



# 2023 Annual Report





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## Letter from the General Manager



**Kathy Turner Jones**  
*General Manager*

As we reflect on the events of 2023, it's evident that Prairielands Groundwater Conservation District ("District") has demonstrated unwavering dedication to managing and safeguarding our groundwater resources. Despite facing over a year of drought conditions across the state of Texas, our District remained resilient, adapting to the evolving landscape, and pressing forward with determination. Despite the challenges presented by these adverse conditions, our commitment to sustainable groundwater management has remained steadfast. We have navigated through these difficulties, embracing innovative approaches and collaborative efforts to ensure the continued protection and preservation of our invaluable water resources.

During the year, the District made significant strides in enhancing our monitoring well program, culminating in the drilling of a new monitor well. This milestone reflects meticulous planning and consideration of various factors, including high-production zones and optimal water levels. Positioned at the perimeter of a high-production zone, the new monitor well promises insights into groundwater directional flow. As the District continues its expansion efforts, anticipate further initiatives aimed at enhancing groundwater management and ensuring the resource's long-term sustainability.

Furthermore, the Board of Directors conducted public hearings in January and September 2023 to implement crucial amendments to our District Rules regulating water wells. Developed by the Rules and Bylaws Committee, these amendments address identified improvements and align with legislation from the 88th Texas Legislature. By defining contiguous controlled acreage and imposing limitations on small well capacity exemptions, we aim to ensure sustainable groundwater utilization while meeting evolving regulatory standards.

The 88th Texas Legislature also saw the passing of several crucial bills, with Senate Bill 2440 standing out as a significant achievement. Effective January 1, 2024, SB 2440 mandates individuals submitting plats for land subdivision intending to use groundwater as their primary water source to obtain a Groundwater Availability Certification ("GAC"), shifting its requirement from permissive to mandatory. A GAC, conducted by licensed professionals, assesses groundwater availability and sustainable yield using aquifer tests, ensuring fair water rights allocation and preventing overexploitation. The District supports SB 2440 as it promotes responsible water management practices amid rapid population growth in Texas, emphasizing the importance of long-term water source security and sustainable subdivision development. The bill's implementation is expected to foster sustainable water usage and responsible development practices within the District.



In collaboration with Groundwater Management Area 8, we embarked on updating the North Texas Groundwater Availability Model (“NTGAM”), enhancing our understanding of regional groundwater dynamics and bolstering our planning efforts for the future. The consultant team is diligently integrating recharge information and focusing on structural enhancements and calibration scripts. The NTGAM serves as a pivotal tool for resource management in the Northern Trinity region, offering a comprehensive perspective on groundwater resources. It supports informed decision-making, equitable distribution, and the development of policies for responsible groundwater management. Technical consultants remain steadfast in their efforts, aiming to complete the model update for review by TWDB in the summer of 2024, ensuring sustainable resource utilization for diverse stakeholders across agriculture, industry, and residential sectors.

Additionally, February 2023 marked a significant transition as Randal Kirk retired from his longstanding position as Vice President of the Board of Directors. Director Paul Tischler assumed the role of Vice President, ensuring the continued leadership. Kathy Tucker of Midlothian, TX, took her oath of office as a Director, appointed by the Ellis County Commissioners Court. With a distinguished background in education and community service, Tucker brings valuable insight to our board as we navigate the challenges of groundwater management in our region.

As we look ahead to 2024, we remain committed to our mission of responsible groundwater stewardship. Through ongoing collaboration, innovation, and community engagement, we aspire to build upon the achievements of the past year and address the challenges and opportunities that lie ahead.

I encourage you to review our annual report for additional insights on our performance standards and benchmarks that help us monitor the District’s management goals and objectives. Your engagement and feedback are invaluable as we strive to continuously improve our efforts in managing our groundwater resources.

Sincerely,



Kathy Turner Jones  
General Manager

## Mission Statement

The Mission of the Prairielands Groundwater Conservation District (“District”) is to develop rules to provide protection to existing wells, prevent waste, promote conservation, provide a framework that will allow availability and accessibility of groundwater for future generations, protect the quality of the groundwater in the recharge zone of the aquifer, ensure that the residents of Ellis, Hill, Johnson, and Somervell Counties maintain local control over their groundwater, and operate the District in a fair and equitable manner for all residents of the District.

## Brief District History

Prairielands Groundwater Conservation District was formed in response to a finding by the Texas Commission on Environmental Quality (“TCEQ”) that groundwater shortages were expected in Ellis, Hill, Johnson, and Somervell counties over the next 25 years. The TCEQ finding required local residents to create a groundwater conservation district, or else the TCEQ would mandate one, enabling legislation for the Prairielands GCD to be created in 2009 by the 81st Texas Legislature.

The Prairielands GCD is located in the northern prairies of Texas, encompassing a four-county area. The District spans 2,870 square miles and overlays the Woodbine Aquifer and Trinity Aquifer.

## District Creation

The Prairielands Groundwater Conservation District (“District”) was created by the 81st Texas Legislature under the authority of Section 59, Article XVI, of the Texas Constitution, and in accordance with Chapter 36 of the Texas Water Code (“Water Code”), by the Act of May 3rd, 2009, 81st Leg., R.S., Ch. 1208, 2009 Tex. Gen. Laws 3859, codified at TEX. SPEC. DIST. LOC. LAWS CODE ANN. Ch. 8855. (“The District Act”). The District is a governmental agency and a body politic and corporate. The District was formed to serve a public use and benefit and is essential to accomplish the objectives set forth in Section 59, Article XVI, of the Texas Constitution.

## Board of Directors

The Prairielands Groundwater Conservation District's Board of Directors is composed of two members per county, appointed by the counties' Commissioners' Courts. The 2023 directors are:

**President – Charles Beseda**

Term Expires August 31, 2027

Represents Hill County

**Director – John Curtis**

Term Expires August 31, 2027

Represents Somervell County

**Vice-President – Paul Tischler**

Term Expires August 31, 2025

Represents Ellis County

**Director – Brad Daniels**

Term Expires August 31, 2025

Represents Hill County

**Secretary/Treasurer – Maurice Osborn**

Term Expires August 31, 2027

Represents Ellis County

**Director – Marty McPherson**

Term Expires August 31, 2025

Represents Somervell County

**Director – Barney McClure**

Term Expires August 31, 2027

Represents Johnson County

**Director – Kathy Tucker**

Term Expires August 31, 2025

Represents Johnson County

## District Staff

**Kathy Turner Jones**

General Manager

**Karol Bowers**

Permitting & Compliance Specialist

**Brian Watts**

Comptroller

**Rusty Zent**

Field Technician

**Michael Heath**

Field Operations Coordinator

**Jose Sarmiento**

Field Technician

**Kaylin Garcia**

Public Relations and Education Director

**Nicole Windham**

Office Assistant

**Annette Kinney**

Permitting & Compliance Specialist

## Amendments to District Rules

The Board of Directors for Prairielands GCD held public hearings on January 17, 2023, and September 18, 2023, to adopt amendments to the District Rules regulating water wells within the boundaries of the District effective immediately. Over the months leading up to the meeting, the District staff and directors worked diligently to identify the needed rules improvements in the course of implementing the permanent District Rules that were adopted on December 17, 2018, and previously amended on October 21, 2019, November 16, 2020, December 20, 2021, and July 18, 2022. The Board's Rules and Bylaws Committee, worked to develop recommended amendments to the District Rules to address such improvements.

Publication of the proposed amendments to the District Rules were made available to the public on December 15, 2022, and August 22, 2023, and public notices of hearings on consideration of adopting the amended rules were published in newspapers across the four-county district no less than 20 days prior to the public hearing. At the public hearings, which were held in person at the meeting room inside the District office in Cleburne, the Board considered any oral and written comments from the public on the proposed amendments to the District Rules, and after taking up and considering the proposed amendments to the District Rules, the Board adopted the amendments as presented.

The January 17, 2023, adopted amendments to the District Rules include defining and clarifying the method by which a permit applicant calculates contiguous controlled acreage. New rule changes limit the small well capacity exemption—17.36 gallons for new wells—to wells used solely for domestic use, livestock use, or poultry use and include new requirements for open, uncovered, abandoned, or deteriorating wells. While the September 18, 2023, adopted amendments allow the District to be consistent with legislation passed during the 88th Texas Legislature, Regular Session. These amendments include the drilling of a water well for temporary use to supply water solely for a drilling rig that is drilling a water well subject to the permitting requirements of the District is itself exempt from the permitting requirements of the District, providing the process and procedures to petition the District to request amendments to the District Rules, updated procedures for the District to act on a permit or permit amendment application, amended requirements and clarifying penalties for retail public utilities to submit annual water audits. Other revisions include requirements related to the deadline for drilling and completing a well after approval by the District, water meter accuracy, test wells, shared wells, well spacing, spacing exceptions, and other minor clarifying or nonsubstantive changes.

The adopted amendments to the District Rules are necessary to support the District's efforts in managing the groundwater resources within the District. Information about the public hearing and copies of the amended District Rules are available on the District's website at [www.prairielandsgcd.org](http://www.prairielandsgcd.org), and physical copies can be obtained by visiting the District's office at 208 Kimberly Drive in Cleburne.



# Management Plan Objectives, Performance Standards, and Annual Activity Report

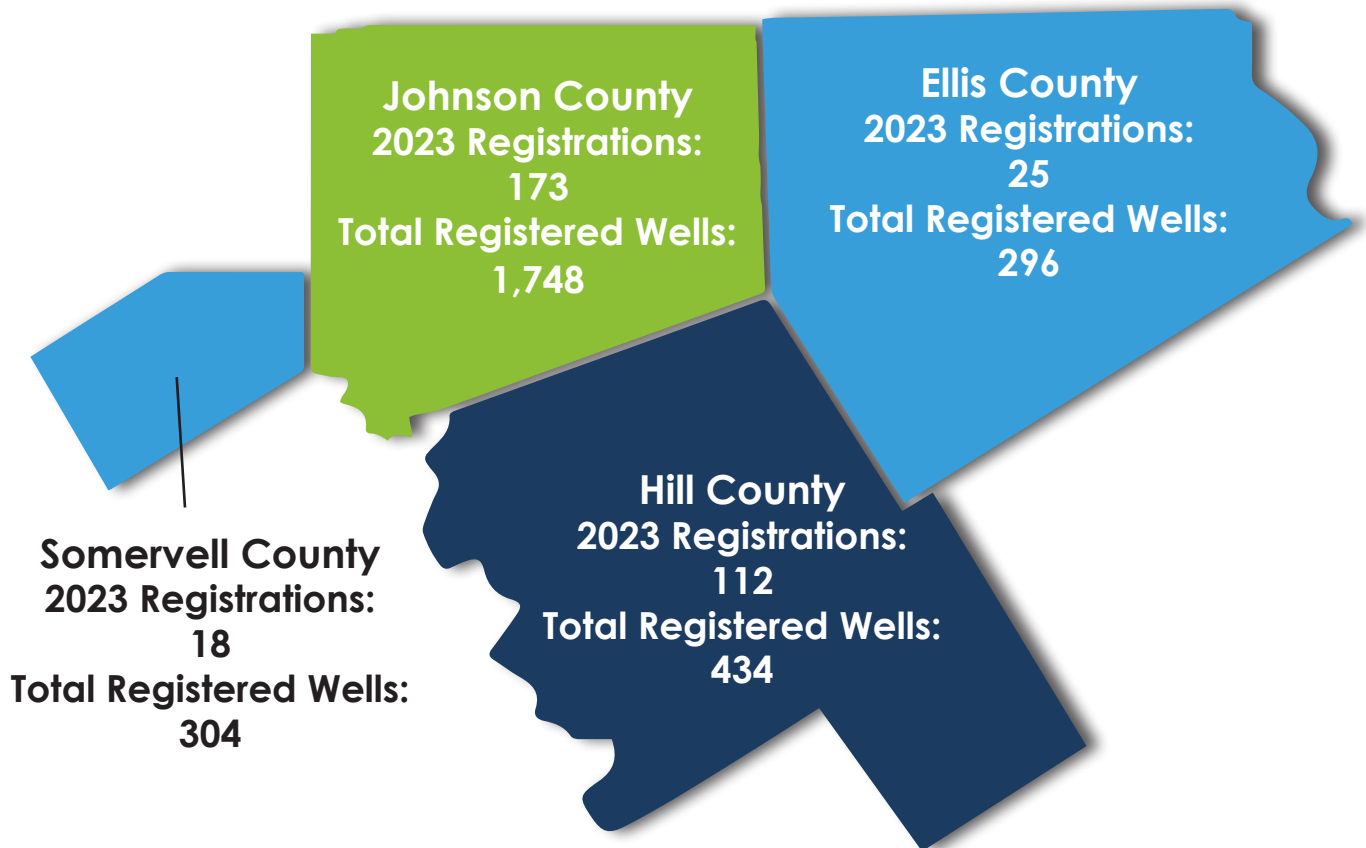
## Providing the Most Efficient Use of Groundwater

### Well Registrations

**A.1. Management Objective:** *The District will require that all wells be registered in accordance with its rules.*

**Performance Standard:** *Each year the staff will report well registration statistics. A summary of registration activity by county and aquifer will be included in the District's Annual Report.*

By December 31, 2023, a total of 328 additional wells were registered with the District in 2023, bringing the total number of registered wells to 2,782 at the end of the year. Of the new registrations, there were 276 new wells, 11 replacement wells, and 41 existing wells. These 2023 well registrations were comprised of 317 exempt wells, and 11 non-exempt wells.

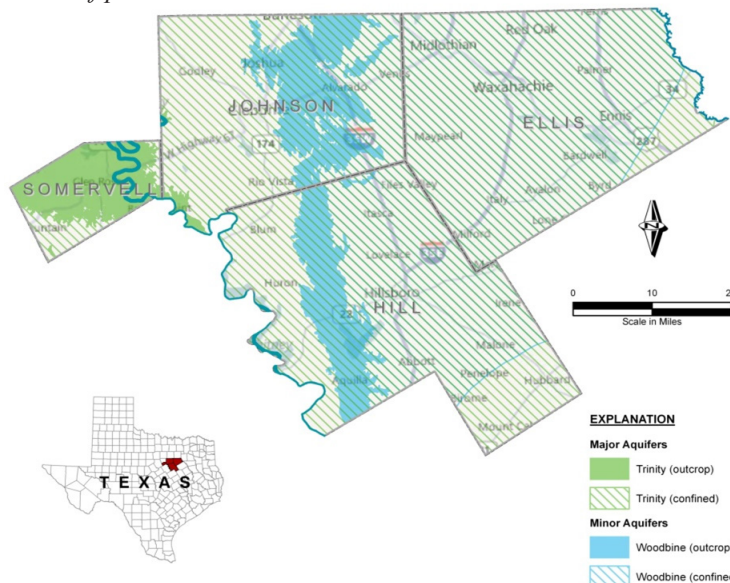


## Well Registrations by Aquifer

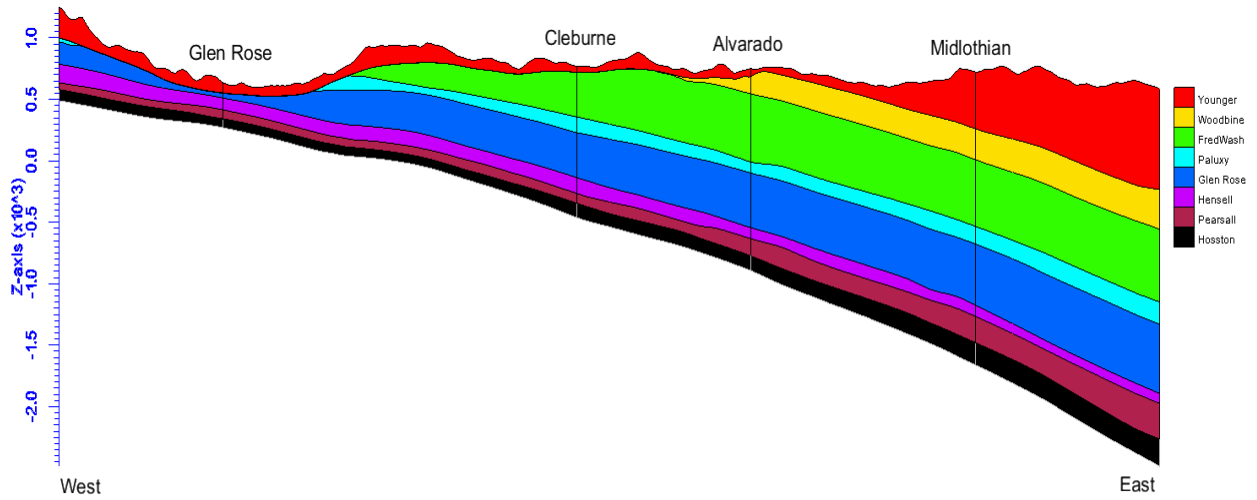
To register wells by aquifer formation, the District used data from the Northern Trinity and Woodbine Aquifers Groundwater Availability Model (“NTWGAM”). Figures 1 and 2 on the next page display the stratigraphy across the District. The District uses the data in its online registration and reporting geo-database to apply aquifer formations to registered wells based on location, depth, screen interval, and formation pump percentage. Many wells, however, are screened across and pull from multiple formations. For this report, the layer with largest percentage of pumping was chosen for those wells. The breakdown of wells with available screen interval data registered in 2023 by stratigraphy is as follows:

