



# **Pineywoods Groundwater Conservation District Management Plan**

**Approved February 25, 2004  
Amended December 11, 2008  
Amended November 8, 2012  
Revised and Approved October 10, 2013  
Revised and Approved August 23, 2018  
Revised and Approved August 16, 2023**

**P.O. Box 635187  
Nacogdoches, TX 75963-5187  
(936) 568-9292  
Fax (936) 568-9296  
[www.pgcd.org](http://www.pgcd.org)**

Page left blank

## TABLE OF CONTENTS

Number	Page
Mission Statement	1
A. Amount of Water Being Used on an Annual Basis	2
B. Projected Total Water Demands	2
C. Projected Surface Water Supplies	3
D. Groundwater Availability	3
E. Projected Water Needs	4
F. Projected Water Management Strategies	4
G. Annual Water Budget Values	4
H. Modeled Available Groundwater (MAG) in the District Based On the Desired Future Conditions (DFCs)	5
Management of Groundwater Supplies	5
Goals, Management Objectives, Performance Standards and Methodology to Evaluate Progress for Implementation of the District Management Plan and Future Board Review	7
 Appendices	
A. Water Being Used Within the District	14
Projected Surface Water Supplies	16
Projected Total Water Demands	17
Projected Water Needs Within the District	19
Projected Water Management Strategies	21
B. The Desired Future Conditions	25
C. Annual Water Budget Values	26
D. Modeled Available Groundwater Based on the DFC	41
E. Maps	53
F. Documentation of notice, public hearings, agenda, Meeting minutes and correspondence with surface water Management entities	57

Page left blank

## **PINEYWOODS GROUNDWATER CONSERVATION DISTRICT MISSION STATEMENT**

The Pineywoods Groundwater Conservation District (District) will strive for the conservation, preservation, and prevention of the waste of groundwater reservoirs over which the District has jurisdiction. The District will implement water conservation and management strategies to prevent the extreme decline of water levels for the benefit of all water users, water rights owners, the economy, or citizens, and the environment of the territory inside the District.

### **TIME PERIOD FOR THIS PLAN**

This District Management Plan became effective February 25, 2004, following adoption by the District Board of Directors and approval by the Texas Water Development Board (TWDB) affirming the plan as administratively complete. It was re-adopted by Board Resolution on December 11, 2008 and again on November 8, 2012, October 10, 2013 and August 23, 2018. This revised and amended plan adopted on August 16, 2023, will remain in effect for a period of five (5) years as a minimum planning period, or until a revised or amended plan may be approved, whichever comes first.

### **STATEMENT OF GUIDING PRINCIPLES**

The District recognizes that the groundwater resources of the region are of vital importance to the continued vitality of the citizens, economy, and environment within the District. The preservation of the groundwater resources can be managed and protected in the most prudent and cost-effective manner through the local regulation of production as effected by the District's well permitting and well spacing rules. This management plan is intended as a tool to direct the efforts of those individuals charged with the responsibility for the managing and execution of District activities.

### **GENERAL DESCRIPTION**

In 2001 the Texas Legislature passed House Bill 2572, which authorized the creation of the Pineywoods Groundwater Conservation District (referred to as the "District") as a governmental agency to regulate groundwater in order to protect it from overuse and wasteful use. This was approved by the voters in a general election on November 2001. The District includes all of Angelina and Nacogdoches Counties.

The District is currently governed by a seven-member appointed Board of Directors, each serving overlapping three-year terms. The members are appointed by the county commissioners of Angelina and Nacogdoches Counties and by the city commissioners of the City of Lufkin and the City of Nacogdoches.

The District is prohibited by legislation from levying taxes. It also may not exercise the power of eminent domain. It also may not issue or sell bonds in the name of the District.

It is the goal of the District that its activities be consistent with sound business practices; that the interest of the public shall always be considered in conducting District business; that impropriety or the appearance of impropriety shall be avoided to ensure and maintain public confidence in the District; and that the Board and staff shall control and manage the affairs of the District lawfully, fairly, impartially, and in accordance with the stated purposes of the District.

The District employs a General Manager to manage the administrative affairs of the District and provides for additional staff as needed to assist in those duties. The General Manager is responsible for ensuring that the rules, regulations, policies, and procedures adopted by the Board are followed. The General Manager is held responsible by the Board and is required to provide timely reports about the administrative affairs of the District.

## **GROUNDWATER RESOURCES**

The Desired Future Conditions for the aquifers located within the District boundaries and within Groundwater Management Area 11 (GMA-11) were established in accordance with Chapter 36.108 of the Texas Water Code at a meeting of the GMA-11 representatives on August 11, 2021.

The Carrizo-Wilcox aquifer is the primary source of groundwater within the District. The Queen City and Sparta are other minor aquifers with pumping for use within the District. Groundwater in the aquifers is under water table of unconfined conditions and the depth of the aquifer sands are highly variable within the District. Groundwater represents 59% of the water source within the District with surface water being the major remaining source. The estimated water pumping by aquifer was 91% from Carrizo-Wilcox; 7.5% from Queen City; 1% from Sparta; the balance from undifferentiated aquifers. Maps of the District and the aquifers are shown for reference in **Appendix F**.

### **A. THE AMOUNT OF WATER BEING USED WITHIN THE DISTRICT ON AN ANNUAL BASIS**

The charts in **Appendix A** represent the annual water usage within the District from 2004 to 2019 and include both groundwater (GW) and surface water (SW) use. They show a total annual usage of 28,418 acre feet including 17,894 acre feet of groundwater and 10,524 acre feet of surface water in 2019.

### **B. PROJECTED TOTAL WATER DEMANDS**

The tables in **Appendix A** show the projected water demand for Angelina and Nacogdoches Counties through the year 2070. This is the combined surface water and groundwater use for

the District. The projections are from the 2022 State Water Plan and include agriculture, municipal and industrial use.

### **C. PROJECTED SURFACE WATER SUPPLIES**

The charts in **Appendix A** show the surface water supplies for the District for 2020 and the projected surface water supplies through the year 2070. All data is from the 2022 State Water Plan.

The percentage of surface water supply not in the District is not material to the presentation of data as a whole because there is no major surface water supply in the area not in the District.

### **D. GROUNDWATER AVAILABILITY**

#### **Carrizo-Wilcox Aquifer**

The Wilcox group and the overlaying Carrizo Formation of the Claiborne Group form a hydrologically connected system known as the Carrizo-Wilcox Aquifer. This aquifer extends from the Rio Grande in South Texas northeastward into Arkansas and Louisiana, providing all or part of the water in 60 counties in Texas. Irrigation pumping accounts for slightly more than half the water pumped, and pumping for municipal supply accounts for another 40 percent of pumping from the Carrizo-Wilcox Aquifer.

#### **Queen City Aquifer**

The Queen City Aquifer extends across Texas from the Frio River in South Texas northeastward into Louisiana. The aquifer provides water for domestic and livestock purposes throughout most of its extent and significant amounts for municipal and industrial supplies in Northeast Texas. The water may be acidic in much of Northeast Texas and relatively high in iron concentrations in some locations.

#### **Sparta Aquifer**

The Sparta aquifer extends in a narrow band from the Frio River in South Texas northeastward to the Louisiana border in Sabine County. The aquifer provides water for domestic and livestock purposes throughout most of its extent and water for municipal, industrial, and irrigation in much of the region. Water may contain iron concentrations in excess of drinking water standards.

#### **Yegua-Jackson Aquifer**

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 the aquifer are erratic, domestic and livestock supplies are available from shallow wells over most of its extent. Local 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 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.

The modeled available groundwater is the amount of groundwater production per year, on an average basis, that will achieve a desired future condition. Total estimated recoverable storage values may include a mixture of water quality types, including fresh, brackish, and saline groundwater.

#### **E. PROJECTED WATER NEEDS WITHIN THE DISTRICT**

The water need estimates in this plan have been extracted from the 2022 State Water Plan and other GAM runs based on existing data. With normal rainfall and the advent of expected conservation practices, total water needs within the District projected to be used within the District on an annual basis from 2020 to 2070 in acre feet is shown in **Appendix A**. Projected water supply needs listed in the TWDB estimated historical water use 2022 state water plan data packet (Appendix A.) are primarily manufacturing in Angelina County and livestock in Nacogdoches County. Mining needs are also listed for both counties. From 2020 to 2070, the total needs in Angelina County are projected to decrease from 1,922 acre feet (AF) to 1,792 AF. During the same period the total needs in Nacogdoches County are projected to decrease from 11,445 AF to 9,517 AF.

#### **F. PROJECTED WATER MANAGEMENT STRATEGIES**

The projected water management strategies from the 2022 State Water Plan to supply the needs of the District are presented in **Appendix A**. These include strategies to develop and adopt methods to meet future needs in the District. Projected water management strategies listed in the TWDB estimated historical water use 2022 state water plan data packet (Appendix A.) are: Municipal Water Conservation (Lufkin, Appleby WSC, Cushing, Garrison and Nacogdoches), Surface Water, (Lake Sam Rayburn, Lake Columbia, Angelina Neches River Authority (ANRA) run of the river), Carrizo-Wilcox Aquifer Wells (D&M Water Supply Corporation (WSC) and Nacogdoches livestock). From 2020 to 2070, the total water

management strategies in Angelina County are projected to increase from 1,776 AF to 29,792 AF. During the same time period the total water management strategies in Nacogdoches County are projected to increase from 270 AF to 19,179 AF.

#### **G. ANNUAL WATER BUDGET VALUES**

A groundwater budget summarizes the water entering and leaving the aquifer according to a groundwater availability model. Selected components were extracted from the groundwater budget for the aquifers located within the District and were averaged over the duration of the



calibrated portion of the model runs. The projected water into and out of the aquifers within the District is taken from Groundwater Availability Model Run 23-003 prepared by TWDB on May 17, 2023.

In accordance with the provisions of the Texas State Water Code, Section 36.1071, Subsection (h), the groundwater availability models for the Carrizo-Wilcox, Queen City, and Sparta aquifers were run for this analysis. 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 the net inter-aquifer flow (lower) for the portions of the aquifers located with the District are summarized in **Appendix C**.

#### **H. MODELED AVAILABLE GROUNDWATER IN THE DISTRICT BASED ON THE DFC**

As defined in Chapter 36 of the Texas Water Code, “modeled available groundwater” is the estimated amount of water that may be produced annually to achieve a Desired Future Condition (DFC).

Groundwater conservation districts are required to consider modeled available groundwater, along with several other factors, when issuing permits in order to manage groundwater production to achieve the desired future conditions. The other factors districts must consider include 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. **Appendix D** shows the available groundwater based on the model run, GAM Run 21-016 MAG on February 17, 2022.

### **MANAGEMENT OF GROUNDWATER SUPPLIES**

The District will manage the supply of groundwater within the District in order to conserve the resource while seeking to maintain the economic viability of all resource user groups, public and private. In consideration of the economic and cultural activities occurring within the District, the District will identify and engage in such activities and practices that, if implemented, would result in a reduction of groundwater use. A monitor well observation network may be established and maintained in order to evaluate changing conditions of

groundwater supplies (aquifer water table levels) within the District. The District will make a regular assessment of water supply and groundwater storage conditions and will report those conditions to the Board and to the public. The District will undertake as necessary, and cooperate with, investigations of the groundwater resources within the District and will make the results of investigations available to the public upon adoption by the Board.

The District will consider the water supply needs and water management strategies from Regional Water Planning Group I and other sources included in the adopted state water plan. This plan shows that the largest projected increases in water demand will be for steam-electric use and manufacturing, which are expected to require about half of the total water demand in 2070. The region as a whole appears to have enough water supplies to meet demands through

2070. In Regional Water Planning Group I, the major water supply project is the development of Lake Columbia in Cherokee County, and the District supports this effort.

The District will enforce the terms and conditions of permits and rules of the District. The District will adopt rules, and amend rules as necessary, to regulate groundwater withdrawals by means of well spacing, well permits, and production limits. The District may deny a well permit or limit groundwater withdrawals in accordance with the guidelines stated in the rules of the District and drought contingency plan. In making a determination to deny a permit or limit groundwater withdrawals, the District will consider the public benefit against individual hardship after considering all appropriate testimony.

In pursuit of the District's mission of protecting the groundwater resources, the District may require reduction of groundwater withdrawals to amounts which will not cause harm to the aquifer. To achieve this purpose, the District may, at the Board's discretion, amend or revoke any permits after notice and hearing. The determination to seek the amendment or revocation of a permit by the District will be based on aquifer conditions observed by the District. The District will enforce the terms and conditions of permits and the rules of the District by enjoining the permit holder in a court of competent jurisdiction as provided for in Texas Water Code (TWC) 36.102.

The relevant factors to be considered in making a determination to deny a permit or limit groundwater withdrawals will include:

- 1) The proposed use of the water and effect of existing groundwater and surface water resources or existing permits under the rules and management plan of the District.
- 2) The beneficial use of the water resource to protect groundwater quality, avoid waste, and achieve water conservation.
- 3) The economic hardship resulting from grant or denial of a permit or the terms prescribed by the permit.
- 4) The application conforms to the requirements of the District and TWC Chapter 36 and is accompanied by the prescribed fees.
- 5) Other factors that may be specific to the application.

### **Drought Contingency Plan**

During drought conditions within the District, all efforts will be made to see that all municipalities and public water supply companies follow their Drought Contingency Plans as they have been presented to the District. During severe drought conditions, the District staff will closely monitor the aquifer levels to ensure that adequate quantities of water are available to the District and coordinate with the Region I Water Planning Area.

The District will prevent any waste of groundwater by any public or private source by promoting the most efficient use of groundwater during drought conditions whether the conditions are mild, moderate or severe.

The District shall call for the most efficient use of groundwater by all users in the District to maintain sufficient groundwater aquifer resources during periods of drought and for future resources by preventing waste and by regulation of users, if necessary, to prevent depletion of the aquifers. The District will also work closely with groundwater users and provide assistance where it is possible to control customer usage as it is outlined in their Drought Contingency Plans.

Periodically, the District will review the Texas Palmer Drought Index and the Texas Drought Preparedness Report, and monitor production figures quarterly. A summary of any drought conditions will be given to the Board of Directors in the annual report along with any recommendations and make necessary changes, as needed.

### **Actions, Procedures, Performance, and Avoidance Necessary to Effectuate The Management Plan**

The District will implement the provisions of this plan and will utilize the provisions of the plan as a guidepost for determining the direction of priority for District activities. Operations, agreements, and planning efforts of the District will be consistent with this plan. The District will seek the cooperation of all interested parties in the implementation of this plan. The plan is for a five-year planning period; however, the Board may review the plan annually or as desired and re-adopt the plan with or without revisions at least every five years.

### **District Rules**

The District will enforce District rules requiring the permitting of all new non-exempt wells to prevent the waste of groundwater. District rules are available upon request from the District or may be viewed at the District's website at [www.pgcd.org](http://www.pgcd.org).

### **Regional Water Plan**

Senate Bill 1 intended for water management to be a bottom up approach. Therefore, the regional planning groups must consider this locally approved PGCD Management Plan in the development of their regional water plan to meet the intent of Senate Bill 1 and Senate Bill 1763 and, consequently, result in a regional management plan which is consistent with this local management plan, resulting in the protection of the local control of groundwater management by the local citizens.

## **GOALS, MANAGEMENT OBJECTIVES, PERFORMANCE STANDARDS AND METHODOLOGY TO EVALUATE PROGRESS FOR IMPLEMENTATION OF THE DISTRICT MANAGEMENT PLAN AND FUTURE BOARD REVIEW**

### **GOAL 1.0 – PROVIDING FOR THE MOST EFFICIENT USE OF GROUNDWATER WITHIN THE DISTRICT**

It is the intent of the district to provide for the most efficient use of groundwater by regulating the drilling of wells within the District and by enforcing District rules.

**--Management Objective**

Each year the District will require the registration of all new wells drilled within the District's jurisdiction, and the District will require a permit for drilling all non-exempt wells.

**Performance Standard**

At all regularly scheduled Board meetings, the General Manager reports to the Board of Directors on the number of new wells registered with the District and the number of permit applications received and approved for new wells within the District.

**--Management Objective**

Each year the District will provide informative speakers to schools, civic groups, social clubs, and other organizations for presentations to inform a minimum of 50 citizens on the activities and programs, the geology and hydrology of groundwater, and the principles of water conservation relating to the best management practices for the efficient use of groundwater.

**Performance Standard**

Report the number of citizens in attendance annually at District presentations concerning the principles of water conservation relating to the best practices for the efficient use of groundwater.

**--Management Objective**

Each year, on four or more occasions, the District will disseminate educational information relating to the conservation practices for the efficient use of water resources.

**Performance Standard**

Report the number of occasions annually that the District disseminated educational information relating to the conservation practices for the efficient use of water resources.

**Methodology**

Annually, the District will prepare and present a report to the Board on presentations in regards to achieving Goal 1. The report will include the number of instances each activity was engaged in during the year. The report will be maintained on file in the District office.

## **GOAL 2.0 - CONTROLLING AND PREVENTING WASTE OF GROUNDWATER**

### **Management Objective**

One hundred percent of complete permit applications will be reviewed by the District within 90 days to ensure all procedures are followed to control and prevent the waste of groundwater. The District will report annually to the Board the number of permit application requests that met the District's rules and requirements for approval within 90 days of receipt of the completed application.

### **Performance Standard**

1. Number of permits issued each year by the District for new non-exempt wells in compliance with District rules and procedures.
2. Percent of completed applications reviewed within 90 days of receipt of application.

### **Management Objective**

The District will maintain procedures for the receipt of well permit applications. Annual reports will be made to the Board on the number and type of well permits approved. If no applications are received by the District during a reporting period, this will annually be reported to the Board.

### **Performance Standard**

The procedures for the receipt of well permit applications will be maintained in District files. An annual report will be made by the District to the Board on the number and type of well permits approved. If no well permit applications are filed and completed during the year, this will be reported to the Board.

### **Methodology**

Annually, the District will prepare and present a report to the Board on the number of permit applications in compliance with District rules and procedures and the percent of completed applications reported to the Board within 90 days. The report will be maintained on file in the District office.

### **Management Objective**

The District will investigate reports of potential waste of groundwater within 72 hours of receiving complaints.

### **Performance Standard**

District staff will report to the Board of Directors as needed regarding waste of groundwater and include the number of investigations in its annual report.

### **GOAL 3.0 - CONTROLLING AND PREVENTING SUBSIDENCE**

In the desired future conditions explanatory report, Carrizo-Wilcox/Queen City/Sparta Aquifers for Groundwater Management 11, the following statements are made: “Subsidence has not been an issue historically in these aquifers. The Texas Water Development Board Subsidence Prediction Tool was used to assess the risk of subsidence in the future. This tool provides an overall risk score (0 is low risk and 10 is high risk). The application of this tool assumed the highest drawdown listed in Table 2 for each of the aquifers covered in this explanatory report. For the Sparta Aquifer, it was assumed that the drawdown from 2010 to 2080 was 30 feet from Table 2 (Anderson County). The risk score was 3.91 and the predicted subsidence was 0.00 feet in 2080.

For the Queen City Aquifer, it was assumed that the drawdown from 2010 to 2080 was 132 feet from Table 2 (Smith County). The risk score was 4.22 and the predicted subsidence was 4.22 and the predicted subsidence in 2080 is 0.00 feet. For the Carrizo-Wilcox Aquifer, it was assumed that the drawdown from 2010 to 2080 was 176 feet from Table 2 (Cherokee County). The risk score was 4.53 and the predicted subsidence was 0.16 feet in 2080.”

<https://www.twdb.texas.gov/groundwater/dfc/2021jointplanning.asp>

This goal is not applicable to the District because it is not appropriate or cost-effective. The TWDB subsidence report (*Identification 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:

<http://www.twdb.texas.gov/groundwater/models/research/subsidence/subsidence.asp>) has been reviewed for applicability to the district. The District will continue to monitor for signs of subsidence and will respond to any reports of substantial subsidence.

### **GOAL 4.0 - ADDRESSING CONJUNCTIVE SURFACE WATER MANAGEMENT ISSUES**

#### **Management Objective**

The water demands increase each year with a growing population and industrial needs. The District will work with the River Authorities in the District and with the Regional Planning Groups to assist with studies and coordinate a plan to meet the water needs of the area.

