Prairielands eLine

The Newsletter of the Prairielands Groundwater Conservation District

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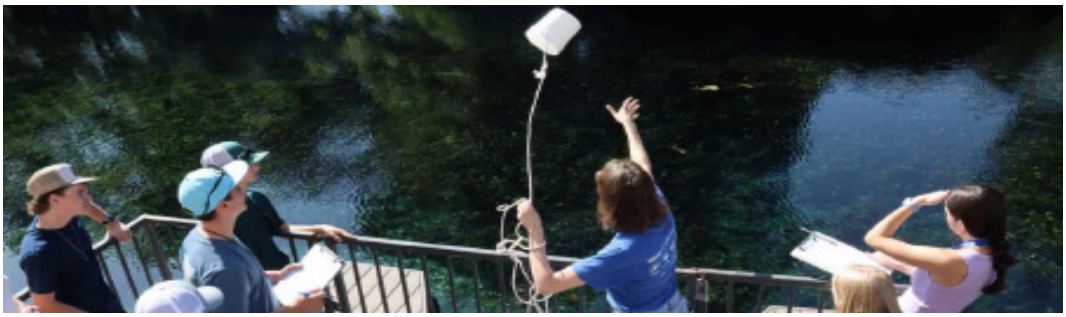
Calling All Students: Step Up as a Texas 4-H Water Ambassador



Applications for the 2026–2027 Texas 4-H Water Ambassadors program will open on March 1, offering high school students a unique opportunity to develop leadership skills while gaining valuable knowledge about water resources across Texas. This prestigious program is designed for students who are passionate about water conservation, environmental stewardship, and making a positive impact in their communities.

Texas 4-H Water Ambassadors serve as leaders and advocates for water education. Throughout the year-long program, ambassadors participate in hands-on learning experiences, workshops, and field trips focused on groundwater and surface water management, water quality, conservation practices, and water policy. Ambassadors also develop public speaking and communication skills by giving presentations, participating in outreach events, and educating their peers and local communities about the importance of protecting Texas' water resources. The program provides students with valuable insight into potential careers in water science, natural resources, engineering, and public service.

Participation in the Texas 4-H Water Ambassadors program not only builds knowledge and leadership skills but also empowers students to become informed stewards of one of Texas' most vital resources. **To support student involvement, the District is proud to offer reimbursement of program participation fees up to $600 annually for eligible students within the District.** This commitment reflects the District's dedication to investing in the next generation of water leaders and promoting continued education and awareness of groundwater conservation.

Students interested in applying are encouraged to visit the Texas 4-H Water Ambassadors website when applications open on March 1. This is an excellent opportunity for motivated students to gain valuable experience, build leadership skills, and make a lasting impact on water conservation in Texas.

In This Issue:

Rainwater Harvesting Grant Program Highlight
"Ellis County Rural Heritage Farm"

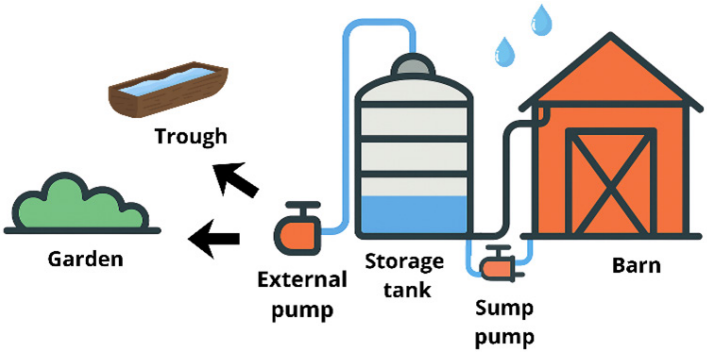
The District is proud to highlight the recent installation of a rainwater harvesting system at the Ellis County Rural Heritage Farm (ECRHF). This historic site is the first recipient of funds from our Rainwater Harvesting Grant Program, which is intended for systems at public or community locations that demonstrate rainwater harvesting as a sustainable water saving practice. This program is designed to educate and raise public awareness of conservation methods within the community while reinforcing the District's mission of conserving groundwater.

Through this initiative, the District seeks to highlight practical system designs that showcase the benefits of capturing and using rainwater for non-potable purposes while providing educational value in public settings. Below is an overview of the system.