<b>Younger Formation - 2</b> <ul style="list-style-type: none"> <li>• Ellis County - 1</li> <li>• Hill County - 1</li> </ul>	<b>Woodbine Formation - 78</b> <ul style="list-style-type: none"> <li>• Ellis County - 7</li> <li>• Hill County - 47</li> <li>• Johnson County - 24</li> </ul>
<b>Washita/Fredericksburg Formation - 40</b> <ul style="list-style-type: none"> <li>• Ellis County - 4</li> <li>• Hill County - 13</li> <li>• Johnson County - 23</li> </ul>	<b>Paluxy Formation - 45</b> <ul style="list-style-type: none"> <li>• Ellis County - 7</li> <li>• Hill County - 22</li> <li>• Johnson County - 15</li> <li>• Somervell County - 1</li> </ul>
<b>Glen Rose Formation - 25</b> <ul style="list-style-type: none"> <li>• Hill County - 3</li> <li>• Johnson County - 20</li> <li>• Somervell County - 2</li> </ul>	<b>Hensell Formation - 14</b> <ul style="list-style-type: none"> <li>• Hill County - 1</li> <li>• Johnson County - 13</li> </ul>
<b>Pearsall Formation - 0</b>	<b>Hosston Formation - 6</b> <ul style="list-style-type: none"> <li>• Hill County - 1</li> <li>• Johnson County - 1</li> <li>• Somervell County - 4</li> </ul>

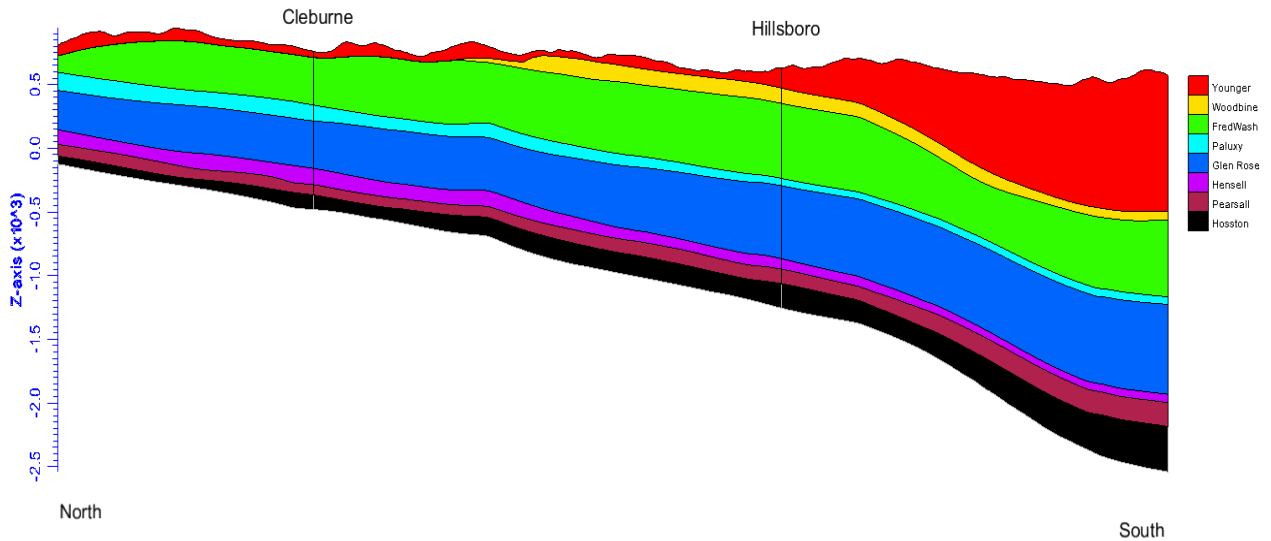
*Note: 118 wells registered in 2023 were existing and pull from an unknown aquifer or have not been drilled at the time of publication.*



The map to the left illustrates the geographical areas within the District covered by the two primary aquifers: the major Trinity aquifer and the minor Woodbine aquifer.



**Figure 1. West to East Cross Section Stratigraphy Map of the District**  
*Stratigraphy map provided by Aquaveo, 2018*



**Figure 2. North to South Cross Section Stratigraphy Map of the District**  
*Stratigraphy map provided by Aquaveo, 2018*

# Installation of Meters and Annual Production of Groundwater from Non-Exempt Wells

**A.2. Management Objective:** *Each year the District will monitor annual production from all non-exempt wells within the District. The District will compile records and develop a database of non-exempt wells to help assess the aquifer units from which groundwater production occurs.*

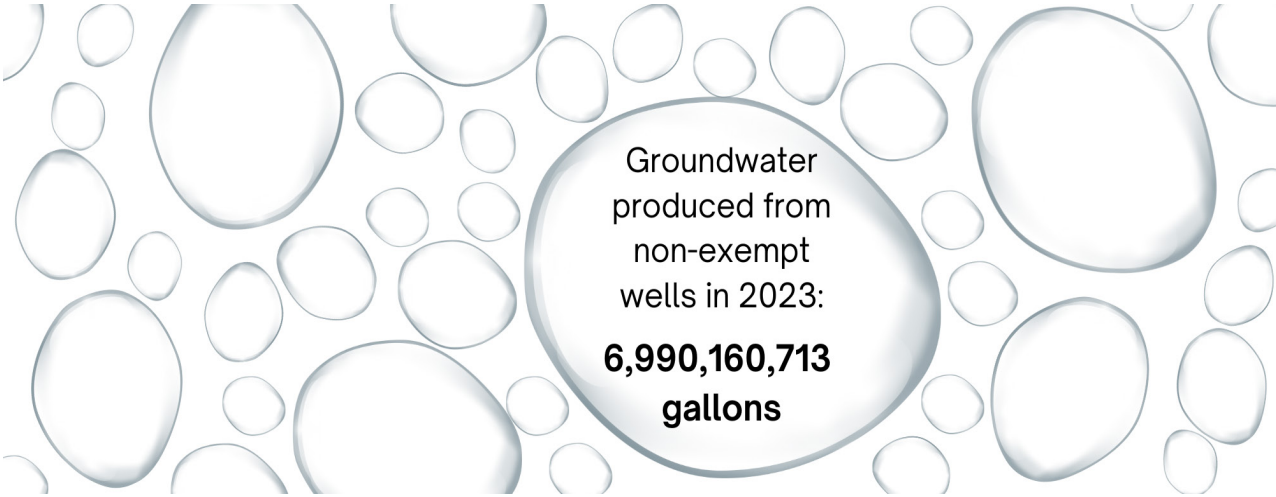
**Performance Standard:** *The District will require installation of meters on all non-exempt wells and reporting of production to the District.*

The District’s Rules require all non-exempt well owners to install and maintain accurate water meters on their wells. Based upon the meter readings, the Rules further require well owners to record the amount of groundwater produced from their wells and report the amount of groundwater production to the District on a monthly basis. Beginning in 2019, the District required all non-exempt wells to either hold an Operating Permit or a Historic Use Permit to help regulate groundwater usage.

**A.3. Management Objective:** *The District will compile records and develop a database of non-exempt wells to help assess in which aquifer units groundwater production occurs.*

**Performance Standard:** *The District will require installation of meters on all non-exempt wells and reporting of production to the District. The annual production of groundwater from non-exempt wells will be included in the Annual Report provided to the Board of Directors.*

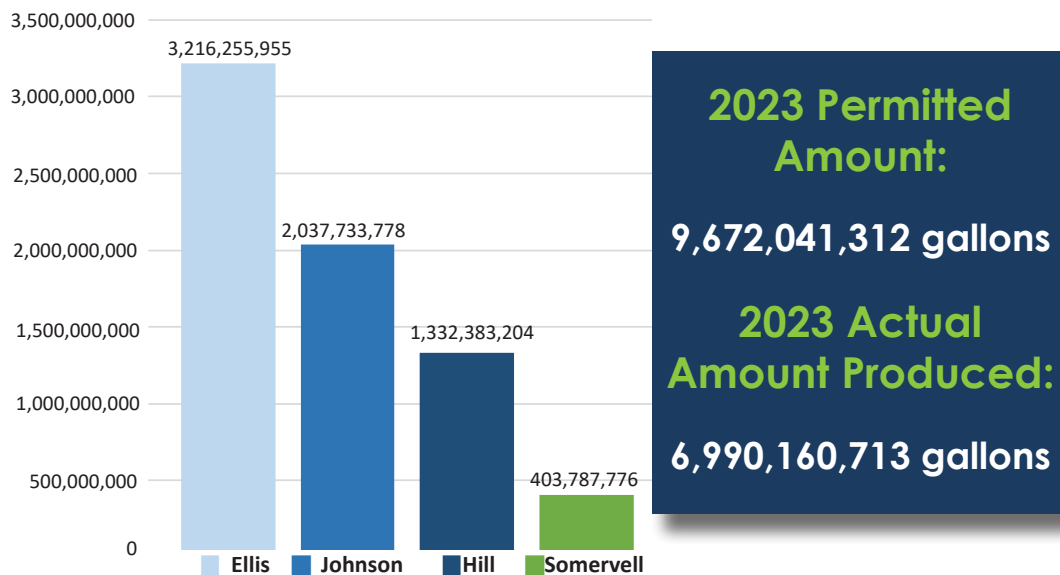
The District’s Groundwater Management System houses all the District’s well and water usage information, allowing users 24/7 access to their meter reading production, state well reports, and field inspections. This database is used by the District to classify wells as exempt or non-exempt, verify coordinates of well locations, input and verify meter readings, easily assess the quantity of water pumped by county, aquifer, well owner, or use, locate wells, and approve new well registrations. It is also available for non-exempt well owners to pay for their water usage, and for well drillers and well owners to apply for new wells or report meter readings.



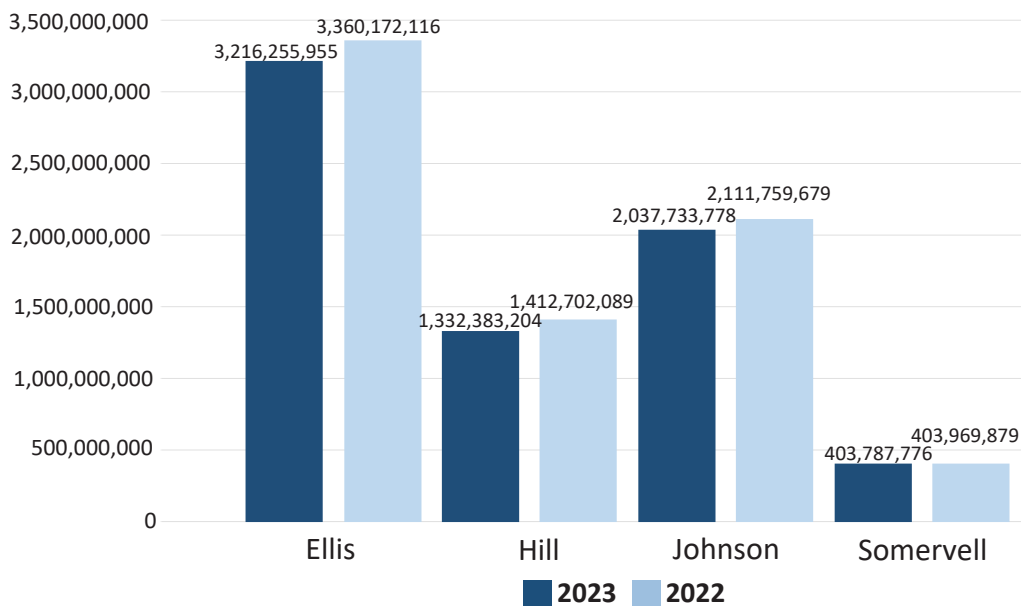


## District Non-Exempt Well Production

Non-exempt well owners in the District reported they pumped a total of 6,990,160,713 gallons of groundwater in 2023. Figure 3 indicates that Ellis County well owners pumped the most of the four counties followed by Johnson, Hill, and Somervell. Compared to 2022, production totals in all four counties showed a decrease in groundwater production in 2023 due to less severe drought conditions experienced throughout the District depicted in Figure 4. *The breakdown of 2022 production numbers presented in this report differ from those in 2022's report. This difference can be attributed to the adjustments made by permittees and District staff to the meter readings after the production numbers were compiled for the 2022 report.*



**Figure 3. 2023 Water Use by County (Gallons)**



**Figure 4. 2023 vs 2022 Annual Water Usage by County (Gallons)**

## District Water User Groups

Most of the groundwater used in the District is for municipal/public water supply systems with a reported 5,760,696,105 gallons pumped in 2023. The industrial/manufacturing sector reported the second greatest usage at 964,825,954 gallons. Due to the less severe drought conditions, there was a decrease in groundwater production amounts for all user groups except filling a pond and commercial producers. *The breakdown of 2022 production numbers presented in this report differ from those in 2022's report. This difference is attributed to the adjustments made by permittees and District staff to the meter readings after the production numbers were compiled for the 2022 report.*



### Municipal/Public Water Supply

2023 Usage: 5,760,696,105 gal  
2022 Usage: 5,931,111,532 gal

### Industrial/Manufacturing

2023 Usage: 964,825,954 gal  
2022 Usage: 999,234,949 gal

### Filling a Pond or Surface Impoundment

2023 Usage: 64,911,013 gal  
2022 Usage: 133,941,116 gal

### Commercial

2023 Usage: 75,912,859 gal  
2022 Usage: 65,377,490 gal

### Non-Agricultural Irrigation

2023 Usage: 79,046,860 gal  
2022 Usage: 108,944,794 gal

### Oil & Gas Production

2023 Usage: 1,992,800 gal  
2022 Usage: 3,221,446 gal

### Recreational

2023 Usage: 42,775,122 gal  
2022 Usage: 46,772,436 gal

# 2023 Water User Group Pumping Amounts by County



## Ellis County

Commercial: 1,734,529 gal  
Filling a Pond or Surface Impoundment: 1,275,269 gal  
Non-Agricultural Irrigation: 11,999,700 gal  
Industrial/Manufacturing: 776,989,205 gal  
Municipal/Public Water Supply: 2,414,769,752 gal  
Recreational: 9,487,500 gal

## Hill County

Non-Agricultural Irrigation: 3,152,400 gal  
Municipal/Public Water Supply: 1,324,087,205 gal  
Recreational: 5,143,599 gal



