Texas Water Conditions Report

December 2020

Texas Water Development Board

RAINFALL

Little to no rain [yellow, orange, and red shading, Figure 1(a)], fell over much of the Trans Pecos, High Plains, Low Rolling Plains, Southern, Lower Valley, portions of central and eastern Edwards Plateau, central and southwestern South Central, and areas of central and western North Central climate divisions .

Some rainfall [light blue and dark blue shading, Figure 1(a)], was recorded over portions of the northeastern and southern Low Rolling Plains, eastern Trans Pecos, northwestern, central, and eastern Edwards Plateau, an area of northwestern Southern, southeastern Lower Valley, northern and southeastern South Central, the majority of North Central, East Texas, and Upper Coast climate divisions, reaching 14.91 inches in eastern portions of the state [dark blue shading, Figure 1(a)].

Monthly rainfall for December was below average [yellow and orange shading, Figure 1(b)], compared to historical data from 1981–2010, in much of the High Plains, northwestern Trans Pecos, central and northern Low Rolling Plains, portions of central North Central, parts of eastern Edwards Plateau, the majority of South Central , Southern, and Lower Valley climate divisions. Above average rainfall [green and light blue shading, Figure 1(b)] occurred in portions of the northern and southern High Plains, northeastern and southern Low Rolling Plains, southeastern Trans Pecos, the majority of Edwards Plateau, northwestern Southern, eastern and western North Central, northern and southern South Central, the majority of East Texas, and the Upper Coast climate divisions. Areas of eastern Trans Pecos, northwestern Edwards Plateau, the southern High Plains, and northwestern Southern climate divisions received 3 to 6 times the average rainfall for December (dark blue and purple, Figure 1 (b).

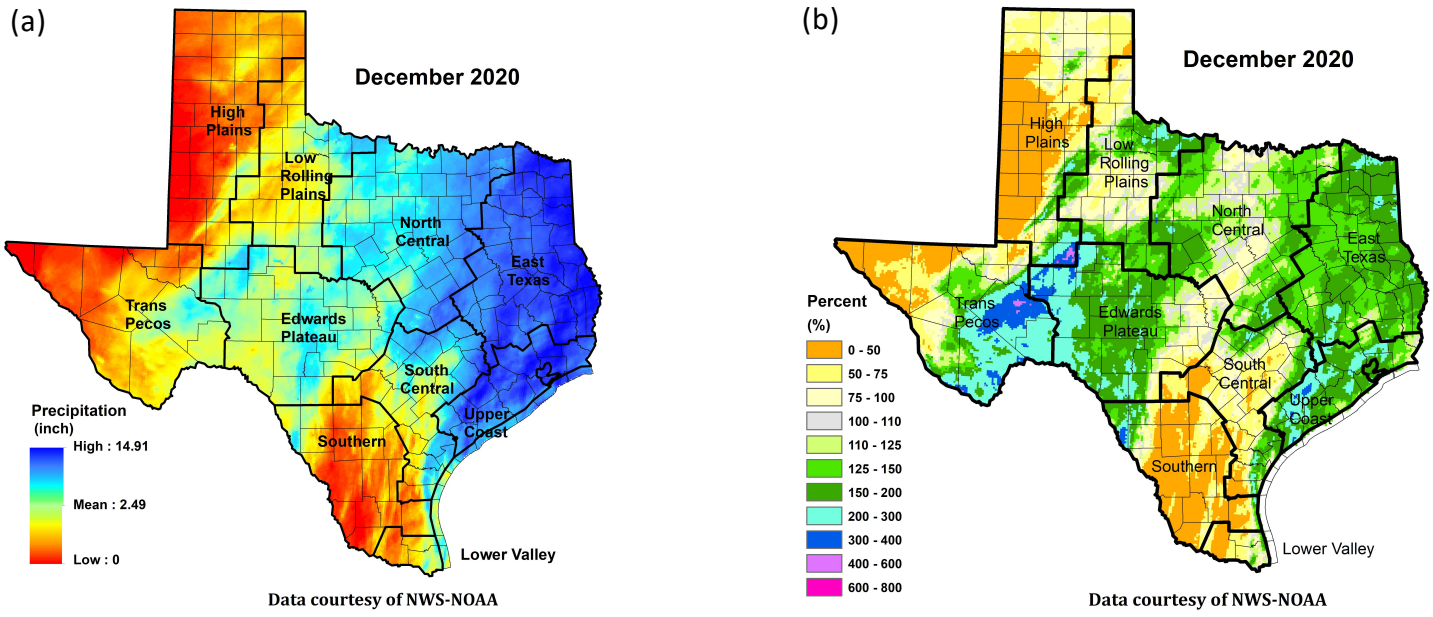


Figure 1: (a) Monthly accumulated rainfall and (b) Percent of normal rainfall

RESERVOIR STORAGE

At the end of December 2020, total conservation storage* in 118 of the state's major water supply reservoirs plus Elephant Butte Reservoir in New Mexico was 25.17 million acre-feet or 78.2 percent of total conservation storage capacity (Figure 2). This is approximately 0.10 million acre-feet more than a month ago and approximately 0.42 million acre-feet less than at the end of December 2019.

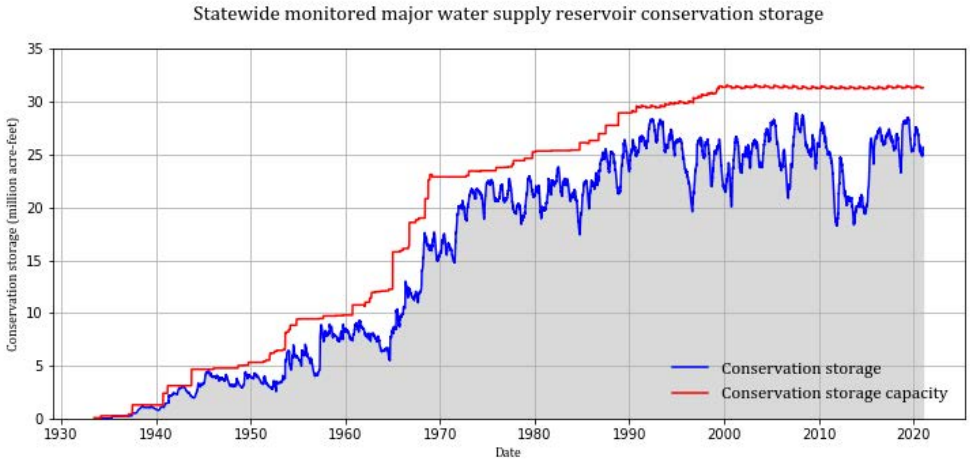


Figure 2: Statewide reservoir conservation storage

Out of 118 reservoirs in the state, 20 reservoirs held 100 percent of conservation storage capacity (Figure 3). Additionally, 41 were at or above 90 percent full. Seven reservoirs [E.V. Spence (22.5 percent full), Greenbelt (16.4 percent full), J.B. Thomas (14.1 percent full), Mackenzie (9.0 percent full), O. C. Fisher (6.3 percent full), Palo Duro Reservoir (1.7 percent full), and White River (12.1 percent full) remained below 30 percent full. Elephant Butte Reservoir (located in New Mexico) was at 6.4 percent full.