The ECRHF system, designed and installed by Rain Ranchers, includes a galvanized steel storage tank with a 4-inch inlet, 4-inch overflow, 2-inch outlet with ball valve and hose connection, and a tank level gauge. The nearby barn has two downspouts that convey rainwater to a sump basin. From the basin, water is pumped into the top of the tank. An external, on-demand pump is connected to the 2-inch outlet and supplies water to a nearby watering trough and garden, alleviating stress on local groundwater resources by approximately 23,000 gallons annually.

- Tank capacity - 2,015 gallons
- Total roof area for collection - 1,000 sq. ft.
- Rainwater collected yearly - 23,674 gallons (62 % capture rate on 38" rainfall)
- Sump pumps approximately 10 gpm
- External pump pumps 12 gpm at 40 psi

The District encourages other public facilities, schools, and community organizations to consider applying for the Rainwater Harvesting Grant Program. Grant funding is available to support the installation of rainwater collection systems that provide conservation benefits while serving as educational examples for the public. To learn more visit our website.



Spring Into Efficiency: Texas Irrigation and Landscape Prep

As spring arrives across Texas, irrigation systems and planting beds both need attention before the long, hot season begins. Because Texas weather can quickly shift from cool and wet to hot and dry, simply turning sprinklers back on often leads to wasted water, higher bills, and stressed plants. A careful spring startup combined with water-smart landscaping helps keep properties efficient and resilient all season.

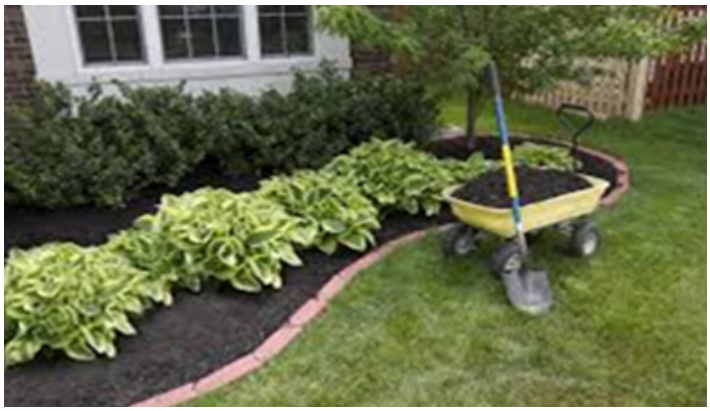
Even mild winters can leave hidden problems. Freeze events, soil movement, and inactivity may cause cracked heads, misaligned nozzles, or small leaks that only appear once the system is pressurized. Spring rainfall also increases the risk of overwatering, making proper setup especially important.

Begin with a visual inspection of the system. Look for tilted heads, exposed wiring, debris in valve boxes, or leaks around the backflow and mainline. Texas clay soils often shift over winter, so heads may need realignment. When restoring service, open the main valve slowly to protect piping, then run each zone individually to check for heads that fail to pop up, misting, runoff, or uneven coverage. Update the controller settings, verify sensors are working, and reduce runtimes, conservative watering is usually best in spring.

Efficient irrigation also depends on good watering habits. Water early in the morning (4–8 a.m.) to reduce evaporation, and use cycle-and-soak scheduling on clay soils to improve absorption. Monitor the system regularly and watch your water bill to catch leaks early.

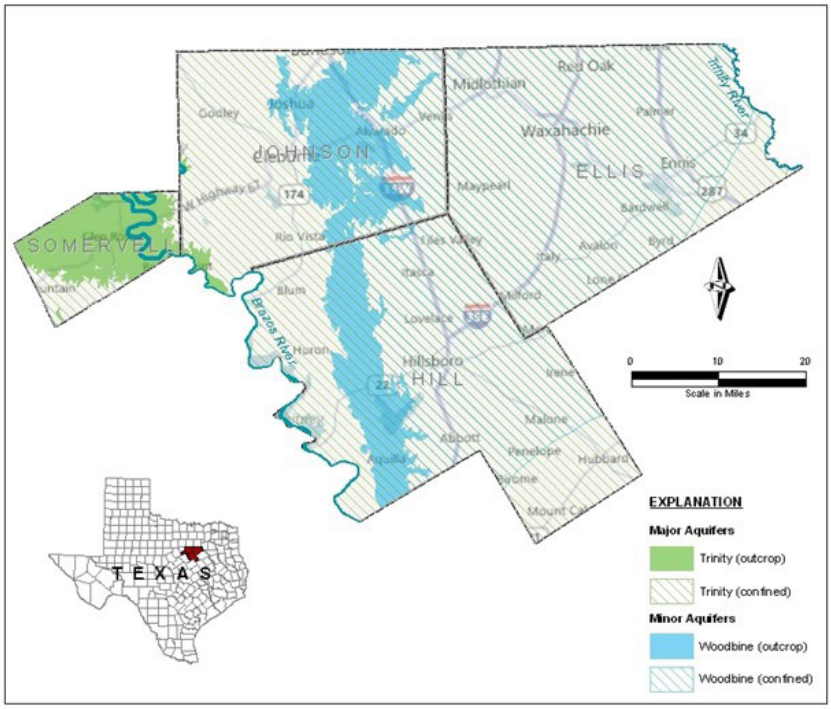
Spring is also the ideal time to refresh planting beds while improving long-term water efficiency. Native and well-adapted plants require less irrigation, and grouping plants with similar water needs allows more precise watering. Maintaining two to three inches of organic mulch helps retain moisture, regulate soil temperature, and suppress weeds. Improving clay soils with compost further enhances water retention and supports healthier plants.