#### **Performance Standard**

Each year, the District will participate in the regional planning process by attending at least 75 percent of the Regional Water Planning Group meetings to encourage the development of surface water supplies to meet the needs of water user groups in the District.

#### **Methodology**

The District will stay informed on surface water issues by attending Region I Regional Water Planning Group meetings and obtaining reports at the GMA-11 meetings on the Region D Regional Water Planning Group activities.

## **GOAL 5.0 – ADDRESSING NATURAL RESOURCE ISSUES THAT IMPACT THE USE AND AVAILABILITY OF GROUNDWATER AND ARE IMPACTED BY THE USE OF GROUNDWATER**

### **Management Objective**

The district will investigate, or refer to the proper agency, any citizen's or district-initiated complaint related to surface water, groundwater, or any natural resource within the district.

### **Performance Standard**

The district will record all complaints and report these annually to the district board of directors.

## **GOAL 6.0 - ADDRESSING DROUGHT CONDITIONS**

During drought conditions within the District, all efforts will be made to see that all municipalities and public water supply companies follow their drought contingency plans. During severe drought conditions that materially affect the aquifer levels, the District staff will closely monitor the aquifer levels through establishment of a District monitoring plan of static levels in selected monitoring wells or by obtaining well water levels from selected water supply companies who have such data available to ensure that adequate quantities of water are available to the District and will coordinate with Region I Water Planning Group. Additional information can be found and utilized on drought at <http://waterdatafortexas.org/drought/>.

### **Performance Standard**

Periodically review the Texas Palmer Drought Index, and monitor production figures quarterly. A summary of any drought conditions will be given to the Board of Directors in the annual report, along with any recommendations and necessary changes as needed.

### **Methodology**

When a drought occurs that requires implementing drought contingency plans by municipalities and public water supply companies, the District will prepare and present a report to the Board on the number of water users contacted and number of plans implemented with the results of water use reduction when such data is available.

## **GOAL 7.0 - ADDRESSING CONSERVATION, RECHARGE ENHANCEMENT, RAINWATER HARVESTING, PRECIPITATION ENHANCEMENT, OR BRUSH CONTROL**

### **Management Objective: Conservation**

Each year, on four or more occasions, the District will disseminate educational information relating to the conservation practices for the efficient use of water resources.

## **Performance Standard**

Number of occasions, annually, the District disseminated educational information relating to the conservation practices for the efficient use of water resources.

## **Methodology**

Annually, the District will prepare and present a report to the Board on District performance in meeting this goal. The report will include the number of instances each activity was engaged in during the year. The report will be maintained on file in the District office.

## **Addressing Recharge Enhancement**

This goal is presently not applicable or cost effective and is, therefore, not applicable to the District at this time.

## **Addressing Rainwater Harvesting**

This goal is presently not applicable or cost effective and is, therefore, not applicable to the District at this time.

## **Addressing Precipitation Enhancement**

This goal is presently not applicable or cost effective and is, therefore, not applicable to the District at this time.

## **Addressing Brush Control**

This goal is presently not applicable or cost effective and is, therefore, not applicable to the District at this time.

## **GOAL 8.0 - ADDRESSING THE DESIRED FUTURE CONDITIONS OF THE GROUNDWATER RESOURCES**

The Desired Future Conditions of the groundwater within the District have been established in accordance with Chapter 36.108 of the Texas Water Code at a meeting of the GMA-11 representatives on August 11, 2021. The Desired Future Conditions drawdowns for Angelina and Nacogdoches counties are established as shown on **Appendix B**.

## **Management Goal**

To conserve and manage groundwater resources in order to provide sufficient water resources for domestic, industrial, and public water supply use to meet the needs of the future and achieve the desired future conditions of the district.



## **Management Objective**

The district will issue permits with annual pumping limits and will maintain a database to limit the total annual withdrawal by permit to be representative of the modeled available groundwater volume without restricting industrial or domestic growth.

## **Performance Standard**

The District will frequently monitor the total permitted allowances to determine if the permitted volume is within or representative of the modeled available groundwater allowable.

## **Methodology**

Annually, the District will prepare and present a report to the Board on District performance in meeting this goal. The report will include the total permitted water and the allowable available water based on the modeled available groundwater. The report will be maintained on file in the District office.

**Management Objective:** The District will monitor water-levels within District boundaries on an annual basis by measuring the water level of at least fifteen (15) water wells as well as all measurements submitted by local water supply companies. These measurements will be used to determine the five-year water level averages based on the measurements taken. The district will compare the five-year water level averages to the corresponding five-year increment of its desired future conditions in order to track its progress in achieving the desired future conditions.

**Performance Standard:** The District's Annual Report will include a description of the wells measured and the monitoring results for each year. The annual report will include the water level measurements taken each year compared to increments of the desired future conditions to assess the District's progress towards achieving its Desired Future Conditions.

## Appendix A. Estimated Historical Water Use 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.

### ANGELINA COUNTY

*100% (multiplier)*

All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2019	GW	9,611	2,246	247	0	18	68	12,190
	SW	0	3	106	0	79	616	804
2018	GW	10,304	2,241	465	0	17	67	13,094
	SW	0	92	199	0	172	607	1,070
2017	GW	9,637	2,099	115	0	21	66	11,938
	SW	0	585	49	0	130	595	1,359
2016	GW	10,404	2,088	42	261	28	64	12,887
	SW	1,434	2,138	18	0	161	580	4,331
2015	GW	10,510	2,747	19	51	0	63	13,390
	SW	129	1,039	8	0	110	567	1,853
2014	GW	9,959	3,102	0	177	0	95	13,333
	SW	574	74	0	0	92	856	1,596
2013	GW	10,649	2,897	9	0	0	98	13,653
	SW	624	297	4	0	642	886	2,453
2012	GW	10,749	3,150	0	0	274	100	14,273
	SW	37	39	0	0	729	902	1,707
2011	GW	12,666	3,161	25	0	265	109	16,226
	SW	0	77	11	0	752	985	1,825
2010	GW	11,368	3,603	15	0	238	111	15,335
	SW	0	21	8	0	902	997	1,928
2009	GW	12,218	2,934	43	0	214	47	15,456
	SW	0	17	23	0	136	425	601
2008	GW	11,984	3,384	71	0	0	49	15,488
	SW	40	1,385	38	0	95	443	2,001
2007	GW	11,540	3,723	0	0	0	42	15,305
	SW	16	2,880	0	0	482	381	3,759
2006	GW	12,410	4,425	0	0	186	40	17,061
	SW	0	2,860	0	0	48	358	3,266
2005	GW	12,441	4,358	0	0	209	39	17,047
	SW	0	2,815	0	0	100	348	3,263
2004	GW	11,448	5,765	0	0	109	199	17,521
	SW	0	965	0	0	125	298	1,388

## Appendix A.

### NACOGDOCHES COUNTY

*100% (multiplier)*

All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2019	GW	4,888	111	407	0	61	237	5,704
	SW	4,970	2,245	175	193	1	2,136	9,720
2018	GW	5,099	116	269	0	88	232	5,804
	SW	6,363	2,504	115	400	1	2,084	11,467
2017	GW	4,997	111	243	0	97	228	5,676
	SW	4,611	2,452	104	238	1	2,053	9,459
2016	GW	5,174	99	48	0	102	251	5,674
	SW	5,098	2,517	20	248	25	2,263	10,171
2015	GW	5,393	84	71	0	106	244	5,898
	SW	5,090	2,273	30	0	2	2,197	9,592
2014	GW	5,203	87	55	0	106	949	6,400
	SW	4,420	2,254	24	0	4	8,545	15,247
2013	GW	5,587	101	0	0	0	972	6,660
	SW	4,786	2,125	0	0	250	8,752	15,913
2012	GW	5,210	199	332	1	31	958	6,731
	SW	4,400	2,265	142	0	203	8,624	15,634
2011	GW	6,237	167	979	0	298	976	8,657
	SW	5,778	2,303	420	0	136	8,787	17,424
2010	GW	5,840	186	359	0	141	990	7,516
	SW	4,638	2,285	172	0	163	8,913	16,171
2009	GW	5,785	156	352	0	226	122	6,641
	SW	4,920	2,006	169	0	149	1,099	8,343
2008	GW	6,434	140	345	0	145	119	7,183
	SW	4,464	1,996	166	0	193	1,072	7,891
2007	GW	6,145	2,028	0	0	143	112	8,428
	SW	4,628	253	0	0	4	1,007	5,892
2006	GW	6,595	2,086	0	0	248	134	9,063
	SW	4,486	310	0	0	152	1,205	6,153
2005	GW	6,859	2,030	0	0	206	120	9,215
	SW	5,215	314	0	0	184	1,082	6,795
2004	GW	6,955	2,175	0	0	281	495	9,906
	SW	5,908	100	0	0	123	743	6,874

## Appendix A.

# Projected Surface Water Supplies TWDB 2022 State Water Plan Data

**ANGELINA COUNTY** *100% (multiplier)* All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
I	Irrigation, Angelina	Neches	Kurth Lake/Reservoir	779	779	779	779	779	779
I	Livestock, Angelina	Neches	Neches Livestock Local Supply	661	661	661	661	661	661
I	Lufkin	Neches	Kurth Lake/Reservoir	2,901	3,018	3,117	3,229	3,353	4,482
I	Manufacturing, Angelina	Neches	Kurth Lake/Reservoir	293	311	311	311	311	311
I	Steam-Electric Power, Angelina	Neches	Kurth Lake/Reservoir	6,721	6,721	6,721	6,721	6,721	6,721
<b>Sum of Projected Surface Water Supplies (acre-feet)</b>				<b>11,355</b>	<b>11,490</b>	<b>11,589</b>	<b>11,701</b>	<b>11,825</b>	<b>12,954</b>

**NACOGDOCHES COUNTY** *100% (multiplier)* All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
I	Appleby WSC	Neches	Nacogdoches Lake/Reservoir	67	67	66	66	65	65
I	County-Other, Nacogdoches	Neches	Nacogdoches Lake/Reservoir	48	48	48	48	48	48
I	D & M WSC	Neches	Nacogdoches Lake/Reservoir	186	185	183	182	181	179
I	Irrigation, Nacogdoches	Neches	Neches Run-of-River	67	67	67	67	67	67
I	Livestock, Nacogdoches	Neches	Neches Livestock Local Supply	2,386	2,386	2,386	2,386	2,386	2,386
I	Manufacturing, Nacogdoches	Neches	Nacogdoches Lake/Reservoir	1,254	1,265	1,265	1,265	1,265	1,265
I	Manufacturing, Nacogdoches	Neches	Sam Rayburn-Steinhagen Lake/Reservoir System	10,000	10,000	10,000	10,000	10,000	10,000
I	Melrose WSC	Neches	Nacogdoches Lake/Reservoir	27	26	26	26	26	26
I	Mining, Nacogdoches	Neches	Neches Other Local Supply	494	494	494	494	494	494
I	Nacogdoches	Neches	Nacogdoches Lake/Reservoir	4,903	5,326	5,752	6,243	6,796	7,372
<b>Sum of Projected Surface Water Supplies (acre-feet)</b>				<b>19,432</b>	<b>19,864</b>	<b>20,287</b>	<b>20,777</b>	<b>21,328</b>	<b>21,902</b>

## Appendix A.

# 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.

<b>ANGELINA COUNTY</b>			<i>100% (multiplier)</i>						All values are in acre-feet
<b>RWPG</b>	<b>WUG</b>	<b>WUG Basin</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>	
I	Angelina WSC	Neches	251	251	254	265	274	284	
I	Central WCID of Angelina County	Neches	510	527	555	582	605	626	
I	County-Other, Angelina	Neches	641	653	668	697	722	746	
I	Diboll	Neches	738	758	776	811	841	870	
I	Four Way SUD	Neches	484	502	520	538	558	577	
I	Hudson WSC	Neches	644	689	727	762	793	820	
I	Huntington	Neches	254	259	264	271	281	291	
I	Irrigation, Angelina	Neches	779	779	779	779	779	779	
I	Livestock, Angelina	Neches	1,028	1,028	1,028	1,028	1,028	1,028	
I	Lufkin	Neches	7,253	7,545	7,792	8,073	8,382	8,668	
I	M & M WSC	Neches	283	286	290	300	310	321	
I	Manufacturing, Angelina	Neches	3,658	3,878	3,878	3,878	3,878	3,878	
I	Mining, Angelina	Neches	486	585	410	312	237	180	
I	Pollok-Redtown WSC	Neches	162	166	170	176	184	191	
I	Redland WSC	Neches	203	201	210	219	227	235	
I	Steam-Electric Power, Angelina	Neches	3,520	3,520	3,520	3,520	3,520	3,520	
I	Upper Jasper County Water Authority	Neches	11	11	10	10	10	10	
I	Woodlawn WSC	Neches	163	165	168	173	180	186	
I	Zavalla	Neches	85	87	89	91	95	98	
<b>Sum of Projected Water Demands (acre-feet)</b>			<b>21,153</b>	<b>21,890</b>	<b>22,108</b>	<b>22,485</b>	<b>22,904</b>	<b>23,308</b>	

**NACOGDOCHES  
COUNTY**

100% (multiplier)

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
I	Appleby WSC	Neches	658	722	787	862	946	1,035
I	Caro WSC	Neches	254	272	292	317	347	380
I	County-Other, Nacogdoches	Neches	686	749	827	909	996	1,090
I	Cushing	Neches	166	181	197	216	237	259
I	D & M WSC	Neches	904	993	1,086	1,189	1,305	1,428
I	Etoile WSC	Neches	255	275	297	323	354	387
I	Garrison	Neches	252	277	302	331	363	397
I	Irrigation, Nacogdoches	Neches	266	266	266	266	266	266
I	Lilly Grove SUD	Neches	369	404	440	481	528	577
I	Livestock, Nacogdoches	Neches	9,693	10,122	10,619	11,195	11,854	12,836
I	Manufacturing, Nacogdoches	Neches	2,508	2,529	2,529	2,529	2,529	2,529
I	Melrose WSC	Neches	410	447	485	529	581	635
I	Mining, Nacogdoches	Neches	7,000	4,500	1,643	1,299	958	707
I	Nacogdoches	Neches	6,868	7,514	8,177	8,945	9,818	10,742
I	Swift WSC	Neches	424	461	499	545	598	654
I	Woden WSC	Neches	340	368	396	432	473	518
<b>Sum of Projected Water Demands (acre-feet)</b>			<b>31,053</b>	<b>30,080</b>	<b>28,842</b>	<b>30,368</b>	<b>32,153</b>	<b>34,440</b>

## Appendix A.

# Projected Water Supply Needs TWDB 2022 State Water Plan Data

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

### ANGELINA COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
I	Angelina WSC	Neches	272	272	269	258	249	239
I	Central WCID of Angelina County	Neches	367	350	322	295	272	251
I	County-Other, Angelina	Neches	1,496	1,484	1,469	1,440	1,415	1,391
I	Diboll	Neches	1,523	1,503	1,485	1,450	1,420	1,391
I	Four Way SUD	Neches	732	714	696	678	658	639
I	Hudson WSC	Neches	0	0	0	0	0	0
I	Huntington	Neches	803	798	793	786	776	766
I	Irrigation, Angelina	Neches	331	331	331	331	331	331
I	Livestock, Angelina	Neches	0	0	0	0	0	0
I	Lufkin	Neches	0	0	0	0	0	0
I	M & M WSC	Neches	0	0	0	0	0	0
I	Manufacturing, Angelina	Neches	-1,449	-1,625	-1,625	-1,625	-1,625	-1,625
I	Mining, Angelina	Neches	-473	-572	-397	-299	-224	-167
I	Pollok-Redtown WSC	Neches	0	0	0	0	0	0
I	Redland WSC	Neches	575	577	568	559	551	543
I	Steam-Electric Power, Angelina	Neches	13,282	13,282	13,282	13,282	13,282	13,282
I	Upper Jasper County Water Authority	Neches	0	0	0	0	0	0
I	Woodlawn WSC	Neches	0	0	0	0	0	0
I	Zavalla	Neches	0	0	0	0	0	0
<b>Sum of Projected Water Supply Needs (acre-feet)</b>			<b>-1,922</b>	<b>-2,197</b>	<b>-2,022</b>	<b>-1,924</b>	<b>-1,849</b>	<b>-1,792</b>

## NACOGDOCHES COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
I	Appleby WSC	Neches	282	218	153	78	0	1
I	Caro WSC	Neches	0	0	0	0	0	0
I	County-Other, Nacogdoches	Neches	1	1	1	1	1	1
I	Cushing	Neches	63	48	32	13	-8	-30
I	D & M WSC	Neches	150	61	-32	-135	-251	-374
I	Etoile WSC	Neches	0	0	0	0	0	0
I	Garrison	Neches	313	288	263	234	202	168
I	Irrigation, Nacogdoches	Neches	174	174	174	174	174	174
I	Lilly Grove SUD	Neches	295	260	224	183	136	87
I	Livestock, Nacogdoches	Neches	-5,970	-6,399	-6,896	-7,472	-8,131	-9,113
I	Manufacturing, Nacogdoches	Neches	10,000	10,001	10,001	10,001	10,001	10,001
I	Melrose WSC	Neches	398	361	323	279	227	173
I	Mining, Nacogdoches	Neches	-5,475	-2,975	-118	226	567	818
I	Nacogdoches	Neches	0	0	0	0	0	0
I	Swift WSC	Neches	233	196	158	112	59	3
I	Woden WSC	Neches	430	402	374	338	297	252
<b>Sum of Projected Water Supply Needs (acre-feet)</b>			<b>-11,445</b>	<b>-9,374</b>	<b>-7,046</b>	<b>-7,607</b>	<b>-8,390</b>	<b>-9,517</b>



## Appendix A.

# Projected Water Management Strategies TWDB 2022 State Water Plan Data

### ANGELINA COUNTY

#### WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
<b>Lufkin, Neches (I)</b>							
LUFK-RAY Sam Rayburn Infrastructure	Sam Rayburn-Steinhagen Lake/Reservoir System [Reservoir]	0	11,210	22,420	28,000	28,000	28,000
Lufkin - Municipal Conservation	DEMAND REDUCTION [Angelina]	151	239	273	0	0	0
		<b>151</b>	<b>11,449</b>	<b>22,693</b>	<b>28,000</b>	<b>28,000</b>	<b>28,000</b>
<b>Manufacturing, Angelina, Neches (I)</b>							
Angelina Manufacturing	Kurth Lake/Reservoir [Reservoir]	1,625	1,625	1,625	1,625	1,625	1,625
		<b>1,625</b>	<b>1,625</b>	<b>1,625</b>	<b>1,625</b>	<b>1,625</b>	<b>1,625</b>
<b>Mining, Angelina, Neches (I)</b>							
ANRA-Run-of-River (Submitted Application)	Neches Run-of-River [Angelina]	0	572	397	299	224	167
		<b>0</b>	<b>572</b>	<b>397</b>	<b>299</b>	<b>224</b>	<b>167</b>
<b>Sum of Projected Water Management Strategies (acre-feet)</b>		<b>1,776</b>	<b>13,646</b>	<b>24,715</b>	<b>29,924</b>	<b>29,849</b>	<b>29,792</b>

