, and river basin for use in the regional water planning process. These areas are shown in Figure 2.

Tables 4, 5, and 6 show the modeled available groundwater for the Edwards-Trinity (Plateau), Trinity, and Pecos Valley aquifers summarized by county, regional water planning area, and river basin, respectively, within Groundwater Management Area 7.

The modeled available groundwater for the aquifers within and outside the groundwater conservation districts in Groundwater Management Area 7 where they were determined to be relevant for the purposes of joint planning are presented in Table 7. As shown in Table 7, the modeled available groundwater within the groundwater conservation districts in Groundwater Management Area 7 is approximately 370,000 acre-feet per year from 2010 to 2060.

LIMITATIONS:

The groundwater model used in developing estimates of modeled available groundwater is the best available scientific tool that can be used to estimate the pumping that will achieve the desired future conditions. Although the groundwater model used in this analysis is the best available scientific tool for this purpose, it, like all models, has limitations. 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 develop estimates of modeled available groundwater is the need to make assumptions about the location in the aquifer where future pumping will occur. As actual pumping changes in the future, it will be necessary to evaluate the amount of that pumping as well as its location in the context of the assumptions associated with this analysis. Evaluating the amount and location of future pumping is as important as evaluating the changes in groundwater levels, spring flows, and other metrics that describe the condition of the groundwater resources in the area that relate to the adopted desired future condition.

Given these limitations, users of this information are cautioned that the modeled available groundwater numbers should not be considered a definitive, permanent description of the amount of groundwater that can be pumped to meet the adopted desired future condition. Because the application of the groundwater model was designed to address regional scale questions, the results are most effective on a regional scale. Texas Water Development Board 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 future groundwater pumping as well as whether or not they are achieving their desired future conditions. Because of the limitations of the groundwater model and the assumptions in this analysis, it is important that the groundwater conservation districts work with Texas Water Development Board to refine these modeled available groundwater numbers given the reality of how the aquifer responds to the actual amount and location of pumping now and in the future.

REFERENCES:

Hutchison, William R., 2010a, GAM Task 10-027: Texas Water Development Board, GAM Task 10-027 Report, 7 p.

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TABLE 6. MODELED AVAILABLE GROUNDWATER FOR THE EDWARDS-TRINITY (PLATEAU), TRINITY, AND PECOS VALLEY AQUIFERS IN GROUNDWATER MANAGEMENT AREA 7 BY RIVER BASIN FOR EACH DECADE BETWEEN 2010 AND 2060. RESULTS ARE IN ACRE-FEET PER YEAR.

River Basin	Year					
	2010	2020	2030	2040	2050	2060
Brazos	633	633	633	633	633	633
Colorado	207,392	207,392	207,392	207,392	207,392	207,392
Guadalupe	139	139	139	139	139	139
Nueces	10,527	10,527	10,527	10,527	10,527	10,527
Rio Grande	230,720	230,720	230,720	230,720	230,720	230,720
Total	449,411	449,411	449,411	449,411	449,411	449,411

TABLE 7. MODELED AVAILABLE GROUNDWATER FOR THE EDWARDS-TRINITY (PLATEAU), TRINITY, AND PECOS VALLEY AQUIFERS IN GROUNDWATER MANAGEMENT AREA 7 BY GROUNDWATER CONSERVATION DISTRICT FOR EACH DECADE BETWEEN 2010 AND 2060. RESULTS ARE IN ACRE-FEET PER YEAR.

Groundwater Conservation District	Year					
	2010	2020	2030	2040	2050	2060
Coke County UWCD	998	998	998	998	998	998
Crockett County GCD	4,685	4,685	4,685	4,685	4,685	4,685
Glasscock GCD	106,075	106,075	106,075	106,075	106,075	106,075
Hill Country UWCD	4,996	4,996	4,996	4,996	4,996	4,996
Irion County WCD	2,435	2,435	2,435	2,435	2,435	2,435
Kimble County GCD	1,283	1,283	1,283	1,283	1,283	1,283
Kinney County GCD	70,338	70,338	70,338	70,338	70,338	70,338
Menard County UWD	2,194	2,194	2,194	2,194	2,194	2,194
Middle Pecos GCD	117,386	117,386	117,386	117,386	117,386	117,386
Plateau UWC and SD	8,050	8,050	8,050	8,050	8,050	8,050
Real-Edwards CRD	13,167	13,167	13,167	13,167	13,167	13,167
Santa Rita UWCD	27,416	27,416	27,416	27,416	27,416	27,416
Sterling County UWCD	2,497	2,497	2,497	2,497	2,497	2,497
Sutton County UWCD	6,438	6,438	6,438	6,438	6,438	6,438
Uvalde County UWCD (Edwards-Trinity Plateau)	1,635	1,635	1,635	1,635	1,635	1,635
Wes-Tex GCD	693	693	693	693	693	693