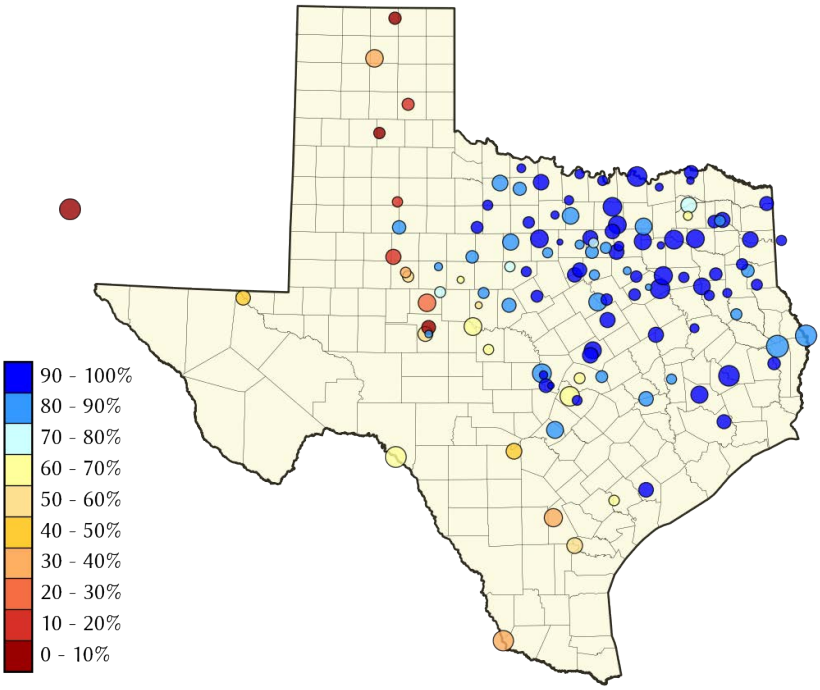


Figure 3: Reservoir conservation storage at end-December expressed as percent full (%)

*Storage is based on end of the month data in 118 major reservoirs that represent 96 percent of the total conservation storage capacity of 188 major water supply reservoirs in Texas plus Elephant Butte Reservoir in New Mexico. Major reservoirs are defined as having a conservation storage capacity of 5,000 acre-feet or greater. Only the Texas share of storage in border reservoirs is counted.

Total regionally combined conservation storage was at or above-normal (storage ≥70 percent full) in the North Central (93.4 percent full), East Texas (91.3 percent full), and Upper Coast (99.1 percent full) climate divisions (Figure 4). Conservation storage in the Edwards Plateau (61.6 percent full), Low Rolling Plains (63.1), and South Central (69.6 percent full) climate divisions was abnormally low (Figure 4). The High Plains (29.3 percent full), and Southern (33.9 percent full) climate divisions had severely low storage, and the Trans Pecos (12.6 percent full) climate division had extremely low conservation storage (Figure 4).

Combined conservation storage by river basin or sub-basin showed that the Upper and Lower Red, Upper and Lower Trinity, Upper and Lower Brazos, Upper and Lower Sabine, Lower Colorado, Guadalupe, Lavaca, San Jacinto, Sulphur, and Neches was normal to high (>70 percent full, Figure 5). Conservation storage in the Upper Colorado, Lower Rio Grande, and San Antonio basins was moderately low (40–60 percent full). Conservation storage in the Canadian and Nueces basins was severely low (20–40 percent full, Figure 5). Conservation storage in the Upper/Mid Rio Grande river basin was extremely low (10–20 percent full, Figure 5).

