



## 2021 REGION D WATER PLAN VOLUME II: APPENDICES

Prepared for  
The North East Texas  
Regional Water Planning Group

October 14, 2020

  
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Appendix C1 – Chapter 1:  
**DESCRIPTION OF THE REGIONAL WATER  
PLANNING AREA**

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# APPENDIX C1

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C1-1: Water Loss Audit Data

C1-2: 2011 Evaluation of Sub-Regional Water Supply Master Plans

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2015 - Water Balance Data for D as of 1/22/2019

Totals for Region D 116 Audit(s) Submitted	System Input Value 23,969,647,899 100%	Authorization Consumption 20,482,515,396 85.4%	Bill Consumption 19,452,994,090 81.1%	Billed Metered 19,442,850,399 81.1%	Revenue Water 19,452,994,090 81.1%
				Billed Unmetered 10,143,691 0.0%	
			Unbilled Consumption 1,029,521,306 4.3%	Unbilled Metered 244,428,689 1.0%	Non-Revenue Water 4,526,797,500 18.9%
				Unbilled Unmetered 785,092,617 3.3%	
		Water Loss 3,487,132,503 14.6%	Apparent Loss 526,271,400 2.3%	Unauthorized Consumption 59,944,713 0.3%	
				Customer Meter Accuracy Loss 446,545,833 1.9%	
				System Data Handling Discrepancy 19,780,854 0.1%	
		Real Loss 2,960,861,103 12.3%	Reported Breaks And Leaks 672,357,258 2.8%	Unreported Loss 2,288,503,845 9.5%	

2016 - Water Balance Data for D as of 1/22/2019

Totals for Region D 24 Audit(s) Submitted	System Input Value 12,916,428,632 100%	Authorization Consumption 11,595,383,033 89.8%	Bill Consumption 10,873,631,418 84.2%	Billed Metered 10,873,102,418 84.2%	Revenue Water 10,873,631,418 84.2%
				Billed Unmetered 529,000 0.0%	
			Unbilled Consumption 721,751,615 5.6%	Unbilled Metered 291,860,465 2.3%	Non-Revenue Water 2,043,326,214 15.7%
				Unbilled Unmetered 429,891,150 3.3%	
		Apparent Loss 255,127,959 1.9%	Unauthorized Consumption 32,291,071 0.2%		
			Customer Meter Accuracy Loss 216,785,400 1.7%		
			System Data Handling Discrepancy 6,051,487 0.0%		
		Water Loss 1,321,045,599 10.1%	Real Loss 1,065,917,640 8.2%	Reported Breaks And Leaks 225,341,235 1.7%	
				Unreported Loss 840,576,405 6.5%	

2017 - Water Balance Data for D as of 1/22/2019

Totals for Region D 23 Audit(s) Submitted	System Input Value 10,088,560,122 100%	Authorization Consumption 8,999,497,338 89.2%	Bill Consumption 8,443,535,209 83.7%	Billed Metered 8,440,917,368 83.7%	Revenue Water 8,443,535,209 83.7%
				Billed Unmetered 2,617,841 0.0%	
			Unbilled Consumption 555,962,129 5.5%	Unbilled Metered 158,331,318 1.6%	Non-Revenue Water 1,647,642,754 16.2%
				Unbilled Unmetered 397,630,811 3.9%	
		Water Loss 1,089,062,784 10.7%	Apparent Loss 213,835,371 2.0%	Unauthorized Consumption 25,126,702 0.2%	
				Customer Meter Accuracy Loss 186,102,570 1.8%	
				System Data Handling Discrepancy 2,606,099 0.0%	
		Real Loss 875,227,412 8.7%	Reported Breaks And Leaks 321,107,156 3.2%	Unreported Loss 554,120,256 5.5%	

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**2011 Evaluation of Sub-Regional  
Water Supply Master Plans  
Prepared for  
North East Texas Regional Water Planning Group**

In June 2007, the Texas Water Development Board (TWDB) commissioned the Northeast Municipal Water District (NETMWD) to provide a further study of sub-regional water supply master plans in Region D, the North East Texas Region, that was initiated in the 2006 Regional Plan. This report was published under separate cover December 17, 2008 and is not reproduced in this appendix.

Texas is projected to more than double in population in the next 50 years. This growth will increase the vulnerability of our water supplies and lead to a significant decline in quality of life if adequate planning is not undertaken. The investigation of the creation of sub-regional water supply master plans was to allow the smaller systems to consider the economic benefits, regulatory compliance benefits and the ability to better serve their end users with adequate water availability.

The 2006 North East Texas Regional Water Plan (NETRWP) identified 255 public water systems in the region. As the plan developed, it became apparent that many of these were quite small, and that in several cases, a number of small systems were located in close proximity to each other. The North East Texas Regional Water Planning Group (NETRWPG) expressed that very small systems may lack the financial, managerial, or technical capacity to continue as separate, viable entities over the long term. In 2004, the NETRWPG requested funding from the TWDB to study the possibility of combining identified clusters of small public supply systems, and, in 2005, the TWDB approved the request.

A total of 51 existing public water supply systems were selected for inclusion in the study, and they were combined into 10 clusters based upon proximity. These clusters were in six of the most southerly counties in the region – Hopkins County, Rains County, Van Zandt County, Harrison County, Upshur County and Smith County. The final clusters varied in size from 1,252 connections to 4,167 connections, with the goal being to have 2,000 more connections. A total of 25,544 connections were included.

This initial work was presented in a volume entitled “Supplemental Tasks” as a part of the 2006 Regional Plan. Physical data on the systems was tabulated, discussion of financial/managerial/technical and political/legal aspects were presented, and rough cost estimates for physical consolidation were presented. The conclusion of the 2006 work was that:

“ultimately, for very small systems, consolidation will become essential to survival. Increasing regulatory compliance pressures, increasing costs, and limits on water supply are all growing influences which will compel consolidation.”

As a portion of the 2011 planning, the NETRWPG elected to pursue further discussions with the entities identified as potential clusters in the 2006 plan. A second emphasis would expand the scope to include additional very small systems not included in 2006. The 2006 selection was limited to small systems which, by virtue of geographic proximity, might combine with neighboring small systems to create a larger, more viable entity. In the 2011 scope, an additional 93 systems with less than 300 meters were identified which were not positioned geographically so as to suggest consolidation with other small systems. In general, these small entities are adjacent to, or surrounded by, a much larger system which would be the most logical partner.

Based upon the information gathered in the study, the following observations were proffered:

1. At the end of the 2006 planning period, 144 systems (93 small and 51 clusters) were identified. By the end of 2008, only 95 of these are still independent, stand-alone systems. The remaining systems have either merged with another small system, have been purchased by a larger for profit or governmental system, or were a proposed system which had not developed. No new systems were identified in these cluster areas.
2. In general, systems desire to remain completely autonomous. Smaller systems do recognize, however, that there are some advantages in working together, and are occasionally willing to do so – for example, shared management or operating staff, or specific programs – provided that each Board retains final approval authority. A merger or consolidation which results in loss of autonomy is the least preferred option.
3. There is a need for regionalization in northern Van Zandt County. It appears that adequate groundwater resources are becoming increasingly difficult to develop, and a contracted or surface water supply alternative will be too expensive for the smaller entities to pursue individually. The City of Canton has conducted some work in this regard, but the NETRWPG may be of assistance in encouraging regional partnerships among the various local entities.

Appendix C2 – Chapter 2:

## POPULATION AND WATER DEMAND PROJECTIONS

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## APPENDIX C2

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C2-3: Water Efficiency Savings

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## 2021 Regional Water Plan - Population Projections for 2020-2070 for Water User Groups by Region, County, and Basin in Texas

### Region D

Region	County	WUG Name	Basin	2020	2030	2040	2050	2060	2070
D	BOWIE	BURNS REDBANK WSC	RED	1,576	1,620	1,634	1,634	1,634	1,634
D	BOWIE	CENTRAL BOWIE COUNTY WSC	RED	1,076	1,149	1,272	1,409	1,561	1,729
D	BOWIE	CENTRAL BOWIE COUNTY WSC	SULPHUR	6,453	6,888	7,631	8,453	9,363	10,372
D	BOWIE	COUNTY-OTHER, BOWIE	RED	4,744	4,025	2,586	2,586	2,586	2,586
D	BOWIE	COUNTY-OTHER, BOWIE	SULPHUR	8,516	7,227	4,641	4,641	4,641	4,641
D	BOWIE	DE KALB	RED	260	266	269	271	274	278
D	BOWIE	DE KALB	SULPHUR	1,451	1,482	1,500	1,509	1,529	1,549
D	BOWIE	HOOKS	RED	3,049	3,173	3,303	3,303	3,303	3,303
D	BOWIE	MACEDONIA EYLAU MUD 1	SULPHUR	8,742	8,892	8,939	8,939	8,939	8,939
D	BOWIE	MAUD	SULPHUR	1,358	1,500	1,642	1,642	1,642	1,642
D	BOWIE	NASH	SULPHUR	4,070	4,751	5,431	6,111	6,111	6,111
D	BOWIE	NEW BOSTON	RED	1,752	1,802	1,817	1,817	1,817	1,817
D	BOWIE	NEW BOSTON	SULPHUR	4,208	4,327	4,363	4,363	4,363	4,363
D	BOWIE	REDWATER	SULPHUR	3,749	4,229	4,709	5,189	5,429	5,429
D	BOWIE	RIVERBEND WATER RESOURCES DISTRICT	RED	93	96	97	97	97	97
D	BOWIE	RIVERBEND WATER RESOURCES DISTRICT	SULPHUR	449	462	466	466	466	466
D	BOWIE	TEXARKANA	RED	4,485	4,681	4,886	5,101	5,324	5,558
D	BOWIE	TEXARKANA	SULPHUR	33,522	34,993	36,527	38,128	39,800	41,544
D	BOWIE	WAKE VILLAGE	SULPHUR	6,150	6,850	7,550	8,250	8,950	8,950
	<b>BOWIE Total</b>			<b>95,703</b>	<b>98,413</b>	<b>99,263</b>	<b>103,909</b>	<b>107,829</b>	<b>111,008</b>
D	CAMP	BI COUNTY WSC	CYPRESS	6,265	7,531	8,521	9,695	10,786	11,850
D	CAMP	COUNTY-OTHER, CAMP	CYPRESS	2,578	2,396	2,255	2,087	1,932	1,779
D	CAMP	PITTSBURG	CYPRESS	4,712	4,946	5,128	5,345	5,546	5,743
	<b>CAMP Total</b>			<b>13,555</b>	<b>14,873</b>	<b>15,904</b>	<b>17,127</b>	<b>18,264</b>	<b>19,372</b>
D	CASS	ATLANTA	CYPRESS	5,871	6,387	6,903	7,419	7,419	7,419
D	CASS	ATLANTA	SULPHUR	6	7	7	8	8	8
D	CASS	COUNTY-OTHER, CASS	CYPRESS	8,946	8,661	8,283	7,904	7,904	7,904
D	CASS	COUNTY-OTHER, CASS	SULPHUR	3,268	3,164	3,026	2,888	2,888	2,888
D	CASS	E M C WSC	CYPRESS	793	793	793	793	793	793
D	CASS	EASTERN CASS WSC	CYPRESS	1,925	1,939	1,939	1,939	1,939	1,939
D	CASS	EASTERN CASS WSC	SULPHUR	149	150	150	150	150	150
D	CASS	HOLLY SPRINGS WSC	CYPRESS	1,166	1,175	1,175	1,175	1,175	1,175
D	CASS	HUGHES SPRINGS	CYPRESS	2,469	2,487	2,487	2,487	2,487	2,487

## 2021 Regional Water Plan - Population Projections for 2020-2070 for Water User Groups by Region, County, and Basin in Texas

### Region D

Region	County	WUG Name	Basin	2020	2030	2040	2050	2060	2070
D	CASS	LINDEN	CYPRESS	2,115	2,129	2,129	2,129	2,129	2,129
D	CASS	MIMS WSC	CYPRESS	281	281	281	281	281	281
D	CASS	QUEEN CITY	CYPRESS	1,063	1,071	1,071	1,071	1,071	1,071
D	CASS	QUEEN CITY	SULPHUR	638	643	643	643	643	643
D	CASS	WESTERN CASS WSC	CYPRESS	1,838	1,851	1,851	1,851	1,851	1,851
D	CASS	WESTERN CASS WSC	SULPHUR	488	491	491	491	491	491
	<b>CASS Total</b>			<b>31,016</b>	<b>31,229</b>	<b>31,229</b>	<b>31,229</b>	<b>31,229</b>	<b>31,229</b>
D	DELTA	COOPER	SULPHUR	2,026	2,047	2,047	2,047	2,047	2,047
D	DELTA	COUNTY-OTHER, DELTA	SULPHUR	1,223	1,229	1,214	1,189	1,137	1,081
D	DELTA	DELTA COUNTY MUD	SULPHUR	1,785	1,810	1,825	1,850	1,902	1,958
D	DELTA	NORTH HUNT SUD	SULPHUR	286	290	290	290	290	290
	<b>DELTA Total</b>			<b>5,320</b>	<b>5,376</b>	<b>5,376</b>	<b>5,376</b>	<b>5,376</b>	<b>5,376</b>
D	FRANKLIN	COUNTY-OTHER, FRANKLIN	CYPRESS	363	380	390	399	406	413
D	FRANKLIN	COUNTY-OTHER, FRANKLIN	SULPHUR	162	169	174	178	181	184
D	FRANKLIN	CYPRESS SPRINGS SUD	CYPRESS	4,235	4,427	4,542	4,655	4,739	4,805
D	FRANKLIN	CYPRESS SPRINGS SUD	SULPHUR	2,743	2,867	2,942	3,015	3,070	3,113
D	FRANKLIN	MOUNT VERNON	SULPHUR	2,877	3,006	3,084	3,161	3,218	3,263
D	FRANKLIN	WINNSBORO	CYPRESS	744	778	798	818	833	844
	<b>FRANKLIN Total</b>			<b>11,124</b>	<b>11,627</b>	<b>11,930</b>	<b>12,226</b>	<b>12,447</b>	<b>12,622</b>
D	GREGG	CLARKSVILLE CITY	SABINE	948	1,038	1,141	1,258	1,389	1,537
D	GREGG	COUNTY-OTHER, GREGG	CYPRESS	232	253	278	307	341	380
D	GREGG	COUNTY-OTHER, GREGG	SABINE	4,361	4,747	5,223	5,768	6,404	7,142
D	GREGG	CROSS ROADS SUD	SABINE	397	435	478	527	582	644
D	GREGG	ELDERVILLE WSC	SABINE	4,831	5,317	5,845	6,434	7,084	7,804
D	GREGG	GLADEWATER	SABINE	4,376	4,792	5,268	5,806	6,410	7,094
D	GREGG	GLENWOOD WSC	CYPRESS	197	213	227	241	254	266
D	GREGG	KILGORE	SABINE	10,829	11,859	13,038	14,369	15,865	17,559
D	GREGG	LIBERTY CITY WSC	SABINE	4,844	5,305	5,833	6,428	7,097	7,855
D	GREGG	LONGVIEW	SABINE	86,261	94,468	103,852	114,453	126,372	139,860
D	GREGG	STARRVILLE-FRIENDSHIP WSC	SABINE	618	684	753	831	915	1,006
D	GREGG	TRYON ROAD SUD	CYPRESS	4,598	5,036	5,536	6,101	6,737	7,456
D	GREGG	TRYON ROAD SUD	SABINE	340	372	409	451	498	551
D	GREGG	WEST GREGG SUD	SABINE	3,549	3,887	4,273	4,710	5,199	5,755



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Region	County	WUG Name	Basin	2020	2030	2040	2050	2060	2070
D	GREGG	WHITE OAK	SABINE	6,966	7,628	8,386	9,243	10,205	11,294
	<b>GREGG Total</b>			<b>133,347</b>	<b>146,034</b>	<b>160,540</b>	<b>176,927</b>	<b>195,352</b>	<b>216,203</b>
D	HARRISON	BLOCKER CROSSROADS WSC	CYPRESS	141	151	162	177	194	213
D	HARRISON	BLOCKER CROSSROADS WSC	SABINE	1,312	1,410	1,510	1,651	1,804	1,986
D	HARRISON	COUNTY-OTHER, HARRISON	CYPRESS	7,751	8,237	8,672	9,276	10,066	11,062
D	HARRISON	COUNTY-OTHER, HARRISON	SABINE	4,522	4,806	5,059	5,412	5,873	6,454
D	HARRISON	DIANA SUD	CYPRESS	357	384	411	449	491	540
D	HARRISON	GILL WSC	SABINE	1,620	1,739	1,863	2,037	2,226	2,450
D	HARRISON	GUM SPRINGS WSC	CYPRESS	2,226	2,391	2,561	2,800	3,061	3,368
D	HARRISON	GUM SPRINGS WSC	SABINE	6,059	6,508	6,972	7,622	8,330	9,167
D	HARRISON	HALLSVILLE	SABINE	4,003	4,298	4,605	5,034	5,503	6,055
D	HARRISON	HARLETON WSC	CYPRESS	3,381	3,632	3,890	4,253	4,649	5,116
D	HARRISON	LEIGH WSC	CYPRESS	1,519	1,631	1,747	1,910	2,088	2,297
D	HARRISON	LEIGH WSC	SABINE	333	358	383	419	458	504
D	HARRISON	LONGVIEW	SABINE	2,009	2,157	2,311	2,526	2,762	3,038
D	HARRISON	MARSHALL	CYPRESS	4,358	4,681	5,014	5,482	5,992	6,593
D	HARRISON	MARSHALL	SABINE	20,403	21,913	23,475	25,666	28,054	30,869
D	HARRISON	NORTH HARRISON WSC	CYPRESS	1,374	1,475	1,580	1,727	1,889	2,078
D	HARRISON	PANOLA-BETHANY WSC	CYPRESS	142	166	202	254	289	321
D	HARRISON	PANOLA-BETHANY WSC	SABINE	1,274	1,488	1,813	2,278	2,593	2,875
D	HARRISON	SCOTTSVILLE	CYPRESS	373	401	430	470	513	565
D	HARRISON	SCOTTSVILLE	SABINE	768	826	884	967	1,057	1,162
D	HARRISON	TALLEY WSC	CYPRESS	742	796	853	932	1,020	1,122
D	HARRISON	TALLEY WSC	SABINE	560	601	644	704	769	846
D	HARRISON	TRYON ROAD SUD	CYPRESS	878	943	1,011	1,105	1,207	1,329
D	HARRISON	WASKOM	CYPRESS	2,924	3,141	3,365	3,678	4,020	4,424
D	HARRISON	WEST HARRISON WSC	CYPRESS	316	339	363	397	434	478
D	HARRISON	WEST HARRISON WSC	SABINE	992	1,066	1,141	1,248	1,364	1,501
	<b>HARRISON Total</b>			<b>70,337</b>	<b>75,538</b>	<b>80,921</b>	<b>88,474</b>	<b>96,706</b>	<b>106,413</b>
D	HOPKINS	BRASHEAR WSC	SABINE	357	384	410	432	460	487
D	HOPKINS	BRASHEAR WSC	SULPHUR	428	461	491	518	551	584
D	HOPKINS	BRINKER WSC	SULPHUR	2,369	2,737	3,071	3,456	3,825	4,198

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Region	County	WUG Name	Basin	2020	2030	2040	2050	2060	2070
D	HOPKINS	CASH SUD	SABINE	104	112	119	123	131	138
D	HOPKINS	CORNERVILLE WSC	CYPRESS	375	415	442	465	495	525
D	HOPKINS	CORNERVILLE WSC	SABINE	356	393	419	442	470	498
D	HOPKINS	COUNTY-OTHER, HOPKINS	CYPRESS	25	21	18	21	18	19
D	HOPKINS	COUNTY-OTHER, HOPKINS	SABINE	936	788	686	770	681	714
D	HOPKINS	COUNTY-OTHER, HOPKINS	SULPHUR	537	452	394	442	391	410
D	HOPKINS	CUMBY	SABINE	954	1,108	1,245	1,367	1,517	1,604
D	HOPKINS	CUMBY	SULPHUR	90	104	118	129	143	151
D	HOPKINS	CYPRESS SPRINGS SUD	CYPRESS	352	356	356	356	356	356
D	HOPKINS	CYPRESS SPRINGS SUD	SULPHUR	709	716	716	716	716	716
D	HOPKINS	GAFFORD CHAPEL WSC	SULPHUR	1,215	1,308	1,393	1,491	1,585	1,680
D	HOPKINS	JONES WSC	SABINE	158	191	220	246	278	310
D	HOPKINS	LAKE FORK WSC	SABINE	158	165	169	168	171	173
D	HOPKINS	MARTIN SPRINGS WSC	SABINE	2,970	3,475	3,936	4,351	4,847	5,270
D	HOPKINS	MARTIN SPRINGS WSC	SULPHUR	532	622	705	779	868	944
D	HOPKINS	MILLER GROVE WSC	SABINE	1,242	1,334	1,411	1,453	1,535	1,615
D	HOPKINS	NORTH HOPKINS WSC	SULPHUR	6,070	6,757	7,384	8,104	8,799	9,497
D	HOPKINS	SHADY GROVE NO 2 WSC	SABINE	255	274	292	308	328	347
D	HOPKINS	SHADY GROVE NO 2 WSC	SULPHUR	311	334	356	376	399	424
D	HOPKINS	SHIRLEY WSC	SABINE	1,626	1,739	1,826	1,884	1,972	2,026
D	HOPKINS	SULPHUR SPRINGS	SABINE	49	51	54	56	59	61
D	HOPKINS	SULPHUR SPRINGS	SULPHUR	15,800	16,598	17,324	18,157	18,961	19,770
	<b>HOPKINS Total</b>			<b>37,978</b>	<b>40,895</b>	<b>43,555</b>	<b>46,610</b>	<b>49,556</b>	<b>52,517</b>
D	HUNT	ABLES SPRINGS WSC	SABINE	866	1,327	1,952	2,816	4,046	5,834
D	HUNT	B H P WSC	SABINE	4,421	5,494	6,950	8,960	11,824	15,986
D	HUNT	BLACKLAND WSC	SABINE	43	43	43	43	43	43
D	HUNT	CADDO BASIN SUD	SABINE	7,800	10,341	13,788	18,546	25,327	35,181
D	HUNT	CADDO MILLS	SABINE	1,710	2,214	2,898	3,843	5,190	7,147
D	HUNT	CASH SUD	SABINE	18,199	21,837	26,206	31,446	37,736	45,281
D	HUNT	CASH SUD	SULPHUR	259	311	373	448	537	644
D	HUNT	CELESTE	SABINE	1,012	1,257	1,590	2,051	2,706	3,658
D	HUNT	COMBINED CONSUMERS SUD	SABINE	6,074	7,548	9,548	12,310	16,245	21,962
D	HUNT	COMMERCE	SULPHUR	8,883	9,975	11,456	13,502	16,416	20,651

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Region	County	WUG Name	Basin	2020	2030	2040	2050	2060	2070
D	HUNT	COUNTY-OTHER, HUNT	SABINE	5,797	10,055	16,409	21,654	32,937	53,262
D	HUNT	COUNTY-OTHER, HUNT	SULPHUR	381	661	1,078	1,423	2,165	3,501
D	HUNT	COUNTY-OTHER, HUNT	TRINITY	164	284	464	613	932	1,507
D	HUNT	DELTA COUNTY MUD	SULPHUR	9	9	9	9	9	10
D	HUNT	FROGNOT WSC	TRINITY	27	32	38	47	52	59
D	HUNT	GREENVILLE	SABINE	29,871	34,309	40,330	48,645	60,491	77,705
D	HUNT	HICKORY CREEK SUD	SABINE	2,098	3,067	4,381	6,196	8,781	12,538
D	HUNT	HICKORY CREEK SUD	SULPHUR	1,456	2,128	3,040	4,299	6,094	8,701
D	HUNT	HICKORY CREEK SUD	TRINITY	718	1,050	1,499	2,120	3,005	4,291
D	HUNT	JOSEPHINE	SABINE	184	325	517	783	783	783
D	HUNT	MACBEE SUD	SABINE	346	430	544	701	925	1,250
D	HUNT	NORTH HUNT SUD	SULPHUR	3,522	4,602	6,069	8,092	10,974	15,163
D	HUNT	POETRY WSC	SABINE	2,303	2,909	3,668	4,729	6,341	8,535
D	HUNT	QUINLAN	SABINE	1,528	1,596	1,688	1,815	1,997	2,259
D	HUNT	ROYSE CITY	SABINE	372	462	584	753	994	1,345
D	HUNT	SHADY GROVE WSC	SABINE	1,476	1,834	2,320	2,991	3,947	5,336
D	HUNT	TEXAS A&M UNIVERSITY COMMERCE	SULPHUR	926	926	926	926	926	926
D	HUNT	WEST LEONARD WSC	TRINITY	50	57	70	90	129	171
D	HUNT	WEST TAWAKONI	SABINE	2,679	3,131	3,744	4,592	5,800	7,556
D	HUNT	WOLFE CITY	SULPHUR	1,720	2,137	2,704	3,486	4,600	6,220
	<b>HUNT Total</b>			<b>104,894</b>	<b>130,351</b>	<b>164,886</b>	<b>207,929</b>	<b>271,952</b>	<b>367,505</b>
D	LAMAR	BLOSSOM	SULPHUR	1,546	1,605	1,649	1,690	1,721	1,746
D	LAMAR	COUNTY-OTHER, LAMAR	RED	812	844	867	888	905	918
D	LAMAR	COUNTY-OTHER, LAMAR	SULPHUR	2,291	2,381	2,448	2,507	2,553	2,590
D	LAMAR	LAMAR COUNTY WSD	RED	11,919	12,380	12,722	13,031	13,272	13,466
D	LAMAR	LAMAR COUNTY WSD	SULPHUR	5,053	5,249	5,393	5,524	5,626	5,709
D	LAMAR	PARIS	RED	10,495	10,901	11,201	11,474	11,686	11,857
D	LAMAR	PARIS	SULPHUR	16,735	17,382	17,862	18,296	18,635	18,908
D	LAMAR	RENO (Lamar)	RED	438	455	467	479	487	495
D	LAMAR	RENO (Lamar)	SULPHUR	2,881	2,992	3,074	3,148	3,207	3,254
	<b>LAMAR Total</b>			<b>52,170</b>	<b>54,189</b>	<b>55,683</b>	<b>57,037</b>	<b>58,092</b>	<b>58,943</b>
D	MARION	COUNTY-OTHER, MARION	CYPRESS	1,473	1,392	1,307	1,188	1,060	907
D	MARION	DIANA SUD	CYPRESS	384	384	384	384	384	384

## 2021 Regional Water Plan - Population Projections for 2020-2070 for Water User Groups by Region, County, and Basin in Texas

### Region D

Region	County	WUG Name	Basin	2020	2030	2040	2050	2060	2070
D	MARION	E M C WSC	CYPRESS	2,405	2,405	2,405	2,405	2,405	2,405
D	MARION	HARLETON WSC	CYPRESS	1,105	1,186	1,271	1,390	1,518	1,671
D	MARION	JEFFERSON	CYPRESS	2,321	2,321	2,321	2,321	2,321	2,321
D	MARION	KELLYVILLE-BEREA WSC	CYPRESS	1,291	1,291	1,291	1,291	1,291	1,291
D	MARION	MIMS WSC	CYPRESS	1,622	1,622	1,622	1,622	1,622	1,622
	<b>MARION Total</b>			<b>10,601</b>	<b>10,601</b>	<b>10,601</b>	<b>10,601</b>	<b>10,601</b>	<b>10,601</b>
D	MORRIS	BI COUNTY WSC	CYPRESS	1,168	1,190	1,213	1,249	1,277	1,306
D	MORRIS	COUNTY-OTHER, MORRIS	CYPRESS	2,094	2,140	2,192	2,271	2,334	2,394
D	MORRIS	COUNTY-OTHER, MORRIS	SULPHUR	820	838	859	889	914	938
D	MORRIS	DAINGERFIELD	CYPRESS	2,602	2,650	2,702	2,782	2,845	2,908
D	MORRIS	HOLLY SPRINGS WSC	CYPRESS	632	636	636	636	636	636
D	MORRIS	HUGHES SPRINGS	CYPRESS	10	10	10	10	10	10
D	MORRIS	LONE STAR	CYPRESS	1,664	1,694	1,729	1,780	1,819	1,860
D	MORRIS	NAPLES	CYPRESS	608	619	632	650	665	680
D	MORRIS	NAPLES	SULPHUR	736	750	766	787	805	823
D	MORRIS	OMAHA	CYPRESS	720	733	748	770	787	805
D	MORRIS	OMAHA	SULPHUR	491	500	510	525	537	549
D	MORRIS	TRI SUD	CYPRESS	1,819	1,852	1,889	1,944	1,989	2,033
	<b>MORRIS Total</b>			<b>13,364</b>	<b>13,612</b>	<b>13,886</b>	<b>14,293</b>	<b>14,618</b>	<b>14,942</b>
D	RAINS	BRIGHT STAR SALEM SUD	SABINE	2,525	2,677	2,721	2,750	2,762	2,768
D	RAINS	CASH SUD	SABINE	709	752	764	772	776	778
D	RAINS	COUNTY-OTHER, RAINS	SABINE	734	767	741	722	674	640
D	RAINS	EAST TAWAKONI	SABINE	1,158	1,228	1,248	1,262	1,268	1,270
D	RAINS	EMORY	SABINE	2,147	2,276	2,314	2,338	2,349	2,354
D	RAINS	GOLDEN WSC	SABINE	53	56	57	58	58	58
D	RAINS	MILLER GROVE WSC	SABINE	209	225	238	253	267	281
D	RAINS	POINT	SABINE	1,484	1,574	1,599	1,615	1,624	1,627
D	RAINS	SHIRLEY WSC	SABINE	750	803	843	869	910	935
D	RAINS	SOUTH RAINS SUD	SABINE	2,119	2,247	2,284	2,308	2,319	2,324
	<b>RAINS Total</b>			<b>11,888</b>	<b>12,605</b>	<b>12,809</b>	<b>12,947</b>	<b>13,007</b>	<b>13,035</b>
D	RED RIVER	410 WSC	RED	421	421	421	421	421	421
D	RED RIVER	410 WSC	SULPHUR	980	980	980	980	980	980
D	RED RIVER	BOGATA	SULPHUR	1,178	1,178	1,178	1,178	1,178	1,178

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### Region D

Region	County	WUG Name	Basin	2020	2030	2040	2050	2060	2070
D	RED RIVER	CLARKSVILLE	SULPHUR	3,315	3,315	3,315	3,315	3,315	3,315
D	RED RIVER	COUNTY-OTHER, RED RIVER	RED	523	371	218	167	138	29
D	RED RIVER	COUNTY-OTHER, RED RIVER	SULPHUR	727	515	303	231	191	41
D	RED RIVER	RED RIVER COUNTY WSC	RED	1,546	1,642	1,739	1,772	1,790	1,859
D	RED RIVER	RED RIVER COUNTY WSC	SULPHUR	4,286	4,554	4,822	4,912	4,963	5,153
	<b>RED RIVER Total</b>			<b>12,976</b>	<b>12,976</b>	<b>12,976</b>	<b>12,976</b>	<b>12,976</b>	<b>12,976</b>
D	SMITH	CARROLL WSC	SABINE	322	358	395	435	478	525
D	SMITH	COUNTY-OTHER, SMITH	SABINE	4,622	5,504	6,444	7,866	9,280	11,067
D	SMITH	CRYSTAL SYSTEMS TEXAS	SABINE	3,026	3,384	3,812	4,324	4,950	5,715
D	SMITH	JACKSON WSC	SABINE	2,244	2,559	2,919	3,338	3,832	4,420
D	SMITH	LIBERTY CITY WSC	SABINE	127	146	166	189	218	251
D	SMITH	LINDALE	SABINE	3,707	4,499	5,396	6,107	7,280	8,674
D	SMITH	LINDALE RURAL WSC	SABINE	6,814	7,774	8,864	9,604	11,027	12,717
D	SMITH	OVERTON	SABINE	73	82	95	109	125	144
D	SMITH	PINE RIDGE WSC	SABINE	1,277	1,417	1,564	1,725	1,896	2,081
D	SMITH	SAND FLAT WSC	SABINE	3,417	3,795	4,187	4,616	5,075	5,568
D	SMITH	SMITH COUNTY MUD 1	SABINE	2,033	2,320	2,646	3,025	3,476	4,008
D	SMITH	SOUTHERN UTILITIES	SABINE	11,488	12,926	14,673	17,320	19,900	22,959
D	SMITH	STAR MOUNTAIN WSC	SABINE	1,392	1,546	1,705	1,882	2,068	2,269
D	SMITH	STARRVILLE-FRIENDSHIP WSC	SABINE	1,504	1,665	1,834	2,023	2,226	2,448
D	SMITH	TYLER	SABINE	968	1,104	1,259	1,440	1,654	1,907
D	SMITH	WEST GREGG SUD	SABINE	881	1,005	1,146	1,311	1,505	1,736
D	SMITH	WINONA	SABINE	645	737	839	961	1,103	1,273
	<b>SMITH Total</b>			<b>44,540</b>	<b>50,821</b>	<b>57,944</b>	<b>66,275</b>	<b>76,093</b>	<b>87,762</b>
D	TITUS	BI COUNTY WSC	CYPRESS	331	375	418	467	518	572
D	TITUS	COUNTY-OTHER, TITUS	CYPRESS	1,142	1,290	1,443	1,611	1,787	1,974
D	TITUS	COUNTY-OTHER, TITUS	SULPHUR	1,875	2,117	2,368	2,644	2,935	3,241
D	TITUS	CYPRESS SPRINGS SUD	CYPRESS	108	122	136	153	169	186
D	TITUS	CYPRESS SPRINGS SUD	SULPHUR	173	195	219	244	271	299
D	TITUS	MOUNT PLEASANT	CYPRESS	17,512	19,775	22,118	24,689	27,397	30,257
D	TITUS	TRI SUD	CYPRESS	10,199	11,518	12,883	14,380	15,956	17,623
D	TITUS	TRI SUD	SULPHUR	5,303	5,989	6,698	7,477	8,297	9,163
	<b>TITUS Total</b>			<b>36,643</b>	<b>41,381</b>	<b>46,283</b>	<b>51,665</b>	<b>57,330</b>	<b>63,315</b>

## 2021 Regional Water Plan - Population Projections for 2020-2070 for Water User Groups by Region, County, and Basin in Texas

### Region D

Region	County	WUG Name	Basin	2020	2030	2040	2050	2060	2070
D	UPSHUR	BI COUNTY WSC	CYPRESS	3,546	3,830	4,076	4,329	4,559	4,776
D	UPSHUR	BIG SANDY	SABINE	1,467	1,585	1,687	1,790	1,887	1,976
D	UPSHUR	COUNTY-OTHER, UPSHUR	CYPRESS	5,450	5,887	6,265	6,655	7,011	7,343
D	UPSHUR	COUNTY-OTHER, UPSHUR	SABINE	1,008	1,089	1,159	1,231	1,297	1,358
D	UPSHUR	DIANA SUD	CYPRESS	4,868	5,259	5,596	5,943	6,260	6,557
D	UPSHUR	EAST MOUNTAIN WATER SYSTEM	CYPRESS	557	602	640	679	716	750
D	UPSHUR	EAST MOUNTAIN WATER SYSTEM	SABINE	1,445	1,560	1,662	1,763	1,858	1,947
D	UPSHUR	FOUKE WSC	SABINE	88	95	102	108	114	119
D	UPSHUR	GILMER	CYPRESS	5,695	6,154	6,548	6,953	7,325	7,673
D	UPSHUR	GLADEWATER	SABINE	2,658	2,872	3,056	3,245	3,419	3,581
D	UPSHUR	GLENWOOD WSC	CYPRESS	2,810	3,036	3,231	3,431	3,614	3,785
D	UPSHUR	GLENWOOD WSC	SABINE	72	78	83	88	93	97
D	UPSHUR	ORE CITY	CYPRESS	1,298	1,402	1,492	1,585	1,669	1,748
D	UPSHUR	PRITCHETT WSC	CYPRESS	2,251	2,433	2,588	2,749	2,896	3,033
D	UPSHUR	PRITCHETT WSC	SABINE	5,422	5,859	6,235	6,621	6,974	7,306
D	UPSHUR	SHARON WSC	CYPRESS	1,847	1,996	2,124	2,255	2,375	2,488
D	UPSHUR	UNION GROVE WSC	CYPRESS	80	86	92	98	103	108
D	UPSHUR	UNION GROVE WSC	SABINE	2,134	2,306	2,453	2,605	2,745	2,874
<b>UPSHUR Total</b>				<b>42,696</b>	<b>46,129</b>	<b>49,089</b>	<b>52,128</b>	<b>54,915</b>	<b>57,519</b>
D	VAN ZANDT	ABLES SPRINGS WSC	SABINE	33	36	39	41	44	45
D	VAN ZANDT	BEN WHEELER WSC	NECHES	2,537	2,783	2,972	3,160	3,316	3,448
D	VAN ZANDT	BETHEL ASH WSC	NECHES	706	924	1,091	1,258	1,395	1,512
D	VAN ZANDT	BETHEL ASH WSC	TRINITY	199	261	308	355	393	426
D	VAN ZANDT	CANTON	SABINE	3,964	4,333	4,616	4,898	5,131	5,329
D	VAN ZANDT	CANTON	TRINITY	17	19	20	21	22	23
D	VAN ZANDT	COMBINED CONSUMERS SUD	SABINE	1,107	1,214	1,296	1,378	1,447	1,505
D	VAN ZANDT	COUNTY-OTHER, VAN ZANDT	NECHES	4,856	5,296	5,627	5,932	6,144	6,288
D	VAN ZANDT	COUNTY-OTHER, VAN ZANDT	SABINE	4,423	4,823	5,126	5,404	5,597	5,728
D	VAN ZANDT	COUNTY-OTHER, VAN ZANDT	TRINITY	4,473	4,878	5,184	5,465	5,660	5,792
D	VAN ZANDT	EDGEWOOD	SABINE	1,564	1,683	1,774	1,864	1,939	2,003
D	VAN ZANDT	EDOM WSC	NECHES	1,191	1,303	1,393	1,486	1,604	1,729
D	VAN ZANDT	FRUITVALE WSC	SABINE	3,383	3,712	3,964	4,214	4,421	4,599
D	VAN ZANDT	GOLDEN WSC	SABINE	680	736	780	823	859	889

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### Region D

Region	County	WUG Name	Basin	2020	2030	2040	2050	2060	2070
D	VAN ZANDT	GRAND SALINE	SABINE	3,390	3,532	3,641	3,750	3,839	3,917
D	VAN ZANDT	LITTLE HOPE MOORE WSC	NECHES	450	494	527	560	588	612
D	VAN ZANDT	LITTLE HOPE MOORE WSC	SABINE	1,030	1,131	1,207	1,283	1,347	1,400
D	VAN ZANDT	MABANK	TRINITY	243	271	299	391	546	761
D	VAN ZANDT	MACBEE SUD	SABINE	2,686	2,948	3,148	3,346	3,511	3,653
D	VAN ZANDT	MACBEE SUD	TRINITY	4,382	4,809	5,135	5,460	5,729	5,959
D	VAN ZANDT	MYRTLE SPRINGS WSC	SABINE	393	431	461	490	514	535
D	VAN ZANDT	MYRTLE SPRINGS WSC	TRINITY	1,223	1,343	1,433	1,524	1,599	1,663
D	VAN ZANDT	PINE RIDGE WSC	SABINE	55	61	67	74	81	89
D	VAN ZANDT	PRUITT SANDFLAT WSC	SABINE	1,419	1,557	1,663	1,768	1,855	1,930
D	VAN ZANDT	R P M WSC	NECHES	2,065	2,553	2,926	3,296	3,604	3,867
D	VAN ZANDT	SOUTH TAWAKONI WSC	SABINE	4,669	5,309	5,796	6,281	6,683	7,028
D	VAN ZANDT	VAN	NECHES	1,916	2,138	2,308	2,475	2,614	2,733
D	VAN ZANDT	VAN	SABINE	1,063	1,186	1,280	1,373	1,451	1,517
D	VAN ZANDT	WILLS POINT	SABINE	1,731	1,749	1,762	1,774	1,785	1,795
D	VAN ZANDT	WILLS POINT	TRINITY	2,607	2,633	2,653	2,673	2,689	2,703
	<b>VAN ZANDT Total</b>			<b>58,455</b>	<b>64,146</b>	<b>68,496</b>	<b>72,817</b>	<b>76,407</b>	<b>79,478</b>
D	WOOD	ALGONQUIN WATER RESOURCES OF TEXAS	SABINE	1,589	1,765	1,947	2,147	2,360	2,589
D	WOOD	BRIGHT STAR SALEM SUD	SABINE	1,881	1,960	1,991	2,040	2,065	2,080
D	WOOD	CORNERSVILLE WSC	SABINE	190	204	218	233	248	262
D	WOOD	COUNTY-OTHER, WOOD	CYPRESS	774	773	741	714	668	611
D	WOOD	COUNTY-OTHER, WOOD	SABINE	2,214	2,213	2,120	2,044	1,910	1,749
D	WOOD	CYPRESS SPRINGS SUD	CYPRESS	438	456	463	475	480	485
D	WOOD	FOUKE WSC	SABINE	6,564	6,837	6,949	7,119	7,203	7,260
D	WOOD	GOLDEN WSC	SABINE	2,603	2,711	2,754	2,822	2,855	2,879
D	WOOD	HAWKINS	SABINE	1,416	1,476	1,499	1,535	1,554	1,566
D	WOOD	JONES WSC	SABINE	4,367	4,550	4,623	4,736	4,792	4,831
D	WOOD	LAKE FORK WSC	SABINE	2,194	2,291	2,336	2,400	2,438	2,468
D	WOOD	MINEOLA	SABINE	5,356	5,581	5,671	5,809	5,878	5,925
D	WOOD	NEW HOPE SUD	SABINE	2,535	2,640	2,682	2,749	2,781	2,804
D	WOOD	PRITCHETT WSC	SABINE	84	88	89	91	92	93
D	WOOD	QUITMAN	SABINE	2,046	2,132	2,166	2,220	2,247	2,264
D	WOOD	RAMEY WSC	SABINE	3,687	3,841	3,903	3,999	4,046	4,079

## 2021 Regional Water Plan - Population Projections for 2020-2070 for Water User Groups by Region, County, and Basin in Texas

### Region D

Region	County	WUG Name	Basin	2020	2030	2040	2050	2060	2070
D	WOOD	SHARON WSC	CYPRESS	1,266	1,319	1,340	1,373	1,389	1,400
D	WOOD	SHARON WSC	SABINE	2,594	2,703	2,745	2,813	2,847	2,870
D	WOOD	SHIRLEY WSC	SABINE	125	134	140	145	152	156
D	WOOD	WINNSBORO	CYPRESS	1,135	1,182	1,201	1,231	1,245	1,255
D	WOOD	WINNSBORO	SABINE	1,804	1,879	1,910	1,956	1,979	1,996
	<b>WOOD Total</b>			<b>44,862</b>	<b>46,735</b>	<b>47,488</b>	<b>48,651</b>	<b>49,229</b>	<b>49,622</b>
<b>Region D Total</b>				<b>831,469</b>	<b>907,531</b>	<b>988,859</b>	<b>1,089,197</b>	<b>1,211,979</b>	<b>1,370,438</b>



## 2021 Regional Water Plan Water Demand Projections for 2020-2070 in Acre-Feet

### Region D

Region	County	WUG Name	Basin	2020	2030	2040	2050	2060	2070
D	BOWIE	BURNS REDBANK WSC	RED	201	199	196	194	193	193
D	BOWIE	CENTRAL BOWIE COUNTY WSC	RED	88	91	101	112	124	137
D	BOWIE	CENTRAL BOWIE COUNTY WSC	SULPHUR	531	548	607	672	745	825
D	BOWIE	COUNTY-OTHER, BOWIE	RED	567	460	288	287	286	286
D	BOWIE	COUNTY-OTHER, BOWIE	SULPHUR	1,017	826	518	516	514	514
D	BOWIE	DE KALB	RED	45	44	44	44	45	45
D	BOWIE	DE KALB	SULPHUR	250	248	245	247	249	253
D	BOWIE	HOOKS	RED	281	278	276	271	269	269
D	BOWIE	IRRIGATION, BOWIE	RED	6,070	6,070	6,070	6,070	6,070	6,070
D	BOWIE	IRRIGATION, BOWIE	SULPHUR	4,303	4,303	4,303	4,303	4,303	4,303
D	BOWIE	LIVESTOCK, BOWIE	RED	687	687	624	535	458	427
D	BOWIE	LIVESTOCK, BOWIE	SULPHUR	1,138	1,138	1,033	886	759	709
D	BOWIE	MACEDONIA EYLAU MUD 1	SULPHUR	588	598	601	601	601	601
D	BOWIE	MANUFACTURING, BOWIE	RED	4	5	5	5	5	5
D	BOWIE	MANUFACTURING, BOWIE	SULPHUR	1,607	2,042	2,042	2,042	2,042	2,042
D	BOWIE	MAUD	SULPHUR	211	226	241	238	237	237
D	BOWIE	NASH	SULPHUR	392	458	523	589	589	589
D	BOWIE	NEW BOSTON	RED	409	411	407	406	405	405
D	BOWIE	NEW BOSTON	SULPHUR	981	988	978	975	974	974
D	BOWIE	REDWATER	SULPHUR	506	553	601	654	682	682
D	BOWIE	RIVERBEND WATER RESOURCES DISTRICT	RED	90	92	92	92	92	92
D	BOWIE	RIVERBEND WATER RESOURCES DISTRICT	SULPHUR	433	444	447	445	445	445
D	BOWIE	TEXARKANA	RED	843	859	880	909	947	989
D	BOWIE	TEXARKANA	SULPHUR	6,302	6,423	6,579	6,797	7,081	7,391
D	BOWIE	WAKE VILLAGE	SULPHUR	699	750	802	861	932	931
	<b>BOWIE County Total</b>			<b>28,243</b>	<b>28,741</b>	<b>28,503</b>	<b>28,751</b>	<b>29,047</b>	<b>29,414</b>
D	CAMP	BI COUNTY WSC	CYPRESS	648	751	830	933	1,035	1,136
D	CAMP	COUNTY-OTHER, CAMP	CYPRESS	173	161	152	140	130	120
D	CAMP	LIVESTOCK, CAMP	CYPRESS	4,914	4,914	4,914	4,914	4,914	4,914
D	CAMP	MANUFACTURING, CAMP	CYPRESS	35	52	52	52	52	52
D	CAMP	MINING, CAMP	CYPRESS	12	11	10	9	8	7

## 2021 Regional Water Plan Water Demand Projections for 2020-2070 in Acre-Feet

### Region D

Region	County	WUG Name	Basin	2020	2030	2040	2050	2060	2070
D	CAMP	PITTSBURG	CYPRESS	832	851	864	891	922	955
	<b>CAMP County Total</b>			<b>6,614</b>	<b>6,740</b>	<b>6,822</b>	<b>6,939</b>	<b>7,061</b>	<b>7,184</b>
D	CASS	ATLANTA	CYPRESS	1,016	1,074	1,134	1,208	1,205	1,205
D	CASS	ATLANTA	SULPHUR	1	1	1	1	1	1
D	CASS	COUNTY-OTHER, CASS	CYPRESS	796	729	664	623	620	620
D	CASS	COUNTY-OTHER, CASS	SULPHUR	291	266	243	227	226	226
D	CASS	E M C WSC	CYPRESS	53	53	53	53	53	53
D	CASS	EASTERN CASS WSC	CYPRESS	152	147	142	139	138	138
D	CASS	EASTERN CASS WSC	SULPHUR	12	11	11	11	11	11
D	CASS	HOLLY SPRINGS WSC	CYPRESS	107	103	99	97	97	97
D	CASS	HUGHES SPRINGS	CYPRESS	278	267	257	255	254	254
D	CASS	LINDEN	CYPRESS	301	292	285	284	283	283
D	CASS	LIVESTOCK, CASS	CYPRESS	1,349	1,349	1,349	1,349	1,349	1,349
D	CASS	LIVESTOCK, CASS	SULPHUR	1,308	1,308	1,308	1,308	1,308	1,308
D	CASS	MANUFACTURING, CASS	CYPRESS	244	245	245	245	245	245
D	CASS	MANUFACTURING, CASS	SULPHUR	32,479	32,554	32,554	32,554	32,554	32,554
D	CASS	MIMS WSC	CYPRESS	19	19	19	19	19	19
D	CASS	MINING, CASS	CYPRESS	39	58	60	45	30	20
D	CASS	QUEEN CITY	CYPRESS	161	157	152	152	152	152
D	CASS	QUEEN CITY	SULPHUR	97	94	92	91	91	91
D	CASS	WESTERN CASS WSC	CYPRESS	172	165	159	157	156	156
D	CASS	WESTERN CASS WSC	SULPHUR	46	44	42	42	42	42
	<b>CASS County Total</b>			<b>38,921</b>	<b>38,936</b>	<b>38,869</b>	<b>38,860</b>	<b>38,834</b>	<b>38,824</b>
D	DELTA	COOPER	SULPHUR	446	440	431	430	429	429
D	DELTA	COUNTY-OTHER, DELTA	SULPHUR	82	83	82	80	76	73
D	DELTA	DELTA COUNTY MUD	SULPHUR	126	122	123	124	128	132
D	DELTA	IRRIGATION, DELTA	SULPHUR	2,396	2,396	2,396	2,396	2,396	2,396
D	DELTA	LIVESTOCK, DELTA	SULPHUR	541	541	541	541	541	541
D	DELTA	NORTH HUNT SUD	SULPHUR	19	19	19	19	19	19
	<b>DELTA County Total</b>			<b>3,610</b>	<b>3,601</b>	<b>3,592</b>	<b>3,590</b>	<b>3,589</b>	<b>3,590</b>

**2021 Regional Water Plan**  
**Water Demand Projections for 2020-2070 in Acre-Feet**

**Region D**

Region	County	WUG Name	Basin	2020	2030	2040	2050	2060	2070
D	FRANKLIN	COUNTY-OTHER, FRANKLIN	CYPRESS	68	70	71	73	74	75
D	FRANKLIN	COUNTY-OTHER, FRANKLIN	SULPHUR	30	31	32	32	33	34
D	FRANKLIN	CYPRESS SPRINGS SUD	CYPRESS	382	382	379	382	387	392
D	FRANKLIN	CYPRESS SPRINGS SUD	SULPHUR	248	248	246	247	250	254
D	FRANKLIN	IRRIGATION, FRANKLIN	CYPRESS	34	34	34	34	34	34
D	FRANKLIN	IRRIGATION, FRANKLIN	SABINE	35	35	35	35	35	35
D	FRANKLIN	IRRIGATION, FRANKLIN	SULPHUR	34	34	34	34	34	34
D	FRANKLIN	LIVESTOCK, FRANKLIN	CYPRESS	1,139	1,139	1,139	1,139	1,139	1,139
D	FRANKLIN	LIVESTOCK, FRANKLIN	SULPHUR	1,711	1,711	1,711	1,711	1,711	1,711
D	FRANKLIN	MANUFACTURING, FRANKLIN	CYPRESS	5	7	7	7	7	7
D	FRANKLIN	MINING, FRANKLIN	SULPHUR	5	5	4	4	3	2
D	FRANKLIN	MOUNT VERNON	SULPHUR	564	577	582	591	600	609
D	FRANKLIN	WINNSBORO	CYPRESS	139	142	142	145	147	149
	<b>FRANKLIN County Total</b>			<b>4,394</b>	<b>4,415</b>	<b>4,416</b>	<b>4,434</b>	<b>4,454</b>	<b>4,475</b>
D	GREGG	CLARKSVILLE CITY	SABINE	100	105	112	121	133	147
D	GREGG	COUNTY-OTHER, GREGG	CYPRESS	30	31	33	37	41	45
D	GREGG	COUNTY-OTHER, GREGG	SABINE	565	590	630	693	767	855
D	GREGG	CROSS ROADS SUD	SABINE	33	34	36	39	43	47
D	GREGG	ELDERVILLE WSC	SABINE	325	357	393	432	476	524
D	GREGG	GLADEWATER	SABINE	731	778	838	913	1,006	1,113
D	GREGG	GLENWOOD WSC	CYPRESS	20	20	21	22	23	24
D	GREGG	IRRIGATION, GREGG	SABINE	40	40	40	40	40	40
D	GREGG	KILGORE	SABINE	2,336	2,505	2,713	2,967	3,271	3,618
D	GREGG	LIBERTY CITY WSC	SABINE	487	510	543	589	648	716
D	GREGG	LIVESTOCK, GREGG	CYPRESS	11	11	11	11	11	11
D	GREGG	LIVESTOCK, GREGG	SABINE	199	199	199	199	199	199
D	GREGG	LONGVIEW	SABINE	23,716	25,539	27,736	30,380	33,500	37,060
D	GREGG	MANUFACTURING, GREGG	SABINE	1,233	1,517	1,517	1,517	1,517	1,517
D	GREGG	MINING, GREGG	CYPRESS	14	22	22	17	13	9
D	GREGG	MINING, GREGG	SABINE	260	411	407	320	233	171
D	GREGG	STARRVILLE-FRIENDSHIP WSC	SABINE	72	77	83	90	99	109

**2021 Regional Water Plan**  
**Water Demand Projections for 2020-2070 in Acre-Feet**

**Region D**

Region	County	WUG Name	Basin	2020	2030	2040	2050	2060	2070
D	GREGG	STEAM ELECTRIC POWER, GREGG	SABINE	940	940	940	940	940	940
D	GREGG	TRYON ROAD SUD	CYPRESS	668	709	761	829	913	1,009
D	GREGG	TRYON ROAD SUD	SABINE	49	52	56	61	68	75
D	GREGG	WEST GREGG SUD	SABINE	307	320	340	368	405	447
D	GREGG	WHITE OAK	SABINE	1,347	1,441	1,558	1,703	1,876	2,076
	<b>GREGG County Total</b>			<b>33,483</b>	<b>36,208</b>	<b>38,989</b>	<b>42,288</b>	<b>46,222</b>	<b>50,752</b>
D	HARRISON	BLOCKER CROSSROADS WSC	CYPRESS	13	13	14	15	16	17
D	HARRISON	BLOCKER CROSSROADS WSC	SABINE	120	123	126	135	147	162
D	HARRISON	COUNTY-OTHER, HARRISON	CYPRESS	908	928	949	999	1,080	1,186
D	HARRISON	COUNTY-OTHER, HARRISON	SABINE	530	542	553	583	630	692
D	HARRISON	DIANA SUD	CYPRESS	31	32	33	35	38	42
D	HARRISON	GILL WSC	SABINE	187	191	198	215	234	258
D	HARRISON	GUM SPRINGS WSC	CYPRESS	207	211	218	234	254	280
D	HARRISON	GUM SPRINGS WSC	SABINE	563	576	595	637	693	761
D	HARRISON	HALLSVILLE	SABINE	545	569	597	645	703	773
D	HARRISON	HARLETON WSC	CYPRESS	345	354	367	394	429	472
D	HARRISON	IRRIGATION, HARRISON	CYPRESS	419	419	419	419	419	419
D	HARRISON	IRRIGATION, HARRISON	SABINE	282	282	282	282	282	282
D	HARRISON	LEIGH WSC	CYPRESS	337	355	374	406	443	487
D	HARRISON	LEIGH WSC	SABINE	74	78	82	89	97	107
D	HARRISON	LIVESTOCK, HARRISON	CYPRESS	382	402	422	442	464	489
D	HARRISON	LIVESTOCK, HARRISON	SABINE	254	267	280	294	309	326
D	HARRISON	LONGVIEW	SABINE	552	583	617	671	732	805
D	HARRISON	MANUFACTURING, HARRISON	CYPRESS	14	16	16	16	16	16
D	HARRISON	MANUFACTURING, HARRISON	SABINE	24,722	27,924	27,924	27,924	27,924	27,924
D	HARRISON	MARSHALL	CYPRESS	879	921	968	1,049	1,144	1,258
D	HARRISON	MARSHALL	SABINE	4,115	4,311	4,531	4,910	5,356	5,890
D	HARRISON	MINING, HARRISON	CYPRESS	525	437	366	297	229	180
D	HARRISON	MINING, HARRISON	SABINE	1,973	1,640	1,374	1,115	859	675
D	HARRISON	NORTH HARRISON WSC	CYPRESS	141	145	150	161	176	193
D	HARRISON	PANOLA-BETHANY WSC	CYPRESS	28	32	38	48	54	60

**2021 Regional Water Plan**  
**Water Demand Projections for 2020-2070 in Acre-Feet**

**Region D**

Region	County	WUG Name	Basin	2020	2030	2040	2050	2060	2070
D	HARRISON	PANOLA-BETHANY WSC	SABINE	253	288	345	430	489	542
D	HARRISON	SCOTTSVILLE	CYPRESS	81	85	90	97	106	117
D	HARRISON	SCOTTSVILLE	SABINE	166	175	184	201	219	240
D	HARRISON	STEAM ELECTRIC POWER, HARRISON	SABINE	21,112	21,112	21,112	21,112	21,112	21,112
D	HARRISON	TALLEY WSC	CYPRESS	56	56	58	63	68	75
D	HARRISON	TALLEY WSC	SABINE	42	42	43	47	52	57
D	HARRISON	TRYON ROAD SUD	CYPRESS	127	133	139	150	164	180
D	HARRISON	WASKOM	CYPRESS	435	453	475	512	559	614
D	HARRISON	WEST HARRISON WSC	CYPRESS	31	32	33	35	38	42
D	HARRISON	WEST HARRISON WSC	SABINE	97	99	103	111	121	132
	<b>HARRISON County Total</b>			<b>60,546</b>	<b>63,826</b>	<b>64,075</b>	<b>64,773</b>	<b>65,656</b>	<b>66,865</b>
D	HOPKINS	BRASHEAR WSC	SABINE	67	70	74	77	82	87
D	HOPKINS	BRASHEAR WSC	SULPHUR	81	85	89	93	99	105
D	HOPKINS	BRINKER WSC	SULPHUR	253	281	307	341	377	413
D	HOPKINS	CASH SUD	SABINE	12	12	13	13	14	15
D	HOPKINS	CORNERVILLE WSC	CYPRESS	49	53	55	57	61	64
D	HOPKINS	CORNERVILLE WSC	SABINE	47	50	52	55	57	61
D	HOPKINS	COUNTY-OTHER, HOPKINS	CYPRESS	3	2	2	2	2	2
D	HOPKINS	COUNTY-OTHER, HOPKINS	SABINE	111	90	76	83	73	77
D	HOPKINS	COUNTY-OTHER, HOPKINS	SULPHUR	63	51	43	48	42	44
D	HOPKINS	CUMBY	SABINE	122	136	150	163	180	190
D	HOPKINS	CUMBY	SULPHUR	11	13	14	15	17	18
D	HOPKINS	CYPRESS SPRINGS SUD	CYPRESS	32	31	30	29	29	29
D	HOPKINS	CYPRESS SPRINGS SUD	SULPHUR	64	62	60	59	59	58
D	HOPKINS	GAFFORD CHAPEL WSC	SULPHUR	109	111	115	121	128	135
D	HOPKINS	IRRIGATION, HOPKINS	CYPRESS	1	1	1	1	1	1
D	HOPKINS	IRRIGATION, HOPKINS	SABINE	16	16	16	16	16	16
D	HOPKINS	IRRIGATION, HOPKINS	SULPHUR	4,752	4,752	4,752	4,752	4,752	4,752
D	HOPKINS	JONES WSC	SABINE	14	16	18	20	22	25
D	HOPKINS	LAKE FORK WSC	SABINE	16	16	15	15	15	16
D	HOPKINS	LIVESTOCK, HOPKINS	CYPRESS	121	121	121	121	121	121

**2021 Regional Water Plan**  
**Water Demand Projections for 2020-2070 in Acre-Feet**

**Region D**

Region	County	WUG Name	Basin	2020	2030	2040	2050	2060	2070
D	HOPKINS	LIVESTOCK, HOPKINS	SABINE	1,490	1,490	1,490	1,490	1,490	1,490
D	HOPKINS	LIVESTOCK, HOPKINS	SULPHUR	3,887	3,887	3,887	3,887	3,887	3,887
D	HOPKINS	MANUFACTURING, HOPKINS	SULPHUR	944	968	968	968	968	968
D	HOPKINS	MARTIN SPRINGS WSC	SABINE	360	405	449	490	544	592
D	HOPKINS	MARTIN SPRINGS WSC	SULPHUR	64	73	80	88	98	106
D	HOPKINS	MILLER GROVE WSC	SABINE	171	178	184	188	198	208
D	HOPKINS	MINING, HOPKINS	CYPRESS	31	34	37	40	43	47
D	HOPKINS	MINING, HOPKINS	SABINE	320	349	379	412	449	489
D	HOPKINS	MINING, HOPKINS	SULPHUR	680	741	806	877	954	1,041
D	HOPKINS	NORTH HOPKINS WSC	SULPHUR	474	494	514	554	598	645
D	HOPKINS	SHADY GROVE NO 2 WSC	SABINE	48	50	53	55	59	62
D	HOPKINS	SHADY GROVE NO 2 WSC	SULPHUR	59	62	65	68	72	76
D	HOPKINS	SHIRLEY WSC	SABINE	218	226	232	236	247	253
D	HOPKINS	SULPHUR SPRINGS	SABINE	10	10	10	11	11	11
D	HOPKINS	SULPHUR SPRINGS	SULPHUR	3,108	3,189	3,268	3,392	3,536	3,686
<b>HOPKINS County Total</b>				<b>17,808</b>	<b>18,125</b>	<b>18,425</b>	<b>18,837</b>	<b>19,301</b>	<b>19,790</b>
D	HUNT	ABLES SPRINGS WSC	SABINE	58	89	131	189	272	392
D	HUNT	B H P WSC	SABINE	330	386	471	602	795	1,074
D	HUNT	BLACKLAND WSC	SABINE	9	9	8	8	8	8
D	HUNT	CADDO BASIN SUD	SABINE	870	1,105	1,438	1,914	2,607	3,617
D	HUNT	CADDO MILLS	SABINE	152	187	237	310	417	573
D	HUNT	CASH SUD	SABINE	2,090	2,429	2,861	3,403	4,072	4,881
D	HUNT	CASH SUD	SULPHUR	30	35	41	48	58	69
D	HUNT	CELESTE	SABINE	124	147	181	231	304	411
D	HUNT	COMBINED CONSUMERS SUD	SABINE	502	589	718	911	1,197	1,615
D	HUNT	COMMERCE	SULPHUR	1,427	1,555	1,749	2,039	2,473	3,108
D	HUNT	COUNTY-OTHER, HUNT	SABINE	723	1,212	1,947	2,552	3,873	6,258
D	HUNT	COUNTY-OTHER, HUNT	SULPHUR	47	80	128	168	255	411
D	HUNT	COUNTY-OTHER, HUNT	TRINITY	20	34	55	72	110	177
D	HUNT	DELTA COUNTY MUD	SULPHUR	1	1	1	1	1	1
D	HUNT	FROGNOT WSC	TRINITY	3	3	4	5	5	6

