

Texas Water Conditions Report

October 2022



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Texas is no stranger to drought. The seven-year drought of record in the 1950s was a turning point in Texas history that led to the formation of the Texas Water Development Board. Since then, Texas has faced numerous droughts, including the second worst and second-longest statewide drought that began in August 2010 and lasted through October 2014. Widespread drought returned to much of the state in 2022, rivaling 2011 conditions and again illustrating drought's reoccurring threat to cause significant harm to the state's economy and endanger the health and safety of people.

Water News:

The Texas Water Development Board has a new drought tab. For drought information, data, and resources visit <http://www.twdb.texas.gov/drought/index.asp>.

RAINFALL

Some rainfall [light blue and dark blue shading, Figure 1(a)] was seen across most of the state this month, with accumulations reaching 9.3 inches. Little to no rain [yellow, orange, and red shading, Figure 1(a)] was seen in areas of the High Plains, Trans Pecos, eastern Edwards Plateau, Southern, South Central, Lower Valley, southern North Central, portions of the Upper Coast, and southern East Texas.

Compared to historical data from 1991–2020, much of the state received below average rainfall [yellow and orange shading, Figure 1(b)]. Areas of the High Plains, Low Rolling Plains, Trans Pecos, western Edwards Plateau, northern North Central, northern East Texas, and southern and central Southern climate divisions received 125–200 percent of normal rainfall [light green, dark green shading, Figure 1(b)]. 200–400 percent of normal rainfall [light blue, dark blue shading, Figure 1(b)] was seen in the Trans Pecos, western Edwards Plateau, southern High Plains, southern Low Rolling Plains, and southwestern Southern climate divisions. Northwestern and eastern Trans Pecos, and southern High Plains climate divisions received 400–600 percent of normal rainfall [(light pink shading, Figure 1 (b)]. In a small area in the northwestern corner of the Trans Pecos 600-800 percent of normal rainfall [(dark pink shading, red circle, Figure 1 (c)] was seen.

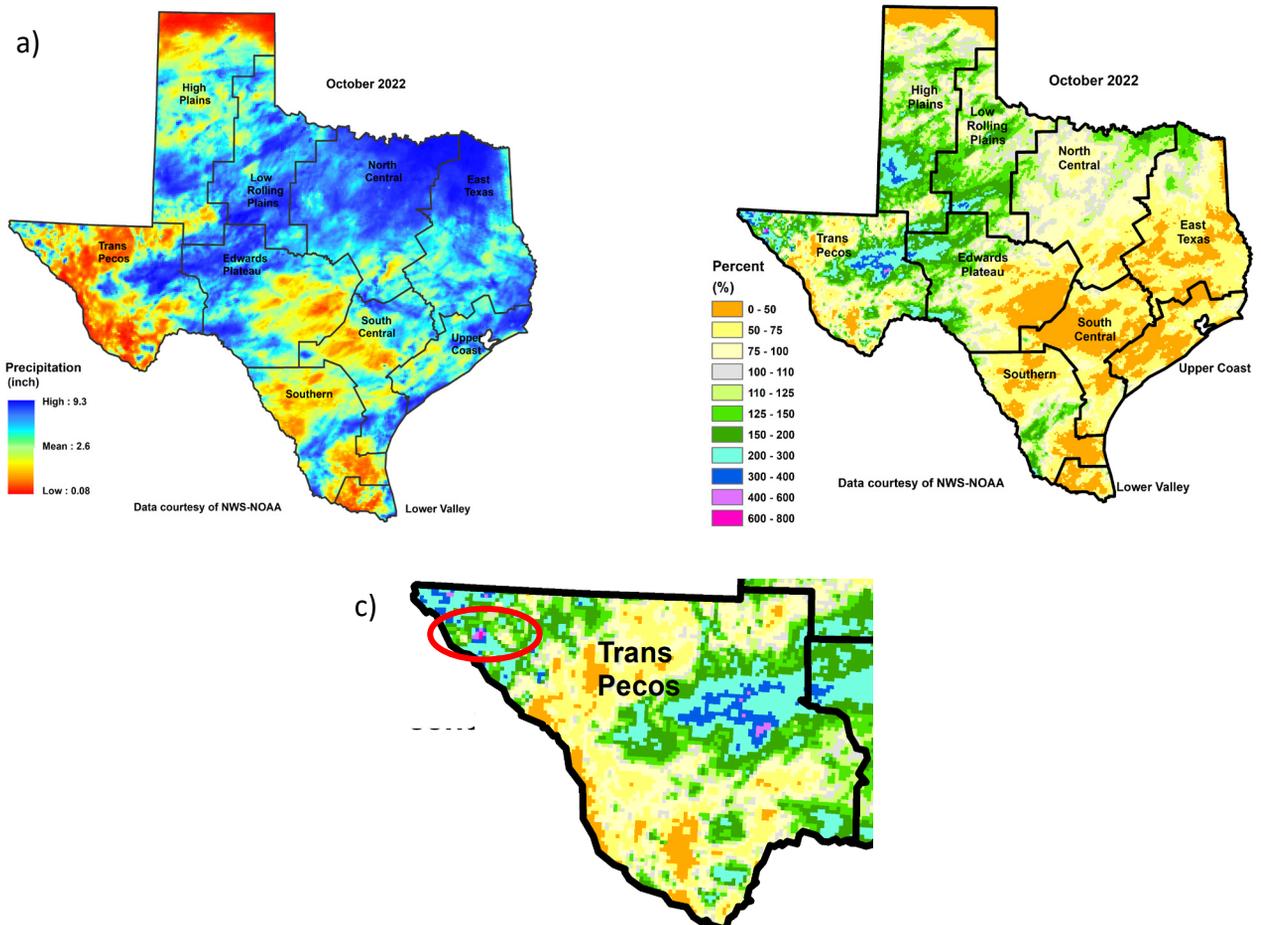


Figure 1: (a) Monthly accumulated rainfall, (b) Percent of normal rainfall, and (c) Areas of 600–800 percent of normal rainfall (dark pink shading-circled in red)

DROUGHT

On the first of November, 91.9% of the state was in the D0 (abnormally dry) through D4 (exceptional drought) categories (**Figure 2**). That is an increase of more than 5% from the end of September.

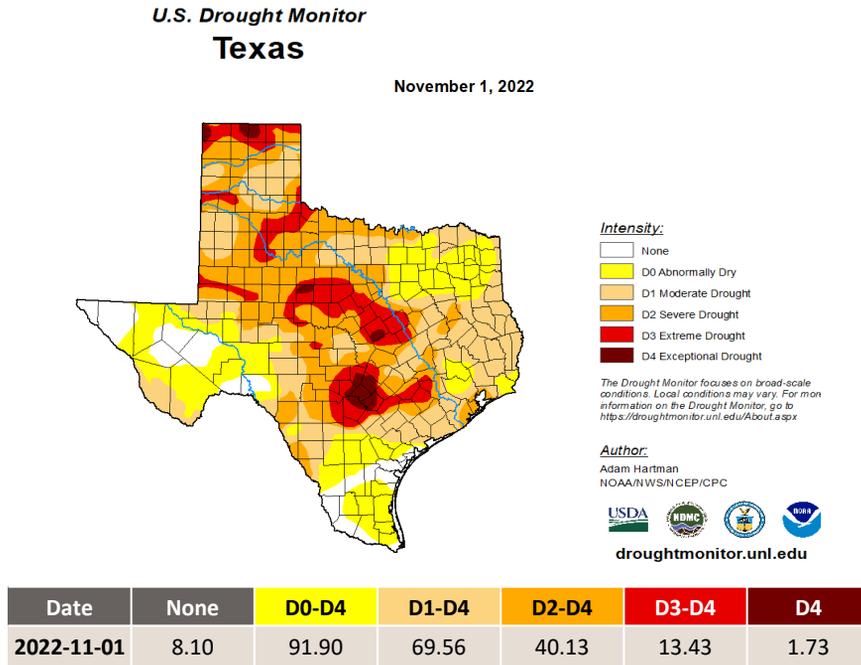


Figure 2. The percentage of drought in Texas according to the U.S. Drought Monitor map as of November 1, 2022.

