



PANOLA COUNTY

groundwater conservation district

2023 ANNUAL REPORT



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District Information

Creation

In 2007, the 80th Legislature, through the approval of House Bill 1498, authorized the creation of the Panola County Groundwater Conservation District, or the District. The voters of Panola County then confirmed the creation of the District on November



6, 2007 by 87%, along with a tax to fund the District with an 83% approval rate. The purpose of the District is to provide for the conservation, preservation, protection, recharging, and prevention of waste of groundwater, and the groundwater reservoirs or their subdivisions, consistent with the objectives of Section 59, Article XVI, Texas Constitution, Chapter 36 of the Texas Water Code, and the District's enabling act. The District was created to serve a public use and benefit in preserving the groundwater resources of the area.

Mission

Since its creation, the Panola County Groundwater Conservation District has worked hard to develop rules to provide protection to existing water wells, prevent waste, promote conservation, and to preserve and protect the groundwater resources of Panola County. The District is committed to managing and protecting the groundwater resources within its jurisdiction, and to work with other stakeholders to ensure a sustainable, high-quality, and cost-effective supply of water for future generations. The District will strive to develop, promote, and implement water conservation and management strategies to protect the water resources for the benefit of the citizens, the economy, and the environment within the District.

Authority

The District is a political subdivision of the State of Texas organized and existing under Section 59, Article XVI, Texas Constitution, the Texas Water Code Chapter 36, Title 31 of the Texas Administrative Code (TAC) Chapter 256, and the District's enabling act. The District is a governmental agency and a body politic and corporate of the State of Texas. The District exercises the authority it has been granted to preserve and protect the groundwater resources of Panola County through the adoption and implementation of rules for the District.

District Information Continued

Location and Extent

The boundaries of the District are the same as Panola County. The area encompasses 821 square miles (approx. 525,438 acres). The District is bounded by Harrison County to the north, Rusk County to the west, Shelby County to the south, and the State of Louisiana to the east.



District Office

Physical/Mailing Address:

419 West Sabine Street
Carthage, TX 75633

Phone: 903-690-0143

Fax: 903-690-0135

Staff and Directors

Directors

The Board of Directors consists of nine (9) members who are elected by the voters of Panola County. The District utilizes the same four (4) precinct boundaries which are used for the Panola County Commissioners when filling eight (8) of the District’s director positions. One director position for the District is elected at-large from Panola County. Elections are held in November of each even-numbered year. The directors of the District are each elected to a four-year term, and a director may serve consecutive terms.

Mike Pennington, President	Precinct One
Todd Malone, Vice-President	Precinct Two
Danny Reed, Treasurer	Precinct One
Charles Worley, Secretary.....	At-Large
John Burgess, Director	Precinct Two
Jody Harris, Director.....	Precinct Three
Mike Roquemore, Director	Precinct Three
Corey Turner, Director	Precinct Four
Charles Foster, Director	Precinct Four

Staff

Teresa Griffin.....	General Manager
David Waldrop....	Field Technician/Inspector
Jeremy Green.....	Field Technician

Management Plan Goals

The District Management Plan identifies the goals and objectives of the District and provides performance standards and tracking methods to measure the District's effectiveness in meeting these goals. The District goals are mandated by the Texas Water Code Chapter 36 in Section 36.1071. The Management Plan must be updated every five (5) years, and Panola County's was updated and approved at a Public Hearing in April 2023. Although all groundwater conservation districts are subject to these goals, each district chooses how to best implement the goals within their district by establishing their own objectives and performance standards. The District goals are as follows:

- A. Providing the most efficient use of groundwater
- B. Controlling and preventing waste of groundwater
- C. Addressing conjunctive surface water management issues
- D. Addressing natural resource issues
- E. Addressing drought conditions
- F. Addressing conservation and rainwater harvesting
- G. Addressing the desired future conditions adopted by the district under Section 36.108

The following is a summary of the District's activities related to these goals.

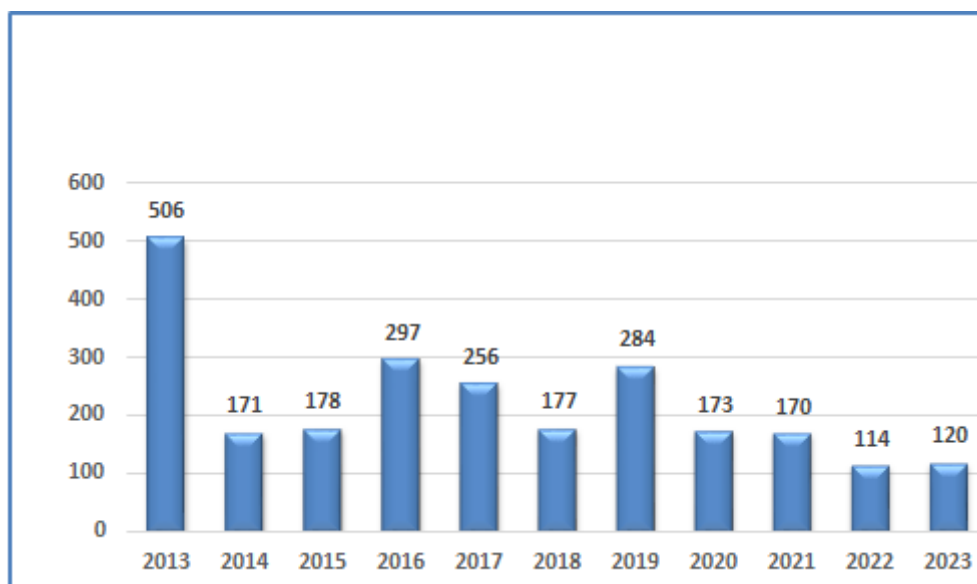
Goal A.1. Registrations

A.1. Objective: The District will require the registration of all wells, exempt and non-exempt, within the District's boundaries each year in accordance with the District Rules.

A.1. Standard: The number of new and existing water wells registered with the District will be provided in the Annual Report for each fiscal year.

The District uses our database to store and track registrations and permits for all wells registered. In 2023, we had a total 81 new wells drilled, and 39 existing wells register for a total of 120 wells. At the end of 2023 we have a total of 4,779 wells registered. We continue the water well registration program by attempting to register undocumented water wells that field technicians have found in the field or through the State water well database.

**Number of Water Wells Registered
Each Year 2013-2023**

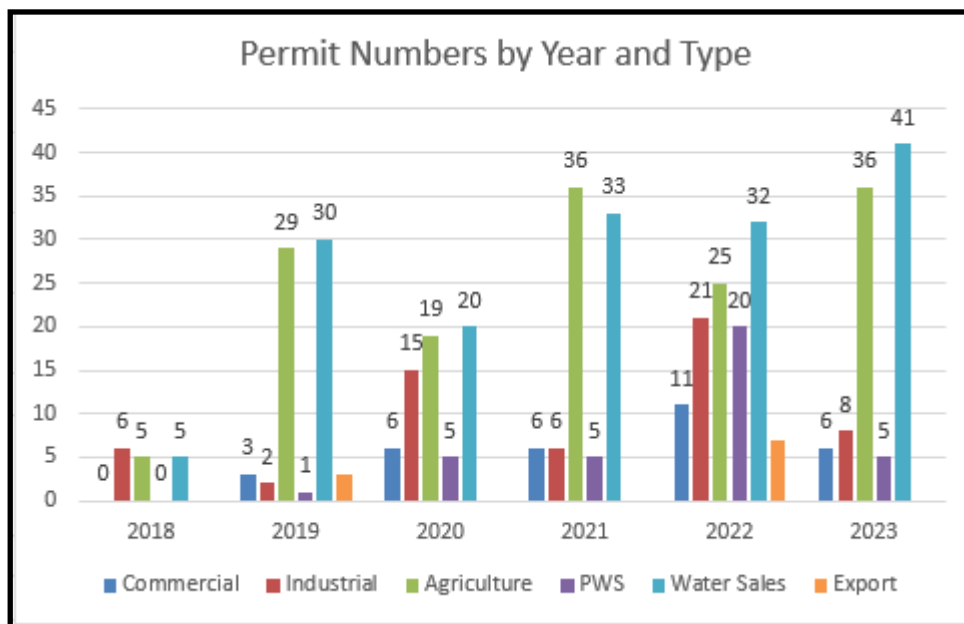


Goal A.2. Permits

A.2. Objective: The District will require permits for all non-exempt groundwater use water wells within the District's boundaries pursuant to the District Rules each year.

A.2. Standard: The District will accept and process applications for permits for all non-exempt groundwater use pursuant to the permitting process described in the District Rules each year. The Annual Report for each fiscal year will contain a summary of the number of applications for the permitted use of groundwater and the number and type of permits issued.

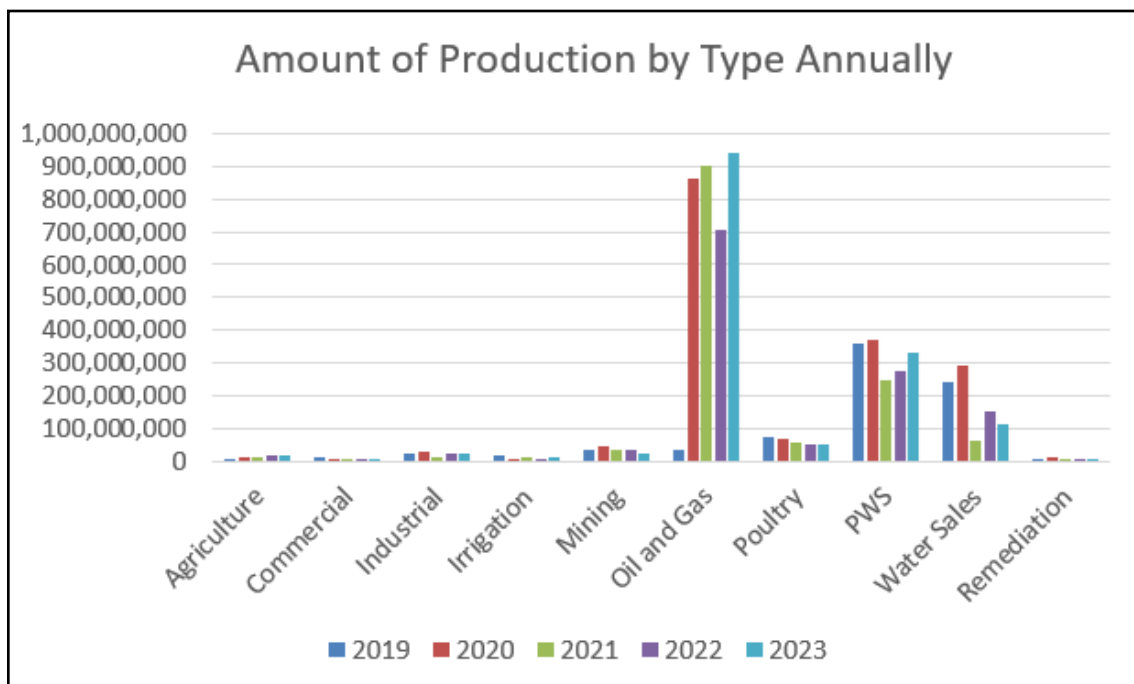
**A total of 96 Permits were issued in 2023. The breakdown of permits is as follows:
81 Operating Permit renewals, 13 new permits and 2 Grandfather Use Permits.**



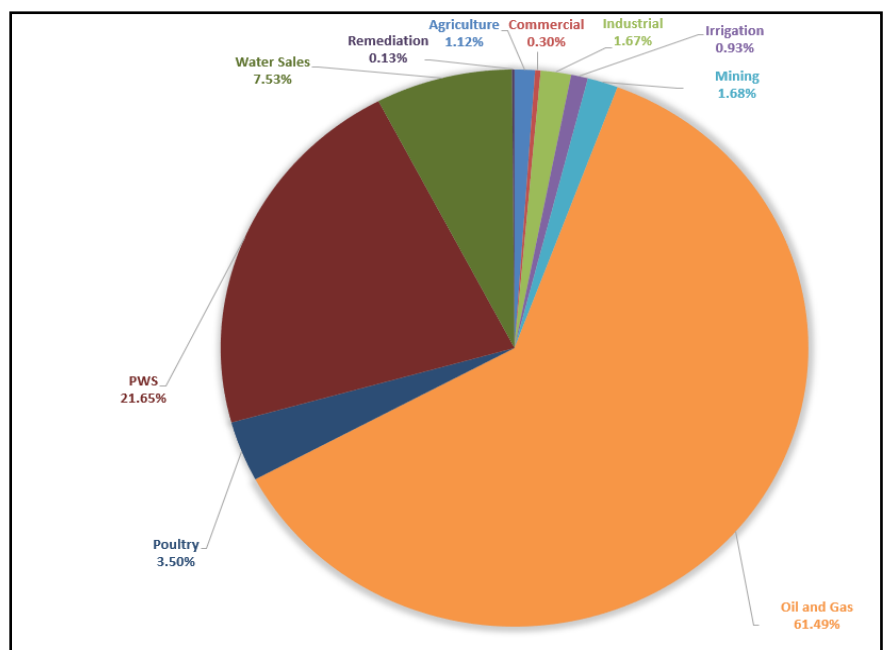
Goal A.3. Production

A.3. Objective: The District will regulate the production of groundwater by maintaining a database of groundwater usage through production volume reports each year according to the District rules.