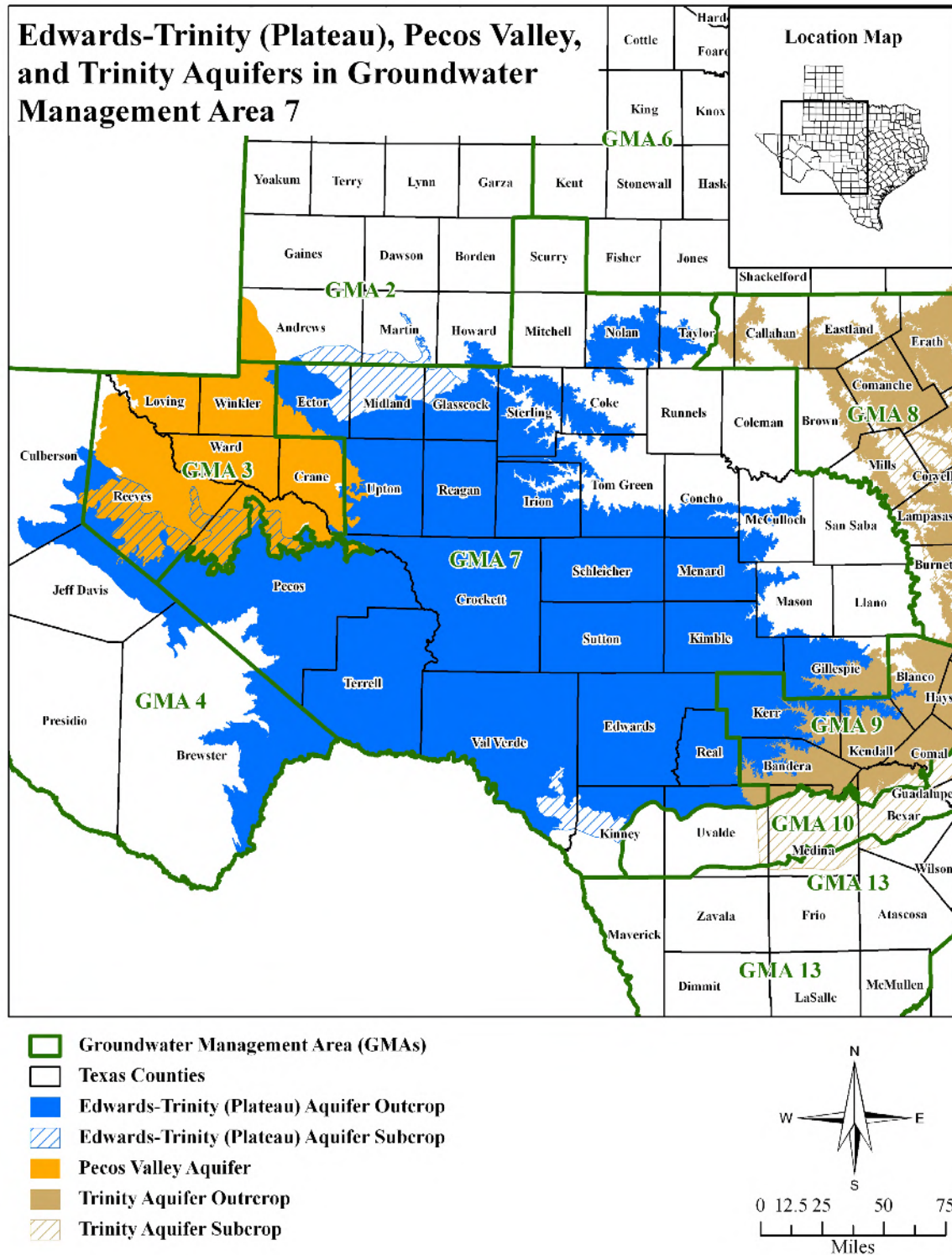


FIGURE 1. MAP SHOWING THE BOUNDARY OF THE EDWARDS-TRINITY (PLATEAU), PECOS VALLEY, AND TRINITY AQUIFERS ACCORDING TO THE 2007 STATE WATER PLAN (TWDB, 2007).

