

Texas Water Development Board



WATER Conditions

RESERVOIR STORAGE

March 2011

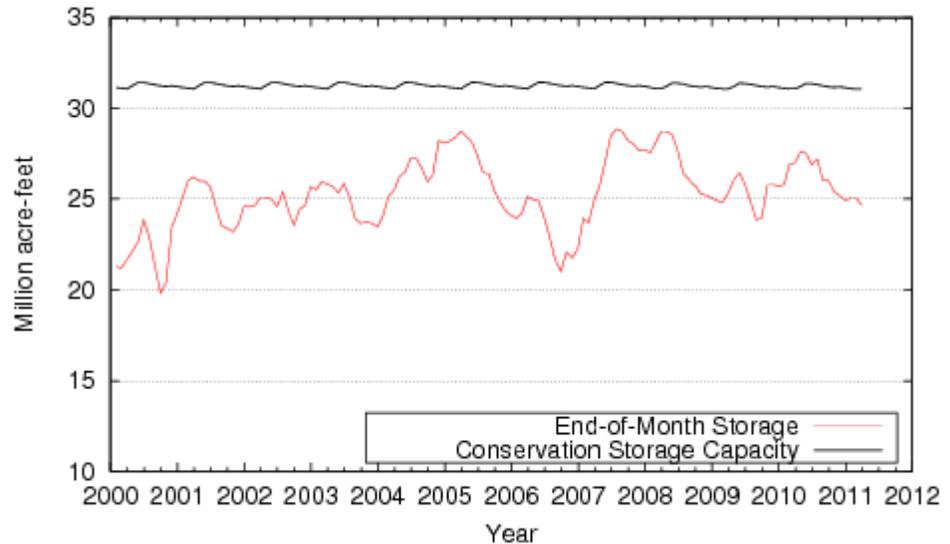
At the end of March, total storage in 109 of the state's major reservoirs was at 24.65 million acre-feet*, or 79% of the total conservation storage capacity. This is 0.39 million acre-feet less than a month ago.

Storage was at 100% in 10 reservoirs, four less than last month. Six lakes were at or below 10% full: O. C. Fisher Lake Reservoir and Lake Meredith (total) were effectively empty, E.V. Spence Reservoir was at 2%, Hords Creek Lake at 3%, Lake J. B. Thomas at 5%, and Lake Electra were at 5% full.

One region had combined storage above 90%: Southern 90%. The High Plains (5%) and Trans-Pecos regions (25%) remained very low. Over the month, storage declined in all regions. Over the 12-month period, storage increased in 3 and decreased in 6 regions.

* Only the Texas share of storage in border reservoirs is counted.

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS



Figures are based on the end of the month data at 109 major reservoirs that represent 95 percent of the total conservation storage capacity of the 175 major water supply reservoirs in Texas. Reservoirs with a conservation storage capacity of 5,000 acre-feet or greater are included.

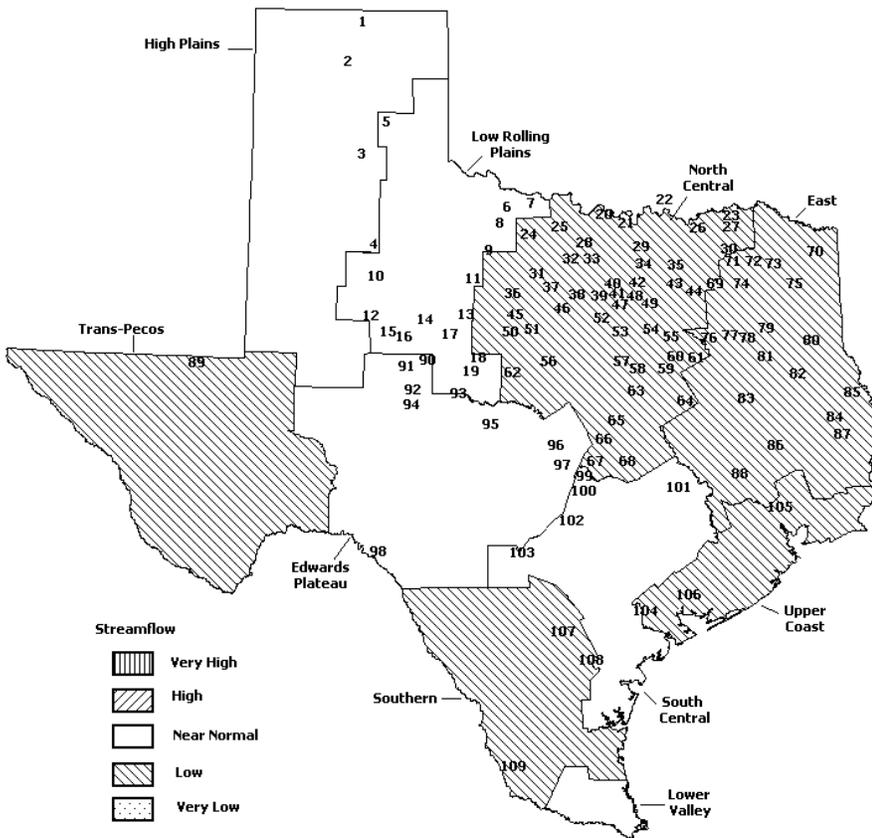
STREAMFLOW

Of 29 reporting index stations in March, computed 30-day mean flows were low (70% - 95%) at 13 stations, very low (>95%) at 1 station, and near normal (30% - 70%) at the remaining 15 stations. Compared to February, flows have increased at 4 index stations and decreased at 24 stations.