A.3. Standard: The District will include a summary of the volume of groundwater produced in the county each year in the annual report.



2023 Largest User
Oil & Gas (61.49%) & Public
Water Supply (21.65%)



Goal B.1. Education—Waste and Water Quality

B.1. Objective: The District will provide information on an annual basis to the public on the elimination, reduction, and prevention of waste of groundwater, and information focused on water quality protection each year.

B.1. Standard: The District's Annual Report will include a summary of the District's efforts during the fiscal year to provide educational information to the public on the elimination, reduction, and prevention of waste of groundwater.

The District's web site, www.pcgcd.org, contains links to a number of useful web sites pertaining to the elimination, reduction, and prevention of waste of groundwater. **Exhibit 1** on the following page shows a snapshot of the links on our website.

The District also hands out educational materials at the office and other events from the Texas Water Development Board on how to prevent waste. A copy of the materials is available in **Exhibit 2**.

We also are proud to be an Advocate level sponsor of the Texas 4-H Water Ambassadors Program. A copy of sponsor list and our appreciation plaque is shown in **Exhibit 3**.

General Manager, Teresa Griffin was invited to speak and provide presentations on groundwater and water issues at two programs during the year. One program was the Mid-Sabine Rural Land Conference, sponsored by Texas A&M AgriLife Extension.

The second program was presented to the Noon Lions Club, where we discussed the mission of the Groundwater Conservation District, and the future of groundwater in Texas.



Exhibit 1 - Links to Educational Material

Links

Texas Well Owner Network <http://twon.tamu.edu/>

40 Gallon Challenge <http://www.40gallonchallenge.org/>

The Private Well Class <http://privatewellclass.org/>

Texas Groundwater Protection Committee <http://www.tgpc.state.tx.us/index.php>

Fun For Kids www.twdb.texas.gov/kids

Texas Water Development Board www.twdb.texas.gov/index.asp

TWDB Submitted Drillers Reports www.twdb.texas.gov/groundwater/data/drillersdb.asp

Texas Commission on Environmental Quality Well Reports

Texas Department of Licensing and Regulation for Water Well and Pump Installers www.license.state.tx.us/wwd/wwd.htm

Licensed Water Well and Pump Installer Search www.license.state.tx.us/LicenseSearch/

Railroad Commission of Texas www.rrc.state.tx.us/

Know Your Water, Water IQ www.wateriq.org

Having a Well Drilled [Having-a-Well-Drilled.pdf](#)

Water Well Development www.lifewater.ca/drill_manual/Section_10.htm

National Groundwater Association NGWA

Environment and Natural Resources Portal www.texasonline.com/portal/tol/en/nat/home

Palmer Drought Indices www.drought.gov/drought/data-maps-tools/current-conditions

Exhibit 2 - Educational Material

OUTDOOR TIPS

One inch of water per week in the summer will keep most Texas grasses healthy. To determine how long you should run your sprinklers, place straight-edged cans at different distances away from the sprinkler and time how long it takes to fill an average of 1 inch of water in each can.

Don't abuse the benefits of an automatic sprinkler system by over watering. Set it to provide thorough but infrequent watering. Check sprinkler heads regularly to make sure they are working properly. Install rain shut-off devices and adjust sprinklers to eliminate coverage on pavement.

Prevent evaporation of water. Water lawns early in the morning or in the evening during the hotter summer months. Never water on windy days. Use drip irrigation systems for broadleaf plants, trees or shrubs and use low angle sprinklers for lawns. Cover pools and spas. This can save the equivalent of your pool volume each year!

Plant water-efficient, well-adapted, and/or native shrubs, trees, and grasses. Choose plants that are drought and heat tolerant and can survive the minimum winter temperatures in your area. In odd shaped areas, use drought-tolerant groundcover instead of grass. Many cities provide lists of water-efficient plants.

Harvest the rain. Buy a rain barrel or a cistern and collect the water from your gutters to water your plants.


Use your water efficiently. Don't waste water by cleaning patios or sidewalks with it; use a broom. For plants that need more water, use a hose or watering can to give them additional water.

Keep grass 3 inches tall during the summer and don't cut more than one-third of its length at one time. Don't scalp lawns when mowing during hot weather. Taller grass holds moisture better. Leave lawn clippings on the lawn instead of bagging.

Use lots of mulch around your shrubs and trees. It will retain moisture, reduce run-off, moderate soil temperatures, and help with weed control.

Don't over-fertilize! Get a soil kit to determine what nutrients your soil needs. If you apply fertilizer only in the spring and fall, your grass will be healthy, use less water, and require less mowing.

Use a car wash that recycles water. If you are washing your car at home, use a bucket of soapy water and a hose nozzle that shuts off the water while you scrub.



Water IQ

www.wateriq.org

Visit the following Web site for additional information:
www.epa.gov/watersense

www.twrb.state.tx.us
PO Box 13234
Austin, Texas 78711-5234


www.wateriq.org

Water Conservation Tips

With the realities of Texas, it's easy to forget two important facts about our state: we are subject to frequent droughts, and our population is projected to double in the next 50 years. The cost of developing new or additional supplies in that same time period is estimated to be \$30.7 billion.

To ensure that we have enough cost-effective water for current and future Texans, we need to reduce the amount of water we waste.

WATER CONSERVING TIPS



USING WATER MORE EFFICIENTLY

will not only save money but, more importantly, will also help protect the quality of life of future Texans.

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Exhibit 2 - Educational Material

POSSIBLE WATER SAVINGS

- High-efficiency toilets, water-efficient washing machines, rainwater harvesting systems, and water-efficient landscaping can all help reduce water use.
- Water-efficient showerheads and aerators for faucets can significantly reduce the amount of water you use. In fact, installing a water-efficient showerhead is one of the most effective water-saving steps you can take inside your home.
- Leaky faucets and toilets can waste thousands of gallons of water monthly, and they are inexpensive to fix. A few small changes in your water use habits can make a huge difference in water savings.
- In the summer, outdoor water use can account for 50 percent or more of total water use. With proper management, you can have a beautiful, healthy landscape and reduce your water use significantly. This can amount to hundreds of dollars in savings a year in water and often wastewater costs.



INDOOR TIPS

Bathroom

- Replace your showerhead with a water-efficient model.
- Get in the shower as soon as the water becomes warm enough.
- Take short showers.
- Take a shower instead of a bath. A shower with a water-efficient showerhead often uses less water than a bath.
- Reduce the level of water used in a bathtub by 1 or 2 inches if a shower is not available.
- Turn off the water while you are shaving. Fill the sink with hot water instead of letting the water run continuously.
- Replace your old toilet with a high-efficiency toilet that uses 1.3 gallons per flush.
- Test toilets for leaks. Once in awhile, take the top off of your toilet tank and watch it flush. Do you notice any leaks? Yes? Replace the flapper or rubber washer. Don't forget about those less obvious leaks. Add a few drops of food coloring or a dye tablet to the water in the tank, but do not flush the toilet. If the coloring appears in the bowl within a few minutes, the toilet has a leak that needs to be repaired.
- Never use the toilet to dispose of trash.
- Don't waste water when brushing your teeth or washing your hands. Shut off the water until it's time to rinse.

Kitchen

- Run the dishwasher only when full. This practice will save water, energy, detergent, and money. If your dishes are not very dirty, use the short wash cycle. You can spend less money on water and energy by installing a high-efficiency dishwasher.
- Install faucet aerators. You'll never notice the difference, and you'll cut your sink water consumption in half! Also, don't ignore leaky faucets; they waste lots of water.
- Keep a container of water in the refrigerator. It will be refreshingly cool and won't waste water.
- Dry scrape dishes instead of rinsing. Your dishwasher will take care of the rest.
- Use garbage disposals sparingly. They can waste water unnecessarily.
- Scrub pots rather than scrubbing them while the water is running.
- Rinse your vegetables in a pan of cold water; it doesn't take gallons of water to get the dirt off.

Laundry room

- Conventional washing machines use 32 to 59 gallons of water per load.
- Wash only full loads.
- Use the lowest water level setting on the washing machine for light or partial loads whenever possible.
- Use cold water as often as possible to save energy and conserve hot water for uses that cold water cannot serve.


Additional tips

- Don't ignore leaky faucets; they are usually easy and inexpensive to repair. Turn off the valve under the sink until you get around to repairing the leak. A slow drip can waste as much as 170 gallons of water each day and will add to the water bill.
- Know where your master water shut-off valve is in case a pipe bursts. Insulate hot water pipes. You won't waste water waiting for it to get hot, and you will save energy too.
- Install water-sensing systems only when necessary, and if you have one, save water and salt by running the minimum amount of repetitions necessary to maintain water softness.
- Replace water-to-air heat pumps and air conditioners with air-to-air if you are purchasing new units. They are just as efficient and do not waste water.
- Find other uses for water rather than letting it go down the drain, such as watering house plants with fish tank water.



Exhibit 3 - Educational Outreach



**TEXAS 4-H**
Water Ambassadors Program

Home About Academies News Apply Sponsors Ambassadors

SPONSORS

Signature: [Prairielands Groundwater Conservation District](#), [Brazos River Authority](#), [Central Texas Groundwater Conservation District](#), [Evergreen Underground Water Conservation District](#), [High Plains Water District](#), [Post Oak Savannah Groundwater Conservation District](#), [Garver](#)

Legacy: [Houston Livestock Show and Rodeo](#), [Middle Trinity Groundwater Conservation District](#), [Bluebonnet Groundwater Conservation District](#), [Clearwater Underground Water Conservation District](#), [Mid-East Texas Groundwater Conservation District](#), [Brazos Valley Groundwater Conservation District](#), [Lower Rio Grande Valley Water District Managers Association](#), [Glasscock Groundwater Conservation District](#), [Edwards Aquifer Authority](#), [Lone Star Groundwater Conservation District](#), [Pecan Valley Groundwater Conservation District](#)

Advocate: [KPA Engineers](#), [Southern Ogallala Conservation and Outreach Program](#), [Lloyd-Gosselink Rochelle and Townsend, P.C.](#), [Hemphill County Underground Water Conservation District](#), [Northern Trinity Groundwater Conservation District](#), [Panola County Groundwater Conservation District](#), [Upper Trinity Groundwater Conservation District](#), [North Plains Groundwater Conservation District](#)

Stewardship: [San Antonio River Authority](#), [Guadalupe-Blanco River Authority](#), [Rusk County Groundwater Conservation District](#), [Texas Agricultural Irrigation Association](#), [Kenedy County Groundwater Conservation District](#), [Upper Guadalupe River Authority](#), [Brush Country Groundwater Conservation District](#), [Guadalupe County Groundwater Conservation District](#), [Tarrant Regional Water District](#), [Pumps of Houston, Inc.](#), [Kinney County Groundwater Conservation District](#), [Trinity Glen Rose Groundwater Conservation District](#), [Hydrogeologic/Environmental Inc.](#), [Mesquite Groundwater Conservation District](#), [Corpus Christi Water](#)

Exhibit 3 - Educational Outreach



Goal B.2. Rule Evaluation

B.2. Objective: The District will make an annual evaluation of its Rules to determine whether any amendments are necessary to facilitate the prevention of waste of the groundwater within the District boundaries.

