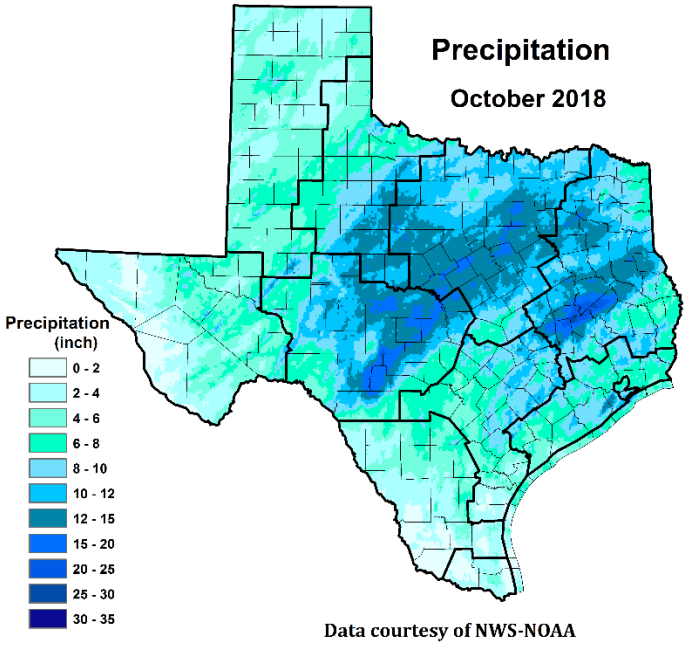
Texas Water Conditions Report

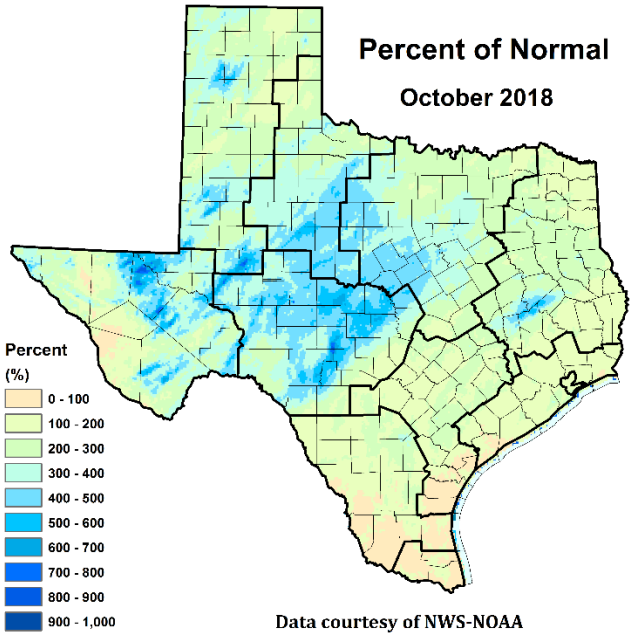
Texas Water Development Board

October 2018

PRECIPITATION

Precipitation is the primary source influencing water conditions in Texas. According to observed precipitation data from the National Weather Service-National Oceanic and Atmospheric Administration (NWS-NOAA) and following the momentum of September, Texas continuously received a decent amount of rainfall in October (*map, below left*). Much of the state received more than 4 inches of rainfall, except in local patches in the Panhandle, Trans Pecos, and South Texas near Lower Rio Grande Valley where rainfall was less than 2 inches. High rainfall totals (greater than 12 inches) occurred in areas throughout Central-North-East Texas, including most of Edwards Plateau, part of Low Rolling Plains, North Central, and East Texas. Total rainfall in October for much of Texas was 200 percent higher than normal rainfall (*map, below right*), as compared to historical data from 1981–2010. West-Central areas including the Edwards Plateau, southern portion of Low Rolling Plains, and North Central Texas reached as much as 400 percent of normal rainfall. However, rainfall in areas near Fort Davis (between El Paso and Big Bend National Park) and South Texas near the Lower Rio Grande Valley and extending along the coast up towards Corpus Christi was below normal.





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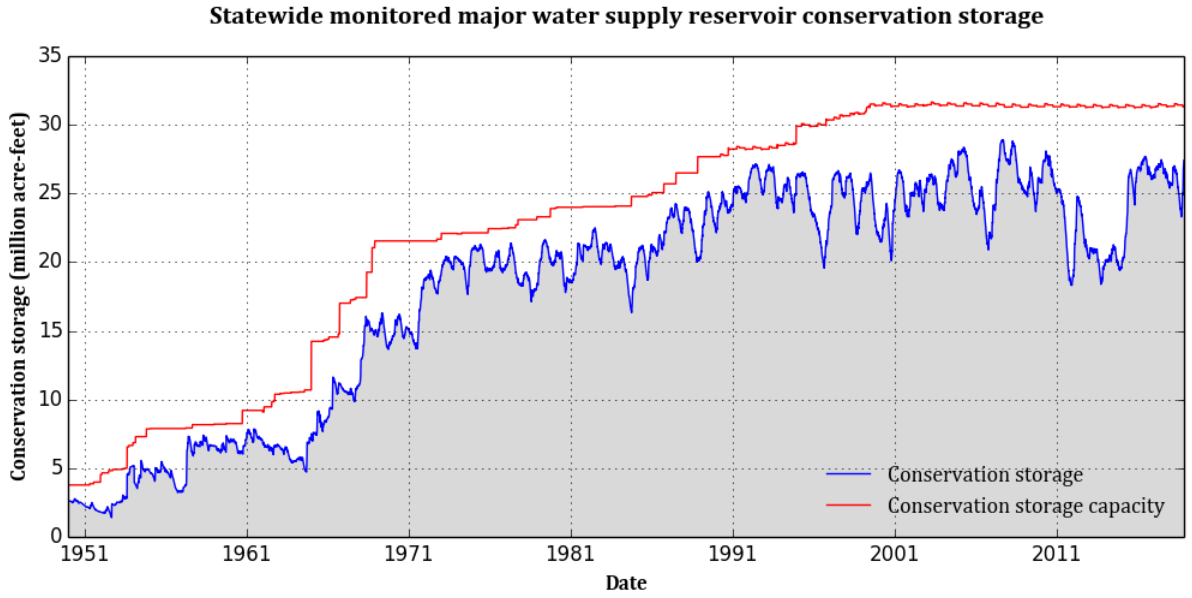
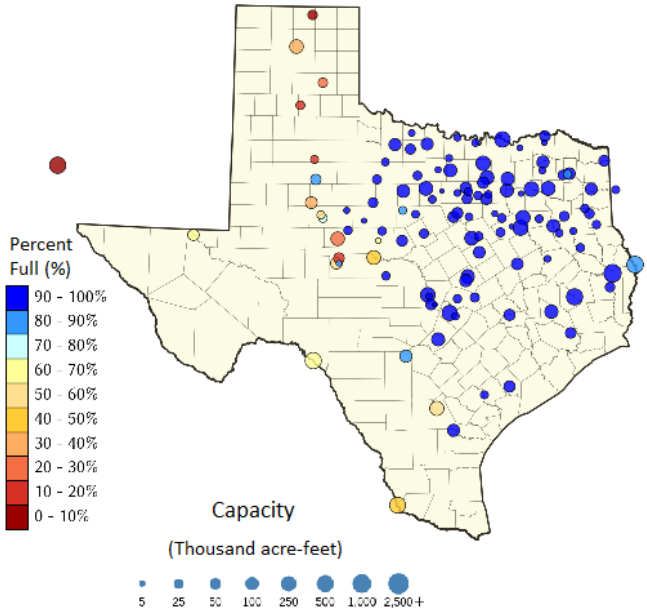
RESERVOIR STORAGE

At the end of October 2018, total conservation storage* in 118 of the state's major water supply reservoirs plus Elephant Butte Reservoir in New Mexico was 27.36 million acre-feet or 85 percent of total conservation storage capacity (*see storage plot, below*). This is approximately 2.38 million acre-feet more than a month ago, continuing an increasing trend that began in September.