## Johnson County

Commercial: 14,144,038 gal  
Filling a Pond or Surface Impoundment: 59,644,284 gal  
Non-Agricultural Irrigation: 61,066,260 gal  
Industrial/Manufacturing: 43,260,680 gal  
Municipal/Public Water Supply: 1,849,970,148 gal  
Oil & Gas Production: 1,992,800 gal  
Recreational: 7,655,568 gal

## Somervell County

Commercial: 60,034,292 gal  
Filling a Pond or Surface Impoundment: 3,991,460 gal  
Non-Agricultural Irrigation: 2,828,500 gal  
Industrial/Manufacturing: 138,773,210 gal  
Municipal/Public Water Supply: 171,869,000 gal  
Recreational: 20,488,455 gal



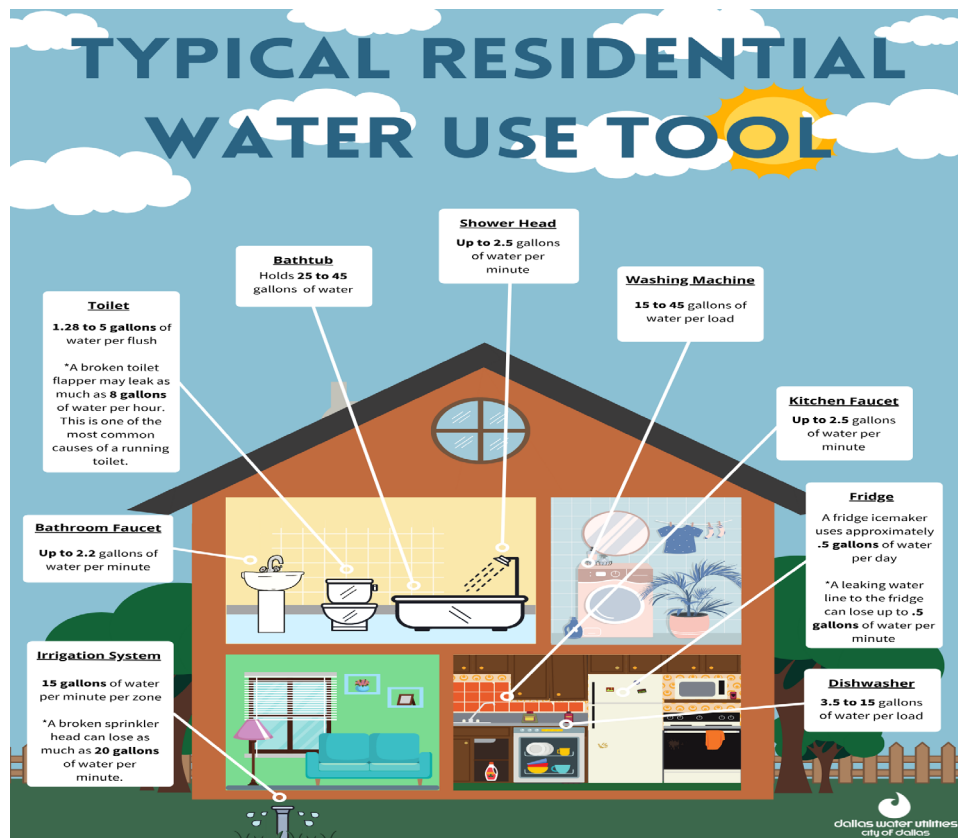
# Methodology to Determine Production from Exempt Wells

**A.4. Management Objective:** *The District will develop a methodology to quantify current and projected annual groundwater production from exempt wells.*

**Performance Standard:** *The District will provide the TWDB with its methodology and estimates of current and projected annual groundwater production from exempt wells. The District will also utilize the information in the future in developing and achieving desired future conditions and in developing and implementing its production allocation and permitting system and rules. Information related to implementation of this objective will be included in the Annual Report to the Board of Directors.*

The District utilizes a similar methodology for estimating annual groundwater production from District-defined exempt wells as was used in the TWDB-adopted Northern Trinity and Woodbine Aquifers Groundwater Availability Model (“NTWGAM”). This methodology is based on the distribution of domestic and livestock wells in the area using census block data to estimate population distributions.

Updated estimates of exempt use were discussed with the District Board of Directors at multiple meetings during 2023 as part of the process for estimating total water use in the District. This was necessary as the District contemplated a response to severe drought conditions and whether, consistent with its rules, the District could authorize additional production to meet unusually high water needs.



<https://dallascityhall.com/departments/waterutilities/Pages/Typical-Residential-Water-Use-Tool.aspx>



# Controlling and Preventing Waste of Groundwater

## Metering, Reporting, Usage Fees, and Compliance Monitoring

**B.1. Management Objective:** *Each year the District will monitor annual production from all non-exempt wells within the District.*

**Performance Standard:** *The District will require installation of meters on all non-exempt wells and reporting of production to the District. The annual production of groundwater from non-exempt wells will be included in the Annual Report provided to the Board of Directors.*

The District requires all non-exempt wells to have meters installed and maintained on each wellhead. The District Rules require well owners to record the amount of groundwater produced from their wells and report the amount of groundwater production to the District on a monthly basis. For a well that requires a meter under District Rules, the permit holder must provide a certificate verifying the accuracy of the meter within the previous five-year period as a condition of permit renewal. A non-exempt well owner or operator who is not a public water system and does not exceed ten million gallons of groundwater per year may apply and receive approval from the District to take meter readings and submit Water Production Reports to the District semiannually. To date, we have two small volume non-exempt users who report semiannually.

**B.2. Management Objective:** *The District will encourage the elimination and reduction of groundwater waste through the collection of a water use fee for non-exempt wells within the District.*

**Performance Standard:** *Annual reporting of total groundwater used and total water use fees paid by non-exempt wells will be included in the Annual Report provided to the Board of Directors.*

Prairielands GCD encourages elimination and reduction of groundwater waste by collecting water use fees for non-exempt wells, identifying and investigating compliance issues, and looking for instances of potential waste of groundwater. The District charged a water use fee rate of \$0.20 per 1,000 gallons for non-exempt usage. There is an additional \$0.10 per 1,000 gallons for transporting groundwater out of the District. The District collected an estimated pre-audit total of \$1,982,246 in water use fees in 2023.

Beginning in 2022, the District established permitting requirements and increased fees for average system water loss by public water systems above certain percentages to promote conservation of water and prevent waste. For purposes of this rule, “wasteful system water losses” of a retail public utility are any real water losses greater than twenty-five percent (25%), based on a five-year rolling average.

**2023 Authorized  
Permitted Production:**  
**9,672,041,312 gallons**

**2023 Non-Exempt  
Production:**  
**6,990,160,713 gallons**

**B.3. Management Objective:** *The District will identify well owners that are not in compliance with District well registration, reporting, and fee payment requirements and bring them into compliance.*

**Performance Standard:** *The District will compare existing state records and field staff observations with the well registration database to identify noncompliant well owners.*

In 2023, seventy-one compliance issues occurred, with eleven pertaining to drilling and operating a well without a compliant registration or permit. Six instances involved wells drilled in a different location than authorized. Additionally, eight cases arose from failure to submit a complete and accurate water production report within the required period, and twenty cases of failure to file a well completion report in a timely manner. Eight cases were related to exceeding authorized production amounts for 2023. Other issues comprised of three failures to plug or close open-hole wells, one failure to meter when required, and nine failures to submit required water loss audits. It is noteworthy that the overwhelming majority of these compliance issues were resolved amicably. However, as of the report's issuance, there are ten pending cases, primarily revolving around overpumping in 2023. We are actively working to address these matters, with a focused aim to resolve eight of them by the end of the first quarter of 2024.

**B.4. Management Objective:** *The District will investigate instances of potential waste of groundwater.*

**Performance Standard:** *Report to the Board as needed and include the number of investigations in the Annual Report.*

In 2023, the District concluded one instance in Ellis County related to potential groundwater waste, which originated in 2022. This case involved a well pumping into a pond, leading to overflow into a ditch. In January, District staff conducted a final field inspection and confirmed the float shut-off was adjusted correctly, preventing further pond overflow. The well owner cooperated with District staff to resolve the issue amicably. Apart from this, the District did not encounter any instances requiring investigation of potential groundwater waste throughout the year.

## Addressing Conjunctive Surface Water Management Issues

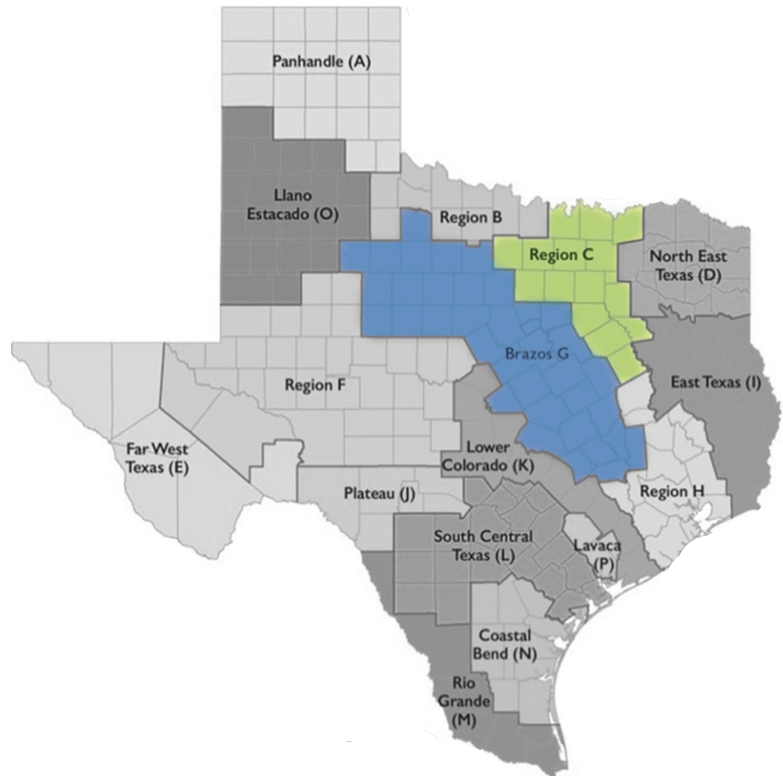
### State and Regional Water Planning Review and Participation

**C.1. Management Objective:** *The District will actively participate in the Region C and Region G regional water planning processes to stay abreast of water demand projects and supply strategies in the District and to coordinate the District's groundwater management strategies with the regional water planning groups and foster an understanding of regional management practices.*

**Performance Standard:** *The District will review the most recently approved State Water Plan to gain an understanding of water demand projections and supply strategies in the District. The*

*District will monitor future proposed amendments to the Region C and Region G regional water plans as they pertain to the District and ensure that supply strategies impacting groundwater resources in the District are identified in the appropriate regional water plan. The District's General Manager or designated representative will attend meetings of the Region C and Region G regional water planning groups when feasible. A summary of the District's interactions with the regional water planning groups will be included in the Annual Report provided to the Board of Directors.*

The Board of Directors, General Manager, and District staff strive to stay informed on any matters related to groundwater supply in Ellis, Hill, Somervell, and Johnson counties. Critical sources of pertinent information include familiarity and understanding of regional and state water plans. The Board President and General Manager continued to stay abreast of proposed amendments to the Region C and G regional water plans so that supply strategies impacting groundwater resources in the District were properly identified.



The General Manager serves as a voting member of the Brazos G Regional Water Planning Group (“RWPG”) and attended meetings on March 8, May 31, July 27, and October 20. Also attended were Brazos G committee meetings on September 20, October 10, November 15 and 29. The General Manager also participated in Region C Regional Water Planning Group meetings on June 12 and July 17.

**C.2. Management Objective:** *The District will: 1) seek to better understand groundwater and surface water interactions, including groundwater base flow discharges to surface water courses and aquifer recharge from surface water flows; 2) identify existing and planned surface water and other alternative supplies to meet anticipated demand growth; 3) explore possible groundwater to surface water conversions in the District and facilitate the process; and 4) understand current and planned surface water supplies and how they affect groundwater demands.*

**Performance Standard:** *A summary of the progress and interaction with RWPGs will be included in each Annual Report.*

Given the significant influence of the District’s groundwater regulations on RWPGs’ planning process, collaborative efforts are paramount. The District works closely with RWPGs and their consultant teams to seamlessly intergrate the District’s groundwater management objectives into the regional water planning process. The District’s interaction with RWPGs encompass active

participation in meetings and continuous coordination to ensure they are well-informed about groundwater-related development in Ellis, Johnson, Hill, and Somervell counties.

## Addressing Natural Resource Issues

### Injection Wells and Oil and Gas Compliance

**D.1. Management Objective:** *The District will develop a program to monitor and assess injection well activities in the District.*

**Performance Standard:** *The District will monitor and review injection well applications filed with the Railroad Commission of Texas and the Texas Commission on Environmental Quality that propose injection wells to be located within the boundaries of the District to identify contamination threats to groundwater resources in the District. The General Manager will bring to the attention of the Board any applications that the General Manager determines in their discretion threaten the groundwater resources in the District, and any outcomes of actions taken by the District will be included in each Annual Report.*

In 2023, Prairielands GCD addressed natural resource issues that impacted the use and availability of groundwater and which are impacted using groundwater. District activities fell into three categories:

1. Monitoring and assessing injection well activities in the District;
2. Monitoring compliance by oil and gas companies with District registration, metering, production reporting, and fee payment requirements; and
3. Participating in interim activities prior to the 88th Session of the Texas Legislature.

The District utilizes an effective Underground Injection Control (“UIC”) monitoring program that included the review of all applications for injection wells proposed to be located within the District’s boundaries to ensure injection well activities do not endanger groundwater resources.

In April 2022, Republic Industrial and Energy Solutions, LLC (“RIES”) opted to withdraw their UIC permit application from TCEQ, with plans for resubmission anticipated. The District did not receive any UIC applications during 2023. However, at the time of publication, the District has received notice informing that RIES has resubmitted the UIC permit application, prompting the District to continue its review and monitoring processes.

Although the TCEQ is required to notify the District of certain injection well operations proposed within the District, current law does not require the Railroad Commission of Texas (“RRC”) to provide notice to the District of a Class II injection well application proposed within the District’s jurisdiction. For this reason, the District has engaged the services of Statewide Plat, a monitoring company, to notify the District of all Class II injection well applications filed with the RRC for injection within the District.



**D.2. Management Objective:** *The District will monitor compliance by oil and gas companies of the well registration, metering, production reporting, and fee payment requirements of the District's rules.*

**Performance Standard:** *As with other types of wells, instances of non-compliance by owners and operators of water wells for oil and gas activities will be reported to the Board of Directors as appropriate for enforcement action. A summary of such enforcement activities will be included in the Annual Report.*

The oil and gas companies have continued to comply with the well registration, metering, production reporting, and fee payment requirements of the District's Rules. In 2023, with the continuation of the District's permitting program, the oil and gas companies have generally complied with the requirements of the District Rules to the best of the District's knowledge. Only five enforcement actions were initiated in 2023 for an oil and gas company who failed to report. The enforcement cases were resolved amicably and was closed prior to the end of 2023.