B.2. Standard: The District's Annual Report will include a summary of the evaluation of the District Rules, and will provide a recommendation as to whether any amendments to the Rules are needed to facilitate the prevention of waste.

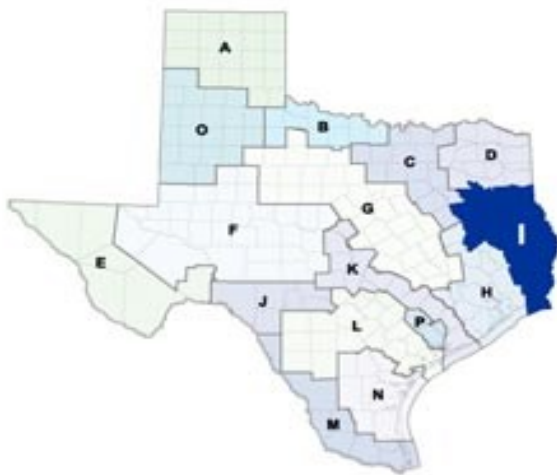
In July the Board began their annual review and discussions of the District Rules for any amendments. The District's attorney made a presentation to the board and provided a review of bills that passed that would require rule changes. The board reviewed the proposed changes and set the date for a Public Hearing on rule changes. The Public Hearing on Rule Changes was held in August. A copy of the agendas, and the minutes showing the rule review can be found in **Appendix A**.

Goal C.1. Regional Planning Process

C.1. Objective: The District will participate in the regional planning process by sending a representative to attend at least one meeting of the East Texas Regional Water Planning Group (Region I) each fiscal year.

C.1. Standard: The attendance at any Region I meeting by a representative of the District will be included in the District's Annual Report, and will indicate the dates of attendance.

The District participates in the regional planning process by attending Region I and Region D Planning Group meetings. The attendance of District staff at these meetings provides valuable input to the Planning Group relative to groundwater's role in overall regional planning, and it helps to coordinate information between the Regional Planning Groups and GMA 11.



General Manager, Teresa Griffin, attended the following Region I 2023 meetings: February 23rd, April 19th, June 21st, and October 4th.

General Manager, Teresa Griffin, attended the March 15, 2023 Region D Water Planning Group meeting.



Goal D.1. Aquifer Levels

D.1. Objective: The District will monitor water levels within District boundaries on an annual basis by measuring the water level and collecting water quality of at least fifteen (15) water wells.

D.1. Standard: The District's Annual Report will include a description of the number of wells measured and the monitoring results of the measured wells along with the water quality for each year.

The District currently checks seventy-one (71) water wells for water levels. Ten (10) of the wells are annual monitor wells for the Texas Water Development Board, and the other sixty-one (61) are checked monthly for the District. Below is a map of the 71 monthly and annual monitor wells. Based on the 2023 measurements, we saw a net change of 0.6 feet decline in water levels over the course of the year, (Table 1& 2). Since starting the program mid-year in 2011 with initial monitoring of 7 wells (36.4ft baseline), we have added 8 wells in 2013 (35.9ft baseline) and 48 wells in 2018 (46.8ft baseline), we have seen a net change in water levels as follows: 2012 = up 1.25 feet, 2013 = up 0.02 feet, 2014 = up 0.65 feet, 2015 = up 2.72 feet, 2016 = down 0.11 feet, 2017 = down 0.40 feet, 2018 = up 1.80 feet, 2019= up 0.30 feet, 2020= up 0.4 feet, 2021= down 0.3 feet, 2022= down 0.7 feet, and 2023= down 0.6 feet. The District also had, on average, forty (41) water wells per month that were used specifically to monitor changes due to hydraulic fracturing (Exhibit 4) The frac pond monitor wells inform us about the drawdown and recovery of the aquifer. The District deploys three water well sensors that measure pressure, temperature, and specific conductivity to gain higher-resolution data from long-term and temporary monitor wells.

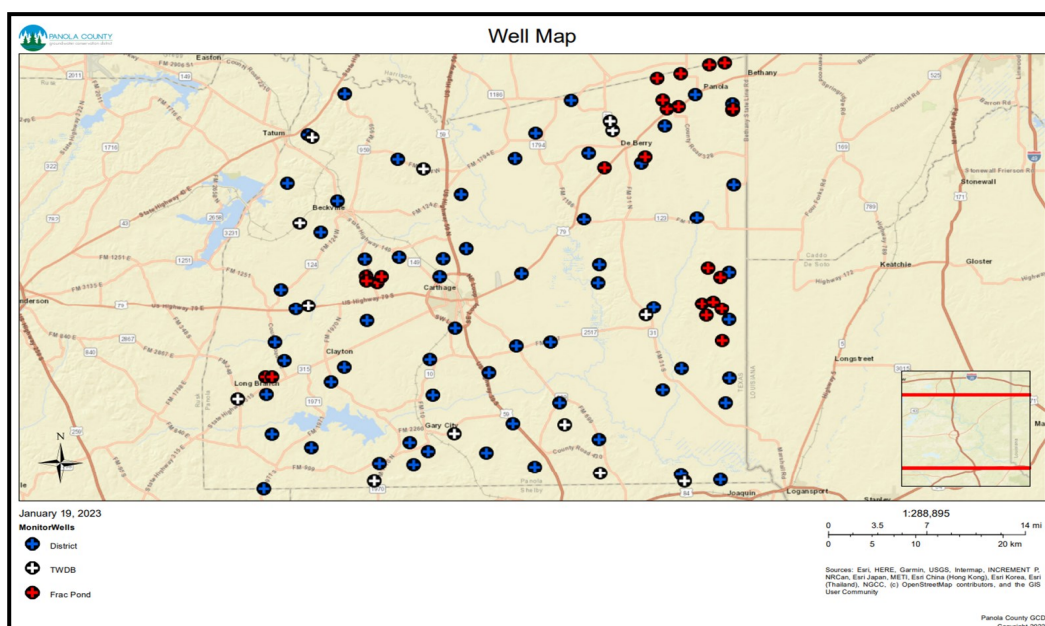
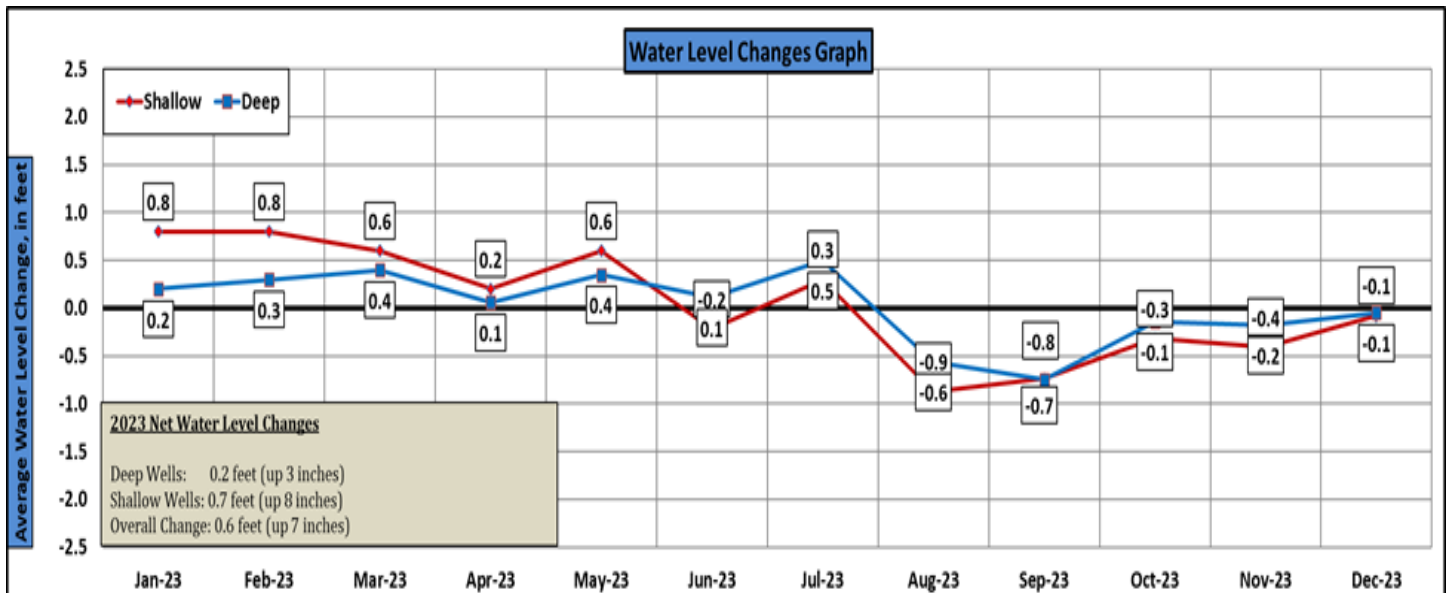


Table 1 and 2 - Monitor Well Water Level Data

Well ID	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23
PC2009-0801	21.5	20.5	19.8	19.8	18.5	19.3	N	20.2	21.4	21.7	21.7	22
PC2009-0794	33.1	32.9	33.5	33.3	32.5	33	32.9	34	33	33.5	33.6	33.3
PC2009-0660	23.7	22.3	20.9	21	20.7	20.6	21.9	23	23.3	24.6	25.1	25.4
PC2009-0795	17.8	17.0	16.4	16.6	15.9	15.8	N	17.0	18.1	17.9	18.1	18.2
PC2018-0008	70.4	69.4	68.5	68.9	67.6	68.6	N	69.4	70.5	70.7	70.4	70.6
PC2017-0057	35.4	34.1	31.6	30.2	28.9	28	N	29.5	30.5	30.8	31.8	31.2
PC2011-0532	36.8	36.2	35.4	37.9	37.7	39.2	N	41.0	42.8	44.9	44.7	44.9
PC2011-0170	57.2	56.1	56.9	55.9	55.8	55.5	N	56.9	57.5	56.5	57.1	57.2
PC2013-0192	37.0	36.3	34.7	36.0	35.2	35.1	N	35.8	36.6	36.9	37.3	37.4
PC2009-0763	58.4	60.9	62.6	61.7	52.6	57.7	N	63.6	65.7	57.8	54.3	52.3
PC2009-0452	64.7	64.5	63.9	63.6	63.6	63.8	63.9	64.0	62.2	64.6	64.7	64.9
PC2011-0329	24.9	24.3	23.4	23.4	22.5	22.5	N	24	25.7	25.3	25	24.8
PC2013-0125	53.0	53.3	53.4	52.4	52.8	52.8	N	52.8	54.3	54.3	54.6	54.4