RESERVOIR STORAGE

Out of 119 reservoirs in the state, five reservoirs held 100 percent conservation storage capacity (Figure 3). Additionally, 13 reservoirs were at or above 90 percent full. Ten reservoirs remained below 30 percent full: E.V. Spence (19.0 percent full), O. C. Fisher (3.3 percent full), J.B. Thomas (26.0 percent full), Falcon (14.7 percent full), Greenbelt (12.4 percent full), Mackenzie (6.3 percent full, Medina Lake (7.0 percent full), Palo Duro Reservoir (0.4 percent full), Twin Buttes (29.3 percent full), and the White River Lake (15.2 percent full). Elephant Butte Reservoir (New Mexico) was 7.1 percent full (Figure 3).

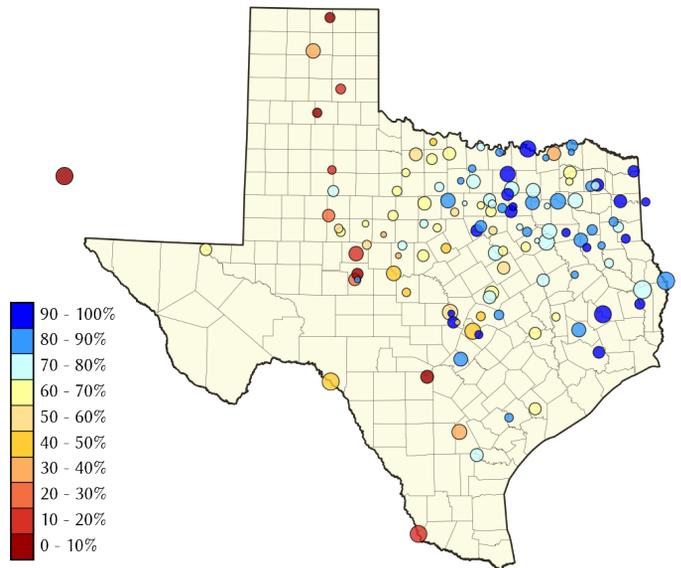
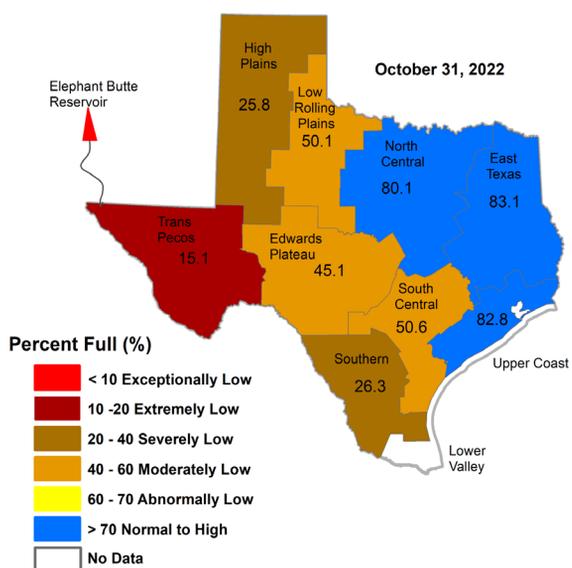


Figure 3. Reservoir conservation storage at end-October expressed as percent full (%)

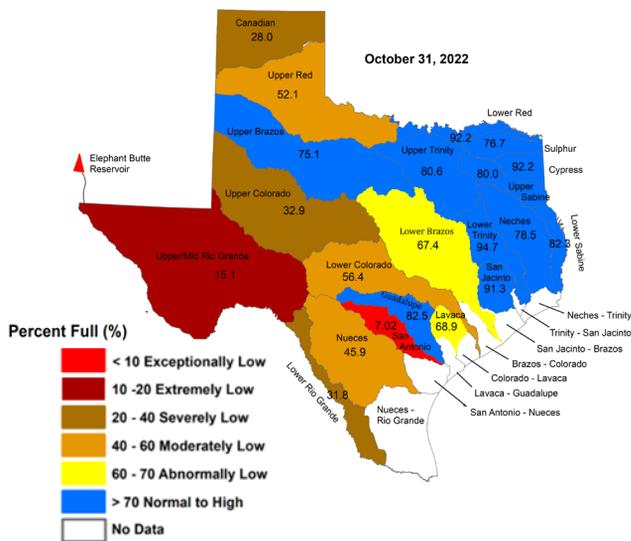
Reservoir conservation storage by climate division was at or above normal [storage ≥ 70 percent full, Figure 4(a)] for East Texas (83.1 percent full), North Central (80.1 percent full), and the Upper Coast (82.8 percent full) climate divisions. Conservation storage was moderately low (Figure 4(a)) for the Low Rolling Plains (50.1 percent full), Edwards Plateau (45.1 percent full), and South Central (50.6 percent full) climate divisions. The High Plains (25.8 percent full) and Southern (26.3 percent full) climate divisions had severely low conservation storage (Figure 4(a)). The Trans Pecos (15.1 percent full) climate division had extremely low conservation storage (Figure 4(a)).

Combined conservation storage by river basin or sub-basin was normal to high (>70 percent full, Figure 4(b)) in the Lower Red, Sulphur, Cypress, Upper and Lower Sabine, Upper and Lower Trinity, Upper Brazos, Neches, San Jacinto, and Guadalupe river basins. The Lower Brazos and Lavaca river basins had abnormally low conservation storage. The Lower Colorado, Upper Red, and Nueces river basins had moderately low conservation storage (40–60 percent full, Figure 4(b)). The Canadian, Upper Colorado, and Lower Rio Grande river basins had severely low conservation storage (20–40 percent full, Figure 4(b)). The Upper/Mid Rio Grande river basin had extremely low conservation storage (10–20 percent full, Figure 4(b)) and the San Antonio river basin had exceptionally low conservation storage (< 10 percent full, Figure 4(b)).

a) Regional Reservoir Storage Condition



b) Reservoir Storage Index* (by Basins/Subbasins)



Percent full is calculated by combined conservation storage of all reservoirs in a climate region (dead pool is excluded)

Figure 4: (a) Reservoir Storage Index* by climate division, and (b) Reservoir Storage Index* by basin/sub-basin.

*Reservoir Storage Index is defined as the percent full of conservation storage capacity.