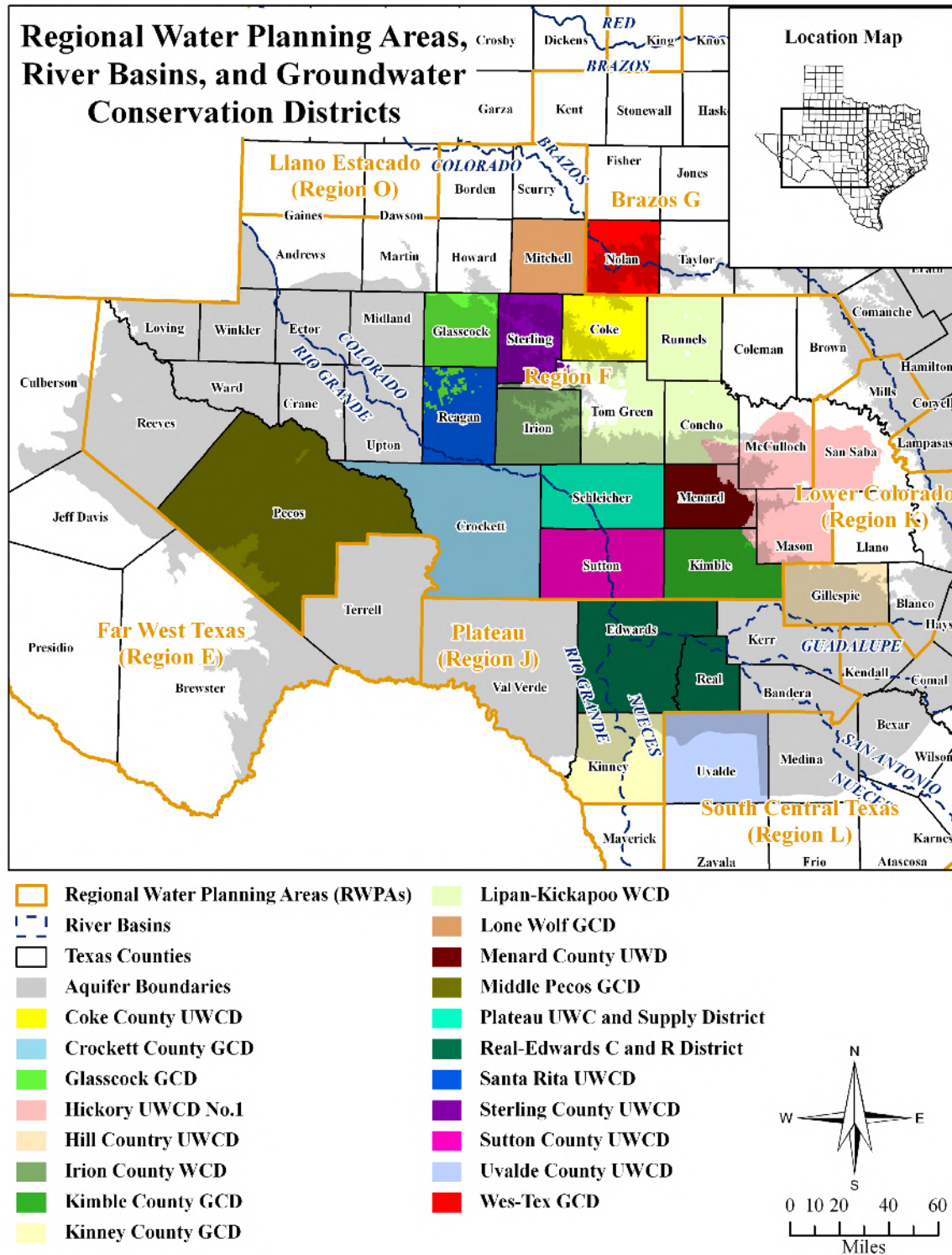


FIGURE 2. MAP SHOWING REGIONAL WATER PLANNING AREAS, GROUNDWATER CONSERVATION DISTRICTS, COUNTIES, AND RIVER BASINS IN AND NEIGHBORING GROUNDWATER MANAGEMENT AREA 7.