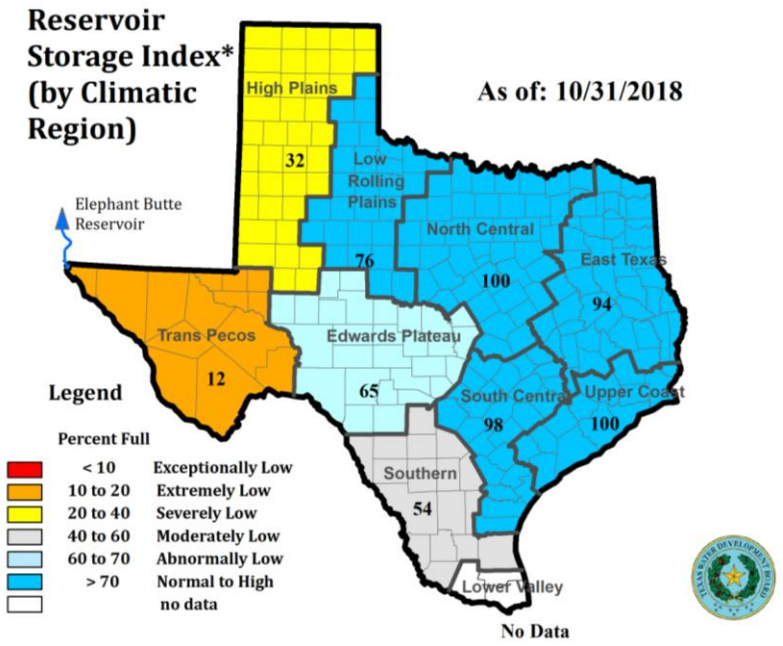


Out of 118 reservoirs in the state, 73 reservoirs held 100 percent of conservation storage capacity (*see map at right*). Additionally, 29 were above 90 percent full. These high storage reservoirs are located in the North, Central, and East Texas regions. However, Palo Duro Reservoir was only 1 percent full and another five reservoirs (Mackenzie (13 percent full), O. C. Fisher (15 percent full), White River (17 percent full) Greenbelt (21 percent full), and E. V. Spence (24 percent full)) remained below 30 percent full. Low storage reservoirs (18 below 70 percent full) occurred in the Panhandle, West, and South Texas regions. Elephant Butte Reservoir (located in New Mexico) was only 4 percent full.

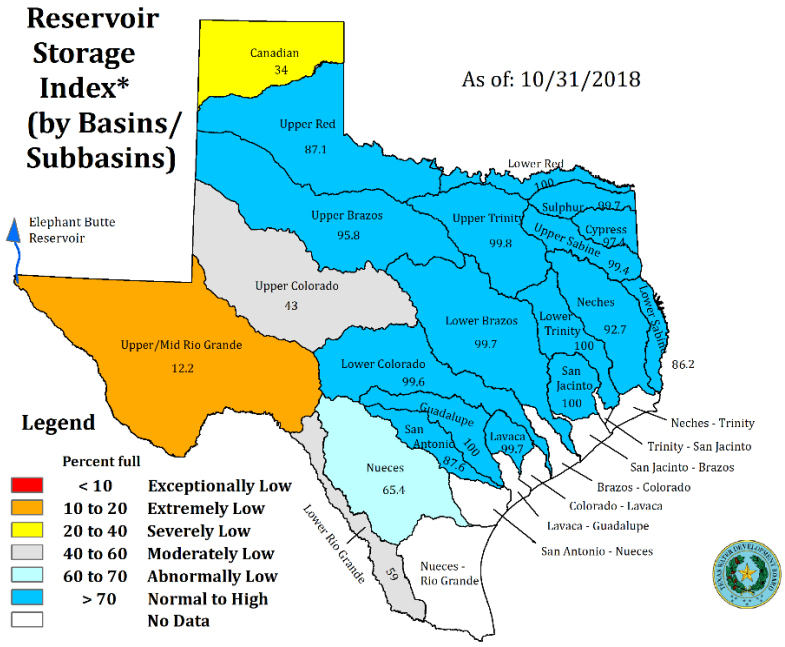


*Storage is based on end of the month data in 118 major reservoirs that represent 96 percent of the total conservation storage capacity of 188 major water supply reservoirs in Texas plus Elephant Butte Reservoir in New Mexico. Major reservoirs are defined as having a conservation storage capacity of 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 Upper Coast (100 percent full), East Texas (94 percent full), North Central (100 percent full), South Central (98 percent full), and Low Rolling Plains (76 percent full) regions (*top map*). The High Plains (32 percent full) and Trans-Pecos (12 percent full) regions had the lowest storage. Overall, storage increased in all regions during October. Combined conservation storage by river basin or sub-basin depicts a similar picture (*bottom map*). Storage in the Upper/Mid Rio Grande was ranked as extremely low. The Canadian River basin was ranked as severely low. Storage in Upper Colorado and Lower Rio Grande was ranked as moderately low, and storage in the Nueces was ranked as abnormally low.



*Percent of combined conservation storage capacity of 118 major water supply reservoirs by that region (dead pools are excluded)



*Percent of combined conservation storage capacity of 118 major water supply reservoirs by sub-basin (dead pools are excluded)