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of lake or reservoir	Storage capacity	Storage at end-October 2022		Storage change from end-Sep 2022		Storage change from end-Oct 2021	
	(acre-feet)	(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)**	(%)
Abilene, Lake	7,900	3,015	38.2	-123	-1.6	-3,550	-44.9
Alan Henry Reservoir	96,207	73,004	75.9	-378	0.0	-16,633	-17.3
*Amistad Reservoir (Texas & Mexico)	3,275,532	1,439,463	43.9	155,072	4.7	298,575	9.1
*Amistad Reservoir (Texas)	1,840,849	851,675	46.3	47,027	2.6	-89,355	-4.9
Amon G Carter, Lake	19,266	16,637	86.4	-382	-2.0	-2,629	-13.6
Aquilla Lake	43,243	27,691	64.0	-702	-1.6	-13,963	-32.3
Arlington, Lake	40,157	34,847	86.8	557	1.4	1,371	3.4
Arrowhead, Lake	230,359	157,098	68.2	-3,037	-1.3	-47,580	-20.7
Athens, Lake	29,503	26,780	90.8	-68	0.0	-2,465	-8.4
*Austin, Lake	23,972	22,895	95.5	-62	0.0	46	0.2
B A Steinhagen Lake	69,186	62,057	89.7	-3,109	-4.5	-1,641	-2.4
Bardwell Lake	46,122	38,747	84.0	-383	0.0	-6,096	-13.2
Belton Lake	435,225	292,315	67.2	-24,169	-5.6	-126,456	-29.1
Benbrook Lake	85,648	59,699	69.7	-857	-1.0	-472	0.0
Bob Sandlin, Lake	192,417	177,760	92.4	-943	0.0	-943	0.0
Bois d'Arc Lake	367,609	139,840	38.0	5,391	1.5	no data	
Bonham, Lake	11,027	9,827	89.1	1,194	10.8	1,278	11.6
Brady Creek Reservoir	28,808	12,461	43.3	-216	0.0	-4,665	-16.2
Bridgeport, Lake	372,183	276,632	74.3	-9,024	-2.4	-68,263	-18.3
*Brownwood, Lake	130,868	82,110	62.7	-2,476	-1.9	-43,655	-33.4
Buchanan, Lake	822,207	518,252	63.0	-15,328	-1.9	-246,835	-30.0
Caddo, Lake	29,898	29,898	100.0	0	0.0	0	0.0
Canyon Lake	378,781	312,283	82.4	-9,495	-2.5	-66,087	-17.4
Cedar Creek Reservoir in Trinity	644,686	499,121	77.4	-20,573	-3.2	-101,787	-15.8
Champion Creek Reservoir	41,580	25,440	61.2	1,181	2.8	-4,413	-10.6
Cherokee, Lake	40,094	33,305	83.1	-860	-2.1	-3,029	-7.6
Choke Canyon Reservoir	662,820	219,745	33.2	-4,921	0.0	-82,427	-12.4
*Cisco, Lake	29,003	21,051	72.6	-261	0.0	-4,979	-17.2
Coleman, Lake	38,075	28,393	74.6	-540	-1.4	-8,459	-22.2
Colorado City, Lake	31,040	25,978	83.7	-1,545	-5.0	-5,062	-16.3
*Coletto Creek Reservoir	30,758	17,642	57.4	264	0.9	-5,986	-19.5
Conroe, Lake	417,577	370,452	88.7	-8,418	-2.0	-20,187	-4.8
Corpus Christi, Lake	256,062	202,364	79.0	-17,058	-6.7	-14,087	-5.5
Crook, Lake	9,195	7,808	84.9	389	4.2	-141	-1.5
Cypress Springs, Lake	66,756	59,232	88.7	62	0.1	-3,257	-4.9
E. V. Spence Reservoir	517,272	98,534	19.0	-645	0.0	-36,200	-7.0
Eagle Mountain Lake	179,880	139,296	77.4	-2,051	-1.1	-30,077	-16.7
Elephant Butte Reservoir (Texas)	852,491	60,326	7.1	13,160	1.5	10,023	1.2
Elephant Butte Reservoir (Total Storage)	1,985,900	139,644	7.0	30,464	1.5	23,202	1.2
*Falcon Reservoir (Texas & Mexico)	2,646,817	478,247	18.1	-21,760	0.0	77,026	2.9
*Falcon Reservoir (Texas)	1,551,007	228,773	14.7	-20,390	-1.3	-82,276	-5.3
Fork Reservoir, Lake	605,061	441,523	73.0	-9,109	-1.5	-103,812	-17.2
Fort Phantom Hill, Lake	70,030	47,913	68.4	691	1.0	-20,136	-28.8
Georgetown, Lake	36,823	18,255	49.6	-1,026	-2.8	-7,272	-19.7
Gibbons Creek Reservoir	25,721	17,926	69.7	-543	-2.1	-2,492	-9.7
Graham, Lake	45,288	36,158	79.8	-755	-1.7	-4,341	-9.6
Granbury, Lake	132,949	114,898	86.4	-293	0.0	-16,101	-12.1

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of lake or reservoir	Storage capacity	Storage at end-October 2022		Storage change from end-Sep 2022		Storage change from end-Oct 2021	
	(acre-feet)	(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)**	(%)
<i>Continued</i>							
Granger Lake	51,822	43,393	83.7	-518	0.0	-8,429	-16.3
Grapevine Lake	163,064	163,064	100.0	3,526	2.2	7,806	4.8
Greenbelt Lake	59,968	7,444	12.4	-196	0.0	-2,944	-4.9
*Halbert, Lake	6,033	4,666	77.3	134	2.2	-402	-6.7
Hords Creek Lake	8,109	2,514	31.0	-62	0.0	-1,133	-14.0
Houston County Lake	17,113	14,246	83.2	-215	-1.3	-2,545	-14.9
Houston, Lake	132,318	131,861	99.7	3,295	2.5	-457	0.0
Hubbard Creek Reservoir	313,298	217,614	69.5	-4,340	-1.4	-70,915	-22.6
Hubert H Moss Lake	24,058	21,343	88.7	-163	0.0	-1,489	-6.2
Inks, Lake	13,729	13,060	95.1	55	0.4	8	0.1
J. B. Thomas, Lake	199,931	51,969	26.0	-2,026	-1.0	-33,152	-16.6
Jacksonville, Lake	25,670	23,113	90.0	-274	-1.1	-1,901	-7.4
Jim Chapman Lake (Cooper)	260,332	169,448	65.1	-7,561	-2.9	-54,028	-20.8
Joe Pool Lake	175,800	167,412	95.2	2,376	1.4	-4,550	-2.6
Kemp, Lake	245,307	130,224	53.1	-4,819	-2.0	-106,141	-43.3
Kickapoo, Lake	86,345	51,942	60.2	-651	0.0	-16,341	-18.9
Lavon Lake	406,388	292,545	72.0	-6,094	-1.5	-41,810	-10.3
Leon, Lake	27,762	17,024	61.3	-534	-1.9	-8,390	-30.2
Lewisville Lake	563,228	446,336	79.2	-6,002	-1.1	-80,259	-14.2
Limestone, Lake	203,780	143,210	70.3	-7,508	-3.7	-42,223	-20.7
*Livingston, Lake	1,741,867	1,652,055	94.8	-46,421	-2.7	-57,883	-3.3
*Lost Creek Reservoir	11,950	10,605	88.7	-120	-1.0	-1,160	-9.7
Lyndon B Johnson, Lake	112,778	111,365	98.7	705	0.6	705	0.6
Mackenzie Reservoir	46,450	2,949	6.3	-40	0.0	-737	-1.6
Marble Falls, Lake	7,597	4,413	58.1	-2,748	-36.2	-2,706	-35.6
Martin, Lake	75,726	58,002	76.6	-2,934	-3.9	-7,905	-10.4
Medina Lake	254,823	17,900	7.0	-1,235	0.0	-54,341	-21.3
Meredith, Lake	500,000	157,278	31.5	-2,843	0.0	-21,748	-4.3
Millers Creek Reservoir	26,768	17,077	63.8	-512	-1.9	-7,225	-27.0
*Mineral Wells, Lake	5,273	4,194	79.5	-140	-2.7	-1,074	-20.4
Monticello, Lake	34,740	26,737	77.0	-177	0.0	-243	0.0
Mountain Creek, Lake	22,850	22,850	100.0	0	0.0	0	0.0
Murvaul, Lake	38,285	36,045	94.1	-1,113	-2.9	-168	0.0
Nacogdoches, Lake	39,522	31,450	79.6	-987	-2.5	-3,846	-9.7
Nasworthy	9,615	8,196	85.2	-135	-1.4	123	1.3
Navarro Mills Lake	49,827	34,821	69.9	-1,525	-3.1	-11,351	-22.8
New Terrell City Lake	8,583	6,814	79.4	0	0.0	-939	-10.9
Nocona, Lake (Farmers Crk)	21,444	16,363	76.3	-563	-2.6	-3,369	-15.7
North Fork Buffalo Creek Reservoir	15,400	7,078	46.0	-391	-2.5	-6,417	-41.7
O' the Pines, Lake	241,363	227,816	94.4	-2,917	-1.2	-11,611	-4.8
O. C. Fisher Lake	115,742	3,790	3.3	-168	0.0	-3,683	-3.2
*O. H. Ivie Reservoir	554,340	223,208	40.3	-7,463	-1.3	-88,543	-16.0
Oak Creek Reservoir	39,210	19,640	50.1	-406	-1.0	-8,546	-21.8