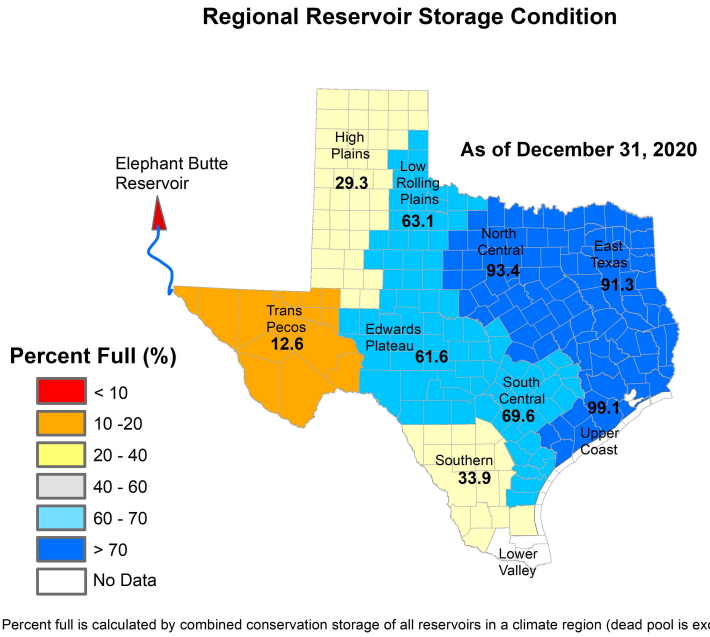


Figure 4: Reservoir Storage Index* by climate division at 12/31/2020

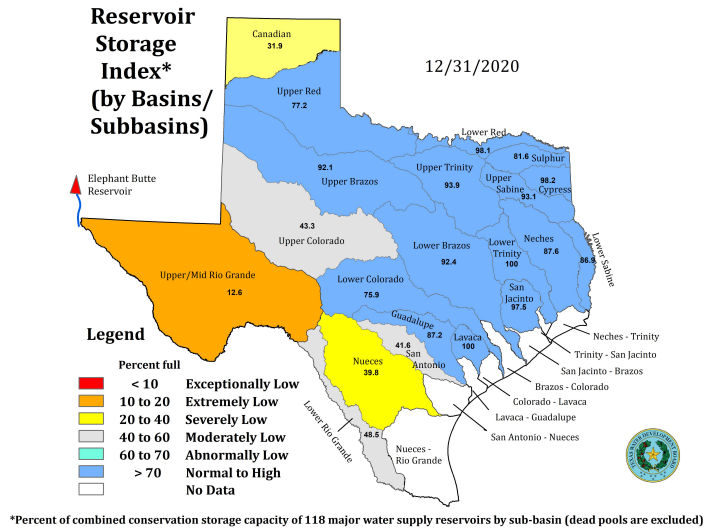


Figure 5: Reservoir Storage Index* by river basin/sub-basin at 12/31/2020

*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-December		Storage change from end-Nov 2020		Storage change from end-Dec 2019	
	(acre-feet)	(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)**	(%)
Abilene, Lake	7,900	5,534	70.1	-194	-2.5	407	5.2
Alan Henry Reservoir	96207	84,894	88.2	-1,106	-1.1	-5,191	-5.4
*Amistad Reservoir (Texas & Mexico)	3,275,532	1,241,635	37.9	-677	0.0	-436,670	-13.3
*Amistad Reservoir (Texas)	1,840,849	1,177,356	64.0	-16,830	0.0	-200,672	-10.9
Amon G Carter, Lake	19,266	18,030	93.6	-217	-1.1	322	1.7
Aquilla Lake	43,243	39,391	91.1	-381	0.0	4,516	10.4
Arlington, Lake	40,157	33,586	83.6	1,930	4.8	-2,774	-6.9
Arrowhead, Lake	230,359	224,170	97.3	-1,717	0.0	22,060	9.6
Athens, Lake	29,503	29,503	100.0	0	0.0	1,393	4.7
*Austin, Lake	23,972	23,174	96.7	263	1.1	693	2.9
B A Steinhagen Lake	69,186	67,865	98.1	5,425	7.8	3,288	4.8
Bardwell Lake	46,122	44,132	95.7	-185	0.0	5,061	11.0
Belton Lake	435,225	423,779	97.4	-1,556	0.0	23,762	5.5
Benbrook Lake	85,648	76,324	89.1	4,419	5.2	13,101	15.3
Bob Sandlin, Lake	192,417	188,173	97.8	3,415	1.8	2,455	1.3
Bonham, Lake	11,027	10,363	94.0	102	0.9	1,156	10.5
Brady Creek Reservoir	28,808	19,673	68.3	-274	0.0	-4,774	-16.6
Bridgeport, Lake	366,236	320,506	87.5	-4,675	-1.3	8,283	2.3
*Brownwood, Lake	130,868	112,776	86.2	-1,249	0.0	4,912	3.8
Buchanan, Lake	860,607	719,122	83.6	-6,606	0.0	-58,146	-6.8
Caddo, Lake	29,898	29,898	100.0	0	0.0	0	0
Canyon Lake	378,781	337,066	89.0	-3,363	0.0	-16,893	-4.5
Cedar Creek Reservoir in Trinity	644,686	625,904	97.1	7,342	1.1	60,656	9.4
Champion Creek Reservoir	41,580	24,388	58.7	-183	0.0	-3,250	-7.8
Cherokee, Lake	40,094	40,094	100.0	1,014	2.5	0	0.0
Choke Canyon Reservoir	662,820	234,017	35.3	-5,246	0.0	-66,866	-10.1
*Cisco, Lake	29,003	23,027	79.4	-184	0.0	-2,206	-7.6
Coleman, Lake	38,075	32,631	85.7	-393	-1.0	-308	0.0
Colorado City, Lake	31,040	20,631	66.5	181	0.6	-1,685	-5.4
*Coleto Creek Reservoir	30,758	11,265	36.6	-86	0.0	-2,571	-8.4
Conroe, Lake	410,988	397,486	96.7	18,219	4.4	28,603	7.0
Corpus Christi, Lake	256,062	132,264	51.7	-5,591	-2.2	-61,531	-24.0
Crook, Lake	9,195	9,195	100.0	230	2.5	136	1.5
Cypress Springs, Lake	66,756	66,756	100.0	2,404	3.6	0	0.0
E. V. Spence Reservoir	517,272	116,600	22.5	-2,202	0.0	-22,145	-4.3
Eagle Mountain Lake	179,880	163,892	91.1	496	0.3	2,225	1.2
Elephant Butte Reservoir (Texas)	852,491	54,724	6.4	11,585	1.4	-180,490	-21.2
Elephant Butte Reservoir (Total Storage)	1,985,900	126,676	6.4	26,818	1.4	-417,802	-21.0
*Falcon Reservoir (Texas & Mexico)	2,646,817	528,356	20.0	-3,333	0.0	-88,227	-3.3
*Falcon Reservoir (Texas)	1,551,007	470,690	30.3	-7,788	0.0	-31,462	-2.0
Fork Reservoir, Lake	605,061	557,187	92.1	9,395	1.6	13,079	2.2
Fort Phantom Hill, Lake	70,030	61,744	88.2	-972	-1.4	500	0.7
Georgetown, Lake	36,823	22,754	61.8	1,256	3.4	-2,507	-6.8
Gibbons Creek Reservoir	25,721	20,966	81.5	679	2.6	570	2.2
Graham, Lake	45,288	42,584	94.0	-409	0.0	4,252	9.4
Granbury, Lake	132,949	132,949	100.0	1,384	1.0	815	0.6

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS							
Name of lake or reservoir	Storage capacity	Storage at end-December		Storage change from end-Nov 2020		Storage change from end-Dec 2019	
	(acre-feet)	(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)**	(%)
Continued							
Granger Lake	51,822	47,050	90.8	1,414	2.7	-4,772	-9.2
Grapevine Lake	163,064	161,030	98.8	1,104	0.7	-2,034	-1.2
Greenbelt Lake	59,968	9,855	16.4	-206	0.0	-2,061	-3.4
*Halbert, Lake	6,033	5,901	97.8	600	9.9	817	13.5
Hords Creek Lake	8,109	4,392	54.2	-125	-1.5	-1,892	-23.3
Houston County Lake	17,113	17,113	100.0	0	0.0	0	0.0
Houston, Lake	130,147	130,147	100.0	0	0.0	10,049	7.7
Hubbard Creek Reservoir	313,298	277,643	88.6	-4,674	-1.5	4,193	1.3
Hubert H Moss Lake	24,058	23,339	97.0	95	0.4	-514	-2.1
Inks, Lake	13,962	12,840	92.0	-60	0.0	-97	0.0
J. B. Thomas, Lake	199,931	28,237	14.1	-1,851	0.0	-22,118	-11.1
Jacksonville, Lake	25,670	25,670	100.0	0	0.0	725	2.8
Jim Chapman Lake (Cooper)	260,332	191,967	73.7	2,493	1.0	-30,691	-11.8
Joe Pool Lake	175,800	163,812	93.2	-1,008	0.0	8,695	4.9
Kemp, Lake	245,307	205,455	83.8	-1,047	0.0	2,759	1.1
Kickapoo, Lake	86,345	70,295	81.4	-784	0.0	-157	0.0
Lavon Lake	406,388	367,453	90.4	800	0.2	29,616	7.3
Leon, Lake	27,762	25,579	92.1	-316	-1.1	1,961	7.1
Lewisville Lake	563,228	537,089	95.4	-6,078	-1.1	-26,139	-4.6
Limestone, Lake	203,780	196,033	96.2	3,400	1.7	32,648	16.0
*Livingston, Lake	1,741,867	1,741,867	100.0	5,731	0.3	0	0.0
*Lost Creek Reservoir	11,950	11,251	94.2	-40	0.0	24	0.2
Lyndon B Johnson, Lake	115,249	110,697	96.1	-429	0.0	1,580	1.4
Mackenzie Reservoir	46,450	4,171	9.0	-57	0.0	-1,177	-2.5
Marble Falls, Lake	6,901	6,814	98.7	-17	0.0	-17	0.0
Martin, Lake	75,726	64,135	84.7	2,055	2.7	4,547	6.0
Medina Lake	254,823	106,243	41.7	-4,614	-1.8	-92,787	-36.4
Meredith, Lake	500,000	178,128	35.6	-1,660	0.0	-30,469	-6.1
Millers Creek Reservoir	26,768	26,768	100.0	0	0.0	3,867	14.4
*Mineral Wells, Lake	5,273	5,273	100.0	0	0.0	513	9.7
Monticello, Lake	34,740	28,951	83.3	889	2.6	631	1.8
Mountain Creek, Lake	22,850	22,850	100.0	0	0.0	0	0.0
Murvaul, Lake	38,285	37,908	99.0	2,398	6.3	2,565	6.7
Nacogdoches, Lake	39,522	34,186	86.5	410	1.0	-671	-1.7
Nasworthy	9,615	8,306	86.4	98	1.0	0	0
Navarro Mills Lake	49,827	48,099	96.5	876	1.8	9,555	19.2
New Terrell City Lake	8,583	8,205	95.6	452	5.3	59	0.7
Nocona, Lake (Farmers Crk)	21,444	19,875	92.7	-130	0.0	491	2.3
North Fork Buffalo Creek Reservoir	15,400	14,415	93.6	-84	0.0	2,922	19.0
O' the Pines, Lake	241,363	241,363	100.0	3,688	1.5	0	0.0
O. C. Fisher Lake	115,742	7,295	6.3	-135	0.0	-3,510	-3.0
*O. H. Ivie Reservoir	554,340	335,984	60.6	-1,241	0.0	-47,574	-8.6
Oak Creek Reservoir	39,210	30,526	77.9	-286	0.0	-3,846	-9.8