## Addressing Drought Conditions

### Drought Conditions and Monitors

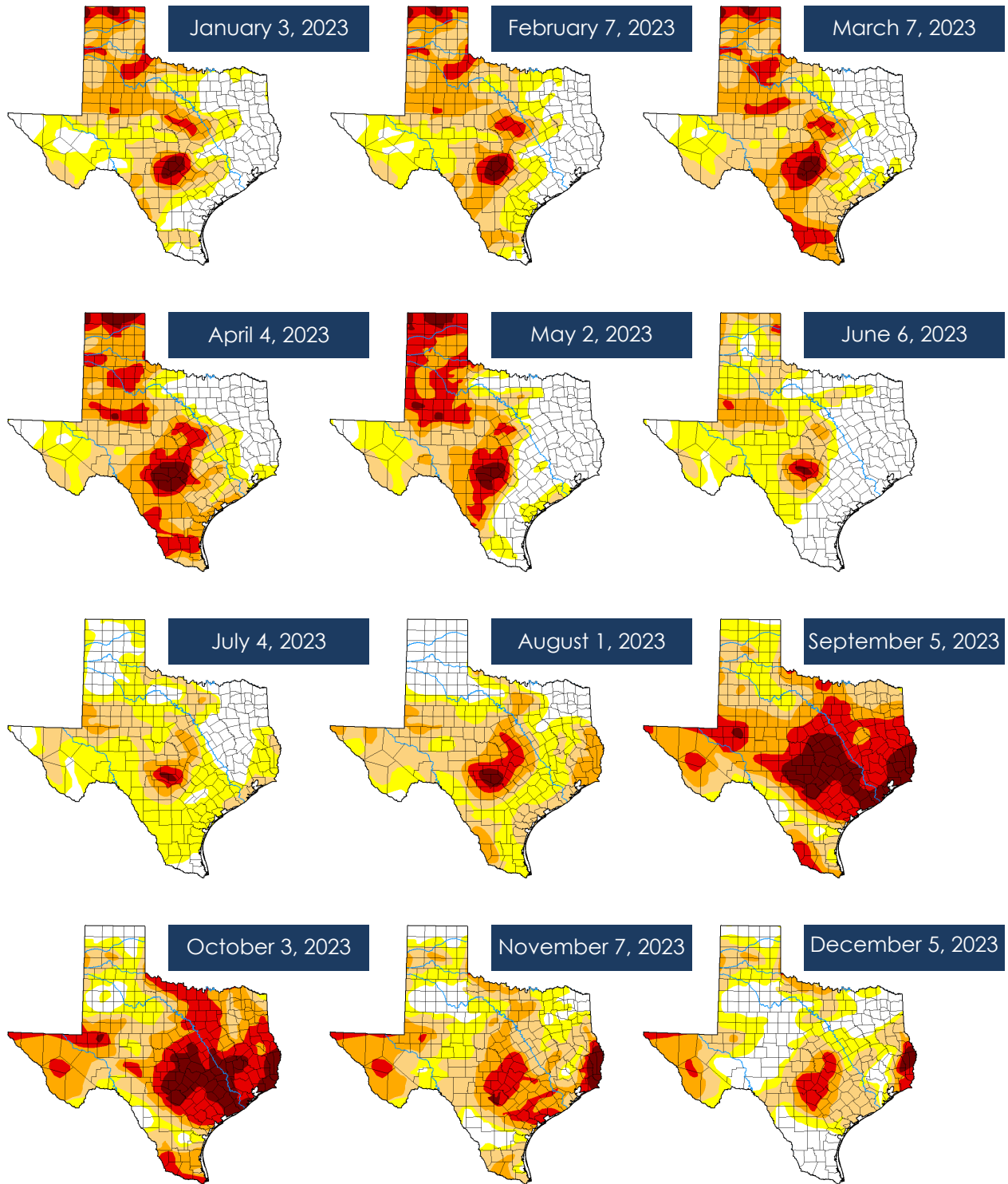
**E.1. Management Objective:** *Monthly review of drought conditions within the District using the Texas Water Development Board's Monthly Drought Conditions.*

**Performance Standard:** *An annual review of drought conditions within the District will be included in the Annual Report provided to the Board of Directors. Reports will be provided more frequently to the Board as deemed appropriate by the General Manager to timely respond to drought conditions as they occur.*

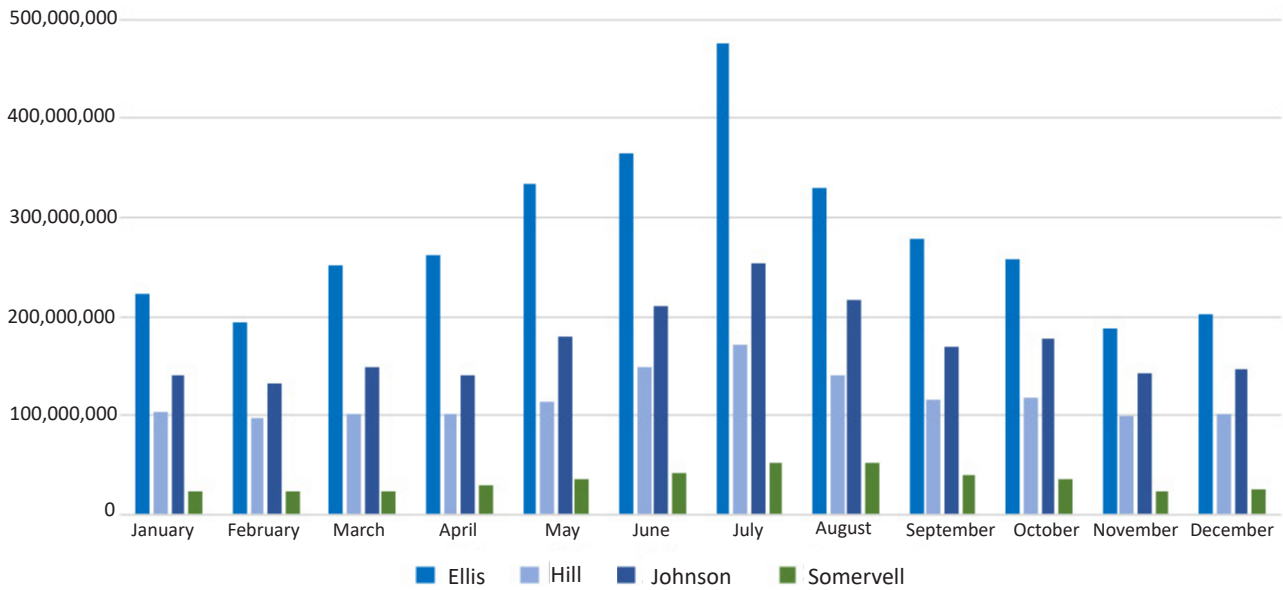
Throughout 2023, regular comparisons were made between the Texas Water Development Board's Monthly Drought Monitors and usage reports to discern any correlations between drought conditions and pumping volumes within the District. The monthly drought maps, presented on the following page, revealed that the District experienced abnormal dryness or varying degrees of moderate drought for the majority of the year. However, from late August to early November, the severity escalated to the "Extreme Drought" stage. Figure 5, on page 19, illustrates monthly water usage across each county, exhibiting trends aligned with seasonal fluctuations in water demand. Moreover, it highlights a direct reflection of the drought severity within the District, as pumping volumes correspondingly increase during periods of heightened drought. In the pursuit of effective aquifer management, the District remains committed to monitoring the interplay between drought conditions, pumping activities, and aquifer levels, ensuring the sustainability of our water resources.

# 2023 Monthly Texas Drought Monitor Maps

None D0 Abnormally Dry D1 Moderate Drought D2 Severe Drought D3 Extreme Drought D4 Exceptional Drought



<https://droughtmonitor.unl.edu/Maps/MapArchive.aspx>



**Figure 5. 2023 Monthly Water Use by County**

**E.2. Management Objective:** *The District will develop information to understand the relationships between drought conditions, increased pumping, and the impacts of both on water levels and shallow wells in the outcrops and subcrops of the aquifer subdivisions in the District. The District will also determine areas where it may be suitable for the District to implement pumping restrictions during drought times in order to protect public safety and welfare, as well as areas in which the District may wish to allow overpumping during drought periods to promote conjunctive management when surface water supplies become unavailable to water user groups due to drought conditions.*

**Performance Standard:** *The District will monitor and assess drought impacts on aquifer outcrops and subcrops, including effects of increased pumping. By 2022, the District will complete studies and rules and regulatory plan development for drought pumping restrictions or over-pumping allowables.*

In 2022, the District studied the relationship between drought, water use and aquifer levels in the Trinity and Woodbine aquifers. Based on the results of this evaluation, the District developed and adopted amended rules that allow for additional pumping in the aquifers during times of extreme or worse drought while ensuring long-term production is consistent with the District’s desired future conditions and modeled available groundwater. To be eligible to produce over the permit allowance, permittees must also have implemented mandatory water restrictions in their drought contingency plans. Additional information is available in Rule 5.10 of the District’s rules.

# Addressing Conservation, Recharge Enhancement, Rainwater Harvesting, Precipitation Enhancement, and Brush Control

## Conservation and Public Awareness Articles

**F.1. Management Objective:** *The District will annually submit at least one article regarding water conservation, rainwater harvesting, or brush control for publication to at least one newspaper of general circulation in the District counties.*

**Performance Standard:** *Each year, a copy of each conservation article will be included in the District's Annual Report to be given to the District's Board of Directors.*

Press releases of various District activities were sent to newspapers in all four counties throughout the year: *Cleburne Times-Review, Glen Rose Reporter, Hillsboro Reporter, and the Waxahachie Daily Light*. A brief summary of the conservation-related articles is provided below. (Complete copies are included in Appendix "A".)

**Press Release #1:** The District amended its rules regulating water wells during a public meeting on January 17, 2023. The amendments aim to offer clarity to well owners and operators, particularly concerning the calculation of "contiguous controlled acreage" and exemptions from permitting, fee payment, metering, and reporting requirements based on well characteristics and purpose of use. These changes also introduce new regulations regarding open, abandoned, or deteriorating wells, emphasizing compliance to prevent groundwater pollution and safety hazards. The District encourages well owners to review the amended rules available on its website or by visiting their office to ensure compliance and effective management of groundwater resources.

**Press Release #2:** The Texas 4-H Water Ambassadors Program, established in 2017, aims to educate high school students about water resources through a summer 4-H2O Leadership Academy where students learn about water collection, treatment, and conservation across Texas. Throughout the year, ambassadors share their knowledge through educational and service activities, interacting with water agencies and policymakers to understand water law, policy, and management. With 158 youth serving as ambassadors to date, the program, supported by the Texas water industry and local districts like Prairielands GCD, offers students the opportunity to develop leadership skills and contribute to water stewardship efforts, requiring a commitment of at least 40 hours of education and service during the program.

**Press Release #3:** Well owners in the Prairielands GCD area must winterize their private water systems to prevent damage and conserve water during freezing temperatures. Insulating pipes and well components, sealing well houses, and adjusting irrigation systems are essential steps to protect water wells from freezing and ensure sustainability. These proactive measures safeguard against water waste and contribute to the reliability of well systems, supporting water conservation efforts in regions prone to drought.

In addition to submitting the following articles, the District also continued with its digital and social media initiative in 2023 with the District's Facebook, Twitter, and LinkedIn profiles and utilizing email campaign software to distribute e-blasts to non-exempt and exempt well owners, elected officials, business

owners, educators, and media contacts and anyone in the public who had requested to receive them. The content in these social and digital media posts include conservation tips, groundwater awareness, important meetings or events in the District, education event information, and general information about the District. These approaches provide an excellent resource for distributing educational materials, sharing important news and information, and building identity and recognition among the public.

**F.2. Management Objective:** *Each year, the District will include at least one informative flier on water conservation, rain water harvesting, or brush control within at least one mail out to groundwater non-exempt users distributed in the normal course of business for the District. The District will also consider additional fliers or initiating other public awareness campaigns and outreach efforts on water conservation during drought conditions.*

**Performance Standard:** *Each year, a copy of each mail-out flier and a summary of all other public awareness water conservation campaigns and outreach efforts will be included in the District’s Annual Report to be given to the District’s Board of Directors.*

On December 8, 2023, the District mailed a flier containing water conservation tips and information about the District’s efforts to manage water loss to non-exempt well owners. The conservation tips include guidance on inspecting water systems and winterizing outdoor setups. Meanwhile, the PGCD’s initiatives for water loss management highlighted meter accuracy verifications, water loss audits, and educational outreach. A copy of the mailed flier can be found in Appendix “B”.

Each year, the District produces a quarterly newsletter, the Prairielands eLine, that is distributed in print and electronically and made available to the public in the District’s office. For copies of our newsletter visit our website at <https://www.prairielandsgcd.org/news/>.

Water conservation topics and other items covered in the Prairielands eLine issues in 2023 included the following:

**Spring 2023**

- Texas 4-H Youth Water Ambassador Program Application for 2023-2024 Opened
- Prevent and Manage Water Leaks at Home During Fix-A-Leak Week 2023
- Validating Water Loss Audits Lead to Better Data and Water Savings

**Summer 2023**

- Senate Bill 2440 - Groundwater Availability Certifications
- GCDs Collaborating to Enhance Aquifer Understanding
- Water Education Program

**Fall 2023**

- Board Adopts Resolution Authorizing Increase of Groundwater Production During 2023’s Extreme Drought
- Prairielands GCD Board of Directors Set Water Use Fee Schedule Rates for 2024
- Board Adopts Amendments to Rules
- District Completes Drilling of New Monitor Well

**Winter 2023**

- PGCD Field Staff Taking Annual Water Level Measurements
- Proposition 6: Creation of the Texas Water Fund
- Schedule the Water Education Trailer for 2024
- District Drought Update





District staff also made several presentations to community and civic groups, as well as making appearances at public events. These outreach initiatives with public organizations and events are a productive way to educate individuals about water conservation, promote awareness, and build relationships and recognition within the four counties of the District. A summary of public events and presentations is listed below:

Date	Event	Location	County	Participants
1/5/23	Dallas Forum hosted by Ovilla Garden Club	Dallas	Ellis	28
1/12/23	Johnson County Association of Realtors	Cleburne	Johnson	40
1/18/23	Johnson County Builders Association Luncheon	Cleburne	Johnson	53
2/8/23	Leadership Cleburne	Cleburne	Johnson	16
3/10/23	Dinosaur Valley State Park	Glen Rose	Somervell	36
3/16/23	Dinosaur Valley State Park	Glen Rose	Somervell	110
3/25/23	Ellis County Master Gardeners Expo	Waxahachie	Ellis	200
3/30/23	Bent Creek HOA	Crowley	Johnson	25
4/29/23	Springfest	Cleburne	Johnson	200
6/13/23	Lake Whitney State Park	Whitney	Hill	30
7/13/23	Lake Whitney Garden Club & Summer Reading Program	Whitney	Hill	40
8/10/23	After Hours Business Social	Cleburne	Johnson	30
9/24/23	Farm Heritage Day	Waxahachie	Ellis	65
9/28/23	Cleburne Chamber of Commerce Business Expo	Cleburne	Johnson	115
10/4/23	Joshua Realtors	Joshua	Johnson	15
10/25/23	Fathom Realty	Cleburne	Johnson	17
12/13/23	Leadership Cleburne	Cleburne	Johnson	22
			<b>Total</b>	<b>1,042</b>





**F.3. Management Objective:** *The District will investigate the feasibility of recharge enhancement and aquifer storage and recovery projects in the District.*

**Performance Standard:** *By 2022, the District will complete studies and an initial assessment regarding the feasibility of recharge enhancement and aquifer storage and recovery projects in the District.*

During the past decade in Texas there have been multiple years of extreme drought and extended periods of above normal temperatures, which has decreased inflows to, and increased evaporative losses from surface water reservoirs. This increased water stress has driven a need for more water storage in many areas of Texas, but it often takes decades to plan, permit, design, and construct new surface water reservoirs. Given the near-term water supply demands there has been increased interest in managed aquifer recharge (MAR) techniques that can increase the quantity and quality of groundwater available in the near-term. There are two general types of MAR, aquifer storage and recovery (ASR) and aquifer recharge (AR) sometimes referred to as artificial recharge.

The Texas Water Development Board (TWDB, 2018) defines aquifer storage and recovery (ASR) as “the storage of water in a suitable aquifer through a well during times when water is available, and the recovery of water from the same aquifer during times when it is needed.” ASR facilities have been increasingly recognized as a viable option to help communities and industries in Texas address water supply needs. When comparing ASR systems to surface water reservoirs, there are several key benefits:

- No water loss to evaporation
- No surface inundation with its associated condemnation, environmental impacts, and years of permitting/regulatory issues
- No loss of storage capacity due to sedimentation
- Scalability: capital costs start at \$1-2 million, rather than \$10s to \$100s of millions.