After startup, monitor the system during the first few cycles and watch for overspray, runoff, blocked spray patterns, or persistently wet areas. Early adjustments prevent ongoing waste. In Texas, where summer stress is inevitable, efficient irrigation is essential. With proper maintenance, smart scheduling, and climate-appropriate landscaping, properties can remain healthy and attractive while using significantly less water.



General Hydrology of Prairielands Groundwater Conservation District

The District, composed of Ellis, Hill, Johnson, and Somervell counties, is situated in a unique and complex physiographic and hydrogeologic setting. District boundaries intersect with river basins of the Brazos and Trinity rivers, which flow southeastward to the Texas coast. Surface water runoff on the west side of the District flows primarily to the Brazos River, and runoff on the east side of the District drains primarily towards the Trinity River. Surface elevations range from approximately 400 to 1,000 feet above mean sea level.



This landscape is positioned within the Grand Prairie and Cross Timbers physiographic regions. Gently rolling prairies, stair-step hills, post oak woodlands, and wooded river valleys characterize the area. Geologic formations observed at the surface vary between limestone, shale, clay, and sand. The two primary aquifers utilized for groundwater production within the District, typically occurring in sandy portions of the subsurface, are the Trinity and Woodbine aquifers. Understanding their structure, productivity, and water quality helps ensure responsible management of this vital resource for current and future generations.

The Trinity Aquifer consists of early Cretaceous Period (143.1 to 66 million years ago) formations of the Trinity Group. The Trinity Group occurs in a band extending through the central part of Texas, from the Red River in North Texas to the Hill Country of South-Central Texas and is an important resource for growing population centers along the Interstate 35 corridor.

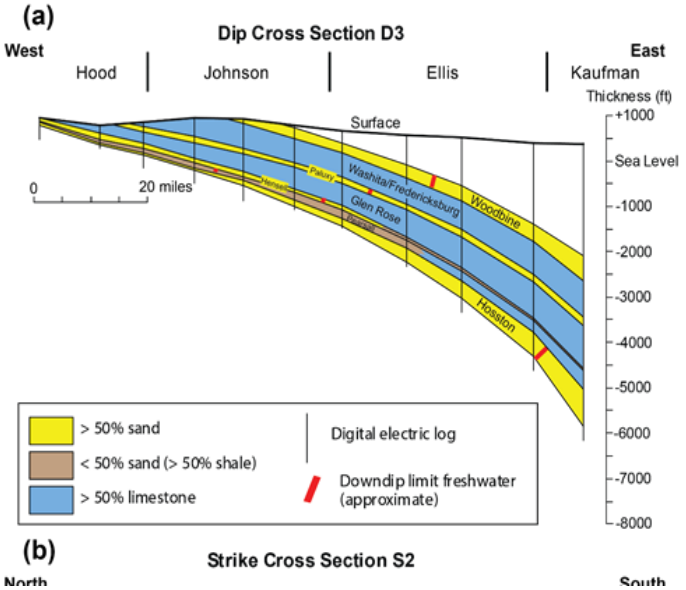
Locally, the Trinity Group includes the following units (from oldest to youngest): the Travis Peak Formation (also referred to as the Twin Mountains Formation in northern parts of Ellis, Johnson, and Somervell Counties), Glen Rose Formation, and Paluxy Formation. Relevant units overlying the Trinity Group include the Fredericksburg Group, Washita Group, and Woodbine Formation. These geologic units generally dip and increase with depth from the northwest to the southeast portion of the District.

