Texas Water Conditions Report

September 2020

Texas Water Development Board

RAINFALL

Little to no rain fell over the majority of the High Plains, Trans Pecos, Low Rolling Plains, western and parts of central Edwards Plateau, portions of the Southern, northwestern and central South Central, portions of central and northern East Texas, parts of northern North Central, and northeastern and southwestern regions of the Upper Coast climate divisions [yellow, orange and red shading, Figure 1(a)].

Some rainfall [light blue and dark blue shading, Figure 1(a)] was recorded over portions of northcentral and eastern Edwards Plateau, eastern Low Rolling Plains, the majority of North Central, Upper Coast, East Texas, parts of northern and scattered portions of southern South Central, and scattered areas in the Southern climate divisions, reaching 20.42 inches in portions of the state [dark blue shading, Figure 1(a)].

Monthly rainfall for September was below-average [yellow and orange shading, Figure 1(b)], compared to historical data from 1981–2010, in the majority of the High Plains and Trans Pecos, portions of northwestern Low Rolling Plains, central eastern Edwards Plateau, northwestern and southern South Central, northern and southern Southern, southern Upper Coast, central East Texas, and a small area of northern North Central climate divisions.

Above average rainfall fell in the majority of the Edwards Plateau, North Central, East Texas, northern Upper Coast , portions of eastern Trans Pecos, southern and eastern Low Rolling Plains, northeastern and central Southern, northern South Central, and parts of the Lower Valley climate divisions [green and blue shading, Figure 1(b)]. Additionally, areas of the Low Rolling Plains, Edwards Plateau, North Central, Southern, South Central, Upper Coast and East Texas received 2–8 times the average amount of rainfall.

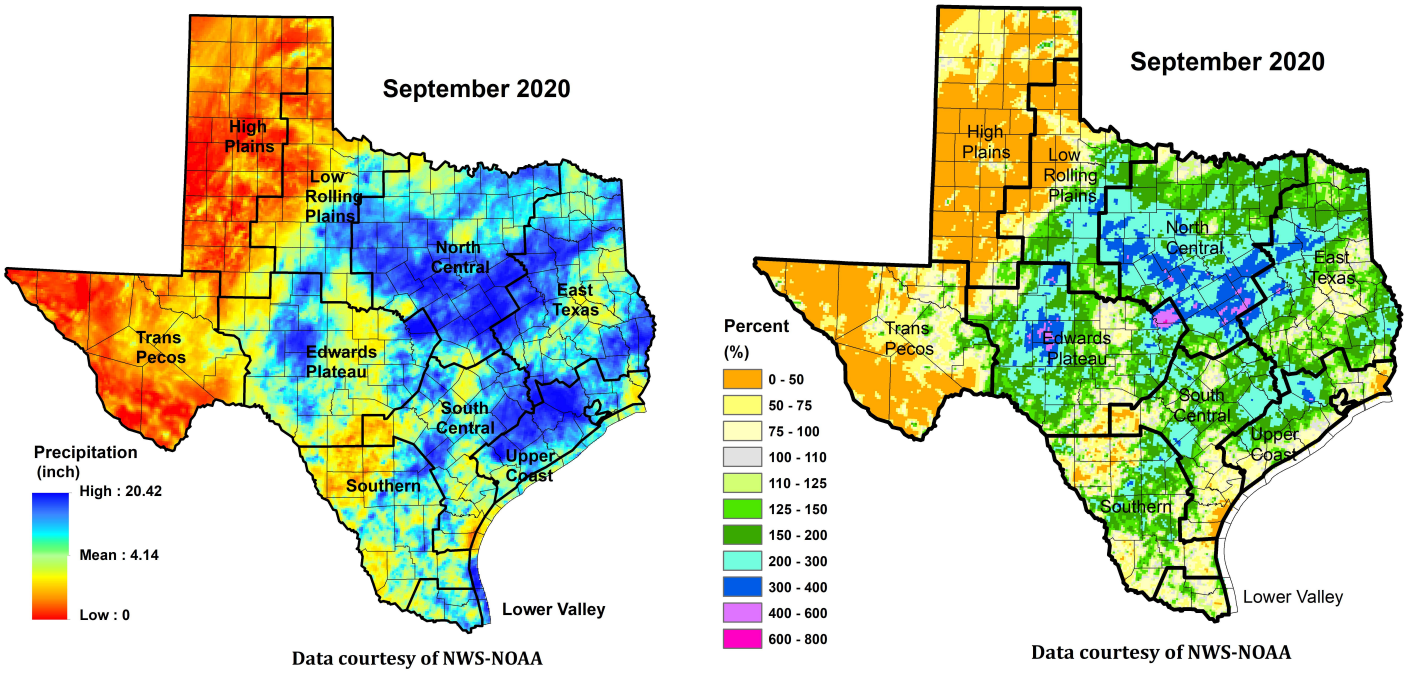


Figure 1: (a) Monthly accumulated rainfall and (b) Percent of normal rainfall

RESERVOIR STORAGE

At the end of September 2020, total conservation storage* in 118 of the state's major water supply reservoirs plus Elephant Butte Reservoir in New Mexico was 25.72 million acre-feet or 80 percent of total conservation storage capacity (Figure 2). This is approximately 0.42 million acre-feet more than a month ago and approximately 0.22 million acre-feet less than the end of September 2019.

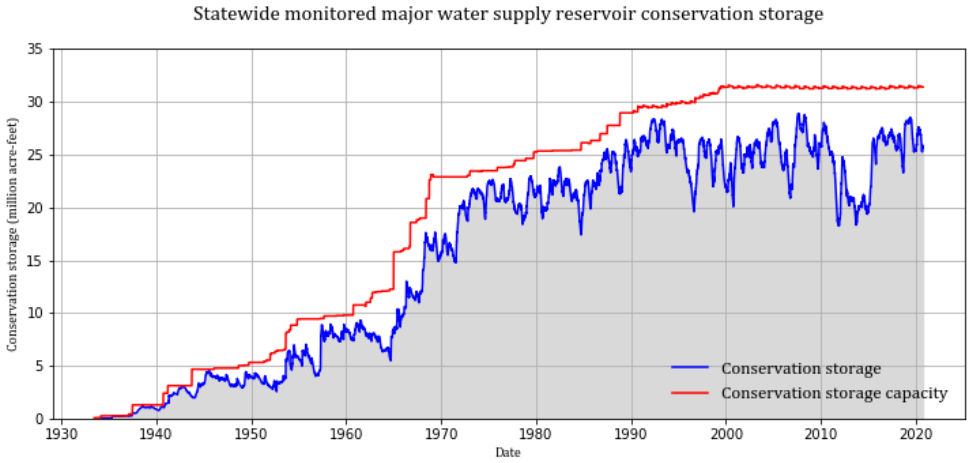


Figure 2: Statewide reservoir conservation storage

Out of 118 reservoirs in the state, 25 reservoirs held 100 percent of conservation storage capacity (Figure 3). Additionally, 51 were at or above 90 percent full. Eight reservoirs [E.V. Spence (24 percent full), Falcon Reservoir (29 percent full), Greenbelt (18 percent full), J.B. Thomas (17 percent full), Mackenzie (9 percent full), O. C. Fisher (7 percent full), Palo Duro Reservoir (2 percent full), and White River (14 percent full) remained below 30 percent full. Elephant Butte Reservoir (located in New Mexico) was at 4 percent full.

