Texas Water Conditions Report

May 2020

Texas Water Development Board

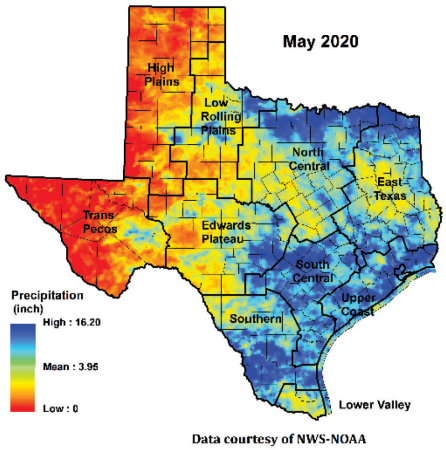
RAINFALL

Little to no rain fell over the majority of the High Plains, Trans Pecos, Low Rolling Plains, Edwards Plateau and the Lower Valley, portions of southwestern North Central, north and west Southern, and central East Texas climate divisions [yellow, orange and red shading, Figure 1(a)]. Some rainfall [light blue and dark blue shading, Figure 1(a)] was recorded over scattered areas of northern central and eastern Edwards Plateau, north central Low Rolling Plains, northern, central, eastern and southern portions of North Central, northeastern and western areas of the Lower Valley, small portions of eastern Trans Pecos, a small patch of southeastern High Plains, northern and southern East Texas, and the majority of the Southern, South Central, and Upper Coast climate divisions, reaching 16.20 inches in portions of the state [dark blue shading, Figure 1(a)].

Monthly rainfall for May was below-average [yellow and orange shading, Figure 1(b)], compared to historical data from 1981–2010, in much of the state, including the majority of the High Plains and Trans Pecos, northern and southern Low Rolling Plains, southern, central and northwestern Edwards Plateau, central and southwestern North Central, central East Texas, northeastern South Central, central Lower Valley, scattered across portions of northwestern Southern and parts of the Upper Coast climate divisions.

Above average rainfall fell in small scattered areas in northwestern, northeastern and more so in eastern Trans Pecos, southeastern portions of High Plains, northwestern, southwestern, central and east Edwards Plateau, central, western, and northeastern Low Rolling Plains, scattered in northern, and eastern areas of the North Central climate division, northern, western, eastern, and southern borders of the Lower Valley, northern and southern East Texas, the majority of the Upper Coast and Southern climate divisions [green and blue shading, Figure 1(b)]. Additionally, parts of the Trans Pecos received 3–6 times the average amount of rainfall and parts of the Southern climate division received 3–8 times the average amount of rainfall.

(a)



(b)

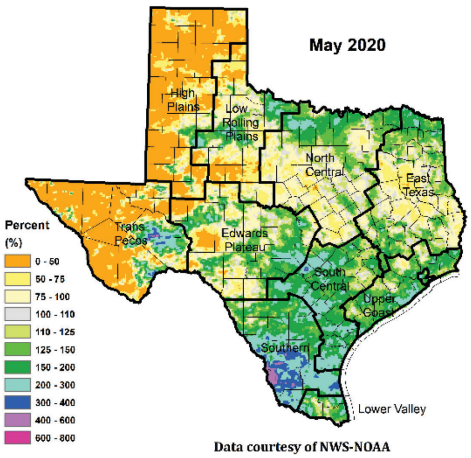


Figure 1: (a) Monthly accumulated rainfall, (b) Percent of normal rainfall

RESERVOIR STORAGE

At the end of May 2020, total conservation storage* in 118 of the state's major water supply reservoirs plus Elephant Butte Reservoir in New Mexico was 27.5 million acre-feet or 85 percent of total conservation storage capacity (Figure 2). This is approximately 0.057 million acre-feet less than a month ago and approximately 1.08 million acre-feet less than the end of May 2019.

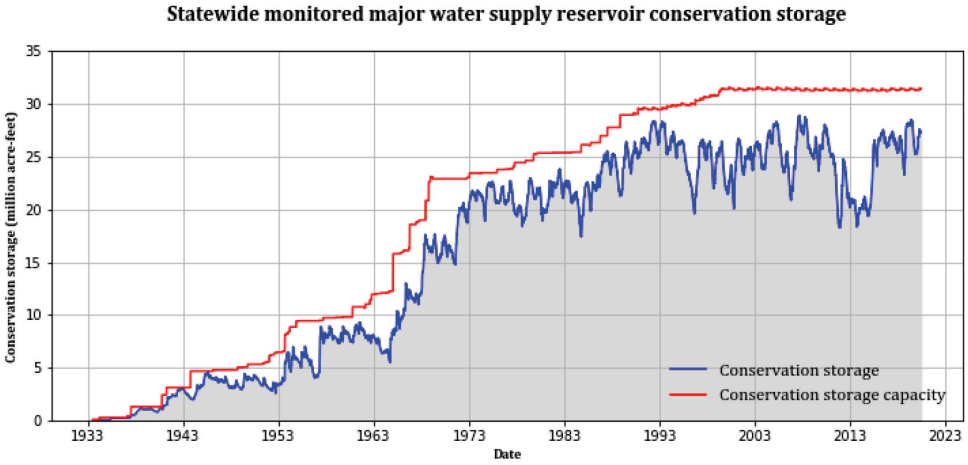


Figure 2: Statewide reservoir conservation storage

Out of 118 reservoirs in the state, 65 reservoirs held 100 percent of conservation storage capacity (Figure 3). Additionally, 24 were at or above 90 percent full. Seven reservoirs [E.V. Spence (26 percent full), Greenbelt (20 percent full), J.B. Thomas (23 percent full), Mackenzie (11 percent full), O. C. Fisher (9 percent full), Palo Duro Reservoir (3 percent full), and White River (20 percent full)] remained below 30 percent full. Elephant Butte Reservoir (located in New Mexico) was at 21 percent full.

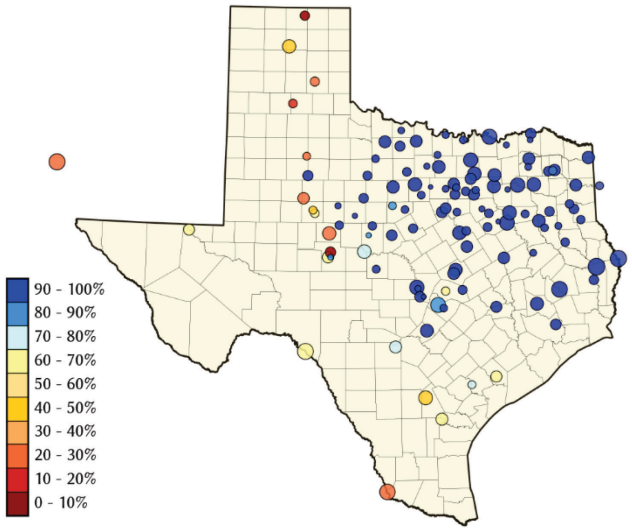


Figure 3: Reservoir conservation storage at end-May expressed as percent full (%)

*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 Low Rolling Plains (73.5 percent full), North Central (99.3 percent full), South Central (87.4 percent full), East Texas (99.6 percent full), and Upper Coast (96.3 percent full) climate divisions (Figure 4). Conservation storage in the Edwards Plateau (64.9 percent full) climate division was abnormally low (Figure 4). The High Plains (34.2 percent full), Southern (38.9 percent full), and Trans Pecos (26.9 percent full) climate divisions had severely low conservation storage (Figure 4).