*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	Conservation storage capacity (acre-feet)	Conservation storage end of Oct. 2018 (acre-feet)	(%)	Change since end of Sept. 2018 (acre-feet)**	(%)	Change since end of Oct. 2017 (acre-feet)**	(%)
HIGH PLAINS							
Mackenzie Reservoir	46,450	5,921	13	-34	0	-1,067	-2
Meredith, Lake	500,000	190,586	38	9,967	2	-4,777	-1
Palo Duro Reservoir	61,066	419	1	-24	0	-455	-1
White River Lake	29,880	5,035	17	1,040	3	-1,375	-5
TOTAL	**637,396**	**201,961**	**32**	**10,949**	**2**	**-7,674**	**-1**
LOW ROLLING PLAINS							
Abilene, Lake	7,900	7,900	100	4,272	54	2,493	32
Alan Henry Reservoir	94,808	84,704	89	9,531	10	899	1
Champion Creek Reservoir	41,580	27,164	65	7,367	18	7,318	18
Coleman, Lake	38,075	38,075	100	8,157	21	3,611	9
Colorado City, Lake	30,758	15,452	50	6,371	21	2,626	9
Fort Phantom Hill, Lake	70,030	70,030	100	11,824	17	3,769	5
Greenbelt Lake	59,968	12,394	21	-76	-0	-3,068	-5
Hords Creek Lake	8,443	5,447	65	969	11	-186	-2
J. B. Thomas, Lake	199,931	77,148	39	5,586	3	-24,757	-12
Kemp, Lake	245,307	245,307	100	66,996	27	16,094	7
Millers Creek Reservoir	26,768	26,768	100	0	0	961	4
North Fork Buffalo Creek Reservoir	15,400	15,400	100	2,462	16	3,418	22
Stamford, Lake	51,570	51,570	100	0	0	509	1
Sweetwater, Lake	12,267	11,846	97	9,439	77	9,375	76
TOTAL	**902,805**	**689,205**	**76**	**132,898**	**15**	**23,062**	**3**
NORTH CENTRAL							
Amon G Carter, Lake	19,266	19,266	100	1,462	8	0	0
Aquilla Lake	43,243	43,243	100	3,500	8	5,379	12
Arlington, Lake	40,188	40,188	100	0	0	10,357	26
Arrowhead, Lake	230,359	230,359	100	44,291	19	25,410	11
Bardwell Lake	46,122	46,122	100	0	0	5,360	12
Belton Lake	435,225	435,225	100	56,253	13	24,608	6
Benbrook Lake	85,648	85,648	100	14,103	16	8,537	10
Bonham, Lake	11,027	11,027	100	0	0	1,180	11
Bridgeport, Lake	366,236	363,444	99	65,992	18	21,484	6
*Brownwood, Lake	128,839	128,839	100	43,171	34	16,954	13
*Cisco, Lake	29,003	23,769	82	2,537	9	-780	-3
Crook, Lake	9,195	9,195	100	0	0	582	6
Eagle Mountain Lake	179,880	179,880	100	9,253	5	14,665	8
Georgetown, Lake	36,823	36,823	100	10,085	27	14,392	39
Graham, Lake	45,288	45,288	100	5,788	13	984	2
Granbury, Lake	132,949	132,460	100	-489	0	2,751	2
Granger Lake	51,822	51,822	100	0	0	0	0
Grapevine Lake	164,703	164,703	100	0	0	4,896	3
*Halbert, Lake	6,033	5,685	94	872	14	406	7
Hubbard Creek Reservoir	318,067	313,209	98	76,796	24	32,596	10
Hubert H Moss Lake	24,058	24,058	100	0	0	1,624	7
Jim Chapman Lake (Cooper)	260,332	260,332	100	17,365	7	22,598	9
Joe Pool Lake	175,358	175,358	100	0	0	7,524	4
Kickapoo, Lake	86,345	86,345	100	18,419	21	10,568	12
Lavon Lake	406,388	406,388	100	0	0	46,086	11
Leon, Lake	27,762	27,762	100	8,667	31	3,688	13
Lewisville Lake	563,228	563,228	100	0	0	35,849	6
Limestone, Lake	203,780	198,600	97	46,394	23	35,215	17
*Lost Creek Reservoir	11,950	11,950	100	686	6	176	1
*Mineral Wells, Lake	5,273	5,273	100	437	8	614	12
Mountain Creek, Lake	22,850	22,850	100	0	0	0	0

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of lake or reservoir	Conservation storage capacity (acre-feet)	Conservation storage end of Oct. 2018 (acre-feet)	(%)	Change since end of Sept. 2018 (acre-feet)**	(%)	Change since end of Oct. 2017 (acre-feet)**	(%)
		(North Central continued)					
Navarro Mills Lake	49,827	49,827	100	7,020	14	6,843	14
New Terrell City Lake	8,583	8,583	100	0	0	731	9
Nocona, Lake (Farmers Crk)	21,444	21,444	100	1,996	9	1,634	8
Palo Pinto, Lake	26,766	26,766	100	8,194	31	3,829	14
Pat Cleburne, Lake	26,008	26,008	100	0	0	3,626	14
*Pat Mayse Lake	113,683	113,683	100	0	0	1,966	2
Possum Kingdom Lake	538,139	525,889	98	-12,250	-2	-529	0
Proctor Lake	54,762	54,762	100	24,675	45	11,278	21
Ray Hubbard, Lake	439,559	439,559	100	627	0	30,334	7
Ray Roberts, Lake	788,167	788,167	100	0	0	22,482	3
Richland-Chambers Reservoir	1,087,839	1,087,839	100	71,617	7	93,511	9
Squaw Creek, Lake	151,250	151,250	100	0	0	0	0
Stillhouse Hollow Lake	227,771	227,771	100	46,628	20	12,640	6
Tawakoni, Lake	871,685	871,685	100	4,065	0	33,927	4
Texoma, Lake (Texas)	1,258,113	1,258,113	100	0	0	0	0
Texoma, Lake (Texas & Oklahoma)	2,525,281	3,271,627	100	465,936	18	610,782	24
Waco, Lake	189,418	189,418	100	26,451	14	22,817	12
Waxahachie, Lake	10,780	10,780	100	160	1	2,163	20
Weatherford, Lake	17,812	17,812	100	3,203	18	1,776	10
Whitney, Lake	553,344	553,344	100	82,717	15	94,967	17
Worth, Lake	33,495	33,495	100	5,944	18	3,467	10
TOTAL	**10,635,685**	**10,604,534**	**100**	**696,629**	**7**	**701,165**	**7**
		EAST					
Athens, Lake	29,503	28,790	98	1,892	6	1,049	4
B A Steinhagen Lake	66,961	61,780	92	-2,151	-3	-1,842	-3
Bob Sandlin, Lake	190,822	190,822	100	4,042	2	8,368	4
Caddo, Lake	29,898	29,898	100	0	0	5,926	20
Cedar Creek Reservoir in Trinity	644,686	644,686	100	57,135	9	56,826	9
Cherokee, Lake	40,094	39,080	97	6,652	17	2,544	6
Conroe, Lake	410,988	410,988	100	32,271	8	11,805	3
Cypress Springs, Lake	66,756	66,756	100	2,086	3	4,674	7
Fork Reservoir, Lake	605,061	598,728	99	41,293	7	19,907	3
Houston County Lake	17,113	17,113	100	1,704	10	283	2
Jacksonville, Lake	25,670	24,854	97	890	3	-11	0
*Livingston, Lake	1,785,348	1,785,348	100	0	0	54,071	3
Martin, Lake	75,726	73,272	97	12,029	16	11,103	15
Monticello, Lake	34,740	29,972	86	1,145	3	-4,768	-14
Murvaul, Lake	38,285	38,285	100	5,633	15	3,935	10
Nacogdoches, Lake	39,522	39,021	99	5,323	13	2,671	7
O' the Pines, Lake	241,363	231,250	96	14,905	6	-10,113	-4
Palestine, Lake	367,303	367,303	100	43,581	12	24,217	7
Sam Rayburn Reservoir	2,857,077	2,611,441	91	142,881	5	-111,752	-4
Striker, Lake	16,934	16,934	100	1,028	6	1,197	7
*Sulphur Springs, Lake	17,747	16,544	93	661	4	-54	0
Toledo Bend Reservoir (Texas)	2,236,450	1,927,621	86	4,801	0	50,527	2
Toledo Bend Reservoir (TX & LA)	4,472,900	3,859,342	86	9,603	0	101,054	2
Tyler, Lake	72,073	69,514	96	6,492	9	1,954	3
Wright Patman Lake	135,069	135,069	100	-86,928	-64	0	0
TOTAL	**10,045,189**	**9,455,069**	**94**	**297,365**	**3**	**132,517**	**1**
		TRANS-PECOS					
Elephant Butte Reservoir (Texas)	852,491	31,151	4	5,804	1	-97,421	-11
Elephant Butte Reservoir (Total Storage)	1,973,358	72,108	4	13,436	1	-225,511	-11
Red Bluff Reservoir	151,110	91,406	60	5,470	4	-15,950	-11
TOTAL	**1,003,601**	**122,557**	**12**	**11,274**	**1**	**-113,371**	**-11**