APPENDIX F

Estimated Historical Water Use

TWDB Historical Water Use Survey (WUS) Data

Groundwater and surface water historical use estimates are currently unavailable for calendar year 2016. TWDB staff anticipates the calculation and posting of these estimates at a later date.

TERRELL COUNTY

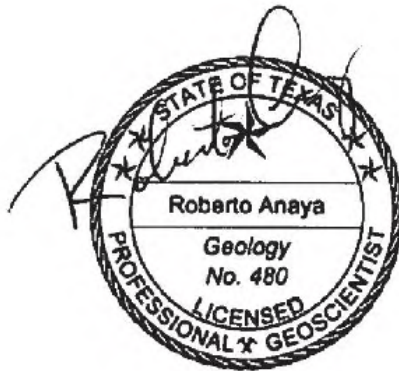
All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2015	GW	153	0	7	0	295	94	549
	SW	0	0	0	0	550	2	552
2014	GW	166	0	15	0	303	91	575
	SW	0	0	0	0	542	2	544
2013	GW	171	0	5	0	3	126	305
	SW	0	0	0	0	550	3	553
2012	GW	187	0	11	0	55	163	416
	SW	0	0	0	0	545	3	548
2011	GW	219	0	138	0	530	179	1,066
	SW	0	0	29	0	250	4	283
2010	GW	204	0	184	0	230	182	800
	SW	0	0	40	0	745	4	789
2009	GW	197	0	108	0	205	206	716
	SW	0	0	23	0	545	4	572
2008	GW	178	0	32	0	0	193	403
	SW	0	0	6	0	163	4	173
2007	GW	193	0	4	0	340	170	707
	SW	0	0	0	0	23	4	27
2006	GW	197	0	5	0	0	211	413
	SW	0	0	0	0	545	4	549
2005	GW	181	0	4	0	0	233	418
	SW	0	0	0	0	100	5	105
2004	GW	147	0	5	0	0	207	359
	SW	0	0	0	0	754	11	765
2003	GW	175	0	5	0	0	189	369
	SW	0	0	0	0	716	10	726
2002	GW	178	0	5	0	0	234	417
	SW	0	0	0	0	207	13	220
2001	GW	200	0	5	0	0	280	485
	SW	0	0	0	0	184	15	199
2000	GW	217	0	5	0	0	292	514
	SW	0	0	0	0	80	15	95

APPENDIX G

GAM RUN 13-012: TERRELL COUNTY GROUNDWATER CONSERVATION DISTRICT MANAGEMENT PLAN

by Roberto Anaya, P.G.
Texas Water Development Board
Groundwater Resources Division
Groundwater Availability Modeling Section
(512) 463-6115
April 23, 2013



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April 23, 2013

EXECUTIVE SUMMARY:

Texas State Water Code, Section 36.1071, Subsection (h), states that, in developing its groundwater management plan, a groundwater conservation district shall use groundwater availability modeling information provided by the executive administrator of the Texas Water Development Board (TWDB) in conjunction with any available site-specific information provided by the district for review and comment to the executive administrator. Information derived from groundwater availability models that shall be included in the groundwater management plan includes:

- the annual amount of recharge from precipitation to the groundwater resources within the district, if any;
- for each aquifer within the district, the annual volume of water that discharges from the aquifer to springs and any surface water bodies, including lakes, streams, and rivers; and
- the annual volume of flow into and out of the district within each aquifer and between aquifers in the district.

This report (Part 2 of a two-part package of information from the TWDB to Terrell County Groundwater Conservation District) fulfills the requirements noted above. Part 1 of the 2-part package is the Historical Water Use/State Water Plan data report. The District should have received, or will receive, this data report from the TWDB Groundwater Technical Assistance Section. Questions about the data report can be directed to Mr. Stephen Allen, Stephen.Allen@twdb.texas.gov, (512) 463-7317.