On a regional basis, flows in February were low in the North Central, East Texas, Trans-Pecos, Upper Coast and Southern regions, and near normal everywhere else. Streamflow in the Lower Valley region is not monitored.

MARCH STREAMFLOW CONDITIONS

Reservoirs Shown on Map



1. Palo Duro Reservoir
2. Meredith, Lake
3. MacKenzie Reservoir
4. White River Lake
5. Greenbelt Lake
6. Electra, Lake
7. N. Fork Buffalo Creek Reservoir
8. Kemp, Lake
9. Miller's Creek Reservoir
10. Alan Henry Reservoir
11. Stamford, Lake
12. Lake J. B. Thomas
13. Fort Phantom Hill, Lake
14. Sweetwater, Lake
15. Colorado City, Lake
16. Champion Creek Reservoir
17. Abilene, Lake
18. Coleman, Lake
19. Hords Creek Lake
20. Farmers Creek Reservoir
21. Hubert H Moss Lake
22. Texoma, Lake
23. Pat Mayse Lake
24. Lake Kickapoo
25. Lake Arrowhead
26. Bonham, Lake
27. Crook, Lake
28. Amon G Carter, Lake
29. Ray Roberts, Lake
30. Jim Chapman Lake
31. Graham, Lake
32. Lost Creek Reservoir
33. Bridgeport Reservoir
34. Lewisville Lake
35. Lavon Lake
36. Hubbard Creek Reservoir
37. Possum Kingdom Lake
38. Mineral Wells, Lake
39. Weatherford, Lake
40. Eagle Mountain Lake
41. Worth, Lake
42. Grapevine Lake
43. Lake Ray Hubbard
44. New Terrell City Lake
45. Daniel, Lake
46. Palo Pinto, Lake
47. Benbrook Lake
48. Arlington, Lake
49. Joe Pool Lake
50. Cisco, Lake
51. Leon, Lake
52. Lake Granbury
53. Pat Cleburne, Lake
54. Waxahachie, Lake
55. Bardwell Lake
56. Proctor Lake
57. Whitney Lake
58. Aquilla Lake
59. Navarro Mills Lake
60. Halbert, Lake
61. Richland-Chambers Reservoir
62. Lake Brownwood
63. Waco Lake
64. Limestone, Lake
65. Belton Lake
66. Stillhouse Hollow Lake
67. Georgetown, Lake
68. Granger Lake
69. Tawakoni, Lake
70. Wright Patman Lake
71. Sulphur Springs, Lake
72. Cypress Springs, Lake
73. Bob Sandlin, Lake
74. Fork Reservoir, Lake
75. O' the Pines, Lake
76. Cedar Creek Reservoir Trinity
77. Athens, Lake
78. Palestine, Lake
79. Tyler, Lake
80. Murvaul, Lake
81. Jacksonville, Lake
82. Nacogdoches, Lake
83. Houston County Lake
84. Sam Rayburn Reservoir
85. Toledo Bend Reservoir
86. Livingston, Lake
87. B. A. Steinhagen Lake
88. Conroe, Lake
89. Red Bluff Reservoir
90. Oak Creek Reservoir
91. E. V. Spence Reservoir
92. O. C. Fisher Lake
93. O. H. Ivie Reservoir
94. Twin Buttes Reservoir
95. Brady Creek Reservoir
96. Buchanan, Lake
97. Lyndon B Johnson, Lake
98. Amistad Reservoir, Intl.
99. Travis, Lake
100. Austin, Lake
101. Somerville Lake
102. Canyon Lake
103. Medina Lake
104. Coletto Creek Reservoir
105. Lake Houston
106. Texana, Lake
107. Choke Canyon Reservoir
108. Lake Corpus Christi
109. Falcon Reservoir, Intl.