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS							
Name of lake or reservoir	Storage capacity	Storage at end-December		Storage change from end-Nov 2020		Storage change from end-Dec 2019	
	(acre-feet)	(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)**	(%)
Continued							
Palestine, Lake	367,303	367,303	100.0	5,062	1.4	34,097	9.3
Palo Duro Reservoir	61,066	1,017	1.7	-74	0.0	-2,268	-3.7
Palo Pinto, Lake	26,766	23,359	87.3	-593	-2.2	3,293	12.3
Pat Cleburne, Lake	26,008	21,905	84.2	-417	-1.6	563	2.2
*Pat Mayse Lake	113,683	113,683	100.0	0	0.0	0	0.0
Possum Kingdom Lake	538,139	528,005	98.1	-2,120	0.0	6,676	1.2
Proctor Lake	54,762	52,026	95.0	-271	0.0	12,120	22.1
Ray Hubbard, Lake	439,559	411,629	93.6	7,595	1.7	30,897	7.0
Ray Roberts, Lake	788,167	761,793	96.7	-1,944	0.0	-26,374	-3.3
Red Bluff Reservoir	151,110	71,890	47.6	1,545	1.0	-23,338	-15.4
Richland-Chambers Reservoir	1,087,839	1,037,893	95.4	8,774	0.8	103,340	9.5
Sam Rayburn Reservoir	2,857,077	2,434,474	85.2	37,922	1.3	-170,590	-6.0
Somerville Lake	150,293	123,192	82.0	716	0.5	-23,521	-15.7
Squaw Creek, Lake	151,250	150,997	99.8	-253	0.0	4,594	3.0
Stamford, Lake	51,570	51,570	100.0	0	0.0	6,390	12.4
Stillhouse Hollow Lake	227,771	227,771	100.0	0	0.0	20,947	9.2
Striker, Lake	16,934	16,934	100.0	0	0.0	0	0.0
Sweetwater, Lake	12,267	10,026	81.7	-123	-1.0	-1,919	-15.6
*Sulphur Springs, Lake	17,747	12,464	70.2	190	1.1	-4,025	-22.7
Tawakoni, Lake	871,685	819,508	94.0	2,843	0.3	10,986	1.3
Texana, Lake	159,566	159,566	100.0	3,111	1.9	41,727	26.2
Texoma, Lake (Texas & Oklahoma)	2,487,601	2,442,173	98.2	50,550	2.0	-134,251	-5.4
Texoma, Lake (Texas)	1,243,801	1,221,086	98.2	25,275	2.0	-22,715	-1.8
Toledo Bend Reservoir (Texas & Louisiana)	4,472,900	3,895,209	87.1	27,863	0.6	520,115	11.6
Toledo Bend Reservoir (Texas)	2,236,450	1,945,554	87.0	13,931	0.6	260,057	11.6
Travis, Lake	1,113,348	750,670	67.4	-7,052	0.0	-158,860	-14.3
Twin Buttes Reservoir	182,454	97,589	53.5	-710	0.0	-18,220	-10.0
Tyler, Lake	72,073	72,073	100.0	939	1.3	9,352	13.0
Waco, Lake	189,418	177,868	93.9	-706	0.0	27,358	14.4
Waxahachie, Lake	10,780	9,280	86.1	611	5.7	-514	-4.8
Weatherford, Lake	17,812	15,944	89.5	0	0.0	849	4.8
White River Lake	29,880	3,629	12.1	0	0	-1,961	-6.6
Whitney, Lake	553,344	495,646	89.6	-828	0.0	71,247	12.9
Worth, Lake	24,419	18,796	77.0	-356	-1.5	386	1.6
Wright Patman Lake	122,593	122,593	100.0	0	0.0	0	0.0
STATEWIDE TOTAL							
STATEWIDE TOTAL	**32,168,837**	**25,169,006**	**78.2**	**103,060**	**0.3**	**-422,961**	**-1.3**

STREAMFLOW CONDITIONS

Much of the state had near normal streamflow (25–75th percentile, green shading in Figure 6) in December 2020. Above normal streamflow (76–90th percentile, light blue shading in Figure 6) was seen in the Sulphur, Upper Brazos, San Jacinto, San Jacinto-Brazos, Brazos-Colorado, and Upper Colorado river basins.

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

Some watersheds in the Upper and Lower Red, Upper Colorado, Upper Rio Grande, Nueces, Nueces-Rio Grande, and San Antonio-Nueces river basins had much below normal streamflow (less than the 10th percentile, dark brown shading in Figure 6).