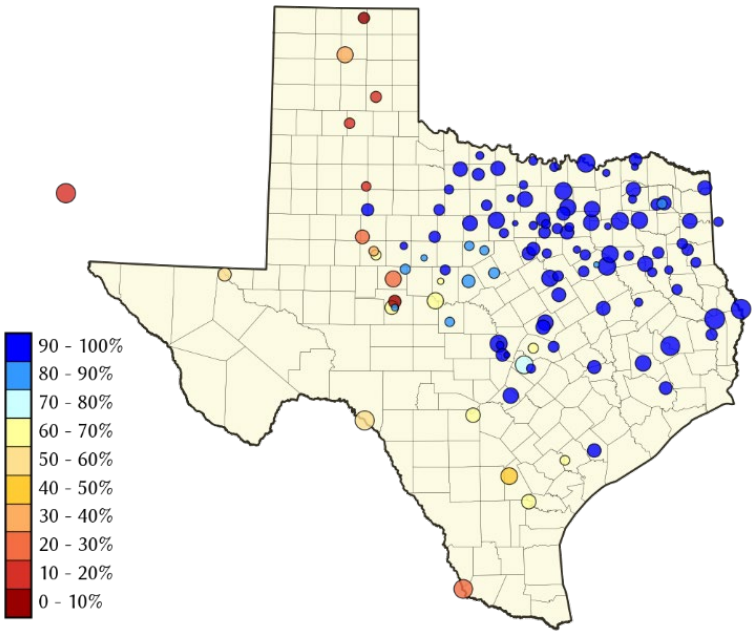


Figure 3: Reservoir conservation storage at end-September expressed as percent full (%)

*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 (96 percent full), East Texas (92.2 percent full), South Central (73.9), and Upper Coast (99.2 percent full) climate divisions (Figure 4). Conservation storage in the Edwards Plateau (62.6 percent full) and Low Rolling Plains (65.5) climate divisions was abnormally low (Figure 4). The High Plains (30.8 percent full), and Southern (34.3 percent full) climate divisions had severely low storage, and the Trans Pecos (10.8 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 Brazos, Upper and Lower Trinity, Lower Colorado, Guadalupe, Lavaca, San Jacinto, Neches, Upper and Lower Sabine, Sulphur, and Cypress was normal to high (>70 percent full, Figure 5). The conservation storage in the Upper Colorado, Lower Rio Grande, Nueces and San Antonio basins was moderately low (40–60 percent full). The Canadian basin storage was severely low (20–40 percent full, Figure 5). The Upper/Mid Rio Grande river basin conservation storage was extremely low (10–20 percent full, Figure 5).