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

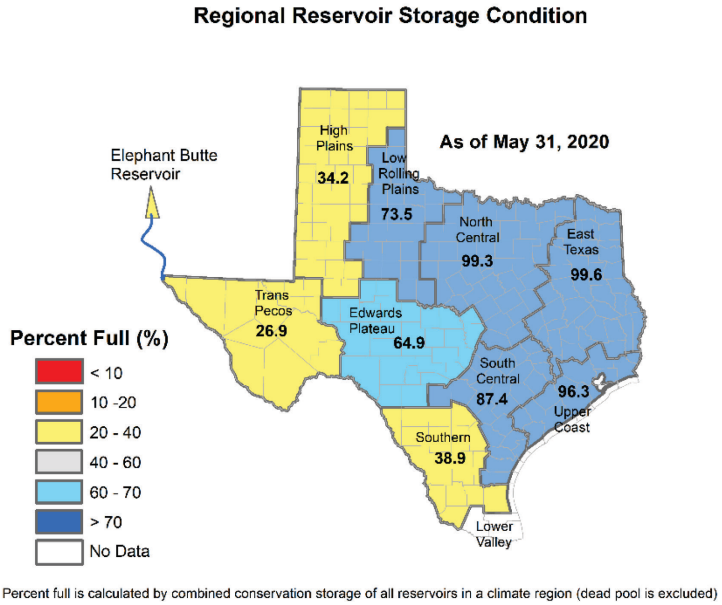


Figure 4: Reservoir Storage Index* by climate division at 5/31/2020

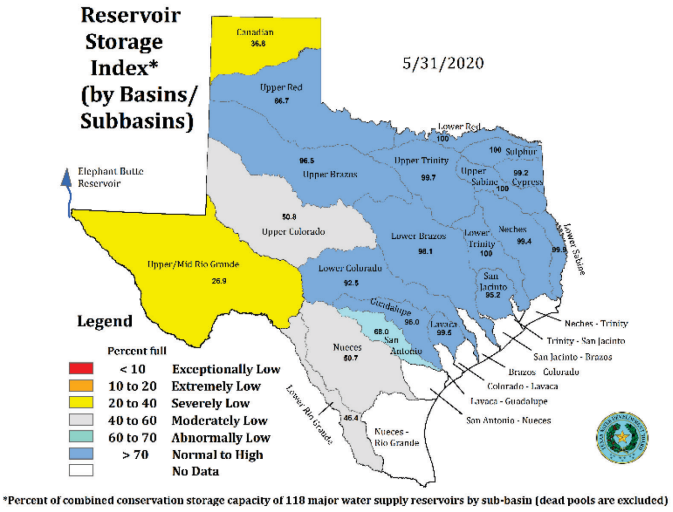


Figure 5: Reservoir Storage Index* by river basin/sub-basin at 5/31/2020

*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-May		Storage change from end-Apr 2020		Storage change from end-May 2019	
	(acre-feet)	(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)**	(%)
Abilene, Lake	7,900	7,230	92	-226	-3	-670	-8
Alan Henry Reservoir	96,207	96,207	100	2,163	2	3,824	4
*Amistad Reservoir (Texas & Mexico)	3,275,532	1,148,217	35	-113,764	-3	-472,144	-14
*Amistad Reservoir (Texas)	1,840,849	1,080,109	59	-128,753	-7	-385,932	-21
Amon G Carter, Lake	19,266	19,266	100	0	0	0	0
Aquilla Lake	43,243	43,243	100	0	0	0	0
Arlington, Lake	40,157	39,926	99	3,847	10	728	2
Arrowhead, Lake	230,359	230,359	100	11,016	5	0	0
Athens, Lake	29,503	29,503	100	0	0	0	0
*Austin, Lake	23,972	23,065	96	93	0	200	1
B A Steinhagen Lake	69,186	61,199	88	-7,987	-12	-3,280	-5
Bardwell Lake	46,122	46,122	100	0	0	0	0
Belton Lake	435,225	435,225	100	0	0	0	0
Benbrook Lake	85,648	85,648	100	0	0	0	0
Bob Sandlin, Lake	192,417	192,417	100	0	0	0	0
Bonham, Lake	11,027	11,027	100	179	2	0	0
Brady Creek Reservoir	28,808	25,725	89	-275	0	-3,083	-11
Bridgeport, Lake	366,236	366,236	100	0	0	0	0
*Brownwood, Lake	130,868	120,261	92	-3,324	-3	-10,607	-8
Buchanan, Lake	816,904	815,604	100	-650	0	-1,084	0
Caddo, Lake	29,898	29,898	100	0	0	no data	
Canyon Lake	378,781	369,548	98	13,140	3	-9,233	-2
Cedar Creek Reservoir in Trinity	644,686	644,686	100	0	0	0	0
Champion Creek Reservoir	41,580	26,823	65	-571	-1	-3,692	-9
Cherokee, Lake	40,094	40,094	100	0	0	0	0
Choke Canyon Reservoir	662,820	284,827	43	-3,935	0	-77,211	-12
*Cisco, Lake	29,003	25,280	87	-329	-1	-2,717	-9
Coleman, Lake	38,075	36,477	96	-572	-2	-1,598	-4
Colorado City, Lake	31,040	23,978	77	1,274	4	-7,062	-23
*Coleto Creek Reservoir	30,758	12,995	42	-508	-2	-3,007	-10
Conroe, Lake	410,988	395,417	96	375	0	938	0
Corpus Christi, Lake	256,062	181,306	71	5,410	2	-74,163	-29
Crook, Lake	9,195	9,195	100	0	0	0	0
Cypress Springs, Lake	66,756	66,756	100	0	0	0	0
E. V. Spence Reservoir	517,272	134,796	26	-4,393	0	-15,634	-3
Eagle Mountain Lake	179,880	179,880	100	0	0	0	0
Elephant Butte Reservoir (Texas)	852,491	174,763	21	-41,990	-5	-34,919	-4
Elephant Butte Reservoir (Total Storage)	1,960,900	404,543	21	-97,200	-5	-80,830	-4
*Falcon Reservoir (Texas & Mexico)	2,646,817	559,549	21	102,111	4	-308,855	-12
*Falcon Reservoir (Texas)	1,551,007	493,837	32	74,433	5	-125,875	-8
Fork Reservoir, Lake	605,061	605,061	100	2,119	0	0	0
Fort Phantom Hill, Lake	70,030	69,560	99	-470	0	-470	0
Georgetown, Lake	36,823	26,149	71	-652	-2	-10,674	-29
Graham, Lake	45,288	45,288	100	616	1	0	0
Granbury, Lake	132,949	131,728	99	-569	0	-1,139	0