Table 1 and 2 - Water Level Changes & Water Quality Data

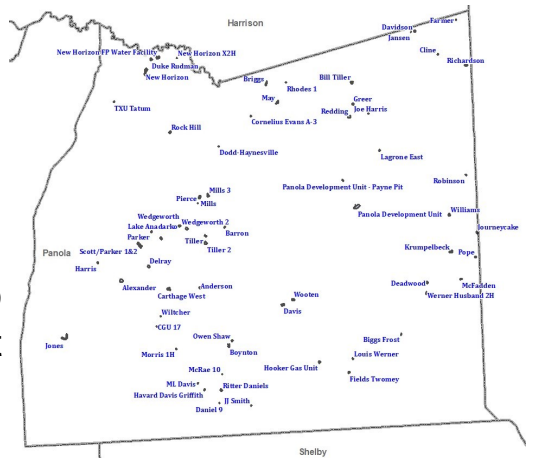


Water Quality Results

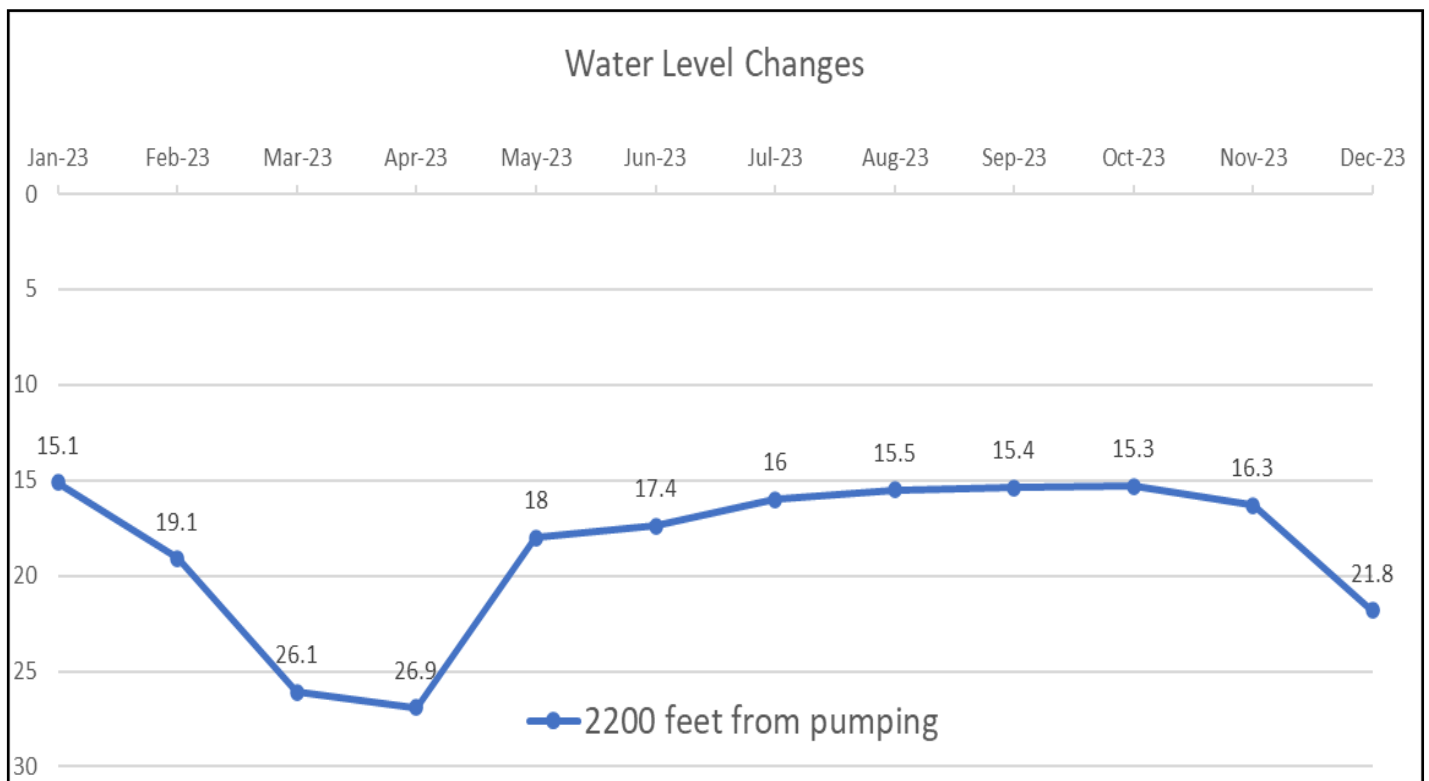
	Troll 500 FP Test	F°	mg/L	mg/L	mg/L	mg/L	mv/L	mg/L	mg/L
ID	Date	Temperature	Chloride	pH	TDS	Nitrate NO3	ORP	Salinity	Conductivity
PC2018-0102	7/31/2023	84.100	48.328	6.515	76.318	1.005	71.049	0.054	124.724
PC2021-0018	8/1/2023	70.000	35.426	7.440	298.847	0.152	63.995	0.220	459.763
PC2021-0028	8/1/2023	73.000	14.094	7.230	211.520	1.014	44.900	0.156	325.349
PC2021-0029	8/1/2023	72.000	27.320	7.260	236.341	3.534	78.881	0.175	363.607
PC2019-0069	8/7/2023	68.900	62.830	7.520	312.990	0.015	37.564	0.234	481.515
PC2021-0025	8/7/2023	68.300	213.552	7.532	303.638	1.669	29.457	0.227	450.512
PC2023-0038	9/28/2023	68.300	126.920	7.280	286.580	0.444	-7.470	0.212	441.200
PC2023-0055	9/28/2023	59.300	216.668	6.979	238.473	0.608	33.960	0.176	366.758
PC2021-0020	9/20/2023	69.400	287.610	6.830	91.520	0.390	-22.040	0.066	140.790
PC2019-0103	10/24/2023	83.300	158.120	7.090	214.080	0.080	-54.120	0.158	329.360
PC2019-0020	10/24/2023	68.300	213.552	7.532	303.638	1.669	29.457	0.227	450.512
PC2020-0114	10/24/2023	71.200	158.120	7.090	214.080	0.080	-54.120	0.150	329.010
PC2020-0153	10/24/2023	70.800	216.650	6.640	136.320	0.080	-16.490	0.100	209.720
PC2020-0004	10/26/2023	73.400	192.200	8.910	794.710	0.999	84.625	0.615	1222.661
PC2020-0007	10/26/2023	72.050	145.226	8.920	773.884	0.921	52.649	0.599	1190.953
	Average	71.490	141.11	7.385	299.53	0.844	24.82	0.22	459.10
	Quality Standards	Not Regulated	Less Than 250	6.5-8.5	Less than 500	10 or less	Less than 650	Not Regulated	200- 800

Exhibit 7 - Hydraulic Fracturing Pond Summary and Example Data

In 2023, the District monitored thirteen frac pond areas, with one of those areas showing full water level recovery. The remaining twelve areas show partial recovery in 2023, as monitoring continues into 2024. An average of 41 water wells were checked monthly to monitor the effects of concentrated pumping fields that were used to supply hydraulic fracturing.



The largest drawdown seen in 2023 was 6.8 feet, which was measured in a well that is 2200 feet from the nearest pumping well. The pumping field in this scenario consisted of four wells, with 40,794,600 gallons of reported production in 2023 for those wells.



Goal E.1. Drought

E.1. Objective: The District's Management Plan requires the District to download at least one updated U.S. Drought Monitor map each month.

E.1. Standard: The District will include the 12 monthly downloaded U.S. Drought Monitor maps in the Annual Report for each fiscal year.

The U.S. Drought Monitor reports can be found in **Appendix B** of this document.

Goal E.2. Drought Contingency Plan

E.2. Objective: The District will create and adopt, through the Board of Directors, a Drought Contingency Plan, and will monitor drought conditions in the Carrizo-Wilcox Aquifer as outlined in the Drought Contingency Plan. If necessary, the District will update its Drought Contingency Plan when changes are warranted.

E.2. Standard: The District's Annual Report to the Board of Directors will provide a summary of any implementations of the Drought Contingency Plan for each year and will include an update on any revisions made during the year.

The drought contingency plan was approved at the May 24, 2016 board meeting. There have been no problems with drought since its approval, so the plan has yet to be activated and no changes have been required to the plan since its implementation in 2016.

Goal F.1. Conservation

F.1. Objective: The District will promote conservation at least once during each fiscal year by distributing literature packets or brochures and will sponsor an educational program/ curriculum.

F.1. Standard: The District's Annual Report will provide a summary of the District's efforts and a copy of any information provided by the District to the public during the previous fiscal year to promote conservation.

Summary of Actions

During the summer PCGCD staff, made our annual visit to the Summer Reading Program at the Sammy Brown Library. This year's theme was "Community Super Heroes", the participants were given capes and masks while we read a book about water conservation along with discussing how they can be community super heroes by helping to conserve water. They also made their own book marks to take home to remind them about water conservation. See **Exhibit 3**.



HOME ABOUT US OUR WATER FAQ'S LINKS CONTACT

Conservation Tips

Milk Jug your toilet

Fill a half-gallon plastic jug with water and affix the cap. Flush the toilet and place the jug in the tank, away from the moving parts. This will save a half gallon per flush. Use pebbles or sand in the bottom of the jug if it doesn't stay put. Toilets use more water than anything else in a house, accounting for nearly 30% of indoor water use, according to the U.S. Environmental Protection Agency.

Think 'on and off'

Continuous flow uses more water than intermittent use. Turn the faucet on and off while brushing teeth, shaving, scrubbing kitchen pans and sopping the car.

Use less

It's obvious, but shorter showers and running the dishwasher and clothes washer only when full help.

Let your grass grow

Use a higher wheel setting on your lawn mower-3 inches or more. Taller grass retains moisture better, requiring less watering. And it inhibits weed growth, saving money on weed-killers.

Fix leaks

It's a no-brainer to fix leaky faucets, but your toilet might be leaking without you knowing and wasting 200 gallons a day, or about 50 flushes' worth. Place a drop of dark food coloring in the tank. If it reaches the bowl within 15 minutes, you have a leak worth fixing.

Get WaterSense

The EPA has a relatively new program called WaterSense for labeling plumbing fixtures certified to save water, about 20% on average. It's similar to the EnergyStar label for products that use electricity efficiently. The label goes on water-efficient models of such fixtures as toilets, sink faucets and showerheads. Learn more at www.epa.gov/watersense.

Don't rinse the dishes

You don't need to rinse dishes before loading them in the dishwasher. Not rinsing could save 6,500 gallons of water per year.

Use sink disposal sparingly

Using the garbage disposal requires a lot of water. Instead, put food waste in a compost pile, which reduces the need for fertilizer.

Water smart outdoors

Water in the cool morning to reduce evaporation and aim sprinklers at plants. Use drip hoses where appropriate.

Goal F.2. Rainwater Harvesting

F.2. Objective: The District will advocate for rainwater harvesting each year by providing updated information about rainwater harvesting on the District website at least once each fiscal year.

F.2. Standard: The District's Annual Report will include a copy of the information on rainwater harvesting which has been provided on the District website within the previous fiscal year.

Summary of Actions

The District has added to the District website the information on rainwater harvesting. The picture below is a snapshot showing the links on our website. We also have installed a rain barrel at our office, which is used to water our flower beds and plants!



[HOME](#) [ABOUT US](#) [OUR WATER](#) [FAQ'S](#) [LINKS](#) [CONTACT](#)

Rainwater Harvesting

Click the links below for more information about Rainwater Harvesting.

[TWDB – Rainwater Harvesting](#)

[The New Landscape of Rainwater Harvesting in Texas – \(article by Kristen Fancher, Attorney\)](#)

[AgriLife Extension, Texas A&M – Rainwater Harvesting](#)

NEWS

[Water Is The Future](#)
OCTOBER 16, 2013

ANNOUNCEMENTS

[February Board Meeting](#)
FEBRUARY 23, 2016

CONTACT US

419 W. Sabine St., Carthage, TX 75633
903-690-0143

Goal F.2. Rainwater Harvesting



Goal G.1. Desired Future Conditions

G.1. Objective: Using water levels monitored as part of Objective D.1, the District will evaluate water level trends and quantitatively compare these to the adopted desired future conditions.

G.1. Standard: The District's Annual Report will include documentation of water level trends from the monitoring program results described in Objective D.1. This documentation will include a comparison of these trends to adopted desired future conditions.

Summary of Actions

For the year 2023, the District used forty-four (42) deep water wells to track groundwater levels. The purpose was to monitor the water table throughout the county in an attempt to quantify the established Desired Future Conditions (DFCs) for the aquifer. The tables on the next page show the numbers for fluctuations in those monitor wells. The District will continue developing its research studies in 2024 to address the Desired Future Conditions set by GMA 11 and to build a greater understanding of the aquifer.