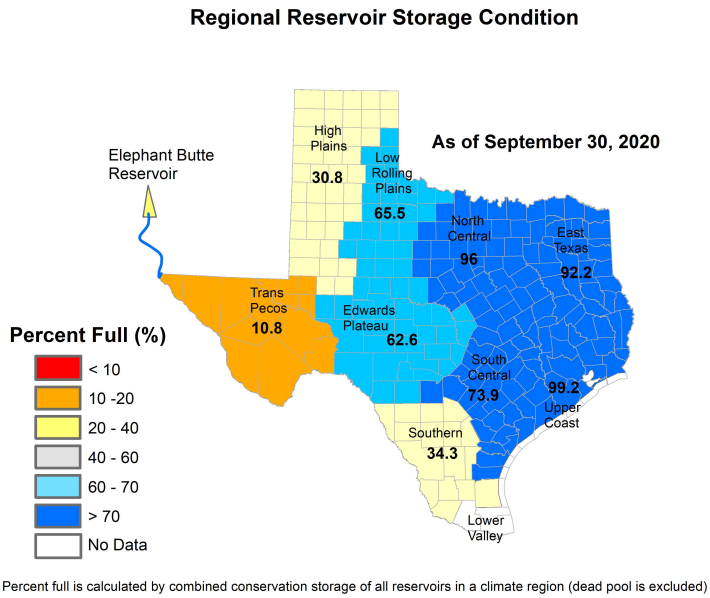


Figure 4: Reservoir Storage Index* by climate division at 9/30/2020

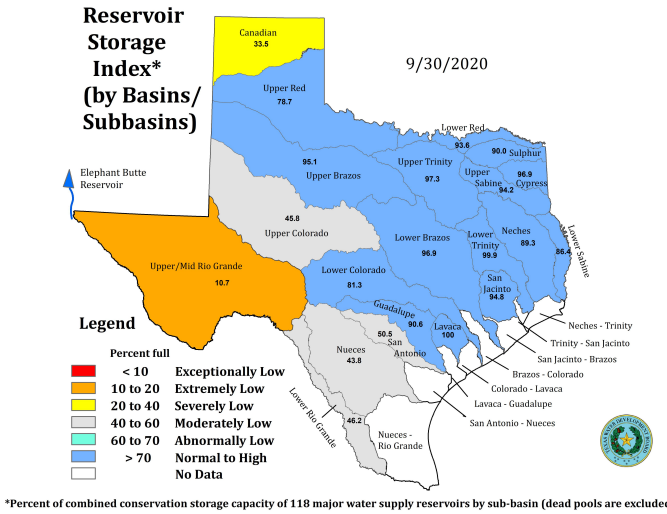


Figure 5: Reservoir Storage Index* by river basin/sub-basin at 9/30/2020

*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-September		Storage change from end-Aug 2020		Storage change from end-Sep 2019	
	(acre-feet)	(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)**	(%)
Abilene, Lake	7,900	6,343	80	212	3	717	9
Alan Henry Reservoir	96,207	89,060	93	-2,060	-2	2,400	2
*Amistad Reservoir (Texas & Mexico)	3,275,532	1,187,545	36	65,099	2	-427,822	-13
*Amistad Reservoir (Texas)	1,840,849	1,121,479	61	87,179	5	-269,035	-15
Amon G Carter, Lake	19,266	18,992	99	146	1	437	2
Aquilla Lake	43,243	41,866	97	1,709	4	4,899	11
Arlington, Lake	40,157	33,790	84	2,956	7	1,456	4
Arrowhead, Lake	230,359	228,623	99	12,372	5	18,479	8
Athens, Lake	29,503	29,503	100	92	0	1,884	6
*Austin, Lake	23,972	23,003	96	77	0	231	1
B A Steinhagen Lake	69,186	63,795	92	2,216	3	-3,263	-5
Bardwell Lake	46,122	46,122	100	2,911	6	5,389	12
Belton Lake	435,225	435,225	100	33,821	8	16,097	4
Benbrook Lake	85,648	69,990	82	2,165	3	13,773	16
Bob Sandlin, Lake	192,417	188,349	98	0	0	4,201	2
Bonham, Lake	11,027	11,027	100	356	3	1,926	17
Brady Creek Reservoir	28,808	21,104	73	-734	-3	-4,560	-16
Bridgeport, Lake	366,236	342,528	94	1,023	0	19,353	5
*Brownwood, Lake	130,868	120,650	92	16,916	13	6,500	5
Buchanan, Lake	816,904	758,996	93	11,592	1	-24,686	-3
Caddo, Lake	29,898	29,898	100	0	0	no data	
Canyon Lake	378,781	351,287	93	-1,727	0	-13,257	-3
Cedar Creek Reservoir in Trinity	644,686	637,513	99	30,650	5	48,726	8
Champion Creek Reservoir	41,580	25,474	61	513	1	-3,156	-8
Cherokee, Lake	40,094	39,851	99	1,415	4	3,449	9
Choke Canyon Reservoir	662,820	252,609	38	-726	0	-66,387	-10
*Cisco, Lake	29,003	23,960	83	584	2	-2,113	-7
Coleman, Lake	38,075	34,411	90	0	0	87	0
Colorado City, Lake	31,040	20,410	66	322	1	-4,488	-14
*Coleto Creek Reservoir	30,758	12,034	39	1,053	3	-2,561	-8
Conroe, Lake	410,988	384,979	94	-1,481	0	11,196	3
Corpus Christi, Lake	256,062	150,289	59	-154	0	-64,682	-25
Crook, Lake	9,195	9,195	100	0	0	1,012	11
Cypress Springs, Lake	66,756	64,925	97	382	1	-351	0
E. V. Spence Reservoir	517,272	125,646	24	6,161	1	-21,317	-4
Eagle Mountain Lake	179,880	170,376	95	4,498	3	7,475	4
Elephant Butte Reservoir (Texas)	852,491	35,716	4	-11,585	-1	-149,629	-18
Elephant Butte Reservoir (Total Storage)	1,960,900	82,675	4	-26,817	-1	-346,364	-18
*Falcon Reservoir (Texas & Mexico)	2,646,817	567,472	21	37,449	1	-74,605	-3
*Falcon Reservoir (Texas)	1,551,007	446,539	29	19,857	1	-30,328	-2
Fork Reservoir, Lake	605,061	564,671	93	1,002	0	-1,755	0
Fort Phantom Hill, Lake	70,030	66,601	95	5,286	8	2,755	4
Georgetown, Lake	36,823	22,064	60	93	0	-2,319	-6
Gibbons Creek Reservoir	25,721	21,232	83	-222	0	89	0
Graham, Lake	45,288	44,402	98	3,127	7	3,949	9
Granbury, Lake	132,949	132,215	99	8,577	6	6,080	5

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of lake or reservoir	Storage capacity	Storage at end-September		Storage change from end-Aug 2020		Storage change from end-Sep 2019	
	(acre-feet)	(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)**	(%)
		Continued					
Granger Lake	51,822	47,553	92	964	2	-3,169	-6
Grapevine Lake	163,064	161,880	99	2,923	2	10,937	7
Greenbelt Lake	59,968	10,650	18	-428	0	-1,108	-2
*Halbert, Lake	6,033	5,318	88	288	5	505	8
Hords Creek Lake	8,109	4,910	61	-143	-2	-1,868	-23
Houston County Lake	17,113	17,023	99	753	4	589	3
Houston, Lake	130,147	128,349	99	7,710	6	7,168	6
Hubbard Creek Reservoir	313,298	295,431	94	23,847	8	8,241	3
Hubert H Moss Lake	24,058	23,638	98	330	1	53	0
Inks, Lake	13,962	12,862	92	7	0	22	0
J. B. Thomas, Lake	199,931	34,704	17	-2,334	-1	-20,784	-10
Jacksonville, Lake	25,670	25,670	100	128	0	1,247	5
Jim Chapman Lake (Cooper)	260,332	213,398	82	-8,769	-3	-22,994	-9
Joe Pool Lake	175,800	171,962	98	4,550	3	14,390	8
Kemp, Lake	245,307	205,108	84	8,104	3	-4,817	-2
Kickapoo, Lake	86,345	74,964	87	-813	0	-1,577	-2
Lavon Lake	406,388	386,991	95	30,937	8	55,728	14
Leon, Lake	27,762	27,430	99	4,414	16	3,150	11
Lewisville Lake	563,228	561,338	100	35,527	6	36,309	6
Limestone, Lake	203,780	202,664	99	15,202	7	27,270	13
*Livingston, Lake	1,741,867	1,741,867	100	36,841	2	76,138	4
*Lost Creek Reservoir	11,950	11,434	96	0	0	244	2
Lyndon B Johnson, Lake	115,249	110,759	96	-735	0	367	0
Mackenzie Reservoir	46,450	4,388	9	-112	0	-1,103	-2
Marble Falls, Lake	6,901	6,793	98	-32	0	-92	-1
Martin, Lake	75,726	67,521	89	-2,249	-3	4,730	6
Medina Lake	254,823	128,839	51	-8,944	-4	-96,169	-38
Meredith, Lake	500,000	186,630	37	-4,452	0	-13,641	-3
Millers Creek Reservoir	26,768	26,768	100	1,858	7	2,174	8
*Mineral Wells, Lake	5,273	5,273	100	566	11	499	9
Monticello, Lake	34,740	28,810	83	-35	0	748	2
Mountain Creek, Lake	22,850	22,850	100	0	0	0	0
Murvaul, Lake	38,285	36,887	96	-782	-2	1,009	3
Nacogdoches, Lake	39,522	35,517	90	-669	-2	361	1
Nasworthy	9,615	8,196	85	-37	0	-98	-1
Navarro Mills Lake	49,827	49,732	100	2,876	6	8,683	17
New Terrell City Lake	8,583	7,919	92	-67	0	-176	-2
Nocona, Lake (Farmers Crk)	21,444	20,699	97	158	1	655	3
North Fork Buffalo Creek Reservoir	15,400	14,986	97	786	5	2,669	17
O' the Pines, Lake	268,566	262,085	98	-2,028	0	4,216	2
O. C. Fisher Lake	115,742	7,981	7	-91	0	-3,605	-3
*O. H. Ivie Reservoir	554,340	349,423	63	-4,542	0	-44,390	-8
Oak Creek Reservoir	39,210	32,310	82	1,373	4	-3,260	-8