**2021 Regional Water Plan**  
**Water Demand Projections for 2020-2070 in Acre-Feet**

**Region D**

Region	County	WUG Name	Basin	2020	2030	2040	2050	2060	2070
D	HUNT	GREENVILLE	SABINE	9,271	10,481	12,187	14,624	18,163	23,319
D	HUNT	HICKORY CREEK SUD	SABINE	209	293	410	576	814	1,162
D	HUNT	HICKORY CREEK SUD	SULPHUR	145	203	285	399	565	806
D	HUNT	HICKORY CREEK SUD	TRINITY	71	100	140	197	279	397
D	HUNT	IRRIGATION, HUNT	SABINE	264	264	264	264	264	264
D	HUNT	IRRIGATION, HUNT	SULPHUR	79	79	79	79	79	79
D	HUNT	IRRIGATION, HUNT	TRINITY	12	12	12	12	12	12
D	HUNT	JOSEPHINE	SABINE	39	68	108	164	164	164
D	HUNT	LIVESTOCK, HUNT	SABINE	771	771	771	771	771	771
D	HUNT	LIVESTOCK, HUNT	SULPHUR	288	288	288	288	288	288
D	HUNT	LIVESTOCK, HUNT	TRINITY	36	36	36	36	36	36
D	HUNT	MACBEE SUD	SABINE	23	29	37	47	62	84
D	HUNT	MANUFACTURING, HUNT	SABINE	404	490	490	490	490	490
D	HUNT	MANUFACTURING, HUNT	SULPHUR	151	182	182	182	182	182
D	HUNT	MINING, HUNT	SABINE	90	83	62	50	41	33
D	HUNT	MINING, HUNT	SULPHUR	35	32	24	19	16	13
D	HUNT	MINING, HUNT	TRINITY	3	3	2	2	1	1
D	HUNT	NORTH HUNT SUD	SULPHUR	237	309	408	544	738	1,019
D	HUNT	POETRY WSC	SABINE	253	309	382	488	653	878
D	HUNT	QUINLAN	SABINE	134	133	134	140	154	174
D	HUNT	ROYSE CITY	SABINE	43	52	65	83	110	149
D	HUNT	SHADY GROVE WSC	SABINE	139	164	202	257	338	457
D	HUNT	STEAM ELECTRIC POWER, HUNT	SABINE	373	373	373	373	373	373
D	HUNT	TEXAS A&M UNIVERSITY COMMERCE	SULPHUR	156	152	150	149	148	148
D	HUNT	WEST LEONARD WSC	TRINITY	7	7	9	11	16	21
D	HUNT	WEST TAWAKONI	SABINE	276	309	360	436	549	714
D	HUNT	WOLFE CITY	SULPHUR	169	199	243	311	409	552
	<b>HUNT County Total</b>			<b>20,064</b>	<b>23,282</b>	<b>27,673</b>	<b>33,445</b>	<b>42,162</b>	<b>55,187</b>
D	LAMAR	BLOSSOM	SULPHUR	136	134	131	131	133	135
D	LAMAR	COUNTY-OTHER, LAMAR	RED	125	127	130	133	135	137
D	LAMAR	COUNTY-OTHER, LAMAR	SULPHUR	354	358	368	375	381	387

## 2021 Regional Water Plan Water Demand Projections for 2020-2070 in Acre-Feet

### Region D

Region	County	WUG Name	Basin	2020	2030	2040	2050	2060	2070
D	LAMAR	IRRIGATION, LAMAR	RED	7,608	7,608	7,608	7,608	7,608	7,608
D	LAMAR	IRRIGATION, LAMAR	SULPHUR	2,518	2,518	2,518	2,518	2,518	2,518
D	LAMAR	LAMAR COUNTY WSD	RED	1,556	1,572	1,582	1,601	1,626	1,650
D	LAMAR	LAMAR COUNTY WSD	SULPHUR	660	666	670	679	690	699
D	LAMAR	LIVESTOCK, LAMAR	RED	617	617	617	617	617	617
D	LAMAR	LIVESTOCK, LAMAR	SULPHUR	852	852	852	852	852	852
D	LAMAR	MANUFACTURING, LAMAR	RED	309	316	316	316	316	316
D	LAMAR	MANUFACTURING, LAMAR	SULPHUR	4,717	4,821	4,821	4,821	4,821	4,821
D	LAMAR	PARIS	RED	1,179	1,172	1,163	1,169	1,187	1,204
D	LAMAR	PARIS	SULPHUR	1,880	1,870	1,854	1,864	1,892	1,919
D	LAMAR	RENO (Lamar)	RED	72	73	74	75	76	78
D	LAMAR	RENO (Lamar)	SULPHUR	476	483	488	495	503	510
D	LAMAR	STEAM ELECTRIC POWER, LAMAR	RED	420	420	420	420	420	420
D	LAMAR	STEAM ELECTRIC POWER, LAMAR	SULPHUR	5,091	5,091	5,091	5,091	5,091	5,091
	<b>LAMAR County Total</b>			<b>28,570</b>	<b>28,698</b>	<b>28,703</b>	<b>28,765</b>	<b>28,866</b>	<b>28,962</b>
D	MARION	COUNTY-OTHER, MARION	CYPRESS	99	94	88	80	71	61
D	MARION	DIANA SUD	CYPRESS	33	32	31	30	30	30
D	MARION	E M C WSC	CYPRESS	162	162	162	162	162	162
D	MARION	HARLETON WSC	CYPRESS	113	116	120	129	140	154
D	MARION	IRRIGATION, MARION	CYPRESS	12	12	12	12	12	12
D	MARION	JEFFERSON	CYPRESS	426	415	406	401	400	400
D	MARION	KELLYVILLE-BEREA WSC	CYPRESS	107	101	96	94	94	94
D	MARION	LIVESTOCK, MARION	CYPRESS	188	188	188	188	188	188
D	MARION	MIMS WSC	CYPRESS	109	109	109	109	109	109
D	MARION	MINING, MARION	CYPRESS	489	764	712	595	478	393
D	MARION	STEAM ELECTRIC POWER, MARION	CYPRESS	4,257	4,257	4,257	4,257	4,257	4,257
	<b>MARION County Total</b>			<b>5,995</b>	<b>6,250</b>	<b>6,181</b>	<b>6,057</b>	<b>5,941</b>	<b>5,860</b>
D	MORRIS	BI COUNTY WSC	CYPRESS	121	119	118	120	123	125
D	MORRIS	COUNTY-OTHER, MORRIS	CYPRESS	253	248	246	254	260	267
D	MORRIS	COUNTY-OTHER, MORRIS	SULPHUR	99	97	96	99	102	104
D	MORRIS	DAINGERFIELD	CYPRESS	465	460	459	468	477	488



## 2021 Regional Water Plan Water Demand Projections for 2020-2070 in Acre-Feet

### Region D

Region	County	WUG Name	Basin	2020	2030	2040	2050	2060	2070
D	MORRIS	HOLLY SPRINGS WSC	CYPRESS	58	56	53	53	53	53
D	MORRIS	HUGHES SPRINGS	CYPRESS	1	1	1	1	1	1
D	MORRIS	IRRIGATION, MORRIS	CYPRESS	3	3	3	3	3	3
D	MORRIS	IRRIGATION, MORRIS	SULPHUR	8	8	8	8	8	8
D	MORRIS	LIVESTOCK, MORRIS	CYPRESS	836	836	836	836	836	836
D	MORRIS	LIVESTOCK, MORRIS	SULPHUR	769	769	769	769	769	769
D	MORRIS	LONE STAR	CYPRESS	189	184	181	184	187	191
D	MORRIS	MANUFACTURING, MORRIS	CYPRESS	25,738	25,743	25,743	25,743	25,743	25,743
D	MORRIS	NAPLES	CYPRESS	70	69	67	69	70	71
D	MORRIS	NAPLES	SULPHUR	85	83	82	83	85	87
D	MORRIS	OMAHA	CYPRESS	127	125	125	127	130	133
D	MORRIS	OMAHA	SULPHUR	86	86	86	87	89	91
D	MORRIS	STEAM ELECTRIC POWER, MORRIS	CYPRESS	50	50	50	50	50	50
D	MORRIS	TRI SUD	CYPRESS	181	177	176	179	183	186
	<b>MORRIS County Total</b>			<b>29,139</b>	<b>29,114</b>	<b>29,099</b>	<b>29,133</b>	<b>29,169</b>	<b>29,206</b>
D	RAINS	BRIGHT STAR SALEM SUD	SABINE	203	202	195	195	195	196
D	RAINS	CASH SUD	SABINE	81	84	83	84	84	84
D	RAINS	COUNTY-OTHER, RAINS	SABINE	74	75	71	69	64	61
D	RAINS	EAST TAWAKONI	SABINE	237	246	247	247	248	248
D	RAINS	EMORY	SABINE	791	829	837	842	845	847
D	RAINS	GOLDEN WSC	SABINE	4	4	4	4	4	4
D	RAINS	IRRIGATION, RAINS	SABINE	65	65	65	65	65	65
D	RAINS	LIVESTOCK, RAINS	SABINE	428	428	428	428	428	428
D	RAINS	MANUFACTURING, RAINS	SABINE	12	12	12	12	12	12
D	RAINS	MILLER GROVE WSC	SABINE	29	30	31	33	34	36
D	RAINS	POINT	SABINE	364	379	380	381	383	383
D	RAINS	SHIRLEY WSC	SABINE	101	104	107	109	114	117
D	RAINS	SOUTH RAINS SUD	SABINE	190	192	188	187	187	188
	<b>RAINS County Total</b>			<b>2,579</b>	<b>2,650</b>	<b>2,648</b>	<b>2,656</b>	<b>2,663</b>	<b>2,669</b>
D	RED RIVER	410 WSC	RED	67	66	64	64	63	63
D	RED RIVER	410 WSC	SULPHUR	157	152	149	148	148	148

**2021 Regional Water Plan**  
**Water Demand Projections for 2020-2070 in Acre-Feet**

**Region D**

Region	County	WUG Name	Basin	2020	2030	2040	2050	2060	2070
D	RED RIVER	BOGATA	SULPHUR	123	116	113	112	112	112
D	RED RIVER	CLARKSVILLE	SULPHUR	620	602	593	592	590	590
D	RED RIVER	COUNTY-OTHER, RED RIVER	RED	67	45	26	20	16	3
D	RED RIVER	COUNTY-OTHER, RED RIVER	SULPHUR	92	63	37	28	23	5
D	RED RIVER	IRRIGATION, RED RIVER	RED	1,279	1,279	1,279	1,279	1,279	1,279
D	RED RIVER	IRRIGATION, RED RIVER	SULPHUR	2,588	2,588	2,588	2,588	2,588	2,588
D	RED RIVER	LIVESTOCK, RED RIVER	RED	762	762	762	762	762	762
D	RED RIVER	LIVESTOCK, RED RIVER	SULPHUR	770	770	770	770	770	770
D	RED RIVER	MANUFACTURING, RED RIVER	SULPHUR	3	3	3	3	3	3
D	RED RIVER	MINING, RED RIVER	SULPHUR	4	4	3	3	3	3
D	RED RIVER	RED RIVER COUNTY WSC	RED	117	116	117	119	120	125
D	RED RIVER	RED RIVER COUNTY WSC	SULPHUR	323	322	324	330	334	346
	<b>RED RIVER County Total</b>			<b>6,972</b>	<b>6,888</b>	<b>6,828</b>	<b>6,818</b>	<b>6,811</b>	<b>6,797</b>
D	SMITH	CARROLL WSC	SABINE	37	40	43	47	52	57
D	SMITH	COUNTY-OTHER, SMITH	SABINE	544	627	718	868	1,021	1,216
D	SMITH	CRYSTAL SYSTEMS TEXAS	SABINE	945	1,045	1,175	1,331	1,522	1,757
D	SMITH	IRRIGATION, SMITH	SABINE	324	324	324	324	324	324
D	SMITH	JACKSON WSC	SABINE	205	222	244	274	314	361
D	SMITH	LIBERTY CITY WSC	SABINE	13	14	15	17	20	23
D	SMITH	LINDALE	SABINE	841	1,005	1,195	1,347	1,604	1,910
D	SMITH	LINDALE RURAL WSC	SABINE	532	576	635	675	772	888
D	SMITH	LIVESTOCK, SMITH	SABINE	514	514	514	514	514	514
D	SMITH	MANUFACTURING, SMITH	SABINE	4	5	5	5	5	5
D	SMITH	MINING, SMITH	SABINE	287	309	341	394	438	497
D	SMITH	OVERTON	SABINE	15	17	19	22	25	29
D	SMITH	PINE RIDGE WSC	SABINE	149	160	172	188	206	226
D	SMITH	SAND FLAT WSC	SABINE	243	255	281	310	341	374
D	SMITH	SMITH COUNTY MUD 1	SABINE	910	1,030	1,169	1,334	1,531	1,765
D	SMITH	SOUTHERN UTILITIES	SABINE	1,964	2,152	2,395	2,799	3,209	3,700
D	SMITH	STAR MOUNTAIN WSC	SABINE	233	252	274	300	329	361
D	SMITH	STARRVILLE-FRIENDSHIP WSC	SABINE	176	187	202	220	241	265

**2021 Regional Water Plan**  
**Water Demand Projections for 2020-2070 in Acre-Feet**

**Region D**

Region	County	WUG Name	Basin	2020	2030	2040	2050	2060	2070
D	SMITH	TYLER	SABINE	185	206	232	263	301	347
D	SMITH	WEST GREGG SUD	SABINE	76	83	91	103	117	135
D	SMITH	WINONA	SABINE	133	149	166	189	217	250
	<b>SMITH County Total</b>			<b>8,330</b>	<b>9,172</b>	<b>10,210</b>	<b>11,524</b>	<b>13,103</b>	<b>15,004</b>
D	TITUS	BI COUNTY WSC	CYPRESS	34	37	41	45	50	55
D	TITUS	COUNTY-OTHER, TITUS	CYPRESS	179	197	220	245	271	299
D	TITUS	COUNTY-OTHER, TITUS	SULPHUR	295	323	360	401	445	491
D	TITUS	CYPRESS SPRINGS SUD	CYPRESS	10	10	12	13	14	15
D	TITUS	CYPRESS SPRINGS SUD	SULPHUR	15	17	18	20	22	25
D	TITUS	IRRIGATION, TITUS	CYPRESS	110	110	110	110	110	110
D	TITUS	IRRIGATION, TITUS	SULPHUR	943	943	943	943	943	943
D	TITUS	LIVESTOCK, TITUS	CYPRESS	1,356	1,356	1,356	1,356	1,356	1,356
D	TITUS	LIVESTOCK, TITUS	SULPHUR	1,591	1,591	1,591	1,591	1,591	1,591
D	TITUS	MANUFACTURING, TITUS	CYPRESS	4,063	4,155	4,155	4,155	4,155	4,155
D	TITUS	MINING, TITUS	CYPRESS	1,512	1,632	1,756	1,890	2,038	2,200
D	TITUS	MINING, TITUS	SULPHUR	132	143	153	165	178	192
D	TITUS	MOUNT PLEASANT	CYPRESS	3,890	4,302	4,745	5,260	5,828	6,433
D	TITUS	STEAM ELECTRIC POWER, TITUS	CYPRESS	61,931	61,931	61,931	61,931	61,931	61,931
D	TITUS	TRI SUD	CYPRESS	1,013	1,102	1,203	1,325	1,465	1,616
D	TITUS	TRI SUD	SULPHUR	526	573	625	689	762	841
	<b>TITUS County Total</b>			<b>77,600</b>	<b>78,422</b>	<b>79,219</b>	<b>80,139</b>	<b>81,159</b>	<b>82,253</b>
D	UPSHUR	BI COUNTY WSC	CYPRESS	367	382	397	417	437	458
D	UPSHUR	BIG SANDY	SABINE	224	234	244	255	269	281
D	UPSHUR	COUNTY-OTHER, UPSHUR	CYPRESS	620	646	668	699	734	769
D	UPSHUR	COUNTY-OTHER, UPSHUR	SABINE	115	119	123	129	136	142
D	UPSHUR	DIANA SUD	CYPRESS	422	435	447	466	488	511
D	UPSHUR	EAST MOUNTAIN WATER SYSTEM	CYPRESS	67	70	72	75	79	83
D	UPSHUR	EAST MOUNTAIN WATER SYSTEM	SABINE	173	180	187	196	206	215
D	UPSHUR	FOUKE WSC	SABINE	10	10	11	11	12	12
D	UPSHUR	GILMER	CYPRESS	1,123	1,184	1,237	1,301	1,368	1,432
D	UPSHUR	GLADEWATER	SABINE	444	466	486	510	537	562

## 2021 Regional Water Plan Water Demand Projections for 2020-2070 in Acre-Feet

### Region D

Region	County	WUG Name	Basin	2020	2030	2040	2050	2060	2070
D	UPSHUR	GLENWOOD WSC	CYPRESS	280	290	297	311	327	341
D	UPSHUR	GLENWOOD WSC	SABINE	7	7	8	8	8	9
D	UPSHUR	IRRIGATION, UPSHUR	CYPRESS	170	170	170	170	170	170
D	UPSHUR	LIVESTOCK, UPSHUR	CYPRESS	1,222	1,222	1,222	1,222	1,222	1,222
D	UPSHUR	LIVESTOCK, UPSHUR	SABINE	429	429	429	429	429	429
D	UPSHUR	MANUFACTURING, UPSHUR	CYPRESS	69	76	76	76	76	76
D	UPSHUR	MINING, UPSHUR	CYPRESS	299	573	608	480	355	263
D	UPSHUR	MINING, UPSHUR	SABINE	80	153	163	129	95	70
D	UPSHUR	ORE CITY	CYPRESS	155	160	166	173	182	190
D	UPSHUR	PRITCHETT WSC	CYPRESS	199	204	208	217	227	238
D	UPSHUR	PRITCHETT WSC	SABINE	478	490	502	521	547	572
D	UPSHUR	SHARON WSC	CYPRESS	147	149	150	158	166	174
D	UPSHUR	UNION GROVE WSC	CYPRESS	6	6	6	7	7	7
D	UPSHUR	UNION GROVE WSC	SABINE	151	155	165	175	184	193
	<b>UPSHUR County Total</b>			<b>7,257</b>	<b>7,810</b>	<b>8,042</b>	<b>8,135</b>	<b>8,261</b>	<b>8,419</b>
D	VAN ZANDT	ABLES SPRINGS WSC	SABINE	2	2	3	3	3	3
D	VAN ZANDT	BEN WHEELER WSC	NECHES	214	223	230	240	250	260
D	VAN ZANDT	BETHEL ASH WSC	NECHES	72	90	105	119	132	143
D	VAN ZANDT	BETHEL ASH WSC	TRINITY	20	26	29	34	37	40
D	VAN ZANDT	CANTON	SABINE	961	1,032	1,084	1,143	1,196	1,242
D	VAN ZANDT	CANTON	TRINITY	4	4	5	5	5	5
D	VAN ZANDT	COMBINED CONSUMERS SUD	SABINE	92	95	98	102	107	111
D	VAN ZANDT	COUNTY-OTHER, VAN ZANDT	NECHES	502	527	546	568	586	600
D	VAN ZANDT	COUNTY-OTHER, VAN ZANDT	SABINE	457	480	498	517	534	546
D	VAN ZANDT	COUNTY-OTHER, VAN ZANDT	TRINITY	462	486	503	523	540	552
D	VAN ZANDT	EDGEWOOD	SABINE	272	285	295	307	318	329
D	VAN ZANDT	EDOM WSC	NECHES	130	137	142	150	161	173
D	VAN ZANDT	FRUITVALE WSC	SABINE	305	318	329	343	359	373
D	VAN ZANDT	GOLDEN WSC	SABINE	55	56	57	58	61	63
D	VAN ZANDT	GRAND SALINE	SABINE	387	388	387	392	400	408
D	VAN ZANDT	IRRIGATION, VAN ZANDT	NECHES	500	500	500	500	500	500

## 2021 Regional Water Plan Water Demand Projections for 2020-2070 in Acre-Feet

### Region D

Region	County	WUG Name	Basin	2020	2030	2040	2050	2060	2070
D	VAN ZANDT	LITTLE HOPE MOORE WSC	NECHES	45	47	49	51	54	55
D	VAN ZANDT	LITTLE HOPE MOORE WSC	SABINE	102	108	111	117	122	127
D	VAN ZANDT	LIVESTOCK, VAN ZANDT	NECHES	1,015	1,015	1,015	1,015	1,015	1,015
D	VAN ZANDT	LIVESTOCK, VAN ZANDT	SABINE	661	661	661	661	661	661
D	VAN ZANDT	LIVESTOCK, VAN ZANDT	TRINITY	213	213	213	213	213	213
D	VAN ZANDT	MABANK	TRINITY	48	53	58	75	104	145
D	VAN ZANDT	MACBEE SUD	SABINE	181	198	212	225	236	245
D	VAN ZANDT	MACBEE SUD	TRINITY	294	323	345	367	385	401
D	VAN ZANDT	MANUFACTURING, VAN ZANDT	SABINE	503	753	753	753	753	753
D	VAN ZANDT	MANUFACTURING, VAN ZANDT	TRINITY	3	4	4	4	4	4
D	VAN ZANDT	MINING, VAN ZANDT	NECHES	81	86	97	107	116	127
D	VAN ZANDT	MINING, VAN ZANDT	SABINE	141	150	168	186	202	221
D	VAN ZANDT	MINING, VAN ZANDT	TRINITY	78	83	93	103	112	122
D	VAN ZANDT	MYRTLE SPRINGS WSC	SABINE	29	30	31	33	35	36
D	VAN ZANDT	MYRTLE SPRINGS WSC	TRINITY	89	93	96	102	107	112
D	VAN ZANDT	PINE RIDGE WSC	SABINE	6	7	7	8	9	10
D	VAN ZANDT	PRUITT SANDFLAT WSC	SABINE	156	164	171	179	187	195
D	VAN ZANDT	R P M WSC	NECHES	225	268	301	336	366	393
D	VAN ZANDT	SOUTH TAWAKONI WSC	SABINE	438	472	498	530	562	590
D	VAN ZANDT	VAN	NECHES	237	255	269	286	301	315
D	VAN ZANDT	VAN	SABINE	132	142	150	158	167	174
D	VAN ZANDT	WILLS POINT	SABINE	300	296	292	290	291	293
D	VAN ZANDT	WILLS POINT	TRINITY	453	445	439	437	439	441
<b>VAN ZANDT County Total</b>				<b>9,865</b>	<b>10,515</b>	<b>10,844</b>	<b>11,240</b>	<b>11,630</b>	<b>11,996</b>
D	WOOD	ALGONQUIN WATER RESOURCES OF TEXAS	SABINE	107	119	131	144	159	174
D	WOOD	BRIGHT STAR SALEM SUD	SABINE	151	148	142	145	146	147
D	WOOD	CORNERSVILLE WSC	SABINE	25	26	27	29	30	32
D	WOOD	COUNTY-OTHER, WOOD	CYPRESS	75	74	70	67	63	58
D	WOOD	COUNTY-OTHER, WOOD	SABINE	213	210	201	193	180	164
D	WOOD	CYPRESS SPRINGS SUD	CYPRESS	40	39	39	39	39	40
D	WOOD	FOUKE WSC	SABINE	717	723	718	725	731	737

**2021 Regional Water Plan  
Water Demand Projections for 2020-2070 in Acre-Feet**

**Region D**

Region	County	WUG Name	Basin	2020	2030	2040	2050	2060	2070
D	WOOD	GOLDEN WSC	SABINE	209	206	200	200	202	203
D	WOOD	HAWKINS	SABINE	362	370	370	377	381	384
D	WOOD	IRRIGATION, WOOD	CYPRESS	36	36	36	36	36	36
D	WOOD	IRRIGATION, WOOD	SABINE	453	453	453	453	453	453
D	WOOD	JONES WSC	SABINE	393	388	378	378	381	384
D	WOOD	LAKE FORK WSC	SABINE	218	218	214	216	219	222
D	WOOD	LIVESTOCK, WOOD	CYPRESS	483	483	483	483	483	483
D	WOOD	LIVESTOCK, WOOD	SABINE	2,741	2,741	2,741	2,741	2,741	2,741
D	WOOD	MANUFACTURING, WOOD	SABINE	2,532	3,085	3,085	3,085	3,085	3,085
D	WOOD	MINEOLA	SABINE	847	857	850	860	868	875
D	WOOD	MINING, WOOD	CYPRESS	2	2	2	2	2	2
D	WOOD	MINING, WOOD	SABINE	23	23	21	19	18	17
D	WOOD	NEW HOPE SUD	SABINE	329	332	329	333	336	339
D	WOOD	PRITCHETT WSC	SABINE	7	7	7	7	7	7
D	WOOD	QUITMAN	SABINE	316	319	317	321	324	326
D	WOOD	RAMEY WSC	SABINE	278	273	265	269	272	274
D	WOOD	SHARON WSC	CYPRESS	101	98	94	96	97	98
D	WOOD	SHARON WSC	SABINE	206	202	194	198	199	200
D	WOOD	SHIRLEY WSC	SABINE	17	17	18	18	19	20
D	WOOD	WINNSBORO	CYPRESS	212	215	214	217	220	221
D	WOOD	WINNSBORO	SABINE	336	342	341	346	349	352
	<b>WOOD County Total</b>			<b>11,429</b>	<b>12,006</b>	<b>11,940</b>	<b>11,997</b>	<b>12,040</b>	<b>12,074</b>
<b>Region D Total</b>				<b>401,419</b>	<b>415,399</b>	<b>425,078</b>	<b>438,381</b>	<b>455,969</b>	<b>479,321</b>

**Water Efficiency Savings used in Municipal Water Demand Projections for 2021 Regional Water Plan  
(in gallons per capita daily)**

(carried over from the 2017 State Water Plan)

Region	County	WUG Name	2020	2030	2040	2050	2060	2070
D	BOWIE	BURNS REDBANK WSC	9.18	13.22	16.16	17.29	17.59	17.60
D	BOWIE	CENTRAL BOWIE COUNTY WSC	7.64	10.00	10.00	10.00	10.00	10.00
D	BOWIE	COUNTY-OTHER, BOWIE	10.36	14.93	17.40	17.77	18.14	18.14
D	BOWIE	DE KALB	9.98	14.64	17.96	18.27	18.57	18.58
D	BOWIE	HOOKS	9.60	13.90	17.29	18.88	19.19	19.19
D	BOWIE	MACEDONIA EYLAU MUD 1	0.00	0.00	0.00	0.00	0.00	0.00
D	BOWIE	MAUD	9.46	13.67	16.96	18.73	19.04	19.04
D	BOWIE	NASH	0.00	0.00	0.00	0.00	0.00	0.00
D	BOWIE	NEW BOSTON	9.80	14.29	17.88	18.55	18.86	18.86
D	BOWIE	REDWATER	8.61	12.24	15.00	16.51	16.81	16.82
D	BOWIE	RIVERBEND WATER RESOURCES DISTRICT	3.33	6.81	10.06	11.82	12.14	12.14
D	BOWIE	TEXARKANA	9.17	13.13	16.21	17.87	18.17	18.18
D	BOWIE	WAKE VILLAGE	9.53	13.31	16.22	17.79	18.08	18.10
D	CAMP	BI COUNTY WSC	8.70	12.02	14.03	15.08	15.35	15.43
D	CAMP	COUNTY-OTHER, CAMP	4.00	4.00	4.00	4.00	4.00	4.00
D	CAMP	PITTSBURG	9.36	13.48	16.60	18.25	18.57	18.61
D	CASS	ATLANTA	9.54	13.84	17.42	18.67	18.99	18.99
D	CASS	COUNTY-OTHER, CASS	9.54	13.85	17.43	18.66	18.98	18.98
D	CASS	E M C WSC	5.41	5.41	5.41	5.41	5.41	5.41
D	CASS	EASTERN CASS WSC	7.57	10.45	12.62	13.86	14.18	14.18
D	CASS	HOLLY SPRINGS WSC	9.19	13.27	16.41	17.25	17.56	17.57
D	CASS	HUGHES SPRINGS	9.65	14.05	17.73	18.51	18.83	18.83
D	CASS	LINDEN	9.99	14.74	17.65	17.97	18.28	18.29
D	CASS	MIMS WSC	0.00	0.00	0.00	0.00	0.00	0.00
D	CASS	QUEEN CITY	9.82	14.42	17.90	18.22	18.54	18.54
D	CASS	WESTERN CASS WSC	9.19	13.27	16.41	17.25	17.56	17.57
D	DELTA	COOPER	9.68	14.15	17.87	18.44	18.76	18.76
D	DELTA	COUNTY-OTHER, DELTA	0.00	0.00	0.00	0.00	0.00	0.00
D	DELTA	DELTA COUNTY MUD	9.80	12.82	12.82	12.82	12.82	12.82
D	DELTA	NORTH HUNT SUD	0.00	0.00	0.00	0.00	0.00	0.00
D	FRANKLIN	COUNTY-OTHER, FRANKLIN	6.89	8.67	9.65	10.29	10.59	10.62
D	FRANKLIN	CYPRESS SPRINGS SUD	8.41	11.88	14.43	15.83	16.13	16.16
D	FRANKLIN	MOUNT VERNON	8.93	12.75	15.59	17.12	17.43	17.45
D	FRANKLIN	WINNSBORO	9.58	13.59	16.61	18.24	18.54	18.56
D	GREGG	CLARKSVILLE CITY	9.55	13.61	16.49	17.93	18.24	18.34
D	GREGG	COUNTY-OTHER, GREGG	10.41	15.11	18.42	18.79	19.11	19.20
D	GREGG	CROSS ROADS SUD	9.29	13.29	16.01	17.37	17.67	17.75
D	GREGG	ELDERVILLE WSC	0.00	0.00	0.00	0.00	0.00	0.00
D	GREGG	GLADEWATER	9.77	14.00	17.04	18.57	18.88	18.96
D	GREGG	GLENWOOD WSC	9.28	13.23	16.04	17.37	17.67	17.73
D	GREGG	KILGORE	9.41	13.42	16.23	17.63	17.94	18.03
D	GREGG	LIBERTY CITY WSC	9.31	13.14	15.82	17.17	17.48	17.58
D	GREGG	LONGVIEW	9.56	13.65	16.57	18.03	18.34	18.44
D	GREGG	STARRVILLE-FRIENDSHIP WSC	9.38	13.06	15.41	16.54	16.83	16.90
D	GREGG	TRYON ROAD SUD	9.42	13.41	16.26	17.68	18.00	18.10
D	GREGG	WEST GREGG SUD	8.75	12.41	14.92	16.18	16.50	16.59
D	GREGG	WHITE OAK	9.35	13.32	16.13	17.53	17.85	17.94
D	HARRISON	BLOCKER CROSSROADS WSC	9.33	13.38	16.32	17.71	18.03	18.12
D	HARRISON	COUNTY-OTHER, HARRISON	9.39	13.41	16.34	17.87	18.20	18.29
D	HARRISON	DIANA SUD	8.57	12.18	14.72	16.05	16.36	16.41
D	HARRISON	GILL WSC	10.10	14.74	18.29	18.66	18.99	19.07
D	HARRISON	GUM SPRINGS WSC	9.08	13.03	15.91	17.42	17.75	17.84
D	HARRISON	HALLSVILLE	8.45	11.89	14.32	15.61	15.94	16.04
D	HARRISON	HARLETON WSC	9.33	13.38	16.32	17.71	18.03	18.12
D	HARRISON	LEIGH WSC	9.33	13.38	16.32	17.71	18.03	18.12
D	HARRISON	LONGVIEW	9.56	13.65	16.57	18.03	18.34	18.44
D	HARRISON	MARSHALL	9.94	14.38	17.68	19.22	19.55	19.65
D	HARRISON	NORTH HARRISON WSC	9.33	13.38	16.32	17.71	18.03	18.12
D	HARRISON	PANOLA-BETHANY WSC	9.79	14.06	17.13	18.36	18.66	18.71
D	HARRISON	SCOTTSVILLE	9.33	13.38	16.32	17.71	18.03	18.12
D	HARRISON	TALLEY WSC	9.33	13.38	16.20	16.20	16.20	16.20
D	HARRISON	TRYON ROAD SUD	9.42	13.41	16.26	17.68	18.00	18.10
D	HARRISON	WASKOM	9.31	13.25	16.11	17.61	17.94	18.03
D	HARRISON	WEST HARRISON WSC	9.33	13.38	16.32	17.71	18.03	18.12
D	HOPKINS	BRASHEAR WSC	9.37	13.21	15.75	17.01	17.30	17.36
D	HOPKINS	BRINKER WSC	9.50	13.29	15.64	16.80	17.07	17.16
D	HOPKINS	CASH SUD	9.48	12.69	14.54	15.41	15.66	15.77
D	HOPKINS	CORNERSVILLE WSC	9.37	13.21	15.75	17.01	17.30	17.36
D	HOPKINS	COUNTY-OTHER, HOPKINS	9.31	13.53	16.90	18.71	19.03	19.07
D	HOPKINS	CUMBY	9.48	13.23	15.54	16.68	16.95	17.03
D	HOPKINS	CYPRESS SPRINGS SUD	8.41	11.88	14.43	15.83	16.13	16.16
D	HOPKINS	GAFFORD CHAPEL WSC	9.37	13.21	15.75	17.01	17.30	17.36
D	HOPKINS	JONES WSC	9.64	13.87	17.05	18.76	19.05	19.08
D	HOPKINS	LAKE FORK WSC	9.49	13.55	16.59	17.87	18.16	18.19

Region	County	WUG Name	2020	2030	2040	2050	2060	2070
D	HOPKINS	MARTIN SPRINGS WSC	9.82	13.78	16.21	17.38	17.65	17.73
D	HOPKINS	MILLER GROVE WSC	9.37	13.21	15.75	17.01	17.30	17.36
D	HOPKINS	NORTH HOPKINS WSC	10.23	14.76	17.90	18.99	19.28	19.35
D	HOPKINS	SHADY GROVE NO 2 WSC	9.37	13.21	15.75	17.01	17.30	17.36
D	HOPKINS	SHIRLEY WSC	9.37	13.21	15.75	17.01	17.30	17.36
D	HOPKINS	SULPHUR SPRINGS	9.36	13.46	16.58	18.21	18.53	18.58
D	HUNT	ABLES SPRINGS WSC	3.00	3.00	3.00	3.00	3.00	3.00
D	HUNT	B H P WSC	9.92	13.79	16.05	16.50	16.50	16.50
D	HUNT	BLACKLAND WSC	8.59	12.06	14.55	15.85	16.17	16.25
D	HUNT	CADDO BASIN SUD	10.43	14.58	16.92	17.87	18.11	18.21
D	HUNT	CADDO MILLS	10.52	14.75	17.09	18.07	18.31	18.42
D	HUNT	CASH SUD	9.48	12.69	14.54	15.41	15.66	15.77
D	HUNT	CELESTE	10.84	15.40	18.13	19.30	19.57	19.70
D	HUNT	COMBINED CONSUMERS SUD	10.20	14.33	16.83	17.95	18.23	18.36
D	HUNT	COMMERCE	9.62	13.82	16.74	18.15	18.50	18.64
D	HUNT	COUNTY-OTHER, HUNT	8.86	12.39	14.09	14.80	15.01	15.11
D	HUNT	DELTA COUNTY MUD	9.80	12.82	12.82	12.82	12.82	12.82
D	HUNT	FROGNOT WSC	8.42	11.36	13.03	13.84	14.07	14.14
D	HUNT	GREENVILLE	9.93	14.29	17.24	18.62	18.95	19.09
D	HUNT	HICKORY CREEK SUD	10.23	13.78	15.39	16.04	16.22	16.30
D	HUNT	JOSEPHINE	12.13	14.87	15.81	16.18	16.24	16.27
D	HUNT	MACBEE SUD	3.00	3.00	3.00	3.00	3.00	3.00
D	HUNT	NORTH HUNT SUD	0.00	0.00	0.00	0.00	0.00	0.00
D	HUNT	POETRY WSC	10.26	13.54	15.37	16.23	16.46	16.55
D	HUNT	QUINLAN	9.46	13.75	17.13	18.90	19.27	19.39
D	HUNT	ROYSE CITY	6.52	9.23	10.52	11.17	11.36	11.38
D	HUNT	SHADY GROVE WSC	9.92	13.79	16.05	17.04	17.30	17.41
D	HUNT	TEXAS A&M UNIVERSITY COMMERCE	9.92	13.79	16.05	17.04	17.30	17.41
D	HUNT	WEST LEONARD WSC	9.92	13.95	16.54	17.54	17.83	17.92
D	HUNT	WEST TAWAKONI	9.14	12.78	15.10	16.21	16.52	16.66
D	HUNT	WOLFE CITY	11.26	16.07	18.93	19.34	19.61	19.74
D	LAMAR	BLOSSOM	9.51	13.66	16.89	18.59	18.90	18.92
D	LAMAR	COUNTY-OTHER, LAMAR	11.24	14.67	15.02	15.35	15.66	15.68
D	LAMAR	LAMAR COUNTY WSD	8.42	11.65	14.01	15.30	15.61	15.63
D	LAMAR	PARIS	9.70	13.99	17.32	19.04	19.35	19.37
D	LAMAR	RENO (Lamar)	8.50	11.88	14.38	15.74	16.04	16.07
D	MARION	COUNTY-OTHER, MARION	7.00	7.00	7.00	7.00	7.00	7.00
D	MARION	DIANA SUD	8.57	12.18	14.72	16.05	16.36	16.41
D	MARION	E M C WSC	5.41	5.41	5.41	5.41	5.41	5.41
D	MARION	HARLETON WSC	9.33	13.38	16.32	17.71	18.03	18.12
D	MARION	JEFFERSON	9.21	13.38	16.89	18.78	19.11	19.11
D	MARION	KELLYVILLE-BEREA WSC	9.29	13.38	16.56	17.95	18.26	18.29
D	MARION	MIMS WSC	0.00	0.00	0.00	0.00	0.00	0.00
D	MORRIS	BI COUNTY WSC	8.70	12.02	14.03	15.08	15.35	15.43
D	MORRIS	COUNTY-OTHER, MORRIS	10.02	14.69	17.87	18.22	18.54	18.57
D	MORRIS	DAINGERFIELD	9.60	13.88	17.37	18.85	19.17	19.20
D	MORRIS	HOLLY SPRINGS WSC	9.19	13.27	16.41	17.25	17.56	17.57
D	MORRIS	HUGHES SPRINGS	9.65	14.05	17.73	18.51	18.83	18.83
D	MORRIS	LONE STAR	9.61	13.85	17.32	18.92	19.24	19.27
D	MORRIS	NAPLES	9.75	14.15	17.75	18.68	19.00	19.03
D	MORRIS	OMAHA	9.28	13.26	16.48	18.21	18.54	18.57
D	MORRIS	TRI SUD	8.38	11.60	13.67	14.73	15.03	15.12
D	RAINS	BRIGHT STAR SALEM SUD	10.23	14.73	18.15	18.57	18.86	18.88
D	RAINS	CASH SUD	9.48	12.69	14.54	15.41	15.66	15.77
D	RAINS	COUNTY-OTHER, RAINS	7.33	9.73	11.19	12.04	12.32	12.34
D	RAINS	EAST TAWAKONI	9.23	12.96	15.59	17.02	17.30	17.32
D	RAINS	EMORY	9.02	12.66	15.21	16.59	16.87	16.89
D	RAINS	GOLDEN WSC	9.27	13.18	16.06	17.61	17.91	17.93
D	RAINS	MILLER GROVE WSC	9.37	13.21	15.75	17.01	17.30	17.36
D	RAINS	POINT	9.76	13.81	16.72	18.28	18.56	18.58
D	RAINS	SHIRLEY WSC	9.37	13.21	15.75	17.01	17.30	17.36
D	RAINS	SOUTH RAINS SUD	9.60	13.58	16.38	17.47	17.74	17.78
D	RED RIVER	410 WSC	9.48	13.75	16.58	17.63	17.94	17.96
D	RED RIVER	BOGATA	9.97	14.79	17.53	17.85	18.17	18.17
D	RED RIVER	CLARKSVILLE	10.08	15.00	17.36	17.68	18.00	18.00
D	RED RIVER	COUNTY-OTHER, RED RIVER	11.74	16.57	16.86	17.41	18.93	28.39
D	RED RIVER	RED RIVER COUNTY WSC	9.57	13.82	17.00	17.00	17.00	17.00
D	SMITH	CARROLL WSC	9.38	13.06	15.41	16.54	16.83	16.90
D	SMITH	COUNTY-OTHER, SMITH	8.86	12.36	14.49	15.52	15.80	15.89
D	SMITH	CRYSTAL SYSTEMS TEXAS	12.29	15.38	15.82	16.17	16.44	16.54
D	SMITH	JACKSON WSC	9.55	13.58	16.30	17.63	17.93	18.03
D	SMITH	LIBERTY CITY WSC	9.31	13.14	15.82	17.17	17.48	17.58
D	SMITH	LINDALE	8.57	11.64	13.27	14.05	14.29	14.39
D	SMITH	LINDALE RURAL WSC	8.36	11.82	14.09	15.23	15.53	15.63
D	SMITH	OVERTON	9.70	13.79	16.54	17.89	18.18	18.27
D	SMITH	PINE RIDGE WSC	9.38	13.06	15.41	16.54	16.83	16.90
D	SMITH	SAND FLAT WSC	9.38	12.90	12.90	12.90	12.90	12.90
D	SMITH	SMITH COUNTY MUD 1	8.43	11.52	13.43	14.40	14.70	14.81
D	SMITH	SOUTHERN UTILITIES	9.36	13.36	16.26	17.74	18.06	18.14
D	SMITH	STAR MOUNTAIN WSC	9.38	13.06	15.41	16.54	16.83	16.90



Region	County	WUG Name	2020	2030	2040	2050	2060	2070
D	SMITH	STARRVILLE-FRIENDSHIP WSC	9.38	13.06	15.41	16.54	16.83	16.90
D	SMITH	TYLER	9.19	13.04	15.75	17.13	17.43	17.51
D	SMITH	WEST GREGG SUD	8.75	12.41	14.92	16.18	16.50	16.59
D	SMITH	WINONA	10.40	14.91	17.94	19.38	19.68	19.79
D	TITUS	BI COUNTY WSC	8.70	12.02	14.03	15.08	15.35	15.43
D	TITUS	COUNTY-OTHER, TITUS	11.88	15.62	16.05	16.40	16.69	16.78
D	TITUS	CYPRESS SPRINGS SUD	8.41	11.88	14.43	15.83	16.13	16.16
D	TITUS	MOUNT PLEASANT	9.71	13.77	16.48	17.80	18.09	18.18
D	TITUS	TRI SUD	8.38	11.60	13.67	14.73	15.03	15.12
D	UPSHUR	BI COUNTY WSC	8.70	12.02	14.03	15.08	15.35	15.43
D	UPSHUR	BIG SANDY	9.79	14.02	17.08	18.63	18.93	18.99
D	UPSHUR	COUNTY-OTHER, UPSHUR	9.34	13.14	15.83	17.22	17.52	17.57
D	UPSHUR	DIANA SUD	8.57	12.18	14.72	16.05	16.36	16.41
D	UPSHUR	EAST MOUNTAIN WATER SYSTEM	8.98	12.84	15.56	16.97	17.27	17.33
D	UPSHUR	FOUKE WSC	8.46	11.59	13.82	15.07	15.36	15.38
D	UPSHUR	GILMER	9.93	14.27	17.41	19.01	19.31	19.37
D	UPSHUR	GLADEWATER	9.77	14.00	17.04	18.57	18.88	18.96
D	UPSHUR	GLENWOOD WSC	9.28	13.23	16.04	17.37	17.67	17.73
D	UPSHUR	ORE CITY	9.73	13.91	16.91	18.44	18.74	18.80
D	UPSHUR	PRITCHETT WSC	9.27	13.31	16.18	17.67	17.97	18.02
D	UPSHUR	SHARON WSC	9.95	14.50	17.97	18.35	18.65	18.69
D	UPSHUR	UNION GROVE WSC	9.28	12.47	12.47	12.47	12.47	12.47
D	VAN ZANDT	ABLES SPRINGS WSC	3.00	3.00	3.00	3.00	3.00	3.00
D	VAN ZANDT	BEN WHEELER WSC	9.60	13.40	15.94	17.23	17.51	17.57
D	VAN ZANDT	BETHEL ASH WSC	9.05	12.28	14.19	15.18	15.44	15.52
D	VAN ZANDT	CANTON	9.57	13.56	16.30	17.71	18.00	18.05
D	VAN ZANDT	COMBINED CONSUMERS SUD	10.20	14.33	16.83	17.95	18.23	18.36
D	VAN ZANDT	COUNTY-OTHER, VAN ZANDT	8.73	12.11	14.36	15.55	15.84	15.89
D	VAN ZANDT	EDGEWOOD	9.60	13.69	16.63	18.15	18.44	18.49
D	VAN ZANDT	EDOM WSC	9.60	13.40	15.94	17.23	17.51	17.57
D	VAN ZANDT	FRUITVALE WSC	9.60	13.40	15.94	17.23	17.51	17.57
D	VAN ZANDT	GOLDEN WSC	9.27	13.18	16.06	17.61	17.91	17.93
D	VAN ZANDT	GRAND SALINE	9.15	13.04	15.99	17.57	17.88	17.91
D	VAN ZANDT	LITTLE HOPE MOORE WSC	9.60	13.40	15.94	17.23	17.51	17.57
D	VAN ZANDT	MABANK	9.22	12.26	14.03	15.08	15.41	15.55
D	VAN ZANDT	MACBEE SUD	3.00	3.00	3.00	3.00	3.00	3.00
D	VAN ZANDT	MYRTLE SPRINGS WSC	9.60	13.40	15.06	15.06	15.06	15.06
D	VAN ZANDT	PINE RIDGE WSC	9.38	13.06	15.41	16.54	16.83	16.90
D	VAN ZANDT	PRUITT SANDFLAT WSC	9.60	13.40	15.94	17.23	17.51	17.57
D	VAN ZANDT	R P M WSC	9.75	13.25	15.15	16.08	16.30	16.37
D	VAN ZANDT	SOUTH TAWAKONI WSC	10.27	14.55	17.32	18.69	18.95	19.01
D	VAN ZANDT	VAN	9.48	13.28	15.76	17.03	17.30	17.36
D	VAN ZANDT	WILLS POINT	9.07	13.04	16.28	18.05	18.37	18.38
D	WOOD	ALGONQUIN WATER RESOURCES OF TEXAS	9.00	9.00	9.00	9.00	9.00	9.00
D	WOOD	BRIGHT STAR SALEM SUD	10.23	14.73	18.15	18.57	18.86	18.88
D	WOOD	CORNERSVILLE WSC	9.37	13.21	15.75	17.01	17.30	17.36
D	WOOD	COUNTY-OTHER, WOOD	8.00	9.05	9.38	9.70	10.00	10.02
D	WOOD	CYPRESS SPRINGS SUD	8.41	11.88	14.43	15.83	16.13	16.16
D	WOOD	FOUKE WSC	8.46	11.59	13.82	15.07	15.36	15.38
D	WOOD	GOLDEN WSC	9.27	13.18	16.06	17.61	17.91	17.93
D	WOOD	HAWKINS	9.98	14.29	17.59	18.91	19.21	19.23
D	WOOD	JONES WSC	9.64	13.87	17.05	18.76	19.05	19.08
D	WOOD	LAKE FORK WSC	9.49	13.55	16.59	17.87	18.16	18.19
D	WOOD	MINEOLA	9.82	13.99	17.16	18.87	19.17	19.19
D	WOOD	NEW HOPE SUD	9.02	12.67	15.37	16.85	17.15	17.17
D	WOOD	PRITCHETT WSC	9.27	13.31	16.18	17.67	17.97	18.02
D	WOOD	QUITMAN	9.96	14.26	17.55	18.94	19.24	19.26
D	WOOD	RAMEY WSC	8.76	12.54	15.35	16.00	16.00	16.00
D	WOOD	SHARON WSC	9.95	14.50	17.97	18.35	18.65	18.69
D	WOOD	SHIRLEY WSC	9.37	13.21	15.75	17.01	17.30	17.36
D	WOOD	WINNSBORO	9.58	13.59	16.61	18.24	18.54	18.56

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### Region D Water User Group (WUG) Population

	WUG POPULATION					
	2020	2030	2040	2050	2060	2070
BURNS REDBANK WSC	1,576	1,620	1,634	1,634	1,634	1,634
CENTRAL BOWIE COUNTY WSC	1,076	1,149	1,272	1,409	1,561	1,729
DE KALB	260	266	269	271	274	278
HOOKS	3,049	3,173	3,303	3,303	3,303	3,303
NEW BOSTON	1,752	1,802	1,817	1,817	1,817	1,817
RIVERBEND WATER RESOURCES DISTRICT	93	96	97	97	97	97
TEXARKANA	4,485	4,681	4,886	5,101	5,324	5,558
COUNTY-OTHER	4,744	4,025	2,586	2,586	2,586	2,586
<b>RED BASIN TOTAL</b>	<b>17,035</b>	<b>16,812</b>	<b>15,864</b>	<b>16,218</b>	<b>16,596</b>	<b>17,002</b>
CENTRAL BOWIE COUNTY WSC	6,453	6,888	7,631	8,453	9,363	10,372
DE KALB	1,451	1,482	1,500	1,509	1,529	1,549
MACEDONIA EYLAU MUD 1	8,742	8,892	8,939	8,939	8,939	8,939
MAUD	1,358	1,500	1,642	1,642	1,642	1,642
NASH	4,070	4,751	5,431	6,111	6,111	6,111
NEW BOSTON	4,208	4,327	4,363	4,363	4,363	4,363
REDWATER	3,749	4,229	4,709	5,189	5,429	5,429
RIVERBEND WATER RESOURCES DISTRICT	449	462	466	466	466	466
TEXARKANA	33,522	34,993	36,527	38,128	39,800	41,544
WAKE VILLAGE	6,150	6,850	7,550	8,250	8,950	8,950
COUNTY-OTHER	8,516	7,227	4,641	4,641	4,641	4,641
<b>SULPHUR BASIN TOTAL</b>	<b>78,668</b>	<b>81,601</b>	<b>83,399</b>	<b>87,691</b>	<b>91,233</b>	<b>94,006</b>
<b>BOWIE COUNTY TOTAL</b>	<b>95,703</b>	<b>98,413</b>	<b>99,263</b>	<b>103,909</b>	<b>107,829</b>	<b>111,008</b>
BI COUNTY WSC	6,265	7,531	8,521	9,695	10,786	11,850
PITTSBURG	4,712	4,946	5,128	5,345	5,546	5,743
COUNTY-OTHER	2,578	2,396	2,255	2,087	1,932	1,779
<b>CYPRESS BASIN TOTAL</b>	<b>13,555</b>	<b>14,873</b>	<b>15,904</b>	<b>17,127</b>	<b>18,264</b>	<b>19,372</b>
<b>CAMP COUNTY TOTAL</b>	<b>13,555</b>	<b>14,873</b>	<b>15,904</b>	<b>17,127</b>	<b>18,264</b>	<b>19,372</b>
ATLANTA	5,871	6,387	6,903	7,419	7,419	7,419
E M C WSC	793	793	793	793	793	793
EASTERN CASS WSC	1,925	1,939	1,939	1,939	1,939	1,939
HOLLY SPRINGS WSC	1,166	1,175	1,175	1,175	1,175	1,175
HUGHES SPRINGS	2,469	2,487	2,487	2,487	2,487	2,487
LINDEN	2,115	2,129	2,129	2,129	2,129	2,129
MIMS WSC	281	281	281	281	281	281
QUEEN CITY	1,063	1,071	1,071	1,071	1,071	1,071
WESTERN CASS WSC	1,838	1,851	1,851	1,851	1,851	1,851
COUNTY-OTHER	8,946	8,661	8,283	7,904	7,904	7,904
<b>CYPRESS BASIN TOTAL</b>	<b>26,467</b>	<b>26,774</b>	<b>26,912</b>	<b>27,049</b>	<b>27,049</b>	<b>27,049</b>
ATLANTA	6	7	7	8	8	8
EASTERN CASS WSC	149	150	150	150	150	150
QUEEN CITY	638	643	643	643	643	643
WESTERN CASS WSC	488	491	491	491	491	491
COUNTY-OTHER	3,268	3,164	3,026	2,888	2,888	2,888
<b>SULPHUR BASIN TOTAL</b>	<b>4,549</b>	<b>4,455</b>	<b>4,317</b>	<b>4,180</b>	<b>4,180</b>	<b>4,180</b>
<b>CASS COUNTY TOTAL</b>	<b>31,016</b>	<b>31,229</b>	<b>31,229</b>	<b>31,229</b>	<b>31,229</b>	<b>31,229</b>
COOPER	2,026	2,047	2,047	2,047	2,047	2,047
DELTA COUNTY MUD*	1,785	1,810	1,825	1,850	1,902	1,958
NORTH HUNT SUD*	286	290	290	290	290	290

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### Region D Water User Group (WUG) Population

	WUG POPULATION					
	2020	2030	2040	2050	2060	2070
COUNTY-OTHER	1,223	1,229	1,214	1,189	1,137	1,081
<b>SULPHUR BASIN TOTAL</b>	<b>5,320</b>	<b>5,376</b>	<b>5,376</b>	<b>5,376</b>	<b>5,376</b>	<b>5,376</b>
<b>DELTA COUNTY TOTAL</b>	<b>5,320</b>	<b>5,376</b>	<b>5,376</b>	<b>5,376</b>	<b>5,376</b>	<b>5,376</b>
CYPRESS SPRINGS SUD	4,235	4,427	4,542	4,655	4,739	4,805
WINNSBORO	744	778	798	818	833	844
COUNTY-OTHER	363	380	390	399	406	413
<b>CYPRESS BASIN TOTAL</b>	<b>5,342</b>	<b>5,585</b>	<b>5,730</b>	<b>5,872</b>	<b>5,978</b>	<b>6,062</b>
CYPRESS SPRINGS SUD	2,743	2,867	2,942	3,015	3,070	3,113
MOUNT VERNON	2,877	3,006	3,084	3,161	3,218	3,263
COUNTY-OTHER	162	169	174	178	181	184
<b>SULPHUR BASIN TOTAL</b>	<b>5,782</b>	<b>6,042</b>	<b>6,200</b>	<b>6,354</b>	<b>6,469</b>	<b>6,560</b>
<b>FRANKLIN COUNTY TOTAL</b>	<b>11,124</b>	<b>11,627</b>	<b>11,930</b>	<b>12,226</b>	<b>12,447</b>	<b>12,622</b>
GLENWOOD WSC	197	213	227	241	254	266
TRYON ROAD SUD	4,598	5,036	5,536	6,101	6,737	7,456
COUNTY-OTHER	232	253	278	307	341	380
<b>CYPRESS BASIN TOTAL</b>	<b>5,027</b>	<b>5,502</b>	<b>6,041</b>	<b>6,649</b>	<b>7,332</b>	<b>8,102</b>
CLARKSVILLE CITY	948	1,038	1,141	1,258	1,389	1,537
CROSS ROADS SUD*	397	435	478	527	582	644
ELDERVILLE WSC*	4,831	5,317	5,845	6,434	7,084	7,804
GLADEWATER	4,376	4,792	5,268	5,806	6,410	7,094
KILGORE*	10,829	11,859	13,038	14,369	15,865	17,559
LIBERTY CITY WSC	4,844	5,305	5,833	6,428	7,097	7,855
LONGVIEW	86,261	94,468	103,852	114,453	126,372	139,860
STARRVILLE-FRIENDSHIP WSC	618	684	753	831	915	1,006
TRYON ROAD SUD	340	372	409	451	498	551
WEST GREGG SUD*	3,549	3,887	4,273	4,710	5,199	5,755
WHITE OAK	6,966	7,628	8,386	9,243	10,205	11,294
COUNTY-OTHER	4,361	4,747	5,223	5,768	6,404	7,142
<b>SABINE BASIN TOTAL</b>	<b>128,320</b>	<b>140,532</b>	<b>154,499</b>	<b>170,278</b>	<b>188,020</b>	<b>208,101</b>
<b>GREGG COUNTY TOTAL</b>	<b>133,347</b>	<b>146,034</b>	<b>160,540</b>	<b>176,927</b>	<b>195,352</b>	<b>216,203</b>
BLOCKER CROSSROADS WSC	141	151	162	177	194	213
DIANA SUD	357	384	411	449	491	540
GUM SPRINGS WSC	2,226	2,391	2,561	2,800	3,061	3,368
HARLETON WSC	3,381	3,632	3,890	4,253	4,649	5,116
LEIGH WSC	1,519	1,631	1,747	1,910	2,088	2,297
MARSHALL	4,358	4,681	5,014	5,482	5,992	6,593
NORTH HARRISON WSC	1,374	1,475	1,580	1,727	1,889	2,078
PANOLA-BETHANY WSC*	142	166	202	254	289	321
SCOTTSVILLE	373	401	430	470	513	565
TALLEY WSC	742	796	853	932	1,020	1,122
TRYON ROAD SUD	878	943	1,011	1,105	1,207	1,329
WASKOM	2,924	3,141	3,365	3,678	4,020	4,424
WEST HARRISON WSC	316	339	363	397	434	478
COUNTY-OTHER	7,751	8,237	8,672	9,276	10,066	11,062
<b>CYPRESS BASIN TOTAL</b>	<b>26,482</b>	<b>28,368</b>	<b>30,261</b>	<b>32,910</b>	<b>35,913</b>	<b>39,506</b>
BLOCKER CROSSROADS WSC	1,312	1,410	1,510	1,651	1,804	1,986
GILL WSC*	1,620	1,739	1,863	2,037	2,226	2,450

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### Region D Water User Group (WUG) Population

	WUG POPULATION					
	2020	2030	2040	2050	2060	2070
GUM SPRINGS WSC	6,059	6,508	6,972	7,622	8,330	9,167
HALLSVILLE	4,003	4,298	4,605	5,034	5,503	6,055
LEIGH WSC	333	358	383	419	458	504
LONGVIEW	2,009	2,157	2,311	2,526	2,762	3,038
MARSHALL	20,403	21,913	23,475	25,666	28,054	30,869
PANOLA-BETHANY WSC*	1,274	1,488	1,813	2,278	2,593	2,875
SCOTTSVILLE	768	826	884	967	1,057	1,162
TALLEY WSC	560	601	644	704	769	846
WEST HARRISON WSC	992	1,066	1,141	1,248	1,364	1,501
COUNTY-OTHER	4,522	4,806	5,059	5,412	5,873	6,454
<b>SABINE BASIN TOTAL</b>	<b>43,855</b>	<b>47,170</b>	<b>50,660</b>	<b>55,564</b>	<b>60,793</b>	<b>66,907</b>
<b>HARRISON COUNTY TOTAL</b>	<b>70,337</b>	<b>75,538</b>	<b>80,921</b>	<b>88,474</b>	<b>96,706</b>	<b>106,413</b>
CORNVILLE WSC	375	415	442	465	495	525
CYPRESS SPRINGS SUD	352	356	356	356	356	356
COUNTY-OTHER	25	21	18	21	18	19
<b>CYPRESS BASIN TOTAL</b>	<b>752</b>	<b>792</b>	<b>816</b>	<b>842</b>	<b>869</b>	<b>900</b>
BRASHEAR WSC	357	384	410	432	460	487
CASH SUD*	104	112	119	123	131	138
CORNVILLE WSC	356	393	419	442	470	498
CUMBY	954	1,108	1,245	1,367	1,517	1,604
JONES WSC	158	191	220	246	278	310
LAKE FORK WSC	158	165	169	168	171	173
MARTIN SPRINGS WSC	2,970	3,475	3,936	4,351	4,847	5,270
MILLER GROVE WSC	1,242	1,334	1,411	1,453	1,535	1,615
SHADY GROVE NO 2 WSC	255	274	292	308	328	347
SHIRLEY WSC	1,626	1,739	1,826	1,884	1,972	2,026
SULPHUR SPRINGS	49	51	54	56	59	61
COUNTY-OTHER	936	788	686	770	681	714
<b>SABINE BASIN TOTAL</b>	<b>9,165</b>	<b>10,014</b>	<b>10,787</b>	<b>11,600</b>	<b>12,449</b>	<b>13,243</b>
BRASHEAR WSC	428	461	491	518	551	584
BRINKER WSC	2,369	2,737	3,071	3,456	3,825	4,198
CUMBY	90	104	118	129	143	151
CYPRESS SPRINGS SUD	709	716	716	716	716	716
GAFFORD CHAPEL WSC	1,215	1,308	1,393	1,491	1,585	1,680
MARTIN SPRINGS WSC	532	622	705	779	868	944
NORTH HOPKINS WSC	6,070	6,757	7,384	8,104	8,799	9,497
SHADY GROVE NO 2 WSC	311	334	356	376	399	424
SULPHUR SPRINGS	15,800	16,598	17,324	18,157	18,961	19,770
COUNTY-OTHER	537	452	394	442	391	410
<b>SULPHUR BASIN TOTAL</b>	<b>28,061</b>	<b>30,089</b>	<b>31,952</b>	<b>34,168</b>	<b>36,238</b>	<b>38,374</b>
<b>HOPKINS COUNTY TOTAL</b>	<b>37,978</b>	<b>40,895</b>	<b>43,555</b>	<b>46,610</b>	<b>49,556</b>	<b>52,517</b>
ABLES SPRINGS WSC*	866	1,327	1,952	2,816	4,046	5,834
B H P WSC*	4,421	5,494	6,950	8,960	11,824	15,986
BLACKLAND WSC*	43	43	43	43	43	43
CADDO BASIN SUD*	7,800	10,341	13,788	18,546	25,327	35,181
CADDO MILLS	1,710	2,214	2,898	3,843	5,190	7,147
CASH SUD*	18,199	21,837	26,206	31,446	37,736	45,281

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### Region D Water User Group (WUG) Population

	WUG POPULATION					
	2020	2030	2040	2050	2060	2070
CELESTE	1,012	1,257	1,590	2,051	2,706	3,658
COMBINED CONSUMERS SUD	6,074	7,548	9,548	12,310	16,245	21,962
GREENVILLE	29,871	34,309	40,330	48,645	60,491	77,705
HICKORY CREEK SUD*	2,098	3,067	4,381	6,196	8,781	12,538
JOSEPHINE*	184	325	517	783	783	783
MACBEE SUD*	346	430	544	701	925	1,250
POETRY WSC*	2,303	2,909	3,668	4,729	6,341	8,535
QUINLAN	1,528	1,596	1,688	1,815	1,997	2,259
ROYSE CITY*	372	462	584	753	994	1,345
SHADY GROVE WSC	1,476	1,834	2,320	2,991	3,947	5,336
WEST TAWAKONI	2,679	3,131	3,744	4,592	5,800	7,556
COUNTY-OTHER	5,797	10,055	16,409	21,654	32,937	53,262
<b>SABINE BASIN TOTAL</b>	<b>86,779</b>	<b>108,179</b>	<b>137,160</b>	<b>172,874</b>	<b>226,113</b>	<b>305,661</b>
CASH SUD*	259	311	373	448	537	644
COMMERCE	8,883	9,975	11,456	13,502	16,416	20,651
DELTA COUNTY MUD*	9	9	9	9	9	10
HICKORY CREEK SUD*	1,456	2,128	3,040	4,299	6,094	8,701
NORTH HUNT SUD*	3,522	4,602	6,069	8,092	10,974	15,163
TEXAS A&M UNIVERSITY COMMERCE	926	926	926	926	926	926
WOLFE CITY*	1,720	2,137	2,704	3,486	4,600	6,220
COUNTY-OTHER	381	661	1,078	1,423	2,165	3,501
<b>SULPHUR BASIN TOTAL</b>	<b>17,156</b>	<b>20,749</b>	<b>25,655</b>	<b>32,185</b>	<b>41,721</b>	<b>55,816</b>
FROGNOT WSC*	27	32	38	47	52	59
HICKORY CREEK SUD*	718	1,050	1,499	2,120	3,005	4,291
WEST LEONARD WSC*	50	57	70	90	129	171
COUNTY-OTHER	164	284	464	613	932	1,507
<b>TRINITY BASIN TOTAL</b>	<b>959</b>	<b>1,423</b>	<b>2,071</b>	<b>2,870</b>	<b>4,118</b>	<b>6,028</b>
<b>HUNT COUNTY TOTAL</b>	<b>104,894</b>	<b>130,351</b>	<b>164,886</b>	<b>207,929</b>	<b>271,952</b>	<b>367,505</b>
LAMAR COUNTY WSD	11,919	12,380	12,722	13,031	13,272	13,466
PARIS	10,495	10,901	11,201	11,474	11,686	11,857
RENO (Lamar)	438	455	467	479	487	495
COUNTY-OTHER	812	844	867	888	905	918
<b>RED BASIN TOTAL</b>	<b>23,664</b>	<b>24,580</b>	<b>25,257</b>	<b>25,872</b>	<b>26,350</b>	<b>26,736</b>
BLOSSOM	1,546	1,605	1,649	1,690	1,721	1,746
LAMAR COUNTY WSD	5,053	5,249	5,393	5,524	5,626	5,709
PARIS	16,735	17,382	17,862	18,296	18,635	18,908
RENO (Lamar)	2,881	2,992	3,074	3,148	3,207	3,254
COUNTY-OTHER	2,291	2,381	2,448	2,507	2,553	2,590
<b>SULPHUR BASIN TOTAL</b>	<b>28,506</b>	<b>29,609</b>	<b>30,426</b>	<b>31,165</b>	<b>31,742</b>	<b>32,207</b>
<b>LAMAR COUNTY TOTAL</b>	<b>52,170</b>	<b>54,189</b>	<b>55,683</b>	<b>57,037</b>	<b>58,092</b>	<b>58,943</b>
DIANA SUD	384	384	384	384	384	384
E M C WSC	2,405	2,405	2,405	2,405	2,405	2,405
HARLETON WSC	1,105	1,186	1,271	1,390	1,518	1,671
JEFFERSON	2,321	2,321	2,321	2,321	2,321	2,321
KELLYVILLE-BEREA WSC	1,291	1,291	1,291	1,291	1,291	1,291
MIMS WSC	1,622	1,622	1,622	1,622	1,622	1,622
COUNTY-OTHER	1,473	1,392	1,307	1,188	1,060	907