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	(acre-feet)	(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)**	(%)
<i>Continued</i>							
Palestine, Lake	367,303	311,693	84.9	-4,397	-1.2	-36,512	-9.9
Palo Duro Reservoir	61,066	274	0.4	-1	0.0	-290	0.0
Palo Pinto, Lake	26,766	15,483	57.8	-1,213	-4.5	-11,087	-41.4
Pat Cleburne, Lake	26,008	13,620	52.4	-528	-2.0	-8,240	-31.7
*Pat Mayse Lake	113,683	100,745	88.6	159	0.1	-5,316	-4.7
Possum Kingdom Lake	538,139	444,687	82.6	-24,601	-4.6	-82,964	-15.4
Proctor Lake	54,762	24,257	44.3	-1,272	-2.3	-25,444	-46.5
Ray Hubbard, Lake	439,559	389,963	88.7	3,936	0.9	-20,063	-4.6
Ray Roberts, Lake	788,167	725,118	92.0	-6,765	0.0	-40,289	-5.1
Red Bluff Reservoir	151,110	92,193	61.0	-7,027	-4.7	-18,316	-12.1
Richland-Chambers Reservoir	1,087,839	867,967	79.8	-21,176	-1.9	-146,597	-13.5
Sam Rayburn Reservoir	2,857,077	2,203,956	77.1	-105,830	-3.7	-357,689	-12.5
Somerville Lake	150,293	94,789	63.1	-1,791	-1.2	-55,391	-36.9
Squaw Creek, Lake	151,250	151,250	100.0	0	0.0	0	0.0
Stamford, Lake	51,570	33,580	65.1	-526	-1.0	-13,688	-26.5
Stillhouse Hollow Lake	227,771	165,824	72.8	-6,225	-2.7	-56,069	-24.6
Striker, Lake	16,934	14,267	84.3	-239	-1.4	-2,055	-12.1
Sweetwater, Lake	12,267	7,589	61.9	-29	0.0	-2,448	-20.0
*Sulphur Springs, Lake	17,747	12,369	69.7	420	2.4	1,150	6.5
Tawakoni, Lake	871,685	736,295	84.5	-4,743	0.0	-82,502	-9.5
Texana, Lake	158,975	109,583	68.9	-6,753	-4.2	-46,330	-29.1
Texoma, Lake (Texas & Oklahoma)	2,487,601	2,313,238	93.0	-11,695	0.0	-54,729	-2.2
Texoma, Lake (Texas)	1,243,801	1,156,618	93.0	-5,848	0.0	-27,365	-2.2
Toledo Bend Reservoir (Texas & Louisiana)	4,472,900	3,687,387	82.4	-70,901	-1.6	-101,556	-2.3
Toledo Bend Reservoir (Texas)	2,236,450	1,841,644	82.3	-35,450	-1.6	-50,778	-2.3
Travis, Lake	1,098,044	506,989	46.2	-28,417	-2.6	-284,245	-25.9
Twin Buttes Reservoir	182,454	53,414	29.3	-2,291	-1.3	-44,012	-24.1
Tyler, Lake	72,073	58,587	81.3	-1,795	-2.5	-9,832	-13.6
Waco, Lake	189,418	108,048	57.0	-5,445	-2.9	-69,272	-36.6
Waxahachie, Lake	10,780	8,236	76.4	89	0.8	-871	-8.1
Weatherford, Lake	17,812	11,088	62.3	443	2.5	-4,277	-24.0
White River Lake	29,880	4,529	15.2	-79	0.0	-1,867	-6.2
Whitney, Lake	553,344	400,436	72.4	-10,037	-1.8	-109,919	-19.9
Worth, Lake	24,419	17,485	71.6	1,164	4.8	-3,467	-14.2
Wright Patman Lake	135,069	135,069	100.0	-96,427	-71.4	0	0.0
STATEWIDE TOTAL							
STATEWIDE TOTAL	32,507,326	21,570,375	66.4	-565,665	-1.7	-3,663,098	-11.3

*Total volume below elevation of conservation pool top is used as conservation storage capacity, because the dead pool storage is unknown.

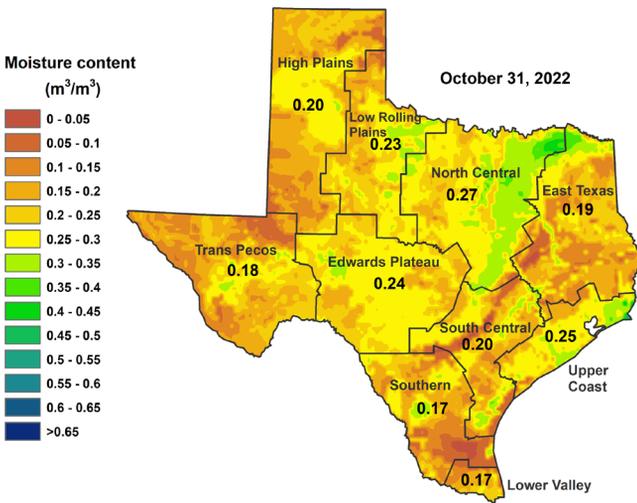
**Monthly and yearly changes do not include reservoirs that did not have data in the last month or last year, respectively.

SOIL MOISTURE

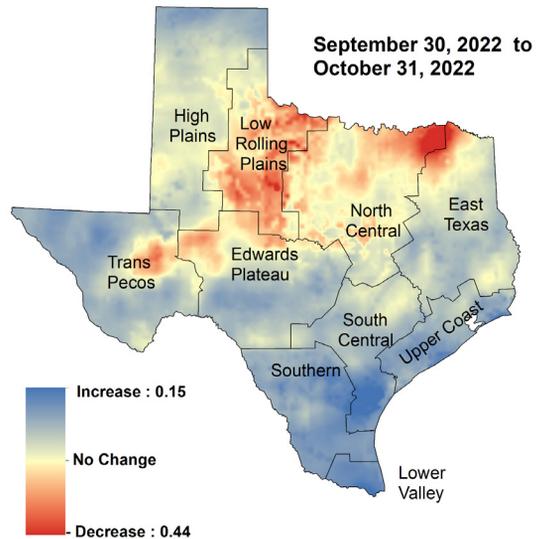
At the end of October 2022, root zone soil moisture was below average [< 0.3 cubic meters of water per bulk cubic meter soil (m^3/m^3), Figure 5(a)] across most of the state. Average soil moisture [0.3 cubic meters of water per bulk cubic meter soil (m^3/m^3), Figure 5(a)] was seen in the eastern Low Rolling Plains, eastern North Central, northern East Texas, northwestern Edwards Plateau, central Southern, northeastern and southern South Central, and the Upper Coast climate divisions. Low soil moisture [< 0.15 cubic meters of water per bulk cubic meter soil (m^3/m^3), Figure 5(a)] was seen across all climate divisions, particularly in the northern and southern High Plains, northeastern Trans Pecos, northern Low Rolling Plains, Southern, South Central, Lower Valley, and East Texas climate divisions.