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of lake or reservoir	Storage capacity	Storage at end-May		Storage change from end-Apr 2020		Storage change from end-May 2019	
	(acre-feet)	(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)**	(%)
		Continued					
Granger Lake	51,822	51,822	100	0	0	0	0
Grapevine Lake	163,064	163,064	100	0	0	0	0
Greenbelt Lake	59,968	11,896	20	-181	0	-1,462	-2
*Halbert, Lake	6,033	5,389	89	-6	0	55	1
Hords Creek Lake	8,109	6,029	74	-272	-3	-807	-10
Houston County Lake	17,113	17,113	100	0	0	0	0
Houston, Lake	130,147	120,098	92	216	0	540	0
Hubbard Creek Reservoir	313,298	303,051	97	-4,786	-2	-10,247	-3
Hubert H Moss Lake	24,058	24,058	100	119	0	44	0
Inks, Lake	13,962	13,005	93	165	1	113	1
J. B. Thomas, Lake	199,931	46,050	23	-2,650	-1	-21,569	-11
Jacksonville, Lake	25,670	25,670	100	0	0	0	0
Jim Chapman Lake (Cooper)	260,332	260,332	100	0	0	0	0
Joe Pool Lake	175,800	175,800	100	0	0	0	0
Kemp, Lake	245,307	245,307	100	0	0	0	0
Kickapoo, Lake	86,345	84,944	98	4,462	5	-1,401	-2
Lavon Lake	406,388	406,388	100	0	0	0	0
Leon, Lake	27,762	26,809	97	-361	-1	-953	-3
Lewisville Lake	563,228	563,228	100	0	0	0	0
Limestone, Lake	203,780	203,780	100	0	0	0	0
*Livingston, Lake	1,741,867	1,741,867	100	0	0	0	0
*Lost Creek Reservoir	11,950	11,950	100	38	0	0	0
Lyndon B Johnson, Lake	115,249	110,697	96	61	0	-62	0
Mackenzie Reservoir	46,450	5,022	11	-114	0	-751	-2
Marble Falls, Lake	6,901	6,852	99	16	0	-6	0
Martin, Lake	75,726	75,726	100	0	0	642	1
Medina Lake	254,823	173,385	68	-6,727	-3	-80,893	-32
Meredith, Lake	500,000	205,037	41	-4,380	0	663	0
Millers Creek Reservoir	26,768	26,768	100	0	0	0	0
*Mineral Wells, Lake	5,273	5,273	100	0	0	0	0
Monticello, Lake	34,740	30,393	87	147	0	-705	-2
Mountain Creek, Lake	22,850	22,850	100	0	0	0	0
Murvaul, Lake	38,285	38,285	100	0	0	0	0
Nacogdoches, Lake	39,522	38,655	98	-867	-2	-670	-2
Nasworthy	9,615	8,393	87	160	2	-25	0
Navarro Mills Lake	49,827	49,827	100	0	0	0	0
New Terrell City Lake	8,583	8,583	100	0	0	0	0
Nocona, Lake (Farmers Crk)	21,444	21,444	100	0	0	0	0
North Fork Buffalo Creek Reservoir	15,400	15,400	100	257	2	0	0
O' the Pines, Lake	268,566	268,566	100	27,203	10	0	0
O. C. Fisher Lake	115,742	10,065	9	-390	0	-4,605	-4
*O. H. Ivie Reservoir	554,340	391,506	71	-6,921	-1	8,996	2
Oak Creek Reservoir	39,210	35,688	91	-1,103	-3	-3,522	-9

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of lake or reservoir	Storage capacity	Storage at end-May		Storage change from end-Apr 2020		Storage change from end-May 2019	
	(acre-feet)	(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)**	(%)
	Continued						
Palestine, Lake	367,303	367,303	100	0	0	0	0
Palo Duro Reservoir	61,066	1,943	3	-306	0	-8,707	-14
Palo Pinto, Lake	26,766	25,018	93	-925	-3	-1,748	-7
Pat Cleburne, Lake	26,008	26,008	100	0	0	0	0
*Pat Mayse Lake	113,683	113,683	100	0	0	0	0
Possum Kingdom Lake	538,139	533,320	99	-178	0	6,198	1
Proctor Lake	54,762	53,706	98	-1,056	-2	-1,056	-2
Ray Hubbard, Lake	439,559	439,141	100	-418	0	835	0
Ray Roberts, Lake	788,167	788,167	100	0	0	0	0
Red Bluff Reservoir	151,110	95,285	63	-4,216	-3	-899	0
Richland-Chambers Reservoir	1,087,839	1,087,839	100	0	0	0	0
Sam Rayburn Reservoir	2,857,077	2,845,828	100	-11,249	0	-11,249	0
Somerville Lake	150,293	150,293	100	0	0	0	0
Squaw Creek, Lake	151,250	151,250	100	0	0	0	0
Stamford, Lake	51,570	51,570	100	0	0	0	0
Stillhouse Hollow Lake	227,771	227,771	100	0	0	0	0
Striker, Lake	16,934	16,934	100	0	0	0	0
Sweetwater, Lake	12,267	11,990	98	-277	-2	-277	-2
*Sulphur Springs, Lake	17,747	17,747	100	4,150	23	0	0
Tawakoni, Lake	871,685	871,685	100	0	0	0	0
Texana, Lake	159,566	158,923	100	30,528	19	-183	0
Texoma, Lake (Texas & Oklahoma)	2,487,601	2,645,883	100	119,845	5	-953,284	-38
Texoma, Lake (Texas)	1,243,801	1,243,801	100	0	0	0	0
Toledo Bend Reservoir (Texas & Louisiana)	4,472,900	4,476,330	100	-105,856	-2	-57,144	-1
Toledo Bend Reservoir (Texas)	2,236,450	2,236,115	100	-335	0	-335	0
Travis, Lake	1,113,348	966,286	87	-7,439	0	-147,062	-13
Twin Buttes Reservoir	182,454	120,907	66	-3,089	-2	-14,800	-8
Tyler, Lake	72,073	72,073	100	0	0	0	0
Waco, Lake	189,418	189,418	100	0	0	0	0
Waxahachie, Lake	10,780	10,780	100	0	0	0	0
Weatherford, Lake	17,812	17,703	99	-33	0	-109	0
White River Lake	29,880	5,877	20	-100	0	-1,362	-5
Whitney, Lake	553,344	529,627	96	12,626	2	-23,717	-4
Worth, Lake	24,419	24,419	100	1,192	5	0	0
Wright Patman Lake	310,382	310,382	100	0	0	0	0
STATEWIDE TOTAL							
STATEWIDE TOTAL	**32,314,405**	**27,555,571**	**85**	**-57,578**	**0**	**-1,087,456**	**-3**