Aquifer recharge, as defined by HB 721 and amended Section 11.155 of the Texas Water Code, “involves the intentional recharge of an aquifer by means of an injection well authorized under Chapter 27 of the Texas Water Code or other means of infiltration, including actions designed to (a) reduce declines in the water level of the aquifer; (b) supplement the quantity of groundwater available; (c) improve water quality in an aquifer; (d) improve spring flows and other interactions between groundwater and surface water; and (e) mitigate subsidence. The key difference between ASR and AR as defined in the Texas Water Code is in ASR there is intent to recover recharged water, while in AR there is no specific intent to recover recharged water.

The potential benefits that ASR and AR may provide have prompted several bills in the recent legislative sessions. In 2018, the Texas 86th Legislature passed three bills aimed at encouraging further development and use of ASR and AR projects. HB 721 directs TWDB to conduct studies on ASR and AR projects in the State Water Plan and required TWDB to conduct a survey to identify the relative suitability to various aquifer for use in ASR and AR projects (Shaw and Others, 2020). The statewide study suggests there are large swaths of the District that are considered “most suitable” for both ASR and AR. However, these suitability rankings were evaluated on a grid with a resolution of 50,000 feet x 50,000 feet (or 89.5 square miles), which is too coarse to evaluate the feasibility of ASR/AR strategies at the District level. The District initiated a study focused on refining the techniques used in the statewide TWDB study so that ASR and AR suitability could be evaluated over a better geographic resolution.

The method used to evaluate the relative suitability of ASR and AR within the District largely followed the methods used in the statewide ASR and AR study (Shaw and Others, 2020), but was modified to use the higher resolution data available at the District scale. All suitability metrics were evaluated on the NTGAM grid, which consists of quarter-mile by quarter-mile grid cells. The refined study applied a scoring methodology that scaled each suitability parameter important for a successful ASR and AR project (e.g., hydraulic conductivity, sand thickness, aquifer storativity, etc.) onto a zero to one scale where the most suitable parameter score is set to one and the least suitable parameter score is set to zero. All suitability parameters were then summed giving the total for ASR and for AR suitability for each aquifer. For display and discussion purposes the total suitability scores were normalized again onto a zero to one scale.

The results from this refined analysis indicate that ASR suitability scores of the five aquifer units studied (i.e., the Woodbine, Paluxy, Hensell, Pearsall, and Hosston) show the Paluxy, Hensell, and Pearsall fell completely within the medium suitability category (Figure 7, Figure 8, Figure 9). The Woodbine and Hosston also fell mostly within the medium suitability category, but there are large portions within Ellis County, which are considered highly suited for ASR (Figure 6 and Figure 10). These highly suited regions coincide with the areas where sand thickness is greatest in the Woodbine and Hosston. There are no areas within the District that are considered to be of low suitability for ASR.

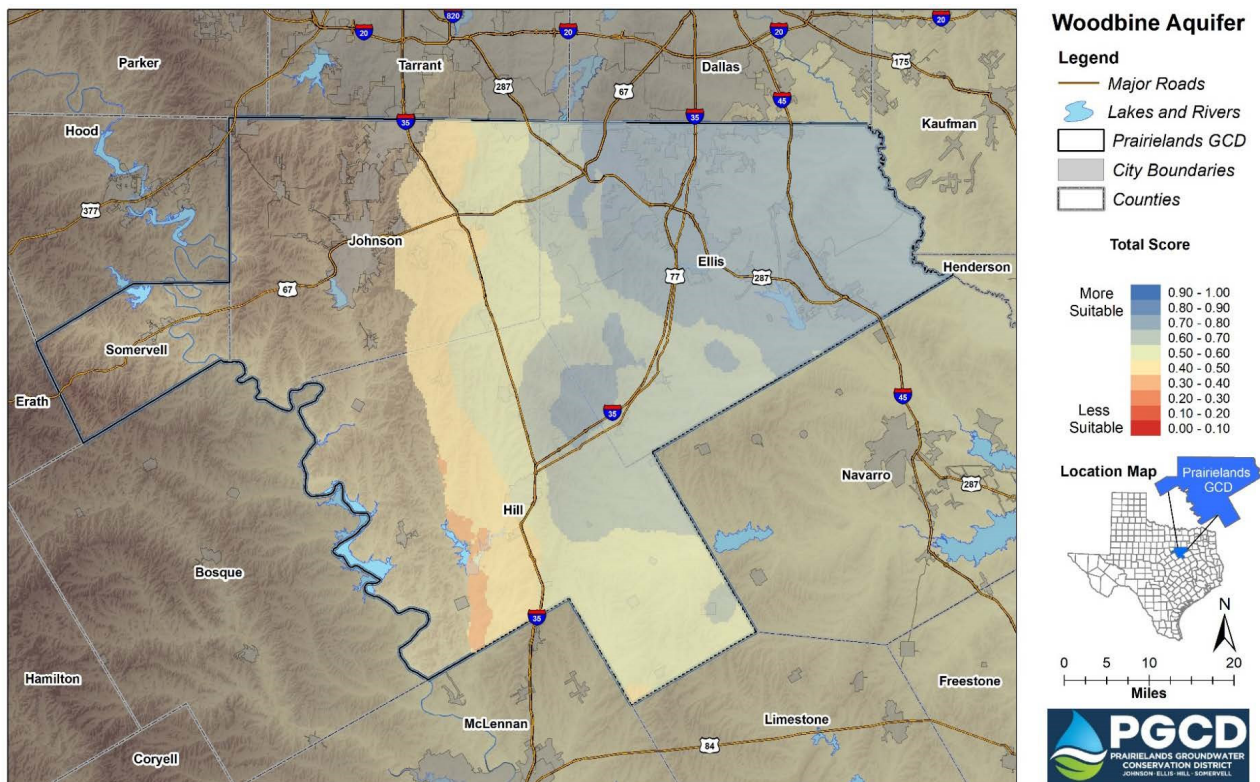


Figure 6. ASR suitability score for the Woodbine aquifer.



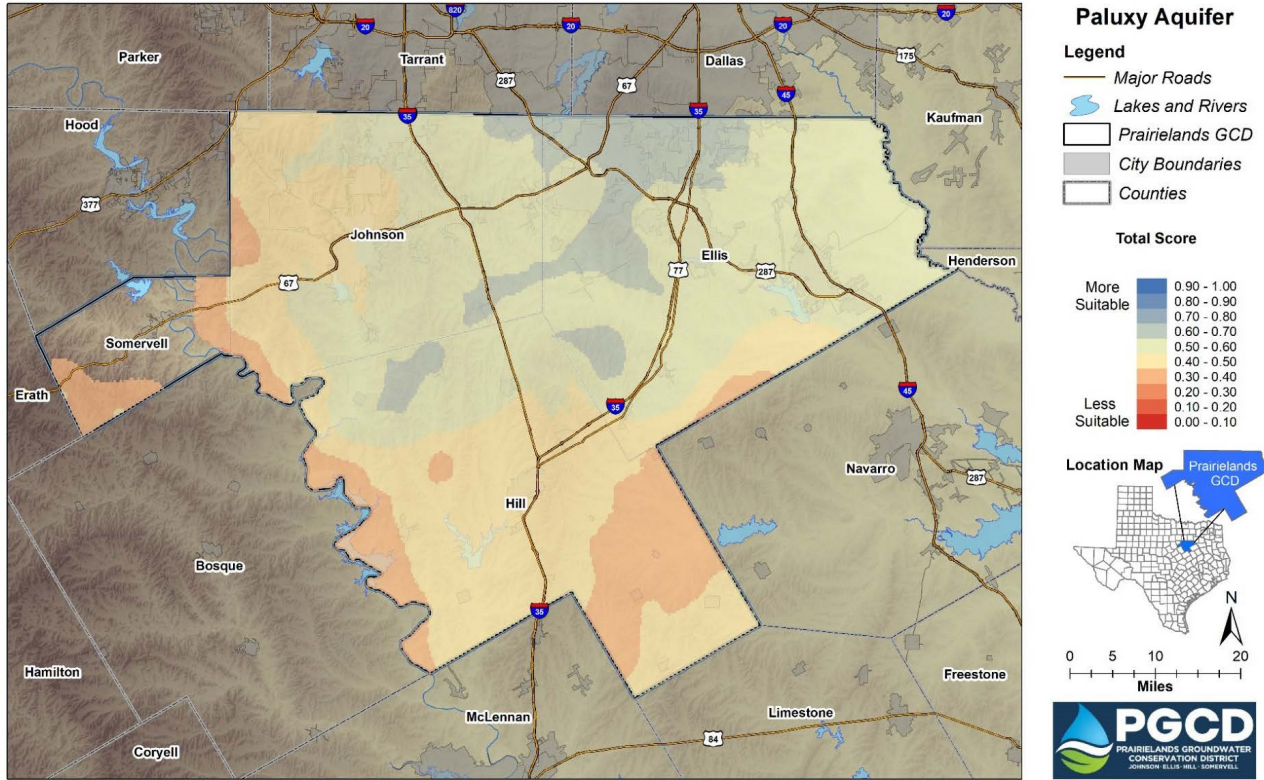


Figure 7. ASR suitability score for the Paluxy aquifer.

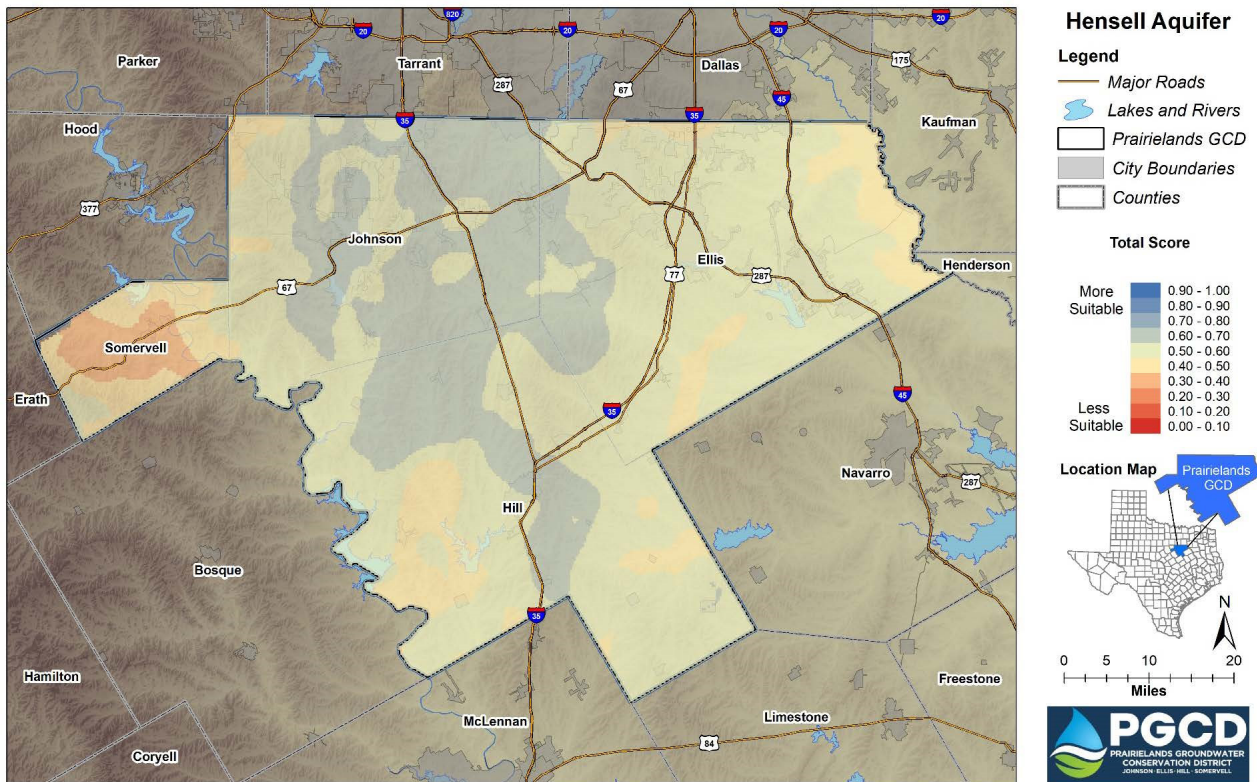


Figure 8. ASR suitability score for the Hensell aquifer.



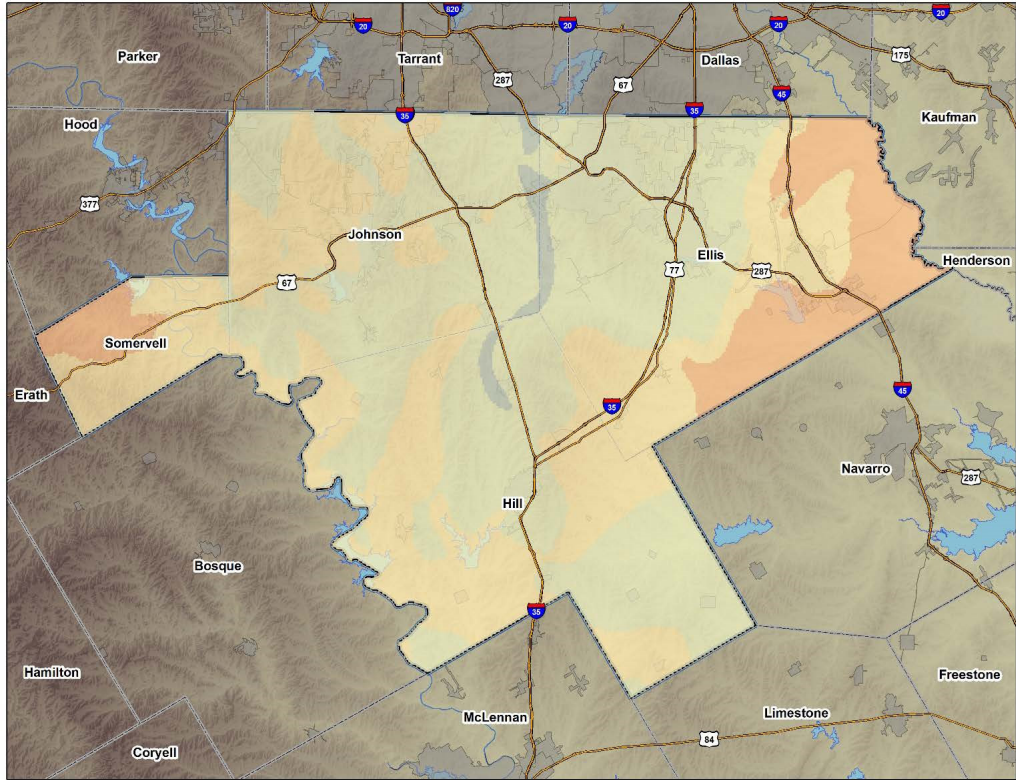


Figure 9. ASR suitability score for the Pearsall aquifer.