Compared to conditions at the end of September 2022, soil moisture content increased [blue shading in Figure 5(b)] with a maximum of $0.15 \text{ m}^3/\text{m}^3$, across the state. Soil moisture content decreased [red shading in Figure 5(b)] in areas of the High Plains, eastern Trans Pecos, northern Edwards Plateau, areas of North Central, northern East Texas, and much of the Low Rolling Plains climate divisions.

a)



b)



Data from NASA Soil Moisture Active Passive (SMAP) Level 4 - Model - Value Added Version 4
Soil moisture content is shown as volume of water per unit volume of bulk soil. Root zone: 0 to 1 meter depth.

Figure 5: (a) Root zone soil moisture conditions in October 2022 and (b) the difference in root zone soil moisture between end-September 2022 and end-October 2022

STREAMFLOW CONDITIONS

Normal streamflow (25–75th percentile, green shading, Figure 6) was recorded in northern, western, and portions of central and eastern Texas this month. Above normal (76–90th percentile, light blue shading, Figure 6) streamflow was seen in the Upper Brazos (Running Water Draw watershed) river basin.

Below normal streamflow (10–24th percentile, orange shading, Figure 6) was recorded in the Canadian, Upper and Lower Red, Cypress, Lower Sabine, Neches, Upper and Lower Trinity, Upper and Lower Brazos, Upper and Lower Colorado, Brazos-Colorado, Nueces, Nueces-Rio Grande, Lavaca-Guadalupe, Upper San Antonio, San Antonio-Nueces, and Pecos (Independence watershed) river basins.

Much below normal stream flow (< 10th percentile, dark red shading, Figure 6) was seen in the Canadian (Washita Headwaters watershed), Upper and Lower Red, Upper and Lower Colorado, Lower Brazos, Guadalupe, San Antonio (Lower San Antonio and Medina watersheds), Nueces (Upper and Lower Frio, and Hondo watersheds), Trinity-San Jacinto (North Galveston Bay watershed), Neches (Village watershed), Brazos-Colorado (San Bernard watershed), Colorado-Lavaca, and Lavaca river basins.

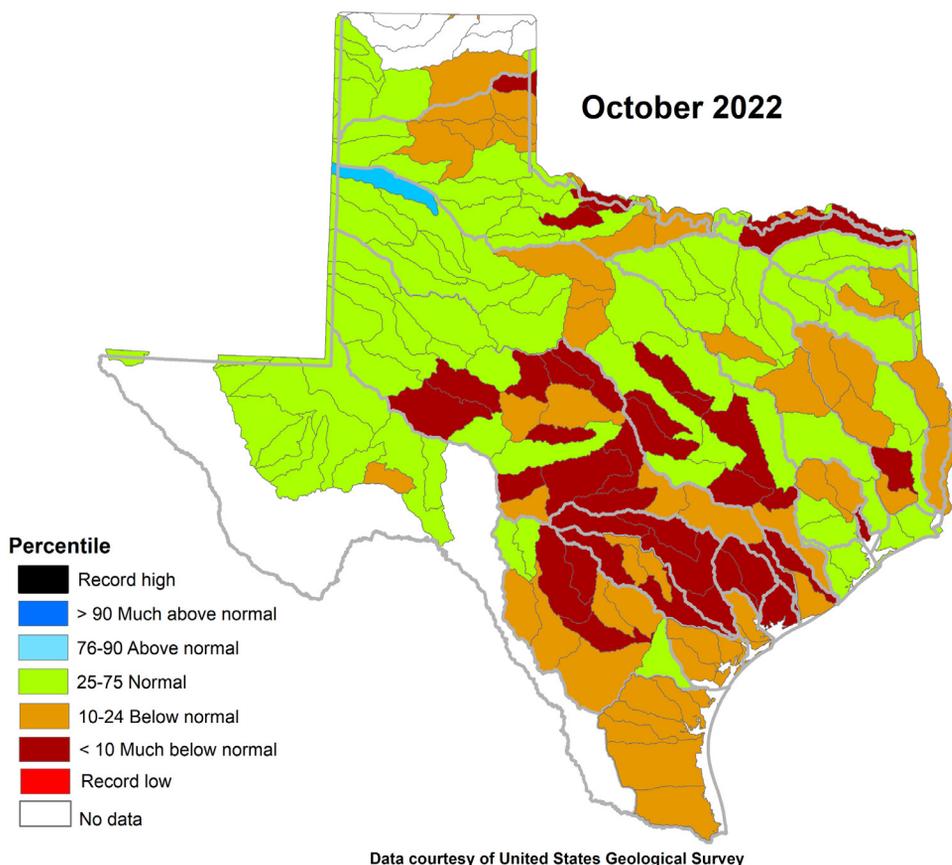
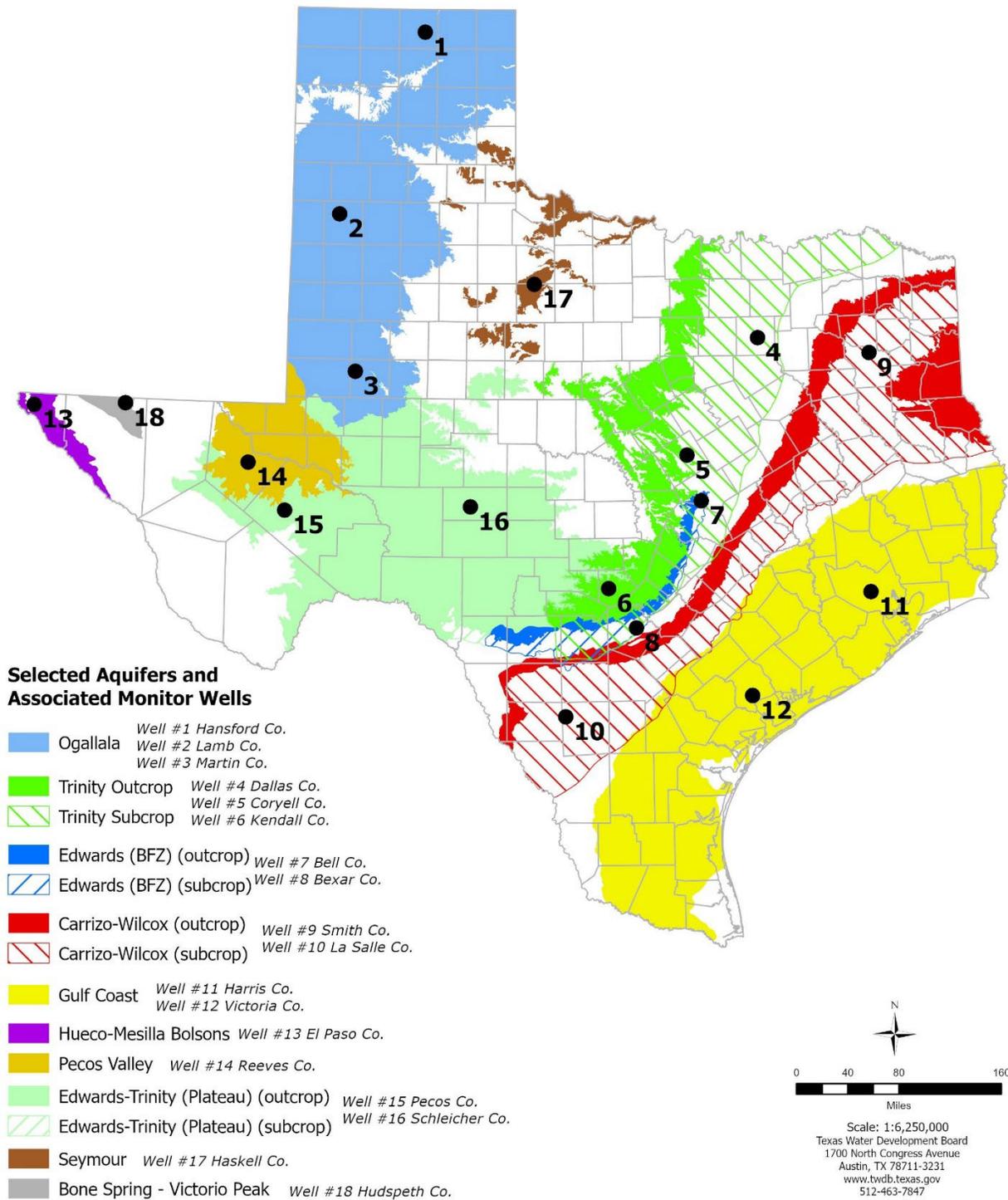