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of lake or reservoir	Conservation storage capacity (acre-feet)	Conservation storage end of Oct. 2018 (acre-feet)	(%)	Change since end of Sept. 2018 (acre-feet)**	(%)	Change since end of Oct. 2017 (acre-feet)**	(%)
EDWARDS PLATEAU							
*Amistad Reservoir (Texas)	1,840,849	1,258,899	68	136,128	7	-116,340	-6
*Amistad Reservoir (Texas & Mexico)	3,275,532	1,790,116	55	184,651	6	-134,244	-4
Brady Creek Reservoir	28,808	28,808	100	13,953	48	12,531	43
Buchanan, Lake	816,904	816,904	100	130,726	16	48,370	6
E. V. Spence Reservoir	517,272	126,654	24	58,549	11	58,148	11
Inks, Lake	13,962	12,795	92	-579	-4	-225	-2
Lyndon B Johnson, Lake	115,249	109,359	95	-729	-1	-1,155	-1
Marble Falls, Lake	6,901	6,793	98	-38	-1	-27	0
Nasworthy	9,615	8,543	89	846	9	702	7
Oak Creek Reservoir	39,210	39,210	100	4,748	12	19,314	49
O. C. Fisher Lake	119,445	17,522	15	8,021	7	4,646	4
*O. H. Ivie Reservoir	554,340	229,095	41	145,919	26	117,628	21
Twin Buttes Reservoir	182,454	90,052	49	68,711	38	76,577	42
TOTAL	**4,245,009**	**2,744,634**	**65**	**566,255**	**13**	**220,169**	**5**
SOUTH CENTRAL							
*Austin, Lake	23,972	22,711	95	-478	-2	-46	0
Canyon Lake	378,781	378,781	100	18,719	5	24,349	6
*Coleto Creek Reservoir	31,040	31,040	100	2,298	7	1,196	4
Medina Lake	254,823	223,258	88	48,021	19	41,157	16
Somerville Lake	147,104	147,104	100	22,436	15	0	0
Travis, Lake	1,113,348	1,113,348	100	365,485	33	188,266	17
TOTAL	**1,949,068**	**1,916,242**	**98**	**456,481**	**23**	**254,922**	**13**
UPPER COAST							
Houston, Lake	120,686	120,686	100	0	0	0	0
Texana, Lake	159,566	159,015	100	11,889	7	7,258	5
TOTAL	**280,252**	**279,701**	**100**	**11,889**	**4**	**7,258**	**3**
SOUTHERN							
Choke Canyon Reservoir	662,820	344,445	52	89,944	14	133,058	20
Corpus Christi, Lake	256,062	256,062	100	0	0	1	0
*Falcon Reservoir (Texas)	1,551,007	743,984	48	101,652	7	-59,871	-4
*Falcon Reservoir (Texas & Mexico)	2,646,817	1,049,976	40	181,275	7	-331,468	-13
TOTAL	**2,469,889**	**1,344,491**	**54**	**191,596**	**8**	**73,188**	**3**
STATEWIDE TOTAL	**32,168,894**	**27,358,394**	**85**	**2,375,336**	**7**	**1,291,236**	**4**

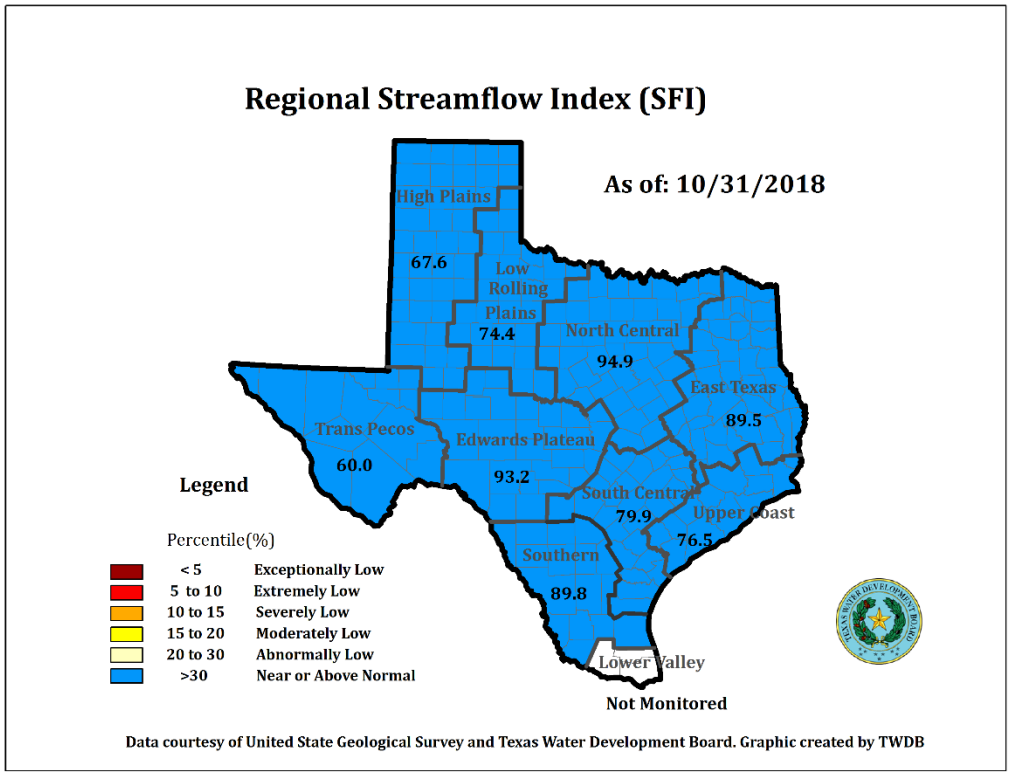
* Total volume below elevation of conservation pool top is used as conservation storage capacity, because the dead pool storage is unknown.
**Monthly and yearly changes do not include reservoirs that did not have data in last month or last year, respectively.

Note:

Conservation storage capacity is the space available to store water above the lowest outlet and below the top of conservation pool (some may have seasonal variations), or normal maximum operating level. Conservation storage refers to the volume of water held within the conservation storage space. Not included is any water in flood control storage (above the top of conservation pool or normal maximum operating level) or any water in the dead pool storage. Conservation storage percentage is based on the conservation storage capacity of the reservoir and the conservation storage in the reservoir on date shown. Percent change is given by 100 * (current conservation storage - past conservation storage)/conservation storage capacity.

STREAMFLOW CONDITIONS

Regional Streamflow Index* for 29 stream gage stations is presented in the map below. On a regional basis, stream flows were above normal (> 30th percentile) in all 9 climate regions of Texas. High index values (> 60th percentile) occurred throughout Texas. Streamflow in the Lower Valley region is not monitored.