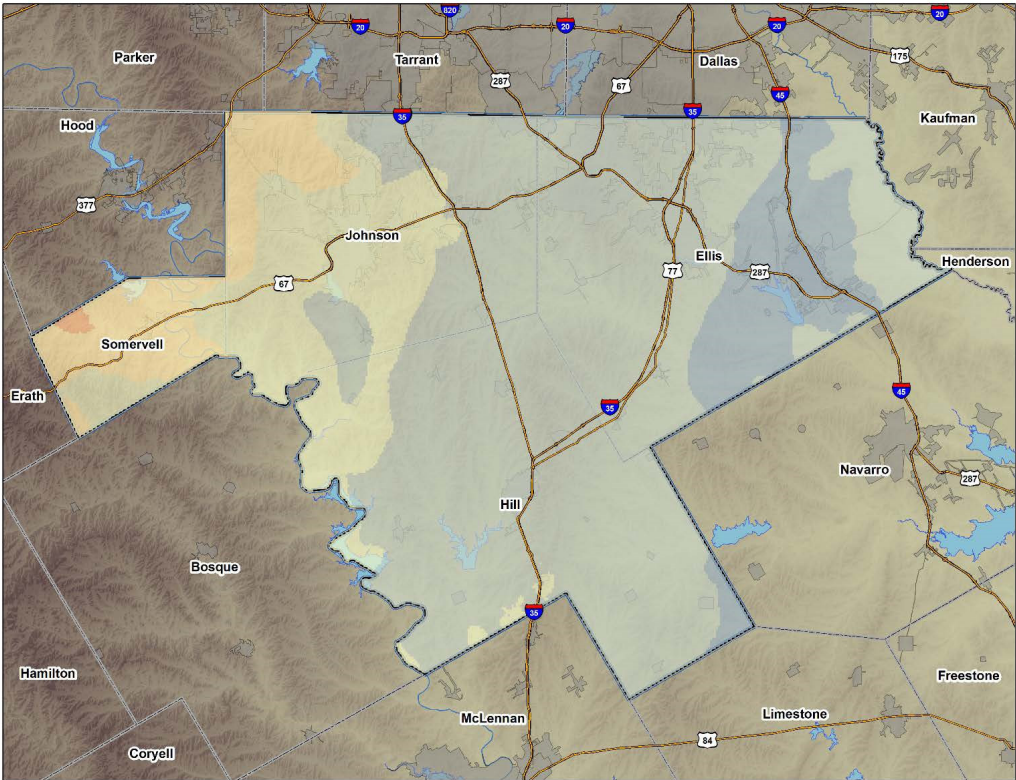
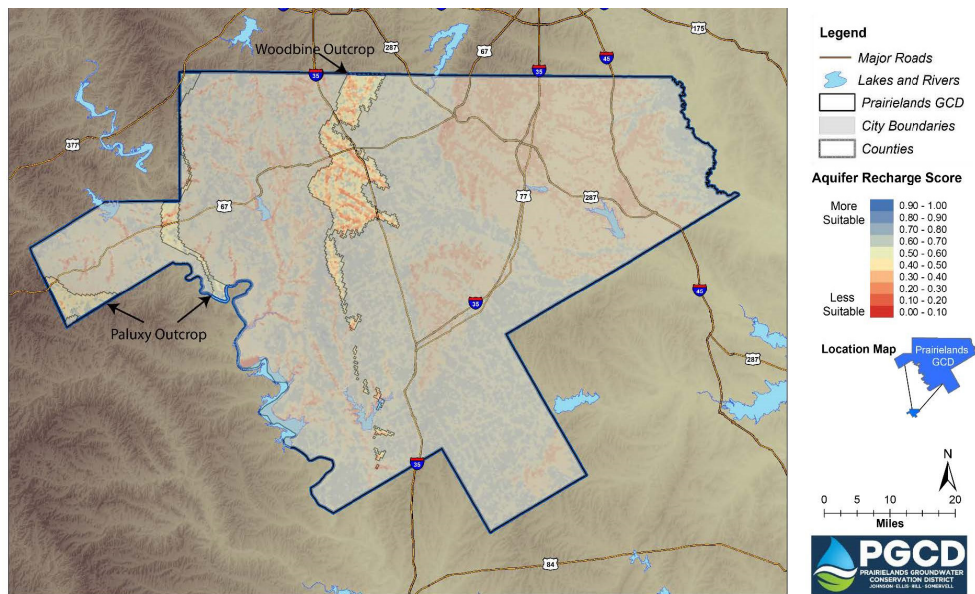


Figure 10. ASR suitability score for the Hosston aquifer.

All aquifers, except for the Pearsall, have large areas that fell just below highly suitable (i.e., within 0.6-0.7). The Pearsall aquifer generally has the lowest relative ASR suitability, which is expected given the hydrogeologic characteristics of the unit. While this study focused on evaluating ASR suitability individually for each aquifer, in practice one could install an ASR well that targets multiple aquifers. For example, if a stakeholder wanted to site an ASR well in the Lower Trinity aquifer system, the ASR suitability maps for the Hensell, Pearsall, and Hosston could be summed. The areas with the highest sum would have the greatest potential for a successful ASR operation.



**Figure 11.** AR suitability score.

The final AR suitability scores are shown in Figure 11. The shaded vs. unshaded areas in Figure 10-11 distinguish areas where the primary aquifer units are in subcrop from areas where they are in outcrop. The Woodbine and Paluxy are the only two aquifers that outcrop within the District. If the primary goal of an AR project is to offset groundwater pumping by increasing recharge to an aquifer, then it is important that these projects be located in areas where the aquifer units' outcrop. Areas where the primary aquifers are in subcrop can still benefit from an AR project, but the recharge potential will depend on the hydraulic connectivity between the shallow subsurface and the underlying aquifer units. In areas where the shallow subsurface is comprised of homogeneous, uncompacted coarse-grained sediments, which tend to have the greatest vertical hydraulic conductivity, the recharge potential would be greater than areas with dense fine-grained units or intact limestone (i.e., units with much lower vertical hydraulic conductivity values). The site-specific hydrogeology of the area between the top of the shallowest aquifer and ground surface is key to applicability of AR projects.

The results discussed above are part of an ASR and AR feasibility assessment report that was presented to the Board and available on the District website. This analysis has resulted in creation of datasets that will help guide siting of ASR and AR projects which have the potential to improve groundwater supplies and quality within the District.

Results from the ASR and AR suitability analysis can be used for preliminary screening of potential ASR and AR sites, but should be considered in a relative context. The siting and design of ASR and AR projects is very site-specific and considers many factors in addition to the factors considered in this study (geology, hydrogeology and geography). Other factors that may need to be taken into account when considering development of new ASR and AR projects, including: source water, access to land, interest of landowners and tenants, possible ancillary benefits (e.g., improvements to streamflow or wetland conditions), and engineering and operations costs. The ASR and AR suitability analysis is a precursor to the typical phased ASR and AR design and implementation process which is adaptive in nature and is driven by collection of site-specific data and information.



In 2023, the District participated in the North Texas ASR Round Table moderated by TWDB in Ft Worth, on October 18 Stakeholders discussed strategies and the feasibility of an ASR/AR project, as well as received updates on the ongoing Texas Regional Water District project. The District will continue to monitor ASR and AR projects being conducted within and near the District.

**F.4. Management Objective:** *The District will periodically support or sponsor an education seminar addressing conservation, recharge enhancement, rainwater harvesting, precipitation enhancement, or brush control.*

**Performance Standard:** *The District will support or sponsor such a seminar at least once every other year. A summary of such educational activities will be included in the District's Annual Report.*

The District was a Signature Sponsor for the Texas 4-H Youth Water Ambassador program in 2023. This is a program for high school students to encourage their interest in the water industry. The program seeks to bring students of varying backgrounds together to gain advanced knowledge and practice leadership skills related to the science, technology, and management of water in Texas. Through an application process, up to 30 high school youth are selected each spring to participate in a summer 4-H2O Leadership Academy and commit service hours annually in a variety of ways. Ambassadors gain insight into water law, policy, planning, and management as they interact with representatives from state water agencies, educators, policy-makers, and water resource managers. Water Ambassadors commit a minimum 40 hours of service over a 12-month period following the Academy. Service hours include delivering water education at local 4-H clubs, schools, fairs, and community events. The District had five students serve as Water Ambassadors in 2023.

In 2023, the District was also a sponsor for the Texas Alliance of Groundwater District's 12th Annual Texas Groundwater Summit on August 29 through August 31, 2023. The Texas Alliance of Groundwater Districts was established in 1988 to provide groundwater conservation districts the opportunity to exchange ideas and develop or influence programs for the management, conservation, protection, and development of groundwater within Texas. The Texas Groundwater Summit is the premier groundwater event in the state, bringing together a diverse group of groundwater professionals over three days to discuss emerging trends and new research.

**F.5. Management Objective:** *Each year, the District will seek to provide an educational outreach regarding water conservation to at least one elementary school in each county of the District.*

**Performance Standard:** *Each year, a list of schools that participate in the educational outreach will be included in the District's Annual Report to be given to the District's Board of Directors.*

Increasing public awareness about groundwater conservation through education and outreach is one of the main goals of the District. The WET, or Water Education Trailer, is a mobile classroom featuring exhibits that provide demonstrations about rainwater harvesting, indoor water conservation tips, pollution prevention, how a water well works, and a working aquifer model. The presentations included in the WET meet TEKS standards and provide STEM-based learning activities. In 2023, the District experienced a successful implementation of the Tinker, LLC Water Conservation Education

Program, collaborating with 12 schools and 15 teachers, effectively reaching 912 fifth-grade students. This initiative targeted Ellis, Johnson, Hill, and Somervell counties, demonstrating a widespread impact across the District.

Date	School	County	Grade	Participants
4/6/23	Johnson County 4H Homeschool Program	Johnson	K – 12th	50
4/11/23	Hill County Water Days – Hillsboro ISD	Hill	5th	110
4/12/23	Hill County Water Days (Various Schools)	Hill	5th	78
4/13/23	Hill County Water Days – Whitney ISD	Hill	5th	139
Spring 2023	Blum ISD	Hill	5th	26
Spring 2023	Coleman Elementary	Johnson	5th	70
Spring 2023	Marti Elementary	Johnson	5th	65
Spring 2023	Mount Calm Elementary	Hill	5th	9
4/19/23	Glen Rose Intermediate Ag Day	Somervell	4th	150
4/21/23	Venus Elementary	Ellis	5th	157
11/16/23	Rio Vista Middle School	Johnson	7th – 8th	146
12/13/23	Pleasant View Elementary	Johnson	5th	77
Fall 2023	Mount Calm Elementary	Hill	5th	15
Fall 2023	Venus Elementary	Ellis	5th	200
Fall 2023	Hillsboro Intermediate	Hill	5th	74
Fall 2023	Hubbard Elementary	Hill	5th	40
Fall 2023	Richard Bransom Elementary	Johnson	5th	125
Fall 2023	Cleburne Christian Academy	Johnson	5th	16
Fall 2023	Whitney Elementary	Hill	5th	112
Fall 2023	Glen Rose Intermediate	Somervell	5th	160
<b>Total</b>				<b>1,819</b>



## Addressing Desired Future Conditions

### Groundwater Monitoring Program and Desired Future Conditions

**G.1. Management Objective:** *The District will develop a Groundwater Monitoring Program within the District to monitor water well levels (and baseline water quality) in wells in each aquifer and subdivision thereof in the District. The District will review the geographic and vertical distribution of existing monitoring wells in the District with historical data from the TWDB, USGS, TCEQ, and other agencies and develop a plan to partner with those agencies as appropriate to ensure continued availability of the monitoring wells and data from them to the District. The District will also develop a plan to acquire or install new monitoring wells to fill in gaps in geographic or vertical distribution. The District will then develop an annual goal of how many monitoring wells it will add each year and a priority system for their installation based upon data deficiencies and needs for the geo-database. The District will take periodic readings from the monitoring wells and input the data into the District's geo-database. The District will utilize the information to help implement its regulatory and permitting program and monitor water level trends and actual achievements of DFCs.*

**Performance Standard:** *Upon development, a summary of the District Groundwater Monitoring Program will be included in the District's Annual Report to be given to the District's Board of Directors.*

To help manage groundwater resources prudently, the District monitors groundwater conditions via groundwater wells distributed throughout the District. As of December 2023, there are 255 monitoring wells within the District, which is 13 more wells than were in the monitoring program in 2022. A fundamental requirement of any monitoring program is that it must be able to monitor the aquifer resources within the District at a scale consistent with the management objectives of the District. Two of the Districts' key management objectives are: (1) the ability to quantitatively track progress towards DFCs, and (2) the ability to generate accurate annual District-wide water level change maps for each aquifer.

When developing a water level monitoring program there are many technical characteristics that must be considered in tandem with practical and policy considerations. Some of the characteristics include the number of wells that are monitored, how frequently water levels are measured, and how to spatially distribute wells across the county. The concepts that generally guide the practical and policy considerations are: the value of simplicity, flexibility, and the law of diminishing returns. Simplicity, is both a benefit for the District staff, who must implement the monitoring approach, and also for the public, who may want to understand the monitoring approach. The monitoring approach must also be flexible enough to easily handle situations that are inevitable when monitoring over several decades. Wells will be added to, and removed from, the network periodically. The concept of diminishing returns generally refers to getting less incremental benefit from each additional item added. For well monitoring, more wells results in a higher confidence in calculated District- and county-wide average drawdowns, but beyond a certain point the cost and effort of adding more wells to the network and regularly monitoring their water levels outweigh the benefit.



During 2023, the District aggressively worked to continue expanding the current monitoring network as part of a comprehensive monitoring program. To ensure that the wells in the monitoring network are distributed evenly throughout the county, the U.S. Geological Survey 7.5-minute quadrangles were used as a standard grid. TWDB also uses these quads to guide water well numbering (e.g., the first four digits of a State Well Number correspond to the quad in which the well lies).

Because of the costs and large amount of coordination and logistics associated with developing a well monitoring network, INTERA recommended the District consider developing the monitoring network over a period of several years. The expansion strategy focuses on prioritizing additions of existing wells into the monitoring program because it is more cost-effective and a quick way to expand the monitoring network over the near term. However, INTERA also recommends installing observation wells strategically throughout the District in order to increase the overall reliability of the network through time. Over the next decade, the proposed expansion strategy is to install one new observation well each year and identify 10 existing wells per year to add to the network. Monitoring well additions will initially be focused on aquifers that produce most of the water supply within the District. The Hosston aquifer currently provides the majority of groundwater used throughout the District, so under the proposed expansion strategy it will be the first aquifer to have a complete monitoring network (estimated completion is 2028). The District drilled its first dedicated monitoring well during 2023 to better understand conditions in the Hosston aquifer. The Woodbine and Paluxy aquifers will reach 80% completion by 2030 and 2035. The proposed expansion strategy timeline considers the significant resources the District must put forth each year to make progress towards completing the monitoring program.



**G.2. Management Objective:** *Upon approval of the District Monitoring Program, conduct water level measurements within the District as specified in the Monitoring Program.*

**Performance Standard:** *Annual evaluation of the water-level trends and the adequacy of the monitoring network to monitor aquifer conditions within the District and to monitor achievement of applicable desired future conditions. The evaluation will be included in the District’s Annual Report to be given to the District’s Board of Directors.*

The District has focused its monitoring program efforts during 2023 on expanding the network of wells that are monitored. Figures 12 through 17 below show the long-term water level trends in the District. These figures also demonstrate how the density and spatial distribution of wells monitored in each aquifer is not sufficient for creating reliable water level surfaces across each aquifer. As the District expands the network of water level monitoring wells and collects data over multiple years, the trends will be reported to the Board and in the Annual Report.