Figure 6: Runoff percentiles by the U.S. Geological Survey's Hydrologic Unit Code



OCTOBER 2022 GROUNDWATER LEVELS IN MONITORING WELLS

Water-level measurements were available for 17 key monitoring wells in the state. The recorder in one well (#15 on map) was offline during the reporting period. Water levels rose in nine monitoring wells since the beginning of October, ranging from an increase of 0.02 feet in the El Paso County Hueco-Mesilla Bolsons Aquifer well (#13 on map) to 3.40 feet in the Bexar County Edwards (Balcones Fault Zone) Aquifer well (#8 on map). Water levels declined in seven monitoring wells, ranging from a decline of -0.14 feet in the Lamb County Ogallala Aquifer well (#2 on map) to -8.97 feet in the Dallas County Trinity Aquifer well (#4 on map). The J-17 well (#8 on map) in San Antonio recorded a water level of 96.90 feet below land surface or 634.10 feet above mean sea level. Water levels are 5.90 feet below the Stage 3 critical management level for the San Antonio portion of the Edwards (Balcones Fault Zone) Aquifer. Stage 3 water restrictions have been in effect since June 13, 2022.

* Well numbers used in this publication on the aquifer map to indicate the monitoring well location (numbers 1 to 18) are different than the TWDB's seven-digit state well number.

Monitoring Well	October (depth to water, feet)	September (depth to water, feet)	Month Change	Year Change	Historical Change*	First Measured (year)
(1) Hansford 0354301	162.66	162.50	-0.16	NA	-92.54	1951
(2) Lamb 1053602	153.28	153.14	-0.14	-0.8	-125.11	1951
(3) Martin 2739903	145.81	145.58	-0.23	-1.39	-40.92	1964
(4) Dallas 3319101	512.19	503.22	-8.97	-16.80	-290.19	1954
(5) Coryell 4035404	551.65	554.38	2.73	-18.20	-259.65	1955**
(6) Kendall 6802609	168.59	NA	NA	-20.44	-108.59	1975
(7) Bell 5804816	126.83	127.24	0.41	-5.25	-3.32	2008
(8) Bexar 6837203	96.90	100.30	3.40	-32.80	-50.26	1932
(9) Smith 3430907	443.79	443.93	0.14	-4.04	-143.79	1977**
(10) La Salle 7738103	534.18	530.32	-3.86	-30.83	-281.11	2003
(11) Harris 6514409	193.60	192.03	-1.57	-7.17	-58.10	1947**
(12) Victoria 8017502	34.47	34.63	0.16	-2.86	-0.47	1958**
(13) El Paso 4913301	300.51	300.53	0.02	-1.61	-68.61	1964**
(14) Reeves 4644501	157.54	157.21	-0.33	0.48	-65.45	1952
(15) Pecos 5216802	NA	217.06	NA	NA	29.82*	1976
(16) Schleicher 5512134	314.09	317.14	3.05	-11.49	-12.19	2003
(17) Haskell 2135748	47.25	47.86	0.61	-2.22	-4.25	2002
(18) Hudspeth 4807516	153.99	155.70	1.71	NA	-50.07	1966

* Change since the original measurement taken on the date indicated in the last column. The historical change shown for recorder well #15 is based off the most recent water level record from September 2022.

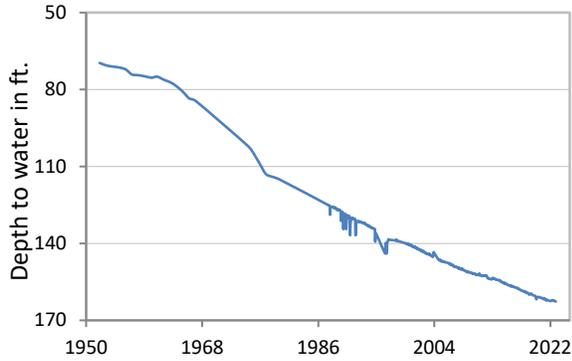
** Measurement not shown on the hydrograph.

NA (not available)

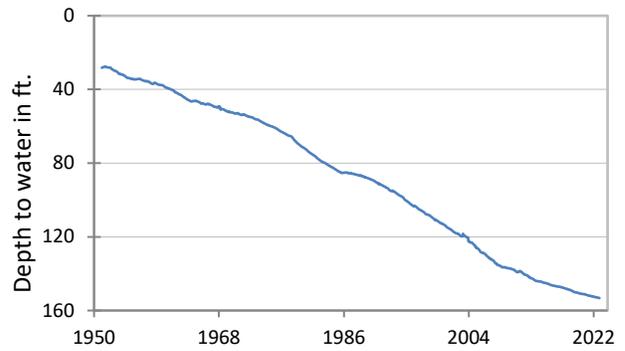
All data are provisional and subject to revision

OCTOBER 2022 MONITORING WELL HYDROGRAPHS

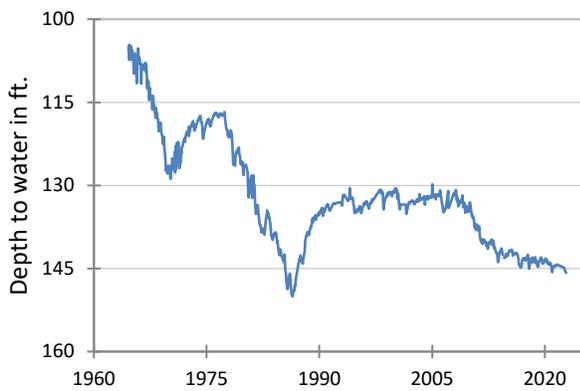
**(1) State Well #03-54-301
Near Spearman, Hansford County
Ogallala Aquifer**



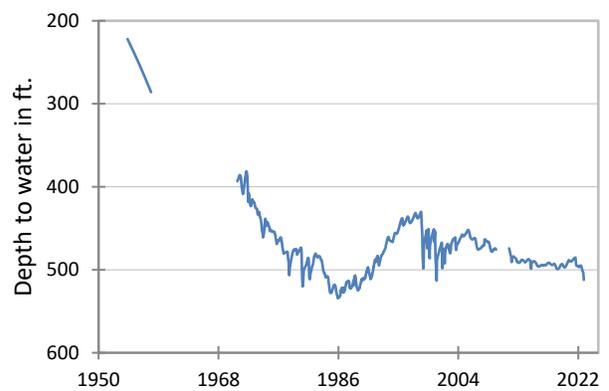
**(2) State Well #10-53-602
Near Earth, Lamb County
Ogallala Aquifer**



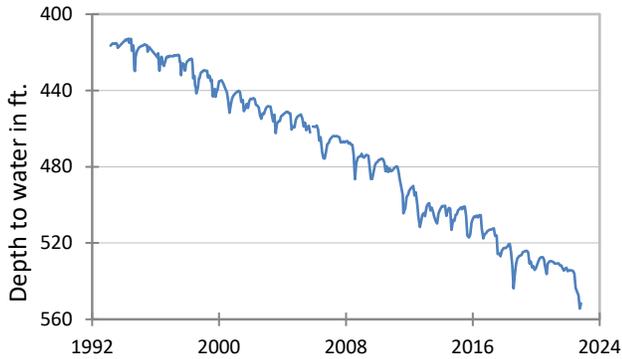
**(3) State Well #27-39-903
Northwest Martin County
Ogallala Aquifer**