STREAMFLOW CONDITIONS

Much of the state had near normal (25–75th percentile, green shading in Figure 6) streamflow according to runoff hydrologic unit codes calculated for May 2020 (green shading in Figure 6) streamflow. Above normal streamflow (76–90th percentile, light blue shading in Figure 6) was seen in the Upper Red, Upper Trinity, Sulphur, and Mid Sabine river basins.

Below normal (10–24th percentile, orange shading in Figure 6) streamflow was recorded in the Canadian, Upper Red, Upper Brazos, Upper Colorado, Upper and Lower Nueces, Lavaca-Guadalupe, Nueces-Rio Grande, Upper Rio Grande river basins. Some sub-watersheds had much below normal (less than the 10th percentile, dark brown shading in Figure 6) streamflow. These include the Upper Canadian, Upper Colorado, and the Upper Rio Grande river basins.

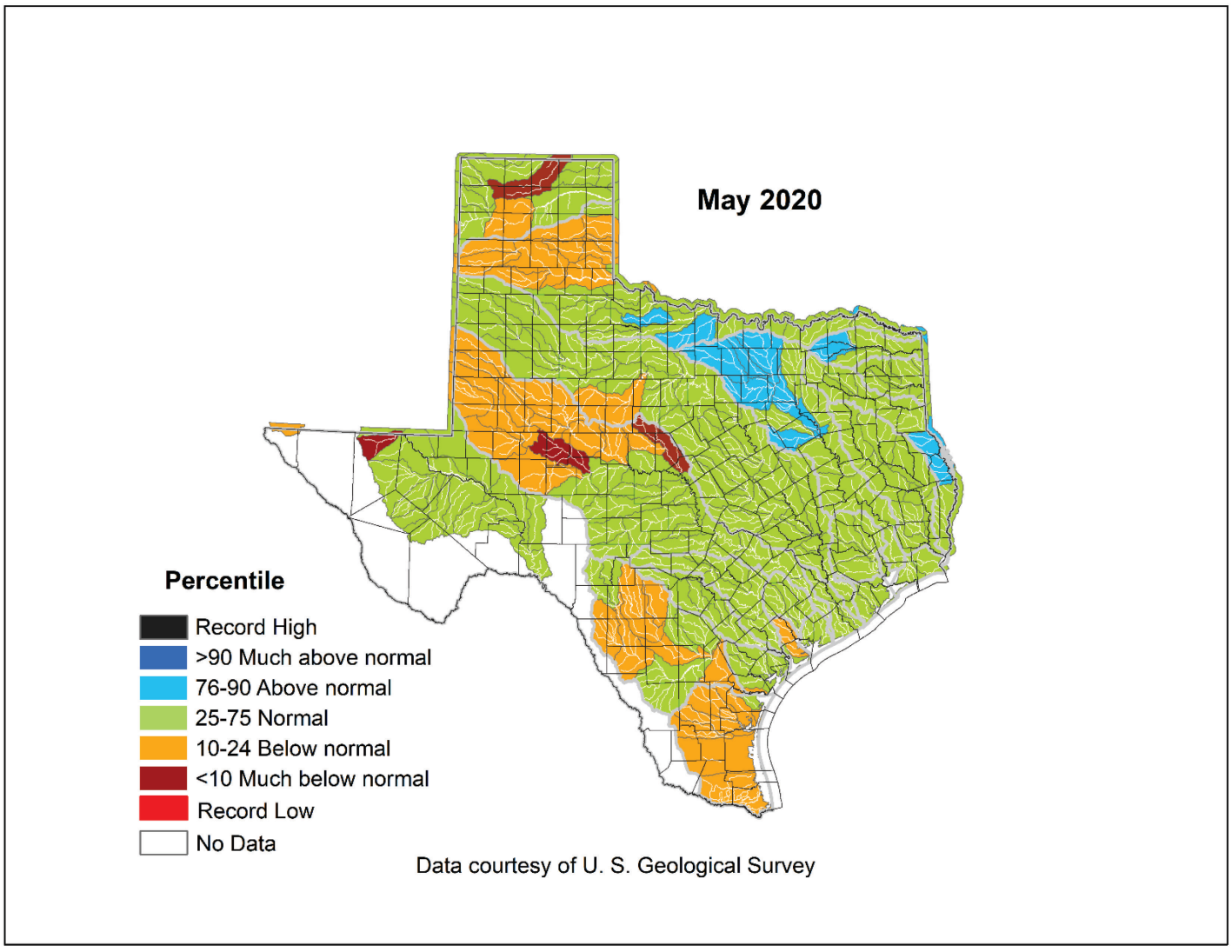


Figure 6: Runoff percentiles by the U.S. Geological Survey's Hydrologic Unit Code

SOIL MOISTURE CONDITIONS

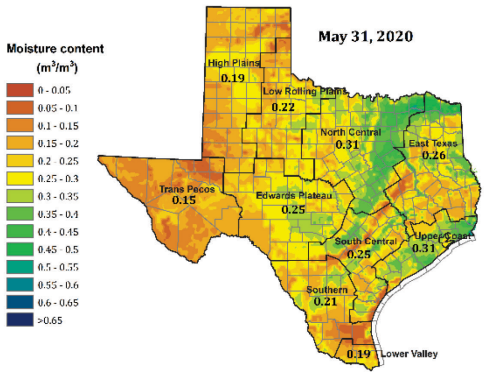
Root zone soil moisture at the end of May 2020 [Figure 7(a)] was moderate [> 0.20 cubic meters of water per bulk cubic meter soil (m^3/m^3)] in much of the state. There were areas of low soil moisture [< 0.15 cubic meters of water per bulk cubic meter soil (m3/m3)] in the Trans Pecos, southern and northern High Plains, southwest Edwards Plateau, portions of southern and northern Southern climate division, southern South Central, and a band of low moisture beginning at the northeast corner of the Southern climate division reaching across central, northeast South Central to the southwestern corner of East Texas.