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of Lake or Reservoir	No. on Map	Conservation Storage		Conservation Storage		Change since Late February		Change since Late March	
		Capacity (acre-feet)		Late Mar. (acre-feet)	2011 (%)	2011 (acre-feet)	(%)	2010 (acre-feet)	(%)
HIGH PLAINS									
Palo Duro Reservoir	1	60,897		10,479	17	-601	-1	10,219	17
Meredith, Lake (Texas)	2	500,000		3,480	1	-473	0	-28,666	-6
Meredith, Lake (Texas & Oklahoma)	(2)	779,556		3,480	0	-473	0	-28,666	-4
MacKenzie Reservoir	3	46,429		5,837	13	-107	0	146	0
White River Lake	4	29,880		9,634	32	-357	-1	6,762	23
TOTAL		637,206		29,430	5	-1,538	0	-11,539	-2
LOW ROLLING PLAINS									
Greenbelt Lake	5	59,500		16,070	27	-151	0	118	0
*Electra, Lake	6	5,626		305	5	-50	-1	-321	-6
N. Fork Buffalo Crk Reservoir	7	15,400		5,407	35	-360	-2	-370	-2
Kemp, Lake	8	245,308		225,745	92	-10,828	-4	28,024	11
Millers Creek Reservoir	9	27,888		17,842	64	-655	-2	2,348	8
Alan Henry Reservoir	10	94,808		87,388	92	-1,183	-1	942	1
Stamford, Lake	11	51,570		47,605	92	-1,883	-4	2,527	5
J B Thomas, Lake	12	199,931		9,290	5	-752	0	-472	0
Fort Phantom Hill, Lake	13	70,030		55,694	80	-1,953	-3	2,917	4
Sweetwater, Lake	14	10,006		5,383	54	-127	-1	-823	-8
Colorado City, Lake	15	31,793		14,071	44	-362	-1	-3,416	-11
Champion Creek Reservoir	16	41,618		6,603	16	-160	0	-1,127	-3
Abilene, Lake	17	6,099		4,449	73	-209	-3	454	7
Coleman, Lake	18	38,076		20,285	53	-537	-1	-4,822	-13
Hords Creek Lake	19	5,684		158	3	-83	-1	-1,241	-22
TOTAL		903,337		516,295	57	-19,293	-2	24,738	3
NORTH CENTRAL									
Nocona, Lake (Farmers Crk)	20	21,445		17,983	84	-475	-2	-3,462	-16
Hubert H Moss Lake	21	24,058		23,769	99	-289	-1	-289	-1
Texoma, Lake (Texas)	22	1,185,688		1,142,717	96	-29,926	-3	-42,971	-4
Texoma, Lake (Texas & Oklahoma)	(22)	2,371,376		2,285,434	96	-59,853	-3	-85,942	-4
*Pat Mayse Lake	23	117,844		101,811	86	-369	0	-16,289	-14
Kickapoo, Lake	24	85,825		66,206	77	-1,754	-2	6,789	8
Arrowhead, Lake	25	235,997		185,568	79	-6,051	-3	16,267	7
Bonham, Lake	26	11,026		9,830	89	-301	-3	-1,185	-11
Crook, Lake	27	9,195		8,802	96	-124	-1	-393	-4
Amon G Carter, Lake	28	19,903		17,030	86	-580	-3	-2,873	-14
Ray Roberts, Lake	29	798,758		753,478	94	-10,766	-1	-45,280	-6
Jim Chapman Lake (Cooper)	30	260,332		137,046	53	-10,449	-4	-123,286	-47
Graham, Lake	31	45,260		41,420	92	-1,067	-2	-1,643	-4
*Lost Creek Reservoir	32	11,950		10,842	91	-137	-1	-1,108	-9
Bridgeport, Lake	33	366,236		316,096	86	-3,749	-1	-33,408	-9
Lewisville Lake	34	563,228		527,966	94	-20,062	-4	-16,022	-3
Lavon Lake	35	443,844		340,226	77	-9,620	-2	-103,618	-23
Hubbard Creek Reservoir	36	318,067		185,426	58	-5,366	-2	-30,915	-10
Possum Kingdom Lake	37	540,340		507,186	94	-8,907	-2	-9,393	-2
*Mineral Wells, Lake	38	7,065		6,204	88	-181	-3	-861	-12
Weatherford, Lake	39	17,789		13,847	78	-700	-4	-4,798	-27
Eagle Mountain Lake	40	179,880		157,912	88	-6,986	-4	-24,588	-14
Worth, Lake	41	24,500		18,208	74	-877	-4	-6,292	-26
Grapevine Lake	42	164,702		156,504	95	-1,217	-1	-8,198	-5
Ray Hubbard, Lake	43	452,040		389,475	86	-6,951	-2	-61,945	-14
New Terrell City Lake	44	8,583		7,381	86	-274	-3	-1,202	-14
Daniel, Lake	45	9,435		4,005	42	-476	-5	-285	-3
Palo Pinto, Lake	46	26,827		20,753	77	-1,180	-4	-6,397	-24
Benbrook Lake	47	85,648		83,405	97	-1,013	-1	-2,243	-3
Arlington, Lake	48	40,156		36,341	90	-2,134	-5	-2,399	-6