The groundwater management plan for the Terrell County Groundwater Conservation District should be adopted by the district on or before August 8, 2015 and submitted to the executive administrator of the TWDB on or before September 7, 2015.

This report discusses the methods, assumptions, and results from model runs using the groundwater availability model (version 1.01) for the Edwards-Trinity (Plateau) and Pecos Valley aquifers (Anaya and Jones, 2009). Table 1 summarizes the groundwater availability model data required by the statute, and Figure 1 shows the area of the model from which the values in the table were extracted. GAM Run 13-012 meets current standards including a refinement of using the extent of the official aquifer boundaries within the district. If after review of the figures, Terrell County Groundwater Conservation District determines that the district boundaries used in the assessment do not reflect current conditions, please notify the Texas Water Development Board immediately. Per statute TWDB is required to provide the districts with data from the official groundwater availability models; however, the TWDB has also approved, for planning purposes, an alternative model that can have water budget information extracted for the district. The alternative model is the 1-layer alternative model for the Edwards-Trinity (Plateau) and Pecos Valley aquifers (Hutchison and others, 2011). Please contact the author of this report if a comparison report using this model is desired.

METHODS:

In accordance with the provisions of the Texas State Water Code, Section 36.1071, Subsection (h), the groundwater availability model for the Edwards-Trinity (Plateau) and Pecos Valley aquifers was run for this analysis. Terrell County Groundwater Conservation District Water budgets for the historical model periods were extracted using ZONEBUDGET Version 3.01 (Harbaugh, 2009) The average annual water budget values for recharge, surface water outflow, inflow to the district, outflow from the district, net inter-aquifer flow (upper), and net inter-aquifer flow (lower) for the portions of the aquifers located within the district are summarized in this report.

PARAMETERS AND ASSUMPTIONS:

Edwards-Trinity (Plateau) Aquifer

- We used version 1.01 of the groundwater availability model for the Edwards-Trinity (Plateau) and Pecos Valley aquifers. See Anaya and Jones (2009) for assumptions and limitations of the groundwater availability model for the Edwards-Trinity (Plateau) and Pecos Valley aquifers. The Pecos Valley Aquifer does not occur within Terrell County and therefore no groundwater budget values are included for it in this report.
- This groundwater availability model includes two layers within Terrell County which generally represent the Edwards Unit (Layer 1) and the Trinity Unit (Layer 2) of the Edwards-Trinity (Plateau) Aquifer. Individual water budgets for the District were determined for the Edwards-Trinity (Plateau) Aquifer (Layer 1 and Layer 2 combined).
- For Terrell County, groundwater in the Edwards-Trinity (Plateau) Aquifer is generally fresh with total dissolved solids of less than 500 milligrams per liter except for a small area near the town of Sheffield along the Pecos River in the northwestern part of the county (Reese and Buckner, 1980).
- The model was run with MODFLOW-96 (Harbaugh and McDonald, 1996).

RESULTS:

A groundwater budget summarizes the amount of water entering and leaving the aquifer according to the groundwater availability model. Selected groundwater budget components listed below were extracted from the model results for the aquifers located within the district and averaged over the duration of the calibration and verification portion of the model runs in the district, as shown in Table 1.

- Precipitation recharge—The areally distributed recharge sourced from precipitation falling on the outcrop areas of the aquifers (where the aquifer is exposed at land surface) within the district.
- Surface water outflow—The total water discharging from the aquifer (outflow) to surface water features such as streams, reservoirs, and drains (springs).
- Flow into and out of district—The lateral flow within the aquifer between the district and adjacent counties.

- Flow between aquifers—The net vertical flow between aquifers or confining units. This flow is controlled by the relative water levels in each aquifer or confining unit and aquifer properties of each aquifer or confining unit that define the amount of leakage that occurs. “Inflow” to an aquifer from an overlying or underlying aquifer will always equal the “Outflow” from the other aquifer.