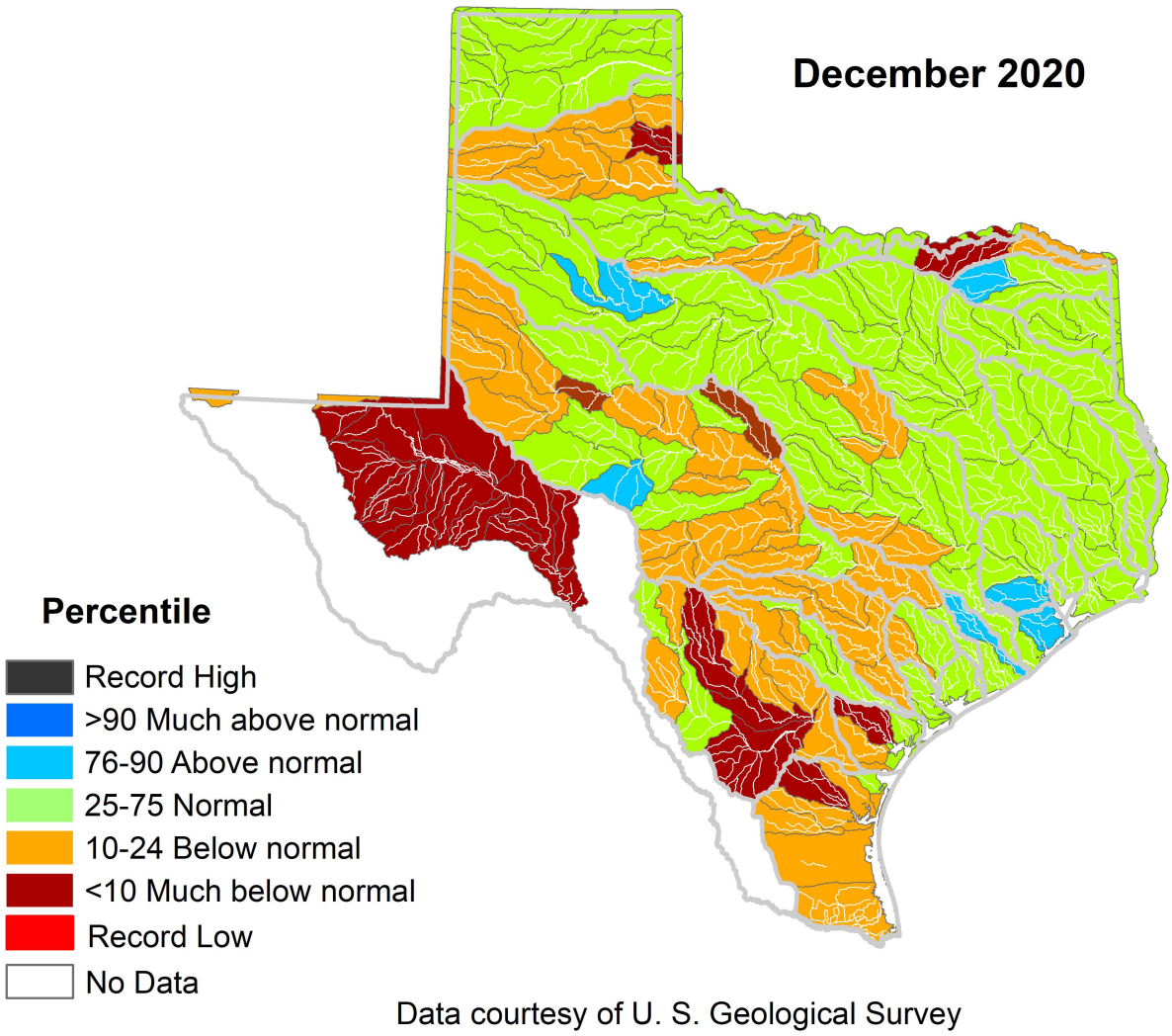


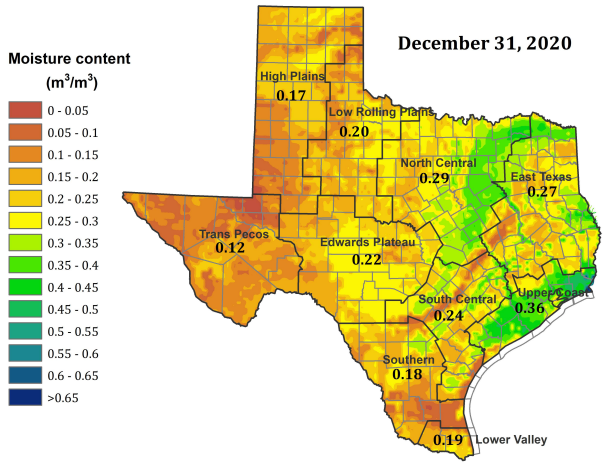
Figure 6: Runoff percentiles by the U.S. Geological Survey's Hydrologic Unit Code

SOIL MOISTURE CONDITIONS

Root zone soil moisture at the end of December 2020 [Figure 7(a)] was moderate [> 0.20 cubic meters of water per bulk cubic meter soil (m^3/m^3)] in portions of the Trans Pecos, High Plains, Low Rolling Plains, Edwards Plateau, western North Central, areas of East Texas, central South Central, Southern, and Lower Valley climate divisions. There were areas of low soil moisture [< 0.15 cubic meters of water per bulk cubic meter soil (m^3/m^3)] in the Trans Pecos, High Plains, Low Rolling Plains, southern portions of the Southern, southern and north central to northeastern South Central, and southwestern East Texas climate divisions. Soil moisture was high [0.3 cubic meters of water per bulk cubic meter soil (m3/m3)] in areas of eastern North Central, northern and southern South Central, and southwestern East Texas climate divisions [Figure 7(a)].

Compared to conditions at the end of November 2020, soil moisture content increased [green to blue shading in Figure 7(b)] in the northeastern Southern, eastern North Central, central and northeastern South Central, Upper Coast, and East Texas climate divisions. Soil moisture content decreased [yellow, orange, and brown shading in Figure 7(b)] in the Trans Pecos, Edwards Plateau, Low Rolling Plains, western North Central, Southern, High Plains, Lower Valley, and southern and western South Central climate divisions.

(a)



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.

(b)

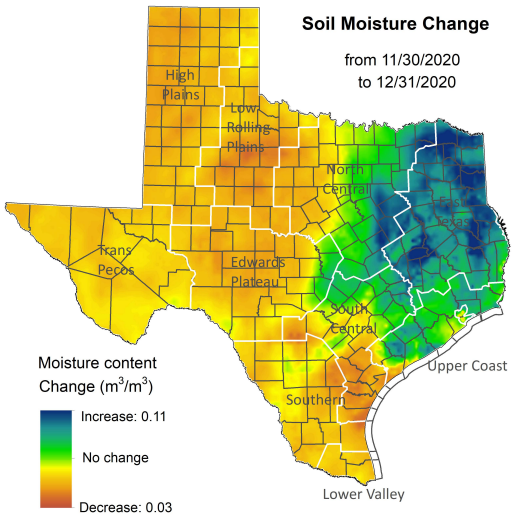
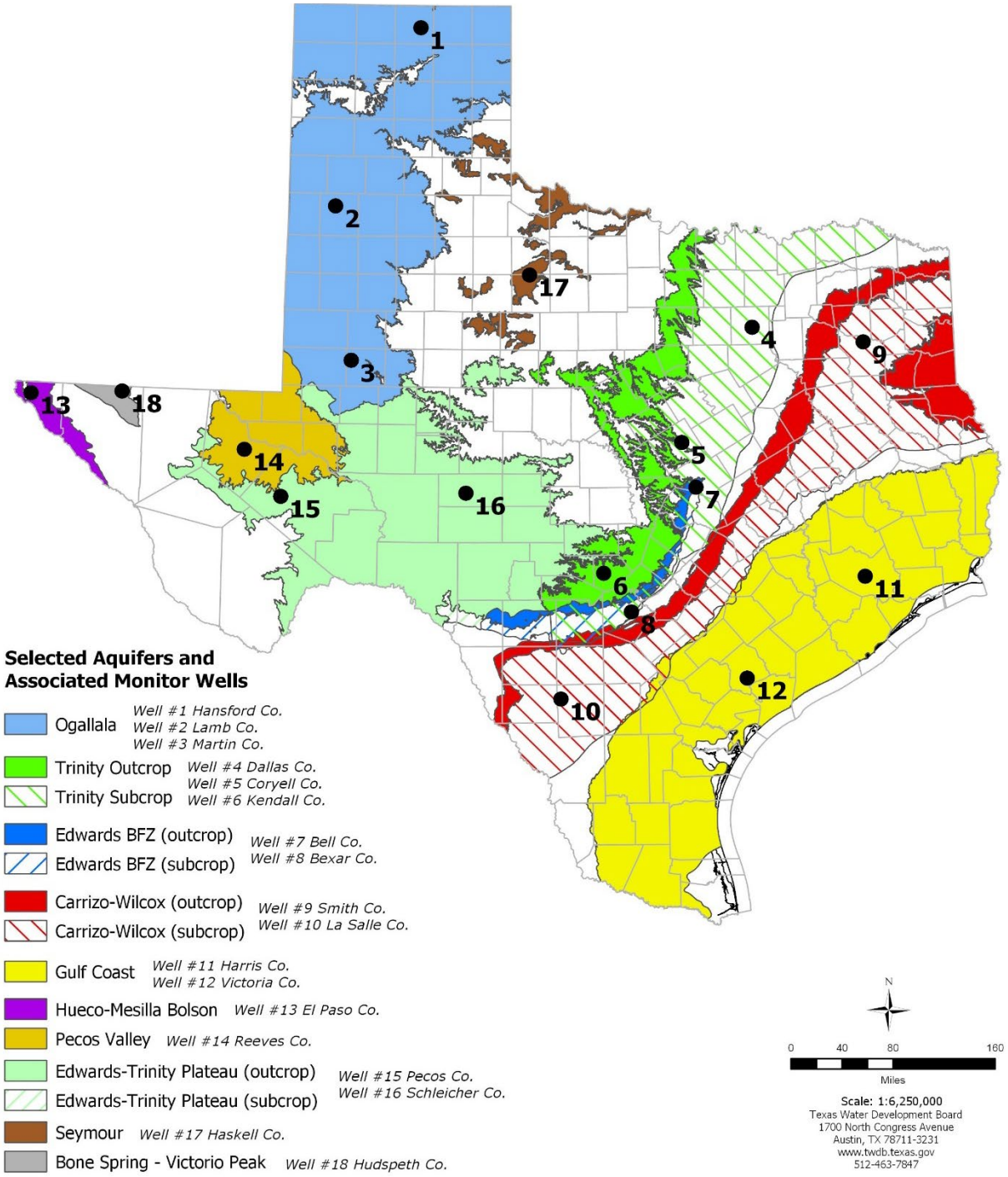