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of Lake or Reservoir	No. on Map	Conservation Storage Capacity (acre-feet)	Conservation Storage		Change since Late February 2011		Change since Late March 2010		
			Late Mar. (acre-feet)	2011 (%)	(acre-feet)	(%)	(acre-feet)	(%)	
NORTH CENTRAL (Continue)									
Joe Pool Lake	49	142,861	140,794	99	-2,067	-1	-2,067	-1	
*Cisco, Lake	50	26,000	13,737	53	-367	-1	-2,945	-11	
Leon, Lake	51	26,421	15,590	59	-516	-2	-3,672	-14	
Granbury, Lake	52	128,046	123,968	97	-3,096	-2	-302	0	
Pat Cleburne, Lake	53	26,008	23,528	90	-1,087	-4	-2,202	-8	
Waxahachie, Lake	54	10,779	9,363	87	-115	-1	-1,416	-13	
Bardwell Lake	55	46,122	45,967	100	-155	0	-155	0	
Proctor Lake	56	55,457	30,013	54	-1,810	-3	-19,627	-35	
Whitney, Lake	57	553,349	374,126	68	-793	0	-168,471	-30	
Aquilla Lake	58	44,460	43,364	98	-883	-2	-1,728	-4	
Navarro Mills Lake	59	49,826	49,826	100	0	0	-5,991	-12	
*Halbert, Lake	60	6,033	3,596	60	-231	-4	-1,860	-31	
Richland-Chambers Reservoir	61	1,087,839	991,518	91	-18,949	-2	-112,298	-10	
*Brownwood, Lake	62	131,429	76,186	58	-2,025	-2	-17,698	-13	
Waco, Lake	62	198,943	198,192	100	-751	0	-751	0	
Limestone, Lake	64	208,015	174,376	84	-5,988	-3	-33,395	-16	
Belton Lake	65	435,225	396,577	91	-3,442	-1	-16,879	-4	
Stillhouse Hollow Lake	66	227,771	227,643	100	-128	0	-128	0	
Georgetown, Lake	67	36,823	30,788	84	-2,420	-7	-6,035	-16	
Granger Lake	68	50,779	50,779	100	0	0	6,603	13	
Tawakoni, Lake	69	888,126	772,016	87	-16,651	-2	-116,110	-13	
TOTAL		10,455,933	9,079,384	87	-193,455	-2	-1,035,414	-10	
EAST									
Wright Patman Lake	70	122,593	122,593	100	0	0	0	0	
*Sulphur Springs, Lake	71	17,838	11,132	62	149	1	-6,213	-35	
Cypress Springs, Lake	72	66,756	63,090	95	-1,332	-2	-4,599	-7	
Bob Sandlin, Lake	73	200,579	175,481	87	-253	0	-25,098	-13	
Fork Reservoir, Lake	74	604,927	521,096	86	-4,145	-1	-83,831	-14	
O the Pines, Lake	75	238,933	238,933	100	0	0	0	0	
Cedar Creek Reservoir in Trinity	76	644,686	560,203	87	-10,293	-2	-84,483	-13	
Athens, Lake	77	29,435	28,269	96	-72	0	-1,166	-4	
Palestine, Lake	78	370,907	339,188	91	-4,462	-1	-31,719	-9	
Tyler, Lake	79	73,256	66,292	90	-1,223	-2	-6,964	-10	
Murvault, Lake	80	38,284	32,214	84	-934	-2	-6,070	-16	
Jacksonville, Lake	81	25,670	24,268	95	-44	0	-6,032	-23	
Nacogdoches, Lake	82	39,521	28,748	73	-717	-2	-10,473	-26	
Houston County Lake	83	17,113	16,643	97	-101	-1	-470	-3	
Sam Rayburn Reservoir	84	2,857,077	2,072,199	73	7,232	0	-784,878	-27	
Toledo Bend Reservoir (Texas)	85	2,236,450	1,621,504	73	-10,266	0	-492,207	-22	
Toledo Bend Reservoir (TX & LA)	(85)	4,472,900	3,243,009	73	-20,531	0	-984,414	-22	
*Livingston, Lake	86	1,741,867	1,740,000	100	-1,867	0	-1,867	0	
B A Steinhagen Lake	87	66,966	55,051	82	2,272	3	-4,455	-7	
Conroe, Lake	88	416,188	386,278	93	-2,420	-1	-29,520	-7	
TOTAL		9,809,046	8,103,182	83	-28,476	0	-1,580,045	-16	
TRANS-PECOS									
Red Bluff Reservoir	89	289,670	71,842	25	-120	0	-362	0	
TOTAL		289,670	71,842	25	-120	0	-362	0	