## NACOGDOCHES COUNTY

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
<b>Appleby WSC, Neches (I)</b>							
Appleby WSC - Municipal Conservation	DEMAND REDUCTION [Nacogdoches]	9	17	20	23	27	32
		<b>9</b>	<b>17</b>	<b>20</b>	<b>23</b>	<b>27</b>	<b>32</b>
<b>County-Other, Nacogdoches, Neches (I)</b>							
ANRA-COL - Lake Columbia	Columbia Lake/Reservoir [Reservoir]	0	428	428	428	428	86
		<b>0</b>	<b>428</b>	<b>428</b>	<b>428</b>	<b>428</b>	<b>86</b>
<b>Cushing, Neches (I)</b>							
WUG-CONS-Municipal Conservation-Cushing	DEMAND REDUCTION [Nacogdoches]	10	19	24	30	37	45
		<b>10</b>	<b>19</b>	<b>24</b>	<b>30</b>	<b>37</b>	<b>45</b>
<b>D &amp; M WSC, Neches (I)</b>							
NACW-DMW-New Wells in Carrizo-Wilcox Aquifer	Carrizo-Wilcox Aquifer [Nacogdoches]	0	0	32	135	251	374
		<b>0</b>	<b>0</b>	<b>32</b>	<b>135</b>	<b>251</b>	<b>374</b>
<b>Garrison, Neches (I)</b>							
Garrison - Municipal Conservation	DEMAND REDUCTION [Nacogdoches]	4	6	8	9	10	12
		<b>4</b>	<b>6</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>12</b>
<b>Livestock, Nacogdoches, Neches (I)</b>							
NACW-LTK-New Wells in Carrizo-Wilcox Aquifer	Carrizo-Wilcox Aquifer [Nacogdoches]	0	6,399	6,896	7,472	8,131	9,113
		<b>0</b>	<b>6,399</b>	<b>6,896</b>	<b>7,472</b>	<b>8,131</b>	<b>9,113</b>
<b>Mining, Nacogdoches, Neches (I)</b>							
ANRA-Run-of-River (Submitted Application)	Neches Run-of-River [Nacogdoches]	0	2,975	118	0	0	0
		<b>0</b>	<b>2,975</b>	<b>118</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Nacogdoches, Neches (I)</b>							
ANRA-COL - Lake Columbia	Columbia Lake/Reservoir [Reservoir]	0	8,551	8,551	8,551	8,551	8,551
WUG-CONS-Municipal Conservation- Nacogdoches	DEMAND REDUCTION [Nacogdoches]	247	426	532	656	802	966
		<b>247</b>	<b>8,977</b>	<b>9,083</b>	<b>9,207</b>	<b>9,353</b>	<b>9,517</b>
<b>Sum of Projected Water Management Strategies (acre-feet)</b>		<b>270</b>	<b>18,821</b>	<b>16,609</b>	<b>17,304</b>	<b>18,237</b>	<b>19,179</b>

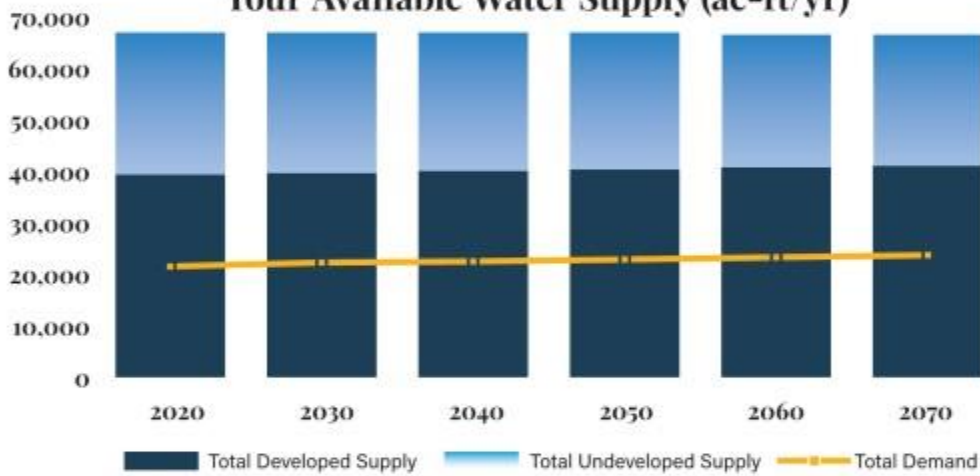
# Appendix A.

## ANGELINA COUNTY WATER PLAN SUMMARY

### Your County Water Demand (acre-feet)



### Your Available Water Supply (ac-ft/yr)



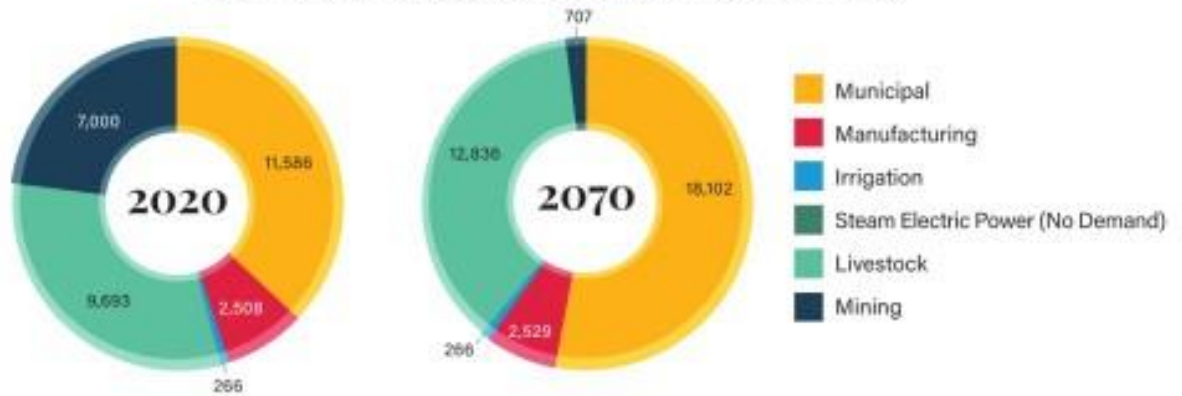
### Angelina County - Your Water User Groups with Identified Needs

Water User Group	Decade of Need	Water Management Strategy
Municipal	-	No Water Shortage Identified
Manufacturing	2020	Purchase Additional Supply from Lufkin
Irrigation	-	No Water Shortage Identified
Steam Electric Power	-	No Water Shortage Identified
Livestock	-	No Water Shortage Identified
Mining	2020	Purchase Additional Supply from ANRA

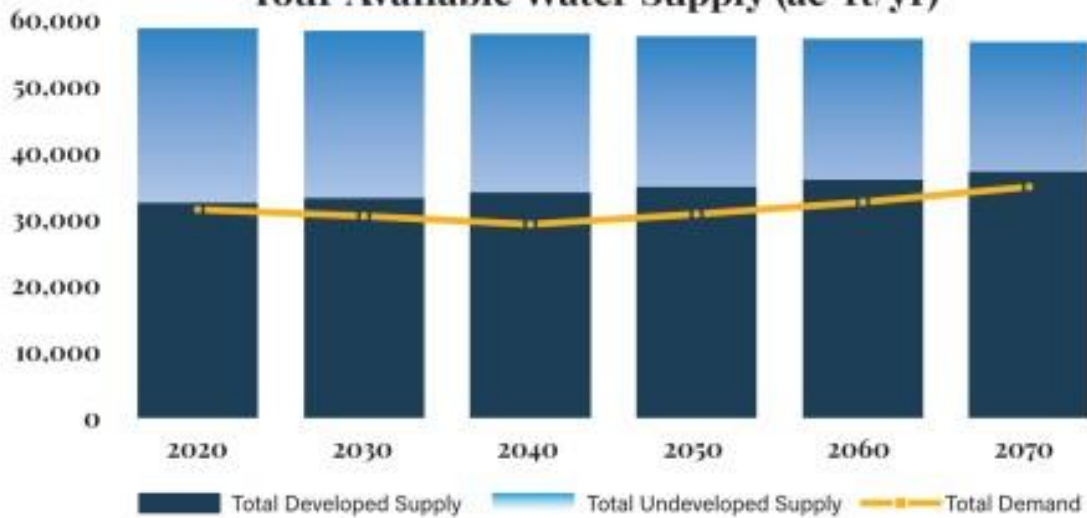
# Appendix A.

## NACOGDOCHES COUNTY WATER PLAN SUMMARY

### Your County Water Demand (acre-feet)



### Your Available Water Supply (ac-ft/yr)



### Nacogdoches County - Your Water User Groups with Identified Needs

Water User Group	Decade of Need	Water Management Strategy
Cushing	2060	Municipal Conservation
D & M WSC	2040	Additional Wells in Carrizo Aquifer
Manufacturing	-	No Water Shortage Identified
Irrigation	-	No Water Shortage Identified
Steam Electric Power	-	No Demand Projected
Livestock	2020	Additional Wells in Carrizo Aquifer
Mining	2020	Purchase Additional Supply from ANRA

## Appendix B.

### Groundwater Management Area (GMA) 11 Desired Future Conditions 2021 Joint Planning

Adopted Desired Future Conditions for Relevant Aquifers				
County	Desired Future Condition (DFC) 2013 to 2080 Average Drawdown (ft) by Aquifer			Date DFC Adopted
	Sparta	Queen City	Carrizo-Wilcox	
Anderson	30	44	155	8/11/2021
Angelina	6	28	67	8/11/2021
Bowie	--	--	12	8/11/2021
Camp	--	11	85	8/11/2021
Cass	66	34	79	8/11/2021
Cherokee	7	31	176	8/11/2021
Franklin	--	--	102	8/11/2021
Gregg	--	49	109	8/11/2021
Harrison	--	41	26	8/11/2021
Henderson	--	33	106	8/11/2021
Hopkins	--	--	61	8/11/2021
Houston	3	12	86	8/11/2021
Marion	123	32	32	8/11/2021
Morris	--	39	78	8/11/2021
Nacogdoches	7	22	73	8/11/2021
Panola	--	--	21	8/11/2021
Rains	--	--	17	8/11/2021
Rusk	26	17	86	8/11/2021

## Appendix C.

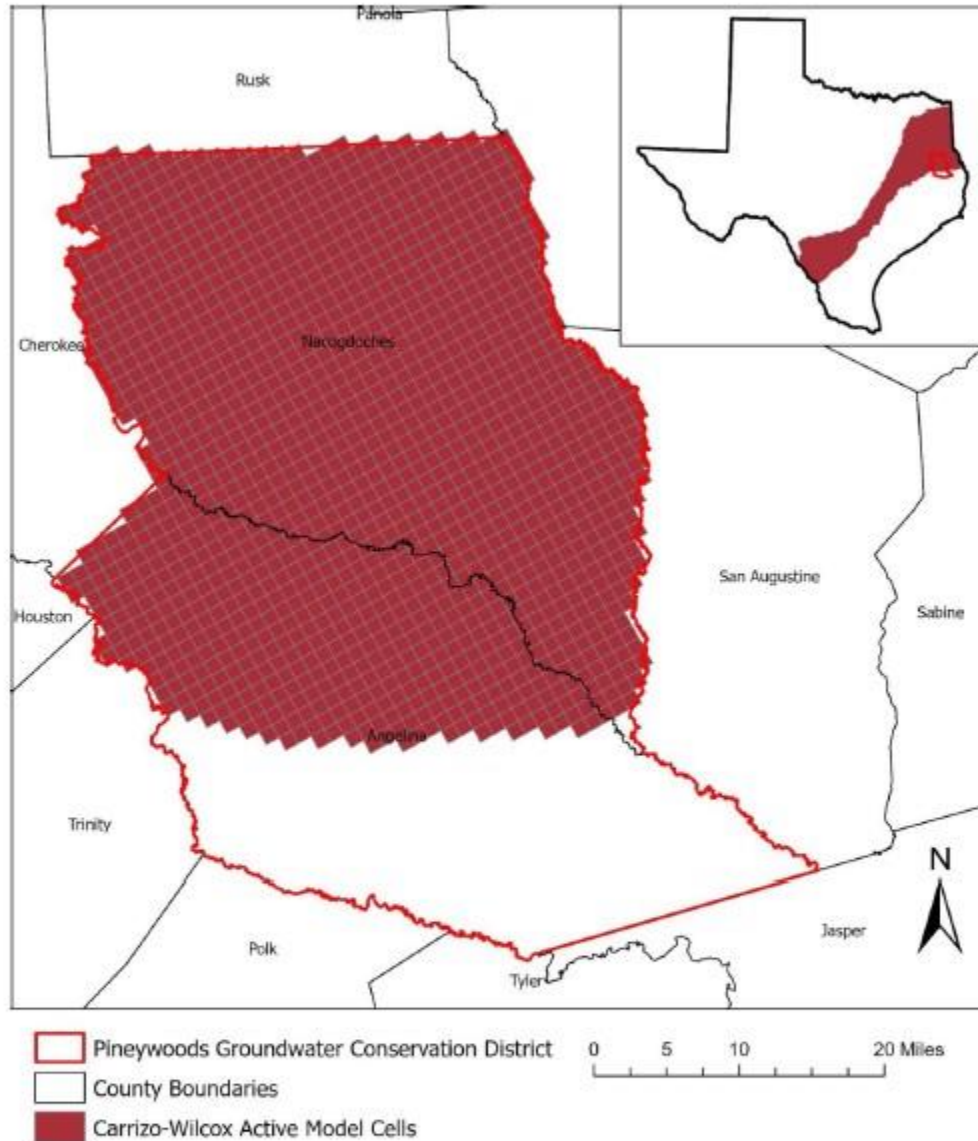
GAM Run 23-003: Pineywoods Groundwater Conservation District Management Plan  
 May 17, 2023  
 Page 9 of 26

**TABLE 1: SUMMARIZED INFORMATION FOR THE CARRIZO-WILCOX AQUIFER THAT IS NEEDED FOR THE PINEYWOODS GROUNDWATER CONSERVATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT.**

Management plan requirement	Aquifer or confining unit	Results
Estimated annual amount of recharge from precipitation to the district	Carrizo-Wilcox Aquifer	6,157
Estimated annual volume of water that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers	Carrizo-Wilcox Aquifer	1,915
Estimated annual volume of flow into the district within each aquifer in the district	Carrizo-Wilcox Aquifer	20,569
Estimated annual volume of flow out of the district within each aquifer in the district	Carrizo-Wilcox Aquifer	3,632
Estimated net annual volume of flow between each aquifer in the district	To the Carrizo-Wilcox Aquifer from the overlying Reklaw Formation	3,760
	To the Carrizo-Wilcox Aquifer from Carrizo-Wilcox equivalent units	7,258

# Appendix C

GAM Run 23-003: Pineywoods Groundwater Conservation District Management Plan  
May 17, 2023  
Page 10 of 26

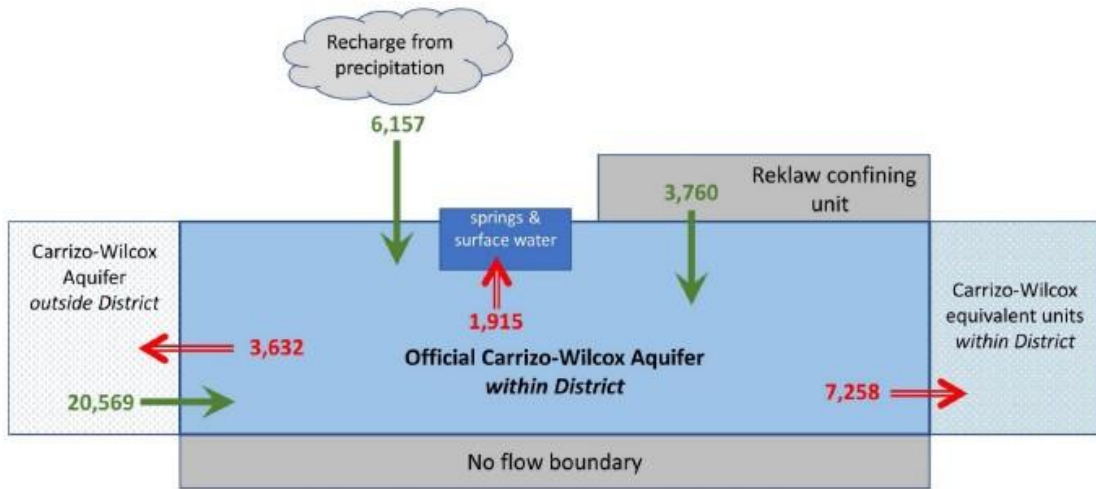


gcd boundary date: 06.26.2020, county boundaries date: 07.03.2019, czwx\_n grid date: 06.07.2021

**FIGURE 1: AREA OF THE NORTHERN PORTION OF THE CARRIZO-WILCOX, QUEEN CITY, AND SPARTA AQUIFERS GROUNDWATER AVAILABILITY MODEL FROM WHICH THE INFORMATION IN TABLE 1 WAS EXTRACTED (THE CARRIZO-WILCOX AQUIFER EXTENT WITHIN THE DISTRICT BOUNDARY).**

# Appendix C

GAM Run 23-003: Pineywoods Groundwater Conservation District Management Plan  
 May 17, 2023  
 Page 11 of 26



*Caveat: This diagram only includes the water budget items provided in Table 1. A complete water budget would include additional inflows and outflows. For a full groundwater budget, please submit a request in writing to the Groundwater Modeling Department.*

**FIGURE 2: GENERALIZED DIAGRAM OF THE SUMMARIZED BUDGET INFORMATION FROM TABLE 1, REPRESENTING DIRECTIONS OF FLOW FOR THE CARRIZO-WILCOX AQUIFER WITHIN PINEYWOODS GROUNDWATER CONSERVATION DISTRICT. FLOW VALUES EXPRESSED IN ACRE-FEET PER YEAR.**



## Appendix C.

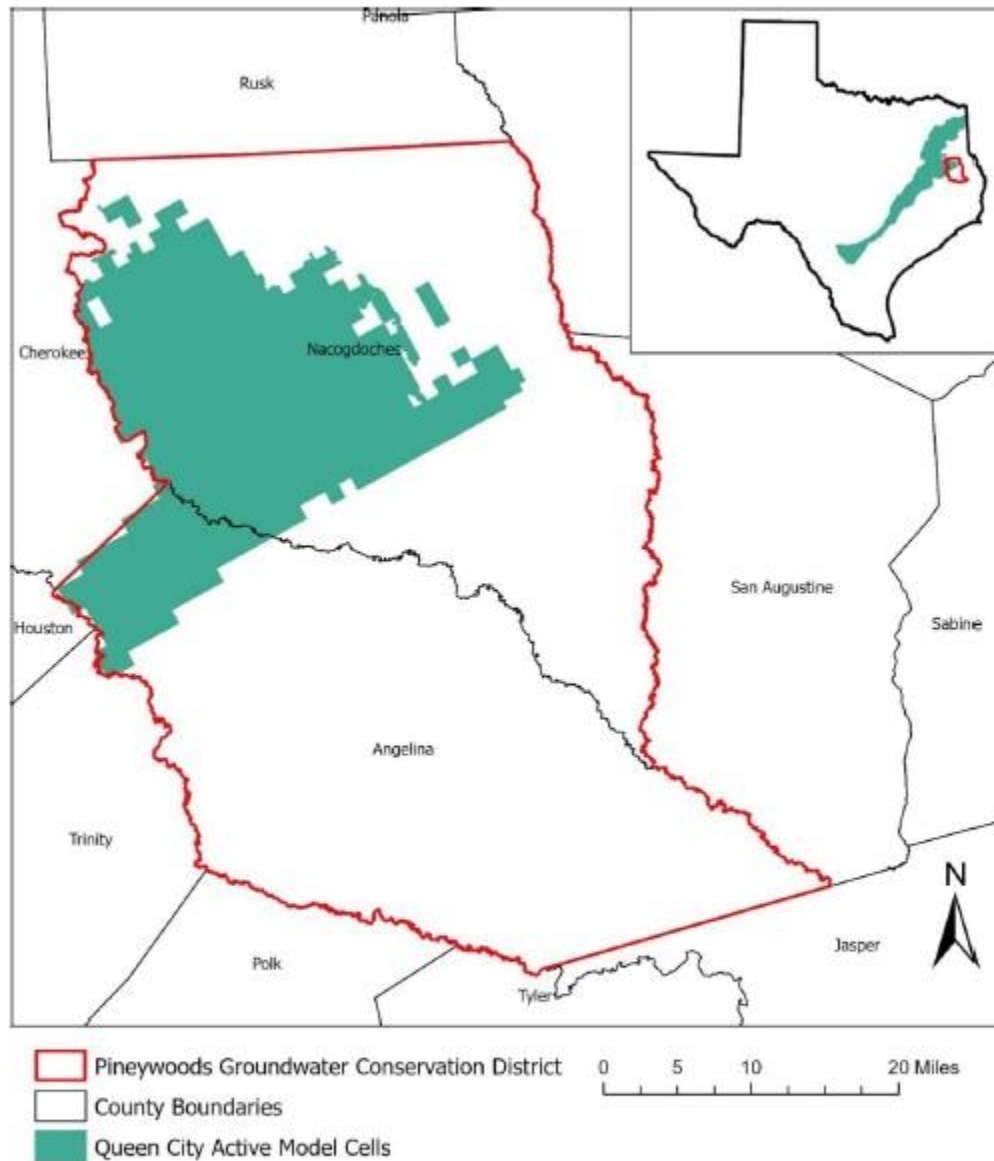
GAM Run 23-003: Pineywoods Groundwater Conservation District Management Plan  
 May 17, 2023  
 Page 12 of 26