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of lake or reservoir	Storage capacity	Storage at end-September		Storage change from end-Aug 2020		Storage change from end-Sep 2019	
	(acre-feet)	(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)**	(%)
	Continued						
Palestine, Lake	367,303	367,303	100	17,979	5	34,966	10
Palo Duro Reservoir	61,066	1,353	2	-205	0	-3,166	-5
Palo Pinto, Lake	26,766	26,137	98	4,911	18	4,371	16
Pat Cleburne, Lake	26,008	23,938	92	198	1	1,451	6
*Pat Mayse Lake	113,683	113,683	100	112	0	3,585	3
Possum Kingdom Lake	538,139	536,172	100	33,284	6	18,504	3
Proctor Lake	54,762	54,762	100	17,500	32	11,692	21
Ray Hubbard, Lake	439,559	421,703	96	13,678	3	41,167	9
Ray Roberts, Lake	788,167	783,071	99	14,320	2	10,404	1
Red Bluff Reservoir	151,110	72,421	48	-3,139	-2	-17,523	-12
Richland-Chambers Reservoir	1,087,839	1,075,879	99	21,182	2	79,906	7
Sam Rayburn Reservoir	2,857,077	2,497,658	87	-59,772	-2	-123,363	-4
Somerville Lake	150,293	130,974	87	210	0	-19,206	-13
Squaw Creek, Lake	151,250	151,250	100	0	0	4,878	3
Stamford, Lake	51,570	51,570	100	2,403	5	5,115	10
Stillhouse Hollow Lake	227,771	227,771	100	18,224	8	7,204	3
Striker, Lake	16,934	16,934	100	289	2	706	4
Sweetwater, Lake	12,267	10,589	86	41	0	-1,309	-11
*Sulphur Springs, Lake	17,747	13,969	79	-598	-3	-3,559	-20
Tawakoni, Lake	871,685	828,783	95	1,431	0	-358	0
Texana, Lake	159,566	159,566	100	9,152	6	35,645	22
Texoma, Lake (Texas & Oklahoma)	2,487,601	2,308,422	93	-26,830	-1	-166,520	-7
Texoma, Lake (Texas)	1,243,801	1,154,210	93	-13,416	-1	-83,260	-7
Toledo Bend Reservoir (Texas & Louisiana)	4,472,900	3,868,970	86	-228,689	-5	525,310	12
Toledo Bend Reservoir (Texas)	2,236,450	1,932,435	86	-114,345	-5	262,655	12
Travis, Lake	1,113,348	790,805	71	-14,885	-1	-184,308	-17
Twin Buttes Reservoir	182,454	101,303	56	2,949	2	-15,827	-9
Tyler, Lake	72,073	72,025	100	4,825	7	8,050	11
Waco, Lake	189,418	188,689	100	15,338	8	23,000	12
Waxahachie, Lake	10,780	8,264	77	-164	-2	-802	-7
Weatherford, Lake	17,812	16,806	94	1,137	6	1,611	9
White River Lake	29,880	4,218	14	-311	-1	-2,032	-7
Whitney, Lake	553,344	540,934	98	61,284	11	111,382	20
Worth, Lake	24,419	21,615	89	465	2	3,269	13
Wright Patman Lake	231,496	231,496	100	0	0	0	0
STATEWIDE TOTAL							
STATEWIDE TOTAL	**32,261,240**	**25,724,538**	**80**	**417,531**	**1**	**-217,228**	**0.7**

STREAMFLOW CONDITIONS

Much of the state had near normal streamflow (25–75th percentile, green shading in Figure 6) in September 2020. Above normal streamflow (76–90th percentile, light blue shading in Figure 6) was seen in the Canadian, Upper and Mid-Red, Brazos, Trinity, areas of the Colorado, Sulphur, Cypress, Sabine, Neches, Neches-Trinity, Lavaca, Colorado-Lavaca, San Antonio-Nueces, San Jacinto-Brazos, Brazos-Colorado, and San Jacinto river basins.

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

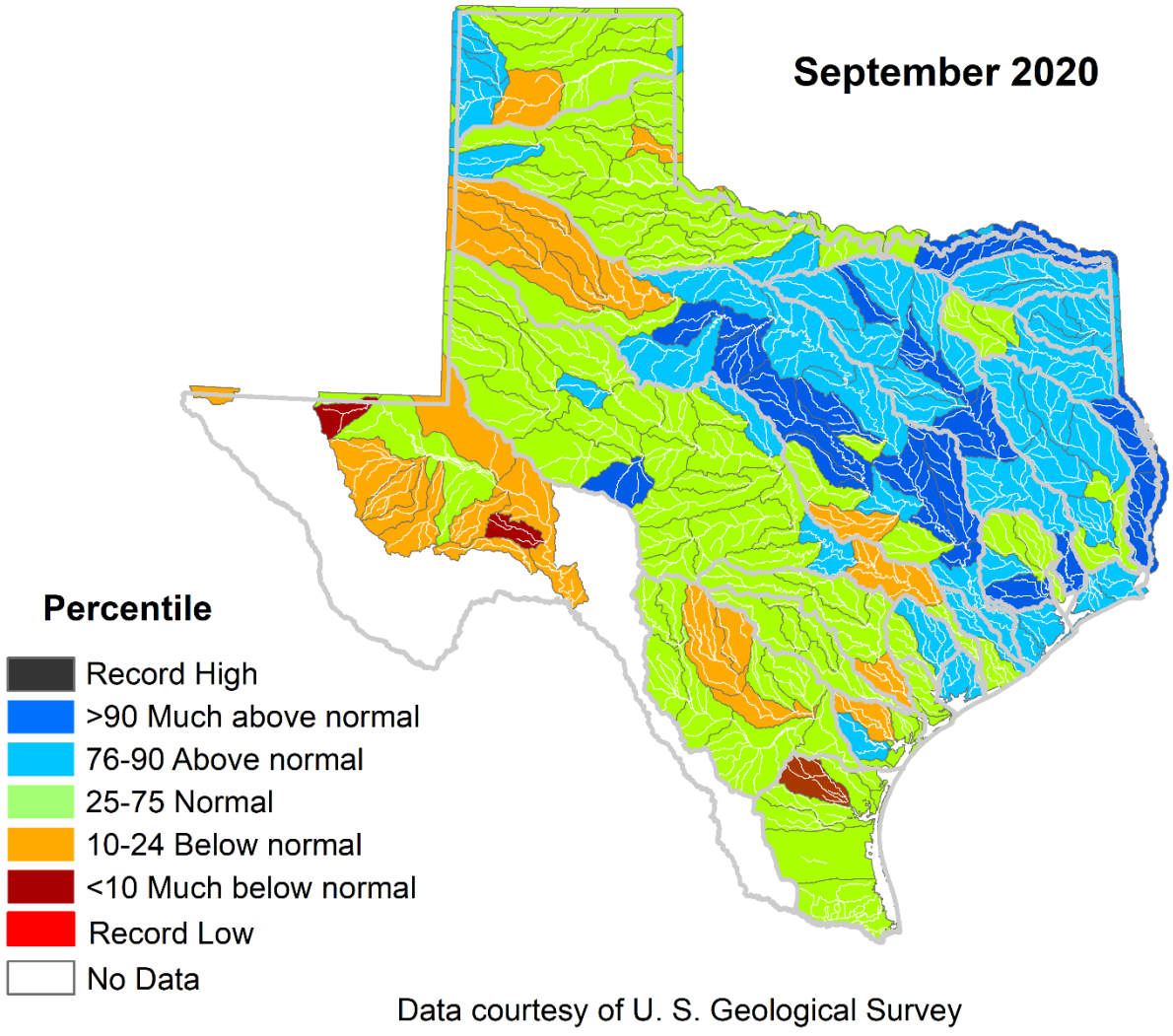


Figure 6: Runoff percentiles by the U.S. Geological Survey's Hydrologic Unit Code

SOIL MOISTURE CONDITIONS

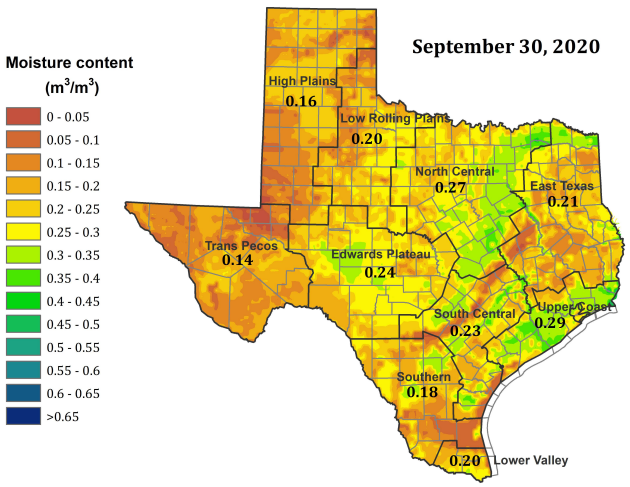
Root zone soil moisture at the end of September 2020 [Figure 7(a)] was moderate [> 0.20 cubic meters of water per bulk cubic meter soil (m^3/m^3)] in much of the state. There were areas of low soil moisture [< 0.15 cubic meters of water per bulk cubic meter soil (m3/m3)] in portions of the Trans Pecos, High Plains, Low Rolling Plains, Southern, South Central and East Texas climate divisions.