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### Region D Water User Group (WUG) Population

	WUG POPULATION					
	2020	2030	2040	2050	2060	2070
<b>CYPRESS BASIN TOTAL</b>	<b>10,601</b>	<b>10,601</b>	<b>10,601</b>	<b>10,601</b>	<b>10,601</b>	<b>10,601</b>
<b>MARION COUNTY TOTAL</b>	<b>10,601</b>	<b>10,601</b>	<b>10,601</b>	<b>10,601</b>	<b>10,601</b>	<b>10,601</b>
BI COUNTY WSC	1,168	1,190	1,213	1,249	1,277	1,306
DAINGERFIELD	2,602	2,650	2,702	2,782	2,845	2,908
HOLLY SPRINGS WSC	632	636	636	636	636	636
HUGHES SPRINGS	10	10	10	10	10	10
LONE STAR	1,664	1,694	1,729	1,780	1,819	1,860
NAPLES	608	619	632	650	665	680
OMAHA	720	733	748	770	787	805
TRI SUD	1,819	1,852	1,889	1,944	1,989	2,033
COUNTY-OTHER	2,094	2,140	2,192	2,271	2,334	2,394
<b>CYPRESS BASIN TOTAL</b>	<b>11,317</b>	<b>11,524</b>	<b>11,751</b>	<b>12,092</b>	<b>12,362</b>	<b>12,632</b>
NAPLES	736	750	766	787	805	823
OMAHA	491	500	510	525	537	549
COUNTY-OTHER	820	838	859	889	914	938
<b>SULPHUR BASIN TOTAL</b>	<b>2,047</b>	<b>2,088</b>	<b>2,135</b>	<b>2,201</b>	<b>2,256</b>	<b>2,310</b>
<b>MORRIS COUNTY TOTAL</b>	<b>13,364</b>	<b>13,612</b>	<b>13,886</b>	<b>14,293</b>	<b>14,618</b>	<b>14,942</b>
BRIGHT STAR SALEM SUD	2,525	2,677	2,721	2,750	2,762	2,768
CASH SUD*	709	752	764	772	776	778
EAST TAWAKONI	1,158	1,228	1,248	1,262	1,268	1,270
EMORY	2,147	2,276	2,314	2,338	2,349	2,354
GOLDEN WSC	53	56	57	58	58	58
MILLER GROVE WSC	209	225	238	253	267	281
POINT	1,484	1,574	1,599	1,615	1,624	1,627
SHIRLEY WSC	750	803	843	869	910	935
SOUTH RAINS SUD	2,119	2,247	2,284	2,308	2,319	2,324
COUNTY-OTHER	734	767	741	722	674	640
<b>SABINE BASIN TOTAL</b>	<b>11,888</b>	<b>12,605</b>	<b>12,809</b>	<b>12,947</b>	<b>13,007</b>	<b>13,035</b>
<b>RAINS COUNTY TOTAL</b>	<b>11,888</b>	<b>12,605</b>	<b>12,809</b>	<b>12,947</b>	<b>13,007</b>	<b>13,035</b>
410 WSC	421	421	421	421	421	421
RED RIVER COUNTY WSC	1,546	1,642	1,739	1,772	1,790	1,859
COUNTY-OTHER	523	371	218	167	138	29
<b>RED BASIN TOTAL</b>	<b>2,490</b>	<b>2,434</b>	<b>2,378</b>	<b>2,360</b>	<b>2,349</b>	<b>2,309</b>
410 WSC	980	980	980	980	980	980
BOGATA	1,178	1,178	1,178	1,178	1,178	1,178
CLARKSVILLE	3,315	3,315	3,315	3,315	3,315	3,315
RED RIVER COUNTY WSC	4,286	4,554	4,822	4,912	4,963	5,153
COUNTY-OTHER	727	515	303	231	191	41
<b>SULPHUR BASIN TOTAL</b>	<b>10,486</b>	<b>10,542</b>	<b>10,598</b>	<b>10,616</b>	<b>10,627</b>	<b>10,667</b>
<b>RED RIVER COUNTY TOTAL</b>	<b>12,976</b>	<b>12,976</b>	<b>12,976</b>	<b>12,976</b>	<b>12,976</b>	<b>12,976</b>
CARROLL WSC*	322	358	395	435	478	525
CRYSTAL SYSTEMS TEXAS*	3,026	3,384	3,812	4,324	4,950	5,715
JACKSON WSC*	2,244	2,559	2,919	3,338	3,832	4,420
LIBERTY CITY WSC	127	146	166	189	218	251
LINDALE RURAL WSC*	6,814	7,774	8,864	9,604	11,027	12,717
LINDALE*	3,707	4,499	5,396	6,107	7,280	8,674
OVERTON*	73	82	95	109	125	144

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### Region D Water User Group (WUG) Population

	WUG POPULATION					
	2020	2030	2040	2050	2060	2070
PINE RIDGE WSC	1,277	1,417	1,564	1,725	1,896	2,081
SAND FLAT WSC	3,417	3,795	4,187	4,616	5,075	5,568
SMITH COUNTY MUD 1	2,033	2,320	2,646	3,025	3,476	4,008
SOUTHERN UTILITIES*	11,488	12,926	14,673	17,320	19,900	22,959
STAR MOUNTAIN WSC	1,392	1,546	1,705	1,882	2,068	2,269
STARRVILLE-FRIENDSHIP WSC	1,504	1,665	1,834	2,023	2,226	2,448
TYLER*	968	1,104	1,259	1,440	1,654	1,907
WEST GREGG SUD*	881	1,005	1,146	1,311	1,505	1,736
WINONA	645	737	839	961	1,103	1,273
COUNTY-OTHER*	4,622	5,504	6,444	7,866	9,280	11,067
<b>SABINE BASIN TOTAL</b>	<b>44,540</b>	<b>50,821</b>	<b>57,944</b>	<b>66,275</b>	<b>76,093</b>	<b>87,762</b>
<b>SMITH COUNTY TOTAL</b>	<b>44,540</b>	<b>50,821</b>	<b>57,944</b>	<b>66,275</b>	<b>76,093</b>	<b>87,762</b>
BI COUNTY WSC	331	375	418	467	518	572
CYPRESS SPRINGS SUD	108	122	136	153	169	186
MOUNT PLEASANT	17,512	19,775	22,118	24,689	27,397	30,257
TRI SUD	10,199	11,518	12,883	14,380	15,956	17,623
COUNTY-OTHER	1,142	1,290	1,443	1,611	1,787	1,974
<b>CYPRESS BASIN TOTAL</b>	<b>29,292</b>	<b>33,080</b>	<b>36,998</b>	<b>41,300</b>	<b>45,827</b>	<b>50,612</b>
CYPRESS SPRINGS SUD	173	195	219	244	271	299
TRI SUD	5,303	5,989	6,698	7,477	8,297	9,163
COUNTY-OTHER	1,875	2,117	2,368	2,644	2,935	3,241
<b>SULPHUR BASIN TOTAL</b>	<b>7,351</b>	<b>8,301</b>	<b>9,285</b>	<b>10,365</b>	<b>11,503</b>	<b>12,703</b>
<b>TITUS COUNTY TOTAL</b>	<b>36,643</b>	<b>41,381</b>	<b>46,283</b>	<b>51,665</b>	<b>57,330</b>	<b>63,315</b>
BI COUNTY WSC	3,546	3,830	4,076	4,329	4,559	4,776
DIANA SUD	4,868	5,259	5,596	5,943	6,260	6,557
EAST MOUNTAIN WATER SYSTEM	557	602	640	679	716	750
GILMER	5,695	6,154	6,548	6,953	7,325	7,673
GLENWOOD WSC	2,810	3,036	3,231	3,431	3,614	3,785
ORE CITY	1,298	1,402	1,492	1,585	1,669	1,748
PRITCHETT WSC	2,251	2,433	2,588	2,749	2,896	3,033
SHARON WSC	1,847	1,996	2,124	2,255	2,375	2,488
UNION GROVE WSC	80	86	92	98	103	108
COUNTY-OTHER	5,450	5,887	6,265	6,655	7,011	7,343
<b>CYPRESS BASIN TOTAL</b>	<b>28,402</b>	<b>30,685</b>	<b>32,652</b>	<b>34,677</b>	<b>36,528</b>	<b>38,261</b>
BIG SANDY	1,467	1,585	1,687	1,790	1,887	1,976
EAST MOUNTAIN WATER SYSTEM	1,445	1,560	1,662	1,763	1,858	1,947
FOUKE WSC	88	95	102	108	114	119
GLADEWATER	2,658	2,872	3,056	3,245	3,419	3,581
GLENWOOD WSC	72	78	83	88	93	97
PRITCHETT WSC	5,422	5,859	6,235	6,621	6,974	7,306
UNION GROVE WSC	2,134	2,306	2,453	2,605	2,745	2,874
COUNTY-OTHER	1,008	1,089	1,159	1,231	1,297	1,358
<b>SABINE BASIN TOTAL</b>	<b>14,294</b>	<b>15,444</b>	<b>16,437</b>	<b>17,451</b>	<b>18,387</b>	<b>19,258</b>
<b>UPSHUR COUNTY TOTAL</b>	<b>42,696</b>	<b>46,129</b>	<b>49,089</b>	<b>52,128</b>	<b>54,915</b>	<b>57,519</b>
BEN WHEELER WSC*	2,537	2,783	2,972	3,160	3,316	3,448
BETHEL ASH WSC*	706	924	1,091	1,258	1,395	1,512
EDOM WSC*	1,191	1,303	1,393	1,486	1,604	1,729

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### Region D Water User Group (WUG) Population

	WUG POPULATION					
	2020	2030	2040	2050	2060	2070
LITTLE HOPE MOORE WSC	450	494	527	560	588	612
R P M WSC*	2,065	2,553	2,926	3,296	3,604	3,867
VAN	1,916	2,138	2,308	2,475	2,614	2,733
COUNTY-OTHER	4,856	5,296	5,627	5,932	6,144	6,288
<b>NECHES BASIN TOTAL</b>	<b>13,721</b>	<b>15,491</b>	<b>16,844</b>	<b>18,167</b>	<b>19,265</b>	<b>20,189</b>
ABLES SPRINGS WSC*	33	36	39	41	44	45
CANTON	3,964	4,333	4,616	4,898	5,131	5,329
COMBINED CONSUMERS SUD	1,107	1,214	1,296	1,378	1,447	1,505
EDGEWOOD	1,564	1,683	1,774	1,864	1,939	2,003
FRUITVALE WSC	3,383	3,712	3,964	4,214	4,421	4,599
GOLDEN WSC	680	736	780	823	859	889
GRAND SALINE	3,390	3,532	3,641	3,750	3,839	3,917
LITTLE HOPE MOORE WSC	1,030	1,131	1,207	1,283	1,347	1,400
MACBEE SUD*	2,686	2,948	3,148	3,346	3,511	3,653
MYRTLE SPRINGS WSC	393	431	461	490	514	535
PINE RIDGE WSC	55	61	67	74	81	89
PRUITT SANDFLAT WSC	1,419	1,557	1,663	1,768	1,855	1,930
SOUTH TAWAKONI WSC	4,669	5,309	5,796	6,281	6,683	7,028
VAN	1,063	1,186	1,280	1,373	1,451	1,517
WILLS POINT	1,731	1,749	1,762	1,774	1,785	1,795
COUNTY-OTHER	4,423	4,823	5,126	5,404	5,597	5,728
<b>SABINE BASIN TOTAL</b>	<b>31,590</b>	<b>34,441</b>	<b>36,620</b>	<b>38,761</b>	<b>40,504</b>	<b>41,962</b>
BETHEL ASH WSC*	199	261	308	355	393	426
CANTON	17	19	20	21	22	23
MABANK*	243	271	299	391	546	761
MACBEE SUD*	4,382	4,809	5,135	5,460	5,729	5,959
MYRTLE SPRINGS WSC	1,223	1,343	1,433	1,524	1,599	1,663
WILLS POINT	2,607	2,633	2,653	2,673	2,689	2,703
COUNTY-OTHER	4,473	4,878	5,184	5,465	5,660	5,792
<b>TRINITY BASIN TOTAL</b>	<b>13,144</b>	<b>14,214</b>	<b>15,032</b>	<b>15,889</b>	<b>16,638</b>	<b>17,327</b>
<b>VAN ZANDT COUNTY TOTAL</b>	<b>58,455</b>	<b>64,146</b>	<b>68,496</b>	<b>72,817</b>	<b>76,407</b>	<b>79,478</b>
CYPRESS SPRINGS SUD	438	456	463	475	480	485
SHARON WSC	1,266	1,319	1,340	1,373	1,389	1,400
WINNSBORO	1,135	1,182	1,201	1,231	1,245	1,255
COUNTY-OTHER	774	773	741	714	668	611
<b>CYPRESS BASIN TOTAL</b>	<b>3,613</b>	<b>3,730</b>	<b>3,745</b>	<b>3,793</b>	<b>3,782</b>	<b>3,751</b>
ALGONQUIN WATER RESOURCES OF TEXAS*	1,589	1,765	1,947	2,147	2,360	2,589
BRIGHT STAR SALEM SUD	1,881	1,960	1,991	2,040	2,065	2,080
CORNERSVILLE WSC	190	204	218	233	248	262
FOUKE WSC	6,564	6,837	6,949	7,119	7,203	7,260
GOLDEN WSC	2,603	2,711	2,754	2,822	2,855	2,879
HAWKINS	1,416	1,476	1,499	1,535	1,554	1,566
JONES WSC	4,367	4,550	4,623	4,736	4,792	4,831
LAKE FORK WSC	2,194	2,291	2,336	2,400	2,438	2,468
MINEOLA	5,356	5,581	5,671	5,809	5,878	5,925
NEW HOPE SUD	2,535	2,640	2,682	2,749	2,781	2,804
PRITCHETT WSC	84	88	89	91	92	93
QUITMAN	2,046	2,132	2,166	2,220	2,247	2,264

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### Region D Water User Group (WUG) Population

	WUG POPULATION					
	2020	2030	2040	2050	2060	2070
RAMEY WSC	3,687	3,841	3,903	3,999	4,046	4,079
SHARON WSC	2,594	2,703	2,745	2,813	2,847	2,870
SHIRLEY WSC	125	134	140	145	152	156
WINNSBORO	1,804	1,879	1,910	1,956	1,979	1,996
COUNTY-OTHER	2,214	2,213	2,120	2,044	1,910	1,749
<b>SABINE BASIN TOTAL</b>	<b>41,249</b>	<b>43,005</b>	<b>43,743</b>	<b>44,858</b>	<b>45,447</b>	<b>45,871</b>
<b>WOOD COUNTY TOTAL</b>	<b>44,862</b>	<b>46,735</b>	<b>47,488</b>	<b>48,651</b>	<b>49,229</b>	<b>49,622</b>
<b>REGION D POPULATION TOTAL</b>	<b>831,469</b>	<b>907,531</b>	<b>988,859</b>	<b>1,089,197</b>	<b>1,211,979</b>	<b>1,370,438</b>

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### Region D Water User Group (WUG) Demand

	WUG DEMAND (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
BURNS REDBANK WSC	201	199	196	194	193	193
CENTRAL BOWIE COUNTY WSC	88	91	101	112	124	137
DE KALB	45	44	44	44	45	45
HOOKS	281	278	276	271	269	269
NEW BOSTON	409	411	407	406	405	405
RIVERBEND WATER RESOURCES DISTRICT	90	92	92	92	92	92
TEXARKANA	843	859	880	909	947	989
COUNTY-OTHER	567	460	288	287	286	286
MANUFACTURING	4	5	5	5	5	5
LIVESTOCK	687	687	624	535	458	427
IRRIGATION	6,070	6,070	6,070	6,070	6,070	6,070
<b>RED BASIN TOTAL</b>	<b>9,285</b>	<b>9,196</b>	<b>8,983</b>	<b>8,925</b>	<b>8,894</b>	<b>8,918</b>
CENTRAL BOWIE COUNTY WSC	531	548	607	672	745	825
DE KALB	250	248	245	247	249	253
MACEDONIA EYLAU MUD 1	588	598	601	601	601	601
MAUD	211	226	241	238	237	237
NASH	392	458	523	589	589	589
NEW BOSTON	981	988	978	975	974	974
REDWATER	506	553	601	654	682	682
RIVERBEND WATER RESOURCES DISTRICT	433	444	447	445	445	445
TEXARKANA	6,302	6,423	6,579	6,797	7,081	7,391
WAKE VILLAGE	699	750	802	861	932	931
COUNTY-OTHER	1,017	826	518	516	514	514
MANUFACTURING	1,607	2,042	2,042	2,042	2,042	2,042
LIVESTOCK	1,138	1,138	1,033	886	759	709
IRRIGATION	4,303	4,303	4,303	4,303	4,303	4,303
<b>SULPHUR BASIN TOTAL</b>	<b>18,958</b>	<b>19,545</b>	<b>19,520</b>	<b>19,826</b>	<b>20,153</b>	<b>20,496</b>
<b>BOWIE COUNTY TOTAL</b>	<b>28,243</b>	<b>28,741</b>	<b>28,503</b>	<b>28,751</b>	<b>29,047</b>	<b>29,414</b>
BI COUNTY WSC	648	751	830	933	1,035	1,136
PITTSBURG	832	851	864	891	922	955
COUNTY-OTHER	173	161	152	140	130	120
MANUFACTURING	35	52	52	52	52	52
MINING	12	11	10	9	8	7
LIVESTOCK	4,914	4,914	4,914	4,914	4,914	4,914
<b>CYPRESS BASIN TOTAL</b>	<b>6,614</b>	<b>6,740</b>	<b>6,822</b>	<b>6,939</b>	<b>7,061</b>	<b>7,184</b>
<b>CAMP COUNTY TOTAL</b>	<b>6,614</b>	<b>6,740</b>	<b>6,822</b>	<b>6,939</b>	<b>7,061</b>	<b>7,184</b>
ATLANTA	1,016	1,074	1,134	1,208	1,205	1,205
E M C WSC	53	53	53	53	53	53
EASTERN CASS WSC	152	147	142	139	138	138
HOLLY SPRINGS WSC	107	103	99	97	97	97
HUGHES SPRINGS	278	267	257	255	254	254
LINDEN	301	292	285	284	283	283
MIMS WSC	19	19	19	19	19	19
QUEEN CITY	161	157	152	152	152	152
WESTERN CASS WSC	172	165	159	157	156	156
COUNTY-OTHER	796	729	664	623	620	620
MANUFACTURING	244	245	245	245	245	245
MINING	39	58	60	45	30	20

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### Region D Water User Group (WUG) Demand

	WUG DEMAND (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
LIVESTOCK	1,349	1,349	1,349	1,349	1,349	1,349
<b>CYPRESS BASIN TOTAL</b>	<b>4,687</b>	<b>4,658</b>	<b>4,618</b>	<b>4,626</b>	<b>4,601</b>	<b>4,591</b>
ATLANTA	1	1	1	1	1	1
EASTERN CASS WSC	12	11	11	11	11	11
QUEEN CITY	97	94	92	91	91	91
WESTERN CASS WSC	46	44	42	42	42	42
COUNTY-OTHER	291	266	243	227	226	226
MANUFACTURING	32,479	32,554	32,554	32,554	32,554	32,554
LIVESTOCK	1,308	1,308	1,308	1,308	1,308	1,308
<b>SULPHUR BASIN TOTAL</b>	<b>34,234</b>	<b>34,278</b>	<b>34,251</b>	<b>34,234</b>	<b>34,233</b>	<b>34,233</b>
<b>CASS COUNTY TOTAL</b>	<b>38,921</b>	<b>38,936</b>	<b>38,869</b>	<b>38,860</b>	<b>38,834</b>	<b>38,824</b>
COOPER	446	440	431	430	429	429
DELTA COUNTY MUD*	126	122	123	124	128	132
NORTH HUNT SUD*	19	19	19	19	19	19
COUNTY-OTHER	82	83	82	80	76	73
LIVESTOCK	541	541	541	541	541	541
IRRIGATION	2,396	2,396	2,396	2,396	2,396	2,396
<b>SULPHUR BASIN TOTAL</b>	<b>3,610</b>	<b>3,601</b>	<b>3,592</b>	<b>3,590</b>	<b>3,589</b>	<b>3,590</b>
<b>DELTA COUNTY TOTAL</b>	<b>3,610</b>	<b>3,601</b>	<b>3,592</b>	<b>3,590</b>	<b>3,589</b>	<b>3,590</b>
CYPRESS SPRINGS SUD	382	382	379	382	387	392
WINNSBORO	139	142	142	145	147	149
COUNTY-OTHER	68	70	71	73	74	75
MANUFACTURING	5	7	7	7	7	7
LIVESTOCK	1,139	1,139	1,139	1,139	1,139	1,139
IRRIGATION	34	34	34	34	34	34
<b>CYPRESS BASIN TOTAL</b>	<b>1,767</b>	<b>1,774</b>	<b>1,772</b>	<b>1,780</b>	<b>1,788</b>	<b>1,796</b>
IRRIGATION	35	35	35	35	35	35
<b>SABINE BASIN TOTAL</b>	<b>35</b>	<b>35</b>	<b>35</b>	<b>35</b>	<b>35</b>	<b>35</b>
CYPRESS SPRINGS SUD	248	248	246	247	250	254
MOUNT VERNON	564	577	582	591	600	609
COUNTY-OTHER	30	31	32	32	33	34
MINING	5	5	4	4	3	2
LIVESTOCK	1,711	1,711	1,711	1,711	1,711	1,711
IRRIGATION	34	34	34	34	34	34
<b>SULPHUR BASIN TOTAL</b>	<b>2,592</b>	<b>2,606</b>	<b>2,609</b>	<b>2,619</b>	<b>2,631</b>	<b>2,644</b>
<b>FRANKLIN COUNTY TOTAL</b>	<b>4,394</b>	<b>4,415</b>	<b>4,416</b>	<b>4,434</b>	<b>4,454</b>	<b>4,475</b>
GLENWOOD WSC	20	20	21	22	23	24
TRYON ROAD SUD	668	709	761	829	913	1,009
COUNTY-OTHER	30	31	33	37	41	45
MINING	14	22	22	17	13	9
LIVESTOCK	11	11	11	11	11	11
<b>CYPRESS BASIN TOTAL</b>	<b>743</b>	<b>793</b>	<b>848</b>	<b>916</b>	<b>1,001</b>	<b>1,098</b>
CLARKSVILLE CITY	100	105	112	121	133	147
CROSS ROADS SUD*	33	34	36	39	43	47
ELDERVILLE WSC*	325	357	393	432	476	524
GLADEWATER	731	778	838	913	1,006	1,113
KILGORE*	2,336	2,505	2,713	2,967	3,271	3,618
LIBERTY CITY WSC	487	510	543	589	648	716

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### Region D Water User Group (WUG) Demand

	WUG DEMAND (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
LONGVIEW	23,716	25,539	27,736	30,380	33,500	37,060
STARRVILLE-FRIENDSHIP WSC	72	77	83	90	99	109
TRYON ROAD SUD	49	52	56	61	68	75
WEST GREGG SUD*	307	320	340	368	405	447
WHITE OAK	1,347	1,441	1,558	1,703	1,876	2,076
COUNTY-OTHER	565	590	630	693	767	855
MANUFACTURING	1,233	1,517	1,517	1,517	1,517	1,517
MINING	260	411	407	320	233	171
STEAM ELECTRIC POWER	940	940	940	940	940	940
LIVESTOCK	199	199	199	199	199	199
IRRIGATION	40	40	40	40	40	40
<b>SABINE BASIN TOTAL</b>	<b>32,740</b>	<b>35,415</b>	<b>38,141</b>	<b>41,372</b>	<b>45,221</b>	<b>49,654</b>
<b>GREGG COUNTY TOTAL</b>	<b>33,483</b>	<b>36,208</b>	<b>38,989</b>	<b>42,288</b>	<b>46,222</b>	<b>50,752</b>
BLOCKER CROSSROADS WSC	13	13	14	15	16	17
DIANA SUD	31	32	33	35	38	42
GUM SPRINGS WSC	207	211	218	234	254	280
HARLETON WSC	345	354	367	394	429	472
LEIGH WSC	337	355	374	406	443	487
MARSHALL	879	921	968	1,049	1,144	1,258
NORTH HARRISON WSC	141	145	150	161	176	193
PANOLA-BETHANY WSC*	28	32	38	48	54	60
SCOTTSVILLE	81	85	90	97	106	117
TALLEY WSC	56	56	58	63	68	75
TRYON ROAD SUD	127	133	139	150	164	180
WASKOM	435	453	475	512	559	614
WEST HARRISON WSC	31	32	33	35	38	42
COUNTY-OTHER	908	928	949	999	1,080	1,186
MANUFACTURING	14	16	16	16	16	16
MINING	525	437	366	297	229	180
LIVESTOCK	382	402	422	442	464	489
IRRIGATION	419	419	419	419	419	419
<b>CYPRESS BASIN TOTAL</b>	<b>4,959</b>	<b>5,024</b>	<b>5,129</b>	<b>5,372</b>	<b>5,697</b>	<b>6,127</b>
BLOCKER CROSSROADS WSC	120	123	126	135	147	162
GILL WSC*	187	191	198	215	234	258
GUM SPRINGS WSC	563	576	595	637	693	761
HALLSVILLE	545	569	597	645	703	773
LEIGH WSC	74	78	82	89	97	107
LONGVIEW	552	583	617	671	732	805
MARSHALL	4,115	4,311	4,531	4,910	5,356	5,890
PANOLA-BETHANY WSC*	253	288	345	430	489	542
SCOTTSVILLE	166	175	184	201	219	240
TALLEY WSC	42	42	43	47	52	57
WEST HARRISON WSC	97	99	103	111	121	132
COUNTY-OTHER	530	542	553	583	630	692
MANUFACTURING	24,722	27,924	27,924	27,924	27,924	27,924
MINING	1,973	1,640	1,374	1,115	859	675
STEAM ELECTRIC POWER	21,112	21,112	21,112	21,112	21,112	21,112

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### Region D Water User Group (WUG) Demand

	WUG DEMAND (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
LIVESTOCK	254	267	280	294	309	326
IRRIGATION	282	282	282	282	282	282
<b>SABINE BASIN TOTAL</b>	<b>55,587</b>	<b>58,802</b>	<b>58,946</b>	<b>59,401</b>	<b>59,959</b>	<b>60,738</b>
<b>HARRISON COUNTY TOTAL</b>	<b>60,546</b>	<b>63,826</b>	<b>64,075</b>	<b>64,773</b>	<b>65,656</b>	<b>66,865</b>
CORNERSVILLE WSC	49	53	55	57	61	64
CYPRESS SPRINGS SUD	32	31	30	29	29	29
COUNTY-OTHER	3	2	2	2	2	2
MINING	31	34	37	40	43	47
LIVESTOCK	121	121	121	121	121	121
IRRIGATION	1	1	1	1	1	1
<b>CYPRESS BASIN TOTAL</b>	<b>237</b>	<b>242</b>	<b>246</b>	<b>250</b>	<b>257</b>	<b>264</b>
BRASHEAR WSC	67	70	74	77	82	87
CASH SUD*	12	12	13	13	14	15
CORNERSVILLE WSC	47	50	52	55	57	61
CUMBY	122	136	150	163	180	190
JONES WSC	14	16	18	20	22	25
LAKE FORK WSC	16	16	15	15	15	16
MARTIN SPRINGS WSC	360	405	449	490	544	592
MILLER GROVE WSC	171	178	184	188	198	208
SHADY GROVE NO 2 WSC	48	50	53	55	59	62
SHIRLEY WSC	218	226	232	236	247	253
SULPHUR SPRINGS	10	10	10	11	11	11
COUNTY-OTHER	111	90	76	83	73	77
MINING	320	349	379	412	449	489
LIVESTOCK	1,490	1,490	1,490	1,490	1,490	1,490
IRRIGATION	16	16	16	16	16	16
<b>SABINE BASIN TOTAL</b>	<b>3,022</b>	<b>3,114</b>	<b>3,211</b>	<b>3,324</b>	<b>3,457</b>	<b>3,592</b>
BRASHEAR WSC	81	85	89	93	99	105
BRINKER WSC	253	281	307	341	377	413
CUMBY	11	13	14	15	17	18
CYPRESS SPRINGS SUD	64	62	60	59	59	58
GAFFORD CHAPEL WSC	109	111	115	121	128	135
MARTIN SPRINGS WSC	64	73	80	88	98	106
NORTH HOPKINS WSC	474	494	514	554	598	645
SHADY GROVE NO 2 WSC	59	62	65	68	72	76
SULPHUR SPRINGS	3,108	3,189	3,268	3,392	3,536	3,686
COUNTY-OTHER	63	51	43	48	42	44
MANUFACTURING	944	968	968	968	968	968
MINING	680	741	806	877	954	1,041
LIVESTOCK	3,887	3,887	3,887	3,887	3,887	3,887
IRRIGATION	4,752	4,752	4,752	4,752	4,752	4,752
<b>SULPHUR BASIN TOTAL</b>	<b>14,549</b>	<b>14,769</b>	<b>14,968</b>	<b>15,263</b>	<b>15,587</b>	<b>15,934</b>
<b>HOPKINS COUNTY TOTAL</b>	<b>17,808</b>	<b>18,125</b>	<b>18,425</b>	<b>18,837</b>	<b>19,301</b>	<b>19,790</b>
ABLES SPRINGS WSC*	58	89	131	189	272	392
B H P WSC*	330	386	471	602	795	1,074
BLACKLAND WSC*	9	9	8	8	8	8
CADDO BASIN SUD*	870	1,105	1,438	1,914	2,607	3,617

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### Region D Water User Group (WUG) Demand

	WUG DEMAND (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
CADDO MILLS	152	187	237	310	417	573
CASH SUD*	2,090	2,429	2,861	3,403	4,072	4,881
CELESTE	124	147	181	231	304	411
COMBINED CONSUMERS SUD	502	589	718	911	1,197	1,615
GREENVILLE	9,271	10,481	12,187	14,624	18,163	23,319
HICKORY CREEK SUD*	209	293	410	576	814	1,162
JOSEPHINE*	39	68	108	164	164	164
MACBEE SUD*	23	29	37	47	62	84
POETRY WSC*	253	309	382	488	653	878
QUINLAN	134	133	134	140	154	174
ROYSE CITY*	43	52	65	83	110	149
SHADY GROVE WSC	139	164	202	257	338	457
WEST TAWAKONI	276	309	360	436	549	714
COUNTY-OTHER	723	1,212	1,947	2,552	3,873	6,258
MANUFACTURING	404	490	490	490	490	490
MINING	90	83	62	50	41	33
STEAM ELECTRIC POWER	373	373	373	373	373	373
LIVESTOCK	771	771	771	771	771	771
IRRIGATION	264	264	264	264	264	264
<b>SABINE BASIN TOTAL</b>	<b>17,147</b>	<b>19,972</b>	<b>23,837</b>	<b>28,883</b>	<b>36,491</b>	<b>47,861</b>
CASH SUD*	30	35	41	48	58	69
COMMERCE	1,427	1,555	1,749	2,039	2,473	3,108
DELTA COUNTY MUD*	1	1	1	1	1	1
HICKORY CREEK SUD*	145	203	285	399	565	806
NORTH HUNT SUD*	237	309	408	544	738	1,019
TEXAS A&M UNIVERSITY COMMERCE	156	152	150	149	148	148
WOLFE CITY*	169	199	243	311	409	552
COUNTY-OTHER	47	80	128	168	255	411
MANUFACTURING	151	182	182	182	182	182
MINING	35	32	24	19	16	13
LIVESTOCK	288	288	288	288	288	288
IRRIGATION	79	79	79	79	79	79
<b>SULPHUR BASIN TOTAL</b>	<b>2,765</b>	<b>3,115</b>	<b>3,578</b>	<b>4,227</b>	<b>5,212</b>	<b>6,676</b>
FROGNOT WSC*	3	3	4	5	5	6
HICKORY CREEK SUD*	71	100	140	197	279	397
WEST LEONARD WSC*	7	7	9	11	16	21
COUNTY-OTHER	20	34	55	72	110	177
MINING	3	3	2	2	1	1
LIVESTOCK	36	36	36	36	36	36
IRRIGATION	12	12	12	12	12	12
<b>TRINITY BASIN TOTAL</b>	<b>152</b>	<b>195</b>	<b>258</b>	<b>335</b>	<b>459</b>	<b>650</b>
<b>HUNT COUNTY TOTAL</b>	<b>20,064</b>	<b>23,282</b>	<b>27,673</b>	<b>33,445</b>	<b>42,162</b>	<b>55,187</b>
LAMAR COUNTY WSD	1,556	1,572	1,582	1,601	1,626	1,650
PARIS	1,179	1,172	1,163	1,169	1,187	1,204
RENO (Lamar)	72	73	74	75	76	78
COUNTY-OTHER	125	127	130	133	135	137
MANUFACTURING	309	316	316	316	316	316
STEAM ELECTRIC POWER	420	420	420	420	420	420

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### Region D Water User Group (WUG) Demand

	WUG DEMAND (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
LIVESTOCK	617	617	617	617	617	617
IRRIGATION	7,608	7,608	7,608	7,608	7,608	7,608
<b>RED BASIN TOTAL</b>	<b>11,886</b>	<b>11,905</b>	<b>11,910</b>	<b>11,939</b>	<b>11,985</b>	<b>12,030</b>
BLOSSOM	136	134	131	131	133	135
LAMAR COUNTY WSD	660	666	670	679	690	699
PARIS	1,880	1,870	1,854	1,864	1,892	1,919
RENO (Lamar)	476	483	488	495	503	510
COUNTY-OTHER	354	358	368	375	381	387
MANUFACTURING	4,717	4,821	4,821	4,821	4,821	4,821
STEAM ELECTRIC POWER	5,091	5,091	5,091	5,091	5,091	5,091
LIVESTOCK	852	852	852	852	852	852
IRRIGATION	2,518	2,518	2,518	2,518	2,518	2,518
<b>SULPHUR BASIN TOTAL</b>	<b>16,684</b>	<b>16,793</b>	<b>16,793</b>	<b>16,826</b>	<b>16,881</b>	<b>16,932</b>
<b>LAMAR COUNTY TOTAL</b>	<b>28,570</b>	<b>28,698</b>	<b>28,703</b>	<b>28,765</b>	<b>28,866</b>	<b>28,962</b>
DIANA SUD	33	32	31	30	30	30
E M C WSC	162	162	162	162	162	162
HARLETON WSC	113	116	120	129	140	154
JEFFERSON	426	415	406	401	400	400
KELLYVILLE-BEREA WSC	107	101	96	94	94	94
MIMS WSC	109	109	109	109	109	109
COUNTY-OTHER	99	94	88	80	71	61
MINING	489	764	712	595	478	393
STEAM ELECTRIC POWER	4,257	4,257	4,257	4,257	4,257	4,257
LIVESTOCK	188	188	188	188	188	188
IRRIGATION	12	12	12	12	12	12
<b>CYPRESS BASIN TOTAL</b>	<b>5,995</b>	<b>6,250</b>	<b>6,181</b>	<b>6,057</b>	<b>5,941</b>	<b>5,860</b>
<b>MARION COUNTY TOTAL</b>	<b>5,995</b>	<b>6,250</b>	<b>6,181</b>	<b>6,057</b>	<b>5,941</b>	<b>5,860</b>
BI COUNTY WSC	121	119	118	120	123	125
DAINGERFIELD	465	460	459	468	477	488
HOLLY SPRINGS WSC	58	56	53	53	53	53
HUGHES SPRINGS	1	1	1	1	1	1
LONE STAR	189	184	181	184	187	191
NAPLES	70	69	67	69	70	71
OMAHA	127	125	125	127	130	133
TRI SUD	181	177	176	179	183	186
COUNTY-OTHER	253	248	246	254	260	267
MANUFACTURING	25,738	25,743	25,743	25,743	25,743	25,743
STEAM ELECTRIC POWER	50	50	50	50	50	50
LIVESTOCK	836	836	836	836	836	836
IRRIGATION	3	3	3	3	3	3
<b>CYPRESS BASIN TOTAL</b>	<b>28,092</b>	<b>28,071</b>	<b>28,058</b>	<b>28,087</b>	<b>28,116</b>	<b>28,147</b>
NAPLES	85	83	82	83	85	87
OMAHA	86	86	86	87	89	91
COUNTY-OTHER	99	97	96	99	102	104
LIVESTOCK	769	769	769	769	769	769
IRRIGATION	8	8	8	8	8	8
<b>SULPHUR BASIN TOTAL</b>	<b>1,047</b>	<b>1,043</b>	<b>1,041</b>	<b>1,046</b>	<b>1,053</b>	<b>1,059</b>
<b>MORRIS COUNTY TOTAL</b>	<b>29,139</b>	<b>29,114</b>	<b>29,099</b>	<b>29,133</b>	<b>29,169</b>	<b>29,206</b>

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### Region D Water User Group (WUG) Demand

	WUG DEMAND (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
BRIGHT STAR SALEM SUD	203	202	195	195	195	196
CASH SUD*	81	84	83	84	84	84
EAST TAWAKONI	237	246	247	247	248	248
EMORY	791	829	837	842	845	847
GOLDEN WSC	4	4	4	4	4	4
MILLER GROVE WSC	29	30	31	33	34	36
POINT	364	379	380	381	383	383
SHIRLEY WSC	101	104	107	109	114	117
SOUTH RAINS SUD	190	192	188	187	187	188
COUNTY-OTHER	74	75	71	69	64	61
MANUFACTURING	12	12	12	12	12	12
LIVESTOCK	428	428	428	428	428	428
IRRIGATION	65	65	65	65	65	65
<b>SABINE BASIN TOTAL</b>	<b>2,579</b>	<b>2,650</b>	<b>2,648</b>	<b>2,656</b>	<b>2,663</b>	<b>2,669</b>
<b>RAINS COUNTY TOTAL</b>	<b>2,579</b>	<b>2,650</b>	<b>2,648</b>	<b>2,656</b>	<b>2,663</b>	<b>2,669</b>
410 WSC	67	66	64	64	63	63
RED RIVER COUNTY WSC	117	116	117	119	120	125
COUNTY-OTHER	67	45	26	20	16	3
LIVESTOCK	762	762	762	762	762	762
IRRIGATION	1,279	1,279	1,279	1,279	1,279	1,279
<b>RED BASIN TOTAL</b>	<b>2,292</b>	<b>2,268</b>	<b>2,248</b>	<b>2,244</b>	<b>2,240</b>	<b>2,232</b>
410 WSC	157	152	149	148	148	148
BOGATA	123	116	113	112	112	112
CLARKSVILLE	620	602	593	592	590	590
RED RIVER COUNTY WSC	323	322	324	330	334	346
COUNTY-OTHER	92	63	37	28	23	5
MANUFACTURING	3	3	3	3	3	3
MINING	4	4	3	3	3	3
LIVESTOCK	770	770	770	770	770	770
IRRIGATION	2,588	2,588	2,588	2,588	2,588	2,588
<b>SULPHUR BASIN TOTAL</b>	<b>4,680</b>	<b>4,620</b>	<b>4,580</b>	<b>4,574</b>	<b>4,571</b>	<b>4,565</b>
<b>RED RIVER COUNTY TOTAL</b>	<b>6,972</b>	<b>6,888</b>	<b>6,828</b>	<b>6,818</b>	<b>6,811</b>	<b>6,797</b>
CARROLL WSC*	37	40	43	47	52	57
CRYSTAL SYSTEMS TEXAS*	945	1,045	1,175	1,331	1,522	1,757
JACKSON WSC*	205	222	244	274	314	361
LIBERTY CITY WSC	13	14	15	17	20	23
LINDALE RURAL WSC*	532	576	635	675	772	888
LINDALE*	841	1,005	1,195	1,347	1,604	1,910
OVERTON*	15	17	19	22	25	29
PINE RIDGE WSC	149	160	172	188	206	226
SAND FLAT WSC	243	255	281	310	341	374
SMITH COUNTY MUD 1	910	1,030	1,169	1,334	1,531	1,765
SOUTHERN UTILITIES*	1,964	2,152	2,395	2,799	3,209	3,700
STAR MOUNTAIN WSC	233	252	274	300	329	361
STARRVILLE-FRIENDSHIP WSC	176	187	202	220	241	265
TYLER*	185	206	232	263	301	347
WEST GREGG SUD*	76	83	91	103	117	135

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### Region D Water User Group (WUG) Demand

	WUG DEMAND (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
WINONA	133	149	166	189	217	250
COUNTY-OTHER*	544	627	718	868	1,021	1,216
MANUFACTURING*	4	5	5	5	5	5
MINING*	287	309	341	394	438	497
LIVESTOCK*	514	514	514	514	514	514
IRRIGATION*	324	324	324	324	324	324
<b>SABINE BASIN TOTAL</b>	<b>8,330</b>	<b>9,172</b>	<b>10,210</b>	<b>11,524</b>	<b>13,103</b>	<b>15,004</b>
<b>SMITH COUNTY TOTAL</b>	<b>8,330</b>	<b>9,172</b>	<b>10,210</b>	<b>11,524</b>	<b>13,103</b>	<b>15,004</b>
BI COUNTY WSC	34	37	41	45	50	55
CYPRESS SPRINGS SUD	10	10	12	13	14	15
MOUNT PLEASANT	3,890	4,302	4,745	5,260	5,828	6,433
TRI SUD	1,013	1,102	1,203	1,325	1,465	1,616
COUNTY-OTHER	179	197	220	245	271	299
MANUFACTURING	4,063	4,155	4,155	4,155	4,155	4,155
MINING	1,512	1,632	1,756	1,890	2,038	2,200
STEAM ELECTRIC POWER	61,931	61,931	61,931	61,931	61,931	61,931
LIVESTOCK	1,356	1,356	1,356	1,356	1,356	1,356
IRRIGATION	110	110	110	110	110	110
<b>CYPRESS BASIN TOTAL</b>	<b>74,098</b>	<b>74,832</b>	<b>75,529</b>	<b>76,330</b>	<b>77,218</b>	<b>78,170</b>
CYPRESS SPRINGS SUD	15	17	18	20	22	25
TRI SUD	526	573	625	689	762	841
COUNTY-OTHER	295	323	360	401	445	491
MINING	132	143	153	165	178	192
LIVESTOCK	1,591	1,591	1,591	1,591	1,591	1,591
IRRIGATION	943	943	943	943	943	943
<b>SULPHUR BASIN TOTAL</b>	<b>3,502</b>	<b>3,590</b>	<b>3,690</b>	<b>3,809</b>	<b>3,941</b>	<b>4,083</b>
<b>TITUS COUNTY TOTAL</b>	<b>77,600</b>	<b>78,422</b>	<b>79,219</b>	<b>80,139</b>	<b>81,159</b>	<b>82,253</b>
BI COUNTY WSC	367	382	397	417	437	458
DIANA SUD	422	435	447	466	488	511
EAST MOUNTAIN WATER SYSTEM	67	70	72	75	79	83
GILMER	1,123	1,184	1,237	1,301	1,368	1,432
GLENWOOD WSC	280	290	297	311	327	341
ORE CITY	155	160	166	173	182	190
PRITCHETT WSC	199	204	208	217	227	238
SHARON WSC	147	149	150	158	166	174
UNION GROVE WSC	6	6	6	7	7	7
COUNTY-OTHER	620	646	668	699	734	769
MANUFACTURING	69	76	76	76	76	76
MINING	299	573	608	480	355	263
LIVESTOCK	1,222	1,222	1,222	1,222	1,222	1,222
IRRIGATION	170	170	170	170	170	170
<b>CYPRESS BASIN TOTAL</b>	<b>5,146</b>	<b>5,567</b>	<b>5,724</b>	<b>5,772</b>	<b>5,838</b>	<b>5,934</b>
BIG SANDY	224	234	244	255	269	281
EAST MOUNTAIN WATER SYSTEM	173	180	187	196	206	215
FOUKE WSC	10	10	11	11	12	12
GLADEWATER	444	466	486	510	537	562
GLENWOOD WSC	7	7	8	8	8	9

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### Region D Water User Group (WUG) Demand

	WUG DEMAND (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
PRITCHETT WSC	478	490	502	521	547	572
UNION GROVE WSC	151	155	165	175	184	193
COUNTY-OTHER	115	119	123	129	136	142
MINING	80	153	163	129	95	70
LIVESTOCK	429	429	429	429	429	429
<b>SABINE BASIN TOTAL</b>	<b>2,111</b>	<b>2,243</b>	<b>2,318</b>	<b>2,363</b>	<b>2,423</b>	<b>2,485</b>
<b>UPSHUR COUNTY TOTAL</b>	<b>7,257</b>	<b>7,810</b>	<b>8,042</b>	<b>8,135</b>	<b>8,261</b>	<b>8,419</b>
BEN WHEELER WSC*	214	223	230	240	250	260
BETHEL ASH WSC*	72	90	105	119	132	143
EDOM WSC*	130	137	142	150	161	173
LITTLE HOPE MOORE WSC	45	47	49	51	54	55
R P M WSC*	225	268	301	336	366	393
VAN	237	255	269	286	301	315
COUNTY-OTHER	502	527	546	568	586	600
MINING	81	86	97	107	116	127
LIVESTOCK	1,015	1,015	1,015	1,015	1,015	1,015
IRRIGATION	500	500	500	500	500	500
<b>NECHES BASIN TOTAL</b>	<b>3,021</b>	<b>3,148</b>	<b>3,254</b>	<b>3,372</b>	<b>3,481</b>	<b>3,581</b>
ABLES SPRINGS WSC*	2	2	3	3	3	3
CANTON	961	1,032	1,084	1,143	1,196	1,242
COMBINED CONSUMERS SUD	92	95	98	102	107	111
EDGEWOOD	272	285	295	307	318	329
FRUITVALE WSC	305	318	329	343	359	373
GOLDEN WSC	55	56	57	58	61	63
GRAND SALINE	387	388	387	392	400	408
LITTLE HOPE MOORE WSC	102	108	111	117	122	127
MACBEE SUD*	181	198	212	225	236	245
MYRTLE SPRINGS WSC	29	30	31	33	35	36
PINE RIDGE WSC	6	7	7	8	9	10
PRUITT SANDFLAT WSC	156	164	171	179	187	195
SOUTH TAWAKONI WSC	438	472	498	530	562	590
VAN	132	142	150	158	167	174
WILLS POINT	300	296	292	290	291	293
COUNTY-OTHER	457	480	498	517	534	546
MANUFACTURING	503	753	753	753	753	753
MINING	141	150	168	186	202	221
LIVESTOCK	661	661	661	661	661	661
<b>SABINE BASIN TOTAL</b>	<b>5,180</b>	<b>5,637</b>	<b>5,805</b>	<b>6,005</b>	<b>6,203</b>	<b>6,380</b>
BETHEL ASH WSC*	20	26	29	34	37	40
CANTON	4	4	5	5	5	5
MABANK*	48	53	58	75	104	145
MACBEE SUD*	294	323	345	367	385	401
MYRTLE SPRINGS WSC	89	93	96	102	107	112
WILLS POINT	453	445	439	437	439	441
COUNTY-OTHER	462	486	503	523	540	552
MANUFACTURING	3	4	4	4	4	4
MINING	78	83	93	103	112	122

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### Region D Water User Group (WUG) Demand

	WUG DEMAND (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
LIVESTOCK	213	213	213	213	213	213
<b>TRINITY BASIN TOTAL</b>	<b>1,664</b>	<b>1,730</b>	<b>1,785</b>	<b>1,863</b>	<b>1,946</b>	<b>2,035</b>
<b>VAN ZANDT COUNTY TOTAL</b>	<b>9,865</b>	<b>10,515</b>	<b>10,844</b>	<b>11,240</b>	<b>11,630</b>	<b>11,996</b>
CYPRESS SPRINGS SUD	40	39	39	39	39	40
SHARON WSC	101	98	94	96	97	98
WINNSBORO	212	215	214	217	220	221
COUNTY-OTHER	75	74	70	67	63	58
MINING	2	2	2	2	2	2
LIVESTOCK	483	483	483	483	483	483
IRRIGATION	36	36	36	36	36	36
<b>CYPRESS BASIN TOTAL</b>	<b>949</b>	<b>947</b>	<b>938</b>	<b>940</b>	<b>940</b>	<b>938</b>
ALGONQUIN WATER RESOURCES OF TEXAS*	107	119	131	144	159	174
BRIGHT STAR SALEM SUD	151	148	142	145	146	147
CORNERSVILLE WSC	25	26	27	29	30	32
FOUKE WSC	717	723	718	725	731	737
GOLDEN WSC	209	206	200	200	202	203
HAWKINS	362	370	370	377	381	384
JONES WSC	393	388	378	378	381	384
LAKE FORK WSC	218	218	214	216	219	222
MINEOLA	847	857	850	860	868	875
NEW HOPE SUD	329	332	329	333	336	339
PRITCHETT WSC	7	7	7	7	7	7
QUITMAN	316	319	317	321	324	326
RAMEY WSC	278	273	265	269	272	274
SHARON WSC	206	202	194	198	199	200
SHIRLEY WSC	17	17	18	18	19	20
WINNSBORO	336	342	341	346	349	352
COUNTY-OTHER	213	210	201	193	180	164
MANUFACTURING	2,532	3,085	3,085	3,085	3,085	3,085
MINING	23	23	21	19	18	17
LIVESTOCK	2,741	2,741	2,741	2,741	2,741	2,741
IRRIGATION	453	453	453	453	453	453
<b>SABINE BASIN TOTAL</b>	<b>10,480</b>	<b>11,059</b>	<b>11,002</b>	<b>11,057</b>	<b>11,100</b>	<b>11,136</b>
<b>WOOD COUNTY TOTAL</b>	<b>11,429</b>	<b>12,006</b>	<b>11,940</b>	<b>11,997</b>	<b>12,040</b>	<b>12,074</b>
<b>REGION D DEMAND TOTAL</b>	<b>401,419</b>	<b>415,399</b>	<b>425,078</b>	<b>438,381</b>	<b>455,969</b>	<b>479,321</b>

\*A single asterisk next to a WUG's name denotes that the WUG is split by more than one planning region.

Appendix C3 – Chapter 3:

## EVALUATION OF CURRENT WATER SUPPLIES IN THE REGION

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## APPENDIX C3

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- C3-1: Region D Survey Letter Contacts
- C3-2: Region D Source Water Availability from DB22
- C3-3: Documentation of Region D Groundwater Availability Approval Process
- C3-4: Region D Municipal WUG Existing Supply
- C3-5: Region D WUG Existing Supply from DB22
- C3-6: Wholesale Water Provider Projected Demand and Supply
- C3-7: Wholesale Water Provider Contracts and Supply
- C3-8: Region D Source Water Balance from DB22

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System Name	Address	City	State	Zip Code	County	Phone Number	Fax	Salutation	First Name	Last Name	Title	Date Survey Mailed	Response	Follow up Call #1	Follow up Notes
City of De Kalb	110 E. Grizzly Drive	Dekalb	TX	75559	Bowie	903-667-2410	903-667-2689	Mr	Matt	McAdoo	Public Works Director	5/30/2017		Ongoing discussions w/Riverbend WRD	
City of Hooks	P.O. Box 37	Hooks	TX	75561	Bowie	903-547-2261	903-547-1107	Mr	Don	Buchanan	Water Department	5/30/2017		Ongoing discussions w/Riverbend WRD	
City of Maud	P.O. Box 100	Maud	TX	75567	Bowie	903-585-2294	903-585-2752		Brandy	Gibson	City Clerk	5/30/2017		Ongoing discussions w/Riverbend WRD	
City of New Boston	P.O. Box 5	New Boston	TX	75570	Bowie	903-628-5596	903-628-6034	Mr	Mark	Mayo		5/30/2017		Ongoing discussions w/Riverbend WRD	
City of Redwater	P.O. Box 209	Redwater	TX	75573	Bowie	903-671-2775	903-671-2625	Mr	Robert	Lorance	Mayor	5/30/2017		Ongoing discussions w/Riverbend WRD	
City of Texarkana	P.O. Box 1967	Texarkana	TX	75504	Bowie	903-798-3900	903-798-3448		Pam	White	Admin Coordinator	5/30/2017		Ongoing discussions w/Riverbend WRD	
City of Wake Village	P.O. Box 3776	Wake Village	TX	75501	Bowie	903-838-0515	903-831-4327	Mr		Burke		5/30/2017		Ongoing discussions w/Riverbend WRD	
Burns Redbank WSC	P.O. Box 907	Hooks	TX	75561	Bowie			Mr.	Doug	Kyles	President	5/30/2017		9/12/2017	9/13/2017
Central Bowie County Water Supply Corporation	2811 Hwy 82 West P.O. Box 306	New Boston	TX	75570	Bowie	903-628-5601	903-628-9258	Mr	Calvin	Pierce	President	5/30/2017		Ongoing discussions w/Riverbend WRD	
Macedonia-Eylau Multiple Utility District #1	RT 11, BOX 228-C	Texarkana	TX	75501	Bowie	903-832-1691	903-832-3159		Carrie	McCreery	Manager	5/30/2017		Ongoing discussions w/Riverbend WRD	
Riverbend Water Resources District	228 A Texas Avenue	New Boston	TX	75570	Bowie	903-831-0091		Ms.	Elizabeth	Fazio-Hale	Executive Director	5/30/2017		Ongoing discussions w/Riverbend WRD	
City of Pittsburg	200 Rusk St.	Pittsburg	TX	75686	Camp	903-856-0544	903-856-0544	Mr	Shawn	Kennington	Mayor	5/30/2017			Engineer Provided
Bi-County Water Supply Corporation	P.O. BOX 848	PITTSBURG	TX	75686	Camp	903-856-5840	903-856-1385	Mr.	Harleton	Taylor	Manager	5/30/2017	8/10/2017		
Cypress Springs Special Utility District	P.O. Box 591	Mt. Vernon	TX	75457	Camp	903-588-2081	903-588-2092	Mr.	Kevin	Spence	Manager	5/30/2017	9/21/2017	Emailed Kevin for FC contract	Contract Received
City of Atlanta	315 N. Buckner	Atlanta	TX	75551	Cass	903-796-2192	903-799-4072	Mr	David	Cockrell	City Manager	5/30/2017		Ongoing discussions w/Riverbend WRD	
City of Hughes Springs	P.O. Box 805	Hughes Springs	TX	75656	Cass	903-639-7519	903-639-3769	Mr	Robert	Puck		5/30/2017		8/11/2017	
City of Linden	P.O. Box 419	Linden	TX	75563	Cass	903-756-7502	903-756-7980	Mr	Clarence	Burns	Mayor	5/30/2017		8/11/2017	
City of Queen City	P.O. Box 301	Queen City	TX	75572	Cass	903-796-7986	903-796-0213	Mr	Harold	Martin	Mayor	5/30/2017		Ongoing discussions w/Riverbend WRD	
Eastern Cass Water Supply Corporation	P.O. Box 26	Blivins	TX	75555	Cass	903-796-3901		Mr.	Mitchell	McCasland		5/30/2017		8/11/2017	
City of Cooper	91 North Side Square	Cooper	TX	75432	Delta	903-395-2217	903-395-0377	Mr	Thomas	Stegall	Mayor	5/30/2017	Yes	7/27/2017	7/27/17 email
North Hunt Special Utility District	P.O. BOX 1170	Commerce	TX	75429	Delta	903-886-3458			Stacey	Nicholson	GM	5/30/2017		10/4/2017	
City of Mount Vernon	P.O. Drawer 591	Mount Vernon	TX	75457	Franklin	903-537-2252	903-537-2634	Ms	Margaret	Sears	Mayor	5/30/2017	6/26/2017		
City of Winnsboro	501 S. Main St	Winnsboro	TX	75494	Franklin	903-342-3654	903-342-5708	Mr.	Richard	Parish	Mayor	5/30/2017		8/11/2017	
North Hopkins Water Supply Corporation	P.O. BOX 407	Sulphur Springs	TX	75482	Franklin	903-945-2619	903-945-2019	MR.	BILLY	EMERSON	MANAGER	5/30/2017	Yes	8/4/2017	8/4/17 email
City of Clarksville City	P.O. Box 1111	White Oak	TX	75693	Gregg	903-845-2681	903-845-2411	Mr	Larry	Allen	Mayor	5/30/2017			Engineer Provided
City of Gladewater	P.O. Box 1725	Gladewater	TX	75647	Gregg	903-845-2196	903-845-6891	Mr	Casey	Chambers	Public Works Director	5/30/2017	7/20/2017		
City of Kilgore	815 N. Kilgove St.	Kilgore	TX	75662	Gregg	903-984-5081 x112	903-988-4131	Mr	Clay	Evers	City Engineer	5/30/2017		8/11/2017	
City of Longview	P.O. Box 1952	Longview	TX	75606	Gregg	903-237-1080	903-237-1092	Mr.	Rolin	McPhee	Public Works Director	5/30/2017	7/7/2017		
City of White Oak	906 S. White Oak Road	White Oak	TX	75693	Gregg	903-759-3936	903-297-3452	Mr.	Kyle	Kutch	Mayor	5/30/2017			Engineer Provided
Cross Roads Special Utility District	P.O. Box 1001	Kilgore	TX	75663	Gregg	903-984-8014		Mr	Fred	Mason	President	5/30/2017		8/11/2017	
Elderville Water Supply Corporation	PO Box 7344	Longview	TX	75607	Gregg	903-643-2692		Mr.	Ernie	Paul	General Manager	5/30/2017	11/15/2017		
Liberty City Water Supply Corporation	6144 Gateway Center, PMB 349	Kilgore	TX	75662	Gregg	903-984-9593		Mr	Max	Conlin	Manager	5/30/2017	7/7/2017		
Tryon Road Water Supply Corporation	P.O. Box 190	Judson	TX	75660	Gregg	903-663-1447	903-663-5875	MR.	Lee	Pigeon	PRESIDENT	5/30/2017	8/7/2017		
West Gregg Special Utility District	P.O. Box 1196	Kilgore	TX	75662	Gregg	903-983-1816	903-984-0707	MR.	Neill	Flemister	President	5/30/2017	7/5/2017		
City of Hallsville	P.O. Box 899	Hallsville	TX	75650	Harrison	903-668-2313	903-668-3959	Mr	Jerri	Medrano	Mayor	5/30/2017	6/30/2017		
City of Marshall	P.O. Box 698	Marshall	TX	75670	Harrison	903-935-4421	903-938-3531		Nancy	Pasel	Treatment Superintendent	5/30/2017	6/19/2017		
City of Waskom	P.O. Box 730	Waskom	TX	75692	Harrison	903-687-3374	903-687-2574		Jesse	Moore	Mayor	5/30/2017	7/27/2017		
Diana Special Utility District	P.O. Box 74	Diana	TX	75640	Harrison	903-663-4837		Ms.	Susan	Whitfield		5/30/2017	6/17/2017		
Gill Water Supply Corporation	2323 FM 2625 W	Marshall	TX	75672	Harrison	903-938-5130		Mr.	Dan	Fogle		5/30/2017			Engineer Provided
Gum Springs Water Supply Corporation	801 Mount Pleasant Road	Hallsville	TX	75650	Harrison	903-660-3420		Mr.	Derrick	Todd		5/30/2017			Engineer Provided