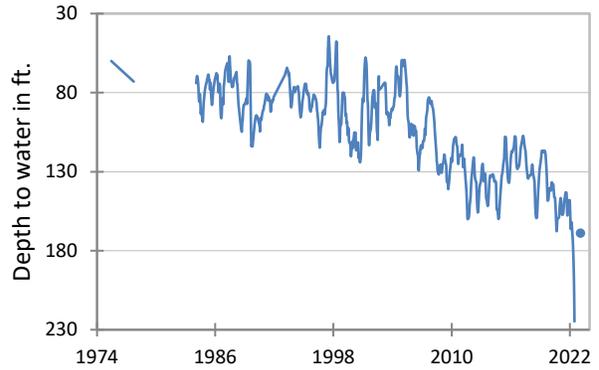
**(4) State Well #33-19-101
Southeast Dallas, Dallas County
Twin Mountains Formation-Trinity Aquifer**



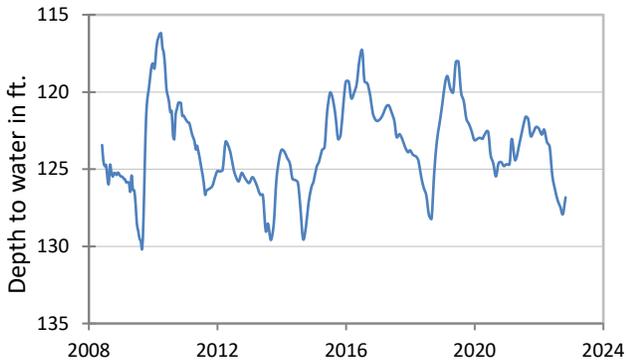
**(5) State Well #40-35-404
Gatesville, Coryell County
Hosston Formation-Trinity Aquifer**



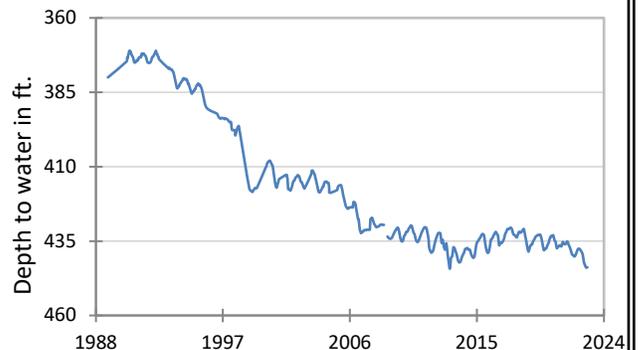
*** (6) State Well #68-02-609
Waring, Kendall County
Travis Peak Formation-Trinity Aquifer**



**(7) State Well #58-04-816
Near Salado, Bell County
Edwards (Balcones Fault Zone) Aquifer**



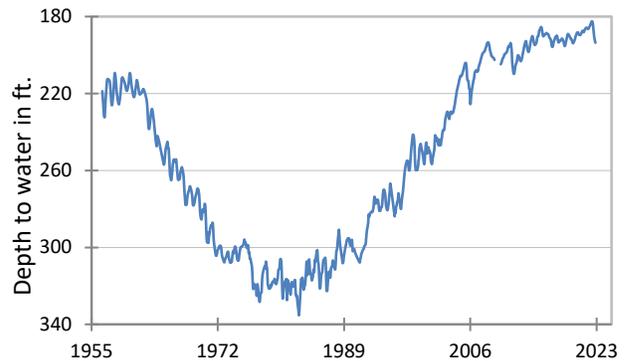
**(9) State Well #34-30-907
Red Springs, Smith County
Carrizo-Wilcox Aquifer**



**(10) State Well #77-38-103
Near Cotulla, La Salle County
Carrizo-Wilcox Aquifer**

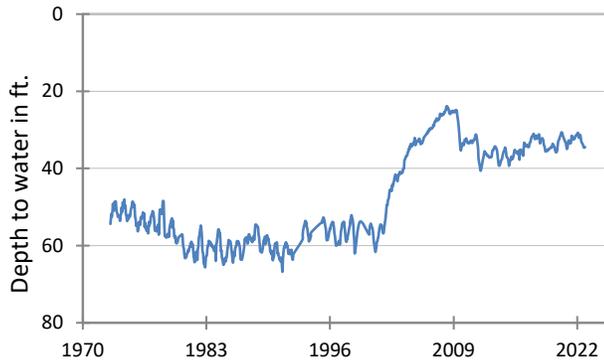


**(11) State Well #65-14-409
North Houston, Harris County
Evangeline Formation-Gulf Coast Aquifer**

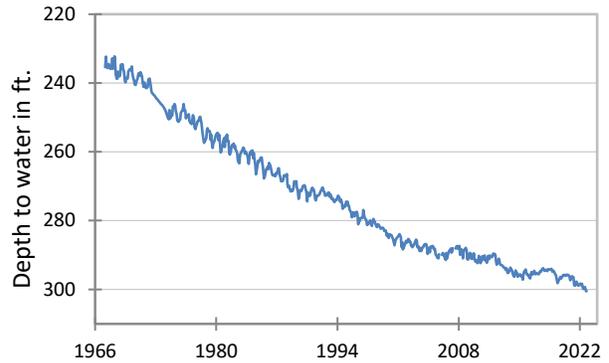


*Data from 6/21/2022 to 10/19/2022 have been invalidated upon review. The blue circle represents the October 2022 water level.

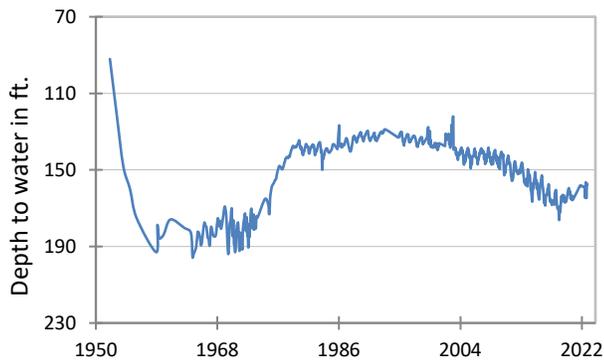
(12) State Well #80-17-502
Near Bloomington, Victoria County
Lissie Formation-Gulf Coast Aquifer



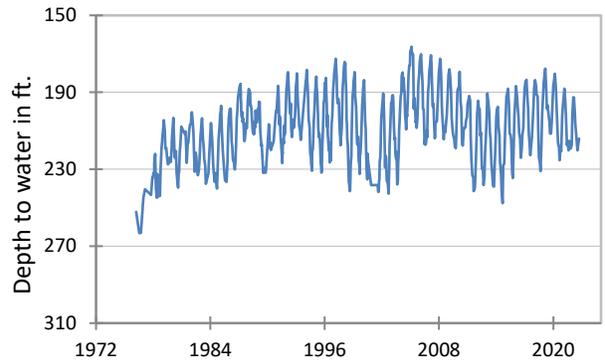
(13) State Well #49-13-301
El Paso, El Paso County
Hueco-Mesilla Bolsons Aquifer



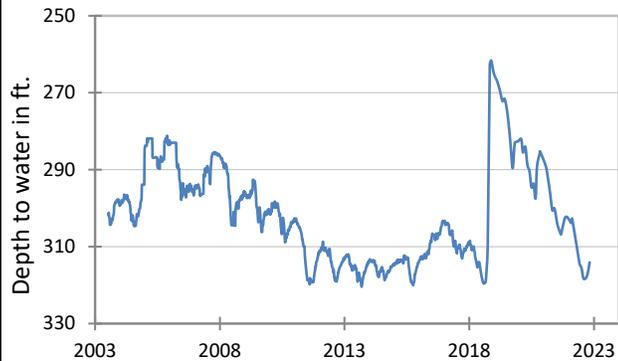
(14) State Well #46-44-501
Near Pecos, Reeves County
Pecos Valley Aquifer