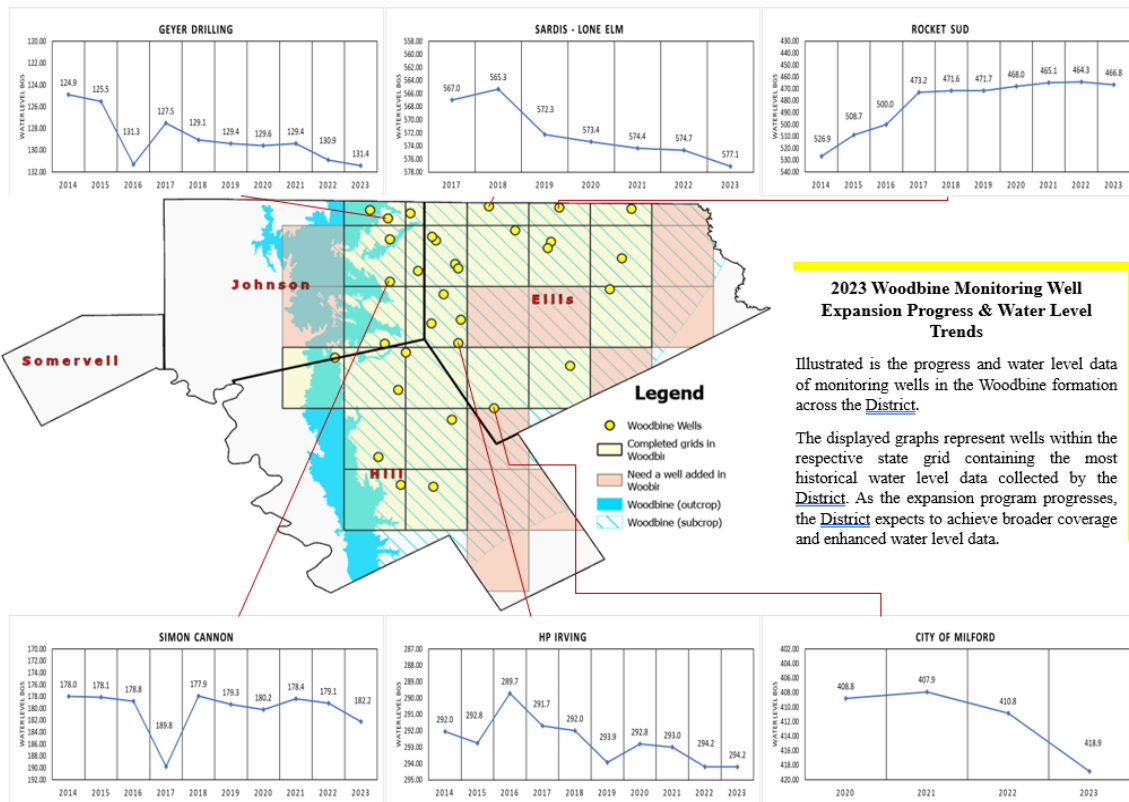


Figure 12. Average water level change in Woodbine aquifer between 2013 and 2023.

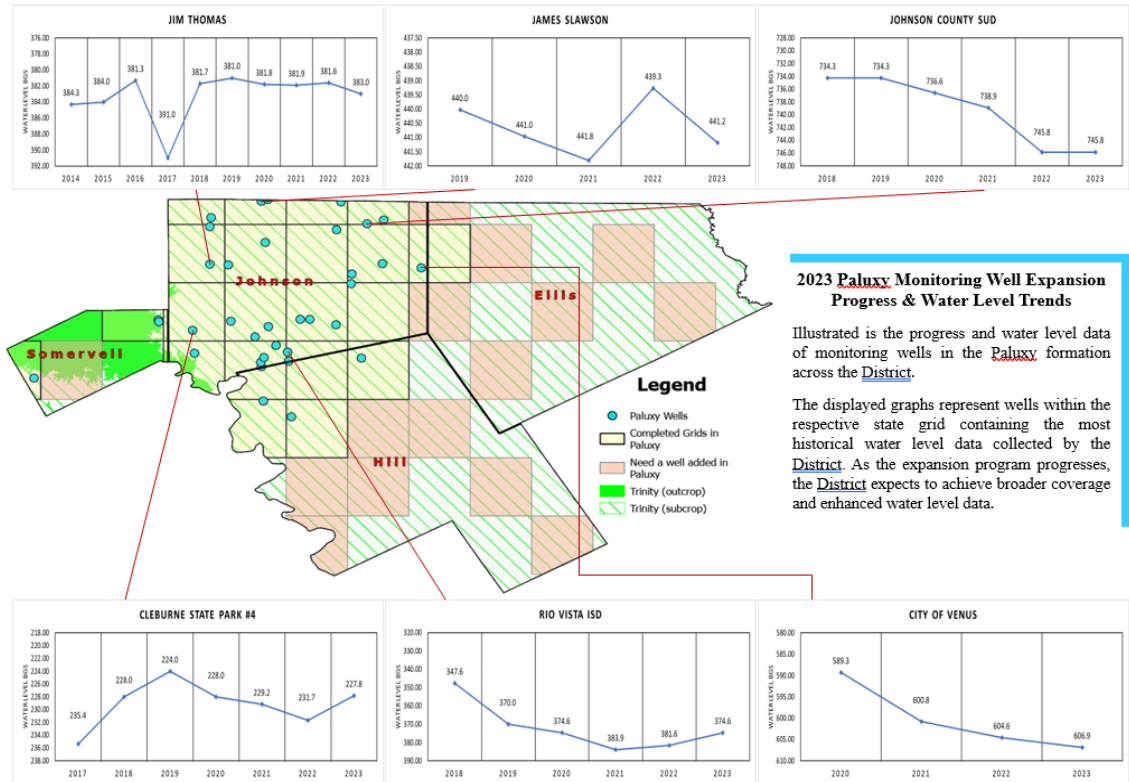


Figure 13. Average water level change in Paluxy aquifer between 2013 and 2023.



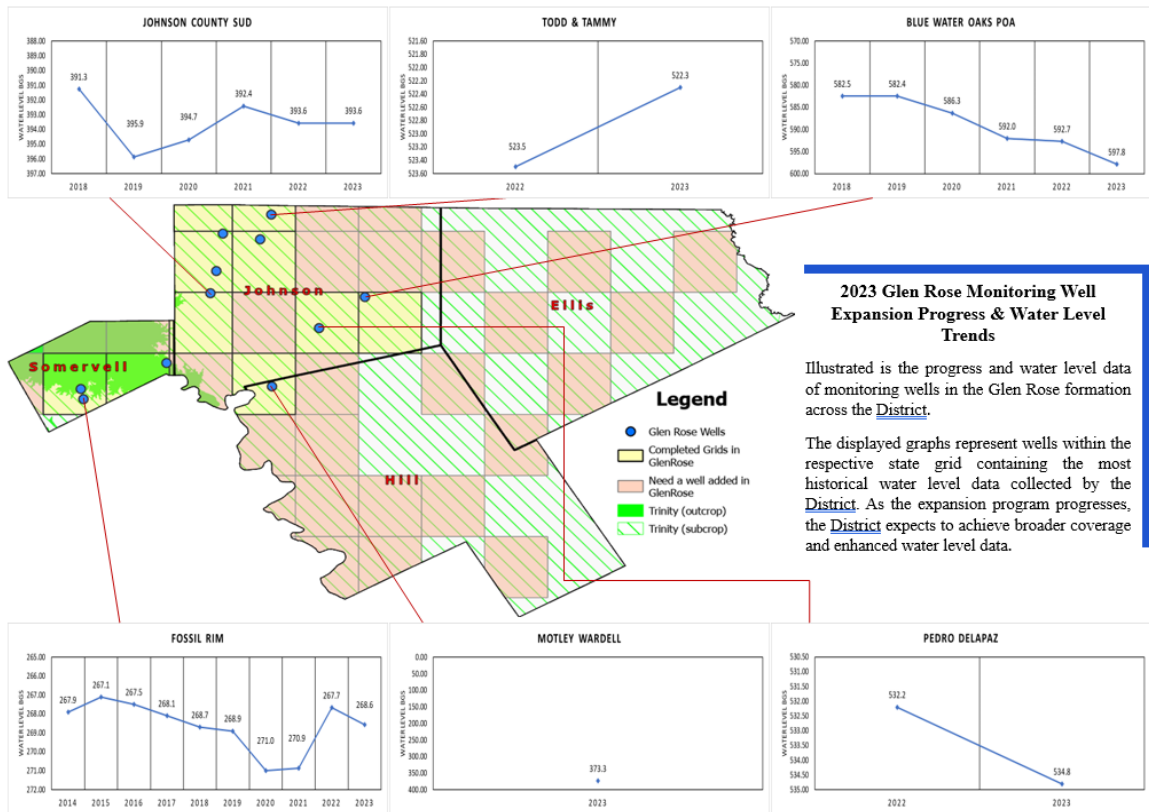


Figure 14. Average water level change in Glen Rose aquifer between 2013 and 2023.

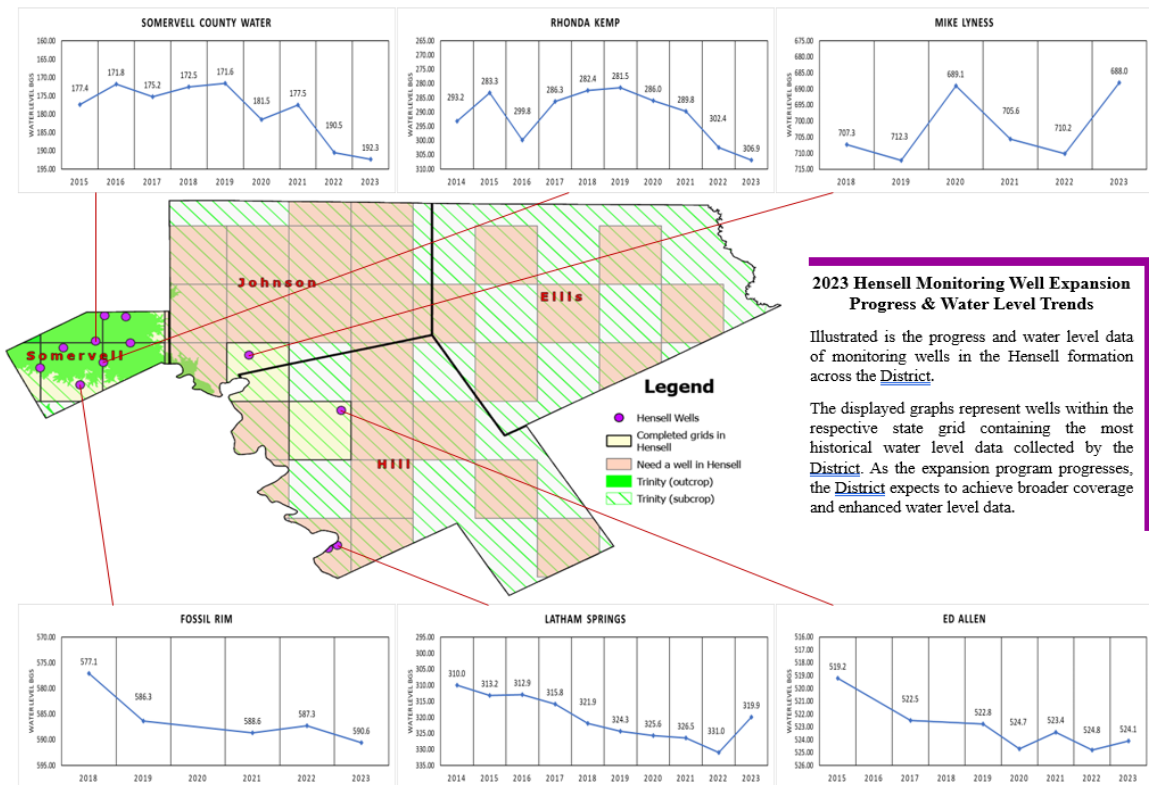


Figure 15. Average water level change in Hensell aquifer between 2013 and 2023.

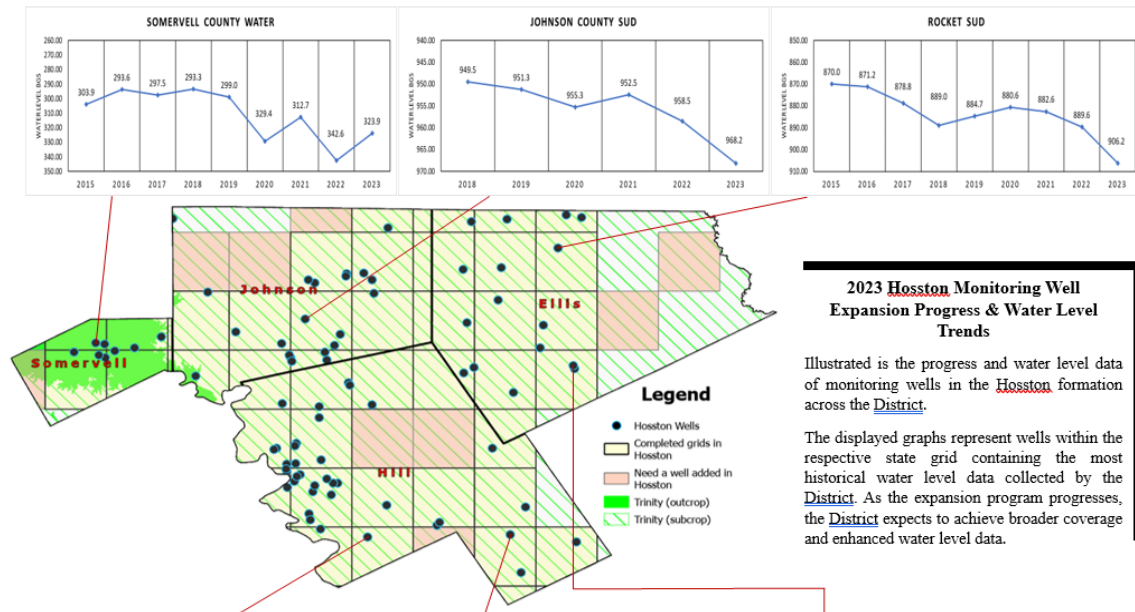


Figure 16. Average water level change in Hosston aquifer between 2013 and 2023.

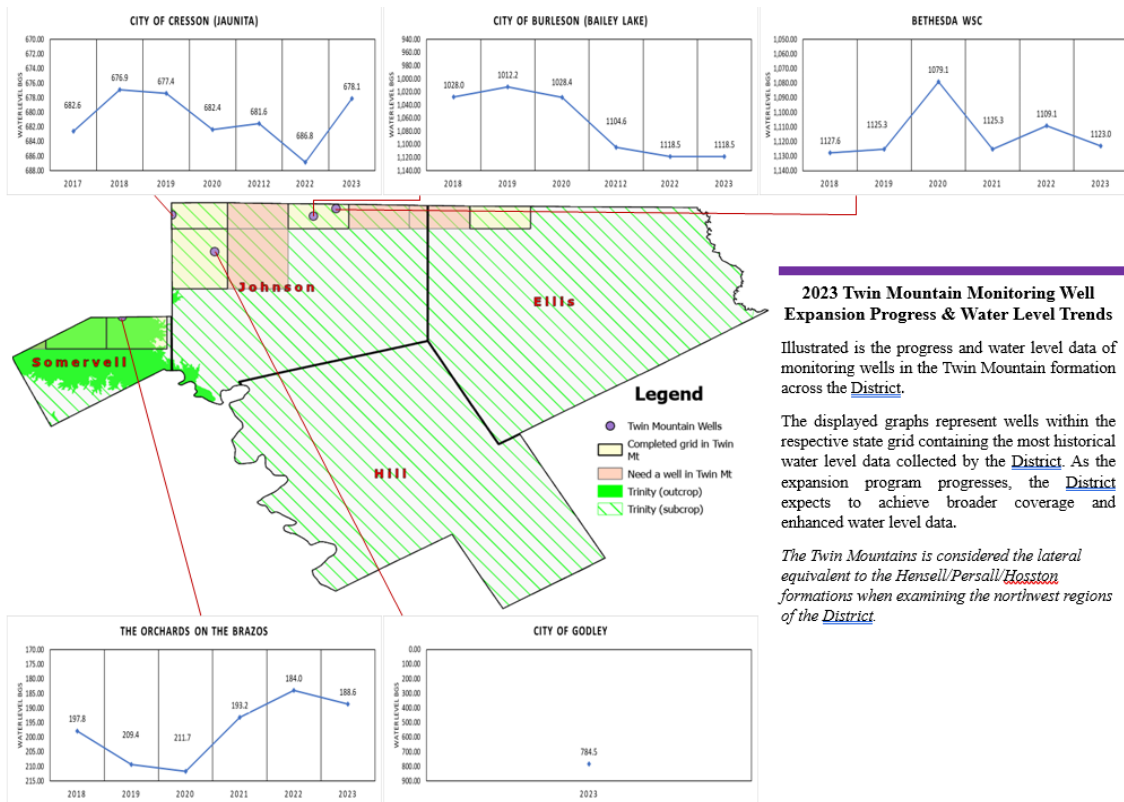


Figure 17. Average water level change in Twin Mountains aquifer between 2013 and 2023.