System Name	Address	City	State	Zip Code	County	Phone Number	Fax	Salutation	First Name	Last Name	Title	Date Survey Mailed	Response	Follow up Call #1	Follow up Notes
Talley Water Supply Corporation	P O Box 1837	Marshall	TX	75671-1837	Harrison	903-935-2545		Mr.	Johnnie	Taylor	President	5/30/2017			Engineer Provided
City of Cumby	P.O. Box 349	Cumby	TX	75433	Hopkins	903-994-2272	903-994-2650	Mr	Johnny	Carter	Public Works Director	5/30/2017		9/12/2017	
City of Sulphur Springs	125 S. Davis	Sulphur Springs	TX	75482	Hopkins	903-885-7541	903-439-2092	Mr	Mark	Maxwell	City Manager	5/30/2017	Yes		
Brinker Water Supply Corporation	107 Jefferson St	Como	TX	75431	Hopkins	903-866-3000		Mr	Scott	Courson	General Manager	5/30/2017		9/13/2017	9/13/17 email
Jones Water Supply Corporation	1650 N State Highway 37	Quitman	TX	75783	Hopkins	903-967-2840		Ms	Frances	Delk	Manager	5/30/2017	Yes	8/3/2017	8/3/17 email
Brashear WSC	P.O. Box 36	Brashear	TX	75420	Hopkins			Mr.	Richard	Bunch		5/30/2017	Yes	9/13/2017	10/4/2017
Cash Special Utility District	P.O. Box 8129	Greenville	TX	75404	Hopkins	903-883-2695		Mr	Clay	Hodges	GM	5/30/2017	Yes		
Cornersville Water Supply Corporation	PO Box 127	Pickton	TX	75471	Hopkins							5/30/2017		9/12/2017	9/12/17 email
Martin Springs Water Supply Corporation	P.O. BOX 9	Como	TX	75431	Hopkins	903-488-3835	903-488-2121	MS.	JULIE	PERRY		5/30/2017		9/8/2017	9/8/17 email
B H P WSC	P.O. Box 370	Royse City	TX	75189	Hunt			Mr.	George	Peoples	President	5/30/2017		9/13/2017	
City of Caddo Mills	2313 Main St.	Caddo Mills	TX	75135	Hunt	903-527-3116	903-527-4582	Mr	Mike	Jump	City Manager	5/30/2017		10/3/2017	10/3/17 email
City of Celeste	P.O. Box 399	Celeste	TX	75423	Hunt	903-568-4512	903-568-4448	Mr	Larry	Godwin	Mayor	5/30/2017	Yes	9/12/2017	9/12/17 email
City of Commerce	1119 Alamo	Commerce	TX	75428	Hunt	903-886-1100	903-886-8929	Mr	Bryan	Creed		5/30/2017		10/3/2017	10/3/17 email
City of Greenville	P.O. Box 1049	Greenville	TX	75401	Hunt	903-457-3116	903-457-0506	Mr	James	Belcher	Water Treatment Plant Superintendent	5/30/2017		10/3/2017	10/3/17 email
City of Josephine	P.O. Box 99	Josephine	TX	75164	Hunt	972-843-8282	972-843-8377	Mr	Mike	Holmes	Mayor	5/30/2017			
City of Lone Oak	P.O. Box 127	Lone Oak	TX	75453	Hunt	903-662-5116	903-662-5334	Mr	Neil	Dent	Mayor	5/30/2017			
City of Quinlan	P.O. Box 2740	Quinlan	TX	75474	Hunt	903-356-3306	903-356-4267	Mr	Rick	Morgan	Director of Public Works	5/30/2017		8/4/2017	8/4/17 email
City of Royse City	P.O. Box 638	Royse City	TX	75189	Hunt	972-636-2250	972-635-2434	Mr	Jerrell	Baley	Mayor	5/30/2017			
City of West Tawakoni	1533 E. Hwy 276	West Tawakoni	TX	75474	Hunt	903-447-2285	903-447-4935	Mr	Lamont	Jenkins		5/30/2017		8/22/2017	
City of Wolfe City	P.O. Box 106	Wolfe City	TX	75496	Hunt	903-496-2251	903-496-2335		Kris	Burns	Operator	5/30/2017		8/22/2017	8/22/17 email
Ables Springs Water Supply Corporation	30100 FM 429	Terrell	TX	75160	Hunt	972-563-9704	972-563-7048					5/30/2017			
Blackland Water Supply	P.O. Box 215	Fate	TX	75132	Hunt	972-771-6375	972-771-3276	MR.	Jim	Myers	President	5/30/2017			
Caddo Basin Special Utility District	156 CO. RD. 1118	Greenville	TX	75401	Hunt	903-527-3504		MR.	LEAHMON	BRYANT	GENERAL MANAGER	5/30/2017	Yes	10/3/2017	
Combined Consumers Special Utility District	P.O. Box 2829	Quinlan	TX	75474	Hunt	903-356-3321	903-356-3322	Mr	Drew	Roberts		5/30/2017		7/26/2017	8/3/17 email
Hickory Creek Special Utility District	P.O. Box 540	Celeste	TX	75423	Hunt	903-568-4760	903-568-4867	Mr	Mike	Wemhoener	General Manager	5/30/2017		9/11/2017	
Macbee Special Utility District	P.O. Box 780	Wills Point	TX	75169	Hunt	903-873-2109	903-873-2748	Mr	John	Simmons	GM	5/30/2017		8/4/2017	
City of Blossom	P.O. Box 297	Blossom	TX	75416	Lamar	903-982-5900	903-982-6599	Mr		Johnson		5/30/2017		7/21/2017	
City of Paris	P.O. Box 9037	Paris	TX	75461	Lamar	903-785-8519	903-785-8519		Doug	Harris	Director	5/30/2017		10/4/2017	10/4/17 email
City of Reno	160 Blackburn St	Reno	TX	75462	Lamar	903-785-6581	903-785-0453		Cara	Hubbard		5/30/2017		8/4/2017	8/4/17 email
Lamar County Water Supply	P.O. Box 188	Brookston	TX	75486	Lamar	903-785-5586	903-784-7148	MR.	ALTON	DOCKREY	MANAGER	5/30/2017		8/4/2017	8/4/17 email
City of Deport	P.O. Box A 354	Deport	TX	75435	Lamar / Red River			Mr.	Mike	Francies	Mayor	5/30/2017			
City of Jefferson	102 N. Polk	Jefferson	TX	75657	Marion	903-665-3922	903-665-1002	Mr.	Carey	Hester Jr.	Mayor	5/30/2017	7/28/2017		
City of Daingerfield	108 Coffey St.	Daingerfield	TX	75638	Morris	903-645-3906	903-645-5488	Mr	Lou	Irvin	Mayor	5/30/2017		8/11/2017	
City of Lone Star	P.O. Box 0218	Lone Star	TX	75668	Morris	903-656-2311	903-656-3355	Mr	C.E.	Nichols	Mayor	5/30/2017		8/11/2017	
City of Naples	P.O. Box 340	Naples	TX	75568	Morris	903-897-2271	903-897-2913	Mr	Danny	Mills	Mayor	5/30/2017		8/11/2017	
City of Nash	P.O. Box 520	Nash	TX	75569	Morris	903-838-0751	903-831-3411	Mr	Darrin	Lafayette	Director of Public Works	5/30/2017		Ongoing discussions w/Riverbend WRD	
City of Omaha	305 White Oak Ave. P.O. Box 937	Omaha	TX	75571	Morris	903-884-2746	903-884-2746	Ms	Janet	Blackburn	Mayor	5/30/2017		8/11/2017	
Tri Special Utility District	300 W 16TH STREET	Mount Pleasant	TX	75455	Morris	903-572-3676		MR.	Aaron	Gann		5/30/2017		8/11/2017	
City of East Tawakoni	288 Briggs Blvd.	East Tawakoni	TX	75472	Rains	903-447-2444	903-447-5080	Mrs.	Tammy	Dowdy		5/30/2017	Yes	7/28/2017	
City of Emory	P.O. Box 100	Emory	TX	75440	Rains	903-473-2465	903-473-2110	Mr	Mike	Dunn		5/30/2017		10/3/2017	
City of Point	365 Locust	Point	TX	75472	Rains	903-598-3296 x5	903-598-3371	Mr	Steve	Bursey	Director of Public Works	5/30/2017		9/6/2017	9/11/2017
Golden Water Supply Corporation	P.O. BOX 148	GOLDEN	TX	75444	Rains	903-768-2861		MR.	Wendell	Baker	GM	5/30/2017		8/2/2017	
Bright Star-Salem Special Utility District	P.O. Box 620	Alba	TX	75410	Rains	903-765-2701		Ms	Wanda	Gaby	General Manager	5/30/2017		7/25/2017	7/26/17 email
410 WSC	PO Box 69	Detroit	TX	75436	Red River			Mr	Russell	Carpenter	President	5/30/2017		9/13/2017	
City of Bogata	P.O. Box 400	Bogata	TX	75417	Red River	903-632-5315	903-632-4631	Mr	Vincent	Lum	Mayor	5/30/2017	Yes	7/21/2017	7/21/17 email
City of Clarksville	800 W. Main	Clarksville	TX	75426	Red River	903-427-3834	903-427-3907	Mr.	Wayne	Dial	City Manager	5/30/2017		10/2/17 email	
City of Detroit	190 East Garner	Detroit	TX	75436	Red River	903-674-4573	903-674-6029	Mr	Richard	Shipp	Director of Public Works	5/30/2017			

System Name	Address	City	State	Zip Code	County	Phone Number	Fax	Salutation	First Name	Last Name	Title	Date Survey Mailed	Response	Follow up Call #1	Follow up Notes
Red River County Water Supply Corporation	1404 E. MAIN STREET	Clarksville	TX	75426	Red River	903-427-2891		Mr.	Billy	Whiteman	President	5/30/2017		10/4/2017	
City of Hideaway	101-B Hideaway Lane Central	Hideaway	TX	75771	Smith	903-882-3889		Mr	Duane	Spaeth	Mayor	5/30/2017		8/11/2017	
City of Lindale	P.O. Box 130	Lindale	TX	75771	Smith	903-882-3422	903-882-1054	Mr	Jim	Mallory	Mayor	5/30/2017		8/11/2017	
City of Overton	P.O. Drawer D	Overton	TX	75684	Smith	903-834-3171	903-834-3174	Mr	John	Welch	Mayor	5/30/2017		8/11/2017	
City of Tyler	P.O. Box 2039	Tyler	TX	75702	Smith	903-531-1250	903-531-1166	Ms	Barbara	Bass	Mayor	5/30/2017			
City of Winona	P.O. Box 97	Winona	TX	75792	Smith	903-877-3381	903-877-2370	Mr	Rusty	Smith	Mayor	5/30/2017		8/11/2017	
Crystal Systems Texas	P.O. Box 1084	Tyler	TX	75710	Smith	903-881-8000						5/30/2017	7/17/2017		
Jackson Water Supply Corporation	17764 County Road 26	Tyler	TX	75707	Smith	903-566-1320	903-566-1377	Ms.	Amber	Durham	Office Manager	5/30/2017	8/24/2017		
Lindale Rural Water Supply Corporation	P.O. Box 756	Lindale	TX	75771	Smith	903-882-3335		Mr	Sam	Beeler	General Manager	5/30/2017			Engineer Provided
Smith County Multiple Utility District	11928 Constantine	Tyler	TX	75708	Smith	903-877-3644		Mr.	Jimmie	Boultinghouse	President	5/30/2017			
Southern Utilities Company	218 N Broadway Ave	Tyler	TX	75702	Smith	903-593-2588						5/30/2017		8/11/2017	
City of Mount Pleasant	501 N. Madison	Mount Pleasant	TX	75455	Titus	903-575-4000	903-577-1828	Mr	John	Hall		5/30/2017	Yes	10/3/2017	
City of Talco	P.O. Box 365	Talco	TX	75487	Titus	903-379-3731	903-379-3311		Jackie	Moore		5/30/2017			
Bethel-Ash Water Supply Corporation	801 North Palestine St	Athens	TX	75751	Trinity	903-675-8466						5/30/2017			
City of Big Sandy	P.O. Box 986	Big Sandy	TX	75755	Upshur	903-636-4343	903-636-4413	Ms.	Nancy	Church	Mayor	5/30/2017		8/11/2017	Engineer Provided
City of East Mountain	103 Municipal Drive	Gilmer	TX	75645	Upshur	903-297-6041	903-297-4346	Mr	Ronnie	Hilliard	Mayor	5/30/2017			Engineer Provided
City of Gilmer	P.O. Box 760	Gilmer	TX	75644	Upshur	903-843-2552	903-843-3508	Mr.	Tim	Marshall	Mayor	5/30/2017	7/27/2017		
City of Ore City	P.O. Box 327	Ore City	TX	75683	Upshur	903-968-2511	903-968-6996		Gail	Weir	Mayor	5/30/2017			Engineer Provided
Fouke Water Supply Corporation	156 FM 1254	Mineola	TX	75773	Upshur	903-967-3304		Ms	Kristi	Hirsch	General Manager	5/30/2017			Engineer Provided
Pritchett Water Supply Corporation	3670 State Highway 155 S	Gilmer	TX	75645	Upshur	903-734-5438		Mr.	Tom	Bledsoe		5/30/2017			Engineer Provided
Sharon Water Supply Corporation	6175 N State Highway 37	Winnsboro	TX	75494	Upshur	903-342-3525						5/30/2017	6/19/2017		
Ben Wheeler WSC	PO Box 104	Ben Wheeler	TX	75754	Van Zandt			Mr.	James	McGehee	President	5/30/2017	Yes		
City of Canton	290 E. Tyler	Canton	TX	75103	Van Zandt	903-567-2826	903-567-1753	Mr	Lonny	Cluck	City Manager	5/30/2017		10/3/17 meeting	
City of Canton	290 E. Tyler	Canton	TX	75103	Van Zandt	903-567-2826	903-567-1753	Mr	Al	Campbell	Water Department	5/30/2017			
City of Edgewood	P.O. Box 377	Edgewood	TX	75117	Van Zandt	903-896-4448	903-896-7033	Mr	Armando	Gonzales	Water Operator	5/30/2017		7/28/2017	
City of Grand Saline	132 E. Frank St.	Grand Saline	TX	75140	Van Zandt	903-962-3122	903-962-3363	Mr	Gene	Putnam	Public Works Director	5/30/2017		10/3/2017	
City of Mabank	P.O. Box 293	Mabank	TX	75147	Van Zandt							5/30/2017			
City of Van	189 S. Maple	Van	TX	75790	Van Zandt	903-963-7216	903-963-5643	Mr	John	Beall	Director of Public Works	5/30/2017		8/22/2017	8/23/17 call and email
City of Wills Point	P.O. Box 505	Wills Point	TX	75169	Van Zandt	903-873-2578	903-873-5512	Mr.	Scott	Drake	Director of Public Works	5/30/2017		8/22/2017	8/22/17 email
Little Hope Moore Water Supply Corporation	150 FM 16	Canton	TX	75103-6033	Van Zandt	903-253-5565	866-790-4581	Mr.	Kevin Wayne	Perkins	President	5/30/2017		9/7/2017	
R P M Water Supply Corporation	200 VZ CR 4913	Ben Wheeler	TX	75754	Van Zandt	903-852-3115		Ms.	Charlotte	Parks	President	5/30/2017		9/7/2017	
South Tawakoni Water Supply Corporation	P.O. BOX 485	Wills Point	TX	75169	Van Zandt	903-873-2509		Mr.	Richard	Phillips		5/30/2017	Yes		
Algonquin Water Resources of Texas	2472 FM 2869	Hawkins	TX	75765	Wood	903-769-2095						5/30/2017		8/11/2017	
City of Hawkins	P.O. Box 329	Hawkins	TX	75765	Wood	903-769-2224	903-769-2781	Mr	Sam	Bradley	Mayor	5/30/2017		8/11/2017	
City of Mineola	P.O. Box 179	Mineola	TX	75773	Wood	903-569-6183	903-569-6551	Mr.	Rodney	Watkins	Mayor	5/30/2017	7/18/2017		
City of Quitman	401 E. Goode	Quitman	TX	75783	Wood	903-763-2223	903-763-5631	Mr	Jerry	Edwards	Mayor	5/30/2017		8/11/2017	
Holly Ranch Water Company	FM 2869	Hawkins	TX	75765	Wood	903-769-2095						5/30/2017		8/11/2017	
New Hope Special Utility District	413 County Rd 2651	Mineola	TX	75773	Wood	903-569-3820		Mr.	Jim	Slayton	Manager	5/30/2017	6/21/2017		
Ramey Water Supply Corporation	P.O. Box 58	Mineola	TX	75773	Wood	903-569-6502		Mr.	Robert	Smith		5/30/2017	6/20/2017		
Blocker Crossroads WSC	2323 FM 2625 W	Marshall	TX	75672				Mr.	Henry	Sanders	President	5/30/2017		resent to updated address	
City of Frognot	9329 CR 628	Blue Ridge	TX	75424-4710								5/30/2017			
City of Scottsville	P.O. Box 463	Scottsville	TX	75688		903-935-3441	903-935-1760	Mr.	Kerry	Cade	Mayor	5/30/2017		8/11/2017	
Texas A&M University Commerce	PO Box 3011	Commerce	TX	75429				Mr.	Dan	Jones	President	5/30/2017	Yes	10/4/2017	
Delta County Municipal Utility District	P O Box 63	Cooper	TX	75432		903-395-4471		Mr.	Matt	Ingram	Operator	5/30/2017		9/12/2017	9/12/17 email
E M C Water Supply Corporation	PO Box 479	Jefferson	TX	75657-0479		903-665-7727		Mr.	David	Rohrbaugh		5/30/2017	6/19/2017		

System Name	Address	City	State	Zip Code	County	Phone Number	Fax	Salutation	First Name	Last Name	Title	Date Survey Mailed	Response	Follow up Call #1	Follow up Notes
Edom Water Supply Corporation	PO Box 245	Brownsboro	TX	75756								5/30/2017		9/11/2017	9/11/17 email
Fruitvale Water Supply Corporation	Box 75	Fruitvale	TX	75127				Mr.	Dale	Smith	President	5/30/2017		9/11/2017	9/11/17 email
Gafford Chapel Water Supply Corporation	P.O. Box 1160	Sulphur Springs	TX	75483				Mr.	Michael	Rawson	President	5/30/2017		9/7/2017	
Glenwood Water Supply Corporation	6792 FM 726 S	Gilmer	TX	75645-8108		903-734-5445		Ms.	Kim	Jenkins	General Manager	5/30/2017	8/2/2017		
Harleton Water Supply Corporation	P.O. Box 372	Harleton	TX	75651		903-777-3740		Mr.	Dustin	Hardy	President	5/30/2017	6/22/2017		
Holly Springs Water Supply Corporation	PO Box 1078	Hughes Springs	TX	75656		903-639-2054	903-639-3769	Mr.	Randy	Russell		5/30/2017		8/11/2017	
Kellyville-Berea Water Supply Corporation	PO Box 459	Jefferson	TX	75657-0459		903-665-6590	903-665-6590	Mr.	Robert	Davidson	President	5/30/2017		8/11/2017	
Lake Fork Water Supply Corporation	PO Box 275	Yantis	TX	75497-0275		903-383-4643	903-383-7643	Mr.	Keith	Gilbreth	President	5/30/2017			Engineer Provided
Leigh Water Supply Corporation	2121 FM 1999	Karnack	TX	75661		903-927-1075		Mr.	Carl	Shelton	President	5/30/2017		not deliverable/called no resp.	
Miller Grove Water Supply Corporation	14966 Farm Road 1567 W	Cumby	TX	75433				Mr.	Mac	Garrett		5/30/2017		9/7/2017	
Mims Water Supply Corporation	12688 FM 729	Avinger	TX	75630-2410		903-755-3185		Mr.	George	Morris, Jr.	President	5/30/2017	6/21/2017		
Myrtle Springs Water Supply Corporation	PO Box 265	Wills Point	TX	75169-0265				Mr.	John	Kimbrew	President	5/30/2017		9/6/2017	9/6/17 email
North Harrison Water Supply Corporation	PO Box 1307	Woodlawn	TX	75694-0130				Mr.	John	Scasta	President	5/30/2017	6/6/2017		
Panola-Bethany Water Supply Corporation	P.O. Box 279	Bethany	LA	71007				Mr.	James	Youngblood		5/30/2017	7/17/2017		
Pine Ridge Water Supply Corporation	21240 F 1253	Mineola	TX	75773		903-569-6522		Mr.	Jarratt	Major	President	5/30/2017			Engineer Provided
Poetry Water Supply Corporation	P.O. Box 392	Terrell	TX	75160		972-563-7471	972-524-0242					5/30/2017		10/4/2017	10/4/17 email
Pruitt Sandflat Water Supply Corporation	PO Box 310	Grand Saline	TX	75140				Mr.	G. L.	Carter	President	5/30/2017		9/6/2017	
Sand Flat Water Supply Corporation	14874 FM 14	Tyler	TX	75706		903-526-5243		Mr.	Larry	Wintters	General Manager	5/30/2017		8/1/2017	
Shady Grove No2 Water Supply Corporation	919 CR 1174	Sulphur Springs	TX	75482-7454				Mr.	Pat	Chase	President	5/30/2017		8/31/2017	9/6/2017
Shady Grove Water Supply Corporation	3516 FM 499	Greenville	TX	75401-6037				Mr.	Ron	Holley	President	5/30/2017		8/31/2017	
Shirley Water Supply Corporation	6684 FM 1567 W	Sulphur Springs	TX	75482				Mr.	Randy	Reed		5/30/2017		8/31/2017	
South Rains Special Utility District	P.O. Box 95	Emory	TX	75440				Mr.	Gus	Metz	General Manager	5/30/2017		8/31/2017	
Star Mountain Water Supply Corporation	P O Box 528	Winona	TX	75792		903-877-3096	903-877-3517	Mr.	Charlie	Martin	President	5/30/2017			Engineer Provided
Starrville-Friendship Water Supply Corporation	P O Box 1482	Gladewater	TX	75647-1482				Mr.	Ryan	Cocker	President	5/30/2017		8/11/2017	
Union Grove Water Supply Corporation	11015 Union Grove Rd	Gladewater	TX	75647		903-845-2834	903-844-2604	Mr.	Bruce	Ogilvie	President	5/30/2017	6/29/2017		
West Harrison Water Supply Corporation	P.O. Box 1027	Hallsville	TX	75650				Ms.	Deborah	Jones	President	5/30/2017		8/11/2017	
West Leonard Water Supply Corporation	P.O. Box 179	Leonard	TX	75452								5/30/2017			
Western Cass Water Supply Corporation	PO Box 150	Linden	TX	75563				Mr.	Robert	Moore		5/30/2017		8/11/2017	

### Region D Source Availability

GROUNDWATER SOURCE TYPE				SOURCE AVAILABILITY (ACRE-FEET PER YEAR)					
SOURCE NAME	COUNTY	BASIN	SALINITY *	2020	2030	2040	2050	2060	2070
BLOSSOM AQUIFER	BOWIE	RED	FRESH	21	21	21	21	21	21
BLOSSOM AQUIFER	BOWIE	SULPHUR	FRESH	180	180	180	180	180	180
BLOSSOM AQUIFER	LAMAR	RED	FRESH	323	323	323	323	323	323
BLOSSOM AQUIFER	LAMAR	SULPHUR	FRESH	71	71	71	71	71	71
BLOSSOM AQUIFER	RED RIVER	RED	FRESH	665	665	665	665	665	665
BLOSSOM AQUIFER	RED RIVER	SULPHUR	FRESH	1,013	1,013	1,013	1,013	1,013	1,013
CARRIZO-WILCOX AQUIFER	BOWIE	SULPHUR	FRESH	9,872	9,558	9,278	9,278	8,999	8,999
CARRIZO-WILCOX AQUIFER	CAMP	CYPRESS	FRESH	4,050	4,050	4,050	4,050	4,050	4,050
CARRIZO-WILCOX AQUIFER	CASS	CYPRESS	FRESH	15,159	15,132	15,132	15,119	15,106	15,094
CARRIZO-WILCOX AQUIFER	CASS	SULPHUR	FRESH	2,864	2,794	2,731	2,667	2,596	2,532
CARRIZO-WILCOX AQUIFER	FRANKLIN	CYPRESS	FRESH	7,765	7,765	7,765	7,765	7,765	7,765
CARRIZO-WILCOX AQUIFER	FRANKLIN	SULPHUR	FRESH	2,021	2,021	2,021	2,021	2,021	2,021
CARRIZO-WILCOX AQUIFER	GREGG	CYPRESS	FRESH	862	862	862	862	862	862
CARRIZO-WILCOX AQUIFER	GREGG	SABINE	FRESH	7,179	7,179	7,179	7,179	7,179	7,179
CARRIZO-WILCOX AQUIFER	HARRISON	CYPRESS	FRESH	6,183	6,109	6,070	6,036	6,016	5,990
CARRIZO-WILCOX AQUIFER	HARRISON	SABINE	FRESH	4,851	4,851	4,851	4,837	4,837	4,837
CARRIZO-WILCOX AQUIFER	HOPKINS	CYPRESS	FRESH	313	313	313	313	313	313
CARRIZO-WILCOX AQUIFER	HOPKINS	SABINE	FRESH	2,842	2,842	2,842	2,842	2,842	2,842
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	FRESH	7,119	7,205	7,228	7,045	7,010	6,795
CARRIZO-WILCOX AQUIFER	MARION	CYPRESS	FRESH	2,726	2,726	2,726	2,726	2,726	2,726
CARRIZO-WILCOX AQUIFER	MORRIS	CYPRESS	FRESH	2,166	2,166	2,166	2,166	2,166	2,166
CARRIZO-WILCOX AQUIFER	MORRIS	SULPHUR	FRESH	402	402	402	402	402	402
CARRIZO-WILCOX AQUIFER	RAINS	SABINE	FRESH	1,839	1,839	1,839	1,802	1,802	1,745
CARRIZO-WILCOX AQUIFER	RED RIVER	SULPHUR	FRESH	0	0	0	0	0	0
CARRIZO-WILCOX AQUIFER	SMITH	SABINE	FRESH	13,246	13,220	13,220	13,220	13,206	13,196
CARRIZO-WILCOX AQUIFER	TITUS	CYPRESS	FRESH	7,215	7,064	6,974	7,211	7,252	7,194
CARRIZO-WILCOX AQUIFER	TITUS	SULPHUR	FRESH	2,838	2,838	2,838	2,838	2,838	2,838
CARRIZO-WILCOX AQUIFER	UPSHUR	CYPRESS	FRESH	5,442	5,442	5,442	5,442	5,442	5,442
CARRIZO-WILCOX AQUIFER	UPSHUR	SABINE	FRESH	1,689	1,689	1,689	1,689	1,689	1,689
CARRIZO-WILCOX AQUIFER	VAN ZANDT	NECHES	FRESH	4,317	4,317	4,317	4,317	4,317	4,317
CARRIZO-WILCOX AQUIFER	VAN ZANDT	SABINE	FRESH	4,767	4,729	4,556	4,497	4,497	4,370
CARRIZO-WILCOX AQUIFER	VAN ZANDT	TRINITY	FRESH	1,384	1,384	1,384	1,384	1,384	1,384
CARRIZO-WILCOX AQUIFER	WOOD	CYPRESS	FRESH	2,053	2,053	2,053	2,053	2,053	2,053
CARRIZO-WILCOX AQUIFER	WOOD	SABINE	FRESH	19,404	19,360	19,285	19,263	19,239	19,184
NACATOC AQUIFER	BOWIE	RED	FRESH	3,071	3,071	3,071	3,071	3,071	3,071
NACATOC AQUIFER	BOWIE	SULPHUR	FRESH	1,942	1,942	1,942	1,942	1,942	1,942
NACATOC AQUIFER	DELTA	SULPHUR	FRESH	575	575	575	575	575	575
NACATOC AQUIFER	FRANKLIN	SULPHUR	FRESH	30	30	30	30	30	30
NACATOC AQUIFER	HOPKINS	SABINE	FRESH	291	291	291	291	291	291
NACATOC AQUIFER	HOPKINS	SULPHUR	FRESH	916	916	916	916	916	916
NACATOC AQUIFER	HUNT	SABINE	FRESH	3,303	3,303	3,303	3,303	3,303	3,303
NACATOC AQUIFER	HUNT	SULPHUR	FRESH	491	491	513	868	1,347	2,052
NACATOC AQUIFER	LAMAR	SULPHUR	FRESH	110	110	110	110	110	110
NACATOC AQUIFER	RAINS	SABINE	FRESH	1	1	1	1	1	1
NACATOC AQUIFER	RED RIVER	RED	FRESH	58	58	58	58	58	58

\* Salinity field indicates whether the source availability is considered 'fresh' (less than 1,000 mg/L), 'brackish' (1,000 to 10,000 mg/L), 'saline' (10,001 mg/L to 34,999 mg/L), or 'seawater' (35,000 mg/L or greater). Sources can also be labeled as 'fresh/brackish' or 'brackish/saline', if a combination of the salinity types is appropriate.

\*\* Since reservoir sources can exist across multiple counties, the county field value, 'reservoir' is applied to all reservoir sources.

### Region D Source Availability

GROUNDWATER SOURCE TYPE				SOURCE AVAILABILITY (ACRE-FEET PER YEAR)					
SOURCE NAME	COUNTY	BASIN	SALINITY *	2020	2030	2040	2050	2060	2070
NACATOCH AQUIFER	RED RIVER	SULPHUR	FRESH	2,925	2,924	2,923	2,923	2,923	2,923
QUEEN CITY AQUIFER	CAMP	CYPRESS	FRESH	4,306	4,306	4,150	4,150	4,150	4,150
QUEEN CITY AQUIFER	CASS	CYPRESS	FRESH	35,499	35,499	35,499	35,499	35,499	35,499
QUEEN CITY AQUIFER	CASS	SULPHUR	FRESH	3,010	3,010	3,010	3,010	3,010	3,010
QUEEN CITY AQUIFER	GREGG	CYPRESS	FRESH	1,359	1,359	1,359	1,359	1,359	1,359
QUEEN CITY AQUIFER	GREGG	SABINE	FRESH	5,625	5,625	5,625	5,625	5,625	5,625
QUEEN CITY AQUIFER	HARRISON	CYPRESS	FRESH	7,762	7,762	7,762	7,762	7,762	7,762
QUEEN CITY AQUIFER	HARRISON	SABINE	FRESH	2,310	2,310	2,310	2,310	2,310	2,310
QUEEN CITY AQUIFER	MARION	CYPRESS	FRESH	15,407	15,407	15,407	15,407	15,338	15,271
QUEEN CITY AQUIFER	MORRIS	CYPRESS	FRESH	9,469	9,469	9,469	9,469	9,469	9,362
QUEEN CITY AQUIFER	SMITH	SABINE	FRESH	28,343	28,343	28,343	28,213	28,018	27,887
QUEEN CITY AQUIFER	TITUS	CYPRESS	FRESH	144	144	144	144	144	144
QUEEN CITY AQUIFER	UPSHUR	CYPRESS	FRESH	19,642	19,642	19,448	19,448	19,448	19,396
QUEEN CITY AQUIFER	UPSHUR	SABINE	FRESH	7,749	7,749	7,749	7,749	7,749	7,749
QUEEN CITY AQUIFER	VAN ZANDT	NECHES	FRESH	4,791	4,791	4,791	4,791	4,791	4,791
QUEEN CITY AQUIFER	WOOD	CYPRESS	FRESH	986	986	986	986	986	986
QUEEN CITY AQUIFER	WOOD	SABINE	FRESH	9,060	9,060	9,060	9,060	9,060	9,060
TRINITY AQUIFER	DELTA	SULPHUR	FRESH	56	56	56	56	56	56
TRINITY AQUIFER	HUNT	SABINE	FRESH	213	213	213	213	213	213
TRINITY AQUIFER	HUNT	SULPHUR	FRESH	3	3	3	3	3	3
TRINITY AQUIFER	HUNT	TRINITY	FRESH	0	0	0	0	0	0
TRINITY AQUIFER	LAMAR	RED	FRESH	0	0	0	0	0	0
TRINITY AQUIFER	LAMAR	SULPHUR	FRESH	8	8	8	8	8	8
TRINITY AQUIFER	RED RIVER	RED	FRESH	52	52	52	52	52	52
TRINITY AQUIFER	RED RIVER	SULPHUR	FRESH	234	233	234	233	234	233
WOODBINE AQUIFER	HUNT	SABINE	FRESH	269	268	269	268	269	268
WOODBINE AQUIFER	HUNT	SULPHUR	FRESH	165	165	165	165	165	165
WOODBINE AQUIFER	HUNT	TRINITY	FRESH	330	329	330	329	330	329
WOODBINE AQUIFER	LAMAR	RED	FRESH	22	22	22	22	22	22
WOODBINE AQUIFER	LAMAR	SULPHUR	FRESH	49	49	49	49	49	49
WOODBINE AQUIFER	RED RIVER	RED	FRESH	2	2	2	2	2	2
<b>GROUNDWATER SOURCE AVAILABILITY TOTAL</b>				<b>313,419</b>	<b>312,757</b>	<b>311,734</b>	<b>311,767</b>	<b>311,570</b>	<b>311,291</b>

REUSE SOURCE TYPE				SOURCE AVAILABILITY (ACRE-FEET PER YEAR)					
SOURCE NAME	COUNTY	BASIN	SALINITY *	2020	2030	2040	2050	2060	2070
DIRECT REUSE	GREGG	SABINE	FRESH	6,161	6,161	6,161	6,161	6,161	6,161
DIRECT REUSE	LAMAR	RED	FRESH	12	12	12	12	12	12
DIRECT REUSE	MORRIS	CYPRESS	FRESH	72,086	66,660	61,344	62,600	71,474	65,248
DIRECT REUSE	TITUS	CYPRESS	FRESH	160	160	160	160	160	160
<b>REUSE SOURCE AVAILABILITY TOTAL</b>				<b>78,419</b>	<b>72,993</b>	<b>67,677</b>	<b>68,933</b>	<b>77,807</b>	<b>71,581</b>

SURFACE WATER SOURCE TYPE				SOURCE AVAILABILITY (ACRE-FEET PER YEAR)					
SOURCE NAME	COUNTY	BASIN	SALINITY *	2020	2030	2040	2050	2060	2070
BIG CREEK LAKE/RESERVOIR	RESERVOIR**	SULPHUR	FRESH	2,162	2,162	2,162	2,162	2,162	2,162
BIG SANDY CREEK LAKE/RESERVOIR	RESERVOIR**	SABINE	FRESH	2,685	2,685	2,685	2,685	2,685	2,685

\* Salinity field indicates whether the source availability is considered 'fresh' (less than 1,000 mg/L), 'brackish' (1,000 to 10,000 mg/L), 'saline' (10,001 mg/L to 34,999 mg/L), or 'seawater' (35,000 mg/L or greater). Sources can also be labeled as 'fresh/brackish' or 'brackish/saline', if a combination of the salinity types is appropriate.

\*\* Since reservoir sources can exist across multiple counties, the county field value, 'reservoir' is applied to all reservoir sources.

### Region D Source Availability

SURFACE WATER SOURCE TYPE				SOURCE AVAILABILITY (ACRE-FEET PER YEAR)					
SOURCE NAME	COUNTY	BASIN	SALINITY *	2020	2030	2040	2050	2060	2070
BOB SANDLIN LAKE/RESERVOIR	RESERVOIR**	CYPRESS	FRESH	36,600	37,100	36,800	36,800	36,100	35,300
BRANDY BRANCH LAKE/RESERVOIR	RESERVOIR**	SABINE	FRESH	19,889	19,889	19,889	19,889	19,889	19,889
CADDO LAKE/RESERVOIR	RESERVOIR**	CYPRESS	FRESH	10,000	10,000	10,000	10,000	10,000	10,000
CANEY CREEK LAKE/RESERVOIR	RESERVOIR**	SULPHUR	FRESH	964	964	964	964	964	964
CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	RESERVOIR**	SULPHUR	FRESH	71,890	70,805	69,301	67,874	66,745	65,298
CROOK LAKE/RESERVOIR	RESERVOIR**	RED	FRESH	7,290	7,290	7,290	7,290	7,290	7,290
CYPRESS LIVESTOCK LOCAL SUPPLY	CAMP	CYPRESS	FRESH	534	534	571	636	698	724
CYPRESS LIVESTOCK LOCAL SUPPLY	CASS	CYPRESS	FRESH	565	565	565	565	565	565
CYPRESS LIVESTOCK LOCAL SUPPLY	FRANKLIN	CYPRESS	FRESH	291	291	291	291	291	291
CYPRESS LIVESTOCK LOCAL SUPPLY	HARRISON	CYPRESS	FRESH	276	302	329	358	387	421
CYPRESS LIVESTOCK LOCAL SUPPLY	HOPKINS	CYPRESS	FRESH	108	108	108	108	108	108
CYPRESS LIVESTOCK LOCAL SUPPLY	MORRIS	CYPRESS	FRESH	215	215	215	215	215	215
CYPRESS LIVESTOCK LOCAL SUPPLY	UPSHUR	CYPRESS	FRESH	975	975	975	975	975	975
CYPRESS LIVESTOCK LOCAL SUPPLY	WOOD	CYPRESS	FRESH	271	271	271	271	271	271
CYPRESS RUN-OF-RIVER	CAMP	CYPRESS	FRESH	1	1	1	1	1	1
CYPRESS RUN-OF-RIVER	CASS	CYPRESS	FRESH	175	175	175	175	175	175
CYPRESS RUN-OF-RIVER	GREGG	CYPRESS	FRESH	41	41	41	41	41	41
CYPRESS RUN-OF-RIVER	HARRISON	CYPRESS	FRESH	9,724	9,724	9,724	9,724	9,724	9,724
CYPRESS RUN-OF-RIVER	MARION	CYPRESS	FRESH	1,072	1,072	1,072	1,072	1,072	1,072
CYPRESS RUN-OF-RIVER	MORRIS	CYPRESS	FRESH	59	59	59	59	59	59
CYPRESS RUN-OF-RIVER	TITUS	CYPRESS	FRESH	408	408	408	408	408	408
CYPRESS RUN-OF-RIVER	UPSHUR	CYPRESS	FRESH	22	22	22	22	22	22
CYPRESS SPRINGS LAKE/RESERVOIR	RESERVOIR**	CYPRESS	FRESH	11,800	11,300	10,800	10,400	9,900	9,500
EDGEWOOD CITY LAKE/RESERVOIR	RESERVOIR**	SABINE	FRESH	160	160	160	160	160	160
ELLIOT CREEK LAKE/RESERVOIR	RESERVOIR**	SULPHUR	FRESH	1,892	1,892	1,892	1,892	1,892	1,892
ELLISON CREEK LAKE/RESERVOIR	RESERVOIR**	CYPRESS	FRESH	33,643	33,643	33,643	33,643	33,643	33,643
FORK LAKE/RESERVOIR	RESERVOIR**	SABINE	FRESH	171,982	170,192	168,378	166,644	164,793	162,920
GILMER LAKE/RESERVOIR	RESERVOIR**	CYPRESS	FRESH	6,180	6,180	6,180	6,180	6,180	6,180
GLADEWATER LAKE/RESERVOIR	RESERVOIR**	SABINE	FRESH	4,840	4,736	3,865	3,438	3,046	2,690
GRAYS CREEK RUN-OF-RIVER	HARRISON	CYPRESS	FRESH	12	12	12	12	12	12
GREENVILLE CITY LAKE/RESERVOIR	RESERVOIR**	SABINE	FRESH	3,421	3,421	3,421	3,421	3,421	3,421
JOHNSON CREEK LAKE/RESERVOIR	RESERVOIR**	CYPRESS	FRESH	2,280	2,280	2,280	2,280	2,280	2,280
LANGFORD LAKE/RESERVOIR	RESERVOIR**	SULPHUR	FRESH	440	300	0	0	0	0
LOMA LAKE/RESERVOIR	RESERVOIR**	SABINE	FRESH	1,777	1,777	1,777	1,777	1,777	1,777
MILL CREEK LAKE/RESERVOIR	RESERVOIR**	SABINE	FRESH	1,192	1,192	1,192	1,192	1,192	1,192
MONTICELLO LAKE/RESERVOIR	RESERVOIR**	CYPRESS	FRESH	5,000	4,400	3,800	3,300	2,700	2,200
NECHES LIVESTOCK LOCAL SUPPLY	VAN ZANDT	NECHES	FRESH	1,136	1,136	1,136	1,136	1,136	1,136
NECHES RUN-OF-RIVER	VAN ZANDT	NECHES	FRESH	166	166	166	166	166	166
O' THE PINES LAKE/RESERVOIR	RESERVOIR**	CYPRESS	FRESH	169,700	169,900	167,000	165,700	164,300	163,000
PAT MAYSE LAKE/RESERVOIR	RESERVOIR**	RED	FRESH	59,670	59,670	59,670	59,670	59,670	59,670
RED LIVESTOCK LOCAL SUPPLY	BOWIE	RED	FRESH	17	17	14	23	36	43
RED LIVESTOCK LOCAL SUPPLY	LAMAR	RED	FRESH	0	0	0	0	0	0
RED LIVESTOCK LOCAL SUPPLY	RED RIVER	RED	FRESH	474	474	474	474	474	474
RED RUN-OF-RIVER	BOWIE	RED	FRESH	9,219	9,219	9,219	9,219	9,219	9,219

\* Salinity field indicates whether the source availability is considered 'fresh' (less than 1,000 mg/L), 'brackish' (1,000 to 10,000 mg/L), 'saline' (10,001 mg/L to 34,999 mg/L), or 'seawater' (35,000 mg/L or greater). Sources can also be labeled as 'fresh/brackish' or 'brackish/saline', if a combination of the salinity types is appropriate.

\*\* Since reservoir sources can exist across multiple counties, the county field value, 'reservoir' is applied to all reservoir sources.

### Region D Source Availability

SURFACE WATER SOURCE TYPE				SOURCE AVAILABILITY (ACRE-FEET PER YEAR)					
SOURCE NAME	COUNTY	BASIN	SALINITY *	2020	2030	2040	2050	2060	2070
RED RUN-OF-RIVER	LAMAR	RED	FRESH	8,609	8,609	8,609	8,609	8,609	8,609
RED RUN-OF-RIVER	RED RIVER	RED	FRESH	2,089	2,089	2,089	2,089	2,089	2,089
RHINES LAKE/RESERVOIR	RESERVOIR**	NECHES	FRESH	1,170	1,170	1,170	1,170	1,170	1,170
SABINE LIVESTOCK LOCAL SUPPLY	FRANKLIN	SABINE	FRESH	1	1	1	1	1	1
SABINE LIVESTOCK LOCAL SUPPLY	HOPKINS	SABINE	FRESH	1,208	1,208	1,208	1,208	1,208	1,208
SABINE LIVESTOCK LOCAL SUPPLY	HUNT	SABINE	FRESH	812	812	812	812	812	812
SABINE LIVESTOCK LOCAL SUPPLY	RAINS	SABINE	FRESH	675	675	675	675	675	675
SABINE LIVESTOCK LOCAL SUPPLY	UPSHUR	SABINE	FRESH	352	352	352	352	352	352
SABINE LIVESTOCK LOCAL SUPPLY	VAN ZANDT	SABINE	FRESH	1,035	1,035	1,035	1,035	1,035	1,035
SABINE LIVESTOCK LOCAL SUPPLY	WOOD	SABINE	FRESH	1,897	1,897	1,897	1,897	1,897	1,897
SABINE OTHER LOCAL SUPPLY	GREGG	SABINE	FRESH	2,500	2,500	2,500	2,500	2,500	2,500
SABINE OTHER LOCAL SUPPLY	VAN ZANDT	SABINE	FRESH	847	1,007	1,170	1,337	1,498	1,661
SABINE RUN-OF-RIVER	GREGG	SABINE	FRESH	12,792	12,792	12,792	12,792	12,792	12,792
SABINE RUN-OF-RIVER	HARRISON	SABINE	FRESH	95,019	95,019	95,019	95,019	95,019	95,019
SABINE RUN-OF-RIVER	HOPKINS	SABINE	FRESH	19	19	19	19	19	19
SABINE RUN-OF-RIVER	HUNT	SABINE	FRESH	19	19	19	19	19	19
SABINE RUN-OF-RIVER	RAINS	SABINE	FRESH	211	211	211	211	211	211
SABINE RUN-OF-RIVER	SMITH	SABINE	FRESH	994	994	994	994	994	994
SABINE RUN-OF-RIVER	UPSHUR	SABINE	FRESH	207	207	207	207	207	207
SABINE RUN-OF-RIVER	VAN ZANDT	SABINE	FRESH	715	715	715	715	715	715
SABINE RUN-OF-RIVER	WOOD	SABINE	FRESH	1,031	1,031	1,031	1,031	1,031	1,031
SULPHUR LIVESTOCK LOCAL SUPPLY	BOWIE	SULPHUR	FRESH	625	625	559	465	385	353
SULPHUR LIVESTOCK LOCAL SUPPLY	CASS	SULPHUR	FRESH	114	114	114	115	115	115
SULPHUR LIVESTOCK LOCAL SUPPLY	DELTA	SULPHUR	FRESH	231	231	231	231	231	231
SULPHUR LIVESTOCK LOCAL SUPPLY	FRANKLIN	SULPHUR	FRESH	393	393	393	393	393	393
SULPHUR LIVESTOCK LOCAL SUPPLY	HOPKINS	SULPHUR	FRESH	1,570	1,493	1,324	1,314	1,130	1,049
SULPHUR LIVESTOCK LOCAL SUPPLY	HUNT	SULPHUR	FRESH	300	300	300	300	300	300
SULPHUR LIVESTOCK LOCAL SUPPLY	LAMAR	SULPHUR	FRESH	1,623	1,623	1,623	1,623	1,623	1,623
SULPHUR LIVESTOCK LOCAL SUPPLY	MORRIS	SULPHUR	FRESH	207	207	207	207	212	212
SULPHUR LIVESTOCK LOCAL SUPPLY	RED RIVER	SULPHUR	FRESH	911	911	911	911	911	911
SULPHUR LIVESTOCK LOCAL SUPPLY	TITUS	SULPHUR	FRESH	156	156	156	156	156	156
SULPHUR OTHER LOCAL SUPPLY	DELTA	SULPHUR	FRESH	25	26	26	26	26	26
SULPHUR RUN-OF-RIVER	BOWIE	SULPHUR	FRESH	205	205	205	205	205	205
SULPHUR RUN-OF-RIVER	DELTA	SULPHUR	FRESH	9,188	9,188	9,188	9,188	9,188	9,188
SULPHUR RUN-OF-RIVER	FRANKLIN	SULPHUR	FRESH	474	474	474	474	474	474
SULPHUR RUN-OF-RIVER	HOPKINS	SULPHUR	FRESH	184	184	184	184	184	184
SULPHUR RUN-OF-RIVER	HUNT	SULPHUR	FRESH	0	0	0	0	0	0
SULPHUR RUN-OF-RIVER	LAMAR	SULPHUR	FRESH	0	0	0	0	0	0
SULPHUR RUN-OF-RIVER	RED RIVER	SULPHUR	FRESH	8,953	8,953	8,953	8,953	8,953	8,953
SULPHUR RUN-OF-RIVER	TITUS	SULPHUR	FRESH	1,465	1,465	1,465	1,465	1,465	1,465
SULPHUR SPRINGS LAKE/RESERVOIR	RESERVOIR**	SULPHUR	FRESH	11,464	11,464	11,464	11,464	11,464	11,464
TANKERSLEY LAKE/RESERVOIR	RESERVOIR**	CYPRESS	FRESH	1,500	1,500	1,500	1,500	1,500	1,500
TAWAKONI LAKE/RESERVOIR	RESERVOIR**	SABINE	FRESH	229,647	227,796	225,922	224,051	222,167	220,273
TRINITY LIVESTOCK LOCAL SUPPLY	HUNT	TRINITY	FRESH	34	34	34	34	35	35
TRINITY LIVESTOCK LOCAL SUPPLY	VAN ZANDT	TRINITY	FRESH	599	527	449	340	282	193

\* Salinity field indicates whether the source availability is considered 'fresh' (less than 1,000 mg/L), 'brackish' (1,000 to 10,000 mg/L), 'saline' (10,001 mg/L to 34,999 mg/L), or 'seawater' (35,000 mg/L or greater). Sources can also be labeled as 'fresh/brackish' or 'brackish/saline', if a combination of the salinity types is appropriate.

\*\* Since reservoir sources can exist across multiple counties, the county field value, 'reservoir' is applied to all reservoir sources.



### Region D Source Availability

SURFACE WATER SOURCE TYPE				SOURCE AVAILABILITY (ACRE-FEET PER YEAR)					
SOURCE NAME	COUNTY	BASIN	SALINITY *	2020	2030	2040	2050	2060	2070
TURKEY CREEK LAKE/RESERVOIR	RESERVOIR**	SULPHUR	FRESH	200	200	200	200	200	200
WELSH LAKE/RESERVOIR	RESERVOIR**	CYPRESS	FRESH	3,000	2,800	2,500	2,200	1,900	1,700
WRIGHT PATMAN LAKE/RESERVOIR	RESERVOIR**	SULPHUR	FRESH	347,566	335,665	323,757	311,788	299,726	287,530
<b>SURFACE WATER SOURCE AVAILABILITY TOTAL</b>				<b>1,404,054</b>	<b>1,386,621</b>	<b>1,363,661</b>	<b>1,343,791</b>	<b>1,322,922</b>	<b>1,301,984</b>
<b>REGION D SOURCE AVAILABILITY TOTAL</b>				<b>1,795,892</b>	<b>1,772,371</b>	<b>1,743,072</b>	<b>1,724,491</b>	<b>1,712,299</b>	<b>1,684,856</b>

\* Salinity field indicates whether the source availability is considered 'fresh' (less than 1,000 mg/L), 'brackish' (1,000 to 10,000 mg/L), 'saline' (10,001 mg/L to 34,999 mg/L), or 'seawater' (35,000 mg/L or greater). Sources can also be labeled as 'fresh/brackish' or 'brackish/saline', if a combination of the salinity types is appropriate.

\*\* Since reservoir sources can exist across multiple counties, the county field value, 'reservoir' is applied to all reservoir sources.

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## MEMO

**TO:** Ms. Sarah Backhouse  
**FROM:** Kristie Laughlin, P.G., James Beach, P.G. and Jennifer Herrera  
**SUBJECT:** Proposed Methodology for Determining Groundwater Availability in Region D on behalf of the North East Texas Regional Water Planning Group  
**DATE:** Revised May 24, 2019

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### Introduction

There are no Groundwater Conservation Districts (GCDs) in Region D. Chapter 357 states:

*If no groundwater conservation district exists within the RWPA, then the RWPG shall determine the Availability of groundwater for regional planning purposes. The Board shall review and consider approving the RWPG-Estimated Groundwater Availability, prior to inclusion in the IPP, including determining if the estimate is physically compatible with the desired future conditions for relevant aquifers in groundwater conservation districts in the co-located groundwater management area or areas. The EA shall use the Board's groundwater availability models as appropriate to conduct the compatibility review.*

Because there are no GCDs in Region D, the region wanted to exercise the right to refine the groundwater availability estimates to determine if the Modeled Available Groundwater (MAG) volumes estimated by the TWDB were appropriate for the region. Region D believes that local entities that operate wells and wellfields in the region have insight and information that may be helpful in refining the groundwater availability estimates. The refined evaluation is deemed necessary to ensure that historical use and local aquifer characteristics and conditions are properly considered when estimating local groundwater availability. Without local GCD representation and data, it is difficult for Groundwater Management Area (GMA) 11 and GMA 8 to assess groundwater availability at the level that may be required for local groundwater sources. Refinement of the groundwater availability estimates entailed comparing the MAGs for each county-aquifer-basin and calculated municipal pumpage in nine county-aquifer-basins. The term "relevant" as applied to groundwater aquifers, determines whether they are considered critical to joint groundwater planning. The 'relevant' designation can change from one planning cycle to the next.



Based on an initial evaluation, the county-aquifer-basins listed below appear to have historical pumping estimates that exceed the TWDB assigned MAG volumes, and thus have been analyzed herein:

1. Hunt County – Nacatoch Aquifer – Sulphur Basin
2. Delta County – Trinity Aquifer – Sulphur Basin
3. Hunt County – Trinity Aquifer – Trinity Basin
4. Lamar County – Trinity Aquifer – Red Basin
5. Hunt County – Woodbine Aquifer – Sabine Basin
6. Hunt County – Woodbine Aquifer – Sulphur Basin
7. Lamar County – Woodbine Aquifer – Red River Basin
8. Lamar County – Woodbine Aquifer – Sulphur Basin
9. Red River County – Woodbine Aquifer – Red River Basin

## Data

To investigate these nine county-aquifer-basin areas, WSP reviewed the following data:

- public water supply well locations, well depths, well tested capacities, and public water supply system average daily consumption volumes available via the Texas Commission on Environmental Quality (TCEQ) Texas Drinking Water Watch;
- groundwater well locations, depths and well yields available via TCEQ water well databases;
- groundwater well locations, depths and well yields available via the Texas Water Development Board (TWDB);
- TWDB groundwater availability model (GAM) run reports requested by GMA-8 for both the 2016 and 2021 planning cycles;
- structure surfaces derived for either the Northern Trinity Woodbine Groundwater Availability Model (NTWGAM) (Kelley and others, 2013) or the Nacatoch Brackish Availability Study (Laughlin and others, 2017); and
- TWDB historical groundwater pumping; (as described on the TWDB website):  
*“Each year the Texas Water Development Board conducts an annual survey of ground and surface water use by municipal and industrial entities within the state of Texas. The information obtained, as well as water use estimates for irrigation, livestock and mining is then utilized by the Texas Water Development Board for water resources planning. The historical water use estimates and survey information is subject to revision as additional data and corrections are made available to the TWDB.”*



## Methodology

### *Municipal Pumping*

The focus of the analyses is primarily on municipal pumping because it accounts for 65 percent of all groundwater used in Region D, based on 2016 historical pumping estimates. Additionally, the municipal estimates are the actual pumping reported by PWS entities to TWDB via annual surveys. To determine if the MAG volumes were adequate to support public water supply (PWS) pumping, PWS locations were verified to be active and to have the correct aquifer designation based on geologic structure. River basin splits, where applicable, were noted for each public system, so that pumping could be properly allocated to compare to MAG volumes split out by basin.

Total tested well capacities were then summed for PWS wells per county-aquifer-basin. Total tested well capacity actually represents maximum system capacity, which is how much a system could pump if it pumped its wells 24 hours a day, seven days a week, for 365 days a year at full capacity. To adjust the total system capacity to a more realistic pumping volume, it is assumed that wells typically pump for only six hours a day. Thus, the maximum system capacity is divided by four to derive the expected average annual pumping for the system. The average daily consumption of the system, if reported, is also converted to an annual volume to represent the average annual PWS system pumping. The estimates of average annual pumping volume are then compared to the MAG volume.

### *Non-municipal Pumping*

The only non-municipal estimates that are based on annual surveys are pumping estimates reported by industrial users, which accounted for approximately four percent of Region D pumping in 2016. To verify non-municipal historical pumping estimates, existing non-municipal well locations were verified (when possible) to be active and aquifer designations were either determined (from state well reports) or verified (for TWDB historical wells) using the geologic structure sources mentioned previously. Non-surveyed estimates were then evaluated to determine if they can be substantiated by existing active wells found within the county-aquifer-basin. Note that the non-surveyed estimates for irrigation and livestock are calculated by the TWDB as follows:

*Livestock water-use estimates are derived from annual livestock population estimates produced by the Texas Agricultural Statistics Service. Estimated water use per animal unit is based on research conducted by the Texas Agricultural Experiment Station.*

*Irrigated agriculture water-use estimates are based on annual crop acreage from the Natural Resources Conservation Service (prior to 2001) and the Farm Service Administration*



*(2001 and later). Irrigation rates per acre are estimated based on potential evapotranspiration, with final estimates reviewed by local authorities.*

Since the non-surveyed volumes are county-wide estimates and are not location-specific, in some areas they can erroneously assign pumping to water users that cannot be substantiated using the publicly-available state well databases and other resources. WSP considered the non-surveyed historical pumping estimates to be questionable when there is no well data to support the assumption that the demands are supplied by wells in that specific county-aquifer-basin. TWDB's non-surveyed historical estimates may not have any direct relationship to MAG volumes or regional supply estimates but they can provide insight for water resource planning.

The above analyses identify where and by how much WUGs within Region D have existing groundwater supplies that exceed MAG amounts, with recommendations for two specific county-aquifer-basins to be increased based on a local hydrogeologic assessment based on available information base. Additional consideration has been given by Region D to the identification of amounts of groundwater available for future water management strategies (WMSs) in the region.

At present, the evaluation of potentially feasible WMSs is underway, but are not yet complete. An analysis has been performed to develop an estimate of the maximum amount of groundwater for individual county-aquifer-basins that may be identified as an available source for Region D. The approach proposed herein is that these estimated maximums be reviewed and possibly approved by TWDB, with an acknowledgement that local hydrogeologic analyses similar to the methods presented herein for existing groundwater availability in Region D will be performed which may further limit the amount of groundwater availabilities for each county-aquifer-basin combination within the region. Said another way, the estimates presented within this memorandum represent the maximum amount of groundwater available within Region D above the MAG, and if the local hydrogeological assessment performed by Region D during WMS evaluations indicates an amount lower than these estimated maximums, then whichever between the two is the lower amount becomes the limiting factor that establishes the availability to be employed for characterizing groundwater availability for the purposes of the 2021 Region D Plan.

To derive the estimated maximum amounts of groundwater availability above existing MAG amounts for each county-aquifer-basin, the following analyses were performed:



1. WUG second-tier needs were evaluated to determine whether groundwater is a potential source of supply. If groundwater was identified as a potential source, the second-tier WUG needs were summed by county and basin.
2. Source water balances for each county-aquifer-basin combination were then summed to represent the amount of MAG available after allocation of existing groundwater supplies to Region D entities.
3. The summed second tier need by county-basin for each Region D WUG (from Item 1) was then compared to the remaining available MAG amount by county-aquifer-basin (from Item 2) to determine the amount of water, by county-aquifer-basin, potentially needed above the MAG.
4. Those instances where the summed second tier need exceeds MAG availability were then tabulated by county-aquifer-basin by the total amount over the MAG.
5. The maximum amount over the MAG over the 50-year planning period was then calculated for each county-aquifer-basin.

This approach results in a conservative estimate of the amount of water to be identified by Region D as being potentially available above the MAG, and is conservative in two aspects:

- a) WUGs may have alternative sources more viable than groundwater; and
- b) WUGs may utilize one county-aquifer-basin over another, but for the present purposes it has been assumed that either county-aquifer-basin may be used, so the resultant maximum amounts may be higher than the application of a specific source to meet an identified need.

## Results

Table 1 is a summary of findings for existing groundwater use using the methods described above. MAG volumes for two of the nine county-aquifer basins are probably not sufficient. It is recommended that further communication with TWDB be made regarding these areas.

Table 2 details the recommended existing supply volumes for all county-aquifer-basins, while Table 3 presents the original groundwater availabilities identified by TWDB, additional maximum amounts of availability of groundwater to meet existing supplies (from Table 2), the additional estimated maximum amounts potentially necessary to meet future water management strategies within Region D, and the resultant requested groundwater availability for each decade by county-aquifer-basin. This requested groundwater availability amount is



the sum of the original availabilities, the additional availabilities identified by Region D for existing supplies, and the maximum estimated overage potentially needed for future water management strategies.

For the purposes of the 2021 Region D Water Plan, the methodologies used herein are proposed for estimating groundwater availability in Region D. Using these methods, for the identified county-aquifer-basins where existing supplies potentially exceed the TWDB MAG volumes, it appears that the MAG volumes are sufficient for existing supply amounts for seven of the county-aquifer-basins.

It is proposed that these methods be used to comparatively assess and evaluate TWDB MAG volumes and groundwater availabilities for potentially feasible Water Management Strategies within the Region D Planning Area. While Region D has not completed a thorough assessment of local aquifer conditions for each WUG that may need a groundwater strategy, conservative estimates of the maximum amount above the MAG for each county-aquifer-basin have been derived and are presented herein. Local hydrogeologic evaluations consistent with the methods described herein are proposed to be completed on a case-by-case basis for WUGs with identified needs, and where a potential groundwater strategy is considered, the lower of either the requested maximums presented herein or the result of the local evaluation will be employed to establish groundwater availability for the specific county-aquifer-basin for the purposes of the 2021 Region D Plan.





**Table 1. Summary of Findings: Source Water Evaluation and MAGs, in acre-feet per year**

County-Aquifer-Basin	2021 MAG	Historical Estimate	Municipal Pumping	Findings
Hunt – Nacatoch - Sulphur	491 (non-relevant = 2016 MAG)	608 (MUN, IRR, STK)	730 (Commerce, Campbell WSC, Maloy WSC, TAMU)	The MAG is not sufficient. Cumulative pumping volumes for non-municipal users is unknown.
Delta – Trinity – Sulphur	56	145 (IRR, STK)	41 (Ben Franklin and West Delta WSCs)	The MAG is sufficient for municipal supply. Historical pumping estimates are not substantiated. The only existing Trinity wells are public water supply wells and over 3,000 feet deep. Professional judgement indicates that 3000 feet deep wells are not economically feasible to meet irrigation and livestock demands.
Hunt – Trinity – Trinity -	0	0	No Trinity municipal pumping	Historical pumping erroneously reported in Hunt County but should be reported in Fannin County.
Lamar – Trinity – Red	0	0	No Trinity municipal pumping	There are no Trinity wells in Lamar County in the Red River basin.
Hunt - Woodbine - Sabine	269	79 (MUN)	267 (Celeste, Hickory Creek SUD – 1 well)	The MAG should be sufficient for municipal supply. There are no other uses reported.
Hunt - Woodbine - Sulphur	165	89 (MUN)	110 This is 22 percent of the total volume reported for Hickory Creek SUD system (405 afy). Pumpage is weighted by basin based on tested well capacities.	The MAG should be sufficient for municipal supply. Only one of the four system wells is located in the Sulphur Basin. There are no other uses reported.
Lamar - Woodbine – Red	0	18 (MUN, STK)	No Woodbine PWS pumping.	The MAG is probably not sufficient. No active public supply wells. There are a few newer domestic wells, livestock and irrigation wells drilled within the last 6 years. Cumulative pumping is unknown, but is likely greater than 18 afy.
Lamar - Woodbine - Sulphur	49	5 (MUN)	No Woodbine PWS pumping after 2011	This MAG should be sufficient. No active public supply wells. No active livestock wells.
Red River - Woodbine – Red	2	1 (MUN)	No Woodbine PWS pumping	The MAG is probably adequate. Historical pumping is questionable based on existing well data. One domestic well is possibly active.

MUN = municipal; IRR = irrigation; STK = livestock



**Table 2. Recommended Availability Volumes, in acre-feet per year**

County-Aquifer-Basin	2021 MAG	Historical Estimate	Municipal Pumping	Recommended Volume	Justification
Hunt - Nacatoch - Sulphur	491 (non-relevant = 2016 MAG)	608 (MUN, IRR, STK)	730 (Commerce, Campbell WSC, Maloy WSC, TAMU)	<b>1,092</b> 730 municipal pumping plus 362 other uses	There are approximately 50 domestic, irrigation and livestock wells in the state driller's report database in this county-aquifer-basin. The average well yield is 18 gpm. Assume wells pump 6 hours a day. Total of 225 gpm is 362 acre-feet/year.
Delta - Trinity - Sulphur	56	145 (IRR, STK)	41	<b>56</b>	MAG volume is recommended. It is sufficient for municipal supply. The only Trinity wells are for public supply (over 3,000 ft. deep).
Hunt - Trinity - Trinity -	0	0	0	<b>0</b>	MAG of zero is recommended, since the North Hunt SUD pumping is in Fannin County.
Lamar - Trinity - Red	0	0	0	<b>0</b>	MAG of zero is recommended, since there are no Trinity wells.
Hunt - Woodbine - Sabine	269	79 (MUN)	267	<b>269</b>	MAG volume recommended. It is currently sufficient for municipal supply, and there are no other uses reported.
Hunt - Woodbine - Sulphur	165	89 (MUN)	110	<b>165</b>	MAG volume recommended. It is currently sufficient for municipal supply, and there are no other uses reported.
Lamar - Woodbine - Red	0	18 (MUN, STK)	No Woodbine PWS pumping.	<b>60</b>	There are approximately 10 domestic, irrigation and livestock wells in the state driller's report database in this county-aquifer-basin. The average well yield is 15 gpm. Assume wells pump 6 hours a day. Total of 37.5 gpm is 60 acre-feet/year.
Lamar - Woodbine - Sulphur	49	5 (MUN)	No Woodbine PWS pumping after 2011	<b>49</b>	MAG volume recommended. No active public supply wells. No active domestic, irrigation or livestock wells.
Red River - Woodbine - Red	2	1 (MUN)	No Woodbine PWS pumping	<b>2</b>	MAG volume recommended. One domestic well is possibly active.