**TABLE 2: SUMMARIZED INFORMATION FOR THE QUEEN CITY AQUIFER THAT IS NEEDED FOR THE PINEYWOODS GROUNDWATER CONSERVATION DISTRICT GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT.**

Management plan requirement	Aquifer or confining unit	Results
Estimated annual amount of recharge from precipitation to the district	Queen City Aquifer	3,990
Estimated annual volume of water that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers	Queen City Aquifer	1,421
Estimated annual volume of flow into the district within each aquifer in the district	Queen City Aquifer	655
Estimated annual volume of flow out of the district within each aquifer in the district	Queen City Aquifer	243
Estimated net annual volume of flow between each aquifer in the district	From the Queen City Aquifer to the Sparta Aquifer	71
	To the Queen City Aquifer from the overlying Weches Formation	1,520
	From the Queen City Aquifer to the underlying Reklaw Formation	1,089
	From the Queen City Aquifer to Queen City equivalent units	74

# Appendix C.

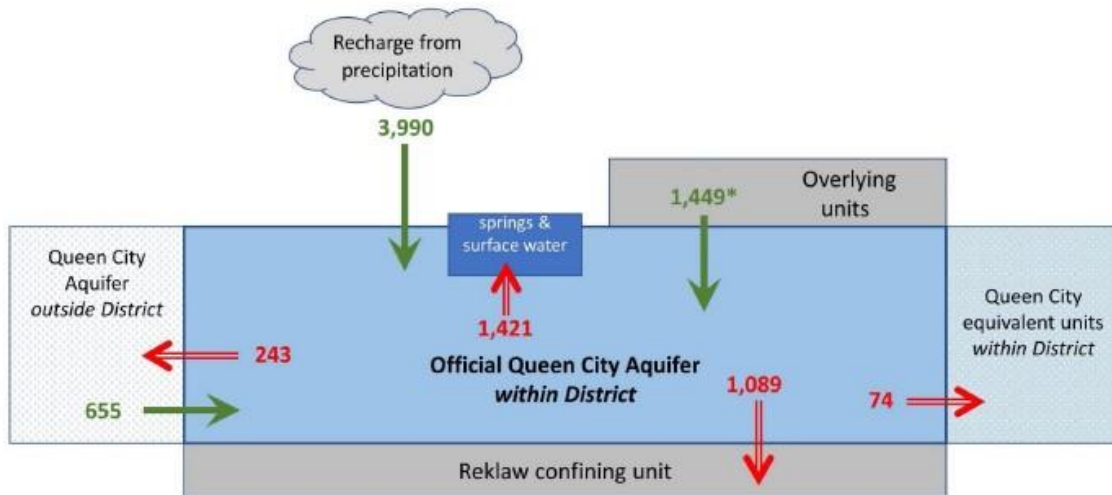
GAM Run 23-003: Pineywoods Groundwater Conservation District Management Plan  
May 17, 2023  
Page 13 of 26



**FIGURE 3: AREA OF THE NORTHERN PORTION OF THE CARRIZO-WILCOX, QUEEN CITY, AND SPARTA AQUIFERS GROUNDWATER AVAILABILITY MODEL FROM WHICH THE INFORMATION IN TABLE 2 WAS EXTRACTED (THE QUEEN CITY AQUIFER EXTENT WITHIN THE DISTRICT BOUNDARY).**

# Appendix C.

GAM Run 23-003: Pineywoods Groundwater Conservation District Management Plan  
 May 17, 2023  
 Page 14 of 26



\* Flow from overlying units includes net outflow of 71 acre-feet per year to the Sparta Aquifer and a new inflow of 1,520 acre-feet per year to the Weches confining unit.

*Caveat: This diagram only includes the water budget items provided in Table 2. A complete water budget would include additional inflows and outflows. For a full groundwater budget, please submit a request in writing to the Groundwater Modeling Department.*

**FIGURE 4: GENERALIZED DIAGRAM OF THE SUMMARIZED BUDGET INFORMATION FROM TABLE 2, REPRESENTING DIRECTIONS OF FLOW FOR THE QUEEN CITY AQUIFER WITHIN PINEYWOODS GROUNDWATER CONSERVATION DISTRICT. FLOW VALUES EXPRESSED IN ACRE-FEET PER YEAR.**

## Appendix C.

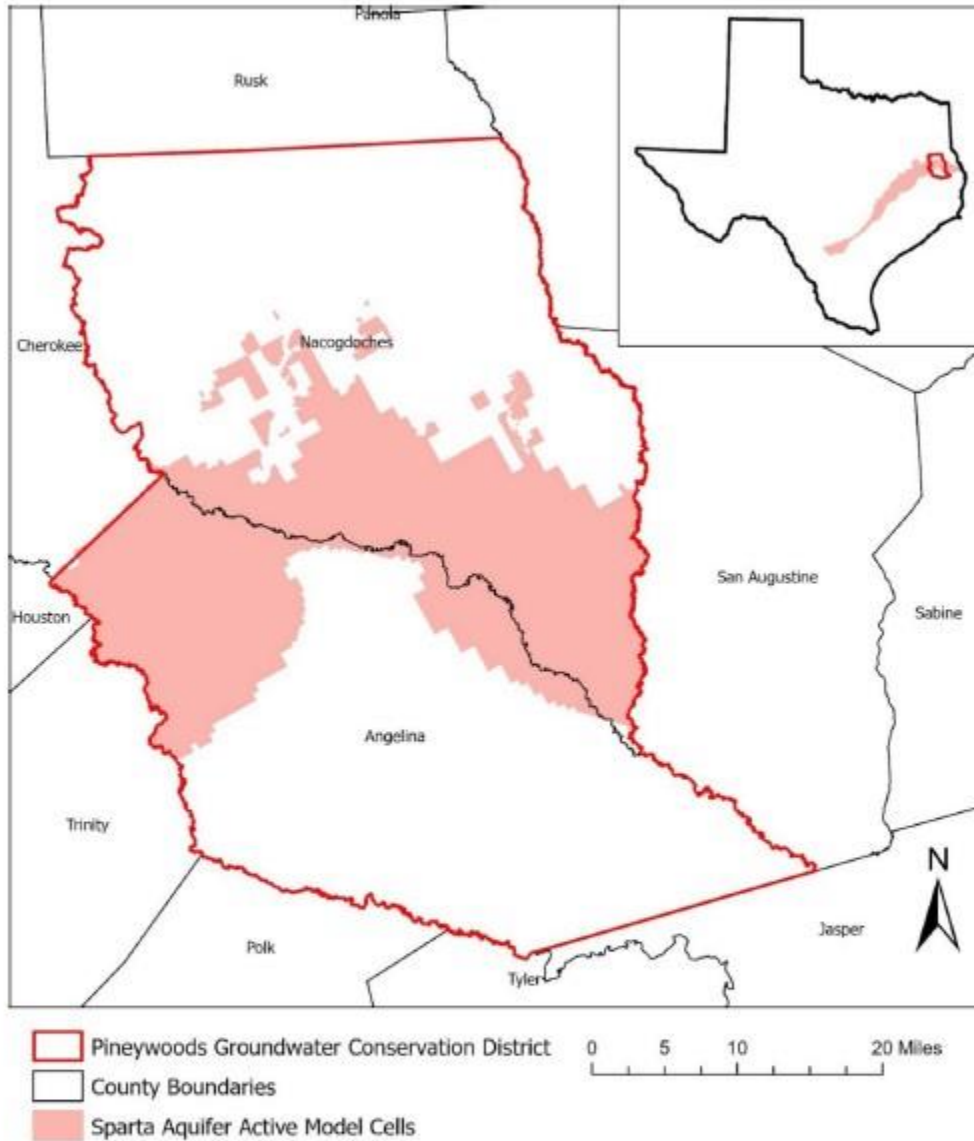
GAM Run 23-003: Pineywoods Groundwater Conservation District Management Plan  
 May 17, 2023  
 Page 15 of 26

**TABLE 3: SUMMARIZED INFORMATION FOR THE SPARTA AQUIFER THAT IS NEEDED FOR THE PINEYWOODS GROUNDWATER CONSERVATION DISTRICT GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT.**

Management plan requirement	Aquifer or confining unit	Results
Estimated annual amount of recharge from precipitation to the district	Sparta Aquifer	10,613
Estimated annual volume of water that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers	Sparta Aquifer	5,029
Estimated annual volume of flow into the district within each aquifer in the district	Sparta Aquifer	1,087
Estimated annual volume of flow out of the district within each aquifer in the district	Sparta Aquifer	464
Estimated net annual volume of flow between each aquifer in the district	From the Sparta Aquifer to younger units	33
	From the Sparta Aquifer to the underlying Weches Formation	762
	To the Sparta Aquifer from the Queen City Aquifer	71
	From the Sparta Aquifer to Sparta equivalent units	184

# Appendix C.

GAM Run 23-003: Pineywoods Groundwater Conservation District Management Plan  
May 17, 2023  
Page 16 of 26

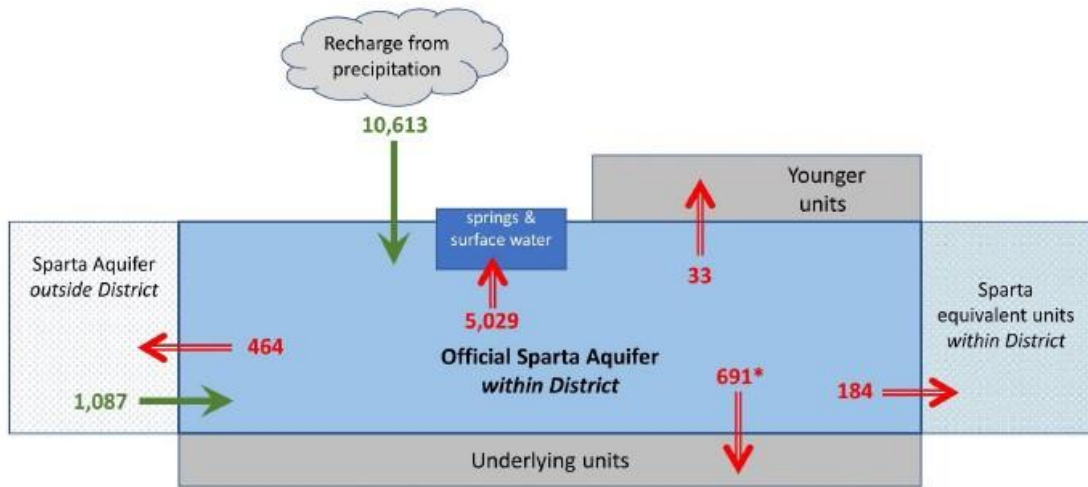


gcd boundary date: 06.26.2020, county boundaries date: 07.03.2019, czwx\_n grid date: 06.07.2021

**FIGURE 5: AREA OF THE NORTHERN PORTION OF THE CARRIZO-WILCOX, QUEEN CITY, AND SPARTA AQUIFERS GROUNDWATER AVAILABILITY MODEL FROM WHICH THE INFORMATION IN TABLE 3 WAS EXTRACTED (THE SPARTA AQUIFER EXTENT WITHIN THE DISTRICT BOUNDARY).**

# Appendix C.

GAM Run 23-003: Pineywoods Groundwater Conservation District Management Plan  
 May 17, 2023  
 Page 17 of 26



\* Flow to underlying units includes net inflow of 71 acre-feet per year from the Queen City Aquifer and net outflow of 762 acre-feet per year to the Weches confining unit.

*Caveat: This diagram only includes the water budget items provided in Table 3. A complete water budget would include additional inflows and outflows. For a full groundwater budget, please submit a request in writing to the Groundwater Modeling Department.*

**FIGURE 6: GENERALIZED DIAGRAM OF THE SUMMARIZED BUDGET INFORMATION FROM TABLE 3, REPRESENTING DIRECTIONS OF FLOW FOR THE SPARTA AQUIFER WITHIN PINEYWOODS GROUNDWATER CONSERVATION DISTRICT. FLOW VALUES EXPRESSED IN ACRE-FEET PER YEAR.**

## Appendix C.

GAM Run 23-003: Pineywoods Groundwater Conservation District Management Plan  
 May 17, 2023  
 Page 18 of 26

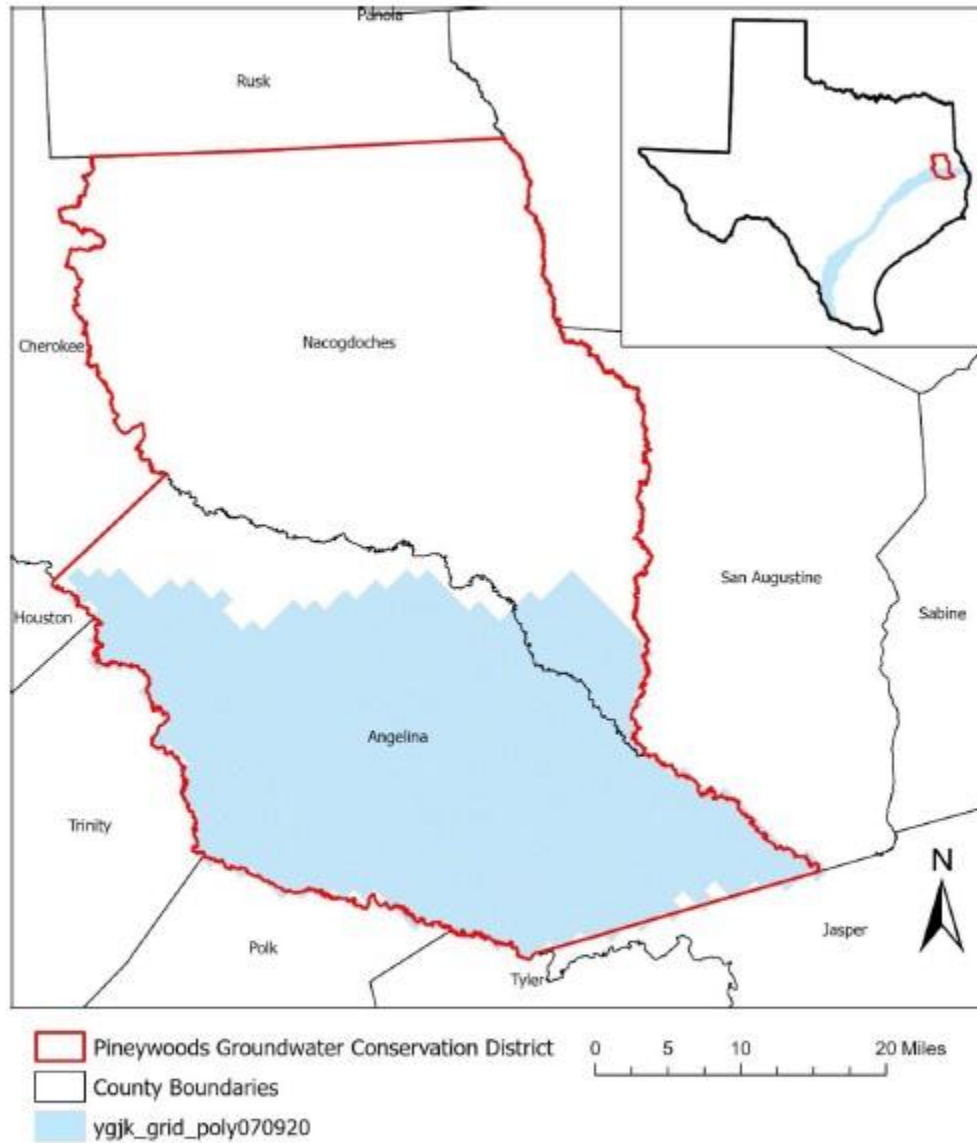
**TABLE 4: SUMMARIZED INFORMATION FOR THE YEGUA-JACKSON AQUIFER THAT IS NEEDED FOR THE PINEYWOODS GROUNDWATER CONSERVATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT.**

Management plan requirement	Aquifer or confining unit	Results
Estimated annual amount of recharge from precipitation to the district	Yegua-Jackson Aquifer	52,555
Estimated annual volume of water that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers	Yegua-Jackson Aquifer	38,914
Estimated annual volume of flow into the district within each aquifer in the district	Yegua-Jackson Aquifer	11,695
Estimated annual volume of flow out of the district within each aquifer in the district	Yegua-Jackson Aquifer	8,741
Estimated net annual volume of flow between each aquifer in the district	From Yegua-Jackson Aquifer to Gulf Coast Aquifer System*	4
	To Yegua-Jackson Aquifer from Yegua-Jackson equivalent units	2

\* The Catahoula Formation in model Layer 1 represents the base of the Gulf Coast Aquifer System within the Pineywoods Groundwater Conservation District.