Desired Future Conditions (DFCs) in Panola County

The District's groundwater elevations are compared to the 2013 baseline. The District makes these comparisons on an annual basis for the DFC and MAG, as guided by the District's management Plan, Chapter 36 of the Texas Water Code, and best management practices of our groundwater resources. An analysis of the 2023 groundwater elevations to the DFC found that Panola County's monitoring data are consistent with the desired future conditions.

The new DFC for the Carrizo-Wilcox Aquifer in Panola County is an average drawdown of **21 feet** from 2013 to 2080. GMA 11 adopted new DFCs on August 11, 2021. The new DFCs are based on the updated Groundwater Availability Model (GAM) which corrects many of the limitations and problems associated with the old GAM. Texas Water Development Board issued a report of GAM Run 21-016 MAG on March 7, 2022 with updated MAGs. The MAG of the Carrizo-Wilcox Aquifer for the years 2020-2080 is **4,999 a/f.**

Panola County MAG Values (acre-feet per								
County	Region	Basin	2020	2030	2040	2050	2060	2070
Panola	I	Cypress	0	0	0	0	0	0
		Sabine	4,999	4,999	4,999	4,999	4,999	4,999

Goal G.1. Desired Future Conditions

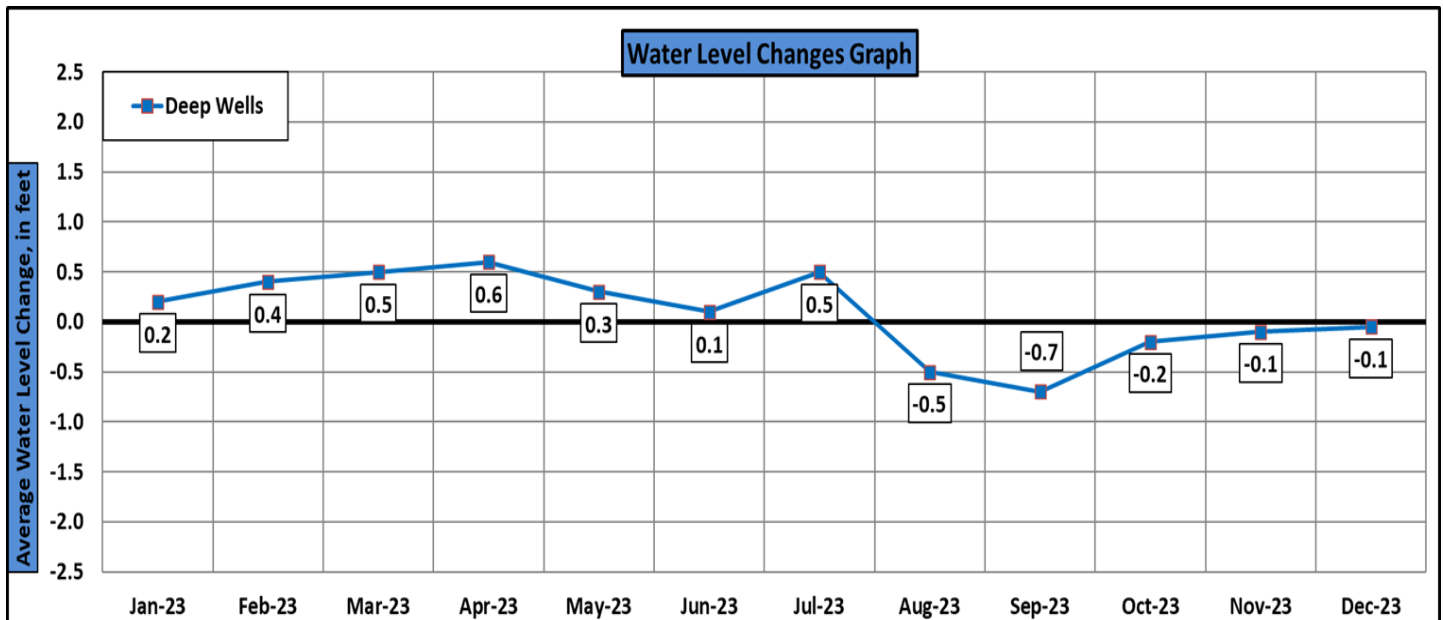


Table 1
Desired Future Conditions for Each County-Aquifer Unit in GMA 11
Expressed at Average Drawdown from 2013 to 2080 (ft)

County	2013-2080 Average Drawdown (ft)		
	Scenario 33, TM 21-01		
	Sparta Aquifer	Queen City Aquifer	Carrizo-Wilcox Aquifer
Anderson	30	44	155
Angelina	6	28	67
Bowie			12
Camp		11	85
Cass	66	34	79
Cherokee	7	31	176
Franklin			102
Gregg		49	109
Harrison		41	26
Henderson		33	106
Hopkins			61
Houston	3	12	86
Marion	123	32	32
Morris		39	78
Nacogdoches	7	22	73
Panola			21
Rains			17
Rusk	26	17	86
Sabine	1	3	9
San Augustine	2	7	22
Shelby	18	12	17
Smith	121	132	265
Titus		9	66
Trinity	5	18	56
Upshur	10	30	149
Van Zandt		73	55
Wood	9	16	122

Goal G.2. Non-Exempt Production

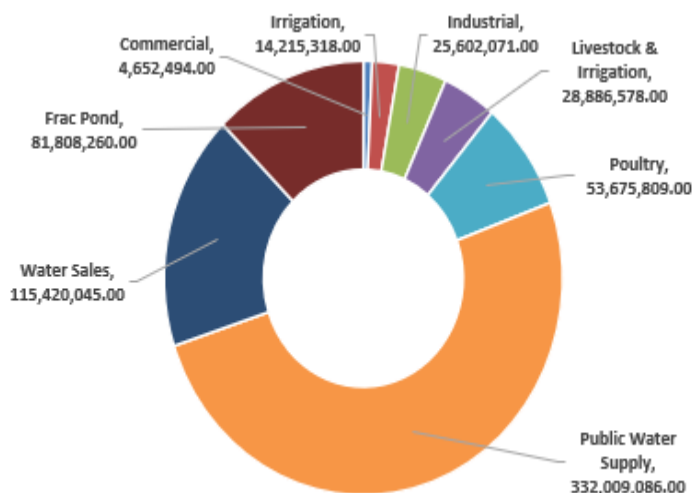
G.2. Objective: The District will consider a reasonable estimated amount of actual ground-water production on an annual basis through tracking production of permitted water wells and estimating use in non-permitted wells.

G.2. Standard: The District's Annual Report will include the amount of production for each permitted water well within the District. The Annual Report will also contain an estimate of use in non-permitted wells and a description of the method used to develop the estimate.

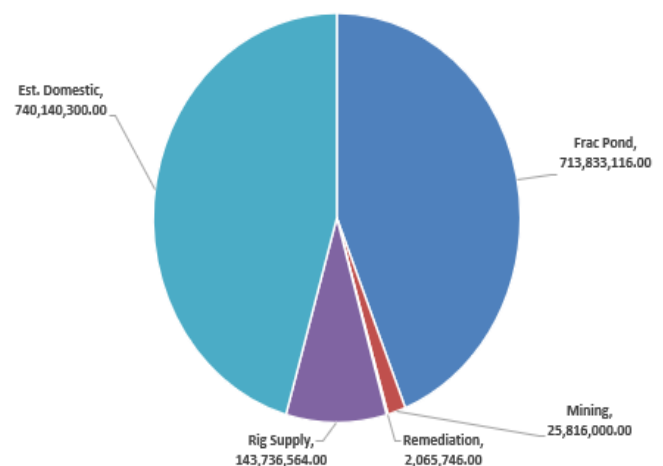
Summary of Actions

The reported total production for all permitted water wells in 2023 was 644,583,044 gallons or 1,978.16 acre-feet. The total amount of groundwater permitted by well type is represented in the chart below. The District has also estimated the amount of non-permitted groundwater used in 2023. With the use of our database, reported production and estimating average household usage of 4,500 gallons per month, we were able to come up with estimated usage of non-permitted wells within Panola County.

2023 Permitted Production



2023 Estimated Non-Permitted



Management Goals Determined Not Applicable to the District

The following goals have been determined by the District to not be applicable.

- ♦ Controlling and Preventing Subsidence
- ♦ Addressing Precipitation Enhancement
- ♦ Addressing Brush Control
- ♦ Recharge Enhancement

Appendix A

REGULAR BOARD MEETING

Panola County Groundwater Conservation District

419 W. Sabine St., Carthage, Texas 75633

Phone: 903.690.0143 Fax: 903.690.0135

Regular Board Meeting of the PCGCD Board of Directors

Tuesday, July 25, 2023, immediately following the Public Hearing-Permits

County Clerk's Office Use Only: FILED FOR RECORD IN MY OFFICE AT <u>11³⁵</u> O'CLOCK <u>a</u> M JUL 21 2023 BOBBIE DAVIS COUNTY CLERK, PANOLA COUNTY, TEXAS BY <u>[Signature]</u> DEPUTY
--

REGULAR BOARD MEETING AGENDA

1. Call to order.
2. Invocation.
3. Public comments.
4. Review and consider approval of minutes for June 27, 2023, Public Hearing.
5. Review and consider approval of minutes for June 27, 2023, Regular Board Meeting.
6. Review, discuss and possible action on FY 2024 Budget.
7. Review, discuss and possible action on FY 2023 Tax Rate.
8. Presentation by District's Attorney on 2023 Texas Legislative Session
9. Review and possible approval of rule changes for public rule making hearing as a result of the 2023 legislative session and attorney recommendations.
10. Review and discuss updates to District's Personnel Policy
11. Hear General Manager report and discuss topics such as, driller violations, updates on meetings attended, District Rules and information related to District operations.
12. Hear staff reports and discuss topics such as water well issues, frac pond monitoring, monitor wells, rain gauges, collection of field data, and information related to the management plan.
13. Review and confirm Quarterly Investment Report and District expenditures from June 23, 2023– July 21, 2023.
14. EXECUTIVE SESSION: The Panola County Groundwater Conservation District Board of Directors may go into an executive session under the authority of the Government code, Chapter 551, Texas Open Meetings Act. Please see details below.
15. Consider action(s) regarding matters discussed in executive session.
16. Set date and time for the next meeting.
17. Adjournment.

This meeting is available to all persons regardless of disability. If you require special assistance to attend or participate in the meeting, please contact the Panola County GCD at (903) 690-0143 at least 24 hours in advance of the meeting.

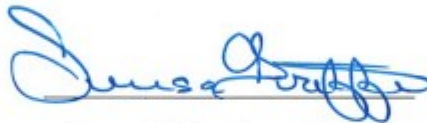
At any time during the meeting and in compliance with the Texas Open Meetings Act, Chapter 551, Government Code, Vernon's Texas Codes, Annotated, the Panola County Groundwater Conservation

Appendix A

District Board may meet in executive session on any of the above agenda items for consultation concerning attorney-client matters (§551.071); deliberation regarding real property (§551.072); deliberation regarding prospective gift (§551.073); personnel matters (§551.074); and deliberation regarding security devices (§551.076). Any subject discussed in executive session may be subject to action during an open meeting.

Certification


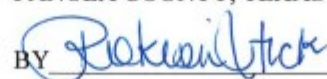
I, the undersigned authority, do hereby certify that on July 21, 2023 at or before 5:00 p.m., our office posted and filed the above notice of meeting with the Panola County Clerk's Office, and also posted a copy near the front door of the Panola County GCD office in a place convenient and readily accessible to the general public at all times, and that it will remain so posted continuously for at least 72 hours preceding the scheduled time of said meeting in accordance with Texas Government Code, Chapter 551.



Teresa Griffin, General Manager
Panola County Groundwater Conservation District

WITNESS THE HAND AND SEAL OF THE UNDERSIGNED CLERK ON THIS THE
21st DAY OF JULY 2023 AT 11:35 O'CLOCK (A.M) P.M.