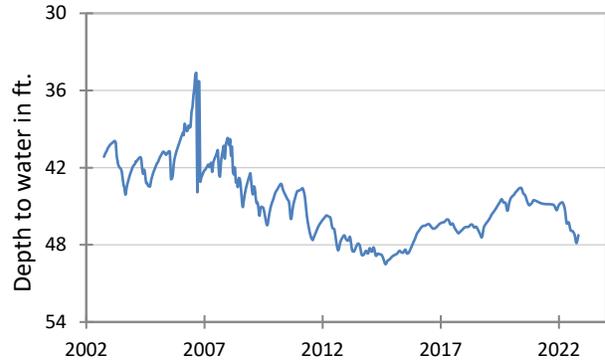
**** (15) State Well #52-16-802**
Fort Stockton, Pecos County
Edwards-Trinity (Plateau) Aquifer



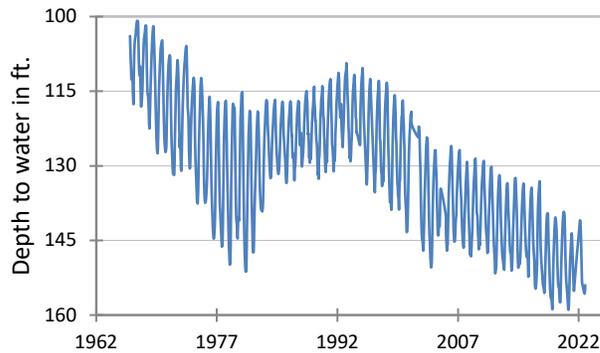
(16) State Well #55-12-134
Eldorado, Schleicher County
Edwards-Trinity (Plateau) Aquifer



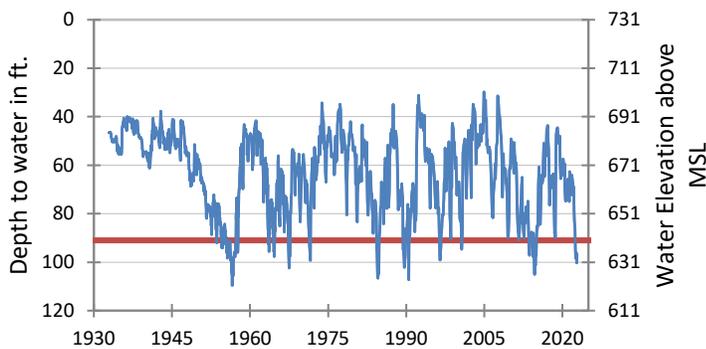
(17) State Well #21-35-748
Near O'Brien, Haskell County
Seymour Aquifer



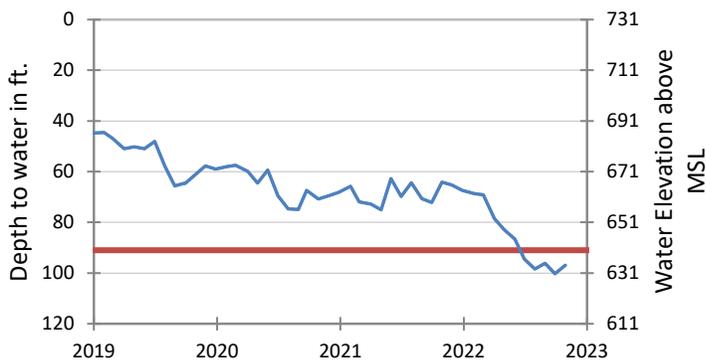
**(18) State Well #48-07-516
Dell City, Hudspeth County
Bone Spring-Victorio Peak Aquifer**



**(8) State Well #68-37-203 (J-17)
San Antonio, Bexar County
Edwards (Balcones Fault Zone) Aquifer**



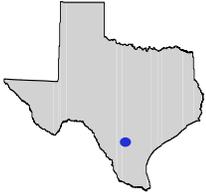
The late October water-level measurement in this Edwards (Balcones Fault Zone) Aquifer well, located at an elevation of 731 feet above mean sea level, was 96.90 feet below land surface, or 634.10 feet above mean sea level. This was 3.40 feet above last month's measurement, 32.80 feet below last year's measurement, and 50.26 feet below the initial measurement recorded in 1932.



Water levels below the red line indicate periods in which Edwards Aquifer Authority Stage 3 drought restrictions are in effect. In October 2022, Stage 3 drought restrictions were in effect because the aquifer remained below the Stage 3 critical management level.

****Recorder well #15 was offline in October 2022 and did not record data.**

HYDROGRAPH OF THE MONTH

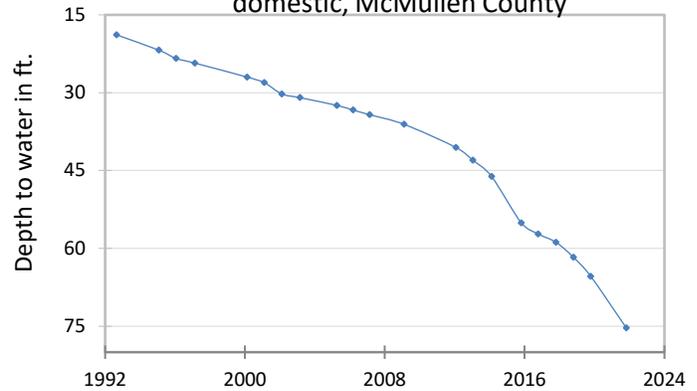


Each month this space features a new hydrograph (marked with the • symbol on the map) depicting different aquifers and their conditions in Texas.

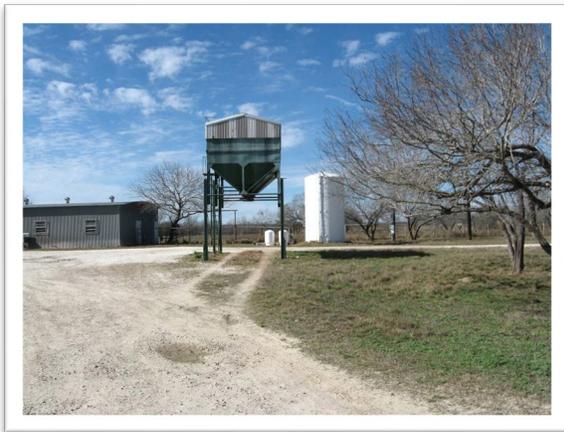
The Queen City Aquifer is a minor but widespread aquifer that stretches across the Texas upper coastal plain. Water is stored in the sand, loosely cemented sandstone, and interbedded clay layers of the Queen City Formation that reaches 2,000 feet in thickness in South Texas. Average freshwater saturation in the Queen City Aquifer is about 140 feet. Water is generally fresh, with an average concentration of total dissolved solids of about 300 milligrams per liter in the recharge zone and about 750 milligrams per liter deeper in the aquifer. Although salinity decreases from south to north, areas of excessive iron concentration and high acidity occur in the northeast. The aquifer is used primarily for livestock and domestic

Queen City Aquifer

Well #78-26-504, 2,088 feet deep
domestic, McMullen County



The initial water-level measurement in this well was taken by the TWDB in August 1992 at 18.85 feet below land surface. The TWDB continues to take near-annual measurements in the well. The period of record reveals a steady decline of -1.01 feet per year from 1992 to 2009. From 2009 to 2021, the rate of water level decline more than triples to -3.27 feet per year. Since the initial measurement in 1992 water levels



Far away (left), and close-up (right) images of well #78-26-504.