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

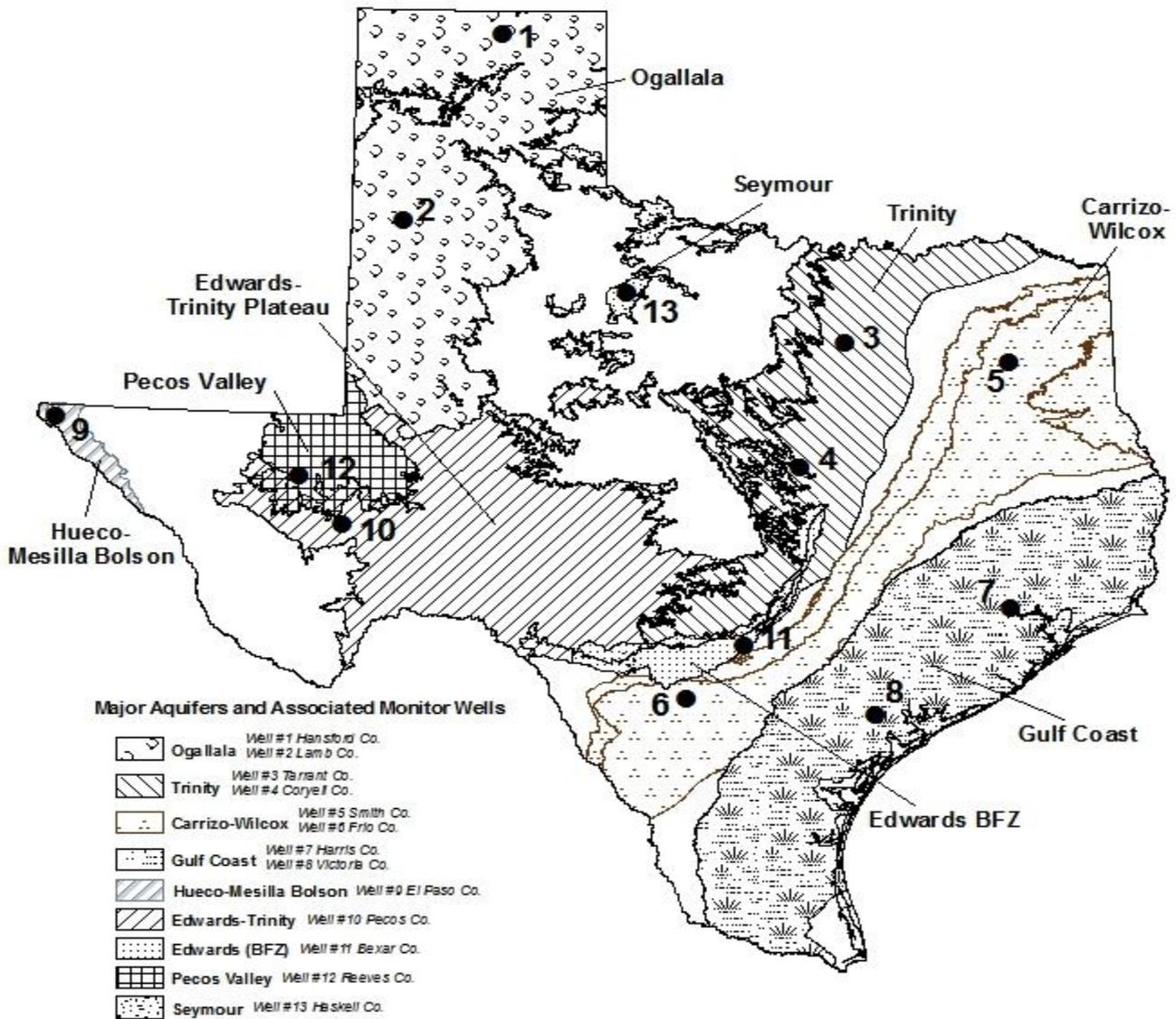
Name of Lake or Reservoir	No. on Map	Conservation Storage Capacity (acre-feet)	Conservation Storage		Change since Late February 2011		Change since Late March 2010		
			Late Mar. (acre-feet)	2011 (%)	(acre-feet)	(%)	(acre-feet)	(%)	
EDWARDS PLATEAU									
Oak Creek Reservoir	90	39,260	22,077	56	-538	-1	-2,253	-6	
E V Spence Reservoir	91	517,272	11,109	2	-1,942	0	-11,888	-2	
O C Fisher Lake	92	79,483	0	0	0	0	0	0	
*O H Ivie Reservoir	93	554,335	167,262	30	-7,025	-1	-72,861	-13	
Twin Buttes Reservoir	94	177,850	18,835	11	-1,302	-1	-16,793	-9	
Brady Creek Reservoir	95	29,110	12,218	42	-560	-2	-5,100	-18	
Buchanan, Lake	96	875,610	660,213	75	-1,342	0	29,172	3	
Lyndon B Johnson, Lake	97	113,323	112,229	99	-122	0	211	0	
*Amistad Reservoir (Texas)	98	1,840,849	1,841,000	100	0	0	117,000	6	
*Amistad Reservoir (TX & Mexico)	(98)	3,275,532	3,275,532	100	0	0	165,532	5	
TOTAL		4,227,092	2,844,943	67	-12,831	0	37,488	1	
SOUTH CENTRAL									
Travis, Lake	99	1,113,255	819,008	74	-32,064	-3	-294,894	-26	
*Austin, Lake	100	21,804	21,198	97	408	2	75	0	
Somerville Lake	101	147,104	123,894	84	-3,335	-2	-23,210	-16	
Canyon Lake	102	378,781	360,312	95	-5,854	-2	-18,469	-5	
Medina Lake	103	254,823	152,083	60	-7,485	-3	47,092	18	
*Coleta Creek Reservoir	104	31,040	30,313	98	-727	-2	-727	-2	
TOTAL		1,946,807	1,506,808	77	-49,057	-3	-290,133	-15	
UPPER COAST									
Houston, Lake	105	128,863	128,863	100	0	0	0	0	
Texana, Lake	106	153,246	112,644	74	-8,282	-5	-40,602	-26	
TOTAL		282,109	241,507	86	-8,282	-3	-40,602	-14	
SOUTHERN									
Choke Canyon Reservoir	107	695,262	543,847	78	-6,564	-1	60,172	9	
Corpus Christi, Lake	108	256,961	211,857	82	-10,585	-4	56,982	22	
*Falcon Reservoir (Texas)	109	1,551,034	1,505,000	97	-63,000	-4	443,000	29	
*Falcon Reservoir (TX & Mexico)	(109)	2,646,817	2,524,000	95	4,000	0	655,000	25	
TOTAL		2,503,257	2,260,704	90	-80,149	-3	560,154	22	
STATE TOTAL		31,054,457	24,654,095	79	-393,201	-1	-2,335,715	-8	

* Conservation volume is used as conservation storage capacity because the dead storage is unknown.

Note:

Conservation storage capacity is the space available to store water above the lowest outlet and below the top of conservation pool, 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 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 $100 \times (\text{current conservation storage} - \text{past conservation storage}) / \text{conservation storage capacity}$. Figures shown are for the Texas share of conservation storage in all reservoirs.

GROUNDWATER LEVELS IN OBSERVATION WELLS



March, 2011

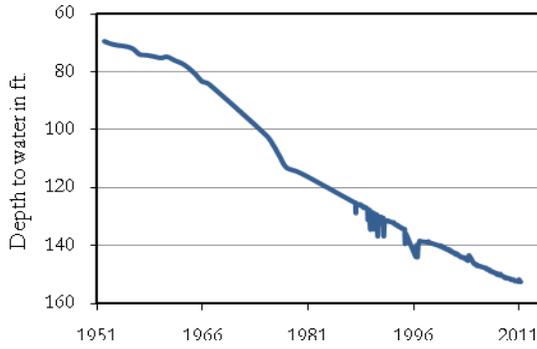
Water level measurements were available for all thirteen key monitoring wells. Water levels rose in three of the monitoring wells since the beginning of March ranging from 0.41 feet in the Lamb County Ogallala Aquifer well to 0.81 feet in the Smith County Carrizo-Wilcox Aquifer well. Water levels declined in the remaining ten monitoring wells, ranging from -0.06 feet in the Hansford County Ogallala Aquifer to -53.78 feet in the Frio County Carrizo-Wilcox Aquifer well. The J-17 well in San Antonio recorded a water level of 68.3 feet below land surface. This water level is 2.7 feet above the Stage 1 critical management level. **Please notice the water level fluctuation in this well quickly followed the Japan earthquake on March 11th.**