# Appendix C.

GAM Run 23-003: Pineywoods Groundwater Conservation District Management Plan  
May 17, 2023  
Page 19 of 26



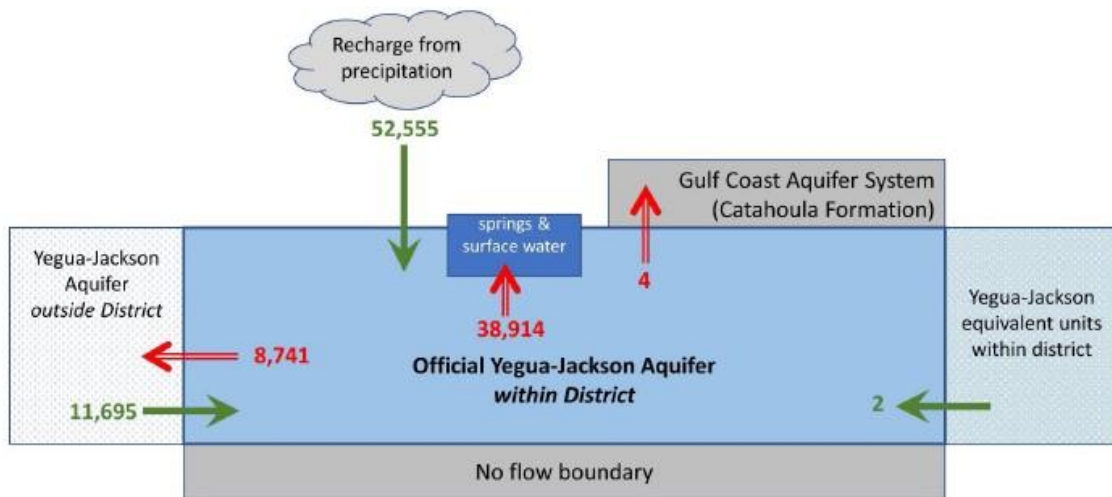
gcd boundary date: 06.26.2020, county boundaries date: 07.03.2019, ygjk grid date: 03.17.2023

**FIGURE 7: AREA OF THE YEGUA-JACKSON AQUIFER GROUNDWATER AVAILABILITY MODEL FROM WHICH THE INFORMATION IN TABLE 4 WAS EXTRACTED (THE YEGUA-JACKSON AQUIFER EXTENT WITHIN THE DISTRICT BOUNDARY).**



# Appendix C.

GAM Run 23-003: Pineywoods Groundwater Conservation District Management Plan  
May 17, 2023  
Page 20 of 26



*Caveat: This diagram only includes the water budget items provided in Table 4. A complete water budget would include additional inflows and outflows. For a full groundwater budget, please submit a request in writing to the Groundwater Modeling Department.*

**FIGURE 8: GENERALIZED DIAGRAM OF THE SUMMARIZED BUDGET INFORMATION FROM TABLE 4, REPRESENTING DIRECTIONS OF FLOW FOR THE YEGUA-JACKSON AQUIFER WITHIN PINEYWOODS GROUNDWATER CONSERVATION DISTRICT. FLOW VALUES EXPRESSED IN ACRE-FEET PER YEAR.**

## Appendix C.

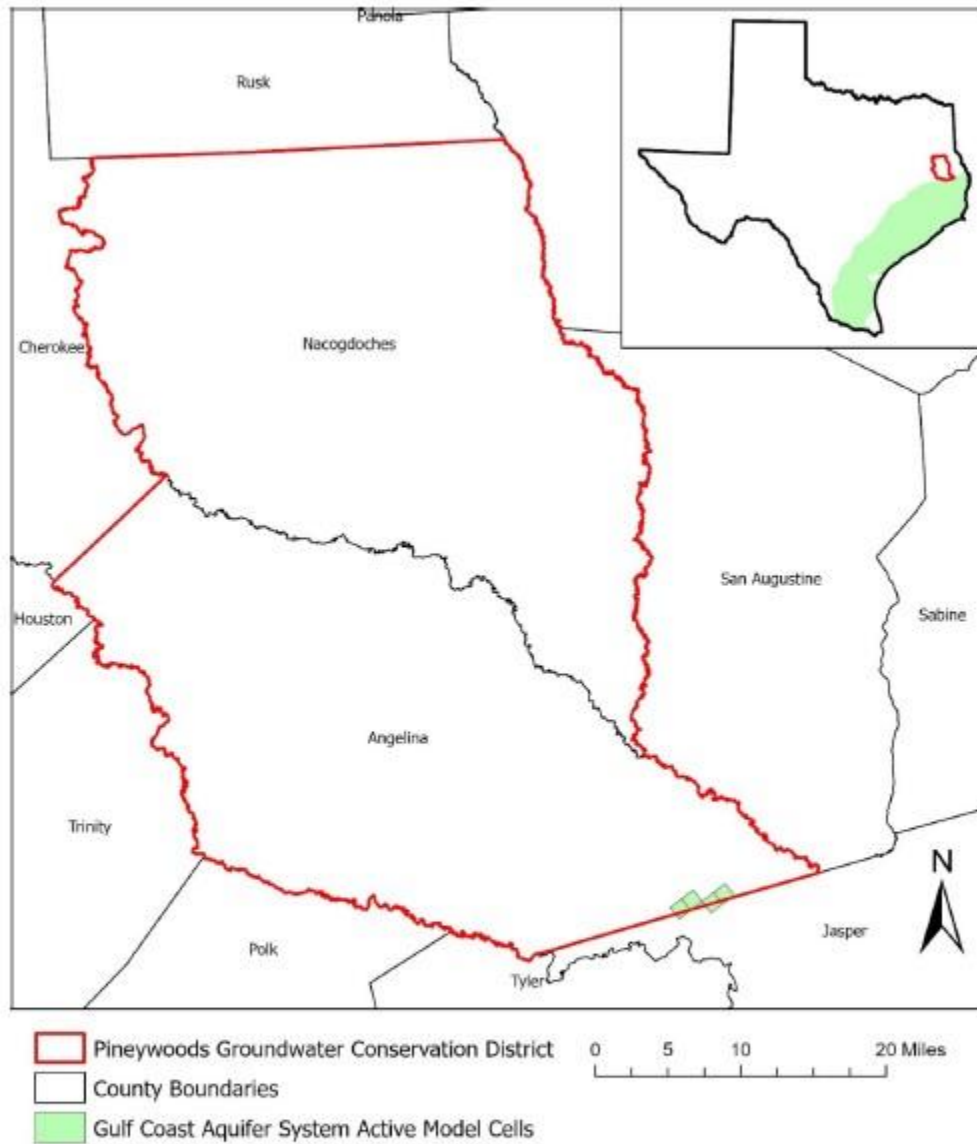
**TABLE 5: SUMMARIZED INFORMATION FOR THE GULF COAST AQUIFER SYSTEM THAT IS NEEDED FOR THE PINEYWOODS GROUNDWATER CONSERVATION DISTRICT GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT.**

Management plan requirement	Aquifer or confining unit	Results
Estimated annual amount of recharge from precipitation to the district	Gulf Coast Aquifer System	18
Estimated annual volume of water that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers	Gulf Coast Aquifer System	0
Estimated annual volume of flow into the district within each aquifer in the district	Gulf Coast Aquifer System	0
Estimated annual volume of flow out of the district within each aquifer in the district	Gulf Coast Aquifer System	18
Estimated net annual volume of flow between each aquifer in the district	To Gulf Coast Aquifer System from Yegua-Jackson Aquifer	4*

\* Budget value comes from the groundwater availability model for the Yegua-Jackson Aquifer (Deeds and others, 2010)

# Appendix C.

GAM Run 23-003: Pinewoods Groundwater Conservation District Management Plan  
May 17, 2023  
Page 22 of 26

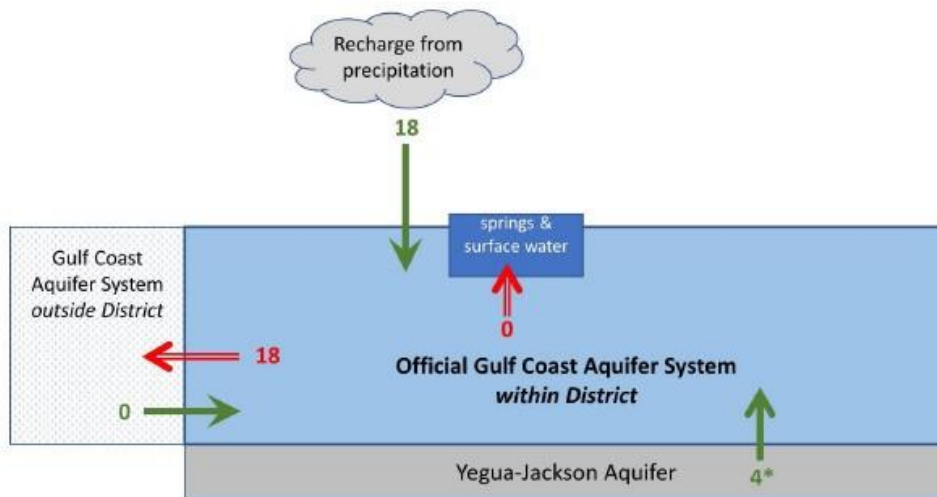


gcd boundary date: 06.26.2020, county boundaries date: 07.03.2019, glfc\_n grid date: 01.06.2020

**FIGURE 9: AREA OF THE NORTHERN PORTION OF THE GULF COAST AQUIFER SYSTEM GROUNDWATER AVAILABILITY MODEL FROM WHICH THE INFORMATION IN TABLE 5 WAS EXTRACTED (THE GULF COAST AQUIFER SYSTEM EXTENT WITHIN THE DISTRICT BOUNDARY).**

# Appendix C.

GAM Run 23-003: Pineywoods Groundwater Conservation District Management Plan  
May 17, 2023  
Page 23 of 26



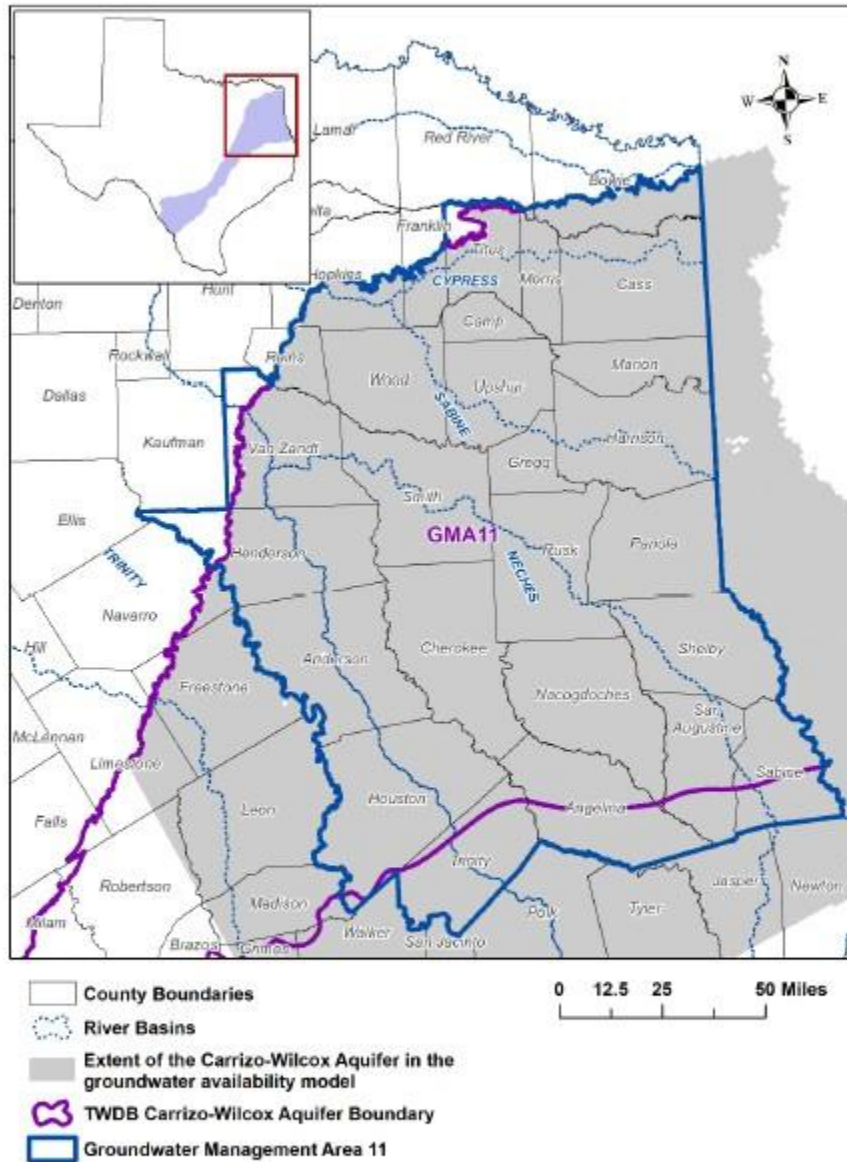
\* Flow value to the Yegua-Jackson Aquifer comes from the Groundwater Availability Model for the Yegua-Jackson Aquifer (Deeds and others, 2010)

*Caveat: This diagram only includes the water budget items provided in Table 5. A complete water budget would include additional inflows and outflows. For a full groundwater budget, please submit a request in writing to the Groundwater Modeling Department.*

**FIGURE 10: GENERALIZED DIAGRAM OF THE SUMMARIZED BUDGET INFORMATION FROM TABLE 5, REPRESENTING DIRECTIONS OF FLOW FOR THE GULF COAST AQUIFER SYSTEM WITHIN PINEYWOODS GROUNDWATER CONSERVATION DISTRICT. FLOW VALUES EXPRESSED IN ACRE-FEET PER YEAR.**

# Appendix D.

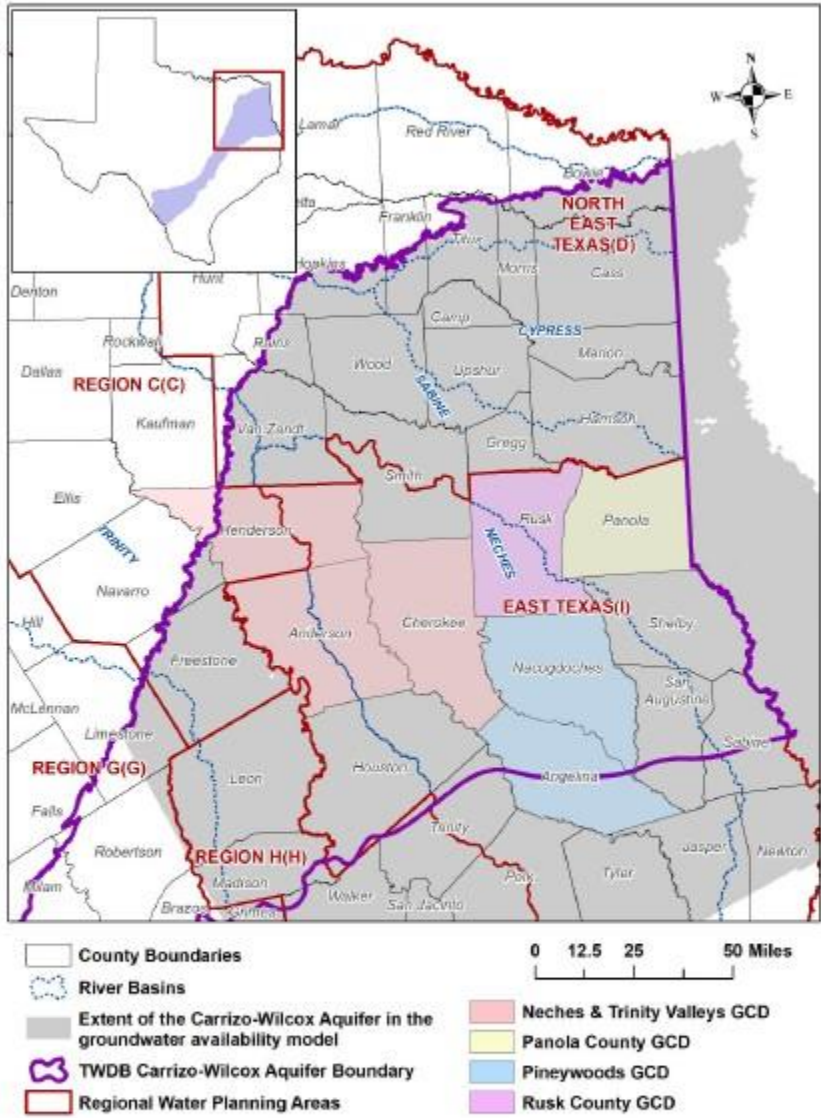
GAM Run 21-016 MAG: Modeled Available Groundwater for the Carrizo-Wilcox, Queen City, and Sparta aquifers in Groundwater Management Area 11  
February 17, 2022  
Page 9 of 24



**FIGURE 1. GROUNDWATER MANAGEMENT AREA (GMA) 11 BOUNDARY, RIVER BASINS, AND COUNTIES overlain ON THE EXTENT OF THE CARRIZO-WILCOX AQUIFER IN THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN PORTION OF THE CARRIZO-WILCOX, QUEEN CITY, AND SPARTA AQUIFERS.**

# Appendix D.

GAM Run 21-016 MAG: Modeled Available Groundwater for the Carrizo-Wilcox, Queen City, and Sparta aquifers in Groundwater Management Area 11  
 February 17, 2022  
 Page 10 of 24



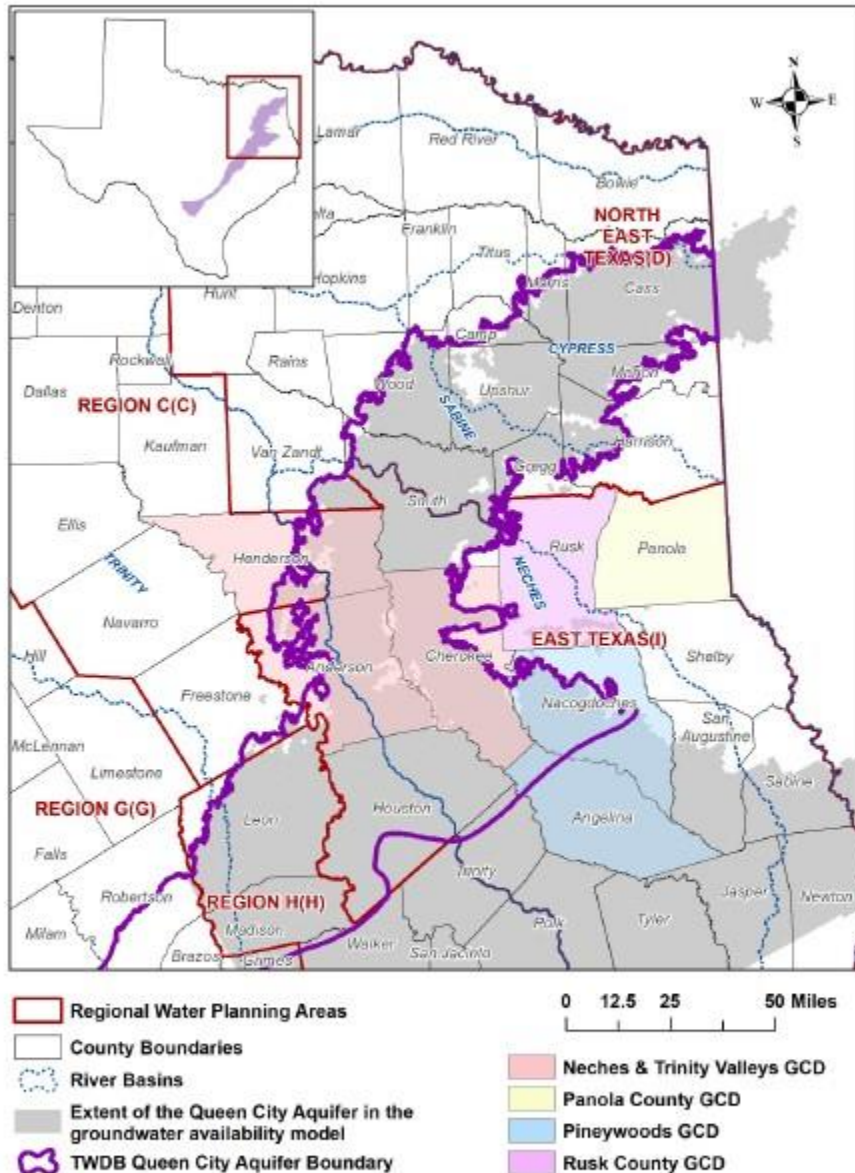
**FIGURE 2. REGIONAL WATER PLANNING AREAS (RWPAS), RIVER BASINS, GROUNDWATER CONSERVATION DISTRICTS (GCDs), AND COUNTIES OVERLAIN ON THE EXTENT OF THE CARRIZO-WILCOX AQUIFER IN THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN PORTION OF THE CARRIZO-WILCOX, QUEEN CITY, AND SPARTA AQUIFERS.**

# Appendix D.

GAM Run 21-016 MAG: Modeled Available Groundwater for the Carrizo-Wilcox, Queen City, and Sparta aquifers in Groundwater Management Area 11

February 17, 2022

Page 11 of 24



**FIGURE 3. REGIONAL WATER PLANNING AREAS (RWPAS), RIVER BASINS, GROUNDWATER CONSERVATION DISTRICTS (GCDs), AND COUNTIES OVERLAIN ON THE EXTENT OF THE QUEEN CITY AQUIFER IN THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN PORTION OF THE CARRIZO-WILCOX, QUEEN CITY, AND SPARTA AQUIFERS.**





# Appendix D.

GAM Run 21-016 MAG: Modeled Available Groundwater for the Carrizo-Wilcox, Queen City, and Sparta aquifers in Groundwater Management Area 11