Figure 7: Root zone soil moisture conditions in December, 2020 (a) and the difference in root zone soil moisture between end-November 2020 and end-December 2020 (b)



December 2020 GROUNDWATER LEVELS IN MONITORING WELLS

Water-level measurements were available for 16 key monitoring wells in the state. Water levels rose in 12 monitoring wells since the beginning of December, ranging from an increase of 0.11 feet in the Hansford County Ogallala Aquifer well (#1 on map) to 8.14 feet in the Kendall County Trinity Aquifer well (#6 on map). Water levels declined in 4 monitoring wells, ranging from a decline of -0.11 feet in the Lamb County Ogallala Aquifer well (#2 on map) to -0.55 feet in the Martin County Ogallala Aquifer well (#3 on map). The J-17 well (#8 on map) in San Antonio recorded a water level of 68.10 feet below land surface or 662.90 feet above mean sea level. Water levels are 2.90 feet above the Stage I critical management level for the San Antonio portion of the Edwards (Balcones Fault Zone) Aquifer.

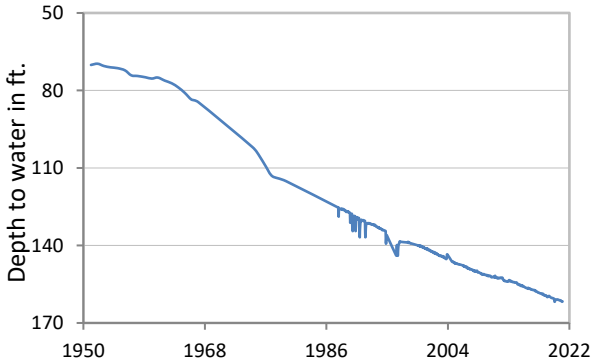
***Well numbers used in this publication on the aquifer map to indicate the monitoring well location (numbers 1 - 18) are different than the TWDB's seven-digit state well number.**

Monitoring Well	December	November	Month Change	Year Change	Historical Change	First Measured
(1) Hansford 0354301	161.67	161.78	*0.11*	*-0.61*	*-91.55*	1951
(2) Lamb 1053602	151.59	151.48	*-0.11*	*-0.94*	*-123.42*	1951
(3) Martin 2739903	145.67	145.12	*-0.55*	*-1.93*	*-40.78*	1964
(4) Dallas 3319101	489.67	490.00	*0.33*	*7.38*	*-267.67*	1954
(5) Coryell 4035404	529.61	529.46	*-0.15*	*3.59*	*-237.61**	1955**
(6) Kendall 6802609	150.51	158.65	*8.14*	*-10.14*	*-90.51*	1975
(7) Bell 5804816	124.68	124.80	*0.12*	*-1.57*	*-1.17*	2008
(8) Bexar 6837203	68.10	69.50	*1.40*	*-9.10*	*-21.46*	1932
(9) Smith 3430907	436.78	436.39	*-0.39*	*-0.27*	*-136.78**	1977**
(10) La Salle 7738103	513.30	520.90	*7.60*	*NA*	*-260.23*	2003
(11) Harris 6514409	188.18	188.92	*0.74*	*4.50*	*-52.68**	1947**
(12) Victoria 8017502	34.36	34.96	*0.60*	*-1.22*	*-0.36**	1958**
(13) El Paso 4913301	296.54	297.32	*0.78*	*-0.26*	*-64.64**	1964**
(14) Reeves 4644501	NA	NA	*NA*	*NA*	*NA*	1952
(15) Pecos 5216802	197.50	202.51	*5.01*	*-10.59*	*49.38*	1976
(16) Schleicher 5512134	NA	285.26	*NA*	*NA*	*NA*	2003
(17) Haskell 2135748	44.53	44.69	*0.16*	*-0.23*	*-1.53*	2002
(18) Hudspeth 4807516	147.63	151.12	*3.49*	*-4.77*	*-43.71*	1966

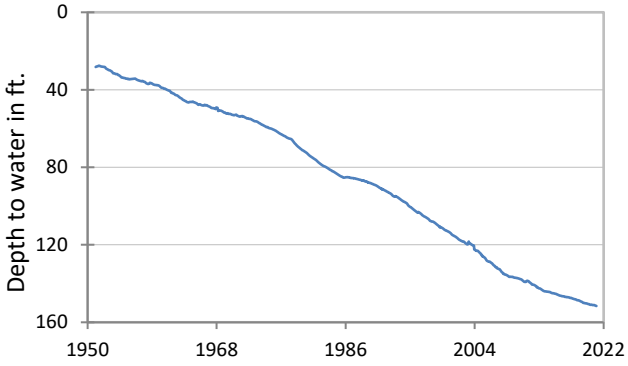
*Change since the original measurement taken on the date indicated in the last column (**measurement not shown on the hydrograph)

December 2020 MONITORING WELL HYDROGRAPHS

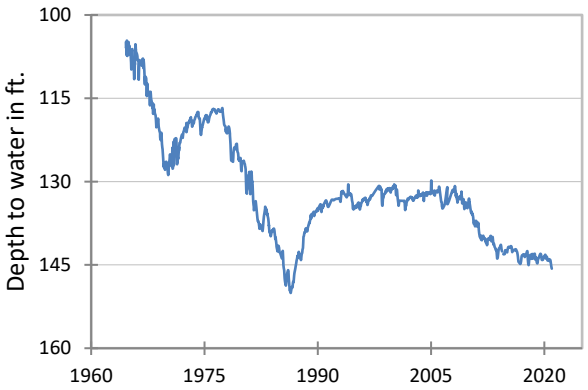
(1) State Well #03-54-301
Near Spearman, Hansford County
Ogallala Aquifer



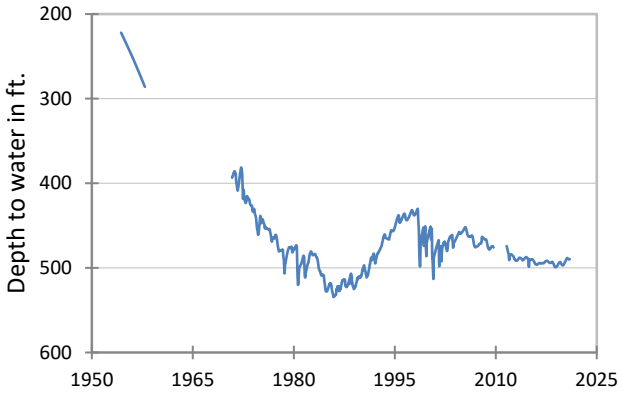
(2) State Well #10-53-602
Near Earth, Lamb County
Ogallala Aquifer



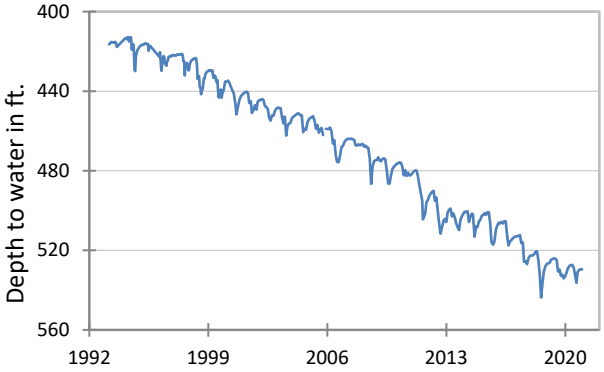
(3) State Well #27-39-903
Northwest Martin County
Ogallala Aquifer