Soil moisture was high [< 0.3 cubic meters of water per bulk cubic meter soil (m3/m3)] in small areas of central and east Edwards Plateau, central northeastern Southern, northwestern, central, northeastern and southern South Central, eastern North Central, parts of northern and central East Texas, and the majority of the Upper Coast climate divisions [Figure 7(a)].

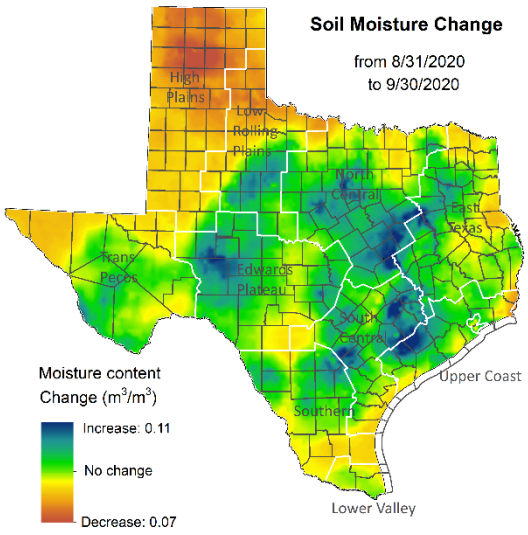
Compared to conditions at the end of August 2020, soil moisture content increased [green to blue shading in Figure 7(b)] in the majority of the state, including portions of the Trans Pecos, Edwards Plateau, southern Low Rolling Plains, Southern, Lower Valley, South Central, North Central, East Texas and Upper Coast climate divisions.

Soil moisture content decreased [yellow, orange, and brown shading in Figure 7(b)] in the High Plains, northern Low Rolling Plains, northern and southeastern Trans Pecos, northern North Central, northern and southeastern East Texas, southeastern Edwards Plateau, southern South Central, southern portions of the Southern, northeastern Lower Valley, and portions of the Upper Coast climate divisions.

(a)

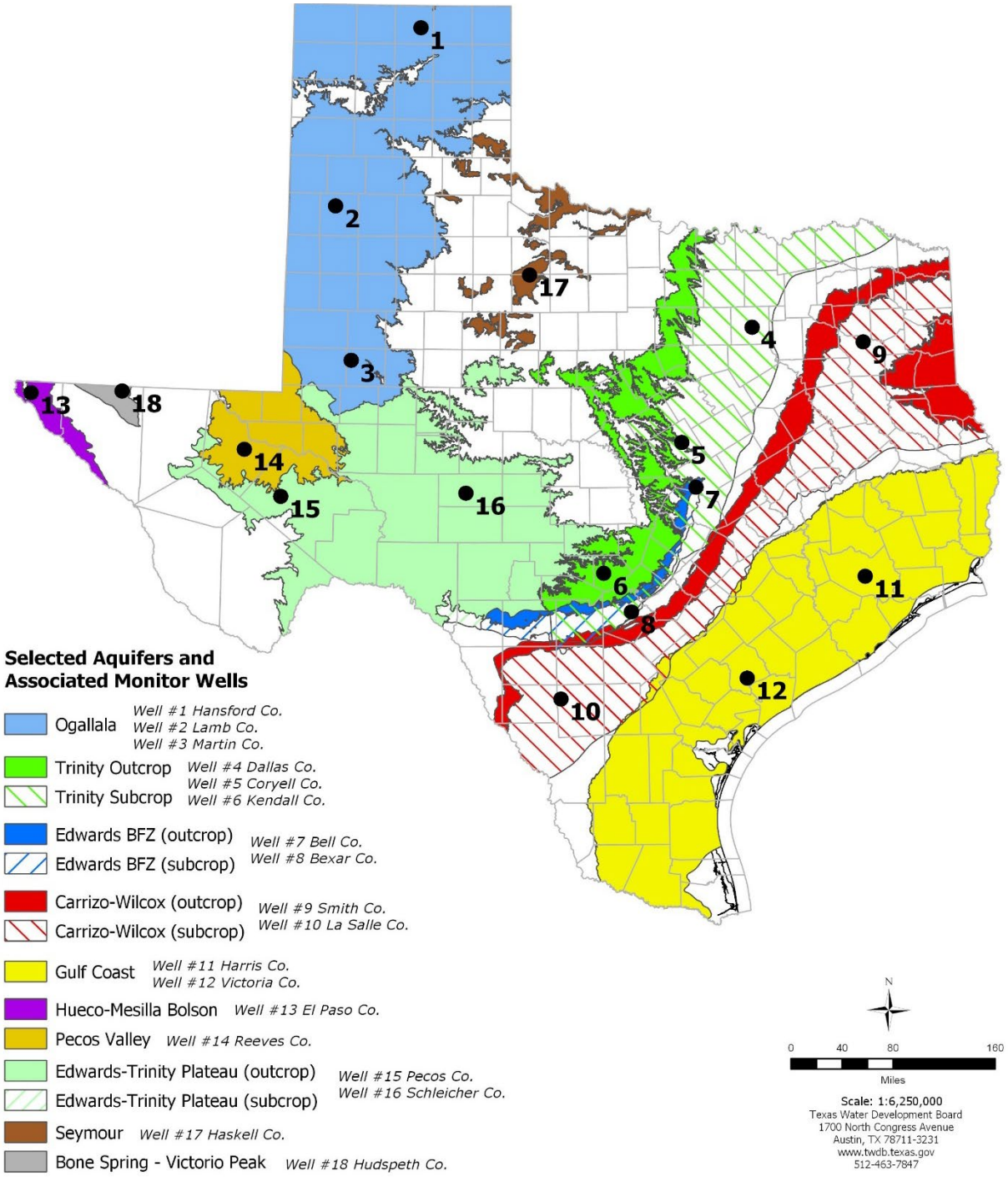


(b)



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



September 2020 GROUNDWATER LEVELS IN OBSERVATION WELLS

Water-level measurements were available for all 18 key monitoring wells in the state. Water levels rose in 8 monitoring wells since the beginning of September, ranging from an increase of 0.26 feet in the Martin County Ogallala Aquifer well (#3 on map) to 8.13 feet in the Schleicher County Edwards-Trinity Plateau Aquifer (#16 on map). Water levels declined in 9 monitoring wells, ranging from a decline of -0.16 feet in the Dallas County Trinity Aquifer well (#4 on map) to -1.80 feet in the Reeves County Pecos Valley Aquifer well (#14 on map). Water levels did not change in the Lamb County Ogallala Aquifer well. The J-17 well (#8 on map) in San Antonio recorded a water level of 67.40 feet below land surface or 663.6 feet above mean sea level. Water levels rose 3.60 feet above the Stage I critical management level for the San Antonio portion of the Edwards (Balcones Fault Zone) Aquifer. Drought restrictions were lifted on September 29th.