MUN = municipal; IRR = irrigation; STK = livestock



**Table 3. Region D Total Requested Groundwater Availability by County-Aquifer-Basin (ac-ft/yr)**

County/Aquifer/Basin	Existing Groundwater Availability						Additional Volume for Existing Supply*	Maximum Estimated Overage for Future Supply	Requested Groundwater Availability					
	2020	2030	2040	2050	2060	2070			2020	2030	2040	2050	2060	2070
BOWIE/BLOSSOM AQUIFER/RED	21	21	21	21	21	21	0	231	252	252	252	252	252	252
BOWIE/BLOSSOM AQUIFER/SULPHUR	180	180	180	180	180	180	0	237	417	417	417	417	417	417
CAMP/CARRIZO-WILCOX AQUIFER/CYPRESS	4,050	4,050	4,050	4,050	4,050	4,050	0	2,120	6,170	6,170	6,170	6,170	6,170	6,170
DELTA/TRINITY AQUIFER/SULPHUR	56	56	56	56	56	56	0	15	71	71	71	71	71	71
HARRISON/CARRIZO-WILCOX AQUIFER/CYPRESS	6,183	6,109	6,070	6,036	6,016	5,990	0	1,058	7,241	7,167	7,128	7,094	7,074	7,048
HOPKINS/NACATOCH AQUIFER/SABINE	291	291	291	291	291	291	0	100	391	391	391	391	391	391
HOPKINS/CARRIZO-WILCOX AQUIFER/SULPHUR	3,237	3,237	3,237	3,237	3,237	3,237	0	4,305	7,542	7,542	7,542	7,542	7,542	7,542
HOPKINS/NACATOCH AQUIFER/SULPHUR	916	916	916	916	916	916	0	6,353	7,269	7,269	7,269	7,269	7,269	7,269
HUNT/NACATOCH AQUIFER/SABINE	3,303	3,303	3,303	3,303	3,303	3,303	0	16,533	19,836	19,836	19,836	19,836	19,836	19,836
HUNT/NACATOCH AQUIFER/SULPHUR	491	491	491	491	491	491	1,092	0	1,583	1,583	1,583	1,583	1,583	1,583
HUNT/TRINITY AQUIFER/SABINE	0	0	0	0	0	0	0	19,262	19,262	19,262	19,262	19,262	19,262	19,262
HUNT/WOODBINE AQUIFER/SABINE	269	268	269	268	269	268	0	19,262	19,531	19,530	19,531	19,530	19,531	19,530
HUNT/NACATOCH AQUIFER/SULPHUR	491	491	491	491	491	491	0	2,425	2,916	2,916	2,916	2,916	2,916	2,916
HUNT/TRINITY AQUIFER/SULPHUR	3	3	3	3	3	3	0	2,425	2,428	2,428	2,428	2,428	2,428	2,428



County/Aquifer/Basin	Existing Groundwater Availability						Additional Volume for Existing Supply*	Maximum Estimated Overage for Future Supply	Requested Groundwater Availability					
	2020	2030	2040	2050	2060	2070			2020	2030	2040	2050	2060	2070
HUNT/WOODBINE AQUIFER/SULPHUR	165	165	165	165	165	165	0	2,405	2,570	2,570	2,570	2,570	2,570	2,570
HUNT/TRINITY AQUIFER/TRINITY	0	0	0	0	0	0	0	124	124	124	124	124	124	124
LAMAR/BLOSSOM AQUIFER/RED	323	323	323	323	323	323	0	1,565	1,888	1,888	1,888	1,888	1,888	1,888
LAMAR/TRINITY AQUIFER/RED	0	0	0	0	0	0	0	1,888	1,888	1,888	1,888	1,888	1,888	1,888
LAMAR/WOODBINE AQUIFER/RED	0	0	0	0	0	0	60	1,888	1,948	1,948	1,948	1,948	1,948	1,948
LAMAR/BLOSSOM AQUIFER/SULPHUR	71	71	71	71	71	71	0	370	441	441	441	441	441	441
LAMAR/NACATOCH AQUIFER/SULPHUR	110	110	110	110	110	110	0	331	441	441	441	441	441	441
LAMAR/TRINITY AQUIFER/SULPHUR	8	8	8	8	8	8	0	435	443	443	443	443	443	443
LAMAR/WOODBINE AQUIFER/SULPHUR	49	49	49	49	49	49	0	441	490	490	490	490	490	490
RAINS/NACATOCH AQUIFER/SABINE	1	1	1	1	1	1	0	149	150	150	150	150	150	150
RED RIVER/NACATOCH AQUIFER/RED	58	58	58	58	58	58	0	134	192	192	192	192	192	192
RED RIVER/TRINITY AQUIFER/RED	52	52	52	52	52	52	0	155	207	207	207	207	207	207
RED RIVER/WOODBINE AQUIFER/RED	2	2	2	2	2	2	0	184	186	186	186	186	186	186
RED RIVER/BLOSSOM AQUIFER/SULPHUR	625	625	625	625	625	625	0	2,391	3,016	3,016	3,016	3,016	3,016	3,016
RED RIVER/CARRIZO-WILCOX AQUIFER/SULPHUR	0	0	0	0	0	0	0	2,391	2,391	2,391	2,391	2,391	2,391	2,391



County/Aquifer/Basin	Existing Groundwater Availability						Additional Volume for Existing Supply*	Maximum Estimated Overage for Future Supply	Requested Groundwater Availability					
	2020	2030	2040	2050	2060	2070			2020	2030	2040	2050	2060	2070
RED RIVER/NACATOCH AQUIFER/SULPHUR	1,047	1,047	1,047	1,047	1,047	1,047	0	2,212	3,259	3,259	3,259	3,259	3,259	3,259
RED RIVER/TRINITY AQUIFER/SULPHUR	125	125	125	125	125	125	0	2,326	2,451	2,451	2,451	2,451	2,451	2,451
TITUS/CARRIZO-WILCOX AQUIFER/CYPRESS	7,215	7,064	6,834	6,786	6,735	6,634	0	2,207	9,422	9,271	9,041	8,993	8,942	8,841
TITUS/QUEEN CITY AQUIFER/CYPRESS	144	144	144	144	144	144	0	2,063	2,207	2,207	2,207	2,207	2,207	2,207
VAN ZANDT/CARRIZO-WILCOX AQUIFER/SABINE	4,629	4,629	4,456	4,397	4,397	4,270	0	132	4,761	4,761	4,588	4,529	4,529	4,402

\*Note: Amount as identified in Table 2.



## References

- Kelley, V., Jones, T., Young, S., Hamlin, S., Pinkard, J., Harding, J., Jigmond, M., Yan, T., Scanlon, B., Reedy, B., Beach, J., Davidson, T., and Laughlin, K., 2013. Updated Groundwater Availability Model of the Northern Trinity and Woodbine Aquifers: Conceptual Model Report; prepared by Intera, The University of Texas at Austin Bureau of Economic Geology, and LBG-Guyton Associates for the Texas Water Development Board.
- Laughlin, K., Fleischhauer, L., Wise, M., Hamlin, S., Banerji, D., and Beach, J., 2017. Identification of Potential Brackish Groundwater Production Areas – Nacatoch Aquifer, TWDB Contract Number 1600011952; prepared by LBG-Guyton Associates, Collier Consulting, Inc. and The University of Texas at Austin Bureau of Economic Geology, July 2017, 154 pages.

**TO:** Ron Ellis, Texas Water Development Board (TWDB) Project Manager, Region D Regional Water Planning Area

**THROUGH:** John T. Dupnik, P.G., Deputy Executive Administrator for Water Sciences and Conservation JD  
 Larry French, P.G., Director, Groundwater LF  
 Cindy Ridgeway, P.G., Manager, Groundwater Availability Modeling CR

**FROM:** Jerry Shi, Ph.D., P.G., Groundwater Availability Modeling J.S.  
 Shirley Wade, Ph.D., P.G., Groundwater Availability Modeling S.W.

**DATE:** August 27, 2019

**SUBJECT:** Technical Review of North East Texas Regional Water Planning Group Proposed Methodology for Determining Groundwater Availability in Region D

**SUMMARY**

Groundwater modeling of the methodology for groundwater availability proposed by the North East Texas Regional Water Planning Group results in widespread exceedances of desired future conditions and in some areas dewatering of multiple aquifers. Therefore, groundwater staff do not recommend approval of the submitted groundwater availability estimates for the Carrizo-Wilcox, Trinity, Queen City, and Woodbine aquifers. Although modeling results for the Carrizo-Wilcox and Queen City aquifers do not generate water-level drawdowns that exceed the desired future conditions in any groundwater conservation district adjacent to Region D, modeling results do suggest that these aquifers may not be able to produce the proposed groundwater availability amounts requested by the Northeast Texas Regional Water Planning Group (Region D) in some areas within Region D. For the Trinity and Woodbine aquifers, the modeling results suggest the desired future conditions in Upper Trinity, North Texas, Prairielands, Red River, Southern Trinity, Middle Trinity, and Northern Trinity groundwater conservation districts may be exceeded.

**BACKGROUND**

On May 24, 2019, Kristie Laughlin, James Beach, and Jennifer Herrera from WSP on behalf of Region D, submitted a proposed methodology for determining groundwater availability in Region D to Sarah Backhouse, manager of the TWDB Regional Water Planning

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Department. Because there are no groundwater conservation districts in Region D, the planning group estimated groundwater availability for the aquifers in Region D. Aquifers in Region D include the Carrizo-Wilcox, Queen City, Nacatoch, Blossom, Trinity, and Woodbine aquifers. TWDB Groundwater Availability Modeling Department staff have reviewed the proposed groundwater availability estimates to determine whether they are compatible with the desired future conditions of the aquifers in Groundwater Management Areas 8 and 11. The Blossom and Nacatoch aquifers were declared nonrelevant in Groundwater Management Area 8 and they do not have desired future conditions, so their compatibility does not need to be reviewed. The Trinity and Woodbine aquifers have desired future conditions in Groundwater Management Area 8 and the Carrizo-Wilcox and Queen City aquifers have desired future conditions in Groundwater Management Area 11.

### **KEY ISSUES**

The technical review of the proposed groundwater availability estimates consisted of verifying that the pumping rates will not generate drawdowns that exceed the desired future conditions for the Trinity and Woodbine aquifers in Groundwater Management Area 8 and for the Carrizo-Wilcox, Queen City, and Sparta aquifers in Groundwater Management Area 11.

Our review of the technical materials provided by Region D showed several inconsistencies. For example, proposed estimates of groundwater availability for the Carrizo-Wilcox and Queen City aquifers in Region D are not discussed in the text of the WSP memo; however, proposed estimates for these aquifers are listed in Table 3 of the WSP memo. In addition, some of the groundwater availability estimates proposed in the text of the WSP memo for the Trinity and Woodbine aquifers were also listed at higher levels in Table 3.

### **ANALYSIS**

#### *Groundwater Management Area 11: Carrizo-Wilcox and Queen City aquifers*

Groundwater staff revised the model pumping file for “Scenario 4” – the model simulation that resulted in values of modeled available groundwater for the adopted desired future conditions in the Groundwater Management Area 11 (Wade, 2017). The revision to Scenario 4 increased the groundwater availability amounts for the county/basin combinations shown in Tables 1 through 3. In areas where no pumping was present in Scenario 4, the requested county/basin pumping volume was evenly distributed. Factors were applied where pumping in Scenario 4 were less than the Region D requested pumping volumes. Groundwater staff then ran the groundwater availability model for the northern part of the Carrizo-Wilcox, Queen City, and Sparta aquifers (version 2.01; Figure 1) using the modified pumping file. Drawdowns from 2000 through 2070 were extracted from the model results and averaged by county and overall (Table 4). The methods and assumptions are the same as those discussed in the Groundwater Management Area 11 modeled



available groundwater report (Wade, 2017). The drawdowns are consistent with the desired future conditions if the difference between the modeled drawdown is within a 1-foot variance. The drawdown averages were compared with the Groundwater Management Area 11 desired future conditions (Table 4). While the desired future conditions were not exceeded in a groundwater conservation district, the overall desired future condition for Groundwater Management Area 11 and several counties without a groundwater conservation district were exceeded.

In addition to analyzing county average drawdowns from the proposed groundwater availability model run, groundwater staff also analyzed the model water budget to verify the groundwater availability values. Some of the pumping discharge volumes were reduced in the model run because of model cells going dry. A model cell going dry suggests that the aquifer may not be able to produce the modeled amount of pumping in a particular area. The maximum number of dry cells in 2070 were noted for each county basin for the desired future condition/modeled available groundwater run and for the revised groundwater availability model run (Table 2). The pumping values listed in Tables 2 and 3, Region D Actual Groundwater Availability, suggest the maximum amount of pumping that appears feasible in a particular aquifer, county, and basin.

#### *Groundwater Management Area 8: Trinity and Woodbine aquifers*

The groundwater availability model simulation that met the desired future conditions (Shi, 2018) was revised to accommodate the increased pumping in the Trinity (Figure 2) and Woodbine (Figure 3) aquifers requested by Region D. The increased pumping was evenly distributed in the official boundary extent of the Trinity and Woodbine aquifers by county, basin, and regional planning area. In applying the additional pumping, we used 365 days in a year except for 366 days in leap years. Pumping is slightly more in leap years to account for one more additional day of pumping.

After the model run, the pumping information extracted from the revised model budget file was compared with the modeled available groundwater from Shi (2018) as a quality control measure. The comparisons are presented in Table 5 for the Trinity Aquifer and Table 6 for the Woodbine Aquifer. The comparisons indicate that the revised model reflected the increased pumping requested by Region D, with slightly more pumping in leap years.

Using the same approach by Shi (2018), the simulated head values from the revised model were used to calculate drawdown values between 2070 and 2009 for both aquifers by counties (Tables 7 and 8), groundwater conservation districts (Table 9), and Groundwater Management Area 8 (Table 10). A desired future condition is exceeded if the drawdown from the revised model changes more than five feet and five percent relative to the desired future condition at the same time. Tables 7 through 10 indicate that, with the increased pumping in Region D, the desired future conditions would be exceeded in several counties and groundwater conservation districts within Groundwater Management Area 8.

Additional model simulations were performed to estimate the optimal pumping rates that could be used by Region D and still do not exceed the desired future conditions by county, groundwater conservation district, and Groundwater Management Area 8.

## **CONCLUSIONS**

The proposed groundwater availability estimates for the Queen City Aquifer do not affect the model estimated 2070 desired future conditions for Groundwater Management Area 11. Drawdown results are not presented for the Queen City Aquifer because the drawdowns with the revised pumping were within 1 foot of the desired future conditions listed in Table 1 of the modeled available groundwater report (Wade, 2017). The proposed groundwater availability estimates for the Carrizo-Wilcox Aquifer cause modeled average drawdowns which exceed the desired future conditions for Groundwater Management Area 11 in eight counties and overall (Table 4). However, none of the desired future conditions that are exceeded are in groundwater conservation districts.

Note, drawdown results are not presented for Red River County in Table 4 because Groundwater Management Area 11 did not adopt a desired future condition for the Carrizo-Wilcox Aquifer in Red River County. Although Red River County is not specifically mentioned in the joint resolution for Groundwater Management Area 11, the resolution did note that all counties with less than 200 square miles were considered non-relevant due to size.

An additional finding of concern is that the Region D proposed availability for the Carrizo-Wilcox Aquifer groundwater availability estimates also cause some model cells to go dry. The dry cells suggest that the aquifer may not be able to produce the proposed groundwater availability amounts in these areas.

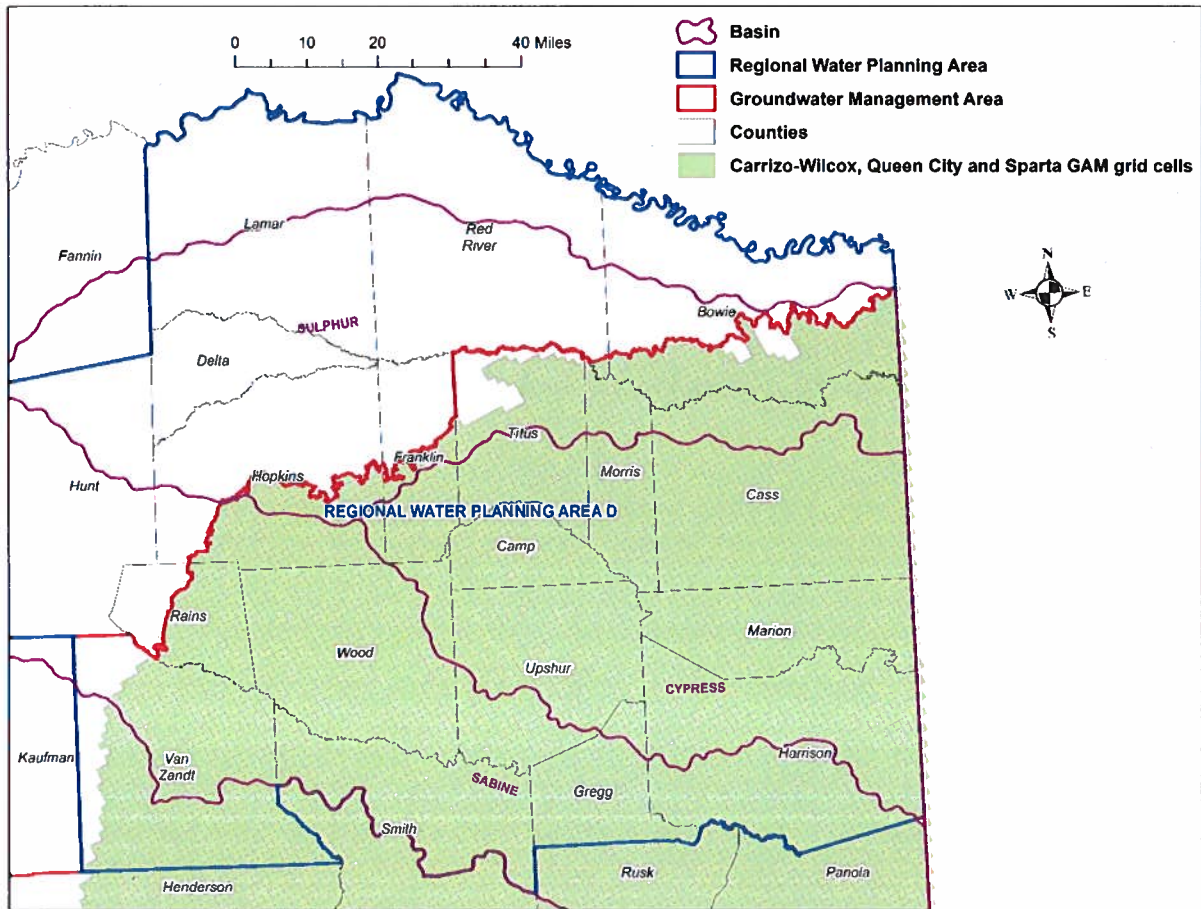
The proposed groundwater availability estimates for the Trinity and Woodbine aquifers are expected to cause water level declines. The declines may be greater than the desired future conditions for both Trinity and Woodbine aquifer in several counties and groundwater conservation districts within Groundwater Management Area 8 where the desired future conditions were defined (Tables 7 through 10).

The maximum feasible amount of pumping for Region D for the Carrizo-Wilcox and Queen City aquifers is noted in Table 3 and the optimal amount of pumping in Groundwater Management Area 8 that meets the desired future condition for the Trinity and Woodbine aquifers is noted in Table 11.

**REFERENCES**

Wade, S.C., 2017, GAM Run 17-024 MAG: Modeled Available Groundwater for the Carrizo-Wilcox, Queen City, and Sparta Aquifers in Groundwater Management Area 11, Texas Water Development Board, 24 p., [http://www.twdb.texas.gov/groundwater/docs/GAMruns/GR17-024\\_MAG.pdf](http://www.twdb.texas.gov/groundwater/docs/GAMruns/GR17-024_MAG.pdf)

Shi, J., 2018, Gam Run 17-029 MAG: Modeled Available Groundwater for the Trinity, Woodbine, Edwards (Balcones Fault Zone), Marble Falls, Ellenburger-San Saba, And Hickory Aquifers in Groundwater Management Area 8, Texas Water Development Board, 102 p., [https://www.twdb.texas.gov/groundwater/docs/GAMruns/GR17-029\\_MAG.pdf](https://www.twdb.texas.gov/groundwater/docs/GAMruns/GR17-029_MAG.pdf)



**Figure 1** Groundwater Availability Model for the Northern Part of the Carrizo-Wilcox, Queen City, and Sparta Aquifers in Groundwater Management Area 11 and Region D.

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**Table 1 Region D Proposed Groundwater Availability Compared with Modeled Available Groundwater (MAG) for Groundwater Management Area 11. All values in acre-feet per year.**

County	Basin	Aquifer	Region D	MAG (2020)	Factor	Additional
Camp	Cypress	Carrizo-Wilcox	6,170	4,050	1.52	NA
Harrison	Cypress	Carrizo-Wilcox	7,241	6,183	1.17	NA
Hopkins	Sulphur	Carrizo-Wilcox	7,542	3,237	2.33	NA
Red River	Sulphur	Carrizo-Wilcox	2,391	0	NA	2,391
Titus	Cypress	Queen City	2,207	144	NA	2,063
Titus	Cypress	Carrizo-Wilcox	9,422	7,215	1.31	NA
Van Zandt	Sabine	Carrizo-Wilcox	4,761	4,629	1.03	NA

NA: not applicable

**Table 2 Reductions of Modeled Groundwater Pumping Due to Dry Cells in Groundwater Management Area 11 and Region D. All values in acre-feet per year.**

County	Basin	Aquifer	Region D request	Region D Actual (2070)	Region D dry cell count (2070)	MAG (2070)	MAG dry cell count (2070)
Camp	Cypress	Carrizo-Wilcox	6,170	6,101	4	4,050	0
Harrison	Cypress	Carrizo-Wilcox	7,241	6,951	29	5,990	25
Hopkins	Sulphur	Carrizo-Wilcox	7,542	6,907	16	3,237	9
Red River	Sulphur	Carrizo-Wilcox	2,391	478	4	0	0
Titus	Cypress	Queen City	2,207	490	14	144	0
Titus	Cypress	Carrizo-Wilcox	9,422	8,494	35	6,634	32
Van Zandt	Sabine	Carrizo-Wilcox	4,761	4,398	15	4,270	15

**Table 3      Region D Actual Groundwater Availability (Region D request decreased by pumping from dry cells). All values in acre-feet per year.**

County	Basin	Aquifer	Region D Actual Groundwater Availability					
			2020	2030	2040	2050	2060	2070
Camp	Cypress	Carrizo-Wilcox	6,156	6,127	6,127	6,101	6,101	6,101
Harrison	Cypress	Carrizo-Wilcox	7,188	7,115	7,028	6,994	6,951	6,951
Hopkins	Sulphur	Carrizo-Wilcox	7,228	7,228	7,228	7,057	7,057	6,907
Red River	Sulphur	Carrizo-Wilcox	478	478	478	478	478	478
Titus	Cypress	Queen City	2,207	1,716	1,226	1,103	735	490
Titus	Cypress	Carrizo-Wilcox	9,234	9,016	8,889	8,753	8,560	8,494
Van Zandt	Sabine	Carrizo-Wilcox	4,768	4,768	4,590	4,528	4,528	4,398



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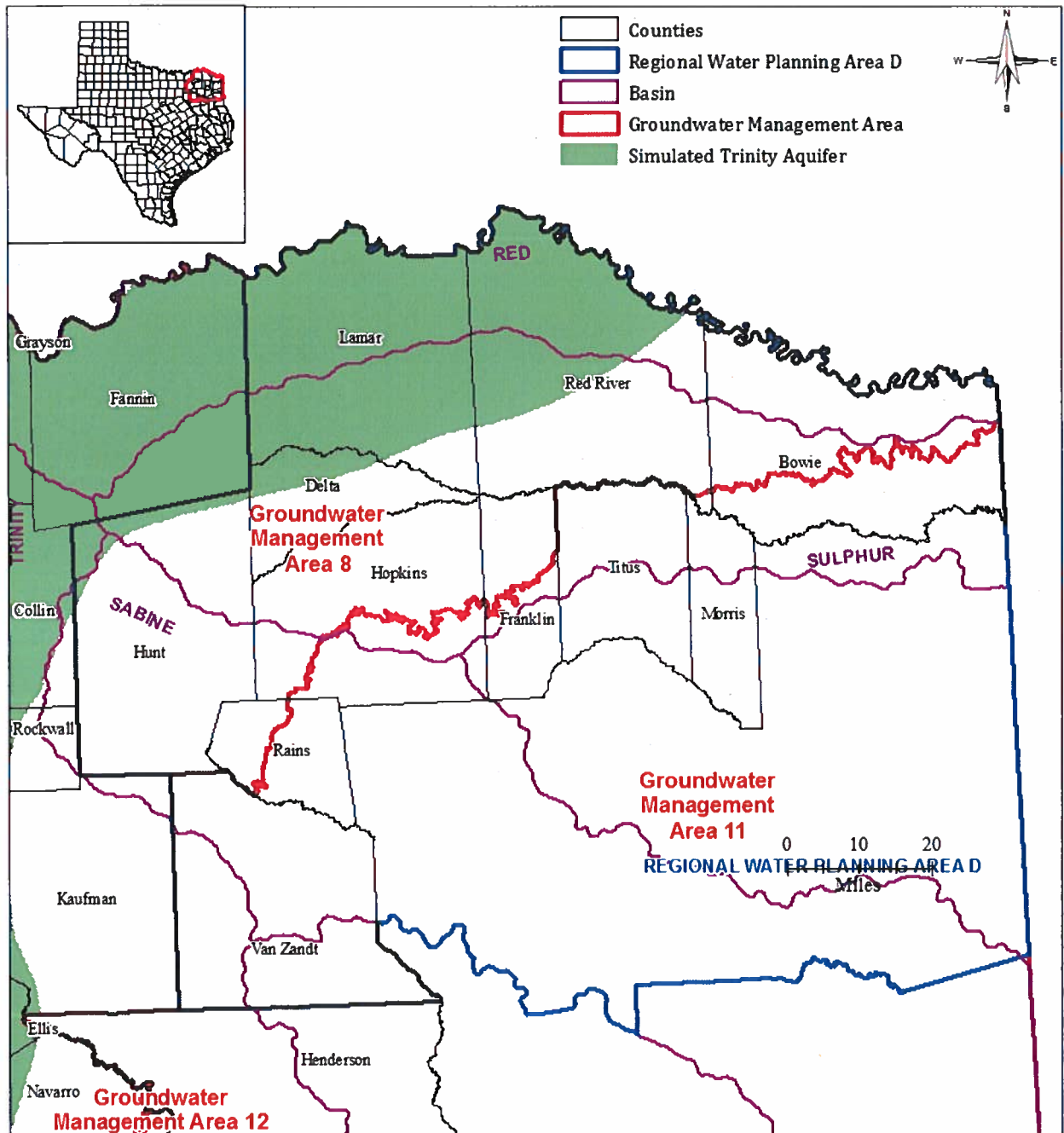
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**Table 4** Desired Future Conditions for the Carrizo-Wilcox Aquifer compared with Results from GAM Run 17-024 for Groundwater Management Area 11 and estimated drawdowns resulting from simulation of the requested groundwater availability from Region D.

County	Desired Future Conditions (feet) <sup>1</sup>	Scenario 4 (feet)	Region D (feet)
Anderson	90	90	90
Angelina	48	48	48
Bowie	5	5	5
Camp	33	33	44
Cass	68	68	69
Cherokee	99	99	99
Franklin	14	14	16
Gregg	58	58	59
Harrison	18	19	21
Henderson	50	50	50
Hopkins	3	3 <sup>2</sup>	6 <sup>2</sup>
Houston	80	80	80
Marion	45	45	47
Morris	46	46	51
Nacogdoches	29	29	29
Panola	3	2 <sup>2</sup>	4 <sup>2</sup>
Rains	1	1 <sup>2</sup>	1 <sup>2</sup>
Rusk	23	23	23
Sabine	9	9	9
San Augustine	7	7	7
Shelby	1	1	1
Smith	119	119	120
Titus	11	11	16
Trinity	51	51	51
Upshur	77	77	81
Van Zandt	21	21	21
Wood	89	89	90
<b>Overall</b>	<b>56</b>	<b>56</b>	<b>61</b>

<sup>1</sup> Drawdown in feet from 2000 to 2070.

<sup>2</sup> For county average drawdown calculations negative drawdowns were set to zero, but not for overall Groundwater Management Area 11 drawdown average.



**Figure 2 Simulated Trinity Aquifer in Groundwater Availability Model for the Northern Portion of the Trinity Aquifer and Woodbine Aquifer in Region D.**



**Table 5 Region D Requested Groundwater Availability Compared with Existing Available Groundwater and Re-Modeled Groundwater Availability for Trinity Aquifer.**

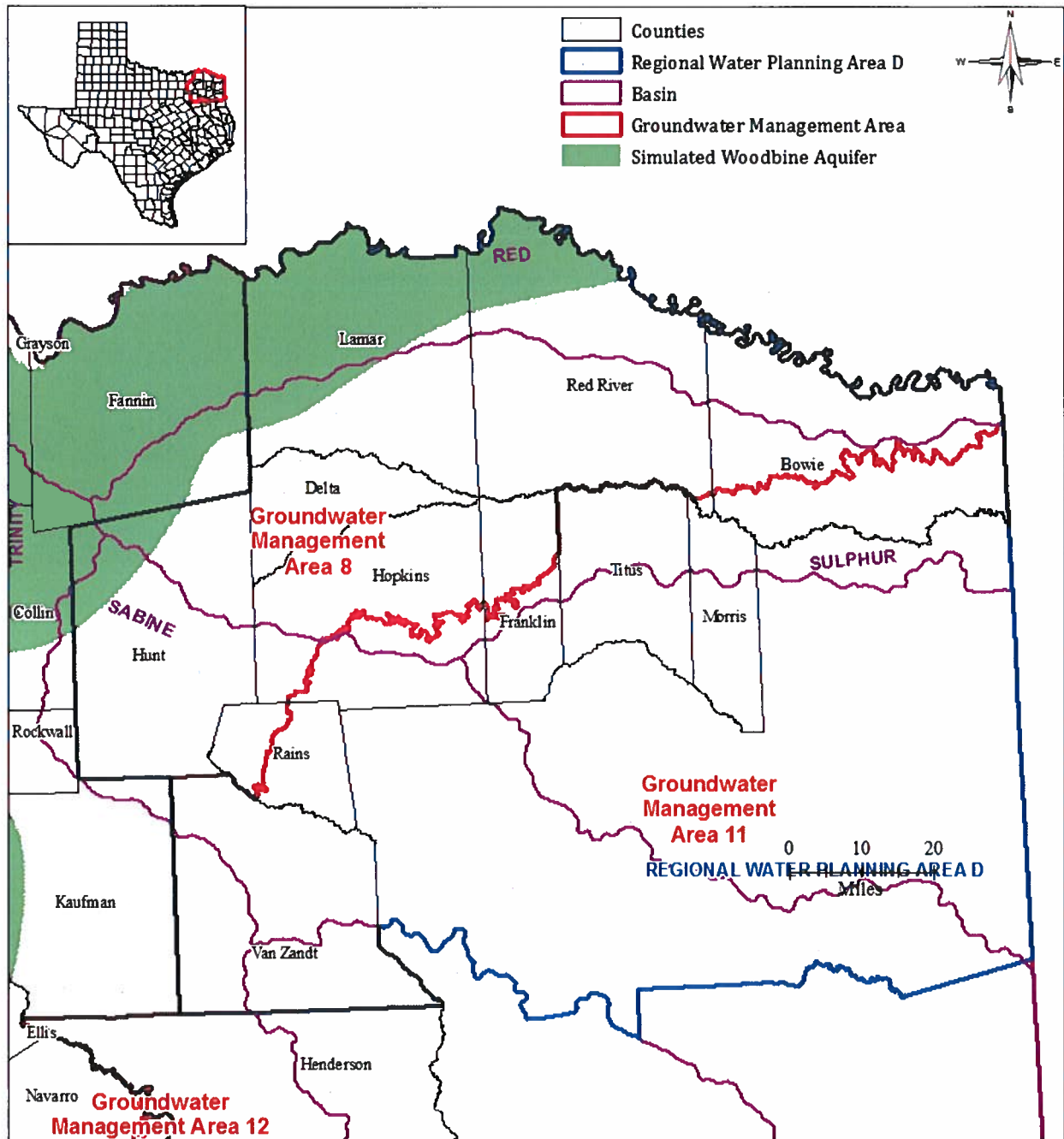
Pumping Scenario	County	Delta	Hunt	Hunt	Hunt	Lamar	Lamar	Red River	Red River
	Basin Year	Sulphur	Sabine	Sulphur	Trinity	Red	Sulphur	Red	Sulphur
Modeled Available Groundwater <sup>1</sup>	2020	56	0	3	0	0	8	52	125
	2030	56	0	3	0	0	8	52	125
	2040	56	0	3	0	0	8	52	125
	2050	56	0	3	0	0	8	52	125
	2060	56	0	3	0	0	8	52	125
	2070	56	0	3	0	0	8	52	125
Requested Groundwater Availability <sup>2</sup>	2020	71	19,262	2,428	124	1,888	443	207	2,451
	2030	71	19,262	2,428	124	1,888	443	207	2,451
	2040	71	19,262	2,428	124	1,888	443	207	2,451
	2050	71	19,262	2,428	124	1,888	443	207	2,451
	2060	71	19,262	2,428	124	1,888	443	207	2,451
	2070	71	19,262	2,428	124	1,888	443	207	2,451
Re-Modeled Groundwater Availability <sup>3</sup>	2020	71	19,315	2,434	125	1,894	444	208	2,457
	2030	71	19,261	2,428	125	1,888	443	208	2,451
	2040	71	19,315	2,434	125	1,894	444	208	2,457
	2050	71	19,261	2,428	125	1,888	443	208	2,451
	2060	71	19,315	2,434	125	1,894	444	208	2,457
	2070	71	19,261	2,428	125	1,888	443	208	2,451

1. Modeled Available Groundwater (Shi, 2018).
2. Requested Groundwater Availability data are from Region D.
3. Re-Modeled Groundwater Availability data are from model run based on Requested Groundwater Availability pumping data from Region D.

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**Figure 3** Simulated Woodbine Aquifer in Groundwater Availability Model for the Northern Portion of the Trinity Aquifer and Woodbine Aquifer in Region D.

**Table 6 Region D Requested Groundwater Availability Compared with Existing Available Groundwater and Re-Modeled Groundwater Availability for Woodbine Aquifer.**

Pumping Scenario	County	Hunt	Hunt	Lamar	Lamar	Red River
	Basin Year	Sabine	Sulphur	Red	Sulphur	Red
Modeled Available Groundwater <sup>1</sup>	2020	269	165	0	49	2
	2030	268	165	0	49	2
	2040	269	165	0	49	2
	2050	268	165	0	49	2
	2060	269	165	0	49	2
	2070	268	165	0	49	2
Requested Groundwater Availability <sup>2</sup>	2020	19,531	2,570	1,948	490	186
	2030	19,530	2,570	1,948	490	186
	2040	19,531	2,570	1,948	490	186
	2050	19,530	2,570	1,948	490	186
	2060	19,531	2,570	1,948	490	186
	2070	19,530	2,570	1,948	490	186
Re-Modeled Groundwater Availability <sup>3</sup>	2020	19,584	2,577	1,953	492	187
	2030	19,530	2,570	1,948	490	187
	2040	19,584	2,577	1,953	492	187
	2050	19,530	2,570	1,948	490	187
	2060	19,584	2,577	1,953	492	187
	2070	19,530	2,570	1,948	490	187

1. Modeled Available Groundwater (Shi, 2018).
2. Requested Groundwater Availability data are from Region D.
3. Re-Modeled Groundwater Availability data are from model run based on Requested Groundwater Availability pumping data from Region D.



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**Table 7 Comparison of Simulated Drawdowns by Model with Desired Future Conditions of Trinity And Woodbine Aquifers by Counties Not in Upper Trinity Groundwater Conservation District.**

County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns <sup>1</sup> (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>2</sup> (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>3</sup> (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance? <sup>4</sup>
<b>Woodbine</b>						
Bell	—	—	—	—	—	—
Bosque	—	—	—	—	—	—
Brown	—	—	—	—	—	—
Burnet	—	—	—	—	—	—
Callahan	—	—	—	—	—	—
Collin	459	459	977	518	113%	Yes
Comanche	—	—	—	—	—	—
Cooke	2	2	2	0	0%	No
Coryell	—	—	—	—	—	—
Dallas	123	123	282	159	129%	Yes
Delta	—	—	—	—	—	—
Denton	22	19	44	22	100%	Yes
Eastland	—	—	—	—	—	—
Ellis	61	61	112	51	84%	Yes
Erath	—	—	—	—	—	—
Falls	—	—	—	—	—	—
Fannin	247	247	644	397	161%	Yes
Grayson	160	157	272	112	70%	Yes
Hamilton	—	—	—	—	—	—
Hill	20	16	21	1	5%	No
Hunt	598	598	1,652	1,054	176%	Yes
Johnson	2	3	4	2	100%	No
Kaufman	208	208	500	292	140%	Yes
Lamar	38	38	266	228	600%	Yes
Lampasas	—	—	—	—	—	—
Limestone	—	—	—	—	—	—
McLennan	6	6	7	1	17%	No
Milam	—	—	—	—	—	—
Mills	—	—	—	—	—	—

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County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns <sup>1</sup> (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>2</sup> (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>3</sup> (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance? <sup>4</sup>
Navarro	92	92	125	33	36%	Yes
Red River	2	2	11	9	450%	Yes
Rockwall	243	243	744	501	206%	Yes
Somervell	—	—	—	—	—	—
Tarrant	7	6	7	0	0%	No
Taylor	—	—	—	—	—	—
Travis	—	—	—	—	—	—
Williamson	—	—	—	—	—	—
<b>Paluxy</b>						
Bell	19	19	19	0	0%	No
Bosque	6	6	7	1	17%	No
Brown	—	—	—	—	—	—
Burnet	—	—	—	—	—	—
Callahan	—	—	—	—	—	—
Collin	705	705	1,391	686	97%	Yes
Comanche	—	—	—	—	—	—
Cooke	—	—	—	—	—	—
Coryell	7	7	7	0	0%	No
Dallas	324	324	542	218	67%	Yes
Delta	264	264	854	590	223%	Yes
Denton	552	552	603	51	9%	Yes
Eastland	—	—	—	—	—	—
Ellis	107	107	215	108	101%	Yes
Erath	1	1	1	0	0%	No
Falls	144	144	150	6	4%	No
Fannin	688	688	1,811	1,123	163%	Yes
Grayson	922	922	1,712	790	86%	Yes
Hamilton	2	2	2	0	0%	No
Hill	38	38	51	13	34%	Yes
Hunt	586	586	2,199	1,613	275%	Yes
Johnson	-61	-61	-48	13	-21%	No
Kaufman	276	276	599	323	117%	Yes
Lamar	93	93	349	256	275%	Yes
Lampasas	—	—	—	—	—	—
Limestone	178	178	195	17	10%	Yes



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County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns <sup>1</sup> (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>2</sup> (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>3</sup> (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance? <sup>4</sup>
McLennan	35	35	39	4	11%	No
Milam	—	—	—	—	—	—
Mills	1	1	1	0	0%	No
Navarro	119	119	175	56	47%	Yes
Red River	21	21	150	129	614%	Yes
Rockwall	401	401	981	580	145%	Yes
Somervell	1	1	1	0	0%	No
Tarrant	101	101	122	21	21%	Yes
Taylor	—	—	—	—	—	—
Travis	—	—	—	—	—	—
Williamson	—	—	—	—	—	—
<b>Glen Rose</b>						
Bell	83	83	85	2	2%	No
Bosque	49	49	53	4	8%	No
Brown	2	2	2	0	0%	No
Burnet	2	2	2	0	0%	No
Callahan	—	—	—	—	—	—
Collin	339	339	1,122	783	231%	Yes
Comanche	1	1	1	0	0%	No
Cooke	—	—	—	—	—	—
Coryell	14	14	15	1	7%	No
Dallas	263	263	551	288	110%	Yes
Delta	181	181	823	642	355%	Yes
Denton	349	349	551	202	58%	Yes
Eastland	—	—	—	—	—	—
Ellis	194	194	336	142	73%	Yes
Erath	5	5	5	0	0%	No
Falls	215	215	225	10	5%	No
Fannin	280	280	1,421	1,141	408%	Yes
Grayson	337	337	1,264	927	275%	Yes
Hamilton	4	4	4	0	0%	No
Hill	133	133	166	33	25%	Yes
Hunt	299	299	1,900	1,601	535%	Yes
Johnson	58	58	90	32	55%	Yes
Kaufman	269	269	607	338	126%	Yes

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County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns <sup>1</sup> (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>2</sup> (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>3</sup> (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance? <sup>4</sup>
Lamar	97	97	514	417	430%	Yes
Lampasas	1	1	1	0	0%	No
Limestone	271	271	305	34	13%	Yes
McLennan	133	133	146	13	10%	Yes
Milam	212	212	216	4	2%	No
Mills	1	1	1	0	0%	No
Navarro	232	232	337	105	45%	Yes
Red River	36	36	253	217	603%	Yes
Rockwall	311	311	925	614	197%	Yes
Somervell	4	4	4	0	0%	No
Tarrant	148	148	217	69	47%	Yes
Taylor	—	—	—	—	—	—
Travis	85	85	85	0	0%	No
Williamson	77	76	77	0	0%	No
<b>Twin Mountains</b>						
Bell	—	—	—	—	—	—
Bosque	—	—	—	—	—	—
Brown	—	—	—	—	—	—
Burnet	—	—	—	—	—	—
Callahan	—	—	—	—	—	—
Collin	526	526	1244	718	137%	Yes
Comanche	—	—	—	—	—	—
Cooke	—	—	—	—	—	—
Coryell	—	—	—	—	—	—
Dallas	463	463	823	360	78%	Yes
Delta	—	—	—	—	—	—
Denton	716	716	1,017	301	42%	Yes
Eastland	—	—	—	—	—	—
Ellis	333	333	511	178	53%	Yes
Erath	6	6	6	0	0%	No
Falls	—	—	—	—	—	—
Fannin	372	372	1,380	1,008	271%	Yes
Grayson	417	417	1,287	870	209%	Yes
Hamilton	—	—	—	—	—	—
Hill	—	—	—	—	—	—



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County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns <sup>1</sup> (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>2</sup> (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>3</sup> (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance? <sup>4</sup>
Hunt	370	370	1,509	1,139	308%	Yes
Johnson	156	156	199	43	28%	Yes
Kaufman	381	381	841	460	121%	Yes
Lamar	—	—	—	—	—	—
Lampasas	—	—	—	—	—	—
Limestone	—	—	—	—	—	—
McLennan	—	—	—	—	—	—
Milam	—	—	—	—	—	—
Mills	—	—	—	—	—	—
Navarro	—	—	—	—	—	—
Red River	—	—	—	—	—	—
Rockwall	426	426	1,036	610	143%	Yes
Somervell	31	31	34	3	10%	No
Tarrant	315	315	409	94	30%	Yes
Taylor	—	—	—	—	—	—
Travis	—	—	—	—	—	—
Williamson	—	—	—	—	—	—
<b>Travis Peak</b>						
Bell	300	294	297	-3	-1%	No
Bosque	167	167	178	11	7%	Yes
Brown	1	1	1	0	0%	No
Burnet	16	16	16	0	0%	No
Callahan	—	—	—	—	—	—
Collin	—	—	—	—	—	—
Comanche	2	2	2	0	0%	No
Cooke	—	—	—	—	—	—
Coryell	99	100	102	3	3%	No
Dallas	348	350	655	307	88%	Yes
Delta	186	186	822	636	342%	Yes
Denton	—	—	—	—	—	—
Eastland	—	—	—	—	—	—
Ellis	301	305	496	195	65%	Yes
Erath	19	19	19	0	0%	No
Falls	462	460	473	11	2%	No
Fannin	269	269	1,181	912	339%	Yes

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County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns <sup>1</sup> (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>2</sup> (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>3</sup> (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance? <sup>4</sup>
Grayson	—	—	—	—	—	—
Hamilton	24	24	25	1	4%	No
Hill	298	299	351	53	18%	Yes
Hunt	324	324	1,426	1,102	340%	Yes
Johnson	179	184	243	64	36%	Yes
Kaufman	323	323	672	349	108%	Yes
Lamar	114	114	549	435	382%	Yes
Lampasas	6	6	6	0	0%	No
Limestone	392	393	433	41	10%	Yes
McLennan	471	468	488	17	4%	No
Milam	345	344	348	3	1%	No
Mills	7	7	7	0	0%	No
Navarro	290	291	413	123	42%	Yes
Red River	51	51	301	250	490%	Yes
Rockwall	—	—	—	—	—	—
Somervell	51	52	57	6	12%	Yes
Tarrant	—	—	—	—	—	—
Taylor	—	—	—	—	—	—
Travis	141	142	143	2	1%	No
Williamson	173	172	173	0	0%	No
<b>Hensell</b>						
Bell	137	137	138	1	1%	No
Bosque	129	129	136	7	5%	Yes
Brown	1	1	1	0	0%	No
Burnet	7	7	7	0	0%	No
Callahan	—	—	—	—	—	—
Collin	—	—	—	—	—	—
Comanche	2	2	2	0	0%	No
Cooke	—	—	—	—	—	—
Coryell	66	66	67	1	2%	No
Dallas	332	332	599	267	80%	Yes
Delta	—	—	—	—	—	—
Denton	—	—	—	—	—	—
Eastland	—	—	—	—	—	—
Ellis	263	263	409	146	56%	Yes

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County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns <sup>1</sup> (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>2</sup> (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>3</sup> (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance? <sup>4</sup>
Erath	11	11	11	0	0%	No
Falls	271	271	280	9	3%	No
Fannin	—	—	—	—	—	—
Grayson	—	—	—	—	—	—
Hamilton	13	13	13	0	0%	No
Hill	186	186	217	31	17%	Yes
Hunt	—	—	—	—	—	—
Johnson	126	126	167	41	33%	Yes
Kaufman	309	309	590	281	91%	Yes
Lamar	—	—	—	—	—	—
Lampasas	1	1	1	0	0%	No
Limestone	183	183	212	29	16%	Yes
McLennan	220	220	234	14	6%	Yes
Milam	229	229	231	2	1%	No
Mills	2	2	2	0	0%	No
Navarro	254	254	350	96	38%	Yes
Red River	—	—	—	—	—	—
Rockwall	—	—	—	—	—	—
Somervell	26	26	29	3	12%	No
Tarrant	—	—	—	—	—	—
Taylor	—	—	—	—	—	—
Travis	50	51	51	1	2%	No
Williamson	74	73	73	-1	-1%	No
<b>Hosston</b>						
Bell	330	330	333	3	1%	No
Bosque	201	201	214	13	6%	Yes
Brown	1	1	1	0	0%	No
Burnet	20	20	20	0	0%	No
Callahan	—	—	—	—	—	—
Collin	—	—	—	—	—	—
Comanche	3	3	3	0	0%	No
Cooke	—	—	—	—	—	—
Coryell	130	130	133	3	2%	No
Dallas	351	351	665	314	89%	Yes
Delta	—	—	—	—	—	—

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County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns <sup>1</sup> (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>2</sup> (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>3</sup> (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance ? <sup>4</sup>
Denton	—	—	—	—	—	—
Eastland	—	—	—	—	—	—
Ellis	310	310	509	199	64%	Yes
Erath	31	31	32	1	3%	No
Falls	465	465	478	13	3%	No
Fannin	—	—	—	—	—	—
Grayson	—	—	—	—	—	—
Hamilton	35	35	36	1	3%	No
Hill	337	337	396	59	18%	Yes
Hunt	—	—	—	—	—	—
Johnson	235	235	307	72	31%	Yes
Kaufman	295	295	584	289	98%	Yes
Lamar	—	—	—	—	—	—
Lampasas	11	11	11	0	0%	No
Limestone	404	404	445	41	10%	Yes
McLennan	542	542	564	22	4%	No
Milam	345	345	349	4	1%	No
Mills	13	13	13	0	0%	No
Navarro	291	291	415	124	43%	Yes
Red River	—	—	—	—	—	—
Rockwall	—	—	—	—	—	—
Somervell	83	83	91	8	10%	Yes
Tarrant	—	—	—	—	—	—
Taylor	—	—	—	—	—	—
Travis	146	148	148	2	1%	No
Williamson	177	176	177	0	0%	No
<b>Antlers</b>						
Bell	—	—	—	—	—	—
Bosque	—	—	—	—	—	—
Brown	2	2	2	0	0%	No
Burnet	—	—	—	—	—	—
Callahan	1	1	1	0	0%	No
Collin	570	570	1,046	476	84%	Yes
Comanche	9	9	9	0	0%	No
Cooke	176	179	236	60	34%	Yes

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County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns <sup>1</sup> (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>2</sup> (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>3</sup> (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance? <sup>4</sup>
Coryell	—	—	—	—	—	—
Dallas	—	—	—	—	—	—
Delta	—	—	—	—	—	—
Denton	395	398	527	132	33%	Yes
Eastland	3	3	3	0	0%	No
Ellis	—	—	—	—	—	—
Erath	12	11	11	-1	-8%	No
Falls	—	—	—	—	—	—
Fannin	251	251	910	659	263%	Yes
Grayson	348	348	678	330	95%	Yes
Hamilton	—	—	—	—	—	—
Hill	—	—	—	—	—	—
Hunt	—	—	—	—	—	—
Johnson	—	—	—	—	—	—
Kaufman	—	—	—	—	—	—
Lamar	122	122	517	395	324%	Yes
Lampasas	—	—	—	—	—	—
Limestone	—	—	—	—	—	—
McLennan	—	—	—	—	—	—
Milam	—	—	—	—	—	—
Mills	—	—	—	—	—	—
Navarro	—	—	—	—	—	—
Red River	13	13	84	71	546%	Yes
Rockwall	—	—	—	—	—	—
Somervell	—	—	—	—	—	—
Tarrant	148	149	171	23	16%	Yes
Taylor	0	0	0	0	0%	No
Travis	—	—	—	—	—	—
Williamson	—	—	—	—	—	—

1. Existing Drawdowns are from Shi (2018).
2. Values greater than five feet are highlighted.
3. Values greater than five percent are highlighted.
4. A desired future condition is violated only when drawdown change is greater than both five feet and five percent at the same time.

**Table 8 Comparison of Simulated Drawdowns by Model with Desired Future Conditions of Trinity Aquifer by Counties in Upper Trinity Groundwater Conservation District.**

County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns <sup>1</sup> (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>2</sup> (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>3</sup> (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance? <sup>4</sup>
<b>Paluxy</b>						
Hood (outcrop)	5	5	5	0	0%	No
Hood (downdip)	—	—	—	—	—	—
Montague (outcrop)	—	—	—	—	—	—
Montague (downdip)	—	—	—	—	—	—
Parker (outcrop)	5	5	5	0	0%	No
Parker (downdip)	1	1	1	0	0%	No
Wise (outcrop)	—	—	—	—	—	—
Wise (downdip)	—	—	—	—	—	—
<b>Glen Rose</b>						
Hood (outcrop)	7	7	7	0	0%	No
Hood (downdip)	28	27	31	3	11%	No
Montague (outcrop)	—	—	—	—	—	—
Montague (downdip)	—	—	—	—	—	—
Parker (outcrop)	10	10	10	0	0%	No
Parker (downdip)	28	28	37	9	32%	Yes
Wise (outcrop)	—	—	—	—	—	—
Wise (downdip)	—	—	—	—	—	—
<b>Twin Mountains</b>						
Hood (outcrop)	4	4	4	0	0%	No
Hood (downdip)	46	46	51	5	11%	No



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County	Desired Future Conditions (DFCs, feet)	Existing Drawdowns <sup>1</sup> (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>2</sup> (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>3</sup> (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance? <sup>4</sup>
Montague (outcrop)	—	—	—	—	—	—
Montague (downdip)	—	—	—	—	—	—
Parker (outcrop)	1	1	1	0	0%	No
Parker (downdip)	46	46	63	17	37%	Yes
Wise (outcrop)	—	—	—	—	—	—
Wise (downdip)	—	—	—	—	—	—
<b>Antlers</b>						
Hood (outcrop)	—	—	—	—	—	—
Hood (downdip)	—	—	—	—	—	—
Montague (outcrop)	18	18	21	3	17%	No
Montague (downdip)	—	—	—	—	—	—
Parker (outcrop)	11	11	14	3	27%	No
Parker (downdip)	—	—	—	—	—	—
Wise (outcrop)	34	35	42	8	24%	Yes
Wise (downdip)	142	142	168	26	18%	Yes

- Existing Drawdowns are from Shi (2018).
- Values greater than five feet are highlighted.
- Values greater than five percent are highlighted.
- A desired future condition is violated only when drawdown change is greater than both five feet and five percent at the same time.

**Table 9 Comparison of Simulated Drawdowns by Model with Desired Future Conditions (DFCs) of Trinity and Woodbine Aquifers by Groundwater Conservation Districts (GCDs).**

Groundwater Conservation District	Desired Future Conditions (DFCs, feet)	Existing Drawdowns <sup>1</sup> (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>2</sup> (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>3</sup> (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance <sup>4</sup> ?
<b>Woodbine</b>						
Central Texas GCD	—	—	—	—	—	—
Clear Water GCD	—	—	—	—	—	—
Middle Trinity GCD	—	—	—	—	—	—
North Texas GCD	278	251	534	256	92%	Yes
Northern Trinity GCD	7	6	7	0	0%	No
Post Oak Savannah GCD	—	—	—	—	—	—
Prairielands GCD	39	35	61	22	56%	Yes
Red River GCD	204	201	457	253	124%	Yes
Saratoga UWCD	—	—	—	—	—	—
Southern Trinity GCD	6	6	7	1	17%	No
Upper Trinity GCD (outcrop)	—	—	—	—	—	—
Upper Trinity GCD (subcrop)	—	—	—	—	—	—
<b>Paluxy</b>						
Central Texas GCD	—	—	—	—	—	—
Clear Water GCD	19	19	19	0	0%	No
Middle Trinity GCD	6	6	7	1	17%	No
North Texas GCD	671	671	1,213	542	81%	Yes
Northern Trinity GCD	101	101	122	21	21%	Yes
Post Oak Savannah GCD	—	—	—	—	—	—
Prairielands GCD	35	35	82	47	134%	Yes



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Groundwater Conservation District	Desired Future Conditions (DFCs, feet)	Existing Drawdowns <sup>1</sup> (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>2</sup> (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>3</sup> (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance <sup>4</sup> ?
Red River GCD	699	699	1,807	1,108	159%	Yes
Saratoga UWCD	—	—	—	—	—	No
Southern Trinity GCD	35	35	39	4	11%	No
Upper Trinity GCD (outcrop)	5	5	5	0	0%	No
Upper Trinity GCD (subcrop)	1	1	1	0	0%	No
<b>Glen Rose</b>						
Central Texas GCD	2	2	2	0	0%	No
Clear Water GCD	83	83	85	2	2%	No
Middle Trinity GCD	27	27	29	2	7%	No
North Texas GCD	341	341	993	652	191%	Yes
Northern Trinity GCD	148	148	217	69	47%	Yes
Post Oak Savannah GCD	212	212	216	4	2%	No
Prairielands GCD	126	126	193	67	53%	Yes
Red River GCD	283	283	1,414	1,131	400%	Yes
Saratoga UWCD	1	1	1	0	0%	No
Southern Trinity GCD	133	133	146	13	10%	Yes
Upper Trinity GCD (outcrop)	8	8	8	0	0%	No
Upper Trinity GCD (subcrop)	28	28	36	8	29%	Yes
<b>Twin Mountains</b>						
Central Texas GCD	—	—	—	—	—	—
Clear Water GCD	—	—	—	—	—	—
Middle Trinity GCD	6	6	6	0	0%	No
North Texas GCD	569	569	1,192	623	109%	Yes
Northern Trinity GCD	315	315	409	94	30%	Yes

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Groundwater Conservation District	Desired Future Conditions (DFCs, feet)	Existing Drawdowns <sup>1</sup> (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>2</sup> (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>3</sup> (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance <sup>4</sup> ?
Post Oak Savannah GCD	—	—	—	—	—	—
Prairielands GCD	142	142	183	41	29%	Yes
Red River GCD	377	377	1,369	992	263%	Yes
Saratoga UWCD	—	—	—	—	—	—
Southern Trinity GCD	—	—	—	—	—	—
Upper Trinity GCD (outcrop)	3	3	3	0	0%	—
Upper Trinity GCD (subcrop)	46	46	59	13	28%	Yes
<b>Travis Peak</b>						
Central Texas GCD	16	16	16	0	0%	—
Clear Water GCD	300	294	297	-3	-1%	—
Middle Trinity GCD	88	88	92	4	5%	—
North Texas GCD	—	—	—	—	—	—
Northern Trinity GCD	—	—	—	—	—	—
Post Oak Savannah GCD	345	344	348	3	1%	No
Prairielands GCD	258	261	360	102	40%	Yes
Red River GCD	269	269	1,181	912	339%	Yes
Saratoga UWCD	6	6	6	0	0%	No
Southern Trinity GCD	471	468	488	17	4%	No
Upper Trinity GCD (outcrop)	—	—	—	—	—	—
Upper Trinity GCD (subcrop)	—	—	—	—	—	—
<b>Hensell</b>						
Central Texas GCD	7	7	7	0	0%	No
Clear Water GCD	137	137	138	1	1%	No
Middle Trinity GCD	72	72	75	3	4%	No

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Groundwater Conservation District	Desired Future Conditions (DFCs, feet)	Existing Drawdowns <sup>1</sup> (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>2</sup> (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>3</sup> (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance <sup>4</sup> ?
North Texas GCD	—	—	—	—	—	—
Northern Trinity GCD	—	—	—	—	—	—
Post Oak Savannah GCD	229	229	231	2	1%	No
Prairielands GCD	190	190	262	72	38%	Yes
Red River GCD	—	—	—	—	—	—
Saratoga UWCD	1	1	1	0	0%	No
Southern Trinity GCD	220	220	234	14	6%	Yes
Upper Trinity GCD (outcrop)	—	—	—	—	—	—
Upper Trinity GCD (subcrop)	—	—	—	—	—	—
<b>Hosston</b>						
Central Texas GCD	20	20	20	0	0%	No
Clear Water GCD	330	330	333	3	1%	No
Middle Trinity GCD	111	111	116	5	5%	No
North Texas GCD	—	—	—	—	—	—
Northern Trinity GCD	—	—	—	—	—	—
Post Oak Savannah GCD	345	345	349	4	1%	No
Prairielands GCD	289	290	398	109	38%	Yes
Red River GCD	—	—	—	—	—	—
Saratoga UWCD	11	11	11	0	0%	No
Southern Trinity GCD	542	542	564	22	4%	No
Upper Trinity GCD (outcrop)	—	—	—	—	—	—
Upper Trinity GCD (subcrop)	—	—	—	—	—	—
<b>Antlers</b>						
Central Texas GCD	—	—	—	—	—	—

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Groundwater Conservation District	Desired Future Conditions (DFCs, feet)	Existing Drawdowns <sup>1</sup> (feet)	Drawdowns after Region D Pumping Adjustment (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>2</sup> (feet)	Drawdown Change from DFCs after Region D Pumping Adjustment <sup>3</sup> (%)	Does Region D Pumping Adjustment Cause DFCs Exceedance <sup>4</sup> ?
Clear Water GCD	—	—	—	—	—	—
Middle Trinity GCD	10	10	10	0	0%	No
North Texas GCD	290	293	403	113	39%	Yes
Northern Trinity GCD	148	149	171	23	16%	Yes
Post Oak Savannah GCD	—	—	—	—	—	—
Prairielands GCD	—	—	—	—	—	—
Red River GCD	304	304	782	478	157%	Yes
Saratoga UWCD	—	—	—	—	—	—
Southern Trinity GCD	—	—	—	—	—	—
Upper Trinity GCD (outcrop)	24	25	29	5	21%	No
Upper Trinity GCD (subcrop)	142	142	168	26	18%	Yes

- Existing Drawdowns are from Shi (2018).
- Values greater than five feet are highlighted.
- Values greater than five percent are highlighted.
- A desired future condition is violated only when drawdown change is greater than both five feet and five percent at the same time.

**Table 10 Comparison of Simulated Drawdowns by Model with Desired Future Conditions of Trinity and Woodbine Aquifers by Groundwater Management Area 8.**

<b>Aquifer</b>	<b>Desired Future Conditions (DFCs, feet)</b>	<b>Existing Drawdowns<sup>1</sup> (feet)</b>	<b>Drawdowns after Region D Pumping Adjustment (feet)</b>	<b>Drawdown Change from DFCs after Region D Pumping Adjustment<sup>2</sup> (feet)</b>	<b>Drawdown Change from DFCs after Region D Pumping Adjustment<sup>3</sup> (%)</b>	<b>Does Region D Pumping Adjustment Cause DFCs Violation?<sup>4</sup></b>
Woodbine	146	136	316	170	117%	Yes
Paluxy	144	144	290	146	101%	Yes
Glen Rose	116	116	236	120	104%	Yes
Twin Mountain	313	313	575	262	84%	Yes
Travis Peak	177	177	246	69	39%	Yes
Hensell	118	118	139	21	18%	Yes
Hosston	206	206	235	29	14%	Yes
Antlers	177	177	350	173	98%	Yes

1. Existing Drawdowns are from Shi (2018).
2. Values greater than five feet are highlighted.
3. Values greater than five percent are highlighted.
4. A desired future condition is violated only when drawdown change is greater than both five feet and five percent at the same time.

**Table 11 Optimal amount of groundwater available that meets desired future conditions with an error tolerance of five percent or five feet, whichever is greater, for the Trinity and Woodbine aquifers.**

County	Aquifer	River Basin	Simulated Pumping in Region D in Acre-Foot Per Year (Total Pumping that is compatible with the modeled available groundwater)					
			2020	2030	2040	2050	2060	2070
Delta	Trinity	Sulphur	56	56	56	56	56	56
Hunt	Trinity	Sabine	213	213	213	213	213	213
Hunt	Woodbine	Sabine	344	343	344	343	344	343
Hunt	Trinity	Sulphur	3	3	3	3	3	3
Hunt	Woodbine	Sulphur	165	165	165	165	165	165
Hunt	Trinity	Trinity	0	0	0	0	0	0
Lamar	Trinity	Red	0	0	0	0	0	0
Lamar	Woodbine	Red	22	22	22	22	22	22
Lamar	Trinity	Sulphur	8	8	8	8	8	8
Lamar	Woodbine	Sulphur	62	62	62	62	62	62
Red River	Trinity	Red	52	52	52	52	52	52
Red River	Woodbine	Red	251	251	251	251	251	251
Red River	Trinity	Sulphur	234	233	234	233	234	233

October 23, 2019

Mr. Ron Ellis  
Texas Water Development Board  
1700 North Congress Avenue  
Austin, TX 78711-3231

Subject: Revised Request for Review of Groundwater Availability in Region D for Draft Recommended Water Management Strategies

Dear Mr. Ellis:

This memorandum is a follow-up to the original May 24, 2019 memorandum submitted on behalf of the North East Texas Regional Water Planning Group (NETRWPG / Region D) detailing the proposed methodology for determining groundwater availability in Region D, and the subsequent August 27, 2019 response to that memo provided by the Texas Water Development Board (TWDB) providing a technical review of that proposed methodology.

### Objective

The objective of this memorandum is to specify the exact quantities that have been identified by Region D as being potentially available (pending TWDB approval) for use as a source for draft recommended water management strategies for water users with identified projected needs within Region D.

### Background

As there are no groundwater conservation districts (GCDs) within Region D, the NETRWPG has wished to exercise the right to refine the groundwater availability estimates to determine if the Modeled Available Groundwater (MAG) volumes estimated by the TWDB are appropriate for the purposes of the 2021 Region D Water Plan. The first May 24, 2019 submittal on behalf of the NETRWPG identified two county-aquifer-basin locations recommended to be increased based on a local hydrogeologic assessment on available information, as well as provided estimates on maximum availability to be applied to identified needs for future water management strategies (WMSs). At that time, the evaluation of feasible WMSs was underway, but was not at a point where recommended and alternative WMSs had been identified, thus the use of estimated maximums by the NETRWPG at that time.

In response to that memorandum, the above referenced August 27, 2019, memorandum from TWDB was provided to the NETRWPG. The TWDB memorandum presented the TWDB's model-based review of the proposed availabilities to determine whether they are physically compatible with desired future conditions (DFCs) for relevant aquifers in GCDs in co-located groundwater management areas (GMAs). Alternative volumes proffered by TWDB as maximum availabilities for select county-aquifer-basins were then presented in the memorandum.



## Status

The present work of the NETRWPG is in the development and identification of recommended and alternative water management strategies, which will be incorporated into the Initially Prepared Plan (IPP) to be submitted by March, 2020. As it is roughly five (5) months until the submittal of the IPP, the “recommended” and “alternative” strategies discussed herein represent the best available information at present as to the representation of these strategies for the purposes of the 2021 Region D Plan. It should be noted that these are thus draft representations of these strategies; however, as TWDB rules (357.32(d)(2)) require that TWDB review the proposed availabilities and determine whether they are physically compatible with the desired future conditions for relevant aquifers in GCDs in the co-located GMAs, this memo is submitted to initiate the final component of TWDB’s review of groundwater availability for the North East Texas region.

## Analysis

With the analyses of existing supplies in the region complete, and with draft recommended and alternative<sup>1</sup> water management strategies identified, the consultant team for the NETRWPG has performed a comparative analysis to identify the extent of availabilities identified as exceeding the MAGs and the TWDB’s modeled maximum availabilities by county-aquifer-basin. Table 1 below presents the list of draft recommended and alternative WMSs that when compiled by similar county-aquifer-basin location may potentially exceed the present MAGs for the respective county-aquifer-basin. Presented in Table 2 are the individual sums of these strategies by county-aquifer-basin.

Using output from DB22, the NETRWPG has identified the remaining amount of MAG after accounting for allocations to existing WUG supplies, as shown in Table 3. These amounts, in effect, show how much MAG remains available for potential utilization as a source for potential WMSs.