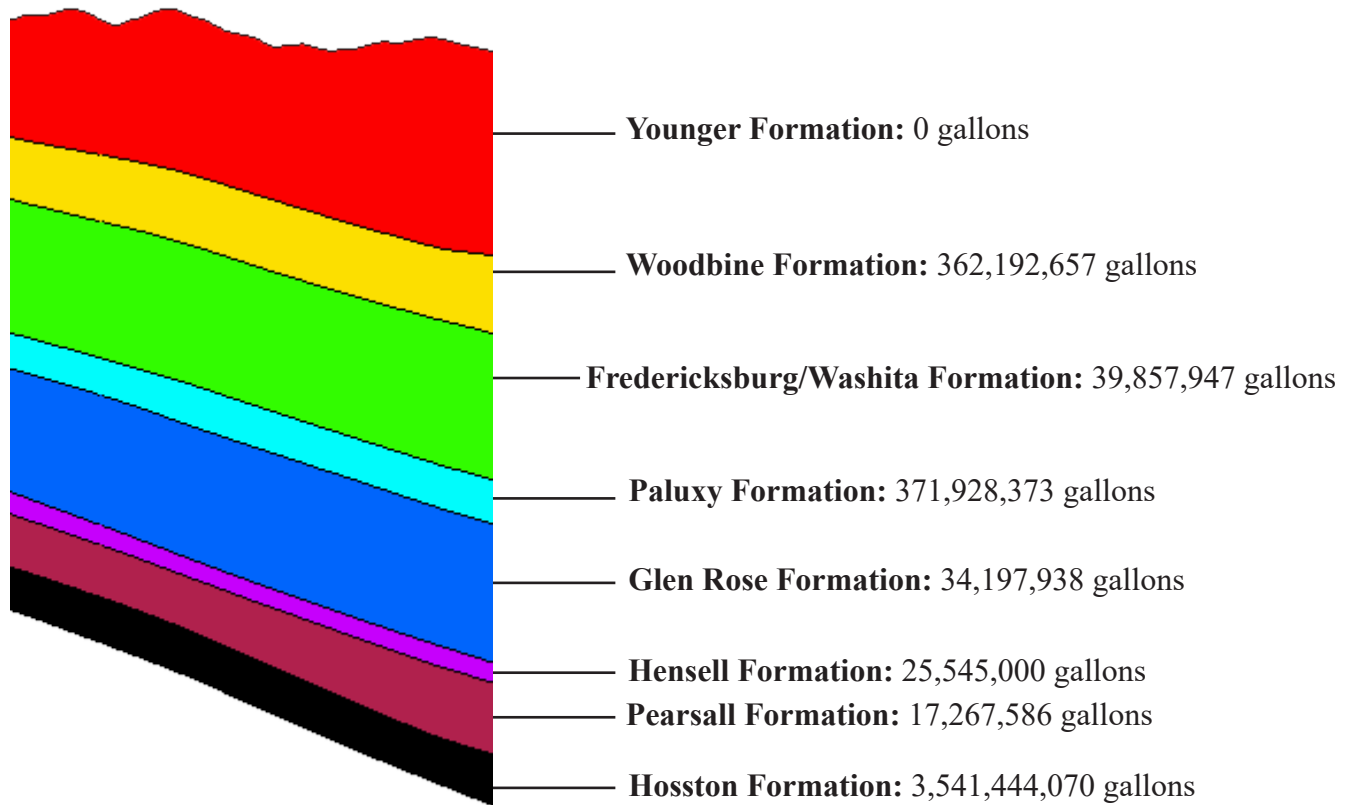
## 2023 Water Usage by Aquifer

**G.3. Management Objective:** *The District will monitor non-exempt pumping within the District for use in evaluating the District’s compliance with aquifer desired future conditions.*

**Performance Standard:** *Annual reporting of groundwater used by non-exempt wells will be included in the Annual Report provided to the District’s Board of Directors.*

In 2023, non-exempt wells in the District reported groundwater use of 6,990,160,713 gallons. With the District’s Groundwater Management System, groundwater production can be tracked to specific aquifers and aquifer groups. Gallons produced by formation are listed below:

*Note: Although non-exempt wells do not withdraw water from the Younger formation, the District has a number of registered exempt domestic wells producing water from this formation. However, these wells are not required to be metered and reported on.*



*Stratigraphy map provided by Aquaveo*

*\*Some assumption is used on wells where aquifer formation production is not available.*

### Production by Aquifer Groups:

**Woodbine/Fredericksburg:** 49,176,97 gallons

**Hensell/Hosston:** 68,509,259 gallons

**Fredericksburg/Washita/Paluxy:** 42,477,066 gallons

**Hensell/Pearsall/Hosston:** 633,867,324 gallons

**Paluxy/Glen Rose:** 52,711,792 gallons

**Pearsall/Hosston:** 1,734,448,399 gallons

**Hensell/Pearsall:** 16,536,331 gallons

**Appendix A**  
**Conservation Related Articles**  
**Published in 2023**



## **Prairie GCD Amends Rules for Water Wells in Ellis, Hill, Johnson, and Somervell Counties**

January 26, 202 – For Immediate Release

In a public meeting on January 17, 2023, the Prairielands Groundwater Conservation District (“District”) amended its rules regulating water wells within the boundaries of the District, which include Ellis, Hill, Johnson, and Somervell Counties. The amendments provide clarity for well owners and operators on several provisions of the rules and are immediately effective.

Several of the new or revised provisions address the amount of “contiguous controlled acreage” at the location of a well, which must be calculated to determine the amount of groundwater that a well owner can be authorized to produce annually under an Operating Permit from the District. The new rules expand the definition of “contiguous controlled acreage” to include acreage owned by a permit applicant on separate properties divided by a road, utility route, or other type of division specified in the rules, even if the permit applicant does not have the right to produce groundwater from those points. Other amended provisions clarify the method by which a permit applicant calculates contiguous controlled acreage, addressing the unique challenges that sometimes arise for retail public utilities and other political subdivisions seeking permits. These changes take into account existing Historic Use Permits, public water system service areas (CCNs), and other factors that affect the calculation of acreage and ultimately the amount of water authorized to be produced annually under a permit.

The rules’ amendments also change the exemptions from permitting, water use fee payment, metering, and reporting requirements based on whether the well was drilled before or after January 1, 2023, the well’s production capacity, and the purpose of use of the well. Specifically, the new rules limit the small well capacity exemption—17.36 gallons for new wells—to wells used solely for domestic use, livestock use, or poultry use. Also, new agricultural irrigation wells, which typically produce large amounts of groundwater annually, will be subject to the permitting, fee payment, metering, and reporting requirements of the rules.

The amendments also include new requirements for open, uncovered, abandoned, or deteriorating wells, which can cause groundwater pollution and can be safety hazards, for which failure to comply is a violation of the rules resulting in the imposition of penalties. In addition, the new rules authorize the District to impose penalties for failure to comply with requirements relating to water meter logs and metering.

Well owners and operators are encouraged to read the rules carefully and to contact the District with any questions to ensure their well is in compliance with the applicable requirements.



The adopted amendments to the District Rules are necessary to support the District's efforts in managing the groundwater resources within the boundaries of the District. Information about the public hearing and copies of the amended District Rules are available on the District's website at [www.prairielandsgcd.org](http://www.prairielandsgcd.org), and physical copies can be obtained by visiting the District office at 208 Kimberly Drive in Cleburne.

## Press Release #2



### Texas 4-H Youth Water Ambassadors Program Opens Applications for 2023-2024 Cohort

March 17, 2023 - For Immediate Release

The Texas 4-H Water Ambassadors Program was formed in 2017 in an effort to educate youth about water resources in Texas. Every spring, up to 30 high school students are selected to participate in a summer 4-H2O Leadership Academy. Students travel throughout Texas to learn how water is collected, conveyed, treated, conserved, and managed to meet the need of our economy and citizenry.



To reinforce knowledge gained during the academy, water ambassadors pass on that information to others as they engage in various education and service activities throughout the year. Through the program, ambassadors gain insight into water law, policy, planning, and management as they interact with representatives from state water agencies, educators, policy-makers, and water resource managers. Ambassadors also gain an appreciation for the complexity of managing Texas surface and groundwater resources, its importance to local, regional, and state economies, and the importance of protecting this valuable resource for future generations.

“It is essential that we invest today in tomorrow’s water industry leaders and decision-makers” stated Extension Program Specialist II for the Texas A&M AgriLife Extension Service, David Smith.

Applications for the 2023-2024 cohort of Texas 4-H Youth Water Ambassador are open through May 1, 2023. Continuing for the fifth year, the 4-H Water Ambassador Program continues to grow in number and continues to gain recognition and support from the Texas water industry. To date, 158 youth have served as 4-H Water Ambassadors conducting 10,655 hours of ambassador education and service.

“The District is proud to support this youth leadership organization and provide the opportunity for young people to nurture their passion and knowledge for management of natural resources in Texas,” stated PGCD General Manager, Kathy Turner Jones. Currently, the District is sponsoring three ambassadors representing Hill and Johnson counties.

To be eligible for the 2023-2024 cohort, students must be considered senior level (grades 9-12) 4-H members in the 2023-2024 academic year, and possess a genuine interest in natural resources, water stewardship, leadership, and service. Selected ambassadors must participate in the Tier I 4-H2O Leadership Academy, June 11-17, 2023, and be able to commit to at least 40 hours of education and service during the 12-month program. Service hours include delivering water education at local 4-H clubs, schools, and community events.



## Winterizing Water Wells: A Guide to Ensure Reliability and Conservation

November 27, 2023 – For Immediate Release

Those freezing nights (and days) are creeping up quickly in the Prairielands GCD area, and even though we cannot predict the weather, well owners must proactively safeguard their private water systems against the challenges posed by unpredictable winter weather. Winterizing water wells is crucial, especially in states like Texas where wells often have above-ground completions with exposed pipes. Taking simple preventative measures not only ensures the resilience of well systems during winter but also contributes to water conservation efforts in a state that frequently faces extreme drought and water challenges.

### Inspecting and Preparing Your Water Well

Frozen pipes can be a common issue during winter, leading to water waste and potential damage. By insulating pipes, especially those exposed to cold temperatures, you can prevent freezing and reduce the risk of leaks. Before winter sets in, it's essential to inspect your water well, pump house, and associated components. Begin by insulating exposed pipes and components to prevent freezing. Cleaning out enclosures provides room to insulate above-ground water lines and other components, such as pressure tanks. Ensure that all vital above-ground components are protected with insulating material, and wrap plumbing from the well to storage tanks with insulation to prevent freezing. The smaller the pipe in diameter and closer to the ground, the more vulnerable it is to freezing.



Winterizing your water well is not only a practical step to ensure a reliable water supply during winter but also a responsible measure in water conservation. By taking necessary precautions and adopting efficient water management practices, homeowners contribute to the sustainability of water resources.



### Preparing Well Houses

If you have a well house, ensure it is adequately enclosed to prevent cold air from entering. Identifying and sealing gaps or cracks in the well house helps maintain a consistent temperature, reducing the risk of freezing. Inspect the well casing and the surrounding ground for holes to prevent

contamination. Adding dirt or concrete around the well house protects it from runoff water and ensures proper drainage. Consider adding heat sources like heat lamps or space heaters when temperatures dip below freezing. However, use caution with these devices to prevent potential fire hazards.



Insulating the walls and ceiling of well houses provides additional protection. If you don't have a well house, placing a well cover over the wellhead shields it from the elements, protecting the casing and preventing debris, ice, or snow from entering. Ensure that the cover is well-ventilated to prevent condensation.

### Winterizing Irrigation Systems

Before freezing temperatures persist, it's crucial to winterize irrigation systems and outdoor spigots, whether on a private water well or not. Drain the irrigation system and unhook hoses from outdoor faucets or fixtures. Adjusting the irrigation schedule based on shorter days and lower temperatures prevents unnecessary water waste. By reprogramming your irrigation system to run less frequently and for shorter durations, you can ensure that your landscape receives just the right amount of water without unnecessary waste.



Consider investing in smart irrigation systems that adjust watering based on weather conditions, preventing overwatering. Turning off irrigation systems during winter months when most plants go dormant is acceptable, preventing damage and ensuring proper functionality in the spring.

Applying mulch around plants helps retain soil moisture, reducing the need for excess irrigation. Mulch acts as insulation, protecting plant roots from temperature fluctuations and minimizing evaporation, especially during winter when plants are more susceptible to moisture loss.

Preparing water wells for winter might not be at the top of the to do list, especially after experiencing the recent severe drought conditions. However, early preparation is key to ensuring the reliability of well systems and conserving water in the long run. By following these practical steps, well owners can navigate winter with confidence, contributing to the sustainability of water resources and protecting one of our most precious asset that is water.

**Appendix B**  
**Non-exempt Flier Mailed on**  
**December 8, 2023**



## Water Conservation Tips for Permit Holders



With the rising population in Texas, effective water loss management and conservation efforts are crucial to ensure sustainable water resources. Implementing responsible practices becomes imperative to meet the growing demands and preserve the state's water supply for future generations.

### 1 Water System Inspection

Regularly inspect the water distribution system for leaks, especially in areas prone to freezing. Leaks can be more challenging to identify during winter, and addressing them promptly helps prevent water waste.

### 2 Winterizing Outdoor Systems

Ensuring water wells are winterized through inspection, insulation, and preparation is vital for preventing freezing, leaks, and water waste, contributing to responsible water conservation efforts. Additionally, shutting off and draining outdoor water features, such as fountains and irrigation systems, not only conserves water but also safeguards infrastructure from potential damage due to freezing during winter.



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## PGCD's Initiatives: Addressing Water Loss Management in 2024

### 1 Meter Accuracy Verifications

The accuracy of meter readings holds significant importance as it allows the District to ensure groundwater is being used effectively. Accurate meter readings help detect and identify leaks promptly. Beginning in 2024 the District is requiring permittees to provide meter calibrations to determine accuracy upon meter installation.

### 2 Water Loss Audits

Water loss audits are required by Retail Public Utilities annually. In 2024, permittees can simplify submissions by utilizing the District's online groundwater management system. Water loss audits for the preceding year must be submitted by May 1st. Additionally, water loss audits will be taken into account in the permit application review process to encourage water conservation.

### 3 Educational Outreach

Throughout 2024, the District will continue its outreach initiative, delivering educational programs focused on water conservation. The goal is to improve public comprehension of the aquifers supplying water to the District. This encompasses activities such as the water education trailer and presentations to community members upon request.



# Recapping 2023:



Students participating in Ag Day viewed the Water Education Trailer.



Four of the District's Directors were administered their Oath of Office following their reappointment by the Commissioner's Court in their respective counties.



Field staff cooked breakfast for office staff.



Kaylin Garcia, the Public Relation and Education Director, recieved the sponsorship plaque from the 4-H Water Ambassadors.



Piper, the office mascot, raised two healthy kittens.



# Through the Lens



The District's Rain Garden was certified as a Wildlife Habitat.



Students with Godley ISD participating in an outdoor water activity with the assistance of Emma Pool, a 4-H Water Ambassador.



Participants with the Lake Whitney Library Reading Club Viewed the Water Education Trailer.



Field Operations Coordinator, Michael Heath, operating a down hole camera during a field collaboration with Upper Trinity GCD.



Karol Bowers, the Permitting and Compliance Specialist won the Annual Christmas Door Decorating Contest, becoming a two time champ.









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