February 17, 2022

Page 13 of 24

**TABLE 2. MODELED AVAILABLE GROUNDWATER FOR THE CARRIZO-WILCOX AQUIFER IN GROUNDWATER MANAGEMENT AREA 11 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	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
Neches & Trinity Valleys GCD	Anderson	Carrizo-Wilcox	27,024	27,024	27,024	27,024	27,024	27,024	27,024
Neches & Trinity Valleys GCD	Cherokee	Carrizo-Wilcox	15,241	15,241	15,241	15,241	15,241	15,241	15,241
Neches & Trinity Valleys GCD	Henderson	Carrizo-Wilcox	7,222	7,222	7,222	7,222	7,222	7,222	7,222
<b>Neches &amp; Trinity Valleys GCD Total</b>		<b>Carrizo-Wilcox</b>	<b>49,488</b>	<b>49,488</b>	<b>49,488</b>	<b>49,488</b>	<b>49,488</b>	<b>49,488</b>	<b>49,488</b>
<b>Panola County GCD</b>									
Panola County GCD	Panola	Carrizo-Wilcox	4,999	4,999	4,999	4,999	4,999	4,999	4,999
Pineywoods GCD	Angelina	Carrizo-Wilcox	27,611	27,611	27,611	27,611	27,611	27,611	27,611
Pineywoods GCD	Nacogdoches	Carrizo-Wilcox	20,859	20,859	20,859	20,859	20,859	20,859	20,859
<b>Pineywoods GCD Total</b>		<b>Carrizo-Wilcox</b>	<b>48,470</b>	<b>48,470</b>	<b>48,470</b>	<b>48,470</b>	<b>48,470</b>	<b>48,470</b>	<b>48,470</b>
<b>Rusk County GCD Total</b>	Rusk	<b>Carrizo-Wilcox</b>	<b>14,019</b>	<b>14,019</b>	<b>14,019</b>	<b>14,019</b>	<b>14,019</b>	<b>14,019</b>	<b>14,019</b>
<b>Total (GCDs)</b>		<b>Carrizo-Wilcox</b>	<b>116,975</b>	<b>116,975</b>	<b>116,975</b>	<b>116,975</b>	<b>116,975</b>	<b>116,975</b>	<b>116,975</b>
No District-County	Bowie	Carrizo-Wilcox	9,645	9,645	9,645	9,645	9,645	9,645	9,645
No District-County	Camp	Carrizo-Wilcox	3,862	3,862	3,862	3,862	3,862	3,862	3,862
No District-County	Cass	Carrizo-Wilcox	13,642	13,642	13,642	13,642	13,642	13,642	13,642
No District-County	Franklin	Carrizo-Wilcox	5,732	5,732	5,732	5,732	5,732	5,732	5,732
No District-County	Gregg	Carrizo-Wilcox	6,072	6,072	6,072	6,072	6,072	6,072	6,072
No District-County	Harrison	Carrizo-Wilcox	9,096	9,096	9,096	9,096	9,096	9,096	9,096
No District-County	Hopkins	Carrizo-Wilcox	4,753	4,753	4,753	4,752	4,752	4,752	4,752
No District-County	Houston	Carrizo-Wilcox	2,356	2,356	2,356	2,356	2,356	2,356	2,356
No District-County	Marion	Carrizo-Wilcox	1,966	1,966	1,966	1,966	1,966	1,966	1,966

# Appendix D.

GAM Run 21-016 MAG: Modeled Available Groundwater for the Carrizo-Wilcox, Queen City, and Sparta aquifers in Groundwater Management Area 11  
 February 17, 2022  
 Page 14 of 24

Groundwater Conservation District	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
No District-County	Morris	Carrizo-Wilcox	2,570	2,570	2,570	2,570	2,570	2,570	2,570
No District-County	Rains	Carrizo-Wilcox	1,411	1,411	1,411	1,411	1,411	1,411	1,411
No District-County	Red River	Carrizo-Wilcox	NR <sup>1</sup>	NR <sup>1</sup>	NR <sup>1</sup>	NR <sup>1</sup>	NR <sup>1</sup>	NR <sup>1</sup>	NR <sup>1</sup>
No District-County	Sabine	Carrizo-Wilcox	1,388	1,388	1,388	1,388	1,388	1,388	1,388
No District-County	San Augustine	Carrizo-Wilcox	587	587	587	587	587	587	587
No District-County	Shelby	Carrizo-Wilcox	6,319	6,319	6,319	6,319	6,319	6,319	6,319
No District-County	Smith	Carrizo-Wilcox	25,547	25,547	25,547	25,547	25,547	25,547	25,547
No District-County	Titus	Carrizo-Wilcox	7,536	7,536	7,536	7,536	7,536	7,536	7,536
No District-County	Trinity	Carrizo-Wilcox	267	267	267	267	267	267	267
No District-County	Upshur	Carrizo-Wilcox	6,658	6,658	6,658	6,658	6,658	6,658	6,658
No District-County	Van Zandt	Carrizo-Wilcox	6,932	6,932	6,932	6,932	6,932	6,932	6,932
No District-County	Wood	Carrizo-Wilcox	17,902	17,902	17,902	17,902	17,902	17,902	17,902
<b>No District-County Total</b>		<b>Carrizo-Wilcox</b>	<b>134,241</b>	<b>134,241</b>	<b>134,241</b>	<b>134,241</b>	<b>134,241</b>	<b>134,241</b>	<b>134,240</b>
<b>Total for GMA 11</b>		<b>Carrizo-Wilcox</b>	<b>251,217</b>	<b>251,217</b>	<b>251,217</b>	<b>251,216</b>	<b>251,216</b>	<b>251,216</b>	<b>251,215</b>

<sup>1</sup>A desired future condition was not specified for the Carrizo-Wilcox Aquifer in Red River County and was declared as not relevant (NR) in a clarification.

GAM Run 21-016 MAG: Modeled Available Groundwater for the Carrizo-Wilcox, Queen City, and Sparta aquifers in Groundwater Management Area 11  
 February 17, 2022  
 Page 14 of 24

Groundwater Conservation District	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
No District-County	Morris	Carrizo-Wilcox	2,570	2,570	2,570	2,570	2,570	2,570	2,570
No District-County	Rains	Carrizo-Wilcox	1,411	1,411	1,411	1,411	1,411	1,411	1,411
No District-County	Red River	Carrizo-Wilcox	NR <sup>1</sup>	NR <sup>1</sup>	NR <sup>1</sup>	NR <sup>1</sup>	NR <sup>1</sup>	NR <sup>1</sup>	NR <sup>1</sup>
No District-County	Sabine	Carrizo-Wilcox	1,388	1,388	1,388	1,388	1,388	1,388	1,388
No District-County	San Augustine	Carrizo-Wilcox	587	587	587	587	587	587	587
No District-County	Shelby	Carrizo-Wilcox	6,319	6,319	6,319	6,319	6,319	6,319	6,319
No District-County	Smith	Carrizo-Wilcox	25,547	25,547	25,547	25,547	25,547	25,547	25,547
No District-County	Titus	Carrizo-Wilcox	7,536	7,536	7,536	7,536	7,536	7,536	7,536
No District-County	Trinity	Carrizo-Wilcox	267	267	267	267	267	267	267
No District-County	Upshur	Carrizo-Wilcox	6,658	6,658	6,658	6,658	6,658	6,658	6,658
No District-County	Van Zandt	Carrizo-Wilcox	6,932	6,932	6,932	6,932	6,932	6,932	6,932
No District-County	Wood	Carrizo-Wilcox	17,902	17,902	17,902	17,902	17,902	17,902	17,902
<b>No District-County Total</b>		<b>Carrizo-Wilcox</b>	<b>134,241</b>	<b>134,241</b>	<b>134,241</b>	<b>134,241</b>	<b>134,241</b>	<b>134,241</b>	<b>134,240</b>
<b>Total for GMA 11</b>		<b>Carrizo-Wilcox</b>	<b>251,217</b>	<b>251,217</b>	<b>251,217</b>	<b>251,216</b>	<b>251,216</b>	<b>251,216</b>	<b>251,215</b>

<sup>1</sup>A desired future condition was not specified for the Carrizo-Wilcox Aquifer in Red River County and was declared as not relevant (NR) in a clarification.

# Appendix D.

GAM Run 21-016 MAG: Modeled Available Groundwater for the Carrizo-Wilcox, Queen City, and Sparta aquifers in Groundwater Management Area 11  
February 17, 2022

Page 15 of 24

**TABLE 3. MODELED AVAILABLE GROUNDWATER FOR THE QUEEN CITY AQUIFER IN GROUNDWATER MANAGEMENT AREA 11 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	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
Neches & Trinity Valleys GCD	Anderson	Queen City	16,591	16,591	16,591	16,591	16,591	16,591	16,591
Neches & Trinity Valleys GCD	Cherokee	Queen City	8,812	8,812	8,812	8,812	8,812	8,812	8,812
Neches & Trinity Valleys GCD	Henderson	Queen City	10,671	10,671	10,671	10,670	10,670	10,670	10,670
<b>Neches &amp; Trinity Valleys GCD Total</b>		<b>Queen City</b>	<b>36,073</b>	<b>36,073</b>	<b>36,073</b>	<b>36,073</b>	<b>36,073</b>	<b>36,073</b>	<b>36,073</b>
Pineywoods GCD	Angelina	Queen City	1,095	1,095	1,095	1,095	1,095	1,095	1,095
Pineywoods GCD	Nacogdoches	Queen City	2,946	2,946	2,946	2,946	2,946	2,946	2,946
<b>Pineywoods GCD Total</b>		<b>Queen City</b>	<b>4,041</b>	<b>4,041</b>	<b>4,041</b>	<b>4,041</b>	<b>4,041</b>	<b>4,041</b>	<b>4,041</b>
<b>Rusk County GCD Total</b>	<b>Rusk</b>	<b>Queen City</b>	<b>59</b>	<b>59</b>	<b>59</b>	<b>59</b>	<b>59</b>	<b>59</b>	<b>59</b>
<b>Total (GCDs)</b>		<b>Queen City</b>	<b>40,173</b>	<b>40,173</b>	<b>40,173</b>	<b>40,173</b>	<b>40,173</b>	<b>40,173</b>	<b>40,172</b>
No District-County	Camp	Queen City	1,594	1,594	1,594	1,594	1,594	1,594	1,594
No District-County	Cass	Queen City	16,479	16,479	16,479	16,479	16,479	16,479	16,479
No District-County	Gregg	Queen City	2,511	2,511	2,511	2,511	2,511	2,511	2,511
No District-County	Harrison	Queen City	3,537	3,537	3,537	3,537	3,537	3,537	3,537
No District-County	Houston	Queen City	2,295	2,295	2,295	2,295	2,295	2,295	2,295
No District-County	Marion	Queen City	7,389	7,389	7,389	7,389	7,389	7,389	7,389
No District-County	Morris	Queen City	3,278	3,278	3,278	3,278	3,278	3,278	3,278
No District-County	Sabine	Queen City	0 <sup>5</sup>	0	0	0	0	0	0

<sup>5</sup> A zero value indicates the groundwater availability model pumping scenario did not include any pumping in the aquifer.

GAM Run 21-016 MAG: Modeled Available Groundwater for the Carrizo-Wilcox, Queen City, and Sparta aquifers in Groundwater Management Area 11  
February 17, 2022

Page 16 of 24

Groundwater Conservation District	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
No District-County	San Augustine	Queen City	0 <sup>6</sup>	0	0	0	0	0	0
No District-County	Shelby	Queen City	0	0	0	0	0	0	0
No District-County	Smith	Queen City	32,578	32,578	32,578	32,578	32,578	32,578	32,578
No District-County	Titus	Queen City	0	0	0	0	0	0	0
No District-County	Trinity	Queen City	0	0	0	0	0	0	0
No District-County	Upshur	Queen City	12,165	12,165	12,165	12,165	12,165	12,165	12,164
No District-County	Van Zandt	Queen City	2,343	2,343	2,343	2,343	2,343	2,343	2,343
No District-County	Wood	Queen City	6,510	6,510	6,510	6,510	6,510	6,510	6,510
<b>No District-County Total</b>		<b>Queen City</b>	<b>90,681</b>	<b>90,681</b>	<b>90,680</b>	<b>90,680</b>	<b>90,680</b>	<b>90,680</b>	<b>90,679</b>
<b>Total for GMA 11</b>		<b>Queen City</b>	<b>130,854</b>	<b>130,854</b>	<b>130,853</b>	<b>130,853</b>	<b>130,853</b>	<b>130,852</b>	<b>130,852</b>

# Appendix D.

GAM Run 21-016 MAG: Modeled Available Groundwater for the Carrizo-Wilcox, Queen City, and Sparta aquifers in Groundwater Management Area 11  
February 17, 2022

Page 17 of 24

**TABLE 4. MODELED AVAILABLE GROUNDWATER FOR THE SPARTA AQUIFER IN GROUNDWATER MANAGEMENT AREA 11 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	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
Neches & Trinity Valleys GCD	Anderson	Sparta	307	307	307	307	307	307	307
Neches & Trinity Valleys GCD	Cherokee	Sparta	352	352	352	352	352	352	352
<b>Neches &amp; Trinity Valleys GCD Total</b>		<b>Sparta</b>	<b>658</b>	<b>658</b>	<b>658</b>	<b>658</b>	<b>658</b>	<b>658</b>	<b>658</b>
Pineywoods GCD	Angelina	Sparta	390	390	390	390	390	390	390
Pineywoods GCD	Nacogdoches	Sparta	362	362	362	362	362	362	362
<b>Pineywoods GCD Total</b>		<b>Sparta</b>	<b>752</b>	<b>752</b>	<b>752</b>	<b>752</b>	<b>752</b>	<b>752</b>	<b>752</b>
<b>Total (GCDs)</b>		<b>Sparta</b>	<b>1,410</b>	<b>1,410</b>	<b>1,410</b>	<b>1,410</b>	<b>1,410</b>	<b>1,410</b>	<b>1,410</b>
No District-County	Cass	Sparta	0 <sup>7</sup>	0	0	0	0	0	0
No District-County	Houston	Sparta	1,482	1,482	1,482	1,482	1,482	1,482	1,482
No District-County	Marion	Sparta	0	0	0	0	0	0	0
No District-County	Sabine	Sparta	49	49	49	49	49	49	49
No District-County	San Augustine	Sparta	166	166	166	166	166	166	166
No District-County	Shelby	Sparta	0	0	0	0	0	0	0
No District-County	Smith	Sparta	0	0	0	0	0	0	0
No District-County	Trinity	Sparta	152	152	152	152	152	152	152
No District-County	Upshur	Sparta	0	0	0	0	0	0	0
No District-County	Wood	Sparta	0	0	0	0	0	0	0
<b>No District-County Total</b>		<b>Sparta</b>	<b>1,848</b>	<b>1,848</b>	<b>1,848</b>	<b>1,848</b>	<b>1,848</b>	<b>1,848</b>	<b>1,848</b>
<b>Total for GMA 11</b>		<b>Sparta</b>	<b>3,259</b>	<b>3,259</b>	<b>3,259</b>	<b>3,259</b>	<b>3,259</b>	<b>3,259</b>	<b>3,259</b>

<sup>7</sup> A zero value indicates the groundwater availability model pumping scenario did not include any pumping in the aquifer.

# Appendix D.

GAM Run 21-016 MAG: Modeled Available Groundwater for the Carrizo-Wilcox, Queen City, and Sparta aquifers in Groundwater Management Area 11  
February 17, 2022

Page 18 of 24

**TABLE 5. MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE CARRIZO-WILCOX AQUIFER IN GROUNDWATER MANAGEMENT AREA 11. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), RIVER BASIN, AND AQUIFER.**

County	RWPA	River Basin	Aquifer	2020	2030	2040	2050	2060	2070	2080
Anderson	I	Neches	Carrizo-Wilcox	21,958	21,958	21,958	21,958	21,958	21,958	21,958
Anderson	I	Trinity	Carrizo-Wilcox	5,066	5,066	5,066	5,066	5,066	5,066	5,066
Angelina	I	Neches	Carrizo-Wilcox	27,611	27,611	27,611	27,611	27,611	27,611	27,611
Bowie	D	Sulphur	Carrizo-Wilcox	9,645	9,645	9,645	9,645	9,645	9,645	9,645
Camp	D	Cypress	Carrizo-Wilcox	3,862	3,862	3,862	3,862	3,862	3,862	3,862
Cass	D	Cypress	Carrizo-Wilcox	12,865	12,865	12,865	12,865	12,865	12,865	12,865
Cass	D	Sulphur	Carrizo-Wilcox	777	777	777	777	777	777	777
Cherokee	I	Neches	Carrizo-Wilcox	15,241	15,241	15,241	15,241	15,241	15,241	15,241
Franklin	D	Cypress	Carrizo-Wilcox	5,334	5,334	5,334	5,334	5,334	5,334	5,334
Franklin	D	Sulphur	Carrizo-Wilcox	398	398	398	398	398	398	398
Gregg	D	Cypress	Carrizo-Wilcox	726	726	726	726	726	726	726
Gregg	D	Sabine	Carrizo-Wilcox	5,346	5,346	5,346	5,346	5,346	5,346	5,346
Harrison	D	Cypress	Carrizo-Wilcox	4,636	4,636	4,636	4,636	4,636	4,636	4,636
Harrison	D	Sabine	Carrizo-Wilcox	4,460	4,460	4,460	4,460	4,460	4,460	4,460
Henderson	C	Trinity	Carrizo-Wilcox	3,226	3,226	3,226	3,226	3,226	3,226	3,226
Henderson	I	Neches	Carrizo-Wilcox	3,996	3,996	3,996	3,996	3,996	3,996	3,996
Hopkins	D	Cypress	Carrizo-Wilcox	309	309	309	309	309	309	309
Hopkins	D	Sabine	Carrizo-Wilcox	2,426	2,426	2,426	2,426	2,426	2,426	2,426
Hopkins	D	Sulphur	Carrizo-Wilcox	2,017	2,017	2,017	2,017	2,017	2,017	2,017
Houston	I	Neches	Carrizo-Wilcox	1,721	1,721	1,721	1,721	1,721	1,721	1,721
Houston	I	Trinity	Carrizo-Wilcox	634	634	634	634	634	634	634
Marion	D	Cypress	Carrizo-Wilcox	1,966	1,966	1,966	1,966	1,966	1,966	1,966
Morris	D	Cypress	Carrizo-Wilcox	2,156	2,156	2,156	2,156	2,156	2,156	2,156
Morris	D	Sulphur	Carrizo-Wilcox	415	415	415	415	415	415	415
Nacogdoches	I	Neches	Carrizo-Wilcox	20,859	20,859	20,859	20,859	20,859	20,859	20,859

# Appendix D.

GAM Run 21-016 MAG: Modeled Available Groundwater for the Carrizo-Wilcox, Queen City, and Sparta aquifers in Groundwater Management Area 11  
 February 17, 2022  
 Page 19 of 24

County	RWPA	River Basin	Aquifer	2020	2030	2040	2050	2060	2070	2080
Panola	I	Cypress	Carrizo-Wilcox	0 <sup>a</sup>	0	0	0	0	0	0
Panola	I	Sabine	Carrizo-Wilcox	4,999	4,999	4,999	4,999	4,999	4,999	4,999
Rains	D	Sabine	Carrizo-Wilcox	1,411	1,411	1,411	1,411	1,411	1,411	1,411
Red River	D	Sulphur	Carrizo-Wilcox	NULL <sup>1</sup>	NULL <sup>1</sup>	NULL <sup>1</sup>	NULL <sup>1</sup>	NULL <sup>1</sup>	NULL <sup>1</sup>	NULL <sup>1</sup>
Rusk	I	Neches	Carrizo-Wilcox	7,111	7,111	7,111	7,111	7,111	7,111	7,111
Rusk	I	Sabine	Carrizo-Wilcox	6,907	6,907	6,907	6,907	6,907	6,907	6,907
Sabine	I	Neches	Carrizo-Wilcox	356	356	356	356	356	356	356
Sabine	I	Sabine	Carrizo-Wilcox	1,032	1,032	1,032	1,032	1,032	1,032	1,032
San Augustine	I	Neches	Carrizo-Wilcox	303	303	303	303	303	303	303
San Augustine	I	Sabine	Carrizo-Wilcox	284	284	284	284	284	284	284
Shelby	I	Neches	Carrizo-Wilcox	2,621	2,621	2,621	2,621	2,621	2,621	2,621
Shelby	I	Sabine	Carrizo-Wilcox	3,698	3,698	3,698	3,698	3,698	3,698	3,698
Smith	D	Sabine	Carrizo-Wilcox	7,939	7,939	7,939	7,939	7,939	7,939	7,939
Smith	I	Neches	Carrizo-Wilcox	17,607	17,607	17,607	17,607	17,607	17,607	17,607
Titus	D	Cypress	Carrizo-Wilcox	5,594	5,594	5,594	5,594	5,594	5,594	5,594
Titus	D	Sulphur	Carrizo-Wilcox	1,942	1,942	1,942	1,942	1,942	1,942	1,942
Trinity	H	Trinity	Carrizo-Wilcox	1	1	1	1	1	1	1
Trinity	I	Neches	Carrizo-Wilcox	266	266	266	266	266	266	266
Upshur	D	Cypress	Carrizo-Wilcox	5,107	5,107	5,107	5,107	5,107	5,107	5,107
Upshur	D	Sabine	Carrizo-Wilcox	1,550	1,550	1,550	1,550	1,550	1,550	1,550
Van Zandt	D	Neches	Carrizo-Wilcox	2,616	2,616	2,616	2,616	2,616	2,616	2,616
Van Zandt	D	Sabine	Carrizo-Wilcox	3,286	3,286	3,286	3,286	3,286	3,286	3,286
Van Zandt	D	Trinity	Carrizo-Wilcox	1,030	1,030	1,030	1,030	1,030	1,030	1,030
Wood	D	Cypress	Carrizo-Wilcox	925	925	925	925	925	925	925
Wood	D	Sabine	Carrizo-Wilcox	16,977	16,977	16,977	16,977	16,977	16,977	16,977
<b>GMA 11 Total</b>			<b>Carrizo-Wilcox</b>	<b>251,217</b>	<b>251,217</b>	<b>251,217</b>	<b>251,216</b>	<b>251,216</b>	<b>251,216</b>	<b>251,215</b>

<sup>a</sup> A zero value indicates the groundwater availability model pumping scenario did not include any pumping in the aquifer.