The lowermost unit of the Trinity Group consists of the Twin Mountains and Travis Peak formations, which are stratigraphic equivalents sometimes referred to interchangeably based on geologic characteristics and location. To the north, the Twin Mountains Formation consists mainly of medium-to coarse-grained sands, silty clays, and conglomerates. To the south, the Travis Peak Formation contains calcareous sands and silts, conglomerates, and limestones. The Travis Peak Formation is often further subdivided into the following members in ascending order: Hosston, Pearsall, and Hensell. In general, groundwa-

ter in these formations is fresh, but can be hard in the outcrop of the aquifer and increase in dissolved solids downdip. The Travis Peak and Twin Mountains are the most prolific portion of the Trinity Aquifer and are relied upon heavily by many public supply, industrial, domestic, and livestock wells in the District.

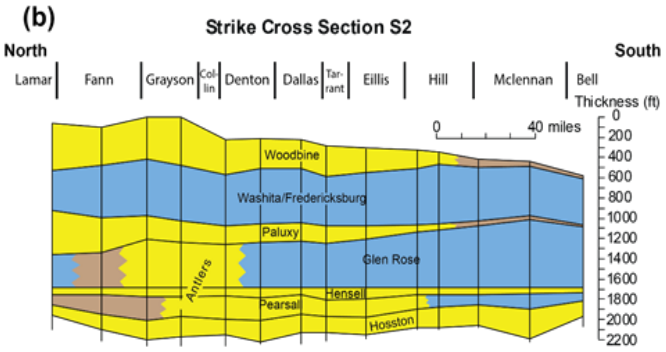
The Glen Rose Formation overlies the lower Trinity Group deposits. This formation is composed of dense, finely crystalline limestone with inter-bedded shale, sandy-shale and anhydrite (Kelley et al., 2014). Because the top of the formation is gradational with the overlying Paluxy Formation, meaning a gradual change over time, the boundary between these two formations is often arbitrarily picked (Thompson, G.L., 1969). Additionally, the uppermost part of the Glen Rose contains more sand and clay than the lower part and provides groundwater in localized areas.

Overlying the Glen Rose, the Paluxy Formation occurs as a predominantly fine-to-coarse-grained sand interbedded with clay and shale. The formation pinches out downdip and does not occur south of the Colorado River. Locally, the Paluxy yields moderate quantities and fresh to slightly saline water for public supply, industry, domestic, and livestock use.



The Fredericksburg and Washita groups are generally considered a low permeability confining unit but can produce potable groundwater in localized areas (Ellis et al., 2025). Composed primarily of limestone and shale, these units are exposed at the surface in between the Trinity and Woodbine aquifer outcrops. The deposition of the Fredericksburg and Washita groups occurred during a major marine transgression, meaning a rise in sea level. There were no significant sources of sand in this depositional environment and the Fredericksburg and Washita groups are not significant sources of groundwater in the area.

The Woodbine Formation is composed of water-bearing sandstone beds interbedded with shale and clay. The Woodbine Aquifer extends from McLennan County in North-Central Texas northward to Cooke County and eastward to Red River County, paralleling the Red River. Groundwater produced from the aquifer furnishes municipal, industrial, domestic, livestock, and small irrigation supplies throughout its North Texas extent. The aquifer is divided into three water-bearing zones that differ considerably in productivity and quality. Only the lower two zones of the aquifer are developed to supply water for domestic and municipal uses. The upper Woodbine contains water of extremely poor quality in downdip locales and contains excessive iron concentrations along the outcrop.



About Prairielands GCD

The Prairielands Groundwater Conservation District was created in response to a finding by the Texas Commission on Environmental Quality 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 TCEQ would mandate one. Enabling legislation for the Prairielands GCD was passed in 2009.

The Mission of the Prairielands Groundwater Conservation 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, insure 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.

Upcoming Events and Meetings

February

26 **Groundwater Management Area 8 Meeting**
10:00 a.m
208 Kimberly Dr
Cleburne,TX 76031

27 **Alvarado Intermediate School**
Water Education Trailer
Alvarado, TX

March

11-13 **Texas Water Association Convention**
Forth Worth, TX

16 **PGCD Board Meeting**
9:00 a.m.
208 Kimberly Dr
Cleburne, TX 76031

25 **Keller Williams Presentation**
200 W Marvin Ave
Waxahachie, TX

27 **Girls Stem Day**
Water Education Trailer
Hill College
Hillsboro, TX

30-31 **Hill County Water Days**
Hillsboro, TX

April

3 **Good Friday**
PGCD Office Closed

20 **PGCD Board Meeting**
9:00 a.m.
208 Kimberly Dr
Cleburne, TX 76031

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