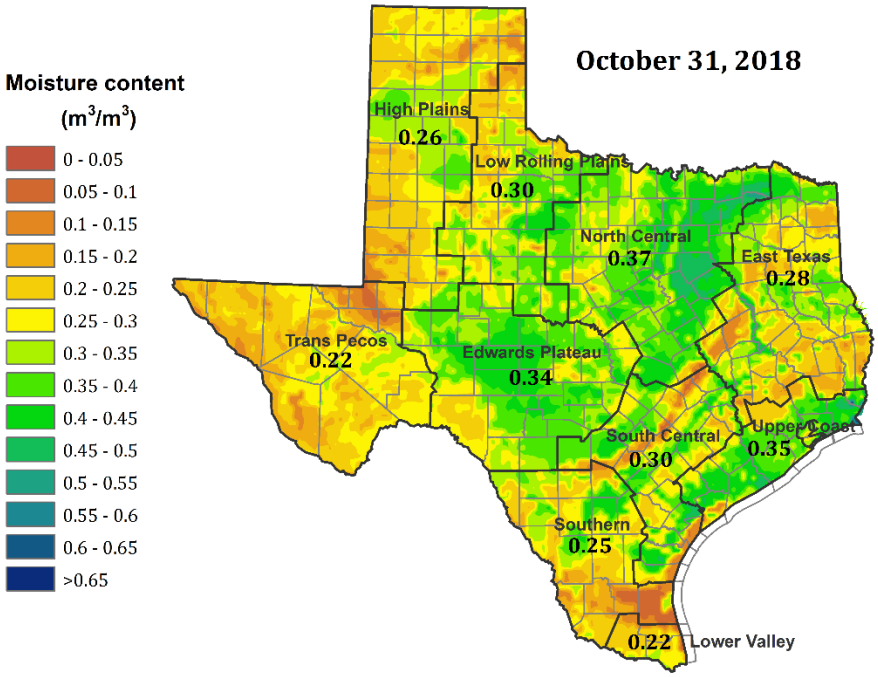
Of 29 individual stream gage stations, streamflow at 28 stations was near or above normal and 1 was abnormally low (*table below*). Compared to streamflow conditions in September 2018, streamflow increased at 25 stations and decreased at 4 stations.

Streamflow Status (percentile)	Number of Stations
Near or Above Normal (>30%)	28
Abnormally Low (20-30%)	1
Moderately Low (15-20%)	0
Severely Low (10-15%)	0
Extremely Low (5-10%)	0
Exceptionally Low (<5%)	0

*Streamflow Index is defined as the following: At each station, a 30-day moving average flow is calculated from historical mean daily flow rate records. For each day, 30-day average flow is presented as a percentile of the historical record for that calendar day.

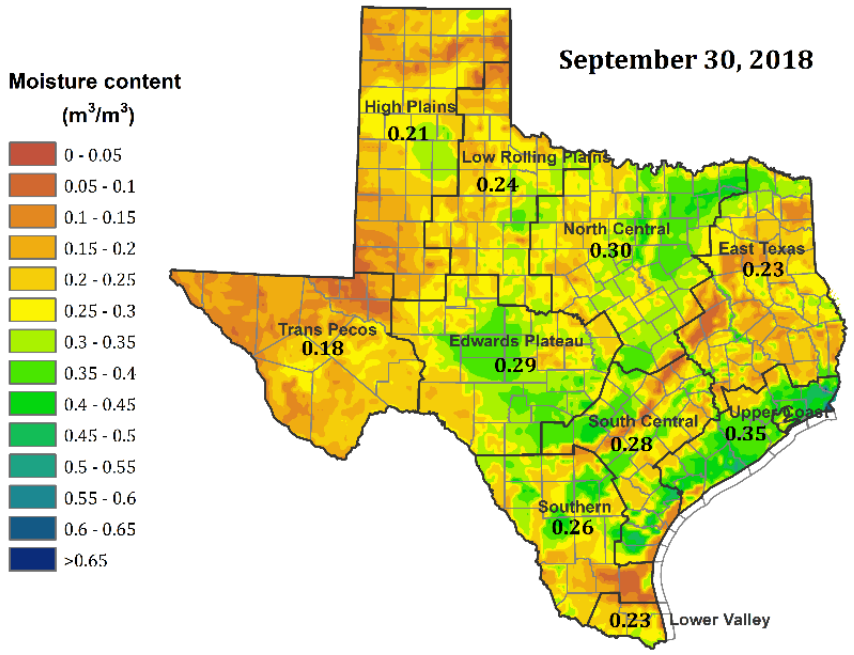
SOIL MOISTURE CONDITIONS

Soil moisture at the end of October 2018 (*top image*) was mostly high or moderate (>0.20 cubic meter water per bulk cubic meter soil (m^3/m^3)) in all regions of the state, due to continued rainfall in October. On a regional basis and comparing to that at the end of September 2018 (*bottom image*), average moisture content increased in seven regions, varying from 0.02 to 0.07 m^3/m^3. The North Central region increased the most; whereas, the South Central region increased the least. The Southern and Lower Valley regions decreased 0.01 m^3/m^3, while the Upper Coast remained unchanged.



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.

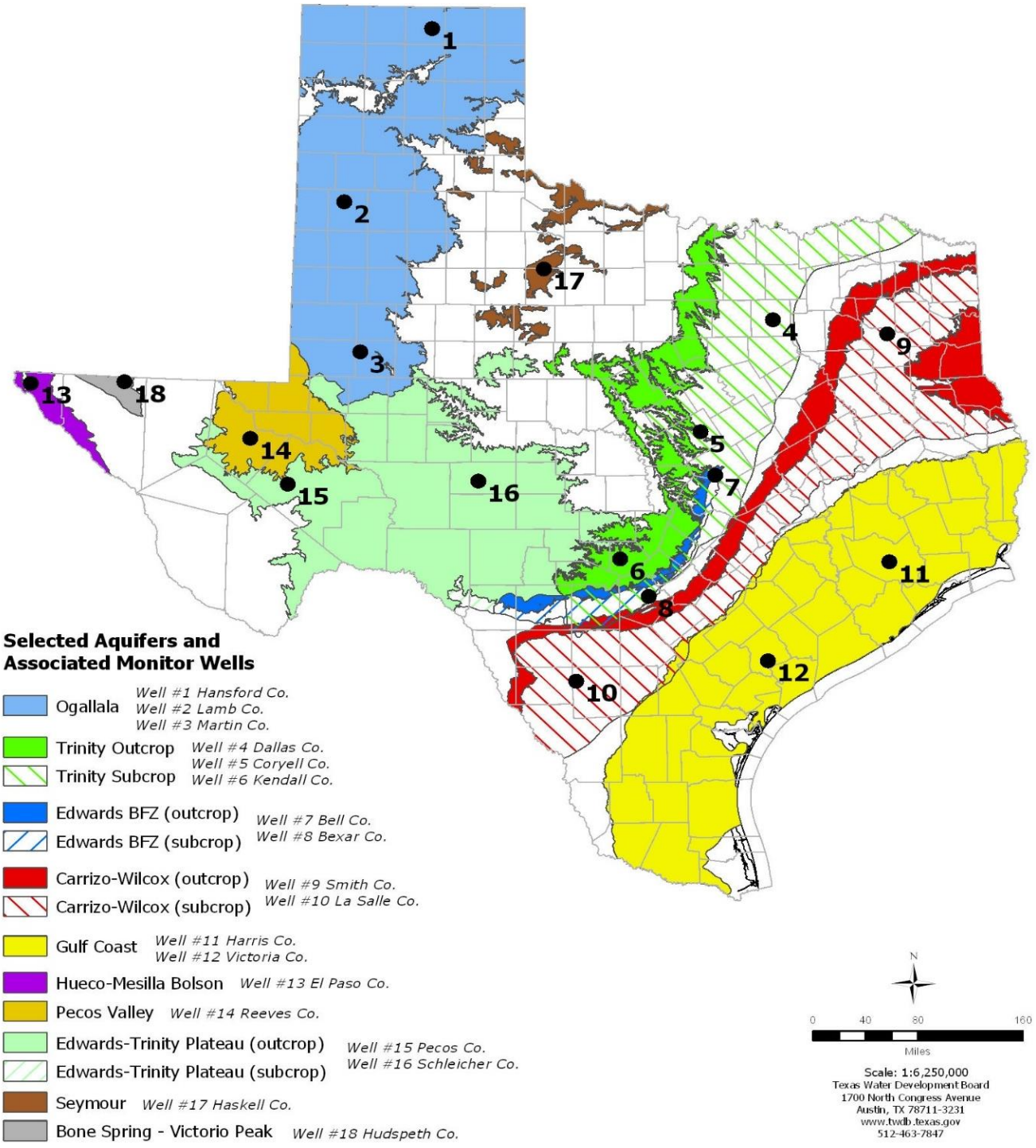


Data from NASA Soil Moisture Active Passive (SMAP) Level 4 - Model - Value Added Version 4

Soil moisture content is shown as volume of water per unit volume of bulk soil. Root zone: 0 to 1 meter depth.