# Appendix D.

GAM Run 21-016 MAG: Modeled Available Groundwater for the Carrizo-Wilcox, Queen City, and Sparta aquifers in Groundwater Management Area 11  
February 17, 2022

Page 20 of 24

**TABLE 6. MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE QUEEN CITY AQUIFER IN GROUNDWATER MANAGEMENT AREA 11. RESULTS ARE IN ACRE- FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), RIVER BASIN, AND AQUIFER.**

County	RWPA	River Basin	Aquifer	2020	2030	2040	2050	2060	2070	2080
Anderson	I	Neches	Queen City	11,489	11,489	11,489	11,488	11,488	11,488	11,488
Anderson	I	Trinity	Queen City	5,102	5,102	5,102	5,102	5,102	5,102	5,102
Angelina	I	Neches	Queen City	1,095	1,095	1,095	1,095	1,095	1,095	1,095
Camp	D	Cypress	Queen City	1,594	1,594	1,594	1,594	1,594	1,594	1,594
Cass	D	Cypress	Queen City	15,855	15,855	15,855	15,855	15,855	15,855	15,855
Cass	D	Sulphur	Queen City	624	624	624	624	624	624	624
Cherokee	I	Neches	Queen City	8,812	8,812	8,812	8,812	8,812	8,812	8,812
Gregg	D	Cypress	Queen City	456	456	456	456	456	456	456
Gregg	D	Sabine	Queen City	2,056	2,056	2,056	2,056	2,056	2,056	2,055
Harrison	D	Cypress	Queen City	2,976	2,976	2,976	2,976	2,976	2,976	2,976
Harrison	D	Sabine	Queen City	561	561	561	561	561	561	561
Henderson	C	Trinity	Queen City	154	154	154	154	154	154	154
Henderson	I	Neches	Queen City	10,516	10,516	10,516	10,516	10,516	10,516	10,516
Houston	I	Neches	Queen City	2,080	2,080	2,080	2,080	2,080	2,080	2,080
Houston	I	Trinity	Queen City	216	216	216	216	216	216	216
Marion	D	Cypress	Queen City	7,389	7,389	7,389	7,389	7,389	7,389	7,389
Morris	D	Cypress	Queen City	3,278	3,278	3,278	3,278	3,278	3,278	3,278
Nacogdoches	I	Neches	Queen City	2,946	2,946	2,946	2,946	2,946	2,946	2,946
Rusk	I	Neches	Queen City	39	39	39	39	39	39	39
Rusk	I	Sabine	Queen City	20	20	20	20	20	20	20
Sabine	I	Neches	Queen City	0 <sup>9</sup>	0	0	0	0	0	0
Sabine	I	Sabine	Queen City	0	0	0	0	0	0	0
San Augustine	I	Neches	Queen City	0	0	0	0	0	0	0
Shelby	I	Sabine	Queen City	0	0	0	0	0	0	0

<sup>9</sup> A zero value indicates the groundwater availability model pumping scenario did not include any pumping in the aquifer.

GAM Run 21-016 MAG: Modeled Available Groundwater for the Carrizo-Wilcox, Queen City, and Sparta aquifers in Groundwater Management Area 11  
February 17, 2022

Page 21 of 24

County	RWPA	River Basin	Aquifer	2020	2030	2040	2050	2060	2070	2080
Smith	D	Sabine	Queen City	12,457	12,457	12,457	12,457	12,457	12,457	12,457
Smith	I	Neches	Queen City	20,121	20,121	20,121	20,121	20,121	20,121	20,121
Titus	D	Cypress	Queen City	0 <sup>10</sup>	0	0	0	0	0	0
Trinity	H	Trinity	Queen City	0	0	0	0	0	0	0
Trinity	I	Neches	Queen City	0	0	0	0	0	0	0
Upshur	D	Cypress	Queen City	6,216	6,215	6,215	6,215	6,215	6,215	6,215
Upshur	D	Sabine	Queen City	5,949	5,949	5,949	5,949	5,949	5,949	5,949
Van Zandt	D	Neches	Queen City	2,343	2,343	2,343	2,343	2,343	2,343	2,343
Wood	D	Cypress	Queen City	779	779	779	779	779	779	779
Wood	D	Sabine	Queen City	5,731	5,731	5,731	5,731	5,731	5,731	5,731
<b>GMA 11 Total</b>			<b>Queen City</b>	<b>130,854</b>	<b>130,854</b>	<b>130,853</b>	<b>130,853</b>	<b>130,853</b>	<b>130,852</b>	<b>130,852</b>

# Appendix D.

GAM Run 21-016 MAG: Modeled Available Groundwater for the Carrizo-Wilcox, Queen City, and Sparta aquifers in Groundwater Management Area 11  
February 17, 2022

Page 22 of 24

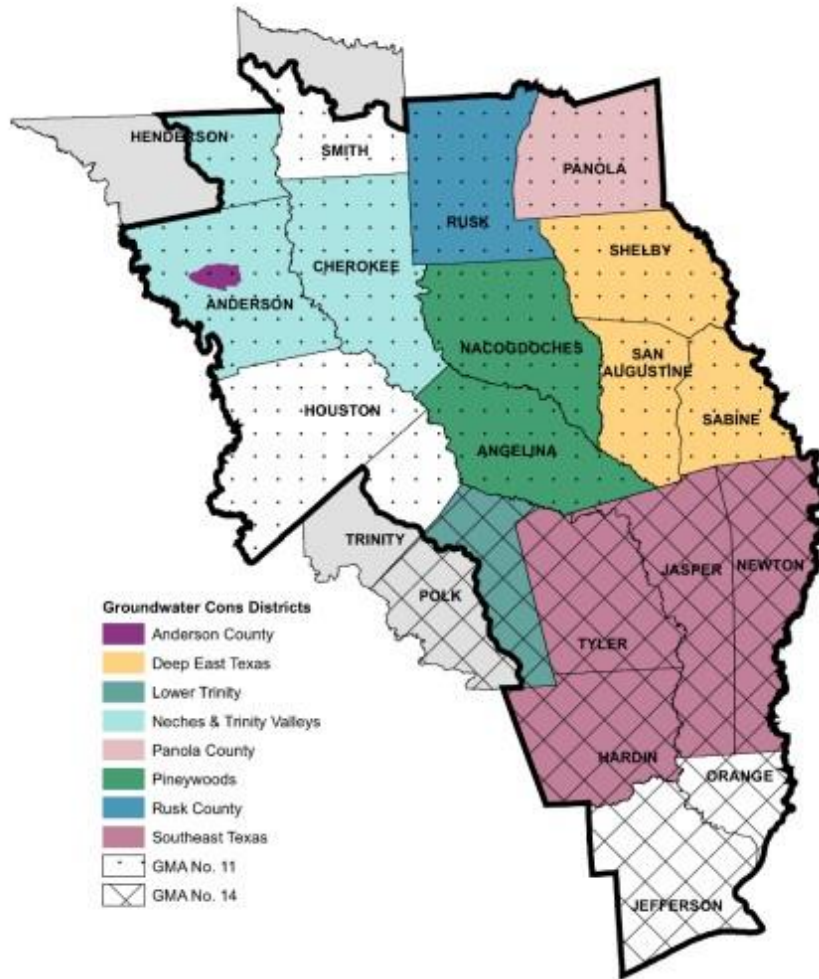
**TABLE 7. MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE SPARTA AQUIFER IN GROUNDWATER MANAGEMENT AREA 11. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), RIVER BASIN, AND AQUIFER.**

County	RWPA	River Basin	Aquifer	2020	2030	2040	2050	2060	2070	2080
Anderson	I	Neches	Sparta Aquifer	109	109	109	109	109	109	109
Anderson	I	Trinity	Sparta Aquifer	198	198	198	198	198	198	198
Angelina	I	Neches	Sparta Aquifer	390	390	390	390	390	390	390
Cass	D	Cypress	Sparta Aquifer	0 <sup>11</sup>	0	0	0	0	0	0
Cherokee	I	Neches	Sparta Aquifer	352	352	352	352	352	352	352
Houston	I	Neches	Sparta Aquifer	505	505	505	505	505	505	505
Houston	I	Trinity	Sparta Aquifer	977	977	977	977	977	977	977
Marion	D	Cypress	Sparta Aquifer	0	0	0	0	0	0	0
Nacogdoches	I	Neches	Sparta Aquifer	362	362	362	362	362	362	362
Rusk	I	Neches	Sparta Aquifer	0	0	0	0	0	0	0
Sabine	I	Neches	Sparta Aquifer	36	36	36	36	36	36	36
Sabine	I	Sabine	Sparta Aquifer	13	13	13	13	13	13	13
San Augustine	I	Neches	Sparta Aquifer	163	163	163	163	163	163	163
San Augustine	I	Sabine	Sparta Aquifer	3	3	3	3	3	3	3
Shelby	I	Sabine	Sparta Aquifer	0	0	0	0	0	0	0
Smith	D	Sabine	Sparta Aquifer	0	0	0	0	0	0	0
Smith	I	Neches	Sparta Aquifer	0	0	0	0	0	0	0
Trinity	H	Trinity	Sparta Aquifer	0	0	0	0	0	0	0
Trinity	I	Neches	Sparta Aquifer	152	152	152	152	152	152	152
Upshur	D	Sabine	Sparta Aquifer	0	0	0	0	0	0	0
Wood	D	Sabine	Sparta Aquifer	0	0	0	0	0	0	0
<b>GMA 11 Total</b>			<b>Sparta Aquifer</b>	<b>3,259</b>	<b>3,259</b>	<b>3,259</b>	<b>3,259</b>	<b>3,259</b>	<b>3,259</b>	<b>3,259</b>

<sup>11</sup> A zero value indicates the groundwater availability model pumping scenario did not include any pumping in the aquifer.



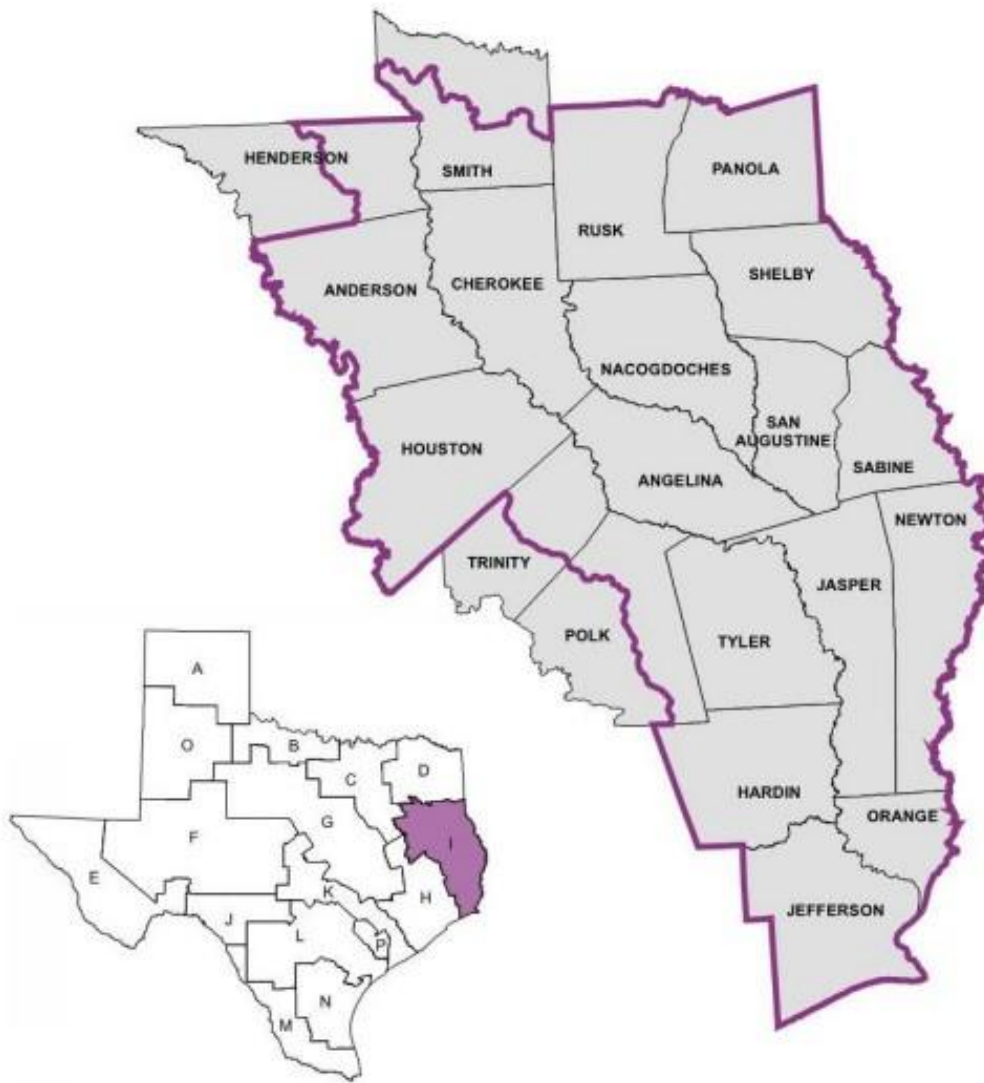
# Appendix E.



**Figure 1.9 Groundwater Conservation Districts and Groundwater Management Areas**

*SOURCE: TEXAS WATER DEVELOPMENT BOARD*

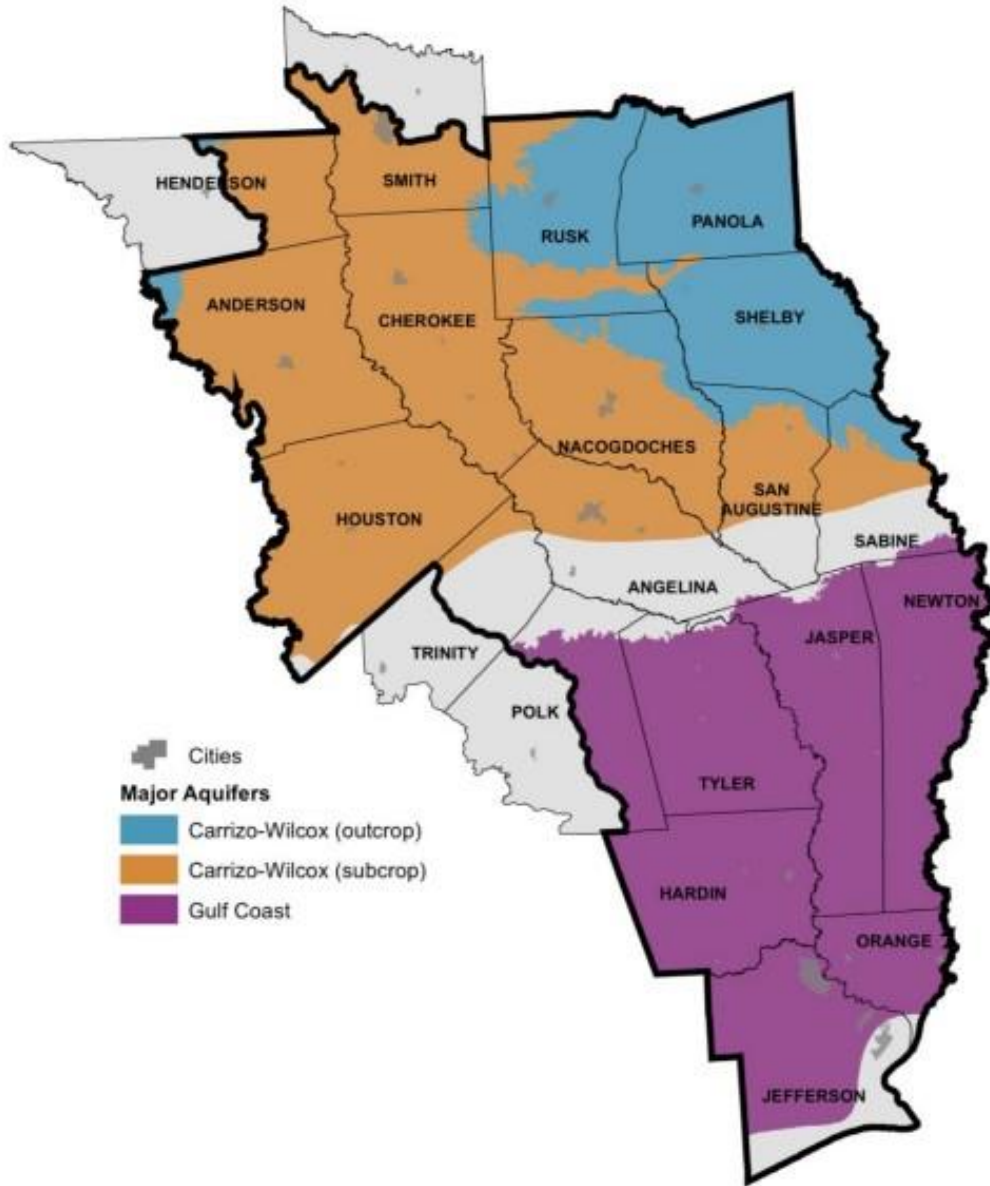
# Appendix E.



**Figure ES.1 Region I Reference Map**

*SOURCE: TEXAS WATER DEVELOPMENT BOARD*

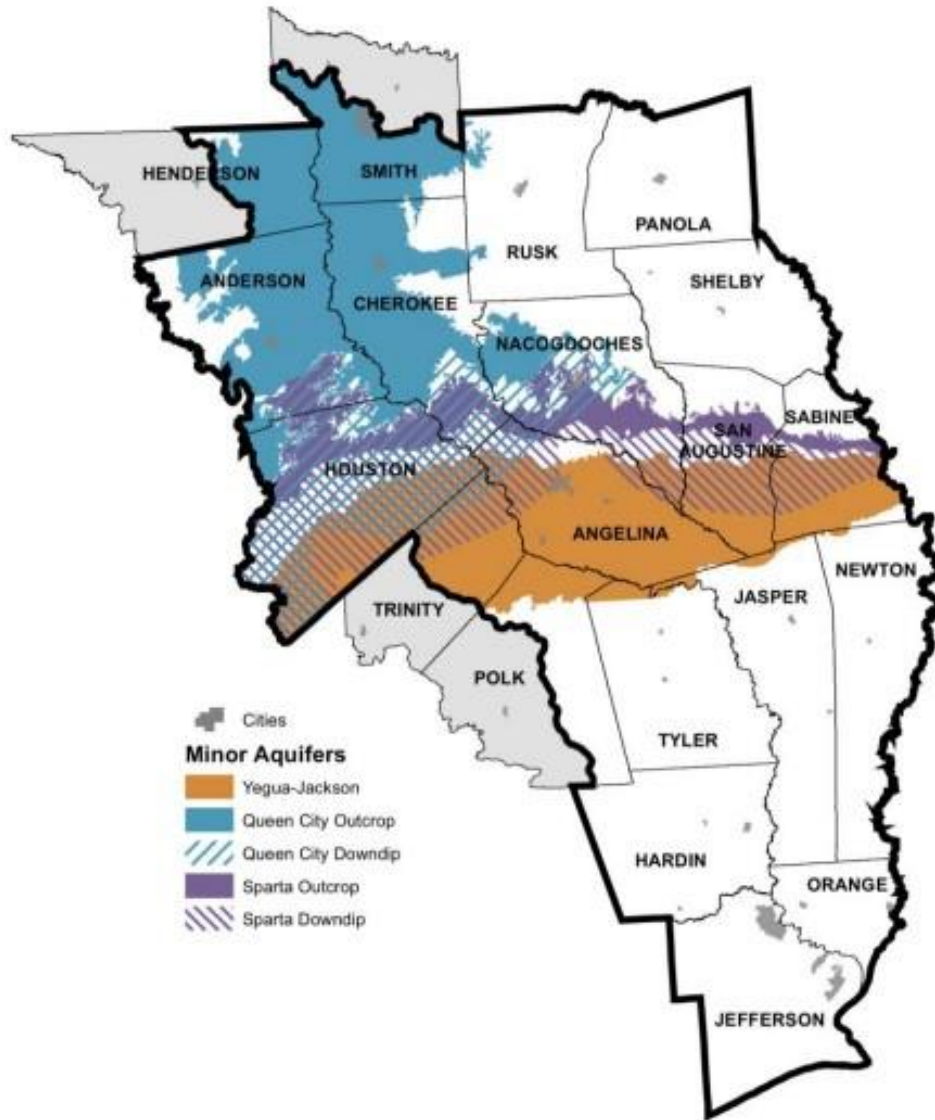
# Appendix E.