In other climate divisions, root zone soil moisture was high [< 0.3 cubic meters of water per bulk cubic meter soil (m3/m3)]. These divisions include northeast Low Rolling Plains, scattered areas in northern, eastern, central, southern North Central, northeast, central and southern South Central, and central Southern, northern, central and scattered parts of southern East Texas, and much of the Upper Coast climate divisions [Figure 7(a)].

Compared to conditions at the end of May 2019, soil moisture content increased [green to blue shading in Figure 7(b)] in the southeastern portions of the state including the portions of southern Edwards Plateau, northern and southern South Central, eastern and western Upper Coast, and the majority of the Southern and Lower Valley climate divisions.

Soil moisture content decreased [yellow, orange, and brown shading in Figure 7(b)] in the majority of the High Plains, North Central, and East Texas, northwestern Trans Pecos, northwestern Edwards Plateau, and northern, southern, and eastern Low Rolling Plains 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)

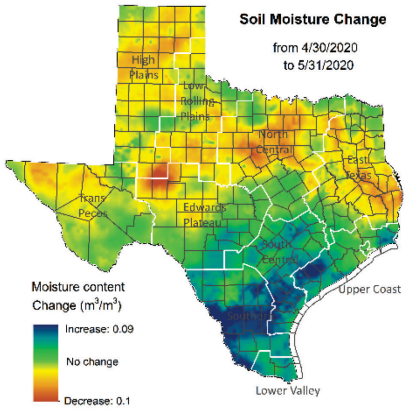
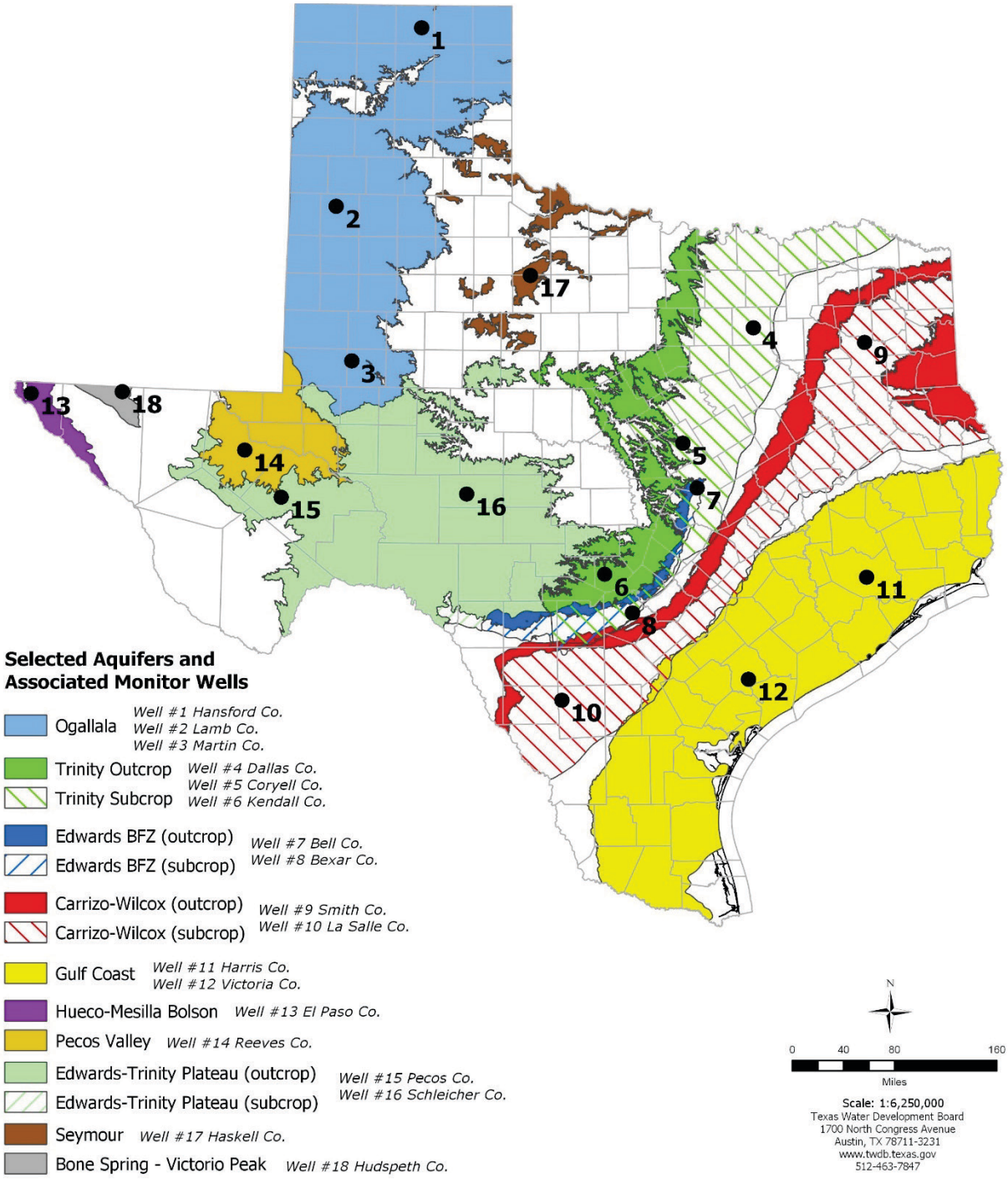


Figure 7: Root zone soil moisture conditions in May, 2020 (a) and the difference in root zone soil moisture between end-April 2020 and end-May 2020 (b)



May 2020 GROUNDWATER LEVELS IN OBSERVATION WELLS

Water-level measurements were available for 17 key monitoring wells in the state. Water levels rose in 8 monitoring wells since the beginning of May, ranging from an increase of 0.01 feet in the Haskell County Seymour Aquifer well (#17 on map) to 5.10 feet in the Bexar County Edwards (Balcones Fault Zone) Aquifer (#8 on map). Water levels declined in 9 monitoring wells, ranging from a decline of -0.03 feet in the Coryell County Trinity Aquifer well (#5 on map) and Hansford County Ogallala Aquifer well (#1 on map) to -13.40 feet in the Pecos County Edwards-Trinity Plateau Aquifer well (#15 on map). The J-17 well (#8 on map) in San Antonio recorded a water level of 59.40 feet below land surface or 671.60 feet above mean sea level. Water levels are 11.60 feet above the Stage 1 critical management level for the San Antonio portion of the Edwards (Balcones Fault Zone) Aquifer.