BOBBIE DAVIS, COUNTY CLERK
PANOLA COUNTY, TEXAS
BY  DEPUTY

Appendix A

PANOLA COUNTY GROUNDWATER CONSERVATION DISTRICT NOTICE OF PUBLIC HEARING ON AMENDMENTS TO DISTRICT RULES

Notice is hereby given that the Board of Directors of the Panola County groundwater Conservation District ("District") will hold a public hearing on Tuesday, August 22, 2023 at 5:30 p.m. at the District office located at 419 West Sabine Street, Carthage, Texas, 75633, to discuss consider, receive public comment, and potentially act on the adoption of proposed amendments to the District Rules.

The proposed amendments to the District Rules include changes to (1) update references to major and minor violations for consistency with the District's Civil Penalty Schedule; (2) the due date for plugging reports to be filed with the District; (3) the list of wells exempt from permitting requirements; (4) the procedure for the continuance of District hearings; (5) the process to petition the District to adopt or modify rules; (6) the District's procedure for finalizing a decision in a groundwater permit contested case hearing; (7) the consolidation of requests for rehearing; (8) the allowable rate at which the District may assess a transport fee; and (9) additional non-substantive changes.

All interested members of the public are invited to attend. Any person who wishes to present comments or other information at the hearing may do so in person, by counsel, or both. Comments may be presented verbally or in written form. Limits may be placed on the amount of time that each person is allowed to present verbal comments at the hearing. The hearing posted in this notice may be recessed from day to day or continued where appropriate. A copy of the proposed District Rules may be requested by email at district@pcgcd.org, may be reviewed or copied at the District office, 419 West Sabine Street, Carthage, Texas, 75633, or are available on the District's website at www.pcgcd.org. Written comments may be submitted to the District email address or to the District mailing address provided here.

FILED FOR RECORD
IN MY OFFICE
AT 12:45 O'CLOCK P M

JUL 28 2023

BOBBIE DAVIS
COUNTY CLERK, PANOLA COUNTY, TEXAS
BY *[Signature]* DEPUTY

Appendix A

Panola County Groundwater Conservation District
Board of Directors Regular Meeting Minutes
July 25, 2023

A regular meeting of the Panola County Groundwater Conservation District Board of Directors was held on Tuesday, July 25, 2023, immediately following the Public Hearing in the District Conference Room at 419 W. Sabine Street, Carthage, Texas 75633. The following were in attendance:

Board Members:

Precinct #1 Mike Pennington
Danny Reed

Precinct #2 John Burgess
Todd Malone

Precinct #3: Mike Roquemore

Precinct #4: Cory Turner
Charles Foster

At Large: Charles Worley

District Staff: Teresa Griffin, General Manager; Ashley Castleberry, Office Manager, David Waldrop, Field Technician/Inspector, Jeremy Green, Field Technician

Others: Ty Embrey, Lloyd Gosselink Attorneys at law

Absent: Jody Harris, Precinct #3

1. The regular board meeting was called to order by Mike Pennington, Board President at 5:32p.m.
2. Charles Foster conducted the invocation.
3. There was no public comment at the July 25, 2023, Regular Board Meeting.
4. After reviewing the June 27, 2023, Public Hearing Meeting Minutes, Danny Reed moved, and Charles Foster seconded the motion to approve the minutes. The motion passed unanimously.
5. After reviewing the June 27, 2023, Regular Board Meeting Minutes, Mike Roquemore moved, and Cory Turner seconded the motion to approve the minutes. The motion passed unanimously.
6. The fiscal year 2024 Budget was reviewed and discussed. There was no action taken.
7. The fiscal year 2023 Tax Rate was reviewed and discussed. There was no action taken.
8. Ty Embrey, the District's attorney, spoke about the rule changes to Chapter 36 during the 2023 Texas Legislative Session.

Appendix A

9. The Board reviewed possible rule changes for approval at the next board meeting based on the information resulting from the 2023 Texas legislative session and based on the recommendation provided by the District's Attorney, Ty Embrey. Charles Foster made a motion to approve the proposed rule changes for public hearing, Corey Turner seconded, and the motion carried unanimously.
10. The District's Personnel Policy was reviewed and discussed. Cory Turner made a motion to add June 19th as a floating holiday and prohibit the use of Tik Tok on government devices. Charles Worley seconded, and the motion carried unanimously.
11. The General Manager gave routine office updates. There was no action taken.
12. District staff provided updates on monitor well, rain gauges, and other District field work. The monthly monitor deep well readings showed a water level increase of .47 feet in the last month. The shallow monitor well water levels showed an increase of .30 feet in the last month. Panola County's recorded rainfall average for June was 3.37 inches. The historical precipitation average for June is 4.09 inches. The cumulative precipitation total for 2023 is 28.99 inches. As of July 19, 2023, Panola County is abnormally dry status according to the U.S. Drought Monitor for Texas. In the last month, there have been no significant drawdowns near frac ponds, and water levels have increased in other areas.
13. The Quarterly Investment Report and District expenditures from June 23, 2023- July 21, 2023, were reviewed and confirmed. Todd Malone motioned to approve the Quarterly Investment Report and District expenditures. Charles Foster seconded, and the motion passed unanimously.
14. The Board did not enter into Executive Session at the July 25, 2023, meeting.
15. Since the board did not enter into Executive Session no action was taken.
16. Next meeting dates are set for August 1, 2023, and August 22, 2023 at 5:30 P.M.
17. With no further business, Charles Foster moved, and Charles Worley seconded the motion to adjourn the meeting. The motion passed unanimously of those present, and the meeting was adjourned at 6:43 P.M.

Approved this 22nd day of August 2023.


Director


Director

Appendix A

PUBLIC HEARING – RULE CHANGES

Panola County Groundwater Conservation District

419 W Sabine St., Carthage, Texas 75633

Phone: 903.690.0143 Fax: 903.690.0135

Public Hearing on District Rule Amendments

Tuesday, August 22, 2023, at 5:30 pm

County Clerks Office Use Only:	
FILED FOR RECORD IN MY OFFICE	
AT <u>11:50</u>	O'CLOCK <u>11</u> M <u>00</u>
AUG 02 2023	
BOBBIE DAVIS COUNTY CLERK, PANOLA COUNTY, TEXAS	
BY <u>McDonald</u>	DEPUTY

PUBLIC HEARING AGENDA – RULE CHANGES

1. Call to order.
2. Public Hearing for District Rule Amendments:
 - a. Rule 3.3 (e) update wording changing “minor” to “major” to reflect wording in Civil Penalty Schedule
 - b. Rule 9.2 (c) update due date of plugging reports to the District to 30 days.
 - c. Rule 3.5 – Adds subsection (a)(6) to include an exemption for temporary use wells used to supply water for a rig actively engaged in drilling a groundwater production well.
 - d. Rule 10.1 – Adds subsection (d)(3) to establish that continuance of a hearing cannot exceed 180 days.; Renumbers accordingly.
 - e. Rule 10.2 – Adds subsection (h) to provide a process to petition the District to adopt or modify rules as required by HB 2443.
 - f. Rule 10.5 – Adds language to subsection (g) to preserve the District's right to remand an Administrative Law Judge's proposed findings of fact and conclusions of law amidst changes to the decision process made by HB 1971.
 - g. Rule 10.5 – Adds subsections (h), (i), (j), (k), and (l) to add language complying with the timelines established by HB 1971 for the Board to issue a final decision in a contested case hearing on an application for a groundwater permit.
 - h. Rule 10.10 – Adds subsection (f) to provide that the Board shall consolidate requests for rehearing pursuant to HB 1971.
 - i. Rule 14.1 – Amends subsection (a) to provide notice of allowed 20 cent maximum rate; Adds subsection (b) to provide notice of automatic annual increase; Adds subsection (c) to specify how revenue from increased fees may be spent.
3. Adjourn


These public hearings are available to all persons regardless of disability. If you require special assistance to attend or participate in the hearings, please contact the Panola County GCD at (903) 690-0143 at least 24 hours in advance of the meeting.

Appendix A

At any time during the meeting and in compliance with the Texas Open Meetings Act, Chapter 551, Government Code, Vernon's Texas Codes, Annotated, the Panola County Groundwater Conservation District Board may meet in executive session on any of the above agenda items for consultation concerning attorney-client matters (§551.071); deliberation regarding real property (§551.072); deliberation regarding prospective gift (§551.073); personnel matters (§551.074); and deliberation regarding security devices (§551.076). Any subject discussed in executive session may be subject to action during an open meeting.



Certification

I, the undersigned authority, do hereby certify that on August 2, 2023, at or before 5:00 p.m., our office posted and filed a notice of meeting with the Panola County Clerk's Office, and also posted a copy near the front door of the Panola County GCD office in a place convenient and readily accessible to the general public all times and that it will remain so posted continuously for at least 20 days preceding the scheduled time of said meeting in accordance with Texas Government Code, Chapter 551.


Teresa Griffin, General Manager
Panola County Groundwater Conservation District

WITNESS THE HAND AND SEAL OF THE UNDERSIGNED CLERK ON THIS THE
2nd DAY OF AUGUST, 2023 AT 11:50 O'CLOCK PM P.M.




BOBBIE DAVIS COUNTY CLERK
PANOLA COUNTY, TEXAS
BY  DEPUTY

Appendix A

Panola County Groundwater Conservation District Board of Directors Regular Meeting Minutes August 22, 2023

A regular meeting of the Panola County Groundwater Conservation District Board of Directors was held on Tuesday, August 22, 2023, at 5:34 P.M. immediately following the Public Hearing in the District Conference Room at 419 W. Sabine Street, Carthage, Texas 75633. The following were in attendance:

Board Members:

Precinct #1 Mike Pennington
Danny Reed

Precinct #2 John Burgess
Todd Malone

Precinct #3: Mike Roquemore

Precinct #4: Corey Turner
Charles Foster

At Large: Charles Worley

District Staff: Teresa Griffin, General Manager; Ashley Castleberry, Office Manager, David Waldrop, Field Technician/Inspector, Jeremy Green, Field Technician

Absent: Jody Harris, Precinct #3

1. The regular board meeting was called to order by Mike Pennington, Board President at 5:34 P.M.
2. Corey Turner conducted the invocation.
3. There was no public comment at the August 22, 2023, Regular Board Meeting.
4. After reviewing the July 25, 2023, Public Hearing Meeting Minutes, Mike Roquemore moved, and Charles Foster seconded the motion to approve the minutes. The motion passed unanimously.
5. After reviewing the July 25, 2023, Regular Board Meeting Minutes, Charles Foster moved, and John Burgess seconded the motion to approve the minutes. The motion passed unanimously.
6. After reviewing the August 1, 2023 Special Board Meeting Minutes, Danny Reed made a motion and Charles Worley seconded the motion to approve the minutes. The motion passed unanimously.
7. The General Manager reviewed the 2024 Budget. Danny Reed moved, and Charles Forster seconded the motion to approve the 2024 Budget. The motion passed unanimously.

Appendix A

8. After reviewing the proposed 2023 Tax Rate of 0.007165. Todd Malone moved to approve the 2023 Tax Rate by Resolution 2023-3, and Charles Worley seconded the motion. The motion was carried unanimously.
9. The Petition to Adopt or Modify a District Rule Form was reviewed. Charles Foster moved to approve the Petition to Modify the District Rule Form, and Todd Malone seconded the motion. The motion was carried unanimously.
10. The General Manager gave routine office updates. There was no action taken.
11. District staff provided updates on monitor well, rain gauges, and other District field work. The monthly monitor deep well readings showed a water level increase of .47 feet in the last month. The shallow monitor well water levels showed a decrease of -0.88 feet in the last month. Panola County's recorded rainfall average for July was 0.68 inches. The historical precipitation average for July is 2.89 inches. The cumulative precipitation total for 2023 is 29.67 inches. As of July 19, 2023, Panola County is abnormally dry status according to the U.S. Drought Monitor for Texas. In the last month, there have been no significant drawdowns near frac ponds, and water levels have increased in other areas.
12. The Quarterly Investment Report and District expenditures from July 22, 2023- August 18, 2023, were reviewed and confirmed. Danny Reed motioned to approve the Quarterly Investment Report and District expenditures. Corey Turner seconded, and the motion passed unanimously.
13. The Board did not enter into Executive Session at the August 22, 2023, meeting.
14. Since the board did not enter into Executive Session no action was taken.
15. Next meeting date was set for September 26, 2023 at 5:30 P.M
16. With no further business, Charles Foster moved, and John Burgess seconded the motion to adjourn the meeting. The motion passed unanimously of those present, and the meeting was adjourned at 6:05 P.M.