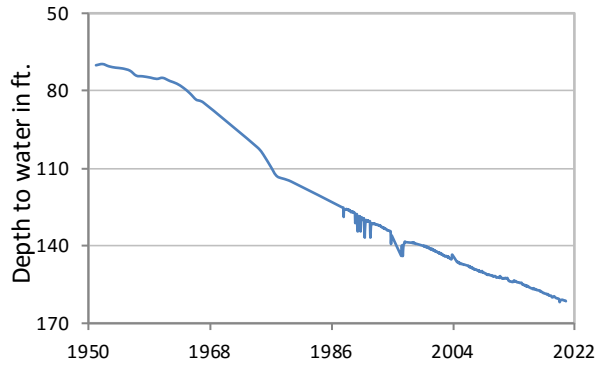
***Well numbers used in this publication on the aquifer map to indicate the monitoring well location (numbers 1 - 17) are different than the TWDB's seven-digit state well number.**

Monitoring Well	September	August	Month Change	Year Change	Historical Change	First Measured
(1) Hansford 0354301	161.46	161.20	-0.26	-0.81	-91.34	1951
(2) Lamb 1053602	151.11	151.11	0.00	-0.67	-122.94	1951
(3) Martin 2739903	144.03	144.29	0.26	0.40	-39.14	1964
(4) Dallas 3319101	489.26	489.10	-0.16	6.06	-267.26	1954
(5) Coryell 4035404	530.89	536.27	5.38	1.93	-238.89	1955
(6) Kendall 6802609	160.00	167.70	7.70	-11.72	-100.00	1975
(7) Bell 5804816	124.62	125.47	0.85	-2.88	-1.11	2008
(8) Bexar 6837203	67.40	74.90	7.50	-2.90	-20.76	1932
(9) Smith 3430907	436.97	437.35	0.38	1.08	-136.97	1977
(10) La Salle 7738103	514.23	513.51	-0.72	11.22	-261.16	2003
(11) Harris 6514409	189.61	189.35	-0.26	3.73	-54.11*	1947**
(12) Victoria 8017502	33.14	32.66	-0.48	2.65	0.86	1958
(13) El Paso 4913301	296.08	295.81	-0.27	0.23	-64.18	1964
(14) Reeves 4644501	165.55	163.75	-1.80	0.79	-73.46	1952
(15) Pecos 5216802	218.65	225.37	6.72	-7.29	28.23	1976
(16) Schleicher 5512134	289.32	297.45	8.13	0.30	12.58	2003
(17) Haskell 2135748	44.92	44.64	-0.28	-0.18	-1.92	2002
(18) Hudspeth 4807516	158.95	157.59	-1.36	-1.56	-55.03	1966

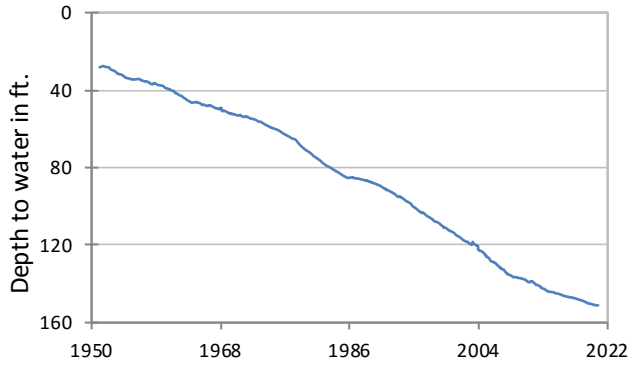
*Change since the original measurement of 135.5 feet below land surface in 1947 (**measurement not shown on the hydrograph)

September 2020 OBSERVATION WELL HYDROGRAPHS

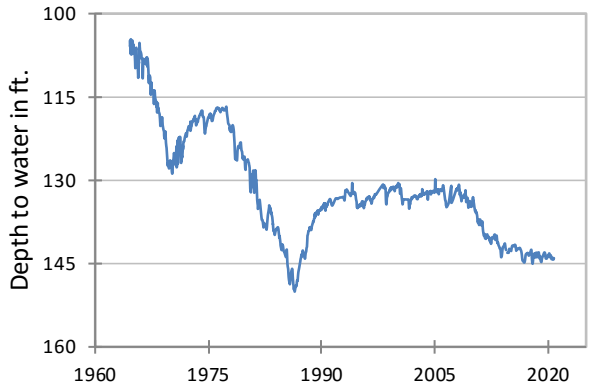
(1) State Well #03-54-301
Near Spearman, Hansford County
Ogallala Aquifer



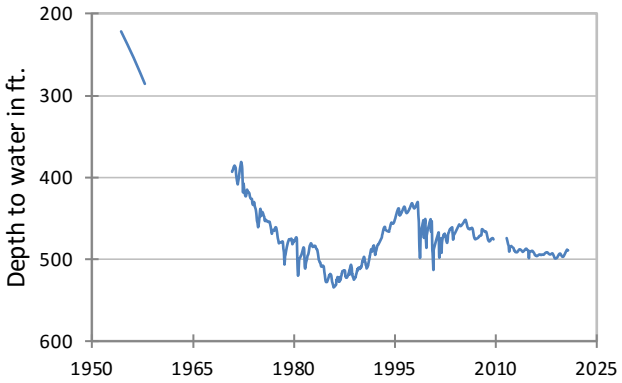
(2) State Well #10-53-602
Near Earth, Lamb County
Ogallala Aquifer



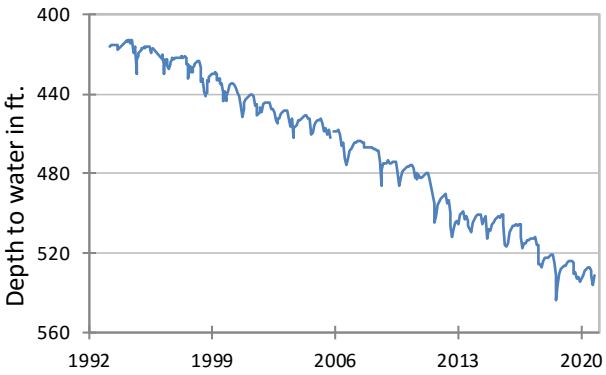
(3) State Well #27-39-903
Northwest Martin County
Ogallala Aquifer



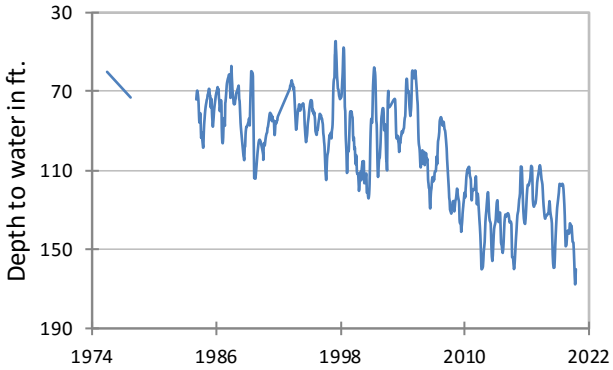
(4) State Well #33-19-101
Southeast Dallas, Dallas County
Twin Mountains Formation-Trinity Aquifer