GROUNDWATER LEVELS IN OBSERVATION WELLS

Water-level measurements were available for all 18 key monitoring wells in the state. Water levels rose in 13 monitoring wells since the beginning of October, ranging from an increase of 0.10 feet in the Hansford County Ogallala Aquifer well (#1 on map) to 46.79 feet in the Schleicher County Edwards-Trinity Plateau Aquifer well (#16 on map). Water levels declined in 5 monitoring wells, ranging from a decline of -0.16 feet in the Lamb County Ogallala Aquifer well (#2 on map) to -3.09 feet in the Reeves County Pecos Valley Aquifer well (#14 on map). The J-17 well (#8 on map) in San Antonio recorded a water level of 47.51 feet below land surface or 683.09 feet above mean sea level. Water levels rose 23.49 feet above the Stage 1 critical management level for the San Antonio portion of the Edwards (Balcones Fault Zone) Aquifer.



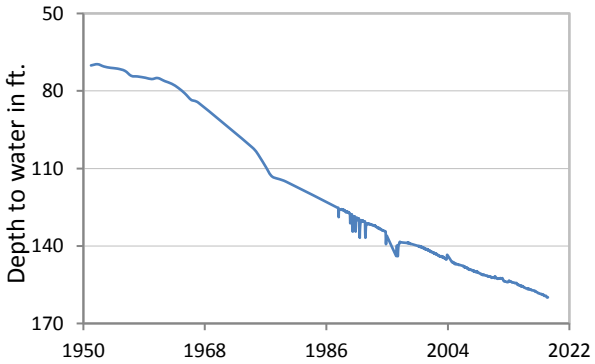
***Well numbers used in this publication on the aquifer map to indicate the monitoring well location (numbers 1 - 17) are different than the TWDB's seven-digit state well number.**

Monitoring Well	October	September	Month Change	Year Change	Historical Change	First Measured
(1) Hansford 0354301	159.87	159.97	0.10	-1.30	-89.75	1951
(2) Lamb 1053602	149.25	149.09	-0.16	-1.31	-121.08	1951
(3) Martin 2739903	144.07	143.00	-1.07	0.15	-39.18	1964
(4) Dallas 3319101	499.25	498.44	-0.81	-6.18	-277.25	1954
(5) Coryell 4035404	528.13	530.72	2.59	-4.11	-236.13	1955
(6) Kendall 6802609	138.12	147.79	9.67	-5.38	-78.12	1975
(7) Bell 5804816	123.20	125.25	2.05	0.35	0.31	2008
(8) Bexar 6837203	47.51	53.71	6.20	21.00	-0.87	1932
(9) Smith 3430907	436.29	437.24	0.95	-2.55	-136.29	1977
(10) La Salle 7738103	526.78	530.90	4.12	-30.66	-273.71	2003
(11) Harris 6514409	193.98	195.29	1.31	-0.70	-58.48*	1947**
(12) Victoria 8017502	35.30	35.43	0.13	-3.64	-1.30	1958
(13) El Paso 4913301	294.84	294.01	-0.83	-0.65	-62.94	1964
(14) Reeves 4644501	172.09	169.00	-3.09	-6.11	-80.00	1952
(15) Pecos 5216802	201.94	216.36	14.42	1.39	44.94	1976
(16) Schleicher 5512134	262.70	309.49	46.79	47.86	39.20	2003
(17) Haskell 2135748	46.65	47.41	0.76	0.31	-3.65	2002
(18) Hudspeth 4807516	152.45	158.65	6.20	-0.80	-48.53	1966

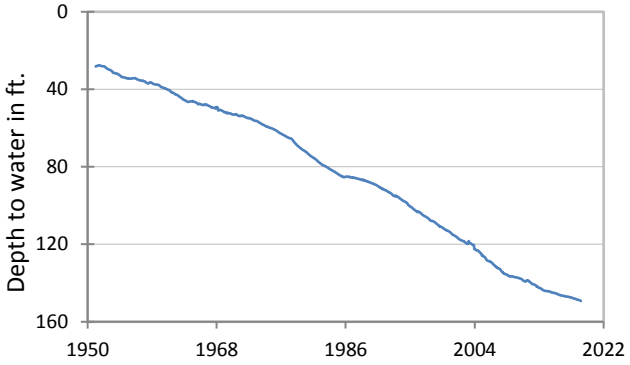
*Change since the original measurement of 135.5 feet below land surface in 1947 (**measurement not shown on the hydrograph)

October 2018 OBSERVATION WELL HYDROGRAPHS

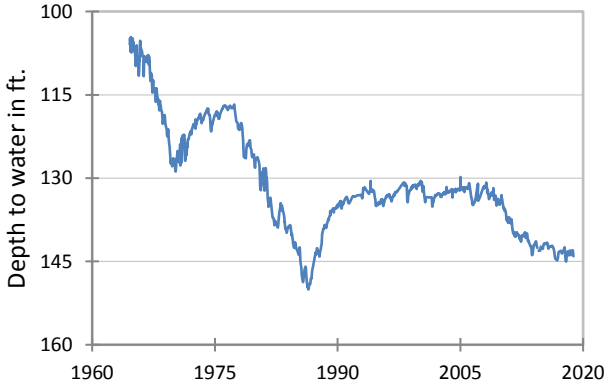
(1) State Well #03-54-301
Near Spearman, Hansford County
Ogallala Aquifer



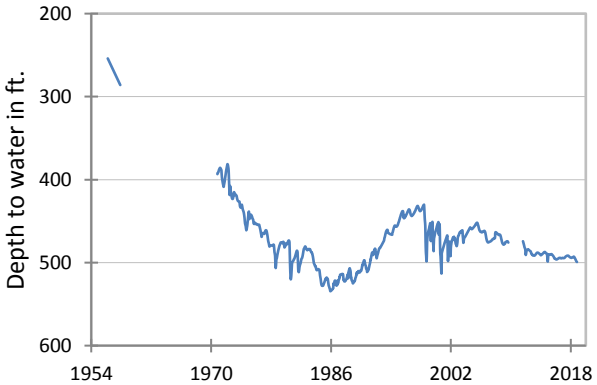
(2) State Well #10-53-602
Near Earth, Lamb County
Ogallala Aquifer



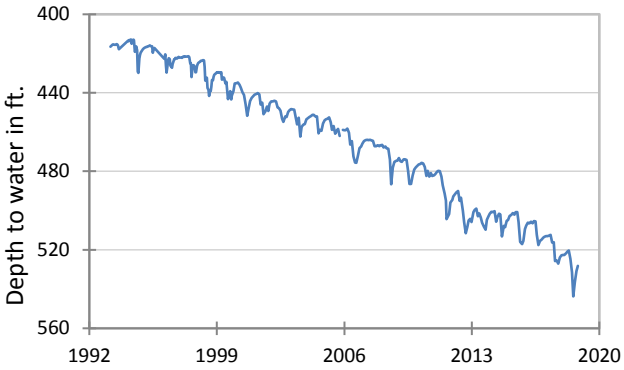
(3) State Well #27-39-903
Northwest Martin County
Ogallala Aquifer