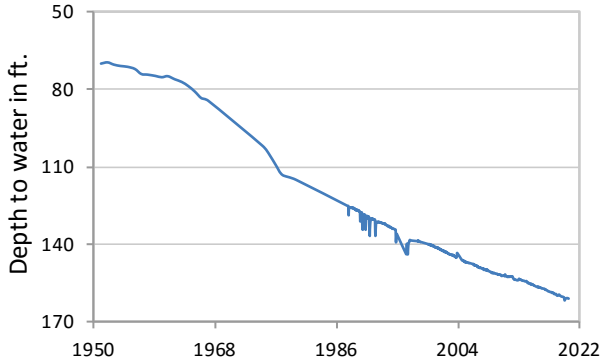
***Well numbers used in this publication on the aquifer map to indicate the monitoring well location (numbers 1 - 17) are different than the TWDB's seven-digit state well number.**

Monitoring Well	May	April	Month Change	Year Change	Historical Change	First Measured
(1) Hansford 0354301	161.09	161.06	-0.03	-0.75	-90.97	1951
(2) Lamb 1053602	151.00	150.91	-0.09	-0.82	-122.83	1951
(3) Martin 2739903	144.20	143.51	-0.69	-1.03	-39.31	1964
(4) Dallas 3319101	NA	NA	NA	NA	NA	1954
(5) Coryell 4035404	527.40	527.37	-0.03	-3.36	-235.40	1955
(6) Kendall 6802609	145.99	138.03	-7.96	-29.28	-85.99	1975
(7) Bell 5804816	122.56	122.96	0.40	-4.50	0.95	2008
(8) Bexar 6837203	59.40	64.50	5.10	-8.40	-12.76	1932
(9) Smith 3430907	433.07	433.44	0.37	-0.01	-133.07	1977
(10) La Salle 7738103	512.00	516.17	4.17	-20.20	-258.93	2003
(11) Harris 6514409	188.25	188.57	0.32	2.38	-52.75*	1947**
(12) Victoria 8017502	30.76	30.68	-0.08	2.86	3.24	1958
(13) El Paso 4913301	295.84	296.01	0.17	2.32	-63.94	1964
(14) Reeves 4644501	163.26	165.07	1.81	2.40	-71.17	1952
(15) Pecos 5216802	208.54	195.14	-13.40	-11.72	38.34	1976
(16) Schleicher 5512134	290.35	288.79	-1.56	-18.78	11.55	2003
(17) Haskell 2135748	43.59	43.60	0.01	1.34	-0.59	2002
(18) Hudspeth 4807516	151.37	145.89	-5.48	1.01	-47.45	1966

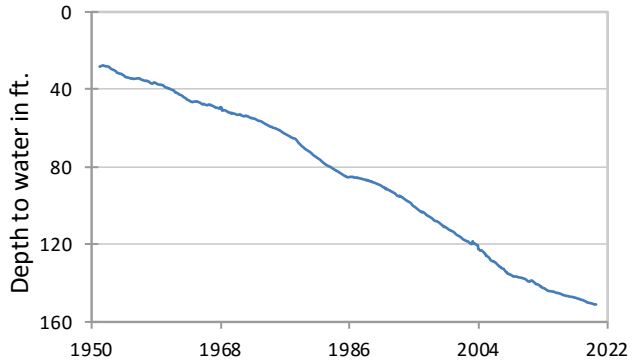
*Change since the original measurement of 135.5 feet below land surface in 1947 (**measurement not shown on the hydrograph)

May 2020 OBSERVATION WELL HYDROGRAPHS

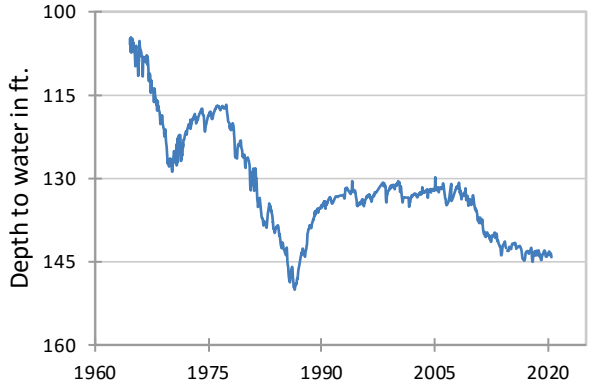
(1) State Well #03-54-301
Near Spearman, Hansford County
Ogallala Aquifer



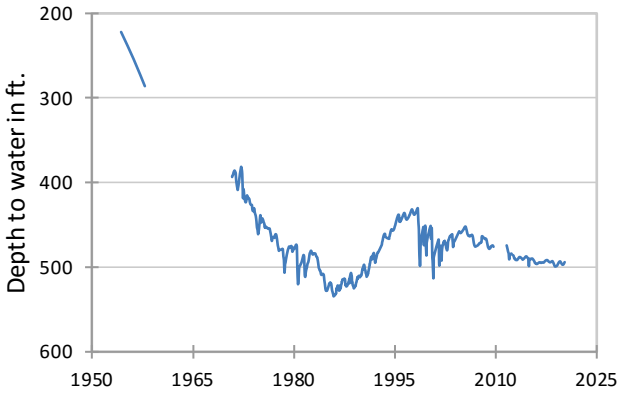
(2) State Well #10-53-602
Near Earth, Lamb County
Ogallala Aquifer



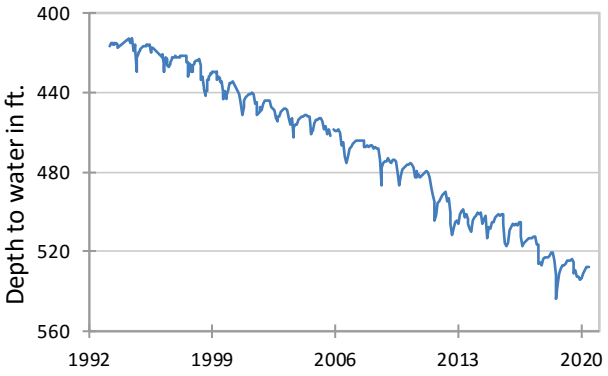
(3) State Well #27-39-903
Northwest Martin County
Ogallala Aquifer



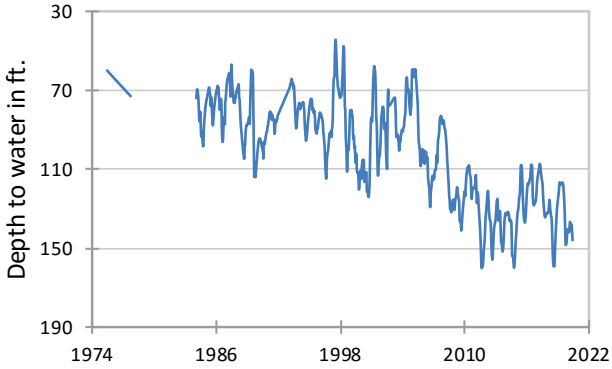
(4) State Well #33-19-101
Southeast Dallas, Dallas County
Twin Mountains Formation-Trinity Aquifer