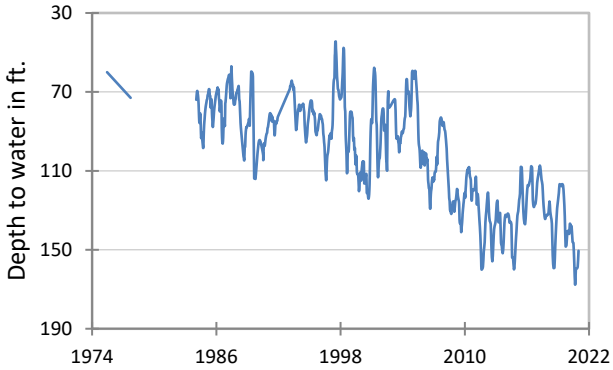
(4) State Well #33-19-101
Southeast Dallas, Dallas County
Twin Mountains Formation-Trinity Aquifer



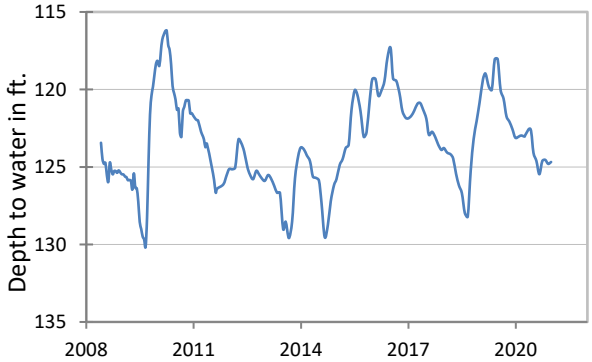
(5) State Well #40-35-404
Gatesville, Coryell County
Hosston Formation-Trinity Aquifer



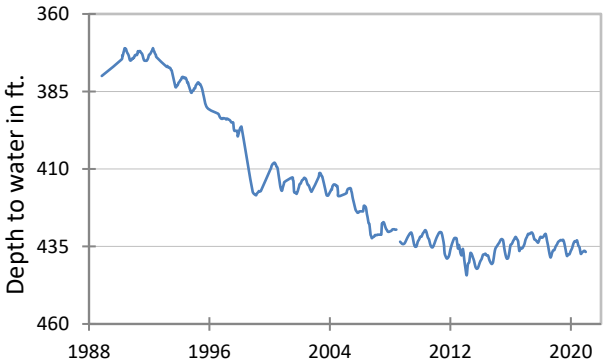
(6) State Well #68-02-609
Waring, Kendall County
Travis Peak Formation-Trinity Aquifer



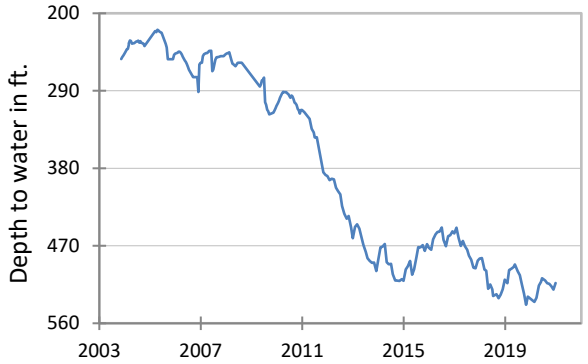
(7) State Well #58-04-816
Near Salado, Bell County
Edwards (Balcones Fault Zone) Aquifer



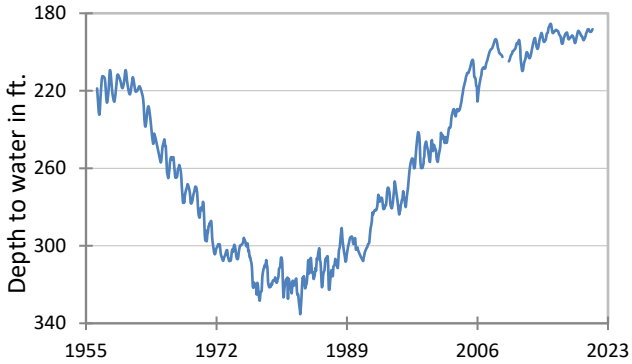
(9) State Well #34-30-907
Red Springs, Smith County
Carrizo-Wilcox Aquifer



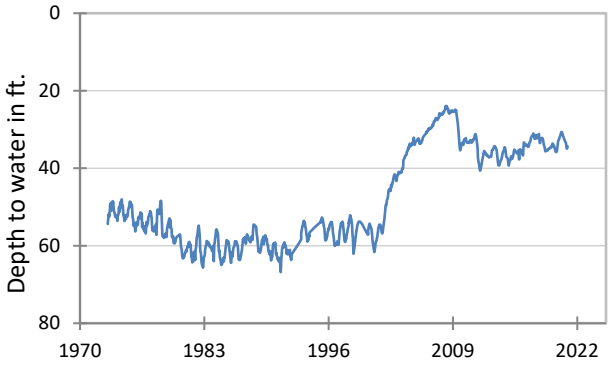
(10) State Well #77-38-103
Near Cotulla, La Salle County
Carrizo-Wilcox Aquifer



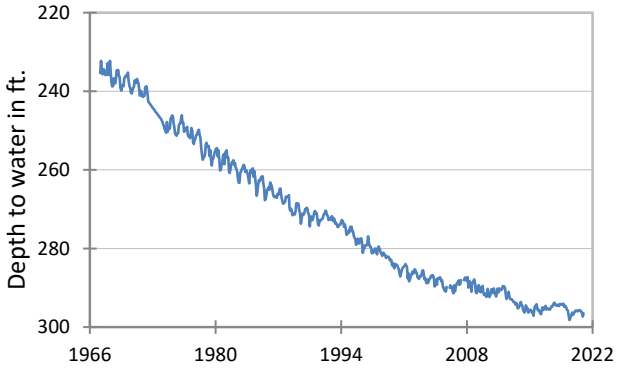
(11) State Well #65-14-409
North Houston, Harris County
Evangeline Formation-Gulf Coast Aquifer



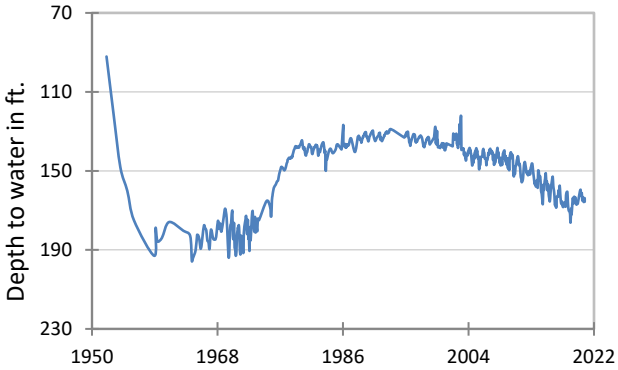
(12) State Well #80-17-502
Near Bloomington, Victoria County
Lissie Formation-Gulf Coast Aquifer