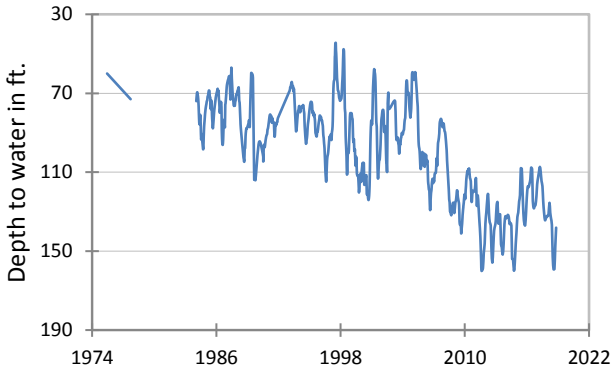
(4) State Well #33-19-101
Southeast Dallas, Dallas County
Twin Mountains Formation-Trinity Aquifer



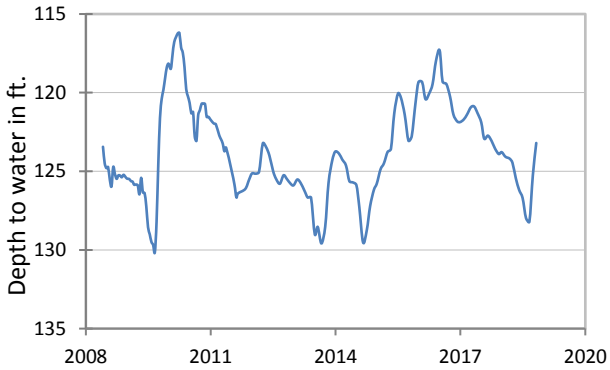
(5) State Well #40-35-404
Gatesville, Coryell County
Hosston Formation-Trinity Aquifer



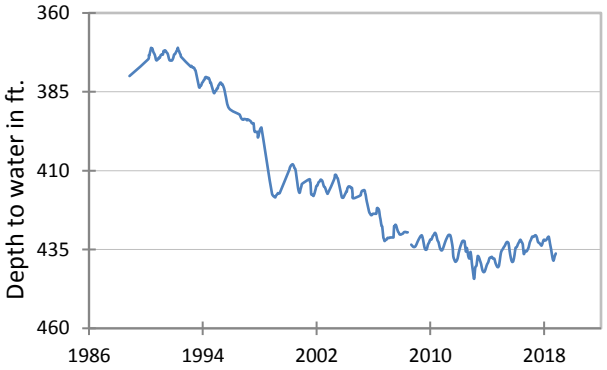
(6) State Well #68-02-609
Waring, Kendall County
Cow Creek Formation-Trinity Aquifer



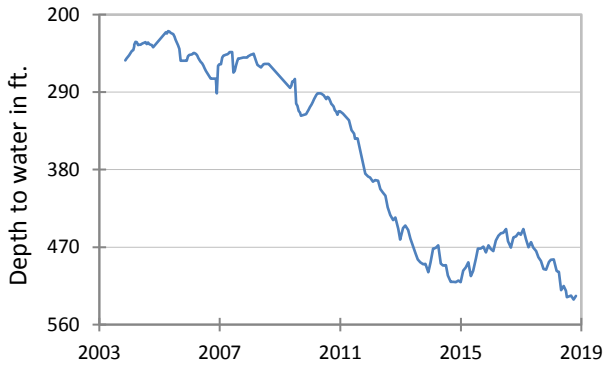
(7) State Well #58-04-816
Near Salado, Bell County
Edwards (Balcones Fault Zone) Aquifer



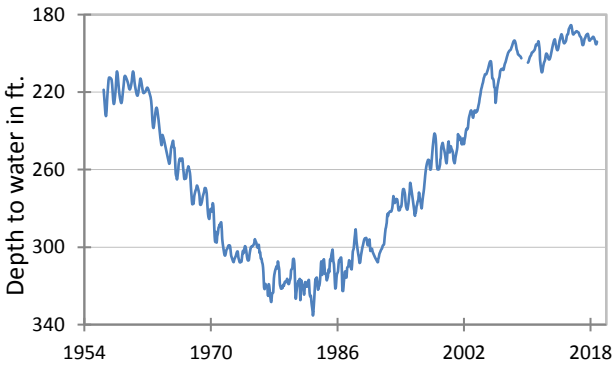
(9) State Well #34-30-907
Red Springs, Smith County
Carrizo-Wilcox Aquifer



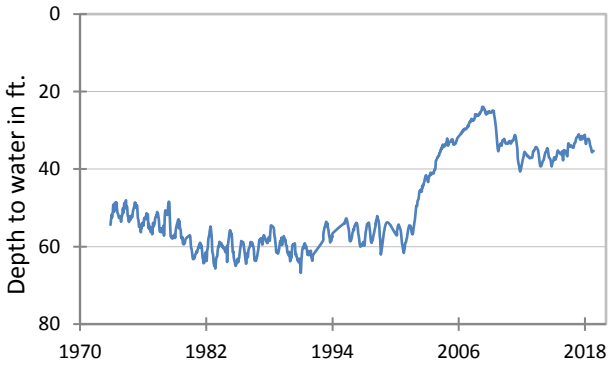
(10) State Well #77-38-103
Near Cotulla, La Salle County
Carrizo-Wilcox Aquifer



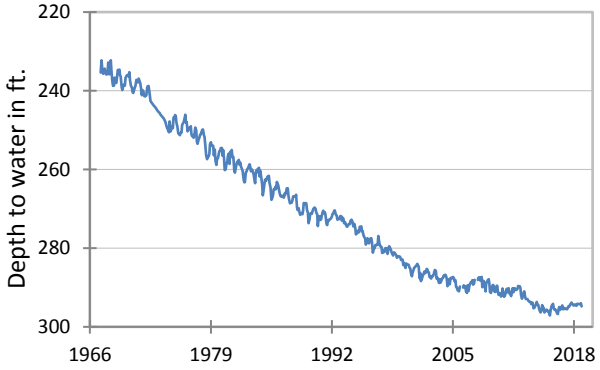
(11) State Well #65-14-409
Alief, Harris County
Evangeline Formation-Gulf Coast Aquifer



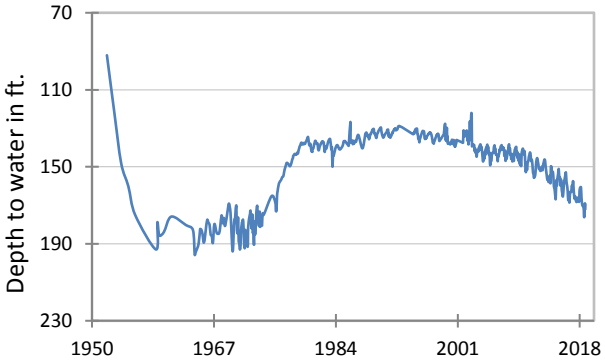
(12) State Well #80-17-502
Near Bloomington, Victoria County
Lissie Formation-Gulf Coast Aquifer