	(1) Hansford 0354301	(2) Lamb 1053602	(3) Tarrant 3215504	(4) Coryell 4035404	(5) Smith 3430907	(6) Frio 7708803	(7) Harris 6514409	(8) Victoria 8017502	(9) El Paso 4913301	(10) Pecos 5216802	(11) Bexar 6837203	(12) Reeves 4644501	(13) Haskell 2135748
March 2011	152.5	138.75	448.29	479.9	430.56	443.99	195.8	31.93	292.24	194.17	68.3	147.09	44.28
February 2011	152.44	139.16	446.41	479.83	431.37	390.21	195.32	32.68	291.41	191.88	61.56	143.92	43.62
Month Change	-0.06	0.41	-1.88	-0.07	0.81	-53.78	-0.48	0.75	-0.83	-2.29	-6.74	-3.17	-0.66
Year Change	-0.75	-1.08	-4.99	-4.14	-0.26	-64.06	7.26	0.69	-0.14	0.8	-15.31	-3.49	-1.01
Historical Change	-82.38	-110.6	-70.29	-187.9	-64.56	-163.99	-60.3	2.07	-60.34	52.71	-21.66	-55	-2.95

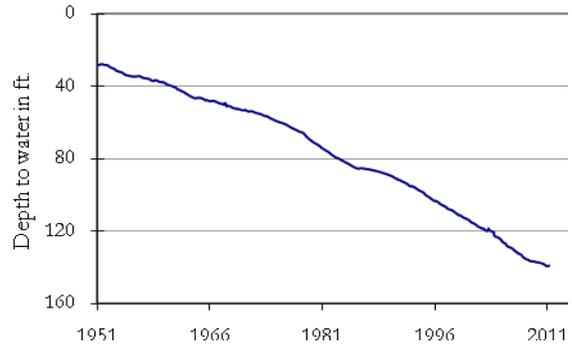
* ID is used in this publication to differentiate between the monitoring well number (1 - 13) as displayed on the aquifer map and the TWDB's six- or seven-digit state well "identification" number.

MARCH GROUNDWATER LEVELS IN OBSERVATION WELLS

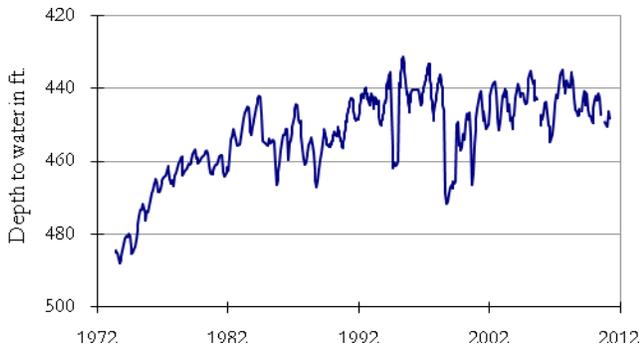
(1) State Well ID 03-54-301
Near Spearman, Hansford County
Ogallala Aquifer



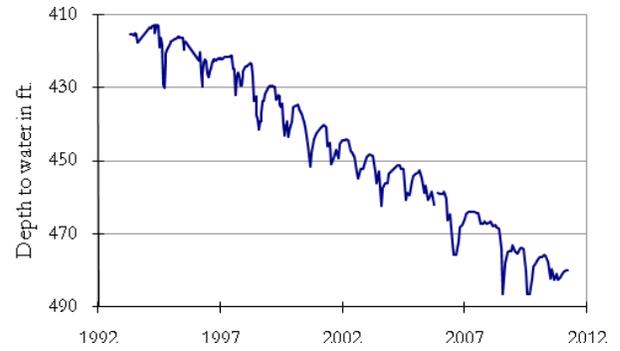
(2) State Well ID 10-53-602
Near Earth, Lamb County
Ogallala Aquifer



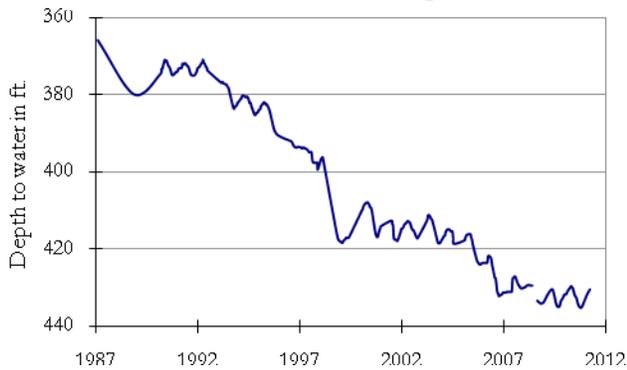
(3) State Well ID 32-15-504
Near Hurst, Tarrant County
Paluxy Formation-Trinity Aquifer



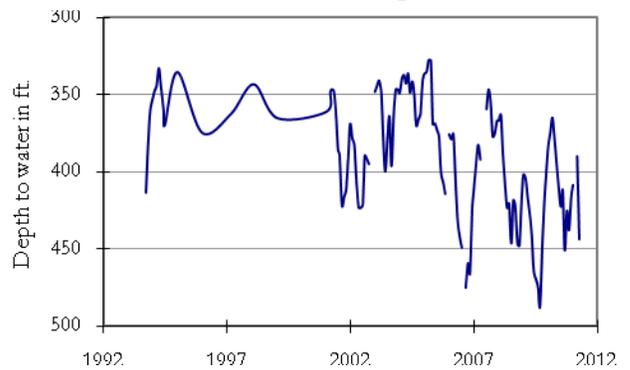
(4) State Well ID 40-35-404
Gatesville, Coryell County
Hosston Formation-Trinity Aquifer