Table 4 presents the results of a comparison between the recommended and alternative WMS amounts (by county-aquifer-basin as identified in Table 2) to the remaining MAGs after allocations have been made for existing supplies. The amounts presented in Table 4 represent the amounts (by county-aquifer-basin) in exceedance of the MAG. There are eight (8) county-aquifer-basins where the combined total recommended WMS amounts exceed the present MAG by a total amount of 6,453 ac-ft/yr in 2020 and 8,392 ac-ft/yr in 2070. The majority of these overages occurs in the portion of the Carrizo-Wilcox Aquifer-in the Sulphur River Basin in Hopkins County and the portion of the Nacatoch Aquifer in the Sulphur River Basin in Red River County. No overage occurs in the portion of the Queen City Aquifer in the Cypress River Basin in Camp County.

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<sup>1</sup> It is noted that TWDB’s review is focused upon recommended WMSs and the associated availability amounts for such strategies. Alternative WMSs are identified herein for informational purposes only, as they represent the present draft status of potentially feasible strategies that at a later date may be considered/discussed. These Alternative WMSs are *not* requested for TWDB review and approval at this time.



Table 1 Draft Recommended and Alternative Water Management Strategies Potentially Exceeding MAG and Increased Availabilities Identified by TWDB (August 27, 2019 memorandum)

County	Entity	Recommendation (ac-ft/yr) by Decade						Strategy	Supply Source		
		2020	2030	2040	2050	2060	2070		Groundwater	County	Basin
CAMP	LIVESTOCK CAMP	3,962	3,962	3,962	3,962	3,962	3,962	DRILL NEW WELLS	QUEEN CITY AQUIFER	CAMP	CYPRESS
HOPKINS	IRRIGATION HOPKINS	4,627	4,627	4,516	4,240	4,052	3,696	DRILL NEW WELLS	CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR
HOPKINS	LIVESTOCK HOPKINS	1,068	1,090	1,140	1,143	1,196	1,219	DRILL NEW WELLS	CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR
HOPKINS	MILLER GROVE WSC	8	16	23	29	40	52	DRILL NEW WELLS	CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR
HOPKINS	MINING HOPKINS	227	283	360	444	533	639	DRILL NEW WELLS	CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR
HUNT	COMMERCE	0	0	22	377	856	1,561	DRILL NEW WELLS	NACATOCH AQUIFER	HUNT	SULPHUR
HUNT	HICKORY CREEK SUD	116	293	461	462	461	462	USE EXISTING WELL PRODUCTION CAPACITY BEYOND MAG	WOODBINE AQUIFER	HUNT	SULPHUR
HUNT	LIVESTOCK HUNT	2	2	2	2	2	2	DRILL NEW WELLS	TRINITY AQUIFER	HUNT	SABINE
HUNT	MINING HUNT	73	64	35	19	7	0	DRILL NEW WELLS	TRINITY AQUIFER	HUNT	SABINE
HUNT	WEST TAWAKONI	90	0	0	0	0	0	DRILL NEW WELLS	TRINITY AQUIFER	HUNT	SABINE
RED RIVER	IRRIGATION RED RIVER	2,057	2,057	2,057	2,057	2,057	2,057	DRILL NEW WELLS	NACATOCH AQUIFER	RED RIVER	SULPHUR
RED RIVER	IRRIGATION RED RIVER	185	185	185	185	185	185	DRILL NEW WELLS	TRINITY AQUIFER	RED RIVER	SULPHUR
RED RIVER	LIVESTOCK RED RIVER	174	173	174	173	174	173	DRILL NEW WELLS	TRINITY AQUIFER	RED RIVER	SULPHUR
TITUS	LIVESTOCK TITUS	275	334	379	425	517	560	DRILL NEW WELLS	CARRIZO-WILCOX AQUIFER	TITUS	CYPRESS

County	Entity	Recommendation (ac-ft/yr) by Decade						Strategy	Supply Source		
		2020	2030	2040	2050	2060	2070		Groundwater	County	Basin
VAN ZANDT	CANTON	100	100	100	100	100	100	DRILL NEW WELLS	CARRIZO-WILCOX AQUIFER	VAN ZANDT	SABINE
VAN ZANDT	SOUTH TAWAKONI WSC	38	0	0	0	0	0	DRILL NEW WELLS	CARRIZO-WILCOX AQUIFER	VAN ZANDT	SABINE
<b>ALTERNATIVE WMS</b>											
WOOD	COUNTY-OTHER, WOOD	8,716	9,751	10,285	14,121	20,856	32,060		CARRIZO-WILCOX AQUIFER	WOOD	SABINE
HOPKINS	BRINKER WSC	0	0	0	12	47	83	DRILL NEW WELLS	CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR

Table 2 Sum of WMS Amounts by County-Aquifer-Basin

Source Name	Source County	Source Basin	DRAFT WMS SUPPLY (AC-FT/YR)						
			2020	2030	2040	2050	2060	2070	
<b>RECOMMENDED WMSs</b>									
QUEEN CITY AQUIFER	CAMP	CYPRESS	3,962	3,962	3,962	3,962	3,962	3,962	3,962
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	5,930	6,016	6,039	5,856	5,821	5,606	
NACATOCH	HUNT	SULPHUR	0	0	22	377	856	1,561	
WOODBINE	HUNT	SULPHUR	116	293	461	462	461	462	
TRINITY AQUIFER	HUNT	SABINE	165	66	37	21	9	2	
NACATOCH	RED RIVER	SULPHUR	2,057	2,057	2,057	2,057	2,057	2,057	
TRINITY AQUIFER	RED RIVER	SULPHUR	359	358	359	358	359	358	
CARRIZO-WILCOX AQUIFER	TITUS	CYPRESS	275	334	379	425	517	560	
CARRIZO-WILCOX AQUIFER	VAN ZANDT	SABINE	138	100	100	100	100	100	
<b>ALTERNATIVE WMSs</b>									
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	5,930	6,016	6,039	5,868	5,868	5,689	
CARRIZO-WILCOX AQUIFER	WOOD	SABINE	8,716	9,751	10,285	14,121	20,856	32,060	

Table 3 Modeled Available Groundwater Remaining after Allocation to Existing Supplies

Source Name	Source County	Source Basin	MAG REMAINING AFTER EXISTING SUPPLY ALLOCATIONS (AC-FT/YR)					
			2020	2030	2040	2050	2060	2070
<b>RECOMMENDED WMSs</b>								
QUEEN CITY AQUIFER	CAMP	CYPRESS	4,170	4,170	4,014	4,014	4,014	4,014
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	2,048	2,048	2,048	2,048	2,048	2,048
NACATOCH	HUNT	SULPHUR	0	0	0	0	0	0
WOODBINE	HUNT	SULPHUR	20	20	20	20	20	20
TRINITY AQUIFER	HUNT	SABINE	0	0	0	0	0	0
NACATOCH	RED RIVER	SULPHUR	179	180	181	181	181	181
TRINITY AQUIFER	RED RIVER	SULPHUR	65	65	65	65	65	65
CARRIZO-WILCOX AQUIFER	TITUS	CYPRESS	1,587	878	239	0	0	0
CARRIZO-WILCOX AQUIFER	VAN ZANDT	SABINE	0	0	0	0	0	0
<b>ALTERNATIVE WMSs</b>								
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	2,048	2,048	2,048	2,048	2,048	2,048
CARRIZO-WILCOX AQUIFER	WOOD	SABINE	5,583	5,495	5,397	5,340	5,266	5,164

Table 4 Total WMS Amount over MAG by County-Aquifer-Basin

Source Name	Source County	Source Basin	TOTAL AMOUNT RECOMMENDED OVER MAG (AC-FT/YR)					
			2020	2030	2040	2050	2060	2070
<b>RECOMMENDED WMSs</b>								
QUEEN CITY AQUIFER	CAMP	CYPRESS	0	0	0	0	0	0
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	3,882	3,968	3,991	3,808	3,773	3,558
NACATOCH	HUNT	SULPHUR	0	0	22	377	856	1,561
WOODBINE	HUNT	SULPHUR	96	273	441	442	441	442
TRINITY AQUIFER	HUNT	SABINE	165	66	37	21	9	2
NACATOCH	RED RIVER	SULPHUR	1,878	1,877	1,876	1,876	1,876	1,876
TRINITY AQUIFER	RED RIVER	SULPHUR	294	293	294	293	294	293
CARRIZO-WILCOX AQUIFER	TITUS	CYPRESS	0	0	140	425	517	560
CARRIZO-WILCOX AQUIFER	VAN ZANDT	SABINE	138	100	100	100	100	100
		<b>TOTAL</b>	<b>6,453</b>	<b>6,577</b>	<b>6,901</b>	<b>7,342</b>	<b>7,866</b>	<b>8,392</b>
<b>ALTERNATIVE WMSs</b>								
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	3,882	3,968	3,991	3,820	3,820	3,641
CARRIZO-WILCOX AQUIFER	WOOD	SABINE	3,133	4,256	4,888	8,781	15,590	26,896

Although the amounts above exceed the MAG, it is again noted that the TWDB's August 27, 2019 memorandum presents alternative volumes as maximum availabilities for select county-aquifer-basins that remain physically compatible with DFCs for relevant aquifers in GCDs in co-located GMAs. These maximums identified by TWDB, in a number of instances, represent an increase in modeled availability that achieves these objectives. These increases above the MAG identified by TWDB are presented in Table 5.

Table 5 Increase in Modeled Availability above MAG Identified by TWDB (August 27, 2019 Memorandum)

Source Name	Source County	Source Basin	TOTAL AMOUNT RECOMMENDED OVER MAG (AC-FT/YR)					
			2020	2030	2040	2050	2060	2070
<b>RECOMMENDED WMSs</b>								
QUEEN CITY AQUIFER	CAMP	CYPRESS	0	0	0	0	0	0
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	3,991	3,991	3,991	3,820	3,820	3,670
NACATOCH	HUNT	SULPHUR	0	0	0	0	0	0
WOODBINE	HUNT	SULPHUR	0	0	0	0	0	0
TRINITY AQUIFER	HUNT	SABINE	213	213	213	213	213	213
NACATOCH	RED RIVER	SULPHUR	0	0	0	0	0	0
TRINITY AQUIFER	RED RIVER	SULPHUR	109	108	109	108	109	108
CARRIZO-WILCOX AQUIFER	TITUS	CYPRESS	2,019	1,952	2,055	1,967	1,825	1,860
CARRIZO-WILCOX AQUIFER	VAN ZANDT	SABINE	139	139	134	131	131	128
<b>ALTERNATIVE WMSs</b>								
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	3,991	3,991	3,991	3,820	3,820	3,670
CARRIZO-WILCOX AQUIFER	WOOD	SABINE	0	0	0	0	0	0

Results of a comparison between the WMS amounts exceeding the MAG (by county-aquifer-basin as shown in Table 4) to the increases in availabilities identified by the TWDB (as shown in Table 5) are shown in Table 6, which depicts the WMS amounts in excess of the increased availabilities identified by TWDB by county-aquifer-basin.

Table 6 WMS Amounts above Increased Availabilities Identified by TWDB

Source Name	Source County	Source Basin	EXCEEDANCE OF WMS ABOVE ADDITIONAL AVAILABILITY IDENTIFIED BY TWDB (AC-FT/YR)					
			2020	2030	2040	2050	2060	2070
<b>RECOMMENDED WMSs</b>								
QUEEN CITY AQUIFER	CAMP	CYPRESS	0	0	0	0	0	0
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	0	0	0	0	0	0
<b>NACATOCH</b>	<b>HUNT</b>	<b>SULPHUR</b>	<b>0</b>	<b>0</b>	<b>22</b>	<b>377</b>	<b>856</b>	<b>1,561</b>
<b>WOODBINE</b>	<b>HUNT</b>	<b>SULPHUR</b>	<b>96</b>	<b>273</b>	<b>441</b>	<b>442</b>	<b>441</b>	<b>442</b>
TRINITY AQUIFER	HUNT	SABINE	0	0	0	0	0	0
<b>NACATOCH</b>	<b>RED RIVER</b>	<b>SULPHUR</b>	<b>1,878</b>	<b>1,877</b>	<b>1,876</b>	<b>1,876</b>	<b>1,876</b>	<b>1,876</b>
<b>TRINITY AQUIFER</b>	<b>RED RIVER</b>	<b>SULPHUR</b>	<b>185</b>	<b>185</b>	<b>185</b>	<b>185</b>	<b>185</b>	<b>185</b>
CARRIZO-WILCOX AQUIFER	TITUS	CYPRESS	0	0	0	0	0	0
CARRIZO-WILCOX AQUIFER	VAN ZANDT	SABINE	0	0	0	0	0	0
<b>ALTERNATIVE WMSs</b>								
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	0	0	0	0	0	0
CARRIZO-WILCOX AQUIFER	WOOD	SABINE	3,133	4,256	4,888	8,781	15,590	26,896

Based on the results shown in Table 6, there are four (4) county-aquifer-basins (shown in bold) where the draft recommended strategies exceed the total groundwater availability identified by the MAG when incorporating the additional amounts identified by TWDB in its' August 27, 2019 memorandum. The totals (by county-aquifer-basin) of the remaining recommended strategies (non-bold) are within the total amounts of available groundwater supply when reflecting both the MAGs plus the additional amounts identified by TWDB. Thus, the recommended strategies within the non-bold county-aquifer-basins shown in Table 6 are physically compatible with the DFCs for relevant aquifers in GCDs in the co-located GMAs.

The aforementioned analyses performed on behalf of the NETRWPG identifies eight (8) county-aquifer-basins wherein the total recommended WMSs exceed the present respective MAGs (Table 4). When the additional amounts identified by TWDB's analysis from its' August 27, 2019, memorandum are included in the comparison, the total amounts for recommended WMSs exceed the total available groundwater in four (4) county-aquifer-basins (Table 6).

Focusing upon the identified WMSs in Table 1, it is thus noted that the Camp County Livestock WMS (located in the Queen City Aquifer, Camp County, Cypress Creek Basin) is found to be within the MAG, which necessitates no further review. For the remaining strategies identified in Table 1 that are located in the below county-aquifer-basins, these WMSs are found to be within the total available groundwater supply when considering both the MAG and the additional availability identified by TWDB in its' August 27, 2019, memorandum:

1. Hopkins County, Carrizo-Wilcox Aquifer, Sulphur River Basin.
2. Hunt County, Trinity Aquifer, Sabine River Basin.
3. Titus County, Carrizo-Wilcox Aquifer, Cypress Creek River Basin.
4. Van Zandt County, Carrizo-Wilcox Aquifer, Sabine River Basin.

Based on the analyses by TWDB and the evaluation documented herein, the WMSs identified in Table 1 located in the above enumerated county-aquifer-basins are physically compatible with the DFCs for relevant aquifers in GCDs in the co-located GMAs. If necessary, the amounts for these enumerated county-aquifer-basins that are above the MAG (as identified in Table 4) can be interpreted as being part of the requested review and approval to the TWDB from the NETRWPG, although it is noted that these results are within the amounts previously identified by TWDB.

There are four (4) remaining instances where recommended WMSs have amounts that exceed the total available groundwater when adding the MAGs with the additional availabilities identified by TWDB. Those four recommended WMSs are shown in Table 7 below by county-aquifer-basin, along with their respective amounts in exceedance of the total available groundwater. Note that the amounts shown in Table 7 are exceedances, and do not represent the total amount of the recommended WMS (which can be found in Table 1). A portion of the Hickory Creek SUD's recommended WMS is met by the existing MAG in Hunt County, Woodbine Aquifer, Sulphur Basin. Similarly, a portion of the Red River County Irrigation recommended WMS for the Sulphur River Basin is met by the existing MAG for the Red River County, Nacatoch Aquifer, Sulphur River Basin. Portions of the recommended amount for Red River County Irrigation in the Sulphur River Basin are met by both the remaining MAG for the Red River County, Trinity Aquifer, Sulphur River Basin, as well as additional availability amounts identified by the TWDB for that county-aquifer-basin.

A local hydrogeologic assessment of the available information base has been performed by the Region D consultant team (attached hereto). The results of this assessment applicable to the four county-aquifer-basins are summarized in the notes in Table 7.

Table 7 Recommended WMS Amounts in Exceedance of the MAG and the Additional Availability Identified by TWDB

WUG	County	Aquifer	Basin	Recommended Amount in Exceedance <sup>2</sup> of Additional Availability identified by TWDB (ac-ft/yr)						NOTE
				2020	2030	2040	2050	2060	2070	
COMMERCE	HUNT	NACATOCH	SULPHUR	0	0	22	377	856	1,561	Past maximum historic pumping exceeds the identified 2070 needs
HICKORY CREEK SUD	HUNT	WOODBINE	SULPHUR	96	273	441	442	441	442	Use of full production capacity from existing system
IRRIGATION_ RED RIVER_ SULPHUR	RED RIVER	NACATOCH	SULPHUR	1,878	1,877	1,876	1,876	1,876	1,876	Based on a relatively low average annual water level decline and the potential for high-productivity wells in the portion of the Nacatoch Aquifer located in the Sulphur River Basin in Red River County, it has been determined that the future projected needs can likely be met with additional irrigation wells.
IRRIGATION_ RED RIVER_ SULPHUR	RED RIVER	TRINITY	SULPHUR	185	185	185	185	185	185	Assessment did not identify sufficient available data to determine potential productivity; however, since there is little to no current production from this portion of the Trinity Aquifer, it has been determined that sufficient source availability is likely to meet the projected needs

<sup>22</sup> Remaining portion of recommended amount is within the total available amount identified by the MAG in addition to the available amount identified by TWDB in its' August 27, 2019 memorandum.



Mr. Ron Ellis  
Texas Water Development Board  
October 23, 2019

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### Request for TWDB Review

The amounts presented in Table 7, along with the supporting documentation, are recommended for the TWDB's review and possible approval to be used in addition to the additional amounts identified by the TWDB in its August 27 2019 memorandum. If approval is necessary for all amounts above the MAG, Table 4 represents the total amount of recommended WMS availability identified above the MAG by county-aquifer-basin for TWDB review.

The NETRWPG and its' consultant team appreciate the TWDB's efforts in support of these analyses, as they represent the first attempt at a Regional Water Planning Group identifying groundwater availability for planning purposes since there are no GCDs located within the region. It is the intent of this memorandum to document milestones of significance to the process as they have occurred to date, in the hope that such documentation will assist in refining the process for future rounds of planning.

If there are any questions whatsoever, please feel free to contact us at your convenience. We truly appreciate the opportunity to work with you and your staff on the planning process.

Sincerely,

CAROLLO ENGINEERS, INC.



Tony L. Smith, P.E.  
Associate Vice President  
Water Resources

TLS:ckt

Enclosures: WSP Local Hydrogeological Assessment

cc: Mr. Walt Sears  
Mr. James Beach  
Mr. David K. Harkins

October 29, 2019

Mr. Ron Ellis  
Texas Water Development Board  
1700 North Congress Avenue  
Austin, TX 78711-3231

Subject: Addendum to Revised Request of Groundwater Availability in Region D for Draft  
Recommended Water Management Strategies

Dear Mr. Ellis:

This is an addendum to the October 23, 2019 memorandum submitted on behalf of the North East Texas Regional Water Planning Group (NETRWPG / Region D) regarding Groundwater Availability in Region D for Draft Water Management Strategies.


The attached table reflects the original Modeled Available Groundwater (MAG) amounts, total groundwater availabilities identified by TWDB that are physically compatible with desired future conditions for aquifers in GCDs in co-located groundwater management areas, and lastly the total groundwater availability identified by Region D for the specific aquifer, county and basin splits requested for review and approval by the TWDB. There are a total of nine splits with amounts identified above their current respective MAGs. Of these, there are five (5) splits that are higher than the availabilities identified in the August 27, 2019, memorandum from TWDB provided to the NETRWPG; however, two of these splits are within the Nacatoch Aquifer, a non-relevant aquifer for the purposes of regional water planning. Thus, there are three (3) identified splits remaining that are in relevant aquifers that exceed the availabilities identified by TWDB in its' August 27, 2019, memorandum, namely:

1. Queen City Aquifer, Camp County, Red River Basin;
2. Woodbine Aquifer, Hunt County, Sulphur River Basin; and
3. Trinity Aquifer, Red River County, Sulphur River Basin.

The supporting documentation for the Queen City Aquifer, Camp County, Red River Basin split's availability (i.e. No. 1 above), was submitted as part of the original May 24, 2019, memorandum submitted on behalf of the NETRWPG to Region D. Supporting documentation for the remaining splits was submitted in the revised request submitted in the NETRWPG's October 23, 2019, memorandum and supporting documentation.

We appreciate your staff's input in presenting this request in a manner that best facilitates TWDB's review of the groundwater availabilities identified herein. If there is anything we can do to assist further, please feel free to contact me at your convenience.

Sincerely,



Tony L. Smith, P.E.  
Associate Vice President

TLS

Enclosures: Attached Table

### Summary of Groundwater Availabilities

Source Name	Source County	Source Basin	Original Modeled Available Groundwater (MAG)						Total Availability Identified from August 27, 2019, TWDB Review						Groundwater Source Availability Requested by Region D for Review by the TWDB					
			2020	2030	2040	2050	2060	2070	2020	2030	2040	2050	2060	2070	2020	2030	2040	2050	2060	2070
WOODBINE	LAMAR	RED	0	0	0	0	0	0	22	22	22	22	22	22	60	60	60	60	60	60
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	3,237	3,237	3,237	3,237	3,237	3,237	7,228	7,228	7,228	7,057	7,057	6,907	7,119	7,205	7,228	7,045	7,010	6,795
NACATOCH	HUNT	SULPHUR	491	491	491	491	491	491	491	491	491	491	491	491	491	491	513	868	1,347	2,052
WOODBINE	HUNT	SULPHUR	165	165	165	165	165	165	165	165	165	165	165	165	261	438	606	607	606	607
TRINITY AQUIFER	HUNT	SABINE	0	0	0	0	0	0	213	213	213	213	213	213	165	66	37	21	9	2
NACATOCH	RED RIVER	SULPHUR	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	2,925	2,924	2,923	2,923	2,923	2,923
TRINITY AQUIFER	RED RIVER	SULPHUR	125	125	125	125	125	125	234	233	234	233	234	233	419	418	419	418	419	418
CARRIZO-WILCOX AQUIFER	TITUS	CYPRESS	7,215	7,064	6,834	6,786	6,735	6,634	9,234	9,016	8,889	8,753	8,560	8,494	7,215	7,064	6,974	7,211	7,252	7,194
CARRIZO-WILCOX AQUIFER	VAN ZANDT	SABINE	4,629	4,629	4,456	4,397	4,397	4,270	4,768	4,768	4,590	4,528	4,528	4,398	4,767	4,729	4,556	4,497	4,497	4,370

MINUTES OF THE  
TEXAS WATER DEVELOPMENT BOARD  
BOARD MEETING  
January 16, 2020 – 9:30 A.M.

Chairman Peter M. Lake called to order the meeting of the Texas Water Development Board at 9:32 a.m. in Room 170 at Stephen F. Austin Building, 1700 N. Congress Avenue, Austin, Texas. In addition to Chairman Lake, Directors Kathleen Jackson, and Brooke T. Paup were also in attendance, and a quorum was present.

The General Counsel announced the items for consideration:

1. DISCUSSION REGARDING OUTREACH EFFORTS AND ACTIVITIES BY THE BOARD.

No action was taken on this item.

2. CONSIDER AUTHORIZING THE EXECUTIVE ADMINISTRATOR, CHIEF FINANCIAL OFFICER, AND DEVELOPMENT FUND MANAGER TO TAKE ALL NECESSARY ACTIONS FOR THE ISSUANCE, SALE AND DELIVERY OF TEXAS WATER DEVELOPMENT BOARD STATE REVOLVING FUND REVENUE BONDS IN ONE OR MORE SERIES; AND APPROVING THE SELECTION OF FINANCIAL ADVISOR, BOND COUNSEL, DISCLOSURE COUNSEL, AND UNDERWRITING SYNDICATE FOR THE NEGOTIATION OF THE BOND ISSUE, Georgia Sanchez, Director of Debt Portfolio Management, presented this item.

Director Jackson moved to authorize the Executive Administrator, Chief Financial Officer, and Development Fund Manager to take all necessary actions for the issuance, sale and delivery of Texas Water Development Board State Revolving Fund Revenue Bonds; and approving the selection of financial advisor, bond counsel, disclosure counsel, and underwriting syndicate for the negotiation of the bond issue, as recommended by the Executive Administrator.

The motion was seconded by Director Paup; it passed unanimously.

3. CONSIDER AUTHORIZING THE EXECUTIVE ADMINISTRATOR TO EXECUTE A CONTRACT AMENDMENT TO EXTEND THE TERM OF THE CONTRACT WITH HILLTOP SECURITIES INC. BY ONE YEAR AND INCREASE THE LIMIT ON TOTAL PAYMENTS FOR SERVICES AND EXPENSES BY \$550,000. Georgia Sanchez, Director of Debt Portfolio Management, presented this item.

Director Paup moved to authorize the Executive Administrator to execute a contract amendment to extend the term of the contract with Hilltop Securities Inc., by one year and increase the limit on total payments for services and expenses by \$550,000, as recommended by the Executive Administrator.

The motion was seconded by Director Jackson; it passed unanimously.

4. APPROVE BY RESOLUTION THE ESTABLISHMENT OF NEW TAX-EXEMPT AND TAXABLE LENDING RATE SCALES FOR THE TEXAS WATER DEVELOPMENT FUND II WATER FINANCIAL ASSISTANCE ACCOUNT (DFUND II) TO BE EFFECTIVE JANUARY 16, 2020. Georgia Sanchez, Director of Debt Portfolio Management, presented this item.

Director Jackson moved to adopt the proposed resolution establishing new tax-exempt and taxable lending rate scales for the Texas Water Development Fund II Water Financial Assistance Account to be effective January 16, 2020, as recommended by the Executive Administrator.

The motion was seconded by Director Paup; it passed unanimously.

5. CONSIDER APPROVING GROUNDWATER AVAILABILITIES FOR THE 2021 REGION D REGIONAL WATER PLAN. Ron Ellis, Water Supply and Infrastructure, presented this item.

Director Paup moved to approve the groundwater availabilities for the 2021 Region D Regional Water Plan, as recommended by the Executive Administrator.

The motion was seconded by Director Jackson; it passed unanimously.

6. CONSIDER APPOINTING MEMBERS TO THE INTERREGIONAL PLANNING COUNCIL. Sarah Backhouse, Water Supply and Infrastructure, presented this item.

Director Jackson moved to appoint the following members to the Interregional Planning Council: Steve Walthour; Russell Schreiber; Kevin Ward; Jim Thompson; Scott Reinert; Allison Strube; Gail Peek; Mark Evans; Kelley Holcomb; Ray Buck; David Wheelock; Suzanne Scott; Tomas Rodriguez; Carl Crull; Melanie Barnes; Patrick Brzozowski, with terms to expire upon adoption of the 2022 State Water Plan, as recommended by the Executive Administrator.

The motion was seconded by Director Paup; it passed unanimously.

7. CONSIDER APPROVING THE TEXAS INFRASTRUCTURE RESILIENCY FUND-HURRICANE HARVEY ACCOUNT (HURRICANE HARVEY ACCOUNT) PRIORITIZATION CRITERIA FOR HAZARD MITIGATION PROJECTS. Jessica Zuba, Deputy Executive Administrator, Water Supply and Infrastructure, presented this item.

Director Paup moved to approve the Texas Infrastructure Resiliency Fund-Hurricane Harvey Account prioritization criteria for hazard mitigation projects, as recommended by the Executive Administrator.

The motion was seconded by Director Jackson; it passed unanimously.

8. CONSIDER APPROVING BY RESOLUTION A REQUEST FROM SHADY GROVE SPECIAL UTILITY DISTRICT (HUNT COUNTY) FOR \$880,000 IN FINANCING FROM THE DRINKING WATER STATE REVOLVING FUND FOR PLANNING, DESIGN, AND CONSTRUCTION OF A

WATER STORAGE IMPROVEMENTS PROJECT. Joe Koen, Water Supply and Infrastructure, presented this item.

Director Jackson moved to adopt the proposed resolution providing Shady Grove Special Utility District with financing from the Drinking Water State Revolving Fund for planning, design, and construction of a water storage improvements project, as recommended by the Executive Administrator.

The motion was seconded by Director Paup; it passed unanimously.

9. CONSIDER APPROVING BY RESOLUTION A REQUEST FROM THE CITY OF FORT WORTH (TARRANT) FOR \$62,825,000 IN FINANCING FROM THE CLEAN WATER STATE REVOLVING FUND FOR PLANNING, DESIGN, AND CONSTRUCTION OF A BIOSOLIDS DEWATERING AND PROCESSING FACILITY. Joe Koen, Water Supply and Infrastructure, presented this item.

Director Paup moved to adopt the proposed resolution providing the City of Fort Worth with financing from the Clean Water State Revolving Fund for planning, design, and construction of a biosolids dewatering and processing facility, as recommended by the Executive Administrator.

The motion was seconded by Director Jackson; it passed unanimously.

10. CONSIDER AUTHORIZING THE EXECUTIVE ADMINISTRATOR TO EXECUTE A CONTRACT WITH HARRIS COUNTY FOR \$30,000,000 TO REMOVE ACCUMULATED SILTATION AND SEDIMENT DEPOSITS LOCATED AT THE CONFLUENCE OF THE SAN JACINTO RIVER AND LAKE HOUSTON PURSUANT TO SENATE BILL 500, 86<sup>TH</sup> LEGISLATURE. Nancy Richards, Water Supply and Infrastructure, presented this item.

Director Jackson moved to authorize by resolution the Executive Administrator to execute a contract providing Harris County with financing to remove accumulated siltation and sediment deposits located at the confluence of the San Jacinto River and Lake Houston pursuant to Senate Bill 500, 86<sup>th</sup> Legislature, as recommend by the Executive Administrator.

The motion was seconded by Director Paup; it passed unanimously.

11. THE EXECUTIVE ADMINISTRATOR AS ASKED THAT THE NEXT ITEM BE TABLED TO A FUTURE AGENDA.

No action is required on this item.

### **The Board took Items 12 and 13 together**

12. CONSIDER APPROVING BY RESOLUTION A REQUEST FROM THE CITY OF JOURDANTON (ATASCOSA COUNTY) FOR \$2,495,000 IN FINANCING FROM THE CLEAN WATER STATE

REVOLVING FUND FOR PLANNING, ACQUISITION, DESIGN, AND CONSTRUCTION OF WASTEWATER SYSTEM IMPROVEMENTS.

13. CONSIDER APPROVING BY RESOLUTION A REQUEST FROM THE CITY OF JOURDANTON (ATASCOSA COUNTY) FOR \$6,845,000 IN FINANCING FROM THE DRINKING WATER STATE REVOLVING FUND FOR PLANNING, ACQUISITION, DESIGN, AND CONSTRUCTION OF WATER SYSTEM IMPROVEMENTS. Dain Larsen, Water Supply and Infrastructure, presented this item.

Director Jackson moved to adopt the proposed resolutions providing the City of Jourdanton with financing from the Clean Water State Revolving Fund for planning, acquisition, design, and construction of wastewater system improvements, and from the Drinking Water State Revolving Fund for planning, acquisition, design, and construction of water system improvements, as recommended by the Executive Administrator.

The motion was seconded by Director Paup; it passed unanimously.

14. THE BOARD WILL RECEIVE COMMENTS FROM THE PUBLIC ON ANY MATTERS WITHIN THE JURISDICTION OF THE TWDB, WITH THE EXCEPTION OF MATTERS WHICH ARE SUBJECT TO THE EX PARTE PROHIBITION FOUND IN TEXAS GOVERNMENT CODE SECTION 2001.061.

No public comments were received.

15. THE BOARD MAY ADJOURN INTO EXECUTIVE SESSION AND CONDUCT A CLOSED MEETING TO CONSIDER ANY ITEM ON THIS AGENDA IF A MATTER IS RAISED THAT IS APPROPRIATE FOR THE BOARD TO CONDUCT A PRIVATE CONSULTATION WITH ITS ATTORNEY ON A MATTER IN WHICH THE DUTY OF THE ATTORNEY TO THE GOVERNMENTAL BODY UNDER THE TEXAS DISCIPLINARY RULES OF PROFESSIONAL CONDUCT OF THE STATE BAR OF TEXAS CLEARLY CONFLICTS WITH CHAPTER 551 OF THE TEXAS GOVERNMENT CODE. THE BOARD MAY CONDUCT A CLOSED MEETING TO RECEIVE LEGAL ADVICE AND DISCUSS PENDING OR CONTEMPLATED LITIGATION, SETTLEMENT OFFERS, OR THE APPOINTMENT, EMPLOYMENT, EVALUATION, REASSIGNMENT, DUTIES, DISCIPLINE OR DISMISSAL OF SPECIFIC BOARD EMPLOYEES, INCLUDING THE EXECUTIVE ADMINISTRATOR AND GENERAL COUNSEL, AS PERMITTED BY SECTIONS 551.071 AND 551.074, THE TEXAS OPEN MEETINGS ACT, CODIFIED AS CHAPTER 551 OF THE TEXAS GOVERNMENT CODE. THE BOARD MAY ALSO MEET IN OPEN MEETING TO TAKE ACTION ON LEGAL OR PERSONNEL MATTERS CONSIDERED IN THE CLOSED MEETING AS REQUIRED BY SECTION 551.102 OF THE OPEN MEETINGS ACT, CHAPTER 551 OF THE GOVERNMENT CODE. THE BOARD MAY CONDUCT A CLOSED MEETING TO CONSIDER AND DISCUSS FINANCIAL MATTERS RELATED TO THE INVESTMENT OR POTENTIAL INVESTMENT OF THE BOARD'S FUNDS, AS PERMITTED BY SECTION 6.0601(a) OF THE TEXAS WATER CODE. THE BOARD MAY ALSO MEET IN OPEN MEETING TO TAKE ACTION ON A FINANCIAL MATTER DISCUSSED IN THE CLOSED MEETING AS REQUIRED BY SECTION 6.0601(b) OF THE TEXAS WATER CODE.

The Board did not meet in closed session.

The Board meeting adjourned at 10:02 a.m.

APPROVED and ordered of record this, the 16th day of January, 2020.

TEXAS WATER DEVELOPMENT BOARD

\_\_\_\_\_  
Peter M. Lake, Chairman

DATE SIGNED: \_\_\_\_\_

ATTEST:

\_\_\_\_\_  
Jeff Walker, Executive Administrator



Region D 2021 - North East Texas Regional Water Plan  
Municipal Water Supply by County, WUG, Basin for 2020-2070

Water User Group Name	Basin	County	Source Name	2020	2030	2040	2050	2060	2070	Sellers Name
<b>BOWIE COUNTY</b>										
BURNS REDBANK WSC	RED	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0	HOOKS
CENTRAL BOWIE COUNTY WSC	RED	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0	RIVERBEND WATER RESOURCES DISTRICT
COUNTY-OTHER	RED	BOWIE	NACATOCH AQUIFER   BOWIE COUNTY	1,105	1,128	1,149	1,130	1,119	1,119	OWNS SYSTEM
COUNTY-OTHER	RED	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0	RIVERBEND WATER RESOURCES DISTRICT
DE KALB	RED	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0	RIVERBEND WATER RESOURCES DISTRICT
HOOKS	RED	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0	RIVERBEND WATER RESOURCES DISTRICT
NEW BOSTON	RED	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0	RIVERBEND WATER RESOURCES DISTRICT
RIVERBEND WATER RESOURCES	RED	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0	TEXARKANA
TEXARKANA	RED	BOWIE	RED RUN-OF-RIVER	0	0	0	0	0	0	RIVERBEND WATER RESOURCES DISTRICT
TEXARKANA	RED	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0	RIVERBEND WATER RESOURCES DISTRICT
CENTRAL BOWIE COUNTY WSC	SULPHUR	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0	RIVERBEND WATER RESOURCES DISTRICT
COUNTY-OTHER	SULPHUR	BOWIE	CARRIZO-WILCOX AQUIFER   BOWIE COUNTY	2,396	2,442	2,484	2,440	2,416	2,416	OWNS SYSTEM
COUNTY-OTHER	SULPHUR	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0	RIVERBEND WATER RESOURCES DISTRICT
DE KALB	SULPHUR	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0	RIVERBEND WATER RESOURCES DISTRICT
MACEDONIA EYLAU MUD 1	SULPHUR	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0	RIVERBEND WATER RESOURCES DISTRICT
MAUD	SULPHUR	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0	RIVERBEND WATER RESOURCES DISTRICT
NASH	SULPHUR	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0	RIVERBEND WATER RESOURCES DISTRICT
NEW BOSTON	SULPHUR	BOWIE	SULPHUR RUN-OF-RIVER	0	0	0	0	0	0	RIVERBEND WATER RESOURCES DISTRICT
NEW BOSTON	SULPHUR	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0	RIVERBEND WATER RESOURCES DISTRICT
REDWATER	SULPHUR	BOWIE	CARRIZO-WILCOX AQUIFER   BOWIE COUNTY	66	66	66	66	66	66	OWNS SYSTEM
REDWATER	SULPHUR	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0	RIVERBEND WATER RESOURCES DISTRICT
RIVERBEND WATER RESOURCES	SULPHUR	BOWIE	CANEY CREEK LAKE/RESERVOIR	0	0	0	0	0	0	TEXARKANA
RIVERBEND WATER RESOURCES	SULPHUR	BOWIE	ELLIOT CREEK LAKE/RESERVOIR	0	0	0	0	0	0	TEXARKANA
RIVERBEND WATER RESOURCES	SULPHUR	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0	TEXARKANA
TEXARKANA	SULPHUR	BOWIE	RED RUN-OF-RIVER	0	0	0	0	0	0	OWNS SYSTEM
TEXARKANA	SULPHUR	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0	RIVERBEND WATER RESOURCES DISTRICT

Region D 2021 - North East Texas Regional Water Plan  
Municipal Water Supply by County, WUG, Basin for 2020-2070

Water User Group Name	Basin	County	Source Name	2020	2030	2040	2050	2060	2070	Sellers Name
WAKE VILLAGE	SULPHUR	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0	RIVERBEND WATER RESOURCES DISTRICT
<b>County Total - Round V</b>				<b>3,567</b>	<b>3,636</b>	<b>3,699</b>	<b>3,636</b>	<b>3,601</b>	<b>3,601</b>	
<b>County Total - Round IV</b>				<b>3,688</b>	<b>3,757</b>	<b>3,820</b>	<b>3,757</b>	<b>3,722</b>	<b>3,722</b>	
<b>Round V minus Round IV</b>				<b>-121</b>	<b>-121</b>	<b>-121</b>	<b>-121</b>	<b>-121</b>	<b>-121</b>	
<b>CAMP COUNTY</b>										
BI COUNTY WSC	CYPRESS	CAMP	CARRIZO-WILCOX AQUIFER   CAMP COUNTY	937	937	937	937	937	937	OWNS SYSTEM
BI COUNTY WSC	CYPRESS	CAMP	CARRIZO-WILCOX AQUIFER   MORRIS COUNTY	50	50	50	50	50	50	OWNS SYSTEM
BI COUNTY WSC	CYPRESS	CAMP	CARRIZO-WILCOX AQUIFER   TITUS COUNTY	100	100	100	100	100	100	OWNS SYSTEM
BI COUNTY WSC	CYPRESS	CAMP	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	50	50	50	50	50	50	OWNS SYSTEM
COUNTY-OTHER	CYPRESS	CAMP	CARRIZO-WILCOX AQUIFER   CAMP COUNTY	432	444	453	461	469	478	OWNS SYSTEM
PITTSBURG	CYPRESS	CAMP	BOB SANDLIN LAKE/RESERVOIR	1,244	1,244	1,244	1,244	1,244	1,244	NORTHEAST TEXAS MWD
PITTSBURG	CYPRESS	CAMP	CARRIZO-WILCOX AQUIFER   CAMP COUNTY	433	433	433	433	433	433	NORTHEAST TEXAS MWD
<b>County Total - Round V</b>				<b>3,246</b>	<b>3,258</b>	<b>3,267</b>	<b>3,275</b>	<b>3,283</b>	<b>3,292</b>	
<b>County Total - Round IV</b>				<b>3,194</b>	<b>3,206</b>	<b>3,215</b>	<b>3,257</b>	<b>3,264</b>	<b>3,270</b>	
<b>Round V minus Round IV</b>				<b>52</b>	<b>52</b>	<b>52</b>	<b>18</b>	<b>19</b>	<b>22</b>	
<b>CASS COUNTY</b>										
ATLANTA	CYPRESS	CASS	WRIGHT PATMAN LAKE/RESERVOIR	1,016	1,074	1,134	1,208	1,205	1,205	RIVERBEND WATER RESOURCES DISTRICT
COUNTY-OTHER	CYPRESS	CASS	CARRIZO-WILCOX AQUIFER   CASS COUNTY	212	212	212	212	212	212	MANUFACTURING, CASS
COUNTY-OTHER	CYPRESS	CASS	O' THE PINES LAKE/RESERVOIR	302	302	302	302	302	302	MANUFACTURING, CASS
E M C WSC	CYPRESS	CASS	CARRIZO-WILCOX AQUIFER   CASS COUNTY	43	43	43	43	43	43	OWNS SYSTEM
E M C WSC	CYPRESS	CASS	CARRIZO-WILCOX AQUIFER   MARION COUNTY	20	20	20	20	20	20	OWNS SYSTEM
EASTERN CASS WSC	CYPRESS	CASS	CARRIZO-WILCOX AQUIFER   CASS COUNTY	581	581	581	581	581	581	OWNS SYSTEM
HOLLY SPRINGS WSC	CYPRESS	CASS	O' THE PINES LAKE/RESERVOIR	60	60	60	59	59	59	HUGHES SPRINGS
HUGHES SPRINGS	CYPRESS	CASS	O' THE PINES LAKE/RESERVOIR	562	562	562	562	562	562	NORTHEAST TEXAS MWD
LINDEN	CYPRESS	CASS	CARRIZO-WILCOX AQUIFER   CASS COUNTY	444	444	444	444	444	444	OWNS SYSTEM
MIMS WSC	CYPRESS	CASS	O' THE PINES LAKE/RESERVOIR	133	133	133	133	133	133	NORTHEAST TEXAS MWD
QUEEN CITY	CYPRESS	CASS	CARRIZO-WILCOX AQUIFER   CASS COUNTY	169	169	169	169	169	169	MANUFACTURING, CASS
WESTERN CASS WSC	CYPRESS	CASS	CARRIZO-WILCOX AQUIFER   CASS COUNTY	895	895	895	895	895	895	OWNS SYSTEM
ATLANTA	SULPHUR	CASS	WRIGHT PATMAN LAKE/RESERVOIR	1	1	1	1	1	1	MANUFACTURING, CASS
COUNTY-OTHER	SULPHUR	CASS	CARRIZO-WILCOX AQUIFER   CASS COUNTY	80	80	80	80	80	80	RIVERBEND WATER RESOURCES DISTRICT

Region D 2021 - North East Texas Regional Water Plan  
Municipal Water Supply by County, WUG, Basin for 2020-2070

Water User Group Name	Basin	County	Source Name	2020	2030	2040	2050	2060	2070	Sellers Name
COUNTY-OTHER	SULPHUR	CASS	WRIGHT PATMAN LAKE/RESERVOIR	44	44	44	44	44	44	MANUFACTURING, CASS
EASTERN CASS WSC	SULPHUR	CASS	CARRIZO-WILCOX AQUIFER   CASS COUNTY	38	38	38	38	38	38	RIVERBEND WATER RESOURCES DISTRICT
QUEEN CITY	SULPHUR	CASS	CARRIZO-WILCOX AQUIFER   CASS COUNTY	100	100	100	100	100	100	MANUFACTURING, CASS
WESTERN CASS WSC	SULPHUR	CASS	CARRIZO-WILCOX AQUIFER   CASS COUNTY	188	188	188	188	188	188	OWNS SYSTEM
<b>County Total - Round V</b>				<b>4,888</b>	<b>4,946</b>	<b>5,006</b>	<b>5,079</b>	<b>5,076</b>	<b>5,076</b>	
<b>County Total - Round IV</b>				<b>5,740</b>	<b>5,800</b>	<b>5,859</b>	<b>5,933</b>	<b>5,931</b>	<b>5,993</b>	
<b>Round V minus Round IV</b>				<b>-852</b>	<b>-854</b>	<b>-853</b>	<b>-854</b>	<b>-855</b>	<b>-917</b>	
<b>DELTA COUNTY</b>										
COOPER	SULPHUR	DELTA	BIG CREEK LAKE/RESERVOIR	980	980	980	980	980	980	OWNS SYSTEM
COUNTY-OTHER	SULPHUR	DELTA	BIG CREEK LAKE/RESERVOIR	82	83	82	80	76	73	COMMERCE
COUNTY-OTHER	SULPHUR	DELTA	NACATOH AQUIFER   DELTA COUNTY	84	85	86	86	86	86	COMMERCE
COUNTY-OTHER	SULPHUR	DELTA	TRINITY AQUIFER   DELTA COUNTY	28	16	16	16	16	16	COMMERCE
DELTA COUNTY MUD	SULPHUR	DELTA	BIG CREEK LAKE/RESERVOIR	126	122	123	124	128	132	COOPER
NORTH HUNT SUD	SULPHUR	DELTA	TAWAKONI LAKE/RESERVOIR	9	7	6	4	3	3	COMMERCE
NORTH HUNT SUD	SULPHUR	DELTA	WOODBINE AQUIFER   HUNT COUNTY	4	3	2	2	1	1	COMMERCE
<b>County Total - Round V</b>				<b>1,313</b>	<b>1,296</b>	<b>1,295</b>	<b>1,292</b>	<b>1,290</b>	<b>1,291</b>	
<b>County Total - Round IV</b>				<b>2,955</b>	<b>2,887</b>	<b>2,872</b>	<b>2,852</b>	<b>2,820</b>	<b>2,690</b>	
<b>Round V minus Round IV</b>				<b>-1,642</b>	<b>-1,591</b>	<b>-1,577</b>	<b>-1,560</b>	<b>-1,530</b>	<b>-1,399</b>	
<b>FRANKLIN COUNTY</b>										
COUNTY-OTHER	CYPRESS	FRANKLIN	CARRIZO-WILCOX AQUIFER   FRANKLIN COUNTY	72	77	82	82	82	82	MOUNT PLEASANT
CYPRESS SPRINGS SUD	CYPRESS	FRANKLIN	CARRIZO-WILCOX AQUIFER   FRANKLIN COUNTY	67	67	67	67	67	67	FRANKLIN COUNTY WD
CYPRESS SPRINGS SUD	CYPRESS	FRANKLIN	CYPRESS SPRINGS LAKE/RESERVOIR	2,067	1,983	1,892	1,825	1,735	1,660	FRANKLIN COUNTY WD
WINNSBORO	CYPRESS	FRANKLIN	CYPRESS SPRINGS LAKE/RESERVOIR	384	370	355	343	328	316	FRANKLIN COUNTY WD
COUNTY-OTHER	SULPHUR	FRANKLIN	BOB SANDLIN LAKE/RESERVOIR	14	0	0	0	0	0	MOUNT PLEASANT
COUNTY-OTHER	SULPHUR	FRANKLIN	CARRIZO-WILCOX AQUIFER   FRANKLIN COUNTY	111	123	133	133	133	133	MOUNT PLEASANT
CYPRESS SPRINGS SUD	SULPHUR	FRANKLIN	CYPRESS SPRINGS LAKE/RESERVOIR	1,341	1,288	1,228	1,180	1,122	1,076	FRANKLIN COUNTY WD
MOUNT VERNON	SULPHUR	FRANKLIN	CYPRESS SPRINGS LAKE/RESERVOIR	2,852	2,731	2,610	2,514	2,393	2,296	FRANKLIN COUNTY WD
MOUNT VERNON	SULPHUR	FRANKLIN	SULPHUR RUN-OF-RIVER	160	160	160	160	160	160	FRANKLIN COUNTY WD
<b>County Total - Round V</b>				<b>7,068</b>	<b>6,799</b>	<b>6,527</b>	<b>6,304</b>	<b>6,020</b>	<b>5,790</b>	
<b>County Total - Round IV</b>				<b>5,178</b>	<b>5,187</b>	<b>5,139</b>	<b>5,090</b>	<b>4,968</b>	<b>4,837</b>	
<b>Round V minus Round IV</b>				<b>1,890</b>	<b>1,612</b>	<b>1,388</b>	<b>1,214</b>	<b>1,052</b>	<b>953</b>	
<b>GREGG COUNTY</b>										
COUNTY-OTHER	CYPRESS	GREGG	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	196	207	220	237	261	278	GLADEWATER

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COUNTY-OTHER	CYPRESS	GREGG	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	19	19	19	19	19	19	GLADEWATER
COUNTY-OTHER	CYPRESS	GREGG	FORK LAKE/RESERVOIR	17	31	33	37	41	45	GLADEWATER
COUNTY-OTHER	CYPRESS	GREGG	O' THE PINES LAKE/RESERVOIR	3	2	2	3	3	3	GLADEWATER
GLENWOOD WSC	CYPRESS	GREGG	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	25	24	25	25	25	25	OWNS SYSTEM
TRYON ROAD SUD	CYPRESS	GREGG	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	165	165	165	164	153	139	NORTHEAST TEXAS MWD
TRYON ROAD SUD	CYPRESS	GREGG	O' THE PINES LAKE/RESERVOIR	948	948	948	948	948	948	NORTHEAST TEXAS MWD
CLARKSVILLE CITY	SABINE	GREGG	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	245	245	245	245	245	245	OWNS SYSTEM
COUNTY-OTHER	SABINE	GREGG	BIG SANDY CREEK LAKE/RESERVOIR	50	50	50	50	50	50	GLADEWATER
COUNTY-OTHER	SABINE	GREGG	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	722	789	867	972	1,124	1,134	GLADEWATER
COUNTY-OTHER	SABINE	GREGG	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	18	18	18	18	18	18	GLADEWATER
COUNTY-OTHER	SABINE	GREGG	FORK LAKE/RESERVOIR	94	590	630	693	767	855	GLADEWATER
COUNTY-OTHER	SABINE	GREGG	GLADEWATER LAKE/RESERVOIR	154	154	154	154	154	54	GLADEWATER
COUNTY-OTHER	SABINE	GREGG	O' THE PINES LAKE/RESERVOIR	47	48	48	47	47	47	GLADEWATER
CROSS ROADS SUD	SABINE	GREGG	CARRIZO-WILCOX AQUIFER   RUSK COUNTY	52	51	50	50	51	52	KILGORE
CROSS ROADS SUD	SABINE	GREGG	FORK LAKE/RESERVOIR	32	34	36	39	43	47	KILGORE
ELDERVILLE WSC	SABINE	GREGG	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	396	396	396	396	396	396	LONGVIEW
ELDERVILLE WSC	SABINE	GREGG	CHEROKEE LAKE/RESERVOIR	186	185	185	185	186	170	LONGVIEW
ELDERVILLE WSC	SABINE	GREGG	FORK LAKE/RESERVOIR	188	188	188	188	188	189	LONGVIEW
GLADEWATER	SABINE	GREGG	GLADEWATER LAKE/RESERVOIR	982	987	999	1,013	1,030	1,113	OWNS SYSTEM
KILGORE	SABINE	GREGG	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	1,144	1,139	1,139	1,140	1,143	1,148	SABINE RIVER AUTHORITY
KILGORE	SABINE	GREGG	FORK LAKE/RESERVOIR	1,415	4,352	4,163	3,934	3,723	4,003	SABINE RIVER AUTHORITY
LIBERTY CITY WSC	SABINE	GREGG	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	858	858	858	858	858	858	OWNS SYSTEM
LONGVIEW	SABINE	GREGG	CHEROKEE LAKE/RESERVOIR	7,463	7,467	7,471	7,472	7,474	7,475	CHEROKEE WATER COMPANY
LONGVIEW	SABINE	GREGG	FORK LAKE/RESERVOIR	6,304	15,153	15,194	15,228	15,267	15,303	CHEROKEE WATER COMPANY
LONGVIEW	SABINE	GREGG	O' THE PINES LAKE/RESERVOIR	17,150	17,150	17,150	17,150	17,150	17,150	CHEROKEE WATER COMPANY
LONGVIEW	SABINE	GREGG	SABINE RUN-OF-RIVER	11,324	11,327	11,334	11,336	11,338	11,340	CHEROKEE WATER COMPANY
STARRVILLE-FRIENDSHIP WSC	SABINE	GREGG	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	60	60	60	60	60	60	OWNS SYSTEM
STARRVILLE-FRIENDSHIP WSC	SABINE	GREGG	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	38	38	38	38	38	38	OWNS SYSTEM
TRYON ROAD SUD	SABINE	GREGG	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	128	128	128	128	128	128	NORTHEAST TEXAS MWD
TRYON ROAD SUD	SABINE	GREGG	O' THE PINES LAKE/RESERVOIR	740	740	740	740	740	740	NORTHEAST TEXAS MWD
WEST GREGG SUD	SABINE	GREGG	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	521	521	521	521	521	517	OWNS SYSTEM

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WHITE OAK	SABINE	GREGG	BIG SANDY CREEK LAKE/RESERVOIR	2,595	2,595	2,595	2,595	2,595	2,595	LONGVIEW
<b>County Total - Round V</b>				<b>54,279</b>	<b>66,659</b>	<b>66,669</b>	<b>66,683</b>	<b>66,784</b>	<b>67,182</b>	
<b>County Total - Round IV</b>				<b>44,249</b>	<b>45,376</b>	<b>45,487</b>	<b>45,638</b>	<b>50,835</b>	<b>50,836</b>	
<b>Round V minus Round IV</b>				<b>10,030</b>	<b>21,283</b>	<b>21,182</b>	<b>21,045</b>	<b>15,949</b>	<b>16,346</b>	
<b>HARRISON COUNTY</b>										
BLOCKER CROSSROADS WSC	CYPRESS	HARRISON	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	21	20	21	21	21	20	OWNS SYSTEM
COUNTY-OTHER	CYPRESS	HARRISON	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	15	15	15	15	15	15	MARSHALL
COUNTY-OTHER	CYPRESS	HARRISON	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	2,032	2,088	2,130	2,179	2,252	2,307	MARSHALL
COUNTY-OTHER	CYPRESS	HARRISON	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	30	30	30	30	30	30	MARSHALL
COUNTY-OTHER	CYPRESS	HARRISON	O' THE PINES LAKE/RESERVOIR	253	253	253	253	253	253	MARSHALL
DIANA SUD	CYPRESS	HARRISON	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	47	47	47	47	47	47	NORTHEAST TEXAS MWD
DIANA SUD	CYPRESS	HARRISON	O' THE PINES LAKE/RESERVOIR	47	47	47	47	47	47	NORTHEAST TEXAS MWD
GUM SPRINGS WSC	CYPRESS	HARRISON	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	300	300	300	300	300	300	LONGVIEW
GUM SPRINGS WSC	CYPRESS	HARRISON	CHEROKEE LAKE/RESERVOIR	52	52	52	52	52	52	LONGVIEW
GUM SPRINGS WSC	CYPRESS	HARRISON	FORK LAKE/RESERVOIR	201	200	200	200	200	201	LONGVIEW
GUM SPRINGS WSC	CYPRESS	HARRISON	O' THE PINES LAKE/RESERVOIR	538	536	536	537	536	538	LONGVIEW
HARLETON WSC	CYPRESS	HARRISON	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	247	247	247	247	247	247	NORTHEAST TEXAS MWD
HARLETON WSC	CYPRESS	HARRISON	O' THE PINES LAKE/RESERVOIR	51	51	51	51	51	51	NORTHEAST TEXAS MWD
LEIGH WSC	CYPRESS	HARRISON	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	357	357	357	357	357	357	OWNS SYSTEM
MARSHALL	CYPRESS	HARRISON	CYPRESS RUN-OF-RIVER	1,262	1,262	1,262	1,262	1,262	1,262	NORTHEAST TEXAS MWD
MARSHALL	CYPRESS	HARRISON	O' THE PINES LAKE/RESERVOIR	1,158	1,158	1,158	1,158	1,158	1,158	NORTHEAST TEXAS MWD
NORTH HARRISON WSC	CYPRESS	HARRISON	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	161	161	161	161	161	161	OWNS SYSTEM
PANOLA-BETHANY WSC	CYPRESS	HARRISON	CARRIZO-WILCOX AQUIFER   PANOLA COUNTY	29	29	29	29	29	29	OWNS SYSTEM
SCOTTSVILLE	CYPRESS	HARRISON	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	71	71	71	70	70	71	OWNS SYSTEM
TALLEY WSC	CYPRESS	HARRISON	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	114	114	114	114	112	112	OWNS SYSTEM
TRYON ROAD SUD	CYPRESS	HARRISON	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	0	0	0	1	12	26	NORTHEAST TEXAS MWD
TRYON ROAD SUD	CYPRESS	HARRISON	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	20	20	20	20	20	20	NORTHEAST TEXAS MWD

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Water User Group Name	Basin	County	Source Name	2020	2030	2040	2050	2060	2070	Sellers Name
TRYON ROAD SUD	CYPRESS	HARRISON	O' THE PINES LAKE/RESERVOIR	134	134	134	134	134	134	NORTHEAST TEXAS MWD
WASKOM	CYPRESS	HARRISON	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	339	339	339	339	339	339	OWNS SYSTEM
WEST HARRISON WSC	CYPRESS	HARRISON	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	87	88	88	86	86	87	OWNS SYSTEM
BLOCKER CROSSROADS WSC	SABINE	HARRISON	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	191	192	191	191	191	192	OWNS SYSTEM
COUNTY-OTHER	SABINE	HARRISON	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	1,350	1,425	1,482	1,549	1,646	1,720	MARSHALL
COUNTY-OTHER	SABINE	HARRISON	O' THE PINES LAKE/RESERVOIR	70	70	70	70	70	70	MARSHALL
GILL WSC	SABINE	HARRISON	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	250	250	250	250	250	250	MARSHALL
GILL WSC	SABINE	HARRISON	O' THE PINES LAKE/RESERVOIR	67	67	67	67	67	67	MARSHALL
GUM SPRINGS WSC	SABINE	HARRISON	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	127	127	127	127	127	127	LONGVIEW
GUM SPRINGS WSC	SABINE	HARRISON	CHEROKEE LAKE/RESERVOIR	142	142	142	142	142	142	LONGVIEW
GUM SPRINGS WSC	SABINE	HARRISON	FORK LAKE/RESERVOIR	545	546	546	546	546	545	LONGVIEW
GUM SPRINGS WSC	SABINE	HARRISON	O' THE PINES LAKE/RESERVOIR	1,462	1,464	1,464	1,463	1,464	1,462	LONGVIEW
HALLSVILLE	SABINE	HARRISON	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	77	77	77	77	77	77	LONGVIEW
HALLSVILLE	SABINE	HARRISON	CHEROKEE LAKE/RESERVOIR	403	403	403	403	403	403	LONGVIEW
HALLSVILLE	SABINE	HARRISON	FORK LAKE/RESERVOIR	334	334	334	334	334	334	LONGVIEW
LEIGH WSC	SABINE	HARRISON	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	78	78	78	78	78	78	OWNS SYSTEM
LONGVIEW	SABINE	HARRISON	CHEROKEE LAKE/RESERVOIR	174	170	166	165	163	162	CHEROKEE WATER COMPANY
LONGVIEW	SABINE	HARRISON	FORK LAKE/RESERVOIR	331	325	317	315	311	310	CHEROKEE WATER COMPANY
LONGVIEW	SABINE	HARRISON	O' THE PINES LAKE/RESERVOIR	400	400	400	400	400	400	CHEROKEE WATER COMPANY
LONGVIEW	SABINE	HARRISON	SABINE RUN-OF-RIVER	264	259	252	250	248	246	CHEROKEE WATER COMPANY
MARSHALL	SABINE	HARRISON	CYPRESS RUN-OF-RIVER	5,909	5,909	5,909	5,909	5,909	5,909	NORTHEAST TEXAS MWD
MARSHALL	SABINE	HARRISON	O' THE PINES LAKE/RESERVOIR	5,419	5,419	5,419	5,419	5,419	5,419	NORTHEAST TEXAS MWD
PANOLA-BETHANY WSC	SABINE	HARRISON	CARRIZO-WILCOX AQUIFER   PANOLA COUNTY	253	242	242	241	241	241	OWNS SYSTEM
SCOTTSVILLE	SABINE	HARRISON	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	145	145	145	146	146	145	OWNS SYSTEM
TALLEY WSC	SABINE	HARRISON	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	84	84	84	84	86	86	OWNS SYSTEM

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WEST HARRISON WSC	SABINE	HARRISON	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	273	272	272	274	274	273	OWNS SYSTEM
<b>County Total - Round V</b>				<b>25,914</b>	<b>26,019</b>	<b>26,099</b>	<b>26,210</b>	<b>26,383</b>	<b>26,522</b>	
<b>County Total - Round IV</b>				<b>19,624</b>	<b>19,755</b>	<b>19,854</b>	<b>19,971</b>	<b>15,152</b>	<b>15,295</b>	
<b>Round V minus Round IV</b>				<b>6,290</b>	<b>6,264</b>	<b>6,245</b>	<b>6,239</b>	<b>11,231</b>	<b>11,227</b>	
<b>HOPKINS COUNTY</b>										
CORNERVILLE WSC	CYPRESS	HOPKINS	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	97	99	99	97	99	98	OWNS SYSTEM
COUNTY-OTHER	CYPRESS	HOPKINS	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	179	179	178	178	178	178	SULPHUR SPRINGS
CYPRESS SPRINGS SUD	CYPRESS	HOPKINS	CYPRESS SPRINGS LAKE/RESERVOIR	173	161	150	139	130	123	FRANKLIN COUNTY WD
BRASHEAR WSC	SABINE	HOPKINS	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	67	70	74	77	82	87	SULPHUR SPRINGS
CASH SUD	SABINE	HOPKINS	FORK LAKE/RESERVOIR	1	0	0	0	0	0	NORTH TEXAS MWD
CASH SUD	SABINE	HOPKINS	TAWAKONI LAKE/RESERVOIR	7	6	4	5	6	1	NORTH TEXAS MWD
CASH SUD	SABINE	HOPKINS	TRINITY INDIRECT REUSE	3	3	3	3	2	2	NORTH TEXAS MWD
CASH SUD	SABINE	HOPKINS	NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	4	4	4	3	3	2	NORTH TEXAS MWD
CORNERVILLE WSC	SABINE	HOPKINS	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	93	93	93	94	92	93	OWNS SYSTEM
COUNTY-OTHER	SABINE	HOPKINS	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	464	465	466	464	461	461	SULPHUR SPRINGS
COUNTY-OTHER	SABINE	HOPKINS	CARRIZO-WILCOX AQUIFER   RAINS COUNTY	112	112	112	112	112	112	SULPHUR SPRINGS
COUNTY-OTHER	SABINE	HOPKINS	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	7	7	7	7	7	7	SULPHUR SPRINGS
COUNTY-OTHER	SABINE	HOPKINS	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	48	53	50	15	0	0	SULPHUR SPRINGS
CUMBY	SABINE	HOPKINS	NACATOCH AQUIFER   HOPKINS COUNTY	109	109	109	109	109	109	OWNS SYSTEM
JONES WSC	SABINE	HOPKINS	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	29	34	38	43	46	52	OWNS SYSTEM
LAKE FORK WSC	SABINE	HOPKINS	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	49	49	47	46	46	48	OWNS SYSTEM
MARTIN SPRINGS WSC	SABINE	HOPKINS	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	376	375	374	376	377	377	SULPHUR SPRINGS
MARTIN SPRINGS WSC	SABINE	HOPKINS	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	188	188	188	189	189	188	SULPHUR SPRINGS
MILLER GROVE WSC	SABINE	HOPKINS	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	164	164	164	163	164	164	OWNS SYSTEM
SHADY GROVE NO 2 WSC	SABINE	HOPKINS	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	24	25	27	28	30	31	SULPHUR SPRINGS
SHADY GROVE NO 2 WSC	SABINE	HOPKINS	SULPHUR SPRINGS LAKE/RESERVOIR	24	25	26	27	29	31	SULPHUR SPRINGS
SHIRLEY WSC	SABINE	HOPKINS	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	230	231	230	230	230	230	OWNS SYSTEM
SHIRLEY WSC	SABINE	HOPKINS	CARRIZO-WILCOX AQUIFER   RAINS COUNTY	98	98	98	98	98	98	OWNS SYSTEM
SULPHUR SPRINGS	SABINE	HOPKINS	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	15	14	14	15	14	14	SULPHUR RIVER MWD