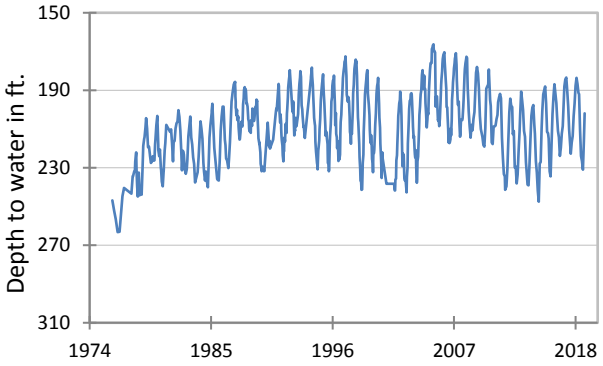
(13) State Well #49-13-301
El Paso, El Paso County
Hueco-Mesilla Bolson Aquifer



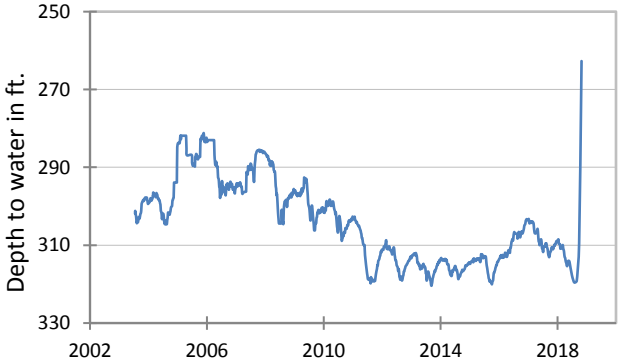
(14) State Well #46-44-501
Near Pecos, Reeves County
Pecos Valley Aquifer



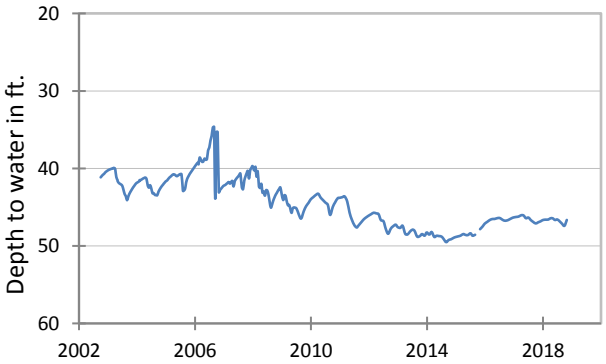
(15) State Well #52-16-802
Fort Stockton, Pecos County
Edwards-Trinity (Plateau) Aquifer



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

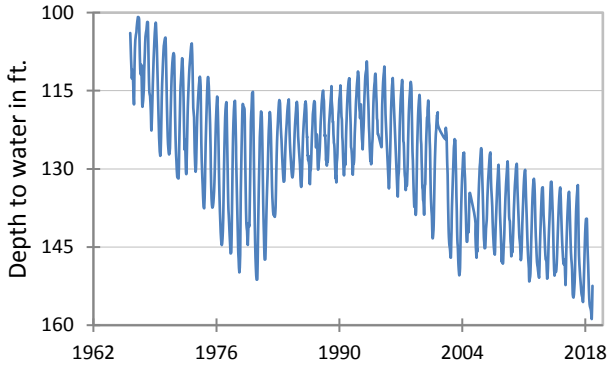


(17) State Well #21-35-748
Near O'Brien, Haskell County
Seymour Aquifer

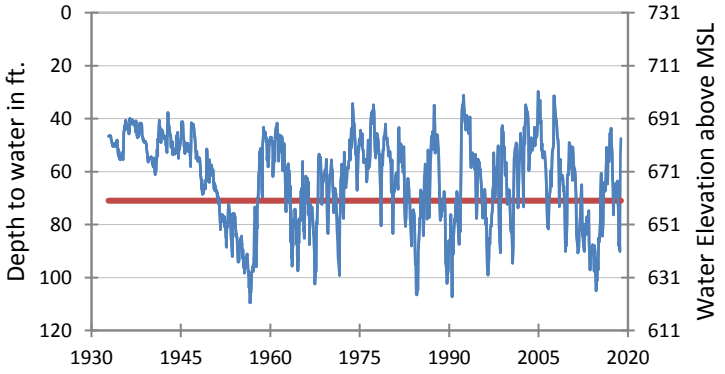


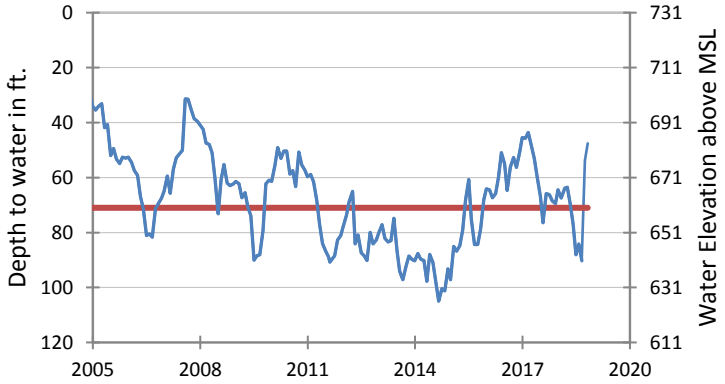
Note: dramatic increase in water-level is a result of enhanced recharge from a large precipitation event. See hydrograph of the month (final page) for more detail.

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



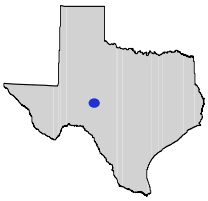
(8) State Well #68-37-203 (J-17)
San Antonio, Bexar County
Edwards (Balcones Fault Zone) Aquifer





The late October water-level measurement in this Edwards (Balcones Fault Zone) Aquifer well, elevation 731 feet above mean sea level, was 47.51 feet below land surface, or 683.09 feet above mean sea level. This was 6.20 feet above last month's measurement, 21.00 feet above last year's measurement and 0.87 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.

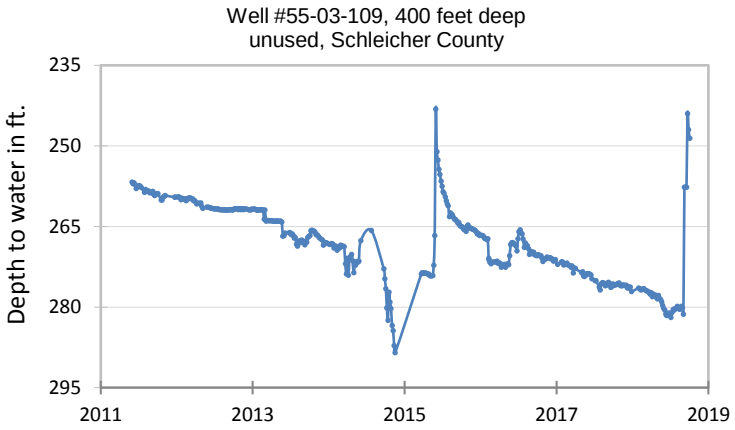


HYDROGRAPH OF THE MONTH

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

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 groundwater resources in Texas. The primary use is for municipalities, but it is also used for irrigation, livestock, and domestic purposes.



The TWDB installed an automatic water-level recorder at this unused well in May of 2011 with an initial measurement of 256.72 below land surface and has since collected near-weekly measurements. The period of record reveals a gradual decline in water level interrupted by two dramatic increases in water level in May of 2015 (+30 ft—preceded by a ~20-foot decline reflecting drought conditions exacerbated by pumping), and in September of 2018 (+35 ft). These spikes are likely caused by high precipitation events that provide large quantities of recharge to karstic, permeable areas of the Trinity outcrop. It should be noted that these spikes in water level are not uncharacteristic of parts of the Trinity Aquifer. Key monitoring well 16, for example, experienced a similar rise in water level.

Far away (left) and close-up (right) images of well #55-03-109.