The information needed for the District’s management plan is summarized in Table 1. It is important to note that sub-regional water budgets are not exact. This is due to the size of the model cells and the approach used to extract data from the model. To avoid double accounting, a model cell that straddles a political boundary, such as a district or county boundary, is assigned to one side of the boundary based on the location of the centroid of the model cell. For example, if a cell contains two counties, the cell is assigned to the county where the centroid of the cell is located (Figure 1).

TABLE 1: SUMMARIZED INFORMATION FOR THE EDWARDS-TRINITY (PLATEAU) AQUIFER THAT IS NEEDED FOR THE TERRELL COUNTY GROUNDWATER CONSERVATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT.

<i>Management Plan requirement</i>	<i>Aquifer or confining unit</i>	<i>Results</i>
Estimated annual amount of recharge from precipitation to the groundwater resources within the district	Edwards-Trinity (Plateau) Aquifer	41,490
Estimated annual volume of water that discharges from the aquifer to springs and any surface water bodies, including lakes, streams, and rivers	Edwards-Trinity (Plateau) Aquifer	46,671
Estimated annual volume of flow into the district within each aquifer in the district	Edwards-Trinity (Plateau) Aquifer	77,577
Estimated annual volume of flow out of the district within each aquifer in the district	Edwards-Trinity (Plateau) Aquifer	72,976
Estimated net annual volume of flow between each aquifer in the district	Not Applicable	0