Approved this 26th day of September 2023.



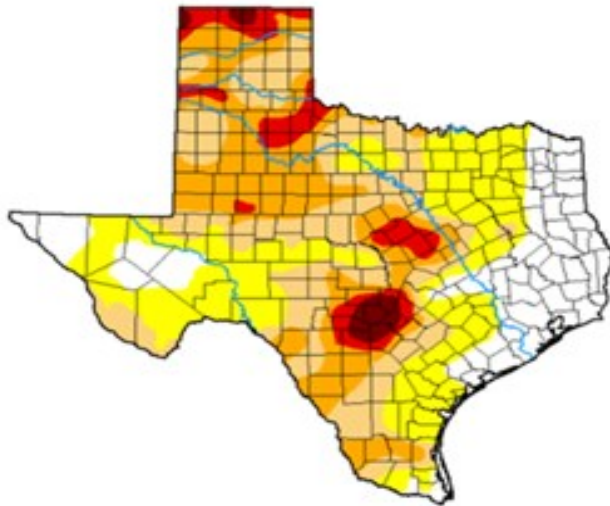
Director



Director

Appendix B

U.S. Drought Monitor Texas



January 31, 2023
(Released Thursday, Feb. 2, 2023)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	10.54	80.45	53.35	28.62	7.89	1.80
Last Week (1-24-2023)	21.06	78.94	54.68	29.79	7.70	1.80
3 Months Ago (10-01-2022)	8.10	91.90	68.56	40.13	13.43	1.73
Start of Calendar Year (1-01-2023)	28.84	71.16	49.90	25.60	7.41	1.00
Start of Water Year (10-27-2022)	14.96	85.04	61.36	31.61	8.82	1.06
One Year Ago (01-01-2022)	7.04	92.95	83.79	69.20	31.56	0.00

Intensity

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

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

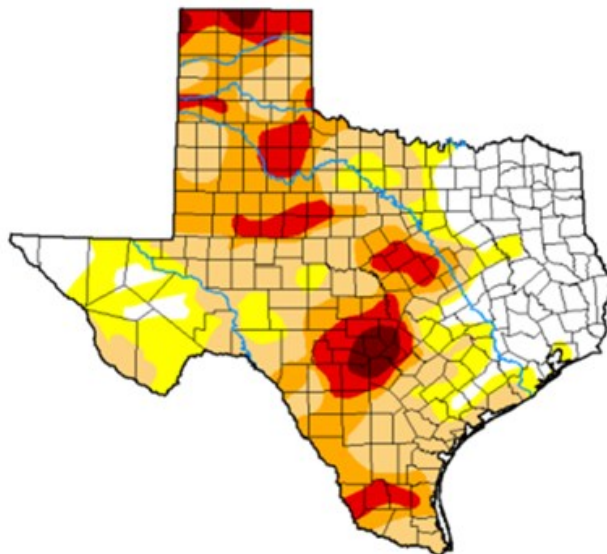
Author

Rocky Bliotta
NCEI/NOAA



droughtmonitor.unl.edu

U.S. Drought Monitor Texas



February 28, 2023
(Released Thursday, Mar. 2, 2023)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	21.85	78.15	62.21	32.63	12.27	1.84
Last Week (02-21-2023)	22.76	77.24	58.44	31.15	9.70	1.84
3 Months Ago (11-29-2022)	25.86	74.14	51.97	29.26	9.23	1.39
Start of Calendar Year (1-01-2023)	28.84	71.16	49.90	25.60	7.41	1.00
Start of Water Year (10-27-2022)	14.96	85.04	61.36	31.61	8.82	1.06
One Year Ago (02-01-2022)	6.66	93.34	80.71	56.71	24.47	0.00

Intensity

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

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author

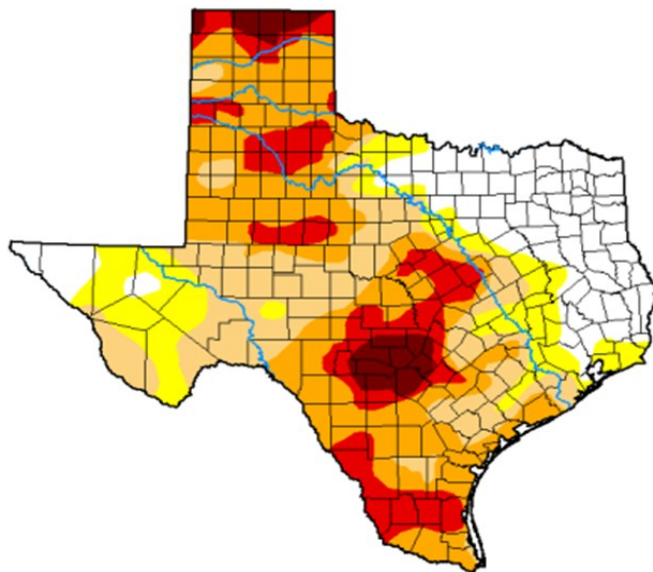
Richard Heim
NCEI/NOAA



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Appendix B

U.S. Drought Monitor Texas



March 28, 2023
(Released Thursday, Mar. 30, 2023)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	19.12	80.88	67.24	46.39	17.33	3.78
Last Week 02-21-2023	21.63	78.37	64.18	43.53	14.21	3.15
3 Months Ago 12-27-2022	27.57	72.43	48.59	25.88	7.13	1.24
Start of Calendar Year 01-03-2023	28.84	71.16	49.90	26.60	7.41	1.60
Start of Water Year 09-27-2022	14.96	85.04	61.36	31.61	8.82	1.06
One Year Ago 03-29-2022	4.90	95.10	88.22	70.79	42.10	7.03

Intensity:

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

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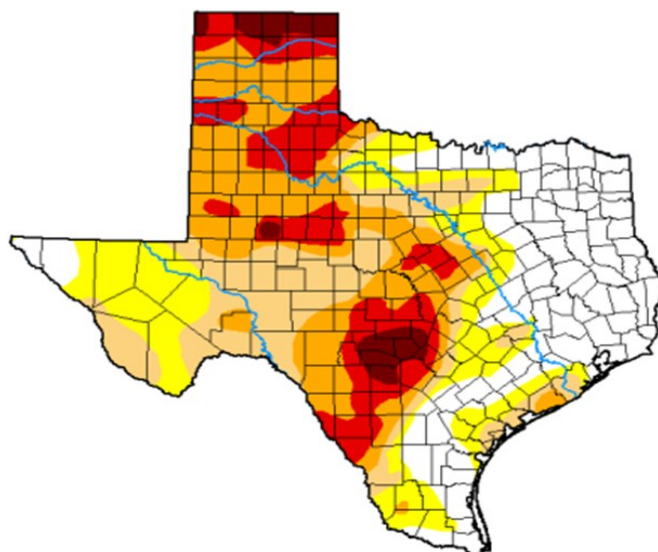
Author:

Curtis Riganti
National Drought Mitigation Center



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U.S. Drought Monitor Texas



April 25, 2023
(Released Thursday, Apr. 27, 2023)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	26.78	73.22	55.32	38.21	16.58	3.50
Last Week 04-18-2023	22.37	77.63	58.15	38.98	17.67	4.14
3 Months Ago 01-24-2023	21.06	78.94	54.68	29.79	7.70	1.80
Start of Calendar Year 01-03-2023	28.84	71.16	49.90	26.60	7.41	1.60
Start of Water Year 09-27-2022	14.96	85.04	61.36	31.61	8.82	1.06
One Year Ago 04-26-2022	6.21	93.79	82.11	70.28	50.25	19.62

Intensity:

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

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Author:

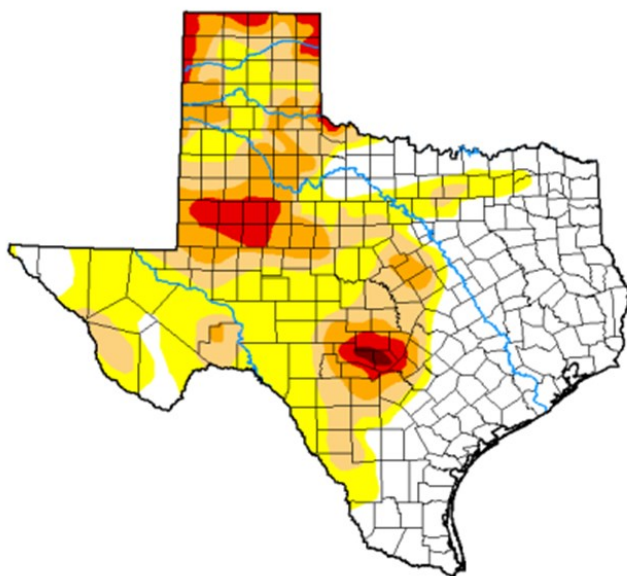
Richard Tinker
CPC/NOAA/NWS/NCEP



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Appendix B

U.S. Drought Monitor Texas



May 30, 2023

(Released Thursday, Jun. 1, 2023)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	39.95	60.05	33.52	16.16	4.71	0.29
Last Week 05-23-2023	39.03	60.97	42.30	21.48	7.79	0.51
3 Months Ago 02-28-2023	21.85	78.15	62.21	32.63	12.27	1.84
Start of Calendar Year 01-03-2023	28.84	71.16	49.90	26.60	7.41	1.60
Start of Water Year 09-27-2022	14.96	85.04	61.36	31.61	8.82	1.06
One Year Ago 05-31-2022	14.11	85.89	78.44	66.35	44.07	17.91

Intensity

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

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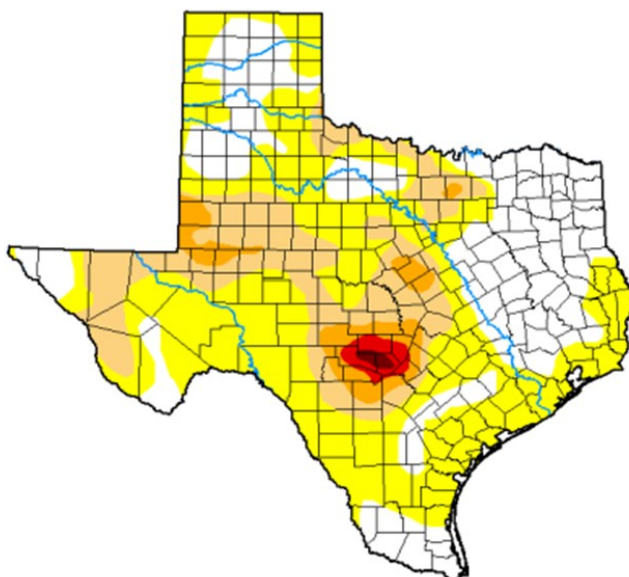
Author

Richard Heim
NCEI/NOAA



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U.S. Drought Monitor Texas



June 27, 2023

(Released Thursday, Jun. 29, 2023)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	30.71	69.29	24.38	6.05	1.37	0.29
Last Week 06-20-2023	41.61	58.39	22.81	6.31	1.37	0.29
3 Months Ago 03-28-2023	19.12	80.88	67.24	46.39	17.33	3.78
Start of Calendar Year 01-03-2023	28.84	71.16	49.90	26.60	7.41	1.60
Start of Water Year 09-27-2022	14.96	85.04	61.36	31.61	8.82	1.06
One Year Ago 06-28-2022	3.71	96.29	86.39	64.99	43.79	15.82