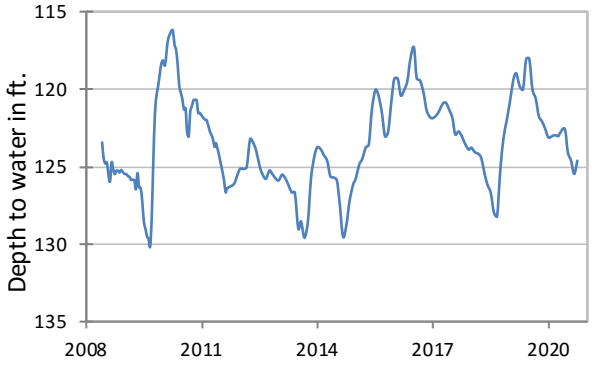
(5) State Well #40-35-404
Gatesville, Coryell County
Hosston Formation-Trinity Aquifer



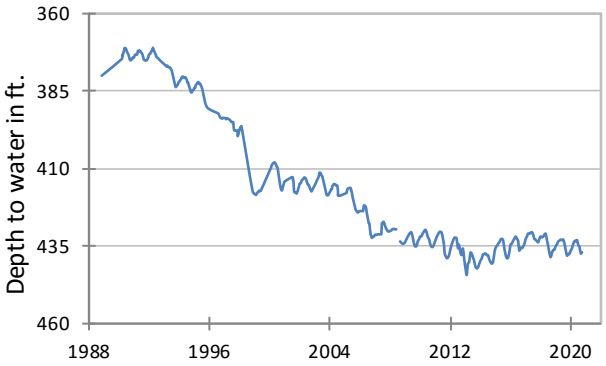
(6) State Well #68-02-609
Waring, Kendall County
Cow Creek Formation-Trinity Aquifer



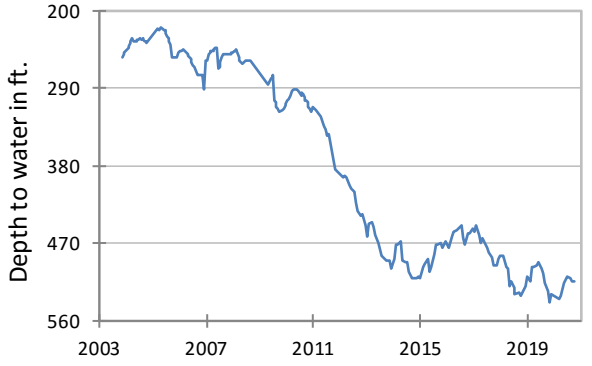
(7) State Well #58-04-816
Near Salado, Bell County
Edwards (Balcones Fault Zone) Aquifer



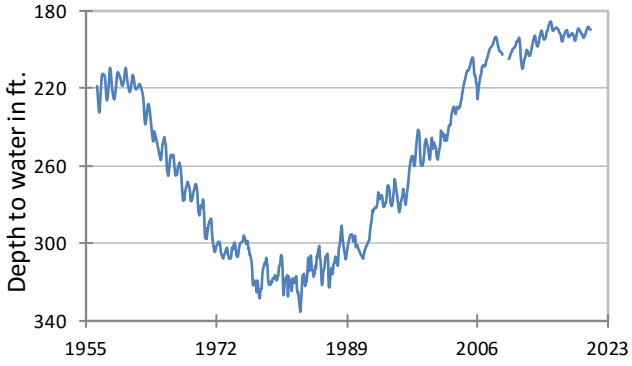
(9) State Well #34-30-907
Red Springs, Smith County
Carrizo-Wilcox Aquifer



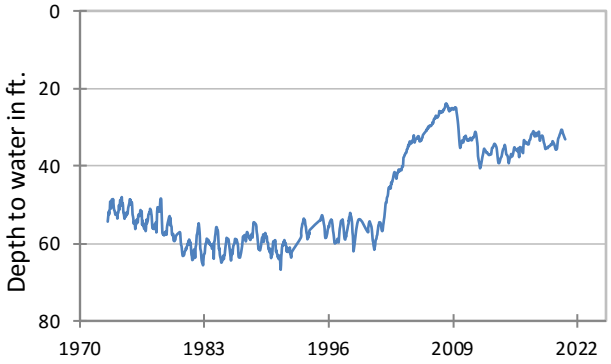
(10) State Well #77-38-103
Near Cotulla, La Salle County
Carrizo-Wilcox Aquifer



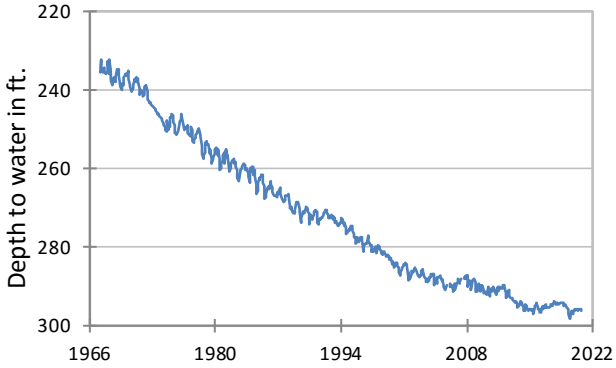
(11) State Well #65-14-409
Alief, Harris County
Evangeline Formation-Gulf Coast Aquifer



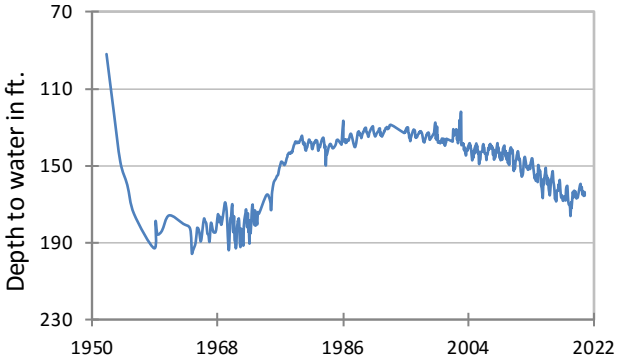
(12) State Well #80-17-502
Near Bloomington, Victoria County
Lissie Formation-Gulf Coast Aquifer



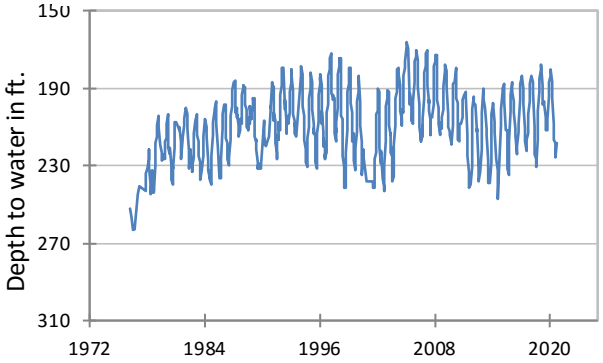
(13) State Well #49-13-301
El Paso, El Paso County
Hueco-Mesilla Bolson Aquifer