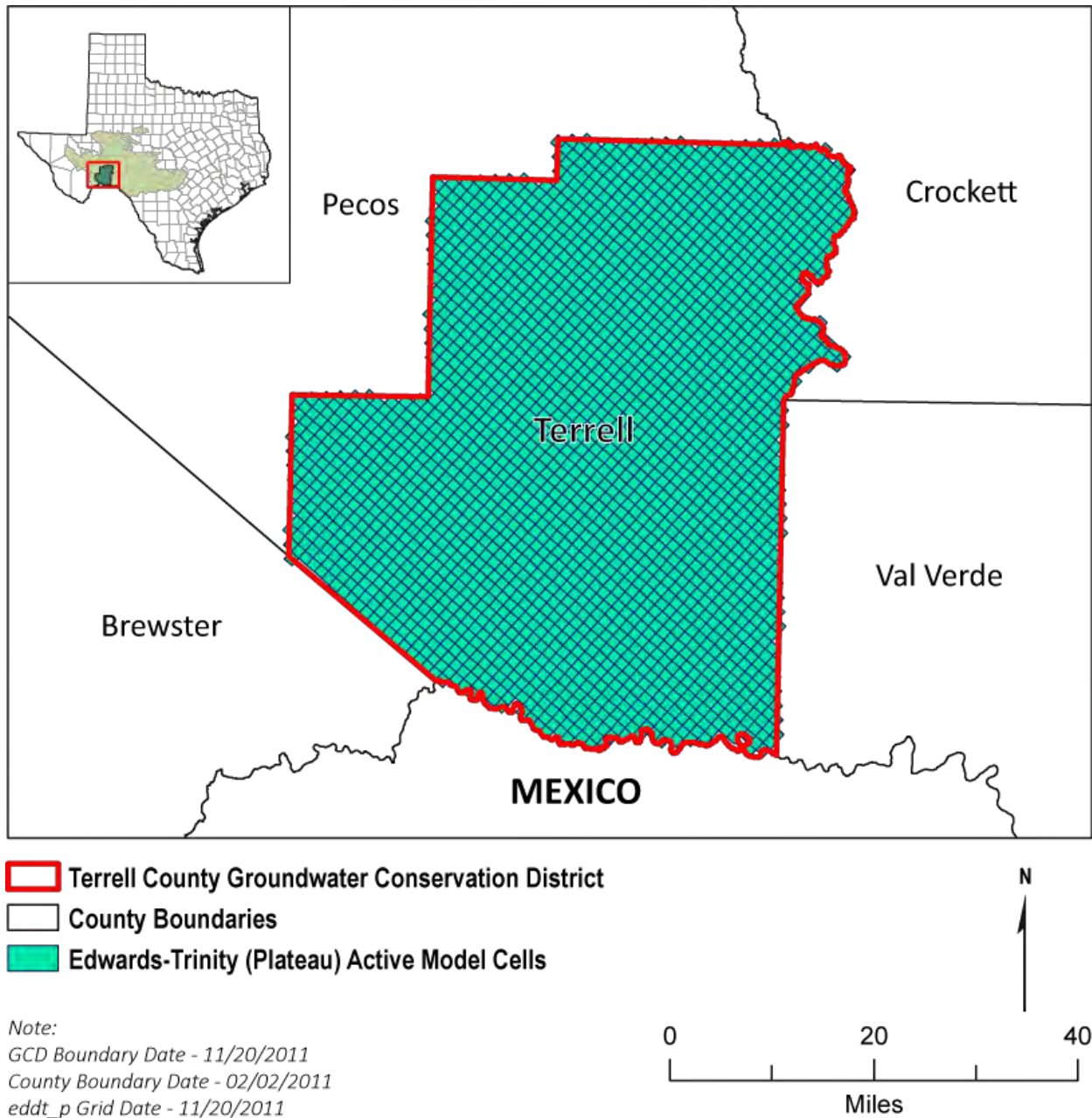


FIGURE 1: AREA OF THE GROUNDWATER AVAILABILITY MODEL FOR THE EDWARDS-TRINITY (PLATEAU) AND PECOS VALLEY AQUIFERS FROM WHICH THE INFORMATION IN TABLE 1 WAS EXTRACTED (THE EDWARDS-TRINITY (PLATEAU) AQUIFER EXTENT WITHIN THE DISTRICT BOUNDARY).

LIMITATIONS

The groundwater model(s) used in completing this analysis is the best available scientific tool that can be used to meet the stated objective(s). 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 interaction with streams are specific to particular historic time periods.

Because the application of the groundwater models was designed to address regional scale questions, the results are most effective on a regional scale. The TWDB makes no warranties or representations related 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 overall conditions of 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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- Reece, R., and Buckner, A. W., 1980, Occurance and Quality of Ground Water in the Edwards-Trinity (Plateau) Aquifer in the Trans-Pecos Region of Texas, 41 p.,
http://www.twdb.texas.gov/publications/reports/numbered_reports/doc/R255/report255.asp

APPENDIX H

Projected Surface Water Supplies

TWDB 2017 State Water Plan Data

TERRELL COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
E	IRRIGATION, TERRELL	RIO GRANDE	RIO GRANDE RUN-OF-RIVER	676	676	676	676	676	676
E	LIVESTOCK, TERRELL	RIO GRANDE	RIO GRANDE LIVESTOCK LOCAL SUPPLY	4	4	4	4	4	4
E	MINING, TERRELL	RIO GRANDE	RIO GRANDE OTHER LOCAL SUPPLY	40	40	40	40	40	40
Sum of Projected Surface Water Supplies (acre-feet)				720	720	720	720	720	720

APPENDIX I

Projected Water Demands

TWDB 2017 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.

TERRELL COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
E	COUNTY-OTHER, TERRELL	RIO GRANDE	19	19	19	19	19	19
E	IRRIGATION, TERRELL	RIO GRANDE	379	369	359	354	344	337
E	LIVESTOCK, TERRELL	RIO GRANDE	238	238	238	238	238	238
E	MINING, TERRELL	RIO GRANDE	673	776	740	606	483	385
E	SANDERSON	RIO GRANDE	202	202	200	199	199	199
Sum of Projected Water Demands (acre-feet)			1,511	1,604	1,556	1,416	1,283	1,178

APPENDIX J

Projected Water Supply Needs

TWDB 2017 State Water Plan Data

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

TERRELL COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
E	COUNTY-OTHER, TERRELL	RIO GRANDE	42	42	42	42	42	42
E	IRRIGATION, TERRELL	RIO GRANDE	712	722	732	737	747	754
E	LIVESTOCK, TERRELL	RIO GRANDE	0	0	0	0	0	0
E	MINING, TERRELL	RIO GRANDE	-449	-552	-516	-382	-259	-161
E	SANDERSON	RIO GRANDE	325	325	327	328	328	328
Sum of Projected Water Supply Needs (acre-feet)			-449	-552	-516	-382	-259	-161

Projected Water Management Strategies

TWDB 2017 State Water Plan Data