Intensity

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

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Author

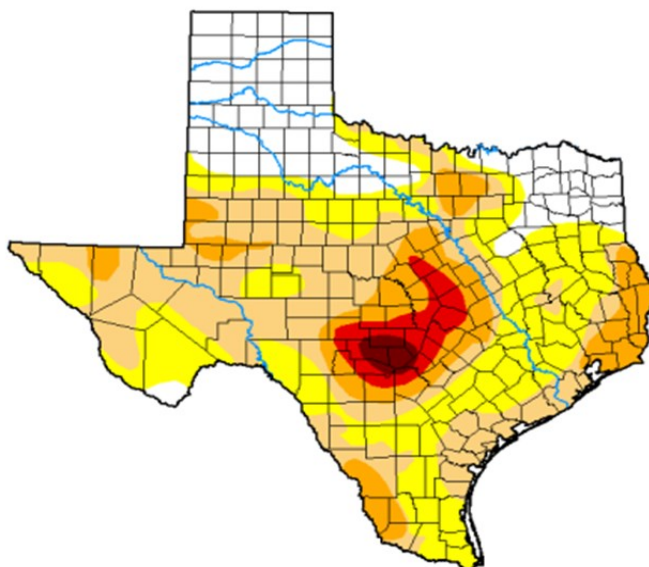
Curtis Riganti
National Drought Mitigation Center



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Appendix B

U.S. Drought Monitor Texas



July 25, 2023
(Released Thursday, Jul. 27, 2023)
Valid 8 a.m. EDT

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	21.67	78.33	48.61	18.01	4.81	1.06
Last Week 07-18-2023	24.65	75.35	43.06	11.71	4.49	1.06
3 Months Ago 04-25-2023	26.78	73.22	55.32	38.21	16.58	3.50
Start of Calendar Year 01-03-2023	28.84	71.16	49.90	26.60	7.41	1.60
Start of Water Year 09-27-2022	14.96	85.04	61.36	31.61	8.82	1.06
One Year Ago 07-26-2022	0.82	99.18	97.40	85.15	60.06	18.80

Intensity:
 None (White)
 D0 Abnormally Dry (Yellow)
 D1 Moderate Drought (Light Orange)
 D2 Severe Drought (Orange)
 D3 Extreme Drought (Red)
 D4 Exceptional Drought (Dark Red)

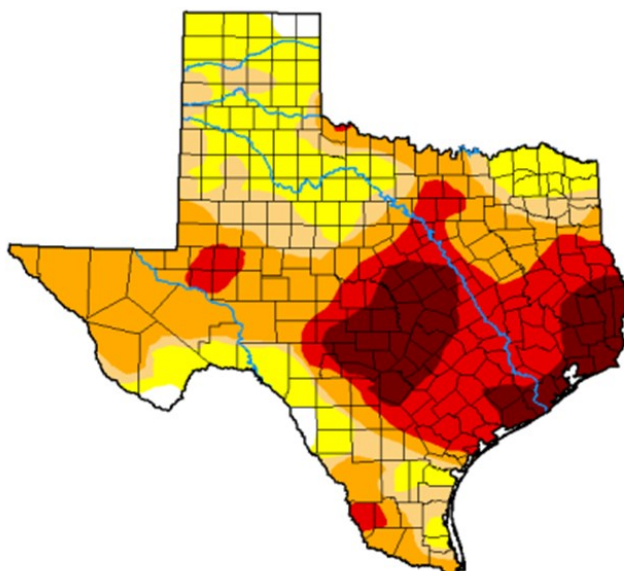
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:
Brian Fuchs
National Drought Mitigation Center



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U.S. Drought Monitor Texas



August 29, 2023
(Released Thursday, Aug. 31, 2023)
Valid 8 a.m. EDT

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	1.55	98.45	75.83	61.41	32.33	12.64
Last Week 08-22-2023	4.13	95.87	78.71	62.10	33.99	11.87
3 Months Ago 05-30-2023	39.95	60.05	33.52	16.16	4.71	0.29
Start of Calendar Year 01-03-2023	28.84	71.16	49.90	26.60	7.41	1.60
Start of Water Year 09-27-2022	14.96	85.04	61.36	31.61	8.82	1.06
One Year Ago 08-30-2022	9.53	90.47	76.03	52.48	26.38	5.28

Intensity:
 None (White)
 D0 Abnormally Dry (Yellow)
 D1 Moderate Drought (Light Orange)
 D2 Severe Drought (Orange)
 D3 Extreme Drought (Red)
 D4 Exceptional Drought (Dark Red)

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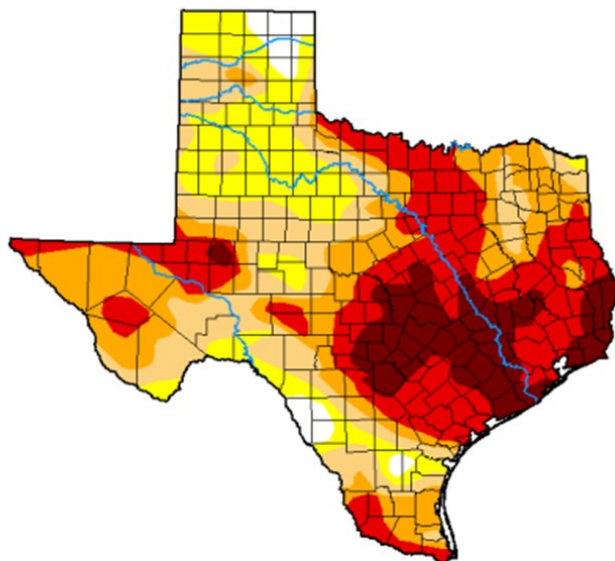
Author:
David Simera
Western Regional Climate Center



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Appendix B

U.S. Drought Monitor Texas



September 26, 2023

(Released Thursday, Sep. 28, 2023)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	3.03	96.97	80.64	59.66	38.06	12.68
Last Week 09-19-2023	3.03	96.97	81.91	61.33	40.76	16.02
3 Months Ago 06-27-2023	30.71	69.29	24.38	6.05	1.37	0.29
Start of Calendar Year 01-02-2023	28.84	71.16	49.90	26.60	7.41	1.60
Start of Water Year 09-27-2022	14.96	85.04	61.36	31.61	8.82	1.06
One Year Ago 09-27-2022	14.96	85.04	61.36	31.61	8.82	1.06

Intensity

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

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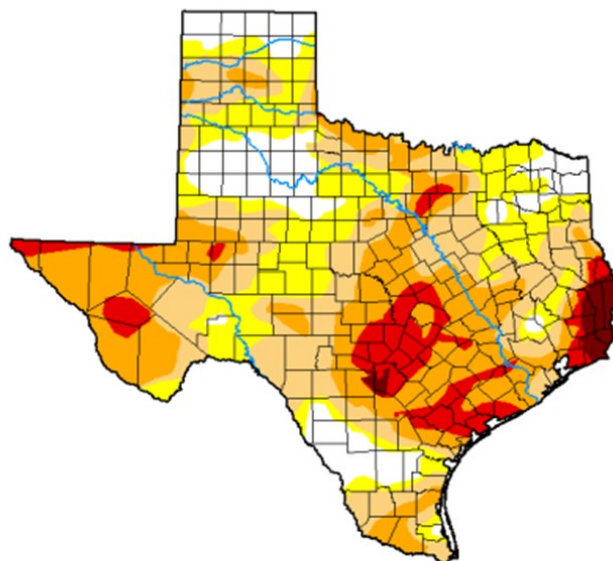
Author

Richard Heim
NCEI/NOAA



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U.S. Drought Monitor Texas



October 31, 2023

(Released Thursday, Nov. 2, 2023)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	13.61	86.39	65.37	38.54	10.94	1.78
Last Week 10-24-2023	10.99	89.01	75.21	52.70	25.15	6.80
3 Months Ago 08-01-2023	21.20	78.80	52.09	19.26	4.81	1.06
Start of Calendar Year 01-02-2023	28.84	71.16	49.90	26.60	7.41	1.60
Start of Water Year 09-26-2022	3.03	96.97	80.64	59.66	38.06	12.68
One Year Ago 11-01-2022	8.10	91.90	69.56	40.13	13.43	1.73

Intensity

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

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Author

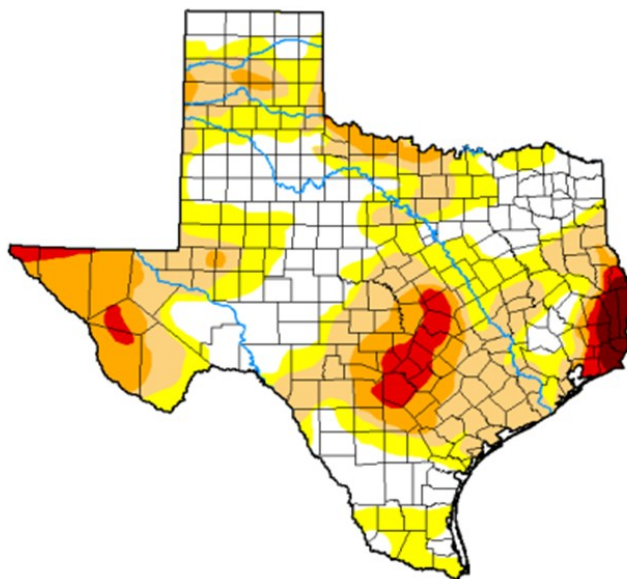
Brian Fuchs
National Drought Mitigation Center



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Appendix B

U.S. Drought Monitor Texas



November 28, 2023

(Released Thursday, Nov. 30, 2023)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	31.32	68.68	42.84	18.38	5.94	1.51
Last Week 11-21-2023	25.27	74.73	44.46	20.73	5.71	1.51
3 Months Ago 08-29-2023	1.55	98.45	75.83	61.41	32.33	12.64
Start of Calendar Year 01-03-2023	28.84	71.16	49.90	26.60	7.41	1.60
Start of Water Year 09-26-2022	3.03	96.97	80.64	59.66	38.06	12.68
One Year Ago 11-29-2022	25.86	74.14	51.97	29.26	9.23	1.39

Intensity:

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

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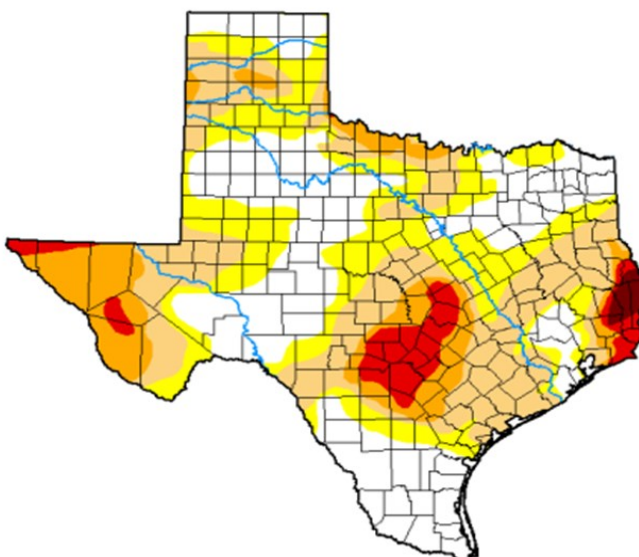
Author:

David Simerai
Western Regional Climate Center



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U.S. Drought Monitor Texas



December 12, 2023

(Released Thursday, Dec. 14, 2023)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	32.59	67.41	43.80	18.04	6.48	0.86
Last Week 12-05-2023	33.88	66.12	42.99	18.14	6.38	0.86
3 Months Ago 09-12-2023	3.04	96.96	85.67	68.27	43.59	18.56
Start of Calendar Year 01-03-2023	28.84	71.16	49.90	26.60	7.41	1.60
Start of Water Year 09-26-2022	3.03	96.97	80.64	59.66	38.06	12.68
One Year Ago 12-13-2022	24.95	75.05	52.09	26.55	7.01	1.39

Intensity:

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

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Author:

Curtis Riganti
National Drought Mitigation Center



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