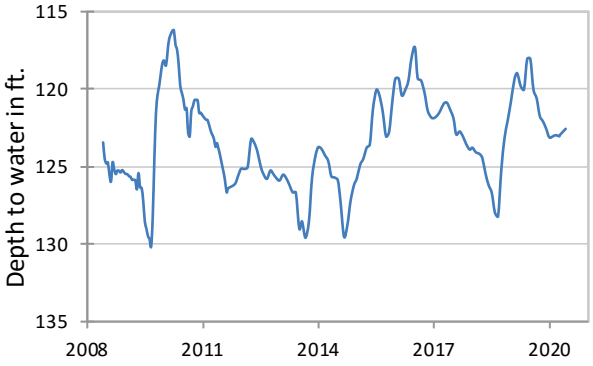
(5) State Well #40-35-404
Gatesville, Coryell County
Hosston Formation-Trinity Aquifer



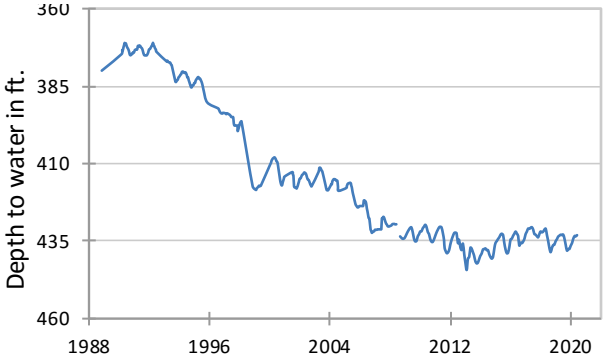
(6) State Well #68-02-609
Waring, Kendall County
Cow Creek Formation-Trinity Aquifer



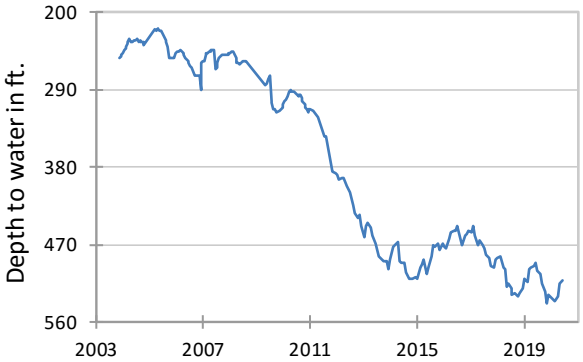
(7) State Well #58-04-816
Near Salado, Bell County
Edwards (Balcones Fault Zone) Aquifer



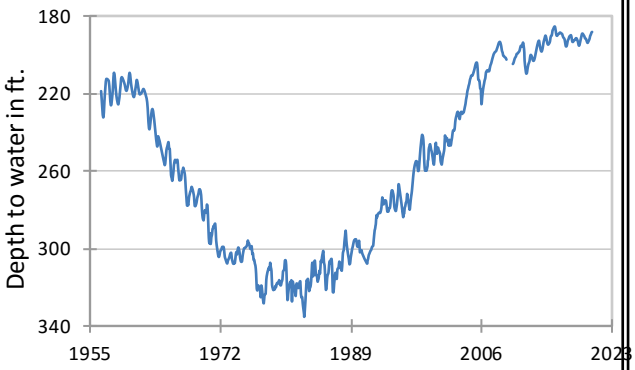
(9) State Well #34-30-907
Red Springs, Smith County
Carrizo-Wilcox Aquifer



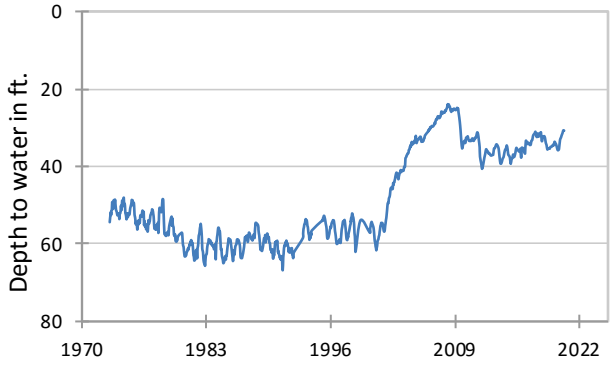
(10) State Well #77-38-103
Near Cotulla, La Salle County
Carrizo-Wilcox Aquifer



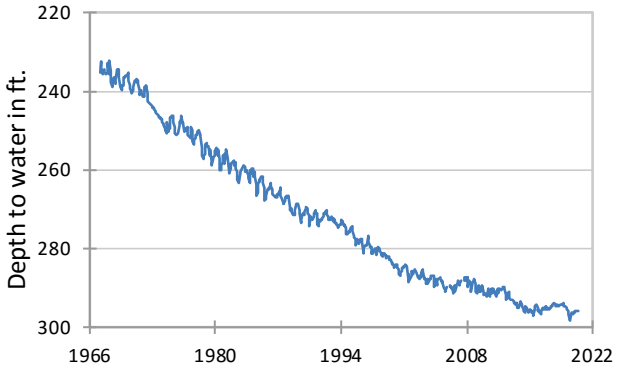
(11) State Well #65-14-409
Alief, Harris County
Evangeline Formation-Gulf Coast Aquifer



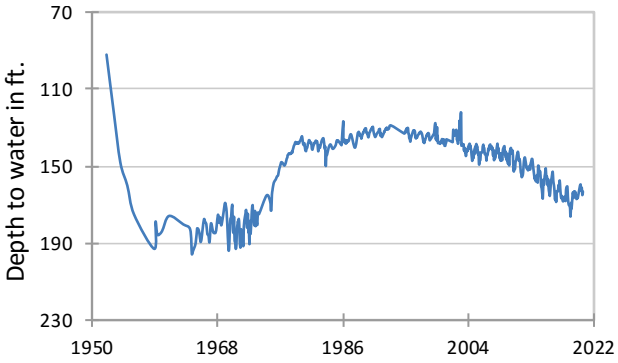
(12) State Well #80-17-502
Near Bloomington, Victoria County
Lissie Formation-Gulf Coast Aquifer