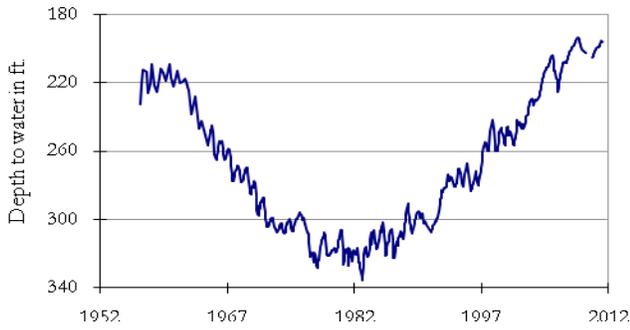
(5) State Well ID 34-30-907
Red Springs, Smith County
Carrizo-Wilcox Aquifer



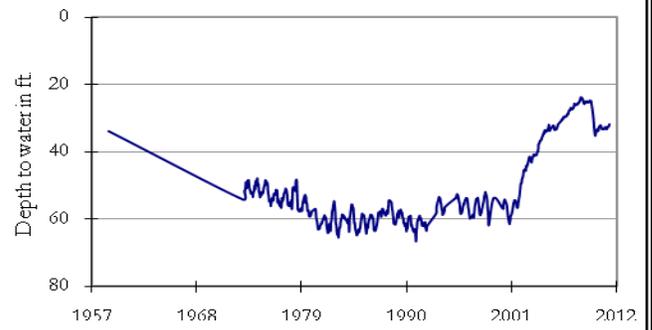
(6) State Well ID 77-08-803
Pearsall, Frio County
Carrizo-Wilcox Aquifer



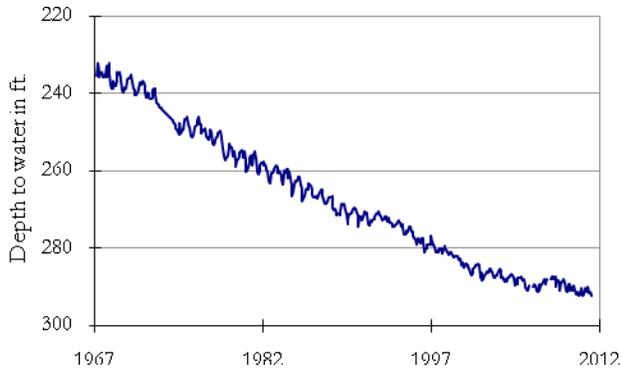
(7) State Well ID 65-14-409
Alief, Harris County
Evangeline Formation-Gulf Coast Aquifer



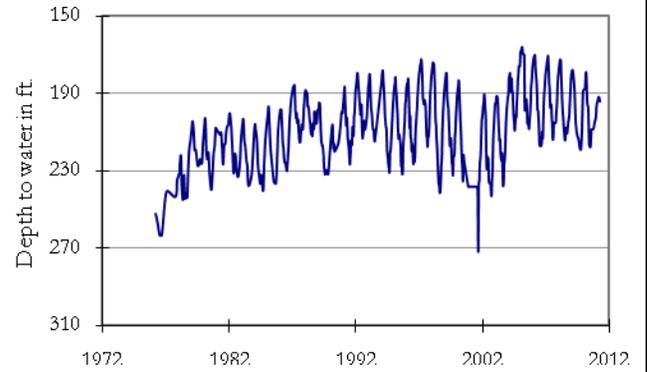
(8) State Well ID 80-17-502
Near Bloomington, Victoria County
Lissie Formation-Gulf Coast Aquifer



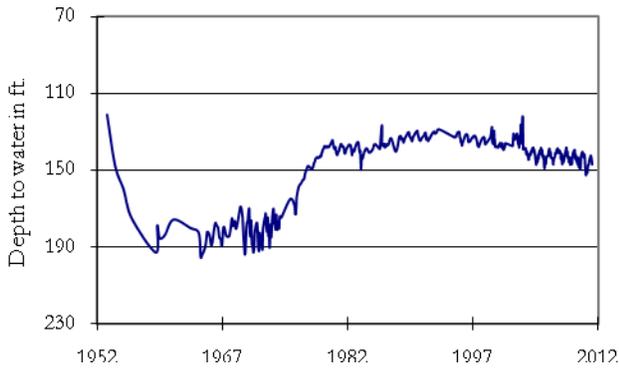
(9) State Well ID 49-13-301
El Paso, El Paso County
Hueco-Mesilla Bolson Aquifer



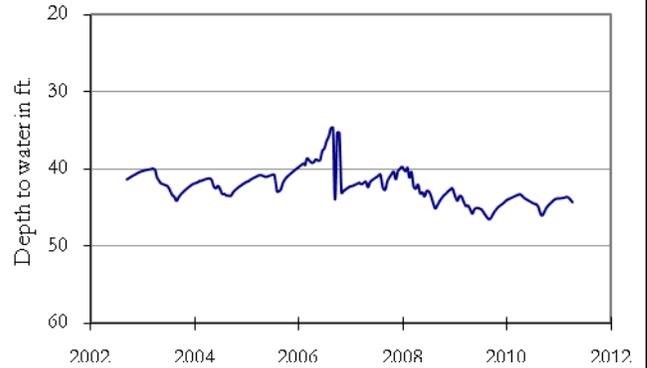
(10) State Well ID 52-16-802
Fort Stockton, Pecos County
Edwards-Trinity (Plateau) Aquifer