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SULPHUR SPRINGS	SABINE	HOPKINS	SULPHUR SPRINGS LAKE/RESERVOIR	1	1	1	1	1	1	SULPHUR RIVER MWD
BRASHEAR WSC	SULPHUR	HOPKINS	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	81	85	89	93	99	105	SULPHUR SPRINGS
BRINKER WSC	SULPHUR	HOPKINS	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	252	251	251	252	253	253	SULPHUR SPRINGS
BRINKER WSC	SULPHUR	HOPKINS	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	77	77	77	77	77	77	SULPHUR SPRINGS
COUNTY-OTHER	SULPHUR	HOPKINS	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	390	392	393	390	387	387	SULPHUR SPRINGS
COUNTY-OTHER	SULPHUR	HOPKINS	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	28	30	29	9	0	0	SULPHUR SPRINGS
COUNTY-OTHER	SULPHUR	HOPKINS	NACATOCH AQUIFER   HOPKINS COUNTY	114	91	88	87	85	85	SULPHUR SPRINGS
CUMBY	SULPHUR	HOPKINS	NACATOCH AQUIFER   HOPKINS COUNTY	11	11	11	11	11	11	OWNS SYSTEM
CYPRESS SPRINGS SUD	SULPHUR	HOPKINS	CYPRESS SPRINGS LAKE/RESERVOIR	346	322	300	282	265	246	FRANKLIN COUNTY WD
GAFFORD CHAPEL WSC	SULPHUR	HOPKINS	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	109	111	115	121	128	135	COMMERCE
GAFFORD CHAPEL WSC	SULPHUR	HOPKINS	NACATOCH AQUIFER   HOPKINS COUNTY	52	52	52	52	52	52	COMMERCE
GAFFORD CHAPEL WSC	SULPHUR	HOPKINS	NACATOCH AQUIFER   HUNT COUNTY	3	3	3	3	3	3	COMMERCE
MARTIN SPRINGS WSC	SULPHUR	HOPKINS	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	69	69	69	69	69	69	SULPHUR SPRINGS
MARTIN SPRINGS WSC	SULPHUR	HOPKINS	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	35	35	35	34	34	35	SULPHUR SPRINGS
NORTH HOPKINS WSC	SULPHUR	HOPKINS	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	921	921	921	921	921	921	SULPHUR SPRINGS
SHADY GROVE NO 2 WSC	SULPHUR	HOPKINS	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	30	31	32	34	36	38	SULPHUR SPRINGS
SHADY GROVE NO 2 WSC	SULPHUR	HOPKINS	SULPHUR SPRINGS LAKE/RESERVOIR	29	31	33	34	36	38	SULPHUR SPRINGS
SULPHUR SPRINGS	SULPHUR	HOPKINS	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	4,552	4,553	4,553	4,552	4,553	4,553	SULPHUR RIVER MWD
SULPHUR SPRINGS	SULPHUR	HOPKINS	SULPHUR SPRINGS LAKE/RESERVOIR	434	434	434	434	434	434	SULPHUR RIVER MWD
<b>County Total - Round V</b>				<b>10,095</b>	<b>10,064</b>	<b>10,041</b>	<b>9,974</b>	<b>9,948</b>	<b>9,949</b>	
<b>County Total - Round IV</b>				<b>23,014</b>	<b>22,661</b>	<b>22,231</b>	<b>22,044</b>	<b>21,571</b>	<b>21,196</b>	
<b>Round V minus Round IV</b>				<b>-12,919</b>	<b>-12,597</b>	<b>-12,190</b>	<b>-12,070</b>	<b>-11,623</b>	<b>-11,247</b>	
<b>HUNT COUNTY</b>										
ABLES SPRINGS WSC	SABINE	HUNT	FORK LAKE/RESERVOIR	4	0	0	0	0	0	OWNS SYSTEM
ABLES SPRINGS WSC	SABINE	HUNT	TAWAKONI LAKE/RESERVOIR	3	2	3	3	5	6	OWNS SYSTEM
ABLES SPRINGS WSC	SABINE	HUNT	TRINITY INDIRECT REUSE	21	32	45	60	77	102	OWNS SYSTEM
ABLES SPRINGS WSC	SABINE	HUNT	NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	30	41	55	71	92	121	OWNS SYSTEM
B H P WSC	SABINE	HUNT	FORK LAKE/RESERVOIR	24	0	0	0	0	0	NORTH TEXAS MWD
B H P WSC	SABINE	HUNT	TAWAKONI LAKE/RESERVOIR	17	9	10	11	13	17	NORTH TEXAS MWD



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Water User Group Name	Basin	County	Source Name	2020	2030	2040	2050	2060	2070	Sellers Name
B H P WSC	SABINE	HUNT	TRINITY INDIRECT REUSE	118	138	162	189	225	280	NORTH TEXAS MWD
B H P WSC	SABINE	HUNT	NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	171	179	196	225	269	332	NORTH TEXAS MWD
BLACKLAND WSC	SABINE	HUNT	FORK LAKE/RESERVOIR	1	0	0	0	0	0	OWNS SYSTEM
BLACKLAND WSC	SABINE	HUNT	TRINITY INDIRECT REUSE	3	3	3	2	2	2	OWNS SYSTEM
BLACKLAND WSC	SABINE	HUNT	NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	5	4	3	3	3	2	OWNS SYSTEM
CADDO BASIN SUD	SABINE	HUNT	FORK LAKE/RESERVOIR	64	0	0	0	0	0	FARMERSVILLE
CADDO BASIN SUD	SABINE	HUNT	TAWAKONI LAKE/RESERVOIR	45	26	30	36	44	55	FARMERSVILLE
CADDO BASIN SUD	SABINE	HUNT	TRINITY INDIRECT REUSE	314	395	493	600	738	941	FARMERSVILLE
CADDO BASIN SUD	SABINE	HUNT	NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	442	512	601	718	880	1,118	FARMERSVILLE
CADDO MILLS	SABINE	HUNT	TAWAKONI LAKE/RESERVOIR	178	186	201	242	309	319	GREENVILLE
CASH SUD	SABINE	HUNT	FORK LAKE/RESERVOIR	97	0	0	0	0	3,095	NORTH TEXAS MWD
CASH SUD	SABINE	HUNT	TAWAKONI LAKE/RESERVOIR	1,241	1,151	1,007	1,239	1,897	279	NORTH TEXAS MWD
CASH SUD	SABINE	HUNT	TRINITY INDIRECT REUSE	465	569	648	690	625	579	NORTH TEXAS MWD
CASH SUD	SABINE	HUNT	NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	328	343	248	204	297	365	NORTH TEXAS MWD
CELESTE	SABINE	HUNT	WOODBINE AQUIFER   HUNT COUNTY	95	95	95	95	95	95	OWNS SYSTEM
COMBINED CONSUMERS SUD	SABINE	HUNT	TAWAKONI LAKE/RESERVOIR	502	589	718	911	1,197	1,615	SABINE RIVER AUTHORITY
COUNTY-OTHER	SABINE	HUNT	BIG CREEK LAKE/RESERVOIR	4	6	8	12	19	21	CASH SUD
COUNTY-OTHER	SABINE	HUNT	NACATOCH AQUIFER   HUNT COUNTY	444	445	445	445	445	445	CASH SUD
COUNTY-OTHER	SABINE	HUNT	TAWAKONI LAKE/RESERVOIR	1,114	1,195	1,337	1,529	1,823	2,351	CASH SUD
COUNTY-OTHER	SABINE	HUNT	WOODBINE AQUIFER   HUNT COUNTY	15	15	15	15	15	15	CASH SUD
GREENVILLE	SABINE	HUNT	GREENVILLE CITY LAKE/RESERVOIR	3,318	3,318	3,318	3,318	3,318	3,318	SABINE RIVER AUTHORITY
GREENVILLE	SABINE	HUNT	TAWAKONI LAKE/RESERVOIR	2,714	2,537	2,338	2,123	1,932	1,735	SABINE RIVER AUTHORITY
HICKORY CREEK SUD	SABINE	HUNT	WOODBINE AQUIFER   HUNT COUNTY	177	179	182	183	185	185	OWNS SYSTEM
JOSEPHINE	SABINE	HUNT	FORK LAKE/RESERVOIR	3	0	0	0	0	0	OWNS SYSTEM
JOSEPHINE	SABINE	HUNT	TAWAKONI LAKE/RESERVOIR	2	2	2	3	3	2	OWNS SYSTEM
JOSEPHINE	SABINE	HUNT	TRINITY INDIRECT REUSE	14	24	37	51	46	43	OWNS SYSTEM
JOSEPHINE	SABINE	HUNT	NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	20	31	45	62	55	51	OWNS SYSTEM
MACBEE SUD	SABINE	HUNT	TAWAKONI LAKE/RESERVOIR	23	29	37	47	62	84	SABINE RIVER AUTHORITY
POETRY WSC	SABINE	HUNT	FORK LAKE/RESERVOIR	20	0	0	0	0	0	TERRELL
POETRY WSC	SABINE	HUNT	TAWAKONI LAKE/RESERVOIR	14	8	8	9	11	14	TERRELL
POETRY WSC	SABINE	HUNT	TRINITY INDIRECT REUSE	91	110	131	153	185	228	TERRELL
POETRY WSC	SABINE	HUNT	NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	129	143	160	183	220	272	TERRELL
QUINLAN	SABINE	HUNT	TAWAKONI LAKE/RESERVOIR	134	133	134	140	154	174	CASH SUD
ROYSE CITY	SABINE	HUNT	FORK LAKE/RESERVOIR	3	0	0	0	0	0	OWNS SYSTEM

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ROYSE CITY	SABINE	HUNT	TAWAKONI LAKE/RESERVOIR	2	1	1	2	2	2	OWNS SYSTEM
ROYSE CITY	SABINE	HUNT	TRINITY INDIRECT REUSE	15	19	22	26	31	39	OWNS SYSTEM
ROYSE CITY	SABINE	HUNT	NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	22	24	27	31	37	46	OWNS SYSTEM
SHADY GROVE WSC	SABINE	HUNT	TAWAKONI LAKE/RESERVOIR	139	164	202	257	338	457	GREENVILLE
WEST TAWAKONI	SABINE	HUNT	TAWAKONI LAKE/RESERVOIR	276	804	797	738	784	777	SABINE RIVER AUTHORITY
CASH SUD	SULPHUR	HUNT	FORK LAKE/RESERVOIR	1	0	0	0	0	0	NORTH TEXAS MWD
CASH SUD	SULPHUR	HUNT	TAWAKONI LAKE/RESERVOIR	18	17	15	18	27	3	NORTH TEXAS MWD
CASH SUD	SULPHUR	HUNT	TRINITY INDIRECT REUSE	6	8	10	10	9	8	NORTH TEXAS MWD
CASH SUD	SULPHUR	HUNT	NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	9	11	11	12	11	10	NORTH TEXAS MWD
COMMERCE	SULPHUR	HUNT	NACATOCH AQUIFER   DELTA COUNTY	122	122	122	122	122	122	SABINE RIVER AUTHORITY
COMMERCE	SULPHUR	HUNT	NACATOCH AQUIFER   HUNT COUNTY	122	122	122	122	122	122	SABINE RIVER AUTHORITY
COMMERCE	SULPHUR	HUNT	TAWAKONI LAKE/RESERVOIR	1,427	4,586	4,609	4,249	2,694	3,078	SABINE RIVER AUTHORITY
COUNTY-OTHER	SULPHUR	HUNT	NACATOCH AQUIFER   HUNT COUNTY	13	13	13	13	13	13	CASH SUD
COUNTY-OTHER	SULPHUR	HUNT	TAWAKONI LAKE/RESERVOIR	34	67	99	48	72	115	CASH SUD
DELTA COUNTY MUD	SULPHUR	HUNT	BIG CREEK LAKE/RESERVOIR	1	1	1	1	1	1	COOPER
HICKORY CREEK SUD	SULPHUR	HUNT	WOODBINE AQUIFER   HUNT COUNTY	109	112	113	114	114	114	OWNS SYSTEM
NORTH HUNT SUD	SULPHUR	HUNT	TAWAKONI LAKE/RESERVOIR	120	124	128	132	135	137	COMMERCE
NORTH HUNT SUD	SULPHUR	HUNT	WOODBINE AQUIFER   HUNT COUNTY	45	46	48	49	50	51	COMMERCE
TEXAS A&M UNIVERSITY COMM	SULPHUR	HUNT	NACATOCH AQUIFER   HUNT COUNTY	156	156	156	156	156	156	COMMERCE
WOLFE CITY	SULPHUR	HUNT	TURKEY CREEK LAKE/RESERVOIR	190	190	190	190	190	190	OWNS SYSTEM
WOLFE CITY	SULPHUR	HUNT	WOODBINE AQUIFER   FANNIN COUNTY	70	70	70	69	70	69	OWNS SYSTEM
COUNTY-OTHER	TRINITY	HUNT	NACATOCH AQUIFER   HUNT COUNTY	1	0	0	0	0	0	CASH SUD
COUNTY-OTHER	TRINITY	HUNT	TAWAKONI LAKE/RESERVOIR	0	12	30	20	31	49	CASH SUD
COUNTY-OTHER	TRINITY	HUNT	TRINITY AQUIFER   HUNT COUNTY	3	3	3	3	3	3	CASH SUD
COUNTY-OTHER	TRINITY	HUNT	WOODBINE AQUIFER   HUNT COUNTY	24	19	14	4	0	0	CASH SUD
FROGNOT WSC	TRINITY	HUNT	WOODBINE AQUIFER   COLLIN COUNTY	6	6	6	6	6	6	OWNS SYSTEM
HICKORY CREEK SUD	TRINITY	HUNT	WOODBINE AQUIFER   HUNT COUNTY	54	55	55	55	56	56	OWNS SYSTEM
WEST LEONARD WSC	TRINITY	HUNT	WOODBINE AQUIFER   FANNIN COUNTY	14	13	16	18	20	21	OWNS SYSTEM
<b>County Total - Round V</b>				<b>15,406</b>	<b>19,214</b>	<b>19,595</b>	<b>20,037</b>	<b>20,335</b>	<b>23,906</b>	
<b>County Total - Round IV</b>				<b>17,221</b>	<b>21,389</b>	<b>21,934</b>	<b>25,518</b>	<b>28,173</b>	<b>29,795</b>	
<b>Round V minus Round IV</b>				<b>-1,815</b>	<b>-2,175</b>	<b>-2,339</b>	<b>-5,481</b>	<b>-7,838</b>	<b>-5,889</b>	
<b>LAMAR COUNTY</b>										
COUNTY-OTHER	RED	LAMAR	PAT MAYSE LAKE/RESERVOIR	5	6	6	6	6	6	LAMAR COUNTY WSD
COUNTY-OTHER	RED	LAMAR	TRINITY AQUIFER   LAMAR COUNTY	0	0	0	0	0	0	LAMAR COUNTY WSD
COUNTY-OTHER	RED	LAMAR	WOODBINE AQUIFER   LAMAR COUNTY	0	0	0	0	0	0	LAMAR COUNTY WSD
LAMAR COUNTY WSD	RED	LAMAR	PAT MAYSE LAKE/RESERVOIR	5,334	5,278	5,229	5,193	5,159	5,108	PARIS
PARIS	RED	LAMAR	CROOK LAKE/RESERVOIR	806	806	806	806	806	806	OWNS SYSTEM
PARIS	RED	LAMAR	PAT MAYSE LAKE/RESERVOIR	10,352	10,234	10,119	10,023	9,839	9,742	OWNS SYSTEM

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RENO (Lamar)	RED	LAMAR	PAT MAYSE LAKE/RESERVOIR	115	128	138	149	160	171	LAMAR COUNTY WSD
BLOSSOM	SULPHUR	LAMAR	PAT MAYSE LAKE/RESERVOIR	216	230	245	245	245	245	LAMAR COUNTY WSD
COUNTY-OTHER	SULPHUR	LAMAR	PAT MAYSE LAKE/RESERVOIR	269	274	279	277	275	273	LAMAR COUNTY WSD
COUNTY-OTHER	SULPHUR	LAMAR	TRINITY AQUIFER   LAMAR COUNTY	1	1	1	1	1	1	LAMAR COUNTY WSD
LAMAR COUNTY WSD	SULPHUR	LAMAR	PAT MAYSE LAKE/RESERVOIR	3,557	3,518	3,486	3,462	3,438	3,404	PARIS
PARIS	SULPHUR	LAMAR	CROOK LAKE/RESERVOIR	1,210	1,210	1,210	1,210	1,210	1,210	OWNS SYSTEM
PARIS	SULPHUR	LAMAR	PAT MAYSE LAKE/RESERVOIR	15,528	15,351	15,179	15,035	14,759	14,614	OWNS SYSTEM
RENO (Lamar)	SULPHUR	LAMAR	PAT MAYSE LAKE/RESERVOIR	513	571	616	665	713	764	LAMAR COUNTY WSD
<b>County Total - Round V</b>				<b>37,906</b>	<b>37,607</b>	<b>37,314</b>	<b>37,072</b>	<b>36,611</b>	<b>36,344</b>	
<b>County Total - Round IV</b>				<b>38,186</b>	<b>37,886</b>	<b>37,610</b>	<b>37,367</b>	<b>36,904</b>	<b>36,637</b>	
<b>Round V minus Round IV</b>				<b>-280</b>	<b>-279</b>	<b>-296</b>	<b>-295</b>	<b>-293</b>	<b>-293</b>	
<b>MARION COUNTY</b>										
COUNTY-OTHER	CYPRESS	MARION	CARRIZO-WILCOX AQUIFER   MARION COUNTY	1,553	1,553	1,553	1,553	1,553	1,553	NORTHEAST TEXAS MWD
COUNTY-OTHER	CYPRESS	MARION	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	35	35	35	35	35	35	NORTHEAST TEXAS MWD
COUNTY-OTHER	CYPRESS	MARION	O' THE PINES LAKE/RESERVOIR	169	169	169	169	169	169	NORTHEAST TEXAS MWD
DIANA SUD	CYPRESS	MARION	CARRIZO-WILCOX AQUIFER   MARION COUNTY	27	27	27	27	27	27	NORTHEAST TEXAS MWD
DIANA SUD	CYPRESS	MARION	O' THE PINES LAKE/RESERVOIR	24	24	24	24	24	24	NORTHEAST TEXAS MWD
E M C WSC	CYPRESS	MARION	CARRIZO-WILCOX AQUIFER   MARION COUNTY	243	243	243	243	243	243	OWNS SYSTEM
HARLETON WSC	CYPRESS	MARION	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	81	81	81	81	81	81	NORTHEAST TEXAS MWD
HARLETON WSC	CYPRESS	MARION	O' THE PINES LAKE/RESERVOIR	17	17	17	17	17	17	NORTHEAST TEXAS MWD
JEFFERSON	CYPRESS	MARION	CYPRESS RUN-OF-RIVER	148	148	148	148	148	148	NORTHEAST TEXAS MWD
JEFFERSON	CYPRESS	MARION	O' THE PINES LAKE/RESERVOIR	1,509	1,509	1,509	1,509	1,509	1,509	NORTHEAST TEXAS MWD
KELLYVILLE-BEREA WSC	CYPRESS	MARION	CARRIZO-WILCOX AQUIFER   MARION COUNTY	148	148	148	148	148	148	OWNS SYSTEM
MIMS WSC	CYPRESS	MARION	O' THE PINES LAKE/RESERVOIR	763	763	763	763	763	763	NORTHEAST TEXAS MWD
<b>County Total - Round V</b>				<b>4,717</b>	<b>4,717</b>	<b>4,717</b>	<b>4,717</b>	<b>4,717</b>	<b>4,717</b>	
<b>County Total - Round IV</b>				<b>3,474</b>	<b>3,474</b>	<b>3,474</b>	<b>3,474</b>	<b>3,474</b>	<b>3,474</b>	
<b>Round V minus Round IV</b>				<b>1,243</b>	<b>1,243</b>	<b>1,243</b>	<b>1,243</b>	<b>1,243</b>	<b>1,243</b>	
<b>MORRIS COUNTY</b>										
BI COUNTY WSC	CYPRESS	MORRIS	CARRIZO-WILCOX AQUIFER   MORRIS COUNTY	132	132	132	132	132	132	OWNS SYSTEM
COUNTY-OTHER	CYPRESS	MORRIS	CARRIZO-WILCOX AQUIFER   MORRIS COUNTY	353	353	353	353	353	353	OWNS SYSTEM

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DAINGERFIELD	CYPRESS	MORRIS	O' THE PINES LAKE/RESERVOIR	1,582	1,582	1,582	1,582	1,582	1,582	NORTHEAST TEXAS MWD
HOLLY SPRINGS WSC	CYPRESS	MORRIS	O' THE PINES LAKE/RESERVOIR	32	32	32	33	33	33	HUGHES SPRINGS
HUGHES SPRINGS	CYPRESS	MORRIS	O' THE PINES LAKE/RESERVOIR	2	2	2	2	2	2	NORTHEAST TEXAS MWD
LONE STAR	CYPRESS	MORRIS	O' THE PINES LAKE/RESERVOIR	747	747	747	747	747	747	NORTHEAST TEXAS MWD
NAPLES	CYPRESS	MORRIS	CARRIZO-WILCOX AQUIFER   MORRIS COUNTY	108	116	116	116	116	116	OWNS SYSTEM
OMAHA	CYPRESS	MORRIS	CARRIZO-WILCOX AQUIFER   MORRIS COUNTY	165	165	165	165	165	165	OWNS SYSTEM
TRI SUD	CYPRESS	MORRIS	BOB SANDLIN LAKE/RESERVOIR	181	177	176	179	183	186	MOUNT PLEASANT
COUNTY-OTHER	SULPHUR	MORRIS	CARRIZO-WILCOX AQUIFER   MORRIS COUNTY	187	187	187	187	187	187	OWNS SYSTEM
NAPLES	SULPHUR	MORRIS	CARRIZO-WILCOX AQUIFER   MORRIS COUNTY	117	109	109	109	109	109	OWNS SYSTEM
OMAHA	SULPHUR	MORRIS	CARRIZO-WILCOX AQUIFER   MORRIS COUNTY	125	125	125	125	125	125	OWNS SYSTEM
<b>County Total - Round V</b>				<b>3,731</b>	<b>3,727</b>	<b>3,726</b>	<b>3,730</b>	<b>3,734</b>	<b>3,737</b>	
<b>County Total - Round IV</b>				<b>3,565</b>	<b>3,565</b>	<b>3,565</b>	<b>3,531</b>	<b>3,532</b>	<b>3,535</b>	
<b>Round V minus Round IV</b>				<b>166</b>	<b>162</b>	<b>161</b>	<b>199</b>	<b>202</b>	<b>202</b>	
<b>RAINS COUNTY</b>										
BRIGHT STAR SALEM SUD	SABINE	RAINS	CARRIZO-WILCOX AQUIFER   RAINS COUNTY	344	344	344	344	344	344	SABINE RIVER AUTHORITY
BRIGHT STAR SALEM SUD	SABINE	RAINS	FORK LAKE/RESERVOIR	354	758	750	742	734	725	SABINE RIVER AUTHORITY
CASH SUD	SABINE	RAINS	FORK LAKE/RESERVOIR	4	0	0	0	0	0	NORTH TEXAS MWD
CASH SUD	SABINE	RAINS	TAWAKONI LAKE/RESERVOIR	49	40	29	31	39	5	NORTH TEXAS MWD
CASH SUD	SABINE	RAINS	TRINITY INDIRECT REUSE	18	19	19	17	13	10	NORTH TEXAS MWD
CASH SUD	SABINE	RAINS	NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	26	25	23	20	15	12	NORTH TEXAS MWD
COUNTY-OTHER	SABINE	RAINS	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	113	113	113	113	113	113	OWNS SYSTEM
COUNTY-OTHER	SABINE	RAINS	CARRIZO-WILCOX AQUIFER   RAINS COUNTY	204	217	220	218	215	215	OWNS SYSTEM
COUNTY-OTHER	SABINE	RAINS	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	7	7	7	7	7	7	OWNS SYSTEM
COUNTY-OTHER	SABINE	RAINS	NACATOCH AQUIFER   HOPKINS COUNTY	69	75	77	76	74	74	OWNS SYSTEM
EAST TAWAKONI	SABINE	RAINS	TAWAKONI LAKE/RESERVOIR	237	246	247	247	248	248	EMORY
EMORY	SABINE	RAINS	TAWAKONI LAKE/RESERVOIR	791	829	837	842	845	847	SABINE RIVER AUTHORITY
GOLDEN WSC	SABINE	RAINS	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	9	9	9	9	9	9	OWNS SYSTEM
MILLER GROVE WSC	SABINE	RAINS	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	28	28	28	29	28	28	OWNS SYSTEM
POINT	SABINE	RAINS	TAWAKONI LAKE/RESERVOIR	364	379	380	381	383	383	SABINE RIVER AUTHORITY

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SHIRLEY WSC	SABINE	RAINS	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	106	106	106	106	106	106	OWNS SYSTEM
SHIRLEY WSC	SABINE	RAINS	CARRIZO-WILCOX AQUIFER   RAINS COUNTY	46	46	46	46	46	46	OWNS SYSTEM
SOUTH RAINS SUD	SABINE	RAINS	CARRIZO-WILCOX AQUIFER   RAINS COUNTY	90	90	90	90	90	90	BRIGHT STAR SALEM SUD
SOUTH RAINS SUD	SABINE	RAINS	TAWAKONI LAKE/RESERVOIR	190	192	188	187	187	188	BRIGHT STAR SALEM SUD
<b>County Total - Round V</b>				<b>3,049</b>	<b>3,523</b>	<b>3,513</b>	<b>3,505</b>	<b>3,496</b>	<b>3,450</b>	
<b>County Total - Round IV</b>				<b>2,733</b>	<b>3,952</b>	<b>3,946</b>	<b>3,932</b>	<b>3,917</b>	<b>3,905</b>	
<b>Round V minus Round IV</b>				<b>316</b>	<b>-429</b>	<b>-433</b>	<b>-427</b>	<b>-421</b>	<b>-455</b>	
<b>RED RIVER COUNTY</b>										
410 WSC	RED	RED RIVER	PAT MAYSE LAKE/RESERVOIR	67	66	64	64	63	63	LAMAR COUNTY WSD
COUNTY-OTHER	RED	RED RIVER	PAT MAYSE LAKE/RESERVOIR	44	33	34	35	34	32	LAMAR COUNTY WSD
COUNTY-OTHER	RED	RED RIVER	TRINITY AQUIFER   RED RIVER COUNTY	23	23	23	23	23	23	LAMAR COUNTY WSD
COUNTY-OTHER	RED	RED RIVER	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0	LAMAR COUNTY WSD
RED RIVER COUNTY WSC	RED	RED RIVER	BLOSSOM AQUIFER   RED RIVER COUNTY	29	30	30	30	30	30	LAMAR COUNTY WSD
RED RIVER COUNTY WSC	RED	RED RIVER	PAT MAYSE LAKE/RESERVOIR	184	184	184	184	184	184	LAMAR COUNTY WSD
RED RIVER COUNTY WSC	RED	RED RIVER	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0	LAMAR COUNTY WSD
410 WSC	SULPHUR	RED RIVER	PAT MAYSE LAKE/RESERVOIR	157	152	149	148	148	148	LAMAR COUNTY WSD
BOGATA	SULPHUR	RED RIVER	NACATOCH AQUIFER   RED RIVER COUNTY	510	510	510	510	510	510	OWNS SYSTEM
CLARKSVILLE	SULPHUR	RED RIVER	BLOSSOM AQUIFER   RED RIVER COUNTY	383	371	371	371	371	371	OWNS SYSTEM
COUNTY-OTHER	SULPHUR	RED RIVER	NACATOCH AQUIFER   RED RIVER COUNTY	56	55	54	54	54	54	LAMAR COUNTY WSD
COUNTY-OTHER	SULPHUR	RED RIVER	PAT MAYSE LAKE/RESERVOIR	36	47	48	48	50	52	LAMAR COUNTY WSD
COUNTY-OTHER	SULPHUR	RED RIVER	TRINITY AQUIFER   RED RIVER COUNTY	0	0	0	0	0	0	LAMAR COUNTY WSD
COUNTY-OTHER	SULPHUR	RED RIVER	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0	LAMAR COUNTY WSD
RED RIVER COUNTY WSC	SULPHUR	RED RIVER	BLOSSOM AQUIFER   RED RIVER COUNTY	212	223	223	223	223	223	LAMAR COUNTY WSD
RED RIVER COUNTY WSC	SULPHUR	RED RIVER	NACATOCH AQUIFER   RED RIVER COUNTY	188	188	188	188	188	188	LAMAR COUNTY WSD
RED RIVER COUNTY WSC	SULPHUR	RED RIVER	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0	LAMAR COUNTY WSD
<b>County Total - Round V</b>				<b>1,889</b>	<b>1,882</b>	<b>1,878</b>	<b>1,878</b>	<b>1,878</b>	<b>1,878</b>	
<b>County Total - Round IV</b>				<b>2,237</b>	<b>1,989</b>	<b>1,325</b>	<b>1,325</b>	<b>1,325</b>	<b>1,325</b>	
<b>Round V minus Round IV</b>				<b>-348</b>	<b>-107</b>	<b>553</b>	<b>553</b>	<b>553</b>	<b>553</b>	
<b>SMITH COUNTY</b>										
CARROLL WSC	SABINE	SMITH	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	37	40	43	47	52	57	OWNS SYSTEM
COUNTY-OTHER	SABINE	SMITH	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	544	627	718	868	1,021	1,216	GLADEWATER
COUNTY-OTHER	SABINE	SMITH	GLADEWATER LAKE/RESERVOIR	23	23	23	23	23	23	GLADEWATER
CRYSTAL SYSTEMS TEXAS	SABINE	SMITH	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	1,334	1,285	1,256	1,236	1,230	1,232	OWNS SYSTEM
JACKSON WSC	SABINE	SMITH	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	205	222	244	274	314	361	OWNS SYSTEM
LIBERTY CITY WSC	SABINE	SMITH	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	23	23	23	23	23	23	OWNS SYSTEM
LINDALE	SABINE	SMITH	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	796	779	773	756	762	773	OWNS SYSTEM
LINDALE RURAL WSC	SABINE	SMITH	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	1,011	1,011	1,011	1,011	1,011	1,011	OWNS SYSTEM
OVERTON	SABINE	SMITH	CARRIZO-WILCOX AQUIFER   RUSK COUNTY	15	17	19	22	25	29	OWNS SYSTEM
PINE RIDGE WSC	SABINE	SMITH	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	272	271	272	271	271	271	OWNS SYSTEM
SAND FLAT WSC	SABINE	SMITH	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	546	546	546	546	546	546	OWNS SYSTEM
SMITH COUNTY MUD 1	SABINE	SMITH	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	887	887	887	887	887	887	OWNS SYSTEM

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Water User Group Name	Basin	County	Source Name	2020	2030	2040	2050	2060	2070	Sellers Name
SMITH COUNTY MUD 1	SABINE	SMITH	QUEEN CITY AQUIFER   SMITH COUNTY	269	269	269	269	269	269	OWNS SYSTEM
SOUTHERN UTILITIES	SABINE	SMITH	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	1,964	2,152	2,395	2,799	3,209	3,700	OWNS SYSTEM
STAR MOUNTAIN WSC	SABINE	SMITH	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	213	213	213	213	213	213	OWNS SYSTEM
STARRVILLE-FRIENDSHIP WSC	SABINE	SMITH	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	147	147	147	147	147	147	OWNS SYSTEM
STARRVILLE-FRIENDSHIP WSC	SABINE	SMITH	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	92	92	92	92	92	92	OWNS SYSTEM
TYLER	SABINE	SMITH	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	21	24	27	30	35	40	OWNS SYSTEM
TYLER	SABINE	SMITH	PALESTINE LAKE/RESERVOIR	80	88	99	114	129	149	OWNS SYSTEM
TYLER	SABINE	SMITH	TYLER LAKE/RESERVOIR	91	101	113	128	147	170	OWNS SYSTEM
WEST GREGG SUD	SABINE	SMITH	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	0	0	0	0	0	3	OWNS SYSTEM
WEST GREGG SUD	SABINE	SMITH	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	132	132	132	132	132	132	OWNS SYSTEM
WINONA	SABINE	SMITH	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	169	169	169	169	169	169	OWNS SYSTEM
<b>County Total - Round V</b>				<b>8,871</b>	<b>9,118</b>	<b>9,471</b>	<b>10,057</b>	<b>10,707</b>	<b>11,513</b>	
<b>County Total - Round IV</b>				<b>10,288</b>	<b>10,792</b>	<b>11,340</b>	<b>12,099</b>	<b>13,064</b>	<b>14,008</b>	
<b>Round V minus Round IV</b>				<b>-1,417</b>	<b>-1,674</b>	<b>-1,869</b>	<b>-2,042</b>	<b>-2,357</b>	<b>-2,495</b>	
<b>TITUS COUNTY</b>										
BI COUNTY WSC	CYPRESS	TITUS	CARRIZO-WILCOX AQUIFER   TITUS COUNTY	76	76	76	76	76	76	OWNS SYSTEM
COUNTY-OTHER	CYPRESS	TITUS	BOB SANDLIN LAKE/RESERVOIR	87	0	0	0	0	0	MOUNT PLEASANT
COUNTY-OTHER	CYPRESS	TITUS	CARRIZO-WILCOX AQUIFER   TITUS COUNTY	415	438	457	475	439	416	MOUNT PLEASANT
CYPRESS SPRINGS SUD	CYPRESS	TITUS	CYPRESS SPRINGS LAKE/RESERVOIR	54	52	60	62	63	64	FRANKLIN COUNTY WD
MOUNT PLEASANT	CYPRESS	TITUS	BOB SANDLIN LAKE/RESERVOIR	13,677	13,423	13,174	12,940	12,551	12,242	TITUS COUNTY FWD #1
MOUNT PLEASANT	CYPRESS	TITUS	CYPRESS RUN-OF-RIVER	404	404	404	404	404	404	TITUS COUNTY FWD #1
MOUNT PLEASANT	CYPRESS	TITUS	CYPRESS SPRINGS LAKE/RESERVOIR	2,769	2,651	2,534	2,440	2,323	2,229	TITUS COUNTY FWD #1
MOUNT PLEASANT	CYPRESS	TITUS	TANKERSLEY LAKE/RESERVOIR	950	950	950	950	950	950	TITUS COUNTY FWD #1
TRI SUD	CYPRESS	TITUS	BOB SANDLIN LAKE/RESERVOIR	1,013	1,102	1,203	1,325	1,465	1,616	MOUNT PLEASANT
COUNTY-OTHER	SULPHUR	TITUS	BOB SANDLIN LAKE/RESERVOIR	600	0	0	0	0	0	MOUNT PLEASANT
COUNTY-OTHER	SULPHUR	TITUS	CARRIZO-WILCOX AQUIFER   TITUS COUNTY	395	432	454	477	500	500	MOUNT PLEASANT
COUNTY-OTHER	SULPHUR	TITUS	NACATOCH AQUIFER   RED RIVER COUNTY	76	76	76	76	76	76	MOUNT PLEASANT
CYPRESS SPRINGS SUD	SULPHUR	TITUS	CYPRESS SPRINGS LAKE/RESERVOIR	81	88	90	96	99	106	FRANKLIN COUNTY WD
TRI SUD	SULPHUR	TITUS	BOB SANDLIN LAKE/RESERVOIR	526	573	625	689	762	841	MOUNT PLEASANT
<b>County Total - Round V</b>				<b>21,123</b>	<b>20,265</b>	<b>20,103</b>	<b>20,010</b>	<b>19,708</b>	<b>19,520</b>	
<b>County Total - Round IV</b>				<b>8,539</b>	<b>8,369</b>	<b>8,075</b>	<b>7,849</b>	<b>8,438</b>	<b>9,067</b>	
<b>Round V minus Round IV</b>				<b>12,584</b>	<b>11,896</b>	<b>12,028</b>	<b>12,161</b>	<b>11,270</b>	<b>10,453</b>	
<b>UPSHUR COUNTY</b>										
BI COUNTY WSC	CYPRESS	UPSHUR	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	479	479	479	479	479	479	OWNS SYSTEM
COUNTY-OTHER	CYPRESS	UPSHUR	BIG SANDY CREEK LAKE/RESERVOIR	27	27	27	27	27	27	GLADEWATER
COUNTY-OTHER	CYPRESS	UPSHUR	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	447	447	448	447	447	447	GLADEWATER

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COUNTY-OTHER	CYPRESS	UPSHUR	GLADEWATER LAKE/RESERVOIR	76	76	76	76	76	76	GLADEWATER
COUNTY-OTHER	CYPRESS	UPSHUR	QUEEN CITY AQUIFER   UPSHUR COUNTY	721	786	871	870	891	913	GLADEWATER
DIANA SUD	CYPRESS	UPSHUR	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	598	598	598	598	598	598	NORTHEAST TEXAS MWD
DIANA SUD	CYPRESS	UPSHUR	O' THE PINES LAKE/RESERVOIR	524	524	524	524	524	524	NORTHEAST TEXAS MWD
EAST MOUNTAIN WATER SYSTEM	CYPRESS	UPSHUR	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	139	139	138	138	138	139	OWNS SYSTEM
GILMER	CYPRESS	UPSHUR	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	1,226	1,226	1,226	1,226	1,226	1,226	OWNS SYSTEM
GLENWOOD WSC	CYPRESS	UPSHUR	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	341	342	341	341	341	341	OWNS SYSTEM
ORE CITY	CYPRESS	UPSHUR	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	214	214	214	214	214	214	NORTHEAST TEXAS MWD
ORE CITY	CYPRESS	UPSHUR	O' THE PINES LAKE/RESERVOIR	1,504	1,504	1,504	1,504	1,504	1,504	NORTHEAST TEXAS MWD
PRITCHETT WSC	CYPRESS	UPSHUR	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	441	441	441	441	441	441	OWNS SYSTEM
SHARON WSC	CYPRESS	UPSHUR	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	363	363	363	363	363	363	OWNS SYSTEM
UNION GROVE WSC	CYPRESS	UPSHUR	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	15	14	14	15	14	14	OWNS SYSTEM
BIG SANDY	SABINE	UPSHUR	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	296	296	296	296	296	296	OWNS SYSTEM
COUNTY-OTHER	SABINE	UPSHUR	BIG SANDY CREEK LAKE/RESERVOIR	13	13	13	13	13	13	GLADEWATER
COUNTY-OTHER	SABINE	UPSHUR	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	54	54	53	54	54	54	GLADEWATER
COUNTY-OTHER	SABINE	UPSHUR	GLADEWATER LAKE/RESERVOIR	36	36	36	36	36	36	GLADEWATER
COUNTY-OTHER	SABINE	UPSHUR	QUEEN CITY AQUIFER   UPSHUR COUNTY	134	145	160	161	165	169	GLADEWATER
COUNTY-OTHER	SABINE	UPSHUR	LOMA LAKE/RESERVOIR	400	400	400	400	400	400	GLADEWATER
EAST MOUNTAIN WATER SYSTEM	SABINE	UPSHUR	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	221	221	222	222	222	221	OWNS SYSTEM
FOUKE WSC	SABINE	UPSHUR	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	13	13	14	14	15	15	OWNS SYSTEM
GLADEWATER	SABINE	UPSHUR	GLADEWATER LAKE/RESERVOIR	597	592	580	566	549	566	OWNS SYSTEM
GLENWOOD WSC	SABINE	UPSHUR	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	10	10	10	10	10	10	OWNS SYSTEM
PRITCHETT WSC	SABINE	UPSHUR	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	577	577	577	577	577	577	OWNS SYSTEM
UNION GROVE WSC	SABINE	UPSHUR	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	361	362	362	361	362	362	OWNS SYSTEM
<b>County Total - Round V</b>				<b>9,827</b>	<b>9,899</b>	<b>9,987</b>	<b>9,973</b>	<b>9,982</b>	<b>10,025</b>	
<b>County Total - Round IV</b>				<b>8,921</b>	<b>8,956</b>	<b>8,977</b>	<b>9,002</b>	<b>9,010</b>	<b>9,053</b>	
<b>Round V minus Round IV</b>				<b>906</b>	<b>943</b>	<b>1,010</b>	<b>971</b>	<b>972</b>	<b>972</b>	
<b>VAN ZANDT COUNTY</b>										

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Water User Group Name	Basin	County	Source Name	2020	2030	2040	2050	2060	2070	Sellers Name
BEN WHEELER WSC	NECHES	VAN ZAND	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	415	413	413	414	414	414	OWNS SYSTEM
BETHEL ASH WSC	NECHES	VAN ZAND	CARRIZO-WILCOX AQUIFER   HENDERSON COUNTY	147	165	175	177	182	182	OWNS SYSTEM
COUNTY-OTHER	NECHES	VAN ZAND	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	1,785	1,887	1,964	2,061	2,170	2,170	OWNS SYSTEM
EDOM WSC	NECHES	VAN ZAND	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	119	119	119	118	119	118	OWNS SYSTEM
LITTLE HOPE MOORE WSC	NECHES	VAN ZAND	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	51	50	51	50	51	50	OWNS SYSTEM
R P M WSC	NECHES	VAN ZAND	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	123	125	125	125	125	124	OWNS SYSTEM
R P M WSC	NECHES	VAN ZAND	QUEEN CITY AQUIFER   VAN ZANDT COUNTY	116	118	118	118	117	117	OWNS SYSTEM
VAN	NECHES	VAN ZAND	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	514	502	493	481	467	467	OWNS SYSTEM
ABLES SPRINGS WSC	SABINE	VAN ZAND	FORK LAKE/RESERVOIR	0	0	0	0	0	0	OWNS SYSTEM
ABLES SPRINGS WSC	SABINE	VAN ZAND	TAWAKONI LAKE/RESERVOIR	0	0	0	0	0	0	OWNS SYSTEM
ABLES SPRINGS WSC	SABINE	VAN ZAND	TRINITY INDIRECT REUSE	0	0	1	1	0	0	OWNS SYSTEM
ABLES SPRINGS WSC	SABINE	VAN ZAND	NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	1	1	1	1	1	1	OWNS SYSTEM
CANTON	SABINE	VAN ZAND	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	382	382	382	382	339	339	OWNS SYSTEM
CANTON	SABINE	VAN ZAND	MILL CREEK LAKE/RESERVOIR	1,187	1,187	1,187	1,187	1,187	1,187	OWNS SYSTEM
CANTON	SABINE	VAN ZAND	SABINE RUN-OF-RIVER	37	37	37	37	37	37	OWNS SYSTEM
COMBINED CONSUMERS SUD	SABINE	VAN ZAND	TAWAKONI LAKE/RESERVOIR	92	95	98	102	107	111	SABINE RIVER AUTHORITY
COUNTY-OTHER	SABINE	VAN ZAND	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	551	557	471	441	517	454	OWNS SYSTEM
COUNTY-OTHER	SABINE	VAN ZAND	SABINE RUN-OF-RIVER	170	170	170	170	170	170	OWNS SYSTEM
EDGEWOOD	SABINE	VAN ZAND	EDGEWOOD CITY LAKE/RESERVOIR	160	160	160	160	160	160	SABINE RIVER AUTHORITY
EDGEWOOD	SABINE	VAN ZAND	TAWAKONI LAKE/RESERVOIR	272	285	295	307	318	329	SABINE RIVER AUTHORITY
FRUITVALE WSC	SABINE	VAN ZAND	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	485	485	485	485	485	485	OWNS SYSTEM
GOLDEN WSC	SABINE	VAN ZAND	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	99	102	105	108	110	112	OWNS SYSTEM
GRAND SALINE	SABINE	VAN ZAND	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	645	645	645	645	611	611	OWNS SYSTEM
LITTLE HOPE MOORE WSC	SABINE	VAN ZAND	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	114	115	114	115	114	115	OWNS SYSTEM
MACBEE SUD	SABINE	VAN ZAND	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	89	78	78	78	78	78	SABINE RIVER AUTHORITY
MACBEE SUD	SABINE	VAN ZAND	TAWAKONI LAKE/RESERVOIR	181	198	212	225	236	245	SABINE RIVER AUTHORITY



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MYRTLE SPRINGS WSC	SABINE	VAN ZAND	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	48	48	48	48	49	48	OWNS SYSTEM
PINE RIDGE WSC	SABINE	VAN ZAND	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	11	12	11	12	12	12	OWNS SYSTEM
PRUITT SANDFLAT WSC	SABINE	VAN ZAND	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	328	328	328	328	328	328	OWNS SYSTEM
SOUTH TAWAKONI WSC	SABINE	VAN ZAND	TAWAKONI LAKE/RESERVOIR	438	472	498	530	562	590	SABINE RIVER AUTHORITY
VAN	SABINE	VAN ZAND	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	134	146	155	167	181	181	OWNS SYSTEM
VAN	SABINE	VAN ZAND	SABINE RUN-OF-RIVER	350	350	350	350	350	350	OWNS SYSTEM
WILLS POINT	SABINE	VAN ZAND	SABINE RUN-OF-RIVER	120	120	120	120	120	120	SABINE RIVER AUTHORITY
WILLS POINT	SABINE	VAN ZAND	TAWAKONI LAKE/RESERVOIR	300	642	637	505	417	414	SABINE RIVER AUTHORITY
BETHEL ASH WSC	TRINITY	VAN ZAND	CARRIZO-WILCOX AQUIFER   HENDERSON COUNTY	43	47	49	52	51	51	OWNS SYSTEM
CANTON	TRINITY	VAN ZAND	MILL CREEK LAKE/RESERVOIR	5	5	5	5	5	5	OWNS SYSTEM
COUNTY-OTHER	TRINITY	VAN ZAND	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	1,024	1,080	1,031	1,051	1,181	1,117	OWNS SYSTEM
MABANK	TRINITY	VAN ZAND	TRWD LAKE/RESERVOIR SYSTEM	31	31	32	31	31	31	OWNS SYSTEM
MACBEE SUD	TRINITY	VAN ZAND	TAWAKONI LAKE/RESERVOIR	294	323	345	367	385	401	SABINE RIVER AUTHORITY
MYRTLE SPRINGS WSC	TRINITY	VAN ZAND	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	149	149	149	149	148	149	OWNS SYSTEM
WILLS POINT	TRINITY	VAN ZAND	TAWAKONI LAKE/RESERVOIR	453	965	957	760	628	622	SABINE RIVER AUTHORITY
<b>County Total - Round V</b>				<b>11,463</b>	<b>12,594</b>	<b>12,614</b>	<b>12,463</b>	<b>12,563</b>	<b>12,495</b>	
<b>County Total - Round IV</b>				<b>11,699</b>	<b>14,819</b>	<b>14,942</b>	<b>15,097</b>	<b>15,073</b>	<b>14,997</b>	
<b>Round V minus Round IV</b>				<b>-236</b>	<b>-2,225</b>	<b>-2,328</b>	<b>-2,634</b>	<b>-2,510</b>	<b>-2,502</b>	
<b>WOOD COUNTY</b>										
COUNTY-OTHER	CYPRESS	WOOD	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	795	799	808	801	810	806	OWNS SYSTEM
CYPRESS SPRINGS SUD	CYPRESS	WOOD	CYPRESS SPRINGS LAKE/RESERVOIR	216	203	195	186	175	169	FRANKLIN COUNTY WD
SHARON WSC	CYPRESS	WOOD	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	159	159	159	159	159	159	OWNS SYSTEM
WINNSBORO	CYPRESS	WOOD	CYPRESS SPRINGS LAKE/RESERVOIR	587	560	534	514	490	469	FRANKLIN COUNTY WD
ALGONQUIN WATER RESOURCE	SABINE	WOOD	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	373	374	373	373	373	373	OWNS SYSTEM
BRIGHT STAR SALEM SUD	SABINE	WOOD	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	343	343	343	343	343	343	SABINE RIVER AUTHORITY
CORNERVILLE WSC	SABINE	WOOD	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	50	48	48	49	49	49	OWNS SYSTEM
COUNTY-OTHER	SABINE	WOOD	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	2	2	2	2	2	2	OWNS SYSTEM
COUNTY-OTHER	SABINE	WOOD	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	3,616	3,658	3,652	3,658	3,649	3,653	OWNS SYSTEM

Region D 2021 - North East Texas Regional Water Plan  
Municipal Water Supply by County, WUG, Basin for 2020-2070

Water User Group Name	Basin	County	Source Name	2020	2030	2040	2050	2060	2070	Sellers Name
FOUKE WSC	SABINE	WOOD	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	945	945	944	944	943	943	OWNS SYSTEM
GOLDEN WSC	SABINE	WOOD	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	376	373	370	367	365	363	OWNS SYSTEM
HAWKINS	SABINE	WOOD	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	1,075	1,075	1,075	1,075	1,075	1,075	OWNS SYSTEM
JONES WSC	SABINE	WOOD	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	818	813	809	804	801	795	OWNS SYSTEM
LAKE FORK WSC	SABINE	WOOD	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	664	664	666	667	667	665	OWNS SYSTEM
MINEOLA	SABINE	WOOD	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	1,347	1,347	1,347	1,347	1,347	1,347	OWNS SYSTEM
NEW HOPE SUD	SABINE	WOOD	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	366	366	366	366	366	366	OWNS SYSTEM
PRITCHETT WSC	SABINE	WOOD	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	3	3	3	3	3	3	OWNS SYSTEM
PRITCHETT WSC	SABINE	WOOD	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	5	5	5	5	5	5	OWNS SYSTEM
QUITMAN	SABINE	WOOD	FORK LAKE/RESERVOIR	316	1,010	1,000	989	978	967	SABINE RIVER AUTHORITY
RAMEY WSC	SABINE	WOOD	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	640	640	640	640	640	640	OWNS SYSTEM
SHARON WSC	SABINE	WOOD	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	471	471	471	471	471	471	OWNS SYSTEM
SHIRLEY WSC	SABINE	WOOD	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	18	17	18	18	18	18	OWNS SYSTEM
SHIRLEY WSC	SABINE	WOOD	CARRIZO-WILCOX AQUIFER   RAINS COUNTY	8	8	8	8	8	8	OWNS SYSTEM
WINNSBORO	SABINE	WOOD	CYPRESS SPRINGS LAKE/RESERVOIR	930	891	851	819	777	746	FRANKLIN COUNTY WD
<b>County Total - Round V</b>				<b>14,123</b>	<b>14,774</b>	<b>14,687</b>	<b>14,608</b>	<b>14,514</b>	<b>14,435</b>	
<b>County Total - Round IV</b>				<b>12,263</b>	<b>13,014</b>	<b>13,003</b>	<b>12,986</b>	<b>12,969</b>	<b>12,954</b>	
<b>Round V minus Round IV</b>				<b>1,860</b>	<b>1,760</b>	<b>1,684</b>	<b>1,622</b>	<b>1,545</b>	<b>1,481</b>	
<b>TOTAL</b>										
<b>County Total - Round V</b>				<b>242,475</b>	<b>259,997</b>	<b>260,208</b>	<b>260,503</b>	<b>260,630</b>	<b>264,723</b>	
<b>County Total - Round IV</b>				<b>226,768</b>	<b>236,834</b>	<b>236,668</b>	<b>240,722</b>	<b>244,142</b>	<b>246,589</b>	
<b>County Total - Round III</b>				<b>409,645</b>	<b>402,967</b>	<b>396,567</b>	<b>392,914</b>	<b>383,799</b>		
<b>County Total - Round II</b>				<b>346,058</b>	<b>346,058</b>	<b>346,058</b>	<b>346,058</b>	<b>346,058</b>		
<b>Round V minus Round IV</b>				<b>15,707</b>	<b>23,163</b>	<b>23,540</b>	<b>19,781</b>	<b>16,488</b>	<b>18,134</b>	
<b>Round IV minus Round III</b>				<b>-182,877</b>	<b>-166,133</b>	<b>-159,899</b>	<b>-152,192</b>	<b>-139,657</b>		
<b>Round III minus Round II</b>				<b>63,587</b>	<b>56,909</b>	<b>50,509</b>	<b>46,856</b>	<b>37,741</b>		

### Region D Water User Group (WUG) Existing Water Supply

WUG NAME	SOURCE REGION	SOURCE DESCRIPTION	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
			2020	2030	2040	2050	2060	2070
BURNS REDBANK WSC	D	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0
CENTRAL BOWIE COUNTY WSC	D	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0
DE KALB	D	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0
HOOKS	D	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0
NEW BOSTON	D	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0
RIVERBEND WATER RESOURCES DISTRICT	D	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0
TEXARKANA	D	RED RUN-OF-RIVER	0	0	0	0	0	0
TEXARKANA	D	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0
COUNTY-OTHER	D	NACATOCH AQUIFER   BOWIE COUNTY	1,105	1,128	1,149	1,130	1,119	1,119
COUNTY-OTHER	D	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0
MANUFACTURING	D	RED RUN-OF-RIVER	7	7	7	7	7	7
MANUFACTURING	D	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	17	17	14	23	36	43
LIVESTOCK	D	NACATOCH AQUIFER   BOWIE COUNTY	418	418	381	316	254	228
IRRIGATION	D	RED RUN-OF-RIVER	6,992	6,992	6,992	6,992	6,992	6,992
<b>RED BASIN TOTAL</b>			<b>8,539</b>	<b>8,562</b>	<b>8,543</b>	<b>8,468</b>	<b>8,408</b>	<b>8,389</b>
CENTRAL BOWIE COUNTY WSC	D	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0
DE KALB	D	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0
MACEDONIA EYLAU MUD 1	D	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0
MAUD	D	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0
NASH	D	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0
NEW BOSTON	D	SULPHUR RUN-OF-RIVER	0	0	0	0	0	0
NEW BOSTON	D	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0
REDWATER	D	CARRIZO-WILCOX AQUIFER   BOWIE COUNTY	66	66	66	66	66	66
REDWATER	D	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0
RIVERBEND WATER RESOURCES DISTRICT	D	CANEY CREEK LAKE/RESERVOIR	0	0	0	0	0	0
RIVERBEND WATER RESOURCES DISTRICT	D	ELLIOT CREEK LAKE/RESERVOIR	0	0	0	0	0	0
RIVERBEND WATER RESOURCES DISTRICT	D	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0
TEXARKANA	D	RED RUN-OF-RIVER	0	0	0	0	0	0
TEXARKANA	D	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0
WAKE VILLAGE	D	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   BOWIE COUNTY	2,396	2,442	2,484	2,440	2,416	2,416
COUNTY-OTHER	D	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0
MANUFACTURING	D	CARRIZO-WILCOX AQUIFER   BOWIE COUNTY	28	28	28	28	28	28
MANUFACTURING	D	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0
LIVESTOCK	D	CARRIZO-WILCOX AQUIFER   BOWIE COUNTY	672	672	610	502	396	354
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	49	49	45	59	85	95
IRRIGATION	D	SULPHUR RUN-OF-RIVER	169	169	169	169	169	169
<b>SULPHUR BASIN TOTAL</b>			<b>3,380</b>	<b>3,426</b>	<b>3,402</b>	<b>3,264</b>	<b>3,160</b>	<b>3,128</b>
<b>BOWIE COUNTY TOTAL</b>			<b>11,919</b>	<b>11,988</b>	<b>11,945</b>	<b>11,732</b>	<b>11,568</b>	<b>11,517</b>
BI COUNTY WSC	D	CARRIZO-WILCOX AQUIFER   CAMP COUNTY	937	937	937	937	937	937
BI COUNTY WSC	D	CARRIZO-WILCOX AQUIFER   MORRIS COUNTY	50	50	50	50	50	50
BI COUNTY WSC	D	CARRIZO-WILCOX AQUIFER   TITUS COUNTY	100	100	100	100	100	100
BI COUNTY WSC	D	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	50	50	50	50	50	50
PITTSBURG	D	BOB SANDLIN LAKE/RESERVOIR	1,244	1,244	1,244	1,244	1,244	1,244

\*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

### Region D Water User Group (WUG) Existing Water Supply

WUG NAME	SOURCE REGION	SOURCE DESCRIPTION	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
			2020	2030	2040	2050	2060	2070
PITTSBURG	D	CARRIZO-WILCOX AQUIFER   CAMP COUNTY	433	433	433	433	433	433
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   CAMP COUNTY	432	444	453	461	469	478
MANUFACTURING	D	BOB SANDLIN LAKE/RESERVOIR	100	100	100	100	100	100
MANUFACTURING	D	CARRIZO-WILCOX AQUIFER   CAMP COUNTY	2	2	2	2	2	2
MINING	D	CARRIZO-WILCOX AQUIFER   CAMP COUNTY	23	23	23	23	23	23
LIVESTOCK	D	CARRIZO-WILCOX AQUIFER   CAMP COUNTY	335	335	335	335	335	335
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	481	481	481	481	481	481
LIVESTOCK	D	QUEEN CITY AQUIFER   CAMP COUNTY	136	136	136	136	136	136
<b>CYPRESS BASIN TOTAL</b>			<b>4,323</b>	<b>4,335</b>	<b>4,344</b>	<b>4,352</b>	<b>4,360</b>	<b>4,369</b>
<b>CAMP COUNTY TOTAL</b>			<b>4,323</b>	<b>4,335</b>	<b>4,344</b>	<b>4,352</b>	<b>4,360</b>	<b>4,369</b>
ATLANTA	D	WRIGHT PATMAN LAKE/RESERVOIR	1,016	1,074	1,134	1,208	1,205	1,205
E M C WSC	D	CARRIZO-WILCOX AQUIFER   CASS COUNTY	43	43	43	43	43	43
E M C WSC	D	CARRIZO-WILCOX AQUIFER   MARION COUNTY	20	20	20	20	20	20
EASTERN CASS WSC	D	CARRIZO-WILCOX AQUIFER   CASS COUNTY	581	581	581	581	581	581
HOLLY SPRINGS WSC	D	O' THE PINES LAKE/RESERVOIR	60	60	60	59	59	59
HUGHES SPRINGS	D	O' THE PINES LAKE/RESERVOIR	562	562	562	562	562	562
LINDEN	D	CARRIZO-WILCOX AQUIFER   CASS COUNTY	444	444	444	444	444	444
MIMS WSC	D	O' THE PINES LAKE/RESERVOIR	133	133	133	133	133	133
QUEEN CITY	D	CARRIZO-WILCOX AQUIFER   CASS COUNTY	169	169	169	169	169	169
WESTERN CASS WSC	D	CARRIZO-WILCOX AQUIFER   CASS COUNTY	895	895	895	895	895	895
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   CASS COUNTY	212	212	212	212	212	212
COUNTY-OTHER	D	O' THE PINES LAKE/RESERVOIR	302	302	302	302	302	302
MANUFACTURING	D	WRIGHT PATMAN LAKE/RESERVOIR	244	245	245	245	245	245
MINING	D	CARRIZO-WILCOX AQUIFER   CASS COUNTY	33	33	33	20	20	20
MINING	D	QUEEN CITY AQUIFER   CASS COUNTY	806	829	851	884	906	932
LIVESTOCK	D	CARRIZO-WILCOX AQUIFER   CASS COUNTY	19	19	19	19	19	19
LIVESTOCK	D	CYPRESS RUN-OF-RIVER	7	7	7	7	7	7
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	458	458	458	458	458	458
<b>CYPRESS BASIN TOTAL</b>			<b>6,004</b>	<b>6,086</b>	<b>6,168</b>	<b>6,261</b>	<b>6,280</b>	<b>6,306</b>
ATLANTA	D	WRIGHT PATMAN LAKE/RESERVOIR	1	1	1	1	1	1
EASTERN CASS WSC	D	CARRIZO-WILCOX AQUIFER   CASS COUNTY	38	38	38	38	38	38
QUEEN CITY	D	CARRIZO-WILCOX AQUIFER   CASS COUNTY	100	100	100	100	100	100
WESTERN CASS WSC	D	CARRIZO-WILCOX AQUIFER   CASS COUNTY	188	188	188	188	188	188
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   CASS COUNTY	80	80	80	80	80	80
COUNTY-OTHER	D	WRIGHT PATMAN LAKE/RESERVOIR	44	44	44	44	44	44
MANUFACTURING	D	CARRIZO-WILCOX AQUIFER   CASS COUNTY	51	50	48	47	47	46
MANUFACTURING	D	WRIGHT PATMAN LAKE/RESERVOIR	32,479	32,554	32,554	32,554	32,554	32,554
LIVESTOCK	D	CARRIZO-WILCOX AQUIFER   CASS COUNTY	20	20	20	20	20	20
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	221	221	221	222	222	222
LIVESTOCK	D	QUEEN CITY AQUIFER   CASS COUNTY	114	114	114	115	115	115
<b>SULPHUR BASIN TOTAL</b>			<b>33,336</b>	<b>33,410</b>	<b>33,408</b>	<b>33,409</b>	<b>33,409</b>	<b>33,408</b>
<b>CASS COUNTY TOTAL</b>			<b>39,340</b>	<b>39,496</b>	<b>39,576</b>	<b>39,670</b>	<b>39,689</b>	<b>39,714</b>
COOPER	D	BIG CREEK LAKE/RESERVOIR	980	980	980	980	980	980
DELTA COUNTY MUD*	D	BIG CREEK LAKE/RESERVOIR	126	122	123	124	128	132
NORTH HUNT SUD*	D	TAWAKONI LAKE/RESERVOIR	9	7	6	4	3	3
NORTH HUNT SUD*	D	WOODBINE AQUIFER   HUNT COUNTY	4	3	2	2	1	1
COUNTY-OTHER	D	BIG CREEK LAKE/RESERVOIR	82	83	82	80	76	73
COUNTY-OTHER	D	NACATOCH AQUIFER   DELTA COUNTY	84	85	86	86	86	86

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### Region D Water User Group (WUG) Existing Water Supply