**Figure 1.7 Major Aquifers**

*SOURCE: TEXAS WATER DEVELOPMENT BOARD*

# Appendix E.



**Figure 1.8 Minor Aquifers**

*SOURCE: TEXAS WATER DEVELOPMENT BOARD*

## Appendix F.

# ★ The Daily Sentinel

936-564-8361  
4920 Colonial Drive  
Nacogdoches, TX 75965

dailysentinel.com  
PO Box 630068  
Nacogdoches, TX 75963

## THE STATE OF TEXAS COUNTY OF Nacogdoches

BEFORE ME, the undersigned, a Notary Public, this day personally came Rick Craig who after being sworn according to law that he is the Publisher of **THE DAILY SENTINEL**.

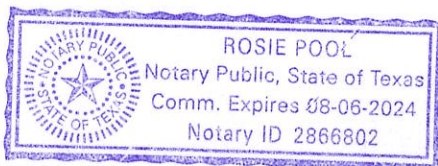
THE PUBLISHERS, of The **DAILY SENTINEL**, a twice-weekly newspaper of general circulation published in Nacogdoches, Texas, in Nacogdoches County and said State, attest that the attached printed material was published in said newspaper 7/30.

  
Rick Craig, Publisher

SUBSCRIBED AND SWORN TO BEFORE ME THIS THE 2<sup>ND</sup>  
day of August 2023.

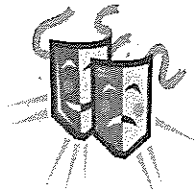


Rosie Pool, Notary Public  
State of Texas



Account Name Pineywoods Groundwater Conservation

Account No. 2458120



**MERCHANDISE  
MISSING THE  
SPOTLIGHT?**

Placing a classified ad is an easy and affordable way to let your items take center-stage to hundreds of potential buyers. What are you waiting for? Contact us today and start turning the stuff you don't want into something you do want:

**CASH!**

Get things moving with the classifieds!

**936-558-3217**

**LEGAL NOTICES**

**LEGAL NOTICES**

**NOTICE**

The Pineywoods Groundwater Conservation District (PGCD) Board of Directors will receive public comments on proposed changes to the District's Management Plan. A public hearing set for 1:30 p.m., August 16, 2023, at the Kurth Lake Lodge in Angelina County. The directors will hold their regular monthly meeting immediately following the conclusion of the public hearing. Written comments or contesting regarding the proposed changes must be received at the PGCD office, 202 E. Pilar St., Room 134, Nacogdoches, Texas no later than 5:00 p.m., Monday August 14, 2023. They may also be submitted by email to staff@pgcd.org. The Management Plan can be accessed for viewing on the website, pgcd.org, or coming by the office.

**CHARM**  
LAST FRIDAY  
Last Friday of Every Month

**LEGAL NOTICES**

**Notice of Public Sale of property to satisfy a landlord's lien.**

Sale to be held on Storage Auction.Com for Blacklock Storage at 1100 NW Stallings Drive, Nacogdoches, Texas 75964 on Monday August 14th starting at 10:00 a.m. and closing on Monday August 21st at 6:00 p.m.

A \$100.00 cash clean up deposit is required. Seller reserves the right to withdraw the property at any time before the sale. Unit items sold to highest bidder, as is, subject to added terms on the website. Property includes the contents of space of the following tenant(s).

- Michael Breaux** — Vehicle seat, vhs tapes, suitcase,
- Cristopher Casto** — Small table, head & foot board, chair, storage rack, household items
- Sabrena Shields** — Microwave, lamps, storage rack, box fan, coffee table, rug, decorative pictures, Full/queen mattress & box springs, household items
- Jada Lister** — Boxes

**LEGAL NOTICES**

**NACOGDOCHES COUNTY, TEXAS REQUEST FOR PROPOSAL COURTHOUSE SECURITY**

Proposals are being solicited for "Court-house Security" to furnish security for the Nacogdoches County Courthouse as set forth in the RFP. Completed informational packets, original and four (4) copies and/or USB with .PDF files only, must be received in the Nacogdoches County Auditor's Office, 101 W. Main, Suite 140, Nacogdoches, Texas 75961, before 10:00 am, 09/01/2023 to be publicly opened at Suite 170, Commissioners Court 10:30 am, 09/01/2023, and the names of the responding vendors will be read aloud. Proposals will be submitted for consideration to the Nacogdoches County Commissioners Court at 9:00 am, 09/19/2023. RFP's arriving late will be returned to the vendor unopened. Nacogdoches County assumes no responsibility for late arrivals. Mark, Seal and Address RFP packets to:

Nacogdoches County Auditor's Office RFP#23-03 Courthouse Security Attn: Mary Newton

**EMPLOYMENT**

**EDUCATION/ TRAINING**

Secondary Math Teacher needed in Nacogdoches, TX to teach students Secondary-grade Math subjects. Prepare course objectives & study outlines per curriculum. Req'd BA/BS degree in relevant fields, plus the state teaching certificate or eligibility for the certificate. Send resume to Nacogdoches Independent School District Attn: HR @4632. NE Stallings Drive, Nacogdoches, TX 75965 or Fax 936-569-5798. EOE

Be a better Bargain Hunter. Shop the Classifieds!

**CLASSIFIED ATTIC**

- 2020 Moped 50 CC 9363710226
- BRAND NEW Power XL Airfryer \$75 Call 936-553-0891.
- Window Unit \$40 9363710226

**WHAT IS THE NUMBER TO CALL TO SELL IT FAST?**

**936-558-3217**

**ARE YOU LOOKING FOR A HANDYMAN?**

**ARE YOU A HANDYMAN LOOKING TO GET YOUR NAME OUT THERE?**

**OUR SERVICE DIRECTORY ADS COME IN HANDY!**

**TO PLACE A HANDY AD CALL TODAY**

**936-558-3217**

**Mailroom Staff**

The Lufkin Daily News has positions available in the mailroom

# THE LUFKIN DAILY NEWS

P.O. Box 1089  
Lufkin, TX 75902  
936-632-6631

**Proof**

Date: 07/25/23

User: PTREGO

Date: 07/25/23  
Account: 58120  
Name: John McFarland  
Company: Pineywoods Groundwater  
Conservation Dist  
Telephone: (936) 568-9292  
Email: pgcd@sbcglobal.net

Ad Taken By: PTREGO  
Sales Person: LaTisha Russaw  
Phone: (936) 631-2635  
Email: latisha.russaw@lufkindailynews.com

Ad ID: 1141677  
# of Lines: 41  
Size: 1 x 3.833  
Color:  
# of Preprints: 0  
# of Pages: 0  
Ad Cost: \$171.62  
PO Number: PN AUG 16,2023  
Publication: The Lufkin Daily News, Nacogdoches  
Daily Sentinel, www.LufkinDailyNews.com, www.  
NacDailySentinel.com

Publish Date: 07/30/23

***\*Please proofread the ad\****  
***For any corrections or changes,  
contact your media representative.***

**We Appreciate Your Business!  
Thank You!**

## NOTICE

The Pineywoods Groundwater Conservation District (PGCD) Board of Directors will receive public comments on proposed changes to the District's Management Plan. A public hearing set for 1:30 p.m., August 16, 2023, at the Kurth Lake Lodge in Angelina County. The directors will hold their regular monthly meeting immediately following the conclusion of the public hearing. Written comments or contesting regarding the proposed changes must be received at the PGCD office, 202 E. Pilar St., Room 134, Nacogdoches, Texas no later than 5:00 p.m., Monday August 14, 2023. They may also be submitted by email to staff@pgcd.org. The Management Plan can be accessed for viewing on the website, pgcd.org, or coming by the office.



**Agenda of Meeting of the  
Pineywoods Groundwater Conservation District**

Notice is hereby given that the Board of Directors of the Pineywoods Groundwater Conservation District will meet on Wednesday, the 16th day of August, 2023, at 1:30 p.m. at Kurth Lake in Angelina County Texas, in accordance with the Texas Open Meeting Act, Chapter 551 of the Texas Government Code or (as amended) (immediately following public hearing on proposed updates to district management plan) at which time the following items will be discussed and action may be taken:

**Public Hearing 1:30 p.m. - Receive comments regarding change in District's Management Plan**  
**Public Hearing**

1. Open public hearing;
2. Receive public comments regarding changes to District's Management Plan
3. Close public hearing

The proposed District Management Plan can be viewed at the District's website: [www.PGCD.org](http://www.PGCD.org). Written comments or regarding the changes in the District's Management Plan must be received at the PGCD office, 202 E. Pilar St., Room 134, Nacogdoches, Texas no later than 5:00 p.m., Tuesday August 15, 2023. They may also be submitted by email to [staff@pgcd.org](mailto:staff@pgcd.org).

**Board Meeting**

1. Call to order and establish a quorum
2. Public Comments
3. Approval of the minutes of the meetings of May 10<sup>th</sup> of 2023.
4. Presentation of annual audit by representatives of Goff & Herrington, P.C. Certified Public Accountants
5. General Manager's Financial Report
  - a. Review and approval, if needed, of bills, banking and other financials
6. General Manager's District Report
7. Review and possibly approve 2<sup>nd</sup> quarter 2023 investment report
8. Review and possible approve District's Investment Policy
9. Review and possible approve proposed updates to management plan
10. Appoint budget committee for 2024 budget
11. Announcement of the date and location of the next meeting
12. Adjourn.

**FILED**  
**AT 10:55 O'CLOCK AM**  
**JUL 27 2023**  
AMY FINCHER  
County Clerk, County Court at Law  
Angelina County, Texas  
By \_\_\_\_\_

If during the course of the meeting, any discussion of any item on the agenda should be held in a closed meeting, the board will conduct a closed meeting in accordance with the Texas Open Meetings Act, Texas Gov't Code, Chapter 551, Subchapters D and E.

Dated this day the 27<sup>th</sup> day of July, 2023, A.D.

By: *John McFarland*  
General Manager

**Agenda of Meeting of the  
Pineywoods Groundwater Conservation District**

Notice is hereby given that the Board of Directors of the Pineywoods Groundwater Conservation District will meet on Wednesday, the 16th day of August, 2023, at 1:30 p.m. at Kurth Lake in Angelina County Texas, in accordance with the Texas Open Meeting Act, Chapter 551 of the Texas Government Code or (as amended) (immediately following public hearing on proposed updates to district management plan) at which time the following items will be discussed and action may be taken:

**Public Hearing 1:30 p.m. - Receive comments regarding change in District's Management Plan**  
**Public Hearing**

1. Open public hearing;
2. Receive public comments regarding changes to District's Management Plan
3. Close public hearing

The proposed District Management Plan can be viewed at the District's website: [www.PGCD.org](http://www.PGCD.org). Written comments or regarding the changes in the District's Management Plan must be received at the PGCD office, 202 E. Pilar St., Room 134, Nacogdoches, Texas no later than 5:00 p.m., Tuesday August 15, 2023. They may also be submitted by email to [staff@pgcd.org](mailto:staff@pgcd.org).

**Board Meeting**




1. Call to order and establish a quorum
2. Public Comments
3. Approval of the minutes of the meetings of May 10<sup>th</sup> of 2023.
4. Presentation of annual audit by representatives of Goff & Herrington, P.C. Certified Public Accountants
5. General Manager's Financial Report
  - a. Review and approval, if needed, of bills, banking and other financials
6. General Manager's District Report
7. Review and possibly approve 2<sup>nd</sup> quarter 2023 investment report
8. Review and possible approve District's Investment Policy
9. Review and possible approve proposed updates to management plan
10. Appoint budget committee for 2024 budget
11. Announcement of the date and location of the next meeting
12. Adjourn.

*John McFarland*  
COUNTY CLERK  
2023 JUL 27 AM 9:51  
FILED  
NACOGDOCHES COUNTY  
TEXAS

If during the course of the meeting, any discussion of any item on the agenda should be held in a closed meeting, the board will conduct a closed meeting in accordance with the Texas Open Meetings Act, Texas Gov't Code, Chapter 551, Subchapters D and E.

Dated this day the 27<sup>th</sup> day of July, 2023, A.D.

By: *John McFarland*  
General Manager

 Reply  Reply All  Forward




Fri 8/18/2023 2:23 PM

John McFarland <jmcfarland@pgcd.org>

Updated Management Plan

To: 'kwright@angelinacounty.com'; 'Shannon Burkley'; 'Kevin Gee'; 'kiplingerk@nactx.us'; 'jarnold@cityofdiboll.com'; 'installworth@sfasu.edu'; 'John Martin'; 'tgriffin pgcd.org'; 'mdsundra@dctexas.net'; 'Kelley Holcomb'

 Message

 PGCD Management Plan 2023.pdf (5 MB)

Date: August 18, 2023

Subject: Updated Management Plan for Pineywoods Groundwater District

To: Honorable Keith Wright, County Judge, Angelina County, Texas  
Honorable Gregg Sowell, County Judge, Nacogdoches County, Texas  
Kevin Gee, City Manager, City of Lufkin, Texas  
Keith Kiplinger, City Manager, City of Nacogdoches, Texas  
Jason Arnold, City Manager, City of Diboll, Texas  
Nick Stallworth, Nacogdoches County MUD 1  
John Martin, Chairman, Regional Water planning Group I  
Teresa Griffin, Coordinator, Groundwater Management Area 11  
Monty Shank, General Manager, Upper Neches Municipal Water Authority  
Kelly Holcomb, General Manager, Angelina & Neches River Authority

On August 16<sup>th</sup>, 2023 a public hearing was conducted for the purpose of receiving and reviewing public comments on the proposed updates for the management plan of the Pineywoods Groundwater Conservation District. The notice of the hearing had been posted in both local newspapers and at both county courthouses. Before the hearing, a draft of the plan had been reviewed by the Texas Water Development Board for administrative completeness. Every five years the management plan is required by be reviewed and updated. Immediately following the hearing, a board meeting was held during which the updated plan was approved. A copy of the updated plan is attached and is also available at the district website: [www.pgcd.org](http://www.pgcd.org).

Sincerely;

*John McFarland*

John McFarland  
General Manager

Pineywoods Groundwater Conservation District

P.O. Box 635187

Nacogdoches Tx 75963-5187

Office: (936-9292

Fax: (936) 568-9296

[JMcFarland@pgcd.org](mailto:JMcFarland@pgcd.org)

**MINUTES OF A BUSINESS MEETING OF  
THE PINEYWOODS GROUNDWATER CONSERVATION DISTRICT  
HELD ON THE 16th DAY OF AUGUST, 2023**

On the 16th day of August, 2023, 1:30 p.m. in Kurth Lodge at Kurth Lake, Angelina County, Texas, the Board of Directors of the Pineywoods Groundwater Conservation District convened in a Public Hearing & Regular Business meeting at which time the following items were discussed and action taken with the following members thereof, to wit:

**Public Hearing**

- 1 **Open public hearing:** President Jimmy Mize 1:30 p.m.
- 2 **Receive public comments regarding changes to District's Management Plan**  
No comments received.
- 3 **Close public hearing:** President Jimmy Mize 1:31 p.m.

**Business Meeting**

- 1 **Call to Order & establish a quorum:**  
**Called to order:** President - Jimmy Mize  
**Start time:** 1:31  
**Board Members Present:**  
President - Jimmy Mize  
Secretary - Gloria Montes  
Treasurer - Tommy Carswell  
Director - Stephen Raley  
Director - Roger Russell  
**Absent:**  
Vice President - David Alders  
Director - Kevin Gee  
**Also present:**  
PGCD General Mgr. - John McFarland  
PGCD Admin. Asst. - Wil Blough  
Auditor - Dan Raney - Goff & Herrington, P.C. CPA
- 2 **Public Comments:** None
- 3 **Approval of the minutes of the meeting, May 10, 2023:**
  - a. **Discussion:** None
  - b. **Motion to approve:** Tommy Carswell      **Second:** Stephen Raley
  - c. **Motion Carried**
- 4 **Presentation of Annual audit by representatives of Goff & Herrington, P.C. Certified Public Accountants:**
  - a. **Discussion:** Presented analysis of Audit. Noted that there were no inconsistencies of operations to report. Director requested information on timeline to complete. Response; Some outside information is not available until late May each year. Audit completed by end of June. **Motion:** Stephen Raley      **Second:** Tommy Carswell
  - b. **Motion Carried**

- 5 **General Manager’s Financial Report: (Review bills, banking & other financials)**
  - a. **Discussion:** Production & Permits majority of income. Production was flat for first half of year. Interest income is up.
  - b. **Motion to approve:** Stephen Raley   **Second:** Tommy Carswell
  - c. **Motion carried**
  
- 6 **General Manager’s District Report:**
  - a. **Well Report:** 15 pending well reports at end of quarter. 15 exempt, 4 non-exempt, 6 rig supply, & 1 public test, wells added this quarter.
  - b. **District updates:** Attended Regional Water Planning Group I meeting, Webinar – Texas Well Owners Network, TAGD meeting, Public Funds Investment Training, GMA-11 meeting, Watershed Mgmt. seminar by Agri-life. Area not in drought at end of June. However, in drought now. Production should be up in 3<sup>rd</sup> quarter.
  
- 7 **Review & possibly approve 2nd quarter 2023 investment report:**
  - a. **Discussion:** Reiterated that our interest income was up.
  - b. **Motion to approve:** Gloria Montes   **Second:** Roger Russell
  - c. **Motion carried**
  
- 8 **Review and possibly approve District’s Investment Policy:**
  - a. **Discussion:** Presented draft updates as recommended by Investment training along with increasing maximum term length allowed to 18 months.
  - b. **Motion to update Section VI & VII as noted in draft:** Tommy Carswell  
**Second:** Roger Russell       **Motion carried**
  
- 9 **Review and possibly approve updates to Management Plan:**
  - a. **Discussion:** Presented draft updates and other modifications necessary to be in compliance with State regulations and new appendix information.
  - b. **Motion to approve:** Tommy Carswell       **Second:** Roger Russell
  - c. **Motion carried**
  
- 10 **Appoint budget committee for 2024 budget:**
  - a. **Nominations:** Gloria, Stephen, & Tommy
  - b. **Motion to nominate:** Jimmy Mize   **Second:** Roger Russell
  - c. **Motion Carried**
  - d. **Meeting Date, Time, Place:** October 24, 2023, 11:00 a.m., Nacogdoches City Hall.
  
- 11 **Announcement of the date and location of the next quarterly business meeting:**
  - a. **Tentative Date:** November 8, 2023, 1:30 p.m., Kurth Lodge.
  
- 12 **Adjourn:**
  - a. **Closed by & Time:** President Jimmy Mize, 2:32 p.m.

---

Jimmy Mize, President

---

Gloria Montes, Secretary