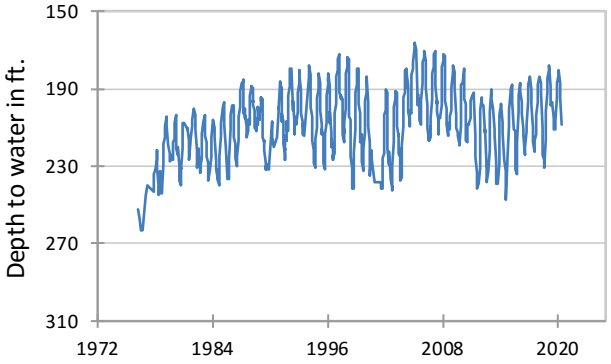
(13) State Well #49-13-301
El Paso, El Paso County
Hueco-Mesilla Bolson Aquifer



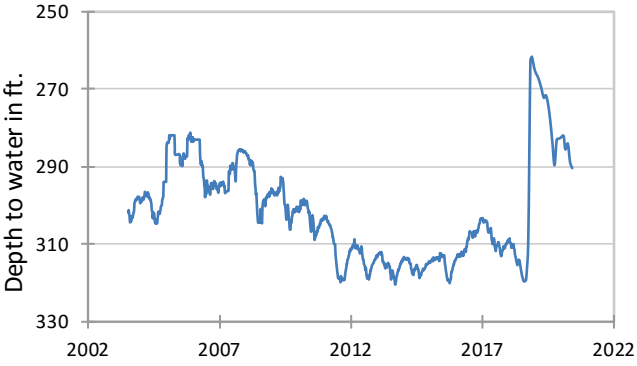
(14) State Well #46-44-501
Near Pecos, Reeves County
Pecos Valley Aquifer



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

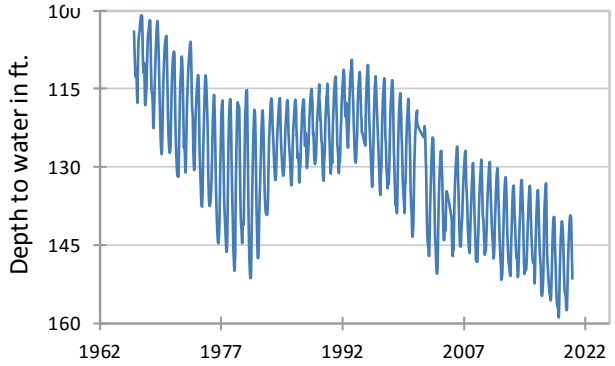


(16) State Well #55-12-134
Eldorado, Schleicher County
Trinity Aquifer

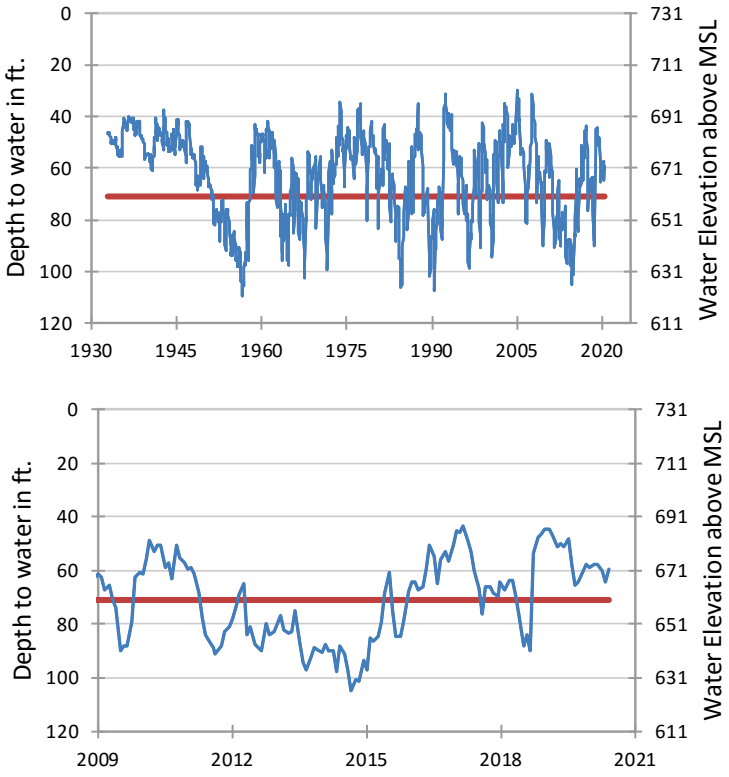


(17) State Well #21-35-748
Near O'Brien, Haskell County
Seymour Aquifer

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

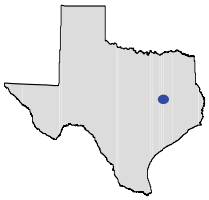


(8) State Well #68-37-203 (J-17)
San Antonio, Bexar County
Edwards (Balcones Fault Zone) Aquifer



The late May water-level measurement in this Edwards (Balcones Fault Zone) Aquifer well, elevation 731 feet above mean sea level, was 59.40 feet below land surface, or 671.60 feet above mean sea level. This was 5.10 feet above last month's measurement, 8.40 feet below last year's measurement and 12.76 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.

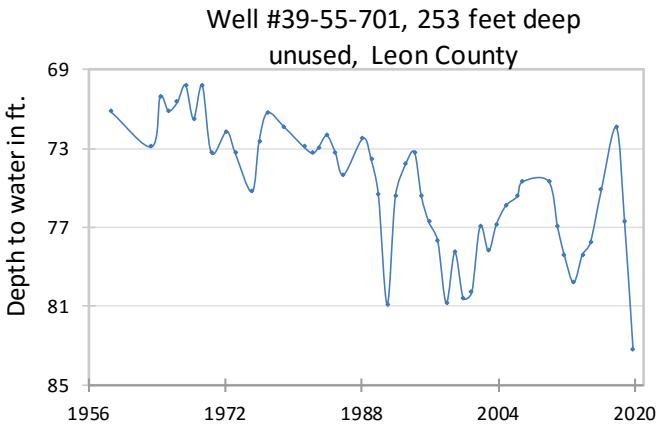


HYDROGRAPH OF THE MONTH

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

Queen City Aquifer

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. The aquifer is used primarily for livestock and domestic purposes, with significant municipal and industrial use in northeast Texas. Water levels have remained fairly stable over time in the northern part of the aquifer. Water level declines are more common in the central (10 to 70 feet) and southern (5 to 130 feet) parts of the aquifer.



The initial measurement of 71.16 feet below land surface was recorded in a Texas Board of Water Engineers well schedule in August of 1958. In 1963 the Texas Water Development Board began recording near-annual measurements in the unused well. The period of record reveals varying degrees of fluctuation as well as an overall negative trend in water level. The most recent water level of 83.19 feet below land surface is 12.02 feet below the initial measurement recorded in 1958.

Far away (left), and close-up (right) images of well #39-55-701.