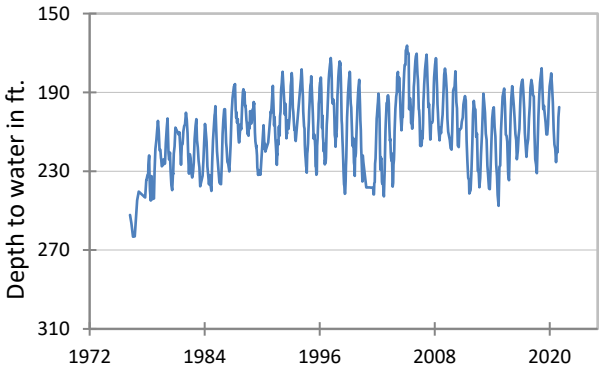
(13) State Well #49-13-301
El Paso, El Paso County
Hueco-Mesilla Bolsons Aquifer



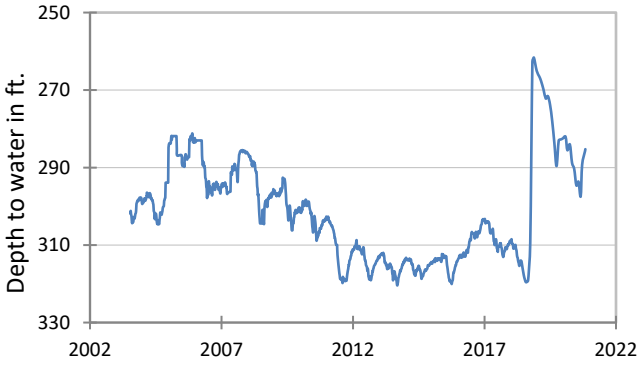
(14) State Well #46-44-501
Near Pecos, Reeves County
Pecos Valley Aquifer



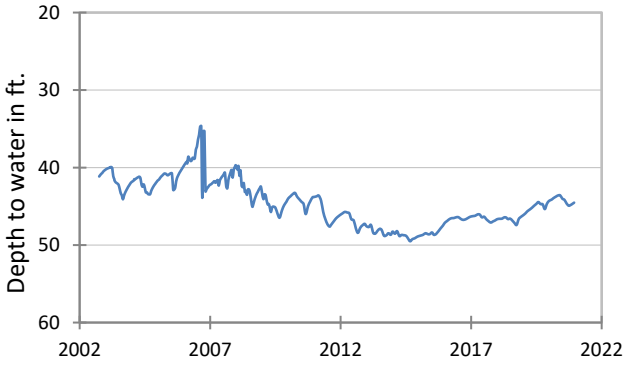
(15) State Well #52-16-802
Fort Stockton, Pecos County
Edwards-Trinity (Plateau) Aquifer



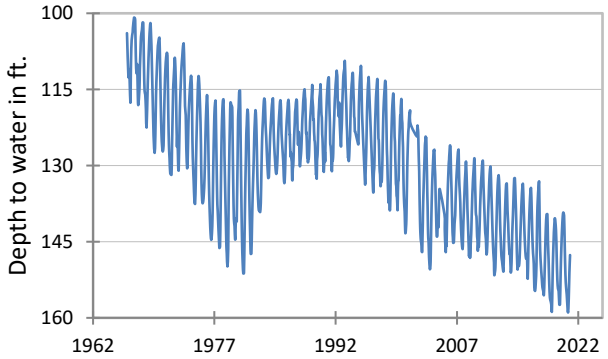
(16) State Well #55-12-134
Eldorado, Schleicher County
Edwards-Trinity (Plateau) Aquifer



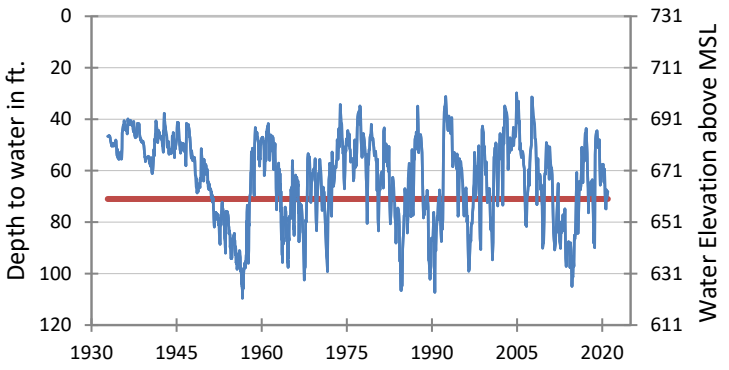
(17) State Well #21-35-748
Near O'Brien, Haskell County
Seymour Aquifer

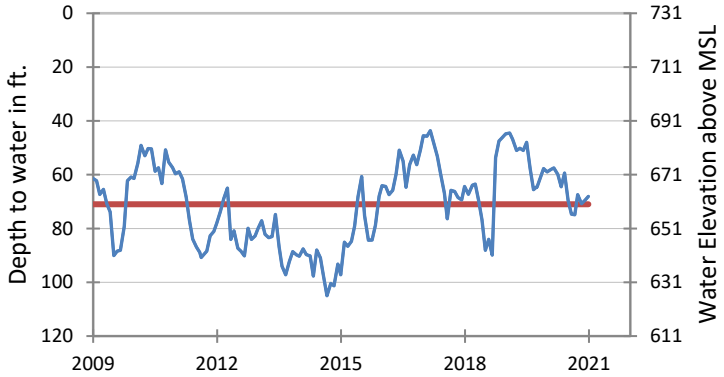


(18) State Well #48-07-516
Dell City, Hudspeth County
Bone Spring - Victorio Peak Aquifer



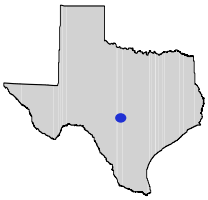
(8) State Well #68-37-203 (J-17)
San Antonio, Bexar County
Edwards (Balcones Fault Zone) Aquifer





The late December water-level measurement in this Edwards (Balcones Fault Zone) Aquifer well, elevation 731 feet above mean sea level, was 68.10 feet below land surface, or 662.90 feet above mean sea level. This was 1.40 feet above last month's measurement, 9.10 feet below last year's measurement, and 21.46 feet below the initial measurement recorded in 1932.

Water levels below the red line indicate periods in which Edwards Aquifer Authority Stage 1 drought restrictions are in effect.



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.

Trinity Aquifer

Well #56-54-405, 620 feet deep
unused, Kerr County

The Trinity Aquifer is a major aquifer that extends across much of the central and northeastern part of Texas. It is composed of several smaller aquifers contained within the Trinity Group, including the Antlers, Glen Rose, Paluxy, Twin Mountains, Travis Peak, Hensell, and Hosston aquifers. These aquifers consist of limestone, sands, clays, gravels, and conglomerates. Their combined freshwater saturated thickness averages about 600 feet in North Texas and about 1,900 feet in Central Texas. The groundwater is fresh but very hard in the outcrop of the aquifer. Total dissolved solids increase from less than 1,000 milligrams per liter in the east and southeast to between 1,000 and 5,000 milligrams per liter, or slightly to moderately saline, as the depth to the aquifer increases. Sulfate and chloride concentrations also tend to increase with depth. The aquifer is one of the most extensive and highly used in Texas. The primary use is for municipalities, but it is also used for irrigation, livestock, and domestic purposes.

The initial water level in this well was measured by the Headwaters Groundwater Conservation District in April 2004 at 431 feet below land surface. The TWDB installed an automatic water level recorder in this well in August 2004, which began collecting near-daily measurements (displayed online) and near-weekly measurements (in the groundwater database). The hydrograph shows a decreasing trend in water level roughly equal to -1.25 ft/yr. The period from 2004 to 2012 depicts irregular intervals of water level decline and recharge. Distinct seasonal fluctuations in water level become apparent after 2012.

Far away (left), and close-up (right) images of well #56-54-405.