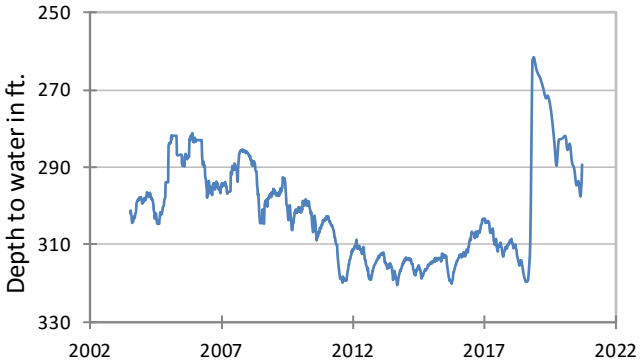
(14) State Well #46-44-501
Near Pecos, Reeves County
Pecos Valley Aquifer



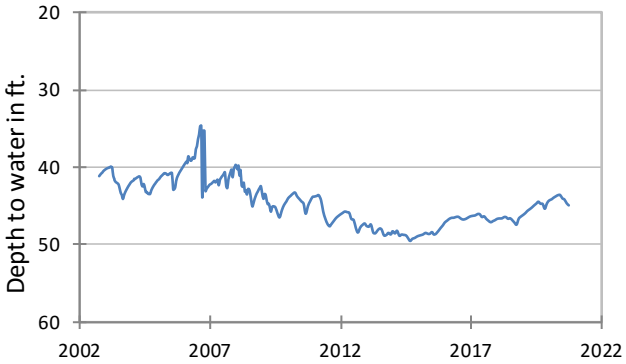
(15) State Well #52-16-802
Fort Stockton, Pecos County
Edwards-Trinity (Plateau) Aquifer



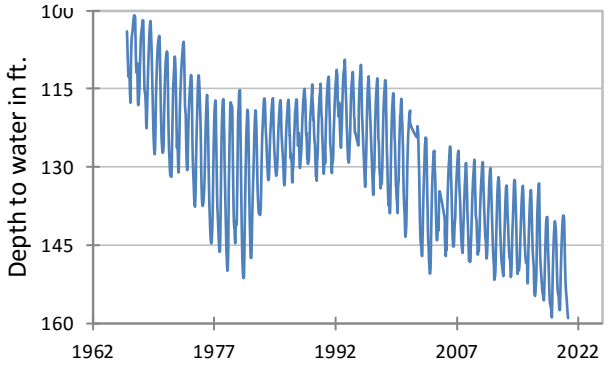
(16) State Well #55-12-134
Eldorado, Schleicher County
Trinity Aquifer



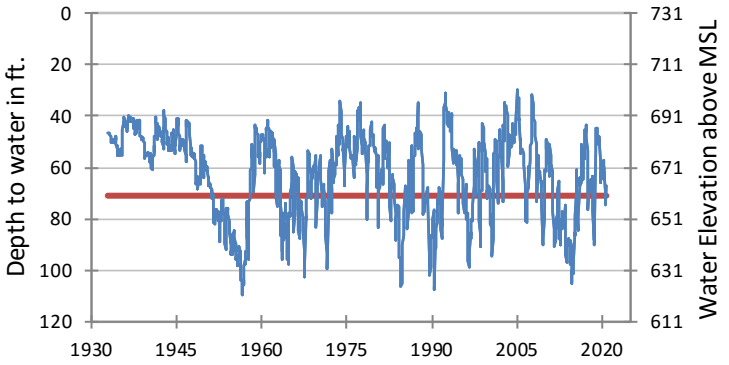
(17) State Well #21-35-748
Near O'Brien, Haskell County
Seymour Aquifer

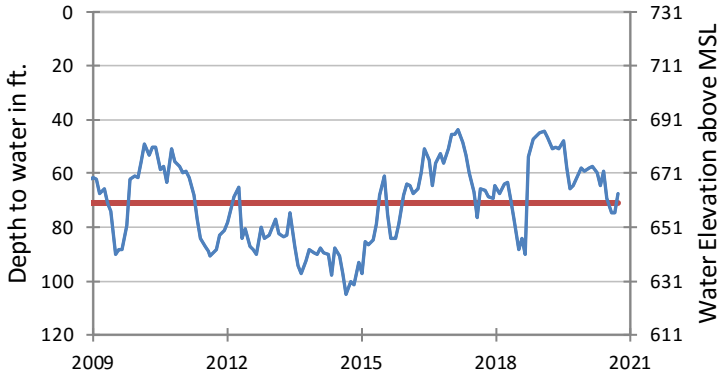


(18) State Well #48-07-516
Dell City, Hudspeth County
Bone Spring - Victorio Peak Aquifer



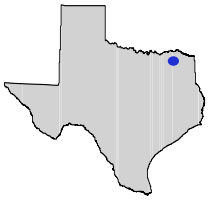
(8) State Well #68-37-203 (J-17)
San Antonio, Bexar County
Edwards (Balcones Fault Zone) Aquifer





The late September water-level measurement in this Edwards (Balcones Fault Zone) Aquifer well, elevation 731 feet above mean sea level, was 67.40 feet below land surface, or 663.60 feet above mean sea level. This was 7.50 feet above last month's measurement, 2.90 feet below last year's measurement and 20.76 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.



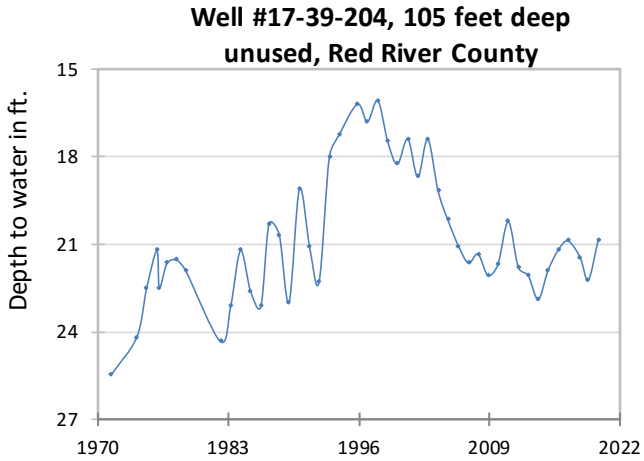
HYDROGRAPH OF THE MONTH

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

Nacatoch Aquifer

The Nacatoch Aquifer is a minor aquifer occurring in a narrow band across northeast Texas. The aquifer consists of the Nacatoch Sand, composed of sequences of sandstone separated by impermeable layers of mudstone or clay. Freshwater saturated thickness averages about 50 feet. The groundwater in the aquifer is typically alkaline, high in sodium bicarbonate, and soft. Water from the aquifer is extensively used for domestic and livestock purposes.

A few cities that have also historically pumped from the aquifer for public supply have converted to surface water. Because of reduced pumping in some systems, the declining water levels that had developed in their areas are stabilizing. However, systems maintaining standby wells to augment supplies during the recent drought may anticipate a resumption of declining water levels.



The initial water-level measurement taken by the TWDB in this well was in April of 1971 at 25.48 feet below land surface. The TWDB has collected a water-level measurement in this well nearly every year since. The period of record reveals a gradual increase of just over 4.6 feet in 48 years with the highest water level of 16.2 feet below land surface measured in November of 1995.

Far away (left), and close-up (right) images of well #17-39-204.