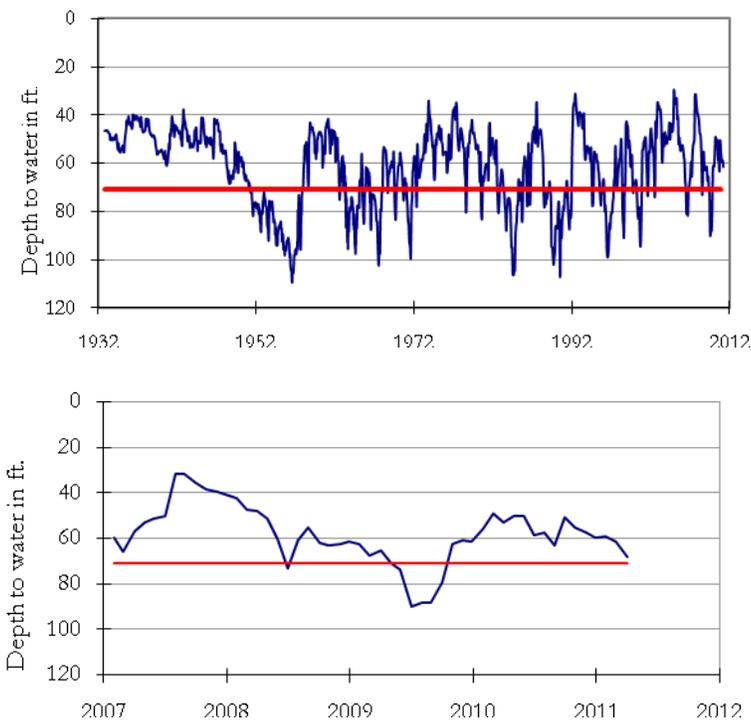
(12) State Well ID 46-44-501
Near Pecos, Reeves County
Pecos Valley Aquifer



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



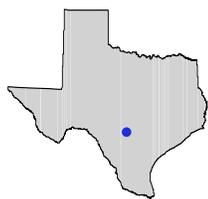
**(11) State Well ID 68-37-203 (J-17)
In San Antonio, Bexar County
Edwards (BFZ) Aquifer**



The late March water level measurement in this Edwards (BFZ) Aquifer well, elevation 731 feet above sea level, was 68.3 feet below land surface. This was 6.74 feet below last month's measurement, 15.31 feet below last year's measurement, and 21.66 feet below the initial measurement recorded in 1932.

***** Water levels below the red line indicate Edwards Aquifer Authority Stage 1 drought restrictions. *****

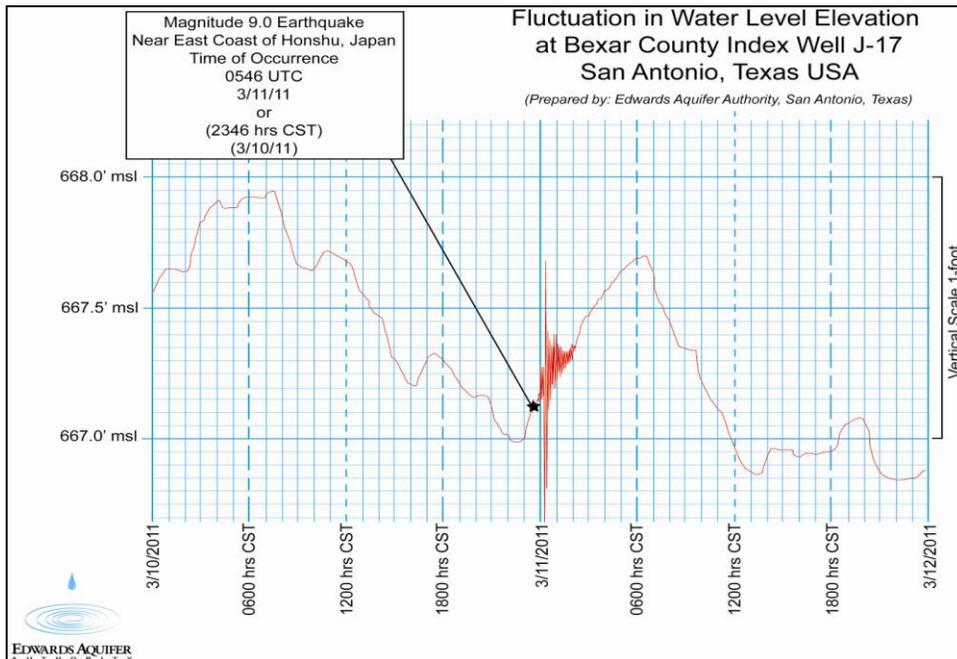
HYDROGRAPH OF THE MONTH



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

**State Well ID 6837203
Bexar County**

The Edwards Aquifer is one of the most studied aquifers in Texas and supplies many people along the Balcones Fault Zone with abundant and fresh water. Due to the karstic nature of its formation, the Edwards Aquifer contains significant storage within large voids and conduits. These voids can allow for rapid aquifer level response to changes in storage and/or volume. In a recent example of the latter, the J-17 monitoring well operated by the EAA clearly recorded the passage of seismic waves from the Japan 9.0 temblor. Like squeezing an open bottle of water, the aquifer levels rose and fell as the earth's crust underwent contractions and expansions.



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