WUG NAME	SOURCE REGION	SOURCE DESCRIPTION	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
			2020	2030	2040	2050	2060	2070
COUNTY-OTHER	D	TRINITY AQUIFER   DELTA COUNTY	28	16	16	16	16	16
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	231	231	231	231	231	231
LIVESTOCK	D	NACATOCH AQUIFER   DELTA COUNTY	20	20	20	20	20	20
LIVESTOCK	D	TRINITY AQUIFER   DELTA COUNTY	28	40	40	40	40	40
IRRIGATION	D	NACATOCH AQUIFER   DELTA COUNTY	38	51	61	66	66	78
IRRIGATION	D	SULPHUR RUN-OF-RIVER	9,125	9,125	9,125	9,125	9,125	9,125
<b>SULPHUR BASIN TOTAL</b>			<b>10,755</b>	<b>10,763</b>	<b>10,772</b>	<b>10,774</b>	<b>10,772</b>	<b>10,785</b>
<b>DELTA COUNTY TOTAL</b>			<b>10,755</b>	<b>10,763</b>	<b>10,772</b>	<b>10,774</b>	<b>10,772</b>	<b>10,785</b>
CYPRESS SPRINGS SUD	D	CARRIZO-WILCOX AQUIFER   FRANKLIN COUNTY	67	67	67	67	67	67
CYPRESS SPRINGS SUD	D	CYPRESS SPRINGS LAKE/RESERVOIR	2,067	1,983	1,892	1,825	1,735	1,660
WINNSBORO	D	CYPRESS SPRINGS LAKE/RESERVOIR	384	370	355	343	328	316
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   FRANKLIN COUNTY	72	77	82	82	82	82
MANUFACTURING	D	CARRIZO-WILCOX AQUIFER   FRANKLIN COUNTY	7	7	7	7	7	7
LIVESTOCK	D	CARRIZO-WILCOX AQUIFER   FRANKLIN COUNTY	133	133	133	133	133	133
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	292	292	292	292	292	292
IRRIGATION	D	SULPHUR RUN-OF-RIVER	103	103	103	103	103	103
<b>CYPRESS BASIN TOTAL</b>			<b>3,125</b>	<b>3,032</b>	<b>2,931</b>	<b>2,852</b>	<b>2,747</b>	<b>2,660</b>
IRRIGATION	D	SULPHUR RUN-OF-RIVER	107	107	107	107	107	107
<b>SABINE BASIN TOTAL</b>			<b>107</b>	<b>107</b>	<b>107</b>	<b>107</b>	<b>107</b>	<b>107</b>
CYPRESS SPRINGS SUD	D	CYPRESS SPRINGS LAKE/RESERVOIR	1,341	1,288	1,228	1,180	1,122	1,076
MOUNT VERNON	D	CYPRESS SPRINGS LAKE/RESERVOIR	2,852	2,731	2,610	2,514	2,393	2,296
MOUNT VERNON	D	SULPHUR RUN-OF-RIVER	160	160	160	160	160	160
COUNTY-OTHER	D	BOB SANDLIN LAKE/RESERVOIR	14	0	0	0	0	0
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   FRANKLIN COUNTY	111	123	133	133	133	133
MINING	D	CARRIZO-WILCOX AQUIFER   FRANKLIN COUNTY	1,040	1,016	994	974	954	954
LIVESTOCK	D	CARRIZO-WILCOX AQUIFER   FRANKLIN COUNTY	228	228	228	228	228	228
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	393	393	393	393	393	393
IRRIGATION	D	SULPHUR RUN-OF-RIVER	104	104	104	104	104	104
<b>SULPHUR BASIN TOTAL</b>			<b>6,243</b>	<b>6,043</b>	<b>5,850</b>	<b>5,686</b>	<b>5,487</b>	<b>5,344</b>
<b>FRANKLIN COUNTY TOTAL</b>			<b>9,475</b>	<b>9,182</b>	<b>8,888</b>	<b>8,645</b>	<b>8,341</b>	<b>8,111</b>
GLENWOOD WSC	D	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	25	24	25	25	25	25
TRYON ROAD SUD	D	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	165	165	165	164	153	139
TRYON ROAD SUD	D	O' THE PINES LAKE/RESERVOIR	948	948	948	948	948	948
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	196	207	220	237	261	278
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	19	19	19	19	19	19
COUNTY-OTHER	D	FORK LAKE/RESERVOIR	17	31	33	37	41	45
COUNTY-OTHER	D	O' THE PINES LAKE/RESERVOIR	3	2	2	3	3	3
MINING	D	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	14	22	22	17	13	9
LIVESTOCK	D	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	11	11	11	11	11	11
<b>CYPRESS BASIN TOTAL</b>			<b>1,398</b>	<b>1,429</b>	<b>1,445</b>	<b>1,461</b>	<b>1,474</b>	<b>1,477</b>
CLARKSVILLE CITY	D	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	245	245	245	245	245	245
CROSS ROADS SUD*	I	CARRIZO-WILCOX AQUIFER   RUSK COUNTY	52	51	50	50	51	52
CROSS ROADS SUD*	D	FORK LAKE/RESERVOIR	32	34	36	39	43	47
ELDERVILLE WSC*	D	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	396	396	396	396	396	396
ELDERVILLE WSC*	I	CHEROKEE LAKE/RESERVOIR	186	185	185	185	186	170
ELDERVILLE WSC*	D	FORK LAKE/RESERVOIR	188	188	188	188	188	189
GLADEWATER	D	GLADEWATER LAKE/RESERVOIR	982	987	999	1,013	1,030	1,113
KILGORE*	D	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	1,144	1,139	1,139	1,140	1,143	1,148

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### Region D Water User Group (WUG) Existing Water Supply

WUG NAME	SOURCE REGION	SOURCE DESCRIPTION	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
			2020	2030	2040	2050	2060	2070
KILGORE*	D	FORK LAKE/RESERVOIR	1,415	4,352	4,163	3,934	3,723	4,003
LIBERTY CITY WSC	D	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	858	858	858	858	858	858
LONGVIEW	I	CHEROKEE LAKE/RESERVOIR	7,463	7,467	7,471	7,472	7,474	7,475
LONGVIEW	D	FORK LAKE/RESERVOIR	6,304	15,153	15,194	15,228	15,267	15,303
LONGVIEW	D	O' THE PINES LAKE/RESERVOIR	17,150	17,150	17,150	17,150	17,150	17,150
LONGVIEW	D	SABINE RUN-OF-RIVER	11,324	11,327	11,334	11,336	11,338	11,340
STARRVILLE-FRIENDSHIP WSC	D	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	60	60	60	60	60	60
STARRVILLE-FRIENDSHIP WSC	D	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	38	38	38	38	38	38
TRYON ROAD SUD	D	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	128	128	128	128	128	128
TRYON ROAD SUD	D	O' THE PINES LAKE/RESERVOIR	740	740	740	740	740	740
WEST GREGG SUD*	D	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	521	521	521	521	521	517
WHITE OAK	D	BIG SANDY CREEK LAKE/RESERVOIR	2,595	2,595	2,595	2,595	2,595	2,595
COUNTY-OTHER	D	BIG SANDY CREEK LAKE/RESERVOIR	50	50	50	50	50	50
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	722	789	867	972	1,124	1,134
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	18	18	18	18	18	18
COUNTY-OTHER	D	FORK LAKE/RESERVOIR	94	590	630	693	767	855
COUNTY-OTHER	D	GLADEWATER LAKE/RESERVOIR	154	154	154	154	154	54
COUNTY-OTHER	D	O' THE PINES LAKE/RESERVOIR	47	48	48	47	47	47
MANUFACTURING	D	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	30	30	30	30	30	30
MANUFACTURING	D	LOCAL SURFACE WATER SUPPLY	450	450	450	450	450	450
MANUFACTURING	D	SABINE RUN-OF-RIVER	1,092	1,094	1,094	1,094	1,094	1,094
MINING	D	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	246	389	385	303	220	162
MINING	D	SABINE RUN-OF-RIVER	3	3	3	3	3	3
STEAM ELECTRIC POWER	D	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	242	242	242	242	242	242
STEAM ELECTRIC POWER	I	CHEROKEE LAKE/RESERVOIR	2,000	2,000	2,000	2,000	2,000	2,000
LIVESTOCK	D	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	204	204	204	204	204	204
IRRIGATION	D	CYPRESS RUN-OF-RIVER	41	41	41	41	41	41
IRRIGATION	D	SABINE RUN-OF-RIVER	151	151	151	151	151	151
<b>SABINE BASIN TOTAL</b>			<b>57,365</b>	<b>69,867</b>	<b>69,857</b>	<b>69,768</b>	<b>69,769</b>	<b>70,102</b>
<b>GREGG COUNTY TOTAL</b>			<b>58,763</b>	<b>71,296</b>	<b>71,302</b>	<b>71,229</b>	<b>71,243</b>	<b>71,579</b>
BLOCKER CROSSROADS WSC	D	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	21	20	21	21	21	20
DIANA SUD	D	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	47	47	47	47	47	47
DIANA SUD	D	O' THE PINES LAKE/RESERVOIR	47	47	47	47	47	47
GUM SPRINGS WSC	D	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	300	300	300	300	300	300
GUM SPRINGS WSC	I	CHEROKEE LAKE/RESERVOIR	52	52	52	52	52	52
GUM SPRINGS WSC	D	FORK LAKE/RESERVOIR	201	200	200	200	200	201
GUM SPRINGS WSC	D	O' THE PINES LAKE/RESERVOIR	538	536	536	537	536	538
HARLETON WSC	D	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	247	247	247	247	247	247
HARLETON WSC	D	O' THE PINES LAKE/RESERVOIR	51	51	51	51	51	51
LEIGH WSC	D	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	357	357	357	357	357	357
MARSHALL	D	CYPRESS RUN-OF-RIVER	1,262	1,262	1,262	1,262	1,262	1,262
MARSHALL	D	O' THE PINES LAKE/RESERVOIR	1,158	1,158	1,158	1,158	1,158	1,158
NORTH HARRISON WSC	D	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	161	161	161	161	161	161
PANOLA-BETHANY WSC*	I	CARRIZO-WILCOX AQUIFER   PANOLA COUNTY	29	29	29	29	29	29
SCOTTSVILLE	D	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	71	71	71	70	70	71
TALLEY WSC	D	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	114	114	114	114	112	112
TRYON ROAD SUD	D	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	0	0	0	1	12	26
TRYON ROAD SUD	D	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	20	20	20	20	20	20

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### Region D Water User Group (WUG) Existing Water Supply

WUG NAME	SOURCE REGION	SOURCE DESCRIPTION	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
			2020	2030	2040	2050	2060	2070
TRYON ROAD SUD	D	O' THE PINES LAKE/RESERVOIR	134	134	134	134	134	134
WASKOM	D	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	339	339	339	339	339	339
WEST HARRISON WSC	D	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	87	88	88	86	86	87
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	15	15	15	15	15	15
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	2,032	2,088	2,130	2,179	2,252	2,307
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	30	30	30	30	30	30
COUNTY-OTHER	D	O' THE PINES LAKE/RESERVOIR	253	253	253	253	253	253
MANUFACTURING	D	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	147	147	147	147	147	147
MANUFACTURING	D	CYPRESS RUN-OF-RIVER	2,386	2,386	2,386	2,386	2,386	2,386
MINING	D	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	217	233	241	250	257	267
MINING	D	CYPRESS RUN-OF-RIVER	67	67	67	67	67	67
MINING	D	QUEEN CITY AQUIFER   HARRISON COUNTY	7	0	0	0	0	0
LIVESTOCK	D	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	167	196	225	255	287	317
LIVESTOCK	D	CYPRESS RUN-OF-RIVER	90	90	90	90	90	90
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	276	302	329	358	366	366
LIVESTOCK	D	QUEEN CITY AQUIFER   HARRISON COUNTY	26	26	26	26	26	26
IRRIGATION	D	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	25	25	25	25	25	25
IRRIGATION	D	CYPRESS RUN-OF-RIVER	10	10	10	10	10	10
<b>CYPRESS BASIN TOTAL</b>			<b>10,984</b>	<b>11,101</b>	<b>11,208</b>	<b>11,324</b>	<b>11,452</b>	<b>11,565</b>
BLOCKER CROSSROADS WSC	D	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	191	192	191	191	191	192
GILL WSC*	D	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	250	250	250	250	250	250
GILL WSC*	D	O' THE PINES LAKE/RESERVOIR	67	67	67	67	67	67
GUM SPRINGS WSC	D	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	127	127	127	127	127	127
GUM SPRINGS WSC	I	CHEROKEE LAKE/RESERVOIR	142	142	142	142	142	142
GUM SPRINGS WSC	D	FORK LAKE/RESERVOIR	545	546	546	546	546	545
GUM SPRINGS WSC	D	O' THE PINES LAKE/RESERVOIR	1,462	1,464	1,464	1,463	1,464	1,462
HALLSVILLE	D	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	77	77	77	77	77	77
HALLSVILLE	I	CHEROKEE LAKE/RESERVOIR	403	403	403	403	403	403
HALLSVILLE	D	FORK LAKE/RESERVOIR	334	334	334	334	334	334
LEIGH WSC	D	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	78	78	78	78	78	78
LONGVIEW	I	CHEROKEE LAKE/RESERVOIR	174	170	166	165	163	162
LONGVIEW	D	FORK LAKE/RESERVOIR	331	325	317	315	311	310
LONGVIEW	D	O' THE PINES LAKE/RESERVOIR	400	400	400	400	400	400
LONGVIEW	D	SABINE RUN-OF-RIVER	264	259	252	250	248	246
MARSHALL	D	CYPRESS RUN-OF-RIVER	5,909	5,909	5,909	5,909	5,909	5,909
MARSHALL	D	O' THE PINES LAKE/RESERVOIR	5,419	5,419	5,419	5,419	5,419	5,419
PANOLA-BETHANY WSC*	I	CARRIZO-WILCOX AQUIFER   PANOLA COUNTY	253	242	242	241	241	241
SCOTTSVILLE	D	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	145	145	145	146	146	145
TALLEY WSC	D	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	84	84	84	84	86	86
WEST HARRISON WSC	D	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	273	272	272	274	274	273
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	1,350	1,425	1,482	1,549	1,646	1,720
COUNTY-OTHER	D	O' THE PINES LAKE/RESERVOIR	70	70	70	70	70	70
MANUFACTURING	I	CHEROKEE LAKE/RESERVOIR	5,524	5,524	5,524	5,524	5,524	5,524
MANUFACTURING	D	FORK LAKE/RESERVOIR	3,500	3,157	3,124	3,092	3,057	3,022
MANUFACTURING	D	GRAYS CREEK RUN-OF-RIVER	12	12	12	12	12	12
MANUFACTURING	D	O' THE PINES LAKE/RESERVOIR	2,400	2,400	2,400	2,400	2,400	2,400
MANUFACTURING	D	SABINE RUN-OF-RIVER	94,403	94,403	94,403	94,403	94,403	94,403
MINING	D	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	96	105	115	124	132	141

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### Region D Water User Group (WUG) Existing Water Supply

WUG NAME	SOURCE REGION	SOURCE DESCRIPTION	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
			2020	2030	2040	2050	2060	2070
MINING	D	SABINE RUN-OF-RIVER	405	405	405	405	405	405
STEAM ELECTRIC POWER	D	BRANDY BRANCH LAKE/RESERVOIR	2,347	2,347	2,347	2,347	2,347	2,347
STEAM ELECTRIC POWER	D	DIRECT REUSE	6,161	6,161	6,161	6,161	6,161	6,161
STEAM ELECTRIC POWER	D	O' THE PINES LAKE/RESERVOIR	18,000	18,000	18,000	18,000	18,000	18,000
LIVESTOCK	D	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	405	425	447	469	492	514
IRRIGATION	D	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	14	14	14	14	14	14
IRRIGATION	D	SABINE RUN-OF-RIVER	120	120	120	120	120	120
<b>SABINE BASIN TOTAL</b>			<b>151,735</b>	<b>151,473</b>	<b>151,509</b>	<b>151,571</b>	<b>151,659</b>	<b>151,721</b>
<b>HARRISON COUNTY TOTAL</b>			<b>162,719</b>	<b>162,574</b>	<b>162,717</b>	<b>162,895</b>	<b>163,111</b>	<b>163,286</b>
CORNERSVILLE WSC	D	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	97	99	99	97	99	98
CYPRESS SPRINGS SUD	D	CYPRESS SPRINGS LAKE/RESERVOIR	173	161	150	139	130	123
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	179	179	178	178	178	178
MINING	D	NACATOCH AQUIFER   HOPKINS COUNTY	18	19	18	19	19	19
MINING	D	SULPHUR SPRINGS LAKE/RESERVOIR	6	7	7	8	9	9
LIVESTOCK	D	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	38	38	38	38	38	38
LIVESTOCK	D	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	33	34	38	38	42	44
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	108	108	108	108	108	108
IRRIGATION	D	SABINE RUN-OF-RIVER	1	1	1	1	1	1
<b>CYPRESS BASIN TOTAL</b>			<b>653</b>	<b>646</b>	<b>637</b>	<b>626</b>	<b>624</b>	<b>618</b>
BRASHEAR WSC	D	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	67	70	74	77	82	87
CASH SUD*	D	FORK LAKE/RESERVOIR	1	0	0	0	0	0
CASH SUD*	C	NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	4	4	4	3	3	2
CASH SUD*	D	TAWAKONI LAKE/RESERVOIR	7	6	4	5	6	1
CASH SUD*	C	TRINITY INDIRECT REUSE	3	3	3	3	2	2
CORNERSVILLE WSC	D	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	93	93	93	94	92	93
CUMBY	D	NACATOCH AQUIFER   HOPKINS COUNTY	109	109	109	109	109	109
JONES WSC	D	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	29	34	38	43	46	52
LAKE FORK WSC	D	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	49	49	47	46	46	48
MARTIN SPRINGS WSC	D	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	376	375	374	376	377	377
MARTIN SPRINGS WSC	D	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	188	188	188	189	189	188
MILLER GROVE WSC	D	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	164	164	164	163	164	164
SHADY GROVE NO 2 WSC	D	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	24	25	27	28	30	31
SHADY GROVE NO 2 WSC	D	SULPHUR SPRINGS LAKE/RESERVOIR	24	25	26	27	29	31
SHIRLEY WSC	D	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	230	231	230	230	230	230
SHIRLEY WSC	D	CARRIZO-WILCOX AQUIFER   RAINS COUNTY	98	98	98	98	98	98
SULPHUR SPRINGS	D	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	15	14	14	15	14	14
SULPHUR SPRINGS	D	SULPHUR SPRINGS LAKE/RESERVOIR	1	1	1	1	1	1
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	464	465	466	464	461	461
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   RAINS COUNTY	112	112	112	112	112	112
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	7	7	7	7	7	7
COUNTY-OTHER	D	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	48	53	50	15	0	0
MINING	D	NACATOCH AQUIFER   HOPKINS COUNTY	187	192	193	193	195	195
MINING	D	SULPHUR SPRINGS LAKE/RESERVOIR	62	68	74	81	88	96
LIVESTOCK	D	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	249	249	249	249	249	249

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### Region D Water User Group (WUG) Existing Water Supply

WUG NAME	SOURCE REGION	SOURCE DESCRIPTION	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
			2020	2030	2040	2050	2060	2070
LIVESTOCK	D	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	399	420	466	469	519	541
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	1,208	1,208	1,208	1,208	1,208	1,208
IRRIGATION	D	SABINE RUN-OF-RIVER	18	18	18	18	18	18
<b>SABINE BASIN TOTAL</b>			<b>4,236</b>	<b>4,281</b>	<b>4,337</b>	<b>4,323</b>	<b>4,375</b>	<b>4,415</b>
BRASHEAR WSC	D	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	81	85	89	93	99	105
BRINKER WSC	D	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	252	251	251	252	253	253
BRINKER WSC	D	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	77	77	77	77	77	77
CUMBY	D	NACATOCH AQUIFER   HOPKINS COUNTY	11	11	11	11	11	11
CYPRESS SPRINGS SUD	D	CYPRESS SPRINGS LAKE/RESERVOIR	346	322	300	282	265	246
GAFFORD CHAPEL WSC	D	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	109	111	115	121	128	135
GAFFORD CHAPEL WSC	D	NACATOCH AQUIFER   HOPKINS COUNTY	52	52	52	52	52	52
GAFFORD CHAPEL WSC	D	NACATOCH AQUIFER   HUNT COUNTY	3	3	3	3	3	3
MARTIN SPRINGS WSC	D	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	69	69	69	69	69	69
MARTIN SPRINGS WSC	D	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	35	35	35	34	34	35
NORTH HOPKINS WSC	D	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	921	921	921	921	921	921
SHADY GROVE NO 2 WSC	D	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	30	31	32	34	36	38
SHADY GROVE NO 2 WSC	D	SULPHUR SPRINGS LAKE/RESERVOIR	29	31	33	34	36	38
SULPHUR SPRINGS	D	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	4,552	4,553	4,553	4,552	4,553	4,553
SULPHUR SPRINGS	D	SULPHUR SPRINGS LAKE/RESERVOIR	434	434	434	434	434	434
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	390	392	393	390	387	387
COUNTY-OTHER	D	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	28	30	29	9	0	0
COUNTY-OTHER	D	NACATOCH AQUIFER   HOPKINS COUNTY	114	91	88	87	85	85
MANUFACTURING	D	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	1,526	1,561	1,592	1,611	1,701	1,802
MANUFACTURING	D	SULPHUR SPRINGS LAKE/RESERVOIR	215	269	323	376	425	473
MINING	D	NACATOCH AQUIFER   HOPKINS COUNTY	399	410	411	412	414	414
MINING	D	SULPHUR SPRINGS LAKE/RESERVOIR	132	145	159	172	188	205
LIVESTOCK	D	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	130	130	130	130	131	131
LIVESTOCK	D	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	1,042	1,097	1,216	1,223	1,353	1,411
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	1,570	1,493	1,324	1,314	1,130	1,049
LIVESTOCK	D	NACATOCH AQUIFER   HOPKINS COUNTY	77	77	77	77	77	77
IRRIGATION	D	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	49	49	49	49	49	49
IRRIGATION	D	SULPHUR RUN-OF-RIVER	76	76	76	76	76	76
<b>SULPHUR BASIN TOTAL</b>			<b>12,749</b>	<b>12,806</b>	<b>12,842</b>	<b>12,895</b>	<b>12,987</b>	<b>13,129</b>
<b>HOPKINS COUNTY TOTAL</b>			<b>17,638</b>	<b>17,733</b>	<b>17,816</b>	<b>17,844</b>	<b>17,986</b>	<b>18,162</b>
ABLES SPRINGS WSC*	D	FORK LAKE/RESERVOIR	4	0	0	0	0	0
ABLES SPRINGS WSC*	C	NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	30	41	55	71	92	121
ABLES SPRINGS WSC*	D	TAWAKONI LAKE/RESERVOIR	3	2	3	3	5	6
ABLES SPRINGS WSC*	C	TRINITY INDIRECT REUSE	21	32	45	60	77	102
B H P WSC*	D	FORK LAKE/RESERVOIR	24	0	0	0	0	0
B H P WSC*	C	NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	171	179	196	225	269	332
B H P WSC*	D	TAWAKONI LAKE/RESERVOIR	17	9	10	11	13	17

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### Region D Water User Group (WUG) Existing Water Supply

WUG NAME	SOURCE REGION	SOURCE DESCRIPTION	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
			2020	2030	2040	2050	2060	2070
B H P WSC*	C	TRINITY INDIRECT REUSE	118	138	162	189	225	280
BLACKLAND WSC*	D	FORK LAKE/RESERVOIR	1	0	0	0	0	0
BLACKLAND WSC*	C	NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	5	4	3	3	3	2
BLACKLAND WSC*	C	TRINITY INDIRECT REUSE	3	3	3	2	2	2
CADDO BASIN SUD*	D	FORK LAKE/RESERVOIR	64	0	0	0	0	0
CADDO BASIN SUD*	C	NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	442	512	601	718	880	1,118
CADDO BASIN SUD*	D	TAWAKONI LAKE/RESERVOIR	45	26	30	36	44	55
CADDO BASIN SUD*	C	TRINITY INDIRECT REUSE	314	395	493	600	738	941
CADDO MILLS	D	TAWAKONI LAKE/RESERVOIR	178	186	201	242	309	319
CASH SUD*	D	FORK LAKE/RESERVOIR	97	0	0	0	0	3,095
CASH SUD*	C	NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	328	343	248	204	297	365
CASH SUD*	D	TAWAKONI LAKE/RESERVOIR	1,241	1,151	1,007	1,239	1,897	279
CASH SUD*	C	TRINITY INDIRECT REUSE	465	569	648	690	625	579
CELESTE	D	WOODBINE AQUIFER   HUNT COUNTY	95	95	95	95	95	95
COMBINED CONSUMERS SUD	D	TAWAKONI LAKE/RESERVOIR	502	589	718	911	1,197	1,615
GREENVILLE	D	GREENVILLE CITY LAKE/RESERVOIR	3,318	3,318	3,318	3,318	3,318	3,318
GREENVILLE	D	TAWAKONI LAKE/RESERVOIR	2,714	2,537	2,338	2,123	1,932	1,735
HICKORY CREEK SUD*	D	WOODBINE AQUIFER   HUNT COUNTY	177	179	182	183	185	185
JOSEPHINE*	D	FORK LAKE/RESERVOIR	3	0	0	0	0	0
JOSEPHINE*	C	NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	20	31	45	62	55	51
JOSEPHINE*	D	TAWAKONI LAKE/RESERVOIR	2	2	2	3	3	2
JOSEPHINE*	C	TRINITY INDIRECT REUSE	14	24	37	51	46	43
MACBEE SUD*	D	TAWAKONI LAKE/RESERVOIR	23	29	37	47	62	84
POETRY WSC*	D	FORK LAKE/RESERVOIR	20	0	0	0	0	0
POETRY WSC*	C	NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	129	143	160	183	220	272
POETRY WSC*	D	TAWAKONI LAKE/RESERVOIR	14	8	8	9	11	14
POETRY WSC*	C	TRINITY INDIRECT REUSE	91	110	131	153	185	228
QUINLAN	D	TAWAKONI LAKE/RESERVOIR	134	133	134	140	154	174
ROYSE CITY*	D	FORK LAKE/RESERVOIR	3	0	0	0	0	0
ROYSE CITY*	C	NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	22	24	27	31	37	46
ROYSE CITY*	D	TAWAKONI LAKE/RESERVOIR	2	1	1	2	2	2
ROYSE CITY*	C	TRINITY INDIRECT REUSE	15	19	22	26	31	39
SHADY GROVE WSC	D	TAWAKONI LAKE/RESERVOIR	139	164	202	257	338	457
WEST TAWAKONI	D	TAWAKONI LAKE/RESERVOIR	276	804	797	738	784	777
COUNTY-OTHER	D	BIG CREEK LAKE/RESERVOIR	4	6	8	12	19	21
COUNTY-OTHER	D	NACATOCH AQUIFER   HUNT COUNTY	444	445	445	445	445	445
COUNTY-OTHER	D	TAWAKONI LAKE/RESERVOIR	1,114	1,195	1,337	1,529	1,823	2,351
COUNTY-OTHER	D	WOODBINE AQUIFER   HUNT COUNTY	15	15	15	15	15	15
MANUFACTURING	D	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	50	50	50	50	50	50
MANUFACTURING	D	GREENVILLE CITY LAKE/RESERVOIR	103	103	103	103	103	103
MANUFACTURING	D	NACATOCH AQUIFER   HUNT COUNTY	200	200	200	200	200	200
MANUFACTURING	D	TAWAKONI LAKE/RESERVOIR	598	747	928	1,101	1,220	1,406
MINING	D	NACATOCH AQUIFER   HUNT COUNTY	36	34	30	28	22	20
MINING	D	TAWAKONI LAKE/RESERVOIR	13	14	16	17	19	16
STEAM ELECTRIC POWER	D	TAWAKONI LAKE/RESERVOIR	373	373	373	373	373	373
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	812	812	812	812	812	812
IRRIGATION	D	NACATOCH AQUIFER   HUNT COUNTY	94	94	94	94	94	94

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### Region D Water User Group (WUG) Existing Water Supply

WUG NAME	SOURCE REGION	SOURCE DESCRIPTION	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
			2020	2030	2040	2050	2060	2070
IRRIGATION	D	SABINE RUN-OF-RIVER	19	19	19	19	19	19
<b>SABINE BASIN TOTAL</b>			<b>15,159</b>	<b>15,907</b>	<b>16,389</b>	<b>17,423</b>	<b>19,345</b>	<b>22,675</b>
CASH SUD*	D	FORK LAKE/RESERVOIR	1	0	0	0	0	0
CASH SUD*	C	NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	9	11	11	12	11	10
CASH SUD*	D	TAWAKONI LAKE/RESERVOIR	18	17	15	18	27	3
CASH SUD*	C	TRINITY INDIRECT REUSE	6	8	10	10	9	8
COMMERCE	D	NACATOCH AQUIFER   DELTA COUNTY	122	122	122	122	122	122
COMMERCE	D	NACATOCH AQUIFER   HUNT COUNTY	122	122	122	122	122	122
COMMERCE	D	TAWAKONI LAKE/RESERVOIR	1,427	4,586	4,609	4,249	2,694	3,078
DELTA COUNTY MUD*	D	BIG CREEK LAKE/RESERVOIR	1	1	1	1	1	1
HICKORY CREEK SUD*	D	WOODBINE AQUIFER   HUNT COUNTY	109	112	113	114	114	114
NORTH HUNT SUD*	D	TAWAKONI LAKE/RESERVOIR	120	124	128	132	135	137
NORTH HUNT SUD*	D	WOODBINE AQUIFER   HUNT COUNTY	45	46	48	49	50	51
TEXAS A&M UNIVERSITY COMMERCE	D	NACATOCH AQUIFER   HUNT COUNTY	156	156	156	156	156	156
WOLFE CITY*	D	TURKEY CREEK LAKE/RESERVOIR	190	190	190	190	190	190
WOLFE CITY*	C	WOODBINE AQUIFER   FANNIN COUNTY	70	70	70	69	70	69
COUNTY-OTHER	D	NACATOCH AQUIFER   HUNT COUNTY	13	13	13	13	13	13
COUNTY-OTHER	D	TAWAKONI LAKE/RESERVOIR	34	67	99	48	72	115
MANUFACTURING	D	TAWAKONI LAKE/RESERVOIR	151	182	182	182	182	182
MINING	D	TAWAKONI LAKE/RESERVOIR	5	5	6	6	9	13
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	300	300	300	300	300	300
IRRIGATION	D	SULPHUR RUN-OF-RIVER	0	0	0	0	0	0
<b>SULPHUR BASIN TOTAL</b>			<b>2,899</b>	<b>6,132</b>	<b>6,195</b>	<b>5,793</b>	<b>4,277</b>	<b>4,684</b>
FROGNOT WSC*	C	WOODBINE AQUIFER   COLLIN COUNTY	6	6	6	6	6	6
HICKORY CREEK SUD*	D	WOODBINE AQUIFER   HUNT COUNTY	54	55	55	55	56	56
WEST LEONARD WSC*	C	WOODBINE AQUIFER   FANNIN COUNTY	14	13	16	18	20	21
COUNTY-OTHER	D	NACATOCH AQUIFER   HUNT COUNTY	1	0	0	0	0	0
COUNTY-OTHER	D	TAWAKONI LAKE/RESERVOIR	0	12	30	20	31	49
COUNTY-OTHER	D	TRINITY AQUIFER   HUNT COUNTY	3	3	3	3	3	3
COUNTY-OTHER	D	WOODBINE AQUIFER   HUNT COUNTY	24	19	14	4	0	0
MINING	D	TAWAKONI LAKE/RESERVOIR	1	1	1	1	1	1
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	34	34	34	34	35	35
LIVESTOCK	D	TRINITY AQUIFER   HUNT COUNTY	0	0	0	0	0	0
IRRIGATION	D	NACATOCH AQUIFER   HUNT COUNTY	12	12	12	12	12	12
<b>TRINITY BASIN TOTAL</b>			<b>149</b>	<b>155</b>	<b>171</b>	<b>153</b>	<b>164</b>	<b>183</b>
<b>HUNT COUNTY TOTAL</b>			<b>18,207</b>	<b>22,194</b>	<b>22,755</b>	<b>23,369</b>	<b>23,786</b>	<b>27,542</b>
LAMAR COUNTY WSD	D	PAT MAYSE LAKE/RESERVOIR	5,334	5,278	5,229	5,193	5,159	5,108
PARIS	D	CROOK LAKE/RESERVOIR	806	806	806	806	806	806
PARIS	D	PAT MAYSE LAKE/RESERVOIR	10,352	10,234	10,119	10,023	9,839	9,742
RENO (Lamar)	D	PAT MAYSE LAKE/RESERVOIR	115	128	138	149	160	171
COUNTY-OTHER	D	PAT MAYSE LAKE/RESERVOIR	5	6	6	6	6	6
COUNTY-OTHER	D	TRINITY AQUIFER   LAMAR COUNTY	0	0	0	0	0	0
COUNTY-OTHER	D	WOODBINE AQUIFER   LAMAR COUNTY	0	0	0	0	0	0
MANUFACTURING	D	DIRECT REUSE	12	12	12	12	12	12
MANUFACTURING	D	PAT MAYSE LAKE/RESERVOIR	858	900	941	976	1,042	1,077
STEAM ELECTRIC POWER	D	PAT MAYSE LAKE/RESERVOIR	683	683	683	683	683	683
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	0	0	0	0	0	0

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### Region D Water User Group (WUG) Existing Water Supply

WUG NAME	SOURCE REGION	SOURCE DESCRIPTION	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
			2020	2030	2040	2050	2060	2070
LIVESTOCK	D	TRINITY AQUIFER   LAMAR COUNTY	0	0	0	0	0	0
LIVESTOCK	D	WOODBINE AQUIFER   LAMAR COUNTY	0	0	0	0	0	0
IRRIGATION	D	RED RUN-OF-RIVER	6,468	6,468	6,468	6,468	6,468	6,468
<b>RED BASIN TOTAL</b>			<b>24,633</b>	<b>24,515</b>	<b>24,402</b>	<b>24,316</b>	<b>24,175</b>	<b>24,073</b>
BLOSSOM	D	PAT MAYSE LAKE/RESERVOIR	216	230	245	245	245	245
LAMAR COUNTY WSD	D	PAT MAYSE LAKE/RESERVOIR	3,557	3,518	3,486	3,462	3,438	3,404
PARIS	D	CROOK LAKE/RESERVOIR	1,210	1,210	1,210	1,210	1,210	1,210
PARIS	D	PAT MAYSE LAKE/RESERVOIR	15,528	15,351	15,179	15,035	14,759	14,614
RENO (Lamar)	D	PAT MAYSE LAKE/RESERVOIR	513	571	616	665	713	764
COUNTY-OTHER	D	PAT MAYSE LAKE/RESERVOIR	269	274	279	277	275	273
COUNTY-OTHER	D	TRINITY AQUIFER   LAMAR COUNTY	1	1	1	1	1	1
MANUFACTURING	D	PAT MAYSE LAKE/RESERVOIR	5,091	5,340	5,580	5,787	6,183	6,386
STEAM ELECTRIC POWER	D	PAT MAYSE LAKE/RESERVOIR	8,278	8,278	8,278	8,278	8,278	8,278
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	1,623	1,623	1,623	1,623	1,623	1,623
LIVESTOCK	D	TRINITY AQUIFER   LAMAR COUNTY	1	1	1	1	1	1
IRRIGATION	D	RED RUN-OF-RIVER	2,141	2,141	2,141	2,141	2,141	2,141
IRRIGATION	D	WOODBINE AQUIFER   LAMAR COUNTY	49	49	49	49	49	49
<b>SULPHUR BASIN TOTAL</b>			<b>38,477</b>	<b>38,587</b>	<b>38,688</b>	<b>38,774</b>	<b>38,916</b>	<b>38,989</b>
<b>LAMAR COUNTY TOTAL</b>			<b>63,110</b>	<b>63,102</b>	<b>63,090</b>	<b>63,090</b>	<b>63,091</b>	<b>63,062</b>
DIANA SUD	D	CARRIZO-WILCOX AQUIFER   MARION COUNTY	27	27	27	27	27	27
DIANA SUD	D	O' THE PINES LAKE/RESERVOIR	24	24	24	24	24	24
E M C WSC	D	CARRIZO-WILCOX AQUIFER   MARION COUNTY	243	243	243	243	243	243
HARLETON WSC	D	CARRIZO-WILCOX AQUIFER   HARRISON COUNTY	81	81	81	81	81	81
HARLETON WSC	D	O' THE PINES LAKE/RESERVOIR	17	17	17	17	17	17
JEFFERSON	D	CYPRESS RUN-OF-RIVER	148	148	148	148	148	148
JEFFERSON	D	O' THE PINES LAKE/RESERVOIR	1,509	1,509	1,509	1,509	1,509	1,509
KELLYVILLE-BEREA WSC	D	CARRIZO-WILCOX AQUIFER   MARION COUNTY	148	148	148	148	148	148
MIMS WSC	D	O' THE PINES LAKE/RESERVOIR	763	763	763	763	763	763
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   MARION COUNTY	1,553	1,553	1,553	1,553	1,553	1,553
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	35	35	35	35	35	35
COUNTY-OTHER	D	O' THE PINES LAKE/RESERVOIR	169	169	169	169	169	169
MINING	D	CARRIZO-WILCOX AQUIFER   MARION COUNTY	116	119	122	124	126	128
STEAM ELECTRIC POWER	D	CARRIZO-WILCOX AQUIFER   MARION COUNTY	75	75	75	75	75	75
STEAM ELECTRIC POWER	D	JOHNSON CREEK LAKE/RESERVOIR	2,280	2,280	2,280	2,280	2,280	2,280
STEAM ELECTRIC POWER	D	O' THE PINES LAKE/RESERVOIR	1,902	2,090	2,472	2,937	3,505	3,892
LIVESTOCK	D	CARRIZO-WILCOX AQUIFER   MARION COUNTY	130	130	130	130	130	130
LIVESTOCK	D	QUEEN CITY AQUIFER   MARION COUNTY	281	281	281	281	281	281
IRRIGATION	D	CARRIZO-WILCOX AQUIFER   MARION COUNTY	12	12	12	12	12	12
IRRIGATION	D	CYPRESS RUN-OF-RIVER	309	309	309	309	309	309
<b>CYPRESS BASIN TOTAL</b>			<b>9,822</b>	<b>10,013</b>	<b>10,398</b>	<b>10,865</b>	<b>11,435</b>	<b>11,824</b>
<b>MARION COUNTY TOTAL</b>			<b>9,822</b>	<b>10,013</b>	<b>10,398</b>	<b>10,865</b>	<b>11,435</b>	<b>11,824</b>
BI COUNTY WSC	D	CARRIZO-WILCOX AQUIFER   MORRIS COUNTY	132	132	132	132	132	132
DAINGERFIELD	D	O' THE PINES LAKE/RESERVOIR	1,582	1,582	1,582	1,582	1,582	1,582
HOLLY SPRINGS WSC	D	O' THE PINES LAKE/RESERVOIR	32	32	32	33	33	33
HUGHES SPRINGS	D	O' THE PINES LAKE/RESERVOIR	2	2	2	2	2	2
LONE STAR	D	O' THE PINES LAKE/RESERVOIR	747	747	747	747	747	747
NAPLES	D	CARRIZO-WILCOX AQUIFER   MORRIS COUNTY	108	116	116	116	116	116
OMAHA	D	CARRIZO-WILCOX AQUIFER   MORRIS COUNTY	165	165	165	165	165	165

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### Region D Water User Group (WUG) Existing Water Supply

WUG NAME	SOURCE REGION	SOURCE DESCRIPTION	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
			2020	2030	2040	2050	2060	2070
TRI SUD	D	BOB SANDLIN LAKE/RESERVOIR	181	177	176	179	183	186
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   MORRIS COUNTY	353	353	353	353	353	353
MANUFACTURING	D	DIRECT REUSE	72,086	66,660	61,344	62,600	71,474	65,248
MANUFACTURING	D	ELLISON CREEK LAKE/RESERVOIR	13,037	13,037	13,037	13,037	13,037	13,037
MANUFACTURING	D	O' THE PINES LAKE/RESERVOIR	32,400	32,400	32,400	32,400	32,400	32,400
MANUFACTURING	D	QUEEN CITY AQUIFER   MORRIS COUNTY	4,383	4,383	4,383	4,383	4,383	4,383
STEAM ELECTRIC POWER	D	ELLISON CREEK LAKE/RESERVOIR	820	820	820	820	820	820
LIVESTOCK	D	CARRIZO-WILCOX AQUIFER   MORRIS COUNTY	81	78	78	78	78	78
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	185	188	188	188	188	188
LIVESTOCK	D	QUEEN CITY AQUIFER   MORRIS COUNTY	60	60	60	60	60	60
IRRIGATION	D	CARRIZO-WILCOX AQUIFER   MORRIS COUNTY	3	3	3	3	3	3
IRRIGATION	D	CYPRESS RUN-OF-RIVER	59	59	59	59	59	59
<b>CYPRESS BASIN TOTAL</b>			<b>126,416</b>	<b>120,994</b>	<b>115,677</b>	<b>116,937</b>	<b>125,815</b>	<b>119,592</b>
NAPLES	D	CARRIZO-WILCOX AQUIFER   MORRIS COUNTY	117	109	109	109	109	109
OMAHA	D	CARRIZO-WILCOX AQUIFER   MORRIS COUNTY	125	125	125	125	125	125
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   MORRIS COUNTY	187	187	187	187	187	187
LIVESTOCK	D	CARRIZO-WILCOX AQUIFER   MORRIS COUNTY	74	72	72	72	72	72
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	171	173	173	173	173	173
LIVESTOCK	D	QUEEN CITY AQUIFER   MORRIS COUNTY	55	55	55	55	55	55
IRRIGATION	D	CARRIZO-WILCOX AQUIFER   MORRIS COUNTY	8	8	8	8	8	8
<b>SULPHUR BASIN TOTAL</b>			<b>737</b>	<b>729</b>	<b>729</b>	<b>729</b>	<b>729</b>	<b>729</b>
<b>MORRIS COUNTY TOTAL</b>			<b>127,153</b>	<b>121,723</b>	<b>116,406</b>	<b>117,666</b>	<b>126,544</b>	<b>120,321</b>
BRIGHT STAR SALEM SUD	D	CARRIZO-WILCOX AQUIFER   RAINS COUNTY	344	344	344	344	344	344
BRIGHT STAR SALEM SUD	D	FORK LAKE/RESERVOIR	354	758	750	742	734	725
CASH SUD*	D	FORK LAKE/RESERVOIR	4	0	0	0	0	0
CASH SUD*	C	NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	26	25	23	20	15	12
CASH SUD*	D	TAWAKONI LAKE/RESERVOIR	49	40	29	31	39	5
CASH SUD*	C	TRINITY INDIRECT REUSE	18	19	19	17	13	10
EAST TAWAKONI	D	TAWAKONI LAKE/RESERVOIR	237	246	247	247	248	248
EMORY	D	TAWAKONI LAKE/RESERVOIR	791	829	837	842	845	847
GOLDEN WSC	D	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	9	9	9	9	9	9
MILLER GROVE WSC	D	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	28	28	28	29	28	28
POINT	D	TAWAKONI LAKE/RESERVOIR	364	379	380	381	383	383
SHIRLEY WSC	D	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	106	106	106	106	106	106
SHIRLEY WSC	D	CARRIZO-WILCOX AQUIFER   RAINS COUNTY	46	46	46	46	46	46
SOUTH RAINS SUD	D	CARRIZO-WILCOX AQUIFER   RAINS COUNTY	90	90	90	90	90	90
SOUTH RAINS SUD	D	TAWAKONI LAKE/RESERVOIR	190	192	188	187	187	188
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	113	113	113	113	113	113
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   RAINS COUNTY	204	217	220	218	215	215
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	7	7	7	7	7	7
COUNTY-OTHER	D	NACATOCH AQUIFER   HOPKINS COUNTY	69	75	77	76	74	74
MANUFACTURING	D	TAWAKONI LAKE/RESERVOIR	12	12	12	12	12	12
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	506	506	506	506	506	506
IRRIGATION	D	SABINE RUN-OF-RIVER	211	211	211	211	211	211
<b>SABINE BASIN TOTAL</b>			<b>3,778</b>	<b>4,252</b>	<b>4,242</b>	<b>4,234</b>	<b>4,225</b>	<b>4,179</b>
<b>RAINS COUNTY TOTAL</b>			<b>3,778</b>	<b>4,252</b>	<b>4,242</b>	<b>4,234</b>	<b>4,225</b>	<b>4,179</b>
410 WSC	D	PAT MAYSE LAKE/RESERVOIR	67	66	64	64	63	63
RED RIVER COUNTY WSC	D	BLOSSOM AQUIFER   RED RIVER COUNTY	29	30	30	30	30	30

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### Region D Water User Group (WUG) Existing Water Supply

WUG NAME	SOURCE REGION	SOURCE DESCRIPTION	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
			2020	2030	2040	2050	2060	2070
RED RIVER COUNTY WSC	D	PAT MAYSE LAKE/RESERVOIR	184	184	184	184	184	184
RED RIVER COUNTY WSC	D	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0
COUNTY-OTHER	D	PAT MAYSE LAKE/RESERVOIR	44	33	34	35	34	32
COUNTY-OTHER	D	TRINITY AQUIFER   RED RIVER COUNTY	23	23	23	23	23	23
COUNTY-OTHER	D	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0
LIVESTOCK	D	BLOSSOM AQUIFER   RED RIVER COUNTY	94	94	94	94	94	94
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	474	474	474	474	474	474
LIVESTOCK	D	NACATOCH AQUIFER   RED RIVER COUNTY	8	8	8	8	8	8
LIVESTOCK	D	WOODBINE AQUIFER   RED RIVER COUNTY	2	2	2	2	2	2
IRRIGATION	D	RED RUN-OF-RIVER	2,089	2,089	2,089	2,089	2,089	2,089
<b>RED BASIN TOTAL</b>			<b>3,014</b>	<b>3,003</b>	<b>3,002</b>	<b>3,003</b>	<b>3,001</b>	<b>2,999</b>
410 WSC	D	PAT MAYSE LAKE/RESERVOIR	157	152	149	148	148	148
BOGATA	D	NACATOCH AQUIFER   RED RIVER COUNTY	510	510	510	510	510	510
CLARKSVILLE	D	BLOSSOM AQUIFER   RED RIVER COUNTY	383	371	371	371	371	371
RED RIVER COUNTY WSC	D	BLOSSOM AQUIFER   RED RIVER COUNTY	212	223	223	223	223	223
RED RIVER COUNTY WSC	D	NACATOCH AQUIFER   RED RIVER COUNTY	188	188	188	188	188	188
RED RIVER COUNTY WSC	D	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0
COUNTY-OTHER	D	NACATOCH AQUIFER   RED RIVER COUNTY	56	55	54	54	54	54
COUNTY-OTHER	D	PAT MAYSE LAKE/RESERVOIR	36	47	48	48	50	52
COUNTY-OTHER	D	TRINITY AQUIFER   RED RIVER COUNTY	0	0	0	0	0	0
COUNTY-OTHER	D	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0
MANUFACTURING	D	BLOSSOM AQUIFER   RED RIVER COUNTY	1	1	1	1	1	1
MANUFACTURING	D	LANGFORD LAKE/RESERVOIR	7	7	0	0	0	0
MANUFACTURING	D	SULPHUR RUN-OF-RIVER	8,519	8,519	8,519	8,519	8,519	8,519
MINING	D	BLOSSOM AQUIFER   RED RIVER COUNTY	4	4	3	3	3	3
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	911	911	911	911	911	911
LIVESTOCK	D	NACATOCH AQUIFER   RED RIVER COUNTY	38	38	38	38	38	38
IRRIGATION	D	SULPHUR RUN-OF-RIVER	434	434	434	434	434	434
<b>SULPHUR BASIN TOTAL</b>			<b>11,456</b>	<b>11,460</b>	<b>11,449</b>	<b>11,448</b>	<b>11,450</b>	<b>11,452</b>
<b>RED RIVER COUNTY TOTAL</b>			<b>14,470</b>	<b>14,463</b>	<b>14,451</b>	<b>14,451</b>	<b>14,451</b>	<b>14,451</b>
CARROLL WSC*	I	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	37	40	43	47	52	57
CRYSTAL SYSTEMS TEXAS*	D	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	959	924	903	889	884	886
CRYSTAL SYSTEMS TEXAS*	I	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	375	361	353	347	346	346
JACKSON WSC*	D	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	205	222	244	274	314	361
LIBERTY CITY WSC	D	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	23	23	23	23	23	23
LINDALE RURAL WSC*	D	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	1,011	1,011	1,011	1,011	1,011	1,011
LINDALE*	I	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	796	779	773	756	762	773
OVERTON*	I	CARRIZO-WILCOX AQUIFER   RUSK COUNTY	15	17	19	22	25	29
PINE RIDGE WSC	D	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	272	271	272	271	271	271
SAND FLAT WSC	D	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	546	546	546	546	546	546
SMITH COUNTY MUD 1	D	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	887	887	887	887	887	887
SMITH COUNTY MUD 1	D	QUEEN CITY AQUIFER   SMITH COUNTY	269	269	269	269	269	269
SOUTHERN UTILITIES*	D	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	1,964	2,152	2,395	2,799	3,209	3,700
STAR MOUNTAIN WSC	D	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	213	213	213	213	213	213
STARRVILLE-FRIENDSHIP WSC	D	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	147	147	147	147	147	147
STARRVILLE-FRIENDSHIP WSC	D	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	92	92	92	92	92	92
TYLER*	I	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	21	24	27	30	35	40
TYLER*	I	PALESTINE LAKE/RESERVOIR	80	88	99	114	129	149

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### Region D Water User Group (WUG) Existing Water Supply

WUG NAME	SOURCE REGION	SOURCE DESCRIPTION	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
			2020	2030	2040	2050	2060	2070
TYLER*	I	TYLER LAKE/RESERVOIR	91	101	113	128	147	170
WEST GREGG SUD*	D	CARRIZO-WILCOX AQUIFER   GREGG COUNTY	0	0	0	0	0	3
WEST GREGG SUD*	D	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	132	132	132	132	132	132
WINONA	D	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	169	169	169	169	169	169
COUNTY-OTHER*	D	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	544	627	718	868	1,021	1,216
COUNTY-OTHER*	D	GLADEWATER LAKE/RESERVOIR	23	23	23	23	23	23
MANUFACTURING*	I	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	4	5	5	5	5	5
MINING*	D	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	176	193	222	289	350	425
MINING*	D	QUEEN CITY AQUIFER   SMITH COUNTY	272	272	272	272	272	272
LIVESTOCK*	D	QUEEN CITY AQUIFER   SMITH COUNTY	514	514	514	514	514	514
IRRIGATION*	D	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	148	148	148	148	148	148
IRRIGATION*	I	QUEEN CITY AQUIFER   SMITH COUNTY	176	176	176	176	176	176
<b>SABINE BASIN TOTAL</b>			<b>10,161</b>	<b>10,426</b>	<b>10,808</b>	<b>11,461</b>	<b>12,172</b>	<b>13,053</b>
<b>SMITH COUNTY TOTAL</b>			<b>10,161</b>	<b>10,426</b>	<b>10,808</b>	<b>11,461</b>	<b>12,172</b>	<b>13,053</b>
BI COUNTY WSC	D	CARRIZO-WILCOX AQUIFER   TITUS COUNTY	76	76	76	76	76	76
CYPRESS SPRINGS SUD	D	CYPRESS SPRINGS LAKE/RESERVOIR	54	52	60	62	63	64
MOUNT PLEASANT	D	BOB SANDLIN LAKE/RESERVOIR	13,677	13,423	13,174	12,940	12,551	12,242
MOUNT PLEASANT	D	CYPRESS RUN-OF-RIVER	404	404	404	404	404	404
MOUNT PLEASANT	D	CYPRESS SPRINGS LAKE/RESERVOIR	2,769	2,651	2,534	2,440	2,323	2,229
MOUNT PLEASANT	D	TANKERSLEY LAKE/RESERVOIR	950	950	950	950	950	950
TRI SUD	D	BOB SANDLIN LAKE/RESERVOIR	1,013	1,102	1,203	1,325	1,465	1,616
COUNTY-OTHER	D	BOB SANDLIN LAKE/RESERVOIR	87	0	0	0	0	0
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   TITUS COUNTY	415	438	457	475	439	416
MANUFACTURING	D	BOB SANDLIN LAKE/RESERVOIR	2,795	0	0	0	0	0
MANUFACTURING	D	CARRIZO-WILCOX AQUIFER   TITUS COUNTY	1,887	2,027	2,150	2,140	1,881	1,751
MANUFACTURING	D	DIRECT REUSE	160	160	160	160	160	160
MANUFACTURING	D	TANKERSLEY LAKE/RESERVOIR	550	550	550	550	550	550
MINING	D	BOB SANDLIN LAKE/RESERVOIR	867	697	654	696	841	735
MINING	D	CARRIZO-WILCOX AQUIFER   TITUS COUNTY	2,714	3,109	3,376	3,559	3,273	3,376
MINING	D	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	80	80	80	80	80	80
MINING	D	MONTICELLO LAKE/RESERVOIR	538	538	538	538	461	0
STEAM ELECTRIC POWER	D	BOB SANDLIN LAKE/RESERVOIR	10,000	10,000	10,000	10,000	10,000	10,000
STEAM ELECTRIC POWER	D	CARRIZO-WILCOX AQUIFER   TITUS COUNTY	3	3	3	3	578	548
STEAM ELECTRIC POWER	D	MONTICELLO LAKE/RESERVOIR	4,462	3,862	3,262	2,762	2,239	2,200
STEAM ELECTRIC POWER	D	O' THE PINES LAKE/RESERVOIR	14,400	14,400	14,400	14,400	14,400	14,400
STEAM ELECTRIC POWER	D	WELSH LAKE/RESERVOIR	3,000	2,800	2,500	2,200	1,900	1,700
LIVESTOCK	D	CARRIZO-WILCOX AQUIFER   TITUS COUNTY	433	433	433	433	428	428
IRRIGATION	D	CYPRESS RUN-OF-RIVER	4	4	4	4	4	4
IRRIGATION	D	SULPHUR RUN-OF-RIVER	153	153	153	153	153	153
<b>CYPRESS BASIN TOTAL</b>			<b>61,491</b>	<b>57,912</b>	<b>57,121</b>	<b>56,350</b>	<b>55,219</b>	<b>54,082</b>
CYPRESS SPRINGS SUD	D	CYPRESS SPRINGS LAKE/RESERVOIR	81	88	90	96	99	106
TRI SUD	D	BOB SANDLIN LAKE/RESERVOIR	526	573	625	689	762	841
COUNTY-OTHER	D	BOB SANDLIN LAKE/RESERVOIR	600	0	0	0	0	0
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   TITUS COUNTY	395	432	454	477	500	500
COUNTY-OTHER	D	NACATOCH AQUIFER   RED RIVER COUNTY	76	76	76	76	76	76
MINING	D	CARRIZO-WILCOX AQUIFER   TITUS COUNTY	361	383	406	429	453	475
LIVESTOCK	D	CARRIZO-WILCOX AQUIFER   TITUS COUNTY	418	418	418	418	378	357

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### Region D Water User Group (WUG) Existing Water Supply

WUG NAME	SOURCE REGION	SOURCE DESCRIPTION	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
			2020	2030	2040	2050	2060	2070
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	156	156	156	156	156	156
LIVESTOCK	D	SULPHUR RUN-OF-RIVER	1	1	1	1	1	1
IRRIGATION	D	SULPHUR RUN-OF-RIVER	1,311	1,311	1,311	1,311	1,311	1,311
<b>SULPHUR BASIN TOTAL</b>			<b>3,925</b>	<b>3,438</b>	<b>3,537</b>	<b>3,653</b>	<b>3,736</b>	<b>3,823</b>
<b>TITUS COUNTY TOTAL</b>			<b>65,416</b>	<b>61,350</b>	<b>60,658</b>	<b>60,003</b>	<b>58,955</b>	<b>57,905</b>
BI COUNTY WSC	D	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	479	479	479	479	479	479
DIANA SUD	D	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	598	598	598	598	598	598
DIANA SUD	D	O' THE PINES LAKE/RESERVOIR	524	524	524	524	524	524
EAST MOUNTAIN WATER SYSTEM	D	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	139	139	138	138	138	139
GILMER	D	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	1,226	1,226	1,226	1,226	1,226	1,226
GLENWOOD WSC	D	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	341	342	341	341	341	341
ORE CITY	D	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	214	214	214	214	214	214
ORE CITY	D	O' THE PINES LAKE/RESERVOIR	1,504	1,504	1,504	1,504	1,504	1,504
PRITCHETT WSC	D	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	441	441	441	441	441	441
SHARON WSC	D	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	363	363	363	363	363	363
UNION GROVE WSC	D	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	15	14	14	15	14	14
COUNTY-OTHER	D	BIG SANDY CREEK LAKE/RESERVOIR	27	27	27	27	27	27
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	447	447	448	447	447	447
COUNTY-OTHER	D	GLADEWATER LAKE/RESERVOIR	76	76	76	76	76	76
COUNTY-OTHER	D	QUEEN CITY AQUIFER   UPSHUR COUNTY	721	786	871	870	891	913
MANUFACTURING	D	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	6	6	6	6	6	6
MINING	D	QUEEN CITY AQUIFER   UPSHUR COUNTY	299	573	608	480	355	263
LIVESTOCK	D	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	183	183	183	183	183	183
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	975	975	975	975	975	975
IRRIGATION	D	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	240	240	240	240	240	240
IRRIGATION	D	CYPRESS RUN-OF-RIVER	22	22	22	22	22	22
IRRIGATION	D	LOMA LAKE/RESERVOIR	350	350	350	350	350	350
IRRIGATION	D	SABINE RUN-OF-RIVER	101	101	101	101	101	101
<b>CYPRESS BASIN TOTAL</b>			<b>9,291</b>	<b>9,630</b>	<b>9,749</b>	<b>9,620</b>	<b>9,515</b>	<b>9,446</b>
BIG SANDY	D	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	296	296	296	296	296	296
EAST MOUNTAIN WATER SYSTEM	D	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	221	221	222	222	222	221
FOUKE WSC	D	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	13	13	14	14	15	15
GLADEWATER	D	GLADEWATER LAKE/RESERVOIR	597	592	580	566	549	566
GLENWOOD WSC	D	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	10	10	10	10	10	10
PRITCHETT WSC	D	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	577	577	577	577	577	577
UNION GROVE WSC	D	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	361	362	362	361	362	362
COUNTY-OTHER	D	BIG SANDY CREEK LAKE/RESERVOIR	13	13	13	13	13	13
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	54	54	53	54	54	54
COUNTY-OTHER	D	GLADEWATER LAKE/RESERVOIR	36	36	36	36	36	36
COUNTY-OTHER	D	LOMA LAKE/RESERVOIR	400	400	400	400	400	400
COUNTY-OTHER	D	QUEEN CITY AQUIFER   UPSHUR COUNTY	134	145	160	161	165	169
MINING	D	QUEEN CITY AQUIFER   UPSHUR COUNTY	80	153	163	129	95	70
MINING	D	SABINE RUN-OF-RIVER	105	105	105	105	105	105
LIVESTOCK	D	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	60	60	60	60	60	60
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	293	293	293	293	293	293
<b>SABINE BASIN TOTAL</b>			<b>3,250</b>	<b>3,330</b>	<b>3,344</b>	<b>3,297</b>	<b>3,252</b>	<b>3,247</b>
<b>UPSHUR COUNTY TOTAL</b>			<b>12,541</b>	<b>12,960</b>	<b>13,093</b>	<b>12,917</b>	<b>12,767</b>	<b>12,693</b>

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### Region D Water User Group (WUG) Existing Water Supply

WUG NAME	SOURCE REGION	SOURCE DESCRIPTION	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
			2020	2030	2040	2050	2060	2070
BEN WHEELER WSC*	D	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	415	413	413	414	414	414
BETHEL ASH WSC*	I	CARRIZO-WILCOX AQUIFER   HENDERSON COUNTY	147	165	175	177	182	182
EDOM WSC*	D	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	119	119	119	118	119	118
LITTLE HOPE MOORE WSC	D	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	51	50	51	50	51	50
R P M WSC*	D	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	123	125	125	125	125	124
R P M WSC*	D	QUEEN CITY AQUIFER   VAN ZANDT COUNTY	116	118	118	118	117	117
VAN	D	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	514	502	493	481	467	467
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	1,785	1,887	1,964	2,061	2,170	2,170
MINING	D	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	126	137	147	158	168	179
MINING	D	RHINES LAKE/RESERVOIR	1,170	1,170	1,170	1,170	1,170	1,170
LIVESTOCK	D	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	59	59	59	59	59	59
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	1,108	1,108	1,108	1,108	1,108	1,108
IRRIGATION	D	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	33	33	33	33	33	33
IRRIGATION	D	NECHES RUN-OF-RIVER	166	166	166	166	166	166
IRRIGATION	D	SABINE RUN-OF-RIVER	74	74	74	74	74	74
IRRIGATION	D	TAWAKONI LAKE/RESERVOIR	184	166	164	163	161	159
<b>NECHES BASIN TOTAL</b>			<b>6,190</b>	<b>6,292</b>	<b>6,379</b>	<b>6,475</b>	<b>6,584</b>	<b>6,590</b>
ABLES SPRINGS WSC*	D	FORK LAKE/RESERVOIR	0	0	0	0	0	0
ABLES SPRINGS WSC*	C	NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	1	1	1	1	1	1
ABLES SPRINGS WSC*	D	TAWAKONI LAKE/RESERVOIR	0	0	0	0	0	0
ABLES SPRINGS WSC*	C	TRINITY INDIRECT REUSE	0	0	1	1	0	0
CANTON	D	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	382	382	382	382	339	339
CANTON	D	MILL CREEK LAKE/RESERVOIR	1,187	1,187	1,187	1,187	1,187	1,187
CANTON	D	SABINE RUN-OF-RIVER	37	37	37	37	37	37
COMBINED CONSUMERS SUD	D	TAWAKONI LAKE/RESERVOIR	92	95	98	102	107	111
EDGEWOOD	D	EDGEWOOD CITY LAKE/RESERVOIR	160	160	160	160	160	160
EDGEWOOD	D	TAWAKONI LAKE/RESERVOIR	272	285	295	307	318	329
FRUITVALE WSC	D	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	485	485	485	485	485	485
GOLDEN WSC	D	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	99	102	105	108	110	112
GRAND SALINE	D	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	645	645	645	645	611	611
LITTLE HOPE MOORE WSC	D	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	114	115	114	115	114	115
MACBEE SUD*	D	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	89	78	78	78	78	78
MACBEE SUD*	D	TAWAKONI LAKE/RESERVOIR	181	198	212	225	236	245
MYRTLE SPRINGS WSC	D	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	48	48	48	48	49	48
PINE RIDGE WSC	D	CARRIZO-WILCOX AQUIFER   SMITH COUNTY	11	12	11	12	12	12
PRUITT SANDFLAT WSC	D	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	328	328	328	328	328	328
SOUTH TAWAKONI WSC	D	TAWAKONI LAKE/RESERVOIR	438	472	498	530	562	590
VAN	D	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	134	146	155	167	181	181
VAN	D	SABINE RUN-OF-RIVER	350	350	350	350	350	350
WILLS POINT	D	SABINE RUN-OF-RIVER	120	120	120	120	120	120
WILLS POINT	D	TAWAKONI LAKE/RESERVOIR	300	642	637	505	417	414
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	551	557	471	441	517	454
COUNTY-OTHER	D	SABINE RUN-OF-RIVER	170	170	170	170	170	170
MANUFACTURING	D	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	205	205	205	205	194	194
MANUFACTURING	D	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	2	2	2	2	2	2
MANUFACTURING	D	SABINE RUN-OF-RIVER	54	54	54	54	54	54
MINING	D	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	1,100	1,100	1,100	1,100	1,041	1,041
MINING	D	LOCAL SURFACE WATER SUPPLY	842	1,003	1,162	1,325	1,483	1,642

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### Region D Water User Group (WUG) Existing Water Supply

WUG NAME	SOURCE REGION	SOURCE DESCRIPTION	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
			2020	2030	2040	2050	2060	2070
LIVESTOCK	D	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	89	89	89	89	84	84
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	1,035	1,035	1,035	1,035	1,035	1,035
<b>SABINE BASIN TOTAL</b>			<b>9,521</b>	<b>10,103</b>	<b>10,235</b>	<b>10,314</b>	<b>10,382</b>	<b>10,529</b>
BETHEL ASH WSC*	I	CARRIZO-WILCOX AQUIFER   HENDERSON COUNTY	43	47	49	52	51	51
CANTON	D	MILL CREEK LAKE/RESERVOIR	5	5	5	5	5	5
MABANK*	C	TRWD LAKE/RESERVOIR SYSTEM	31	31	32	31	31	31
MACBEE SUD*	D	TAWAKONI LAKE/RESERVOIR	294	323	345	367	385	401
MYRTLE SPRINGS WSC	D	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	149	149	149	149	148	149
WILLS POINT	D	TAWAKONI LAKE/RESERVOIR	453	965	957	760	628	622
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	1,024	1,080	1,031	1,051	1,181	1,117
MANUFACTURING	D	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	3	3	3	3	3	3
MINING	D	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	73	79	85	91	97	103
MINING	D	LOCAL SURFACE WATER SUPPLY	5	4	8	12	15	19
LIVESTOCK	D	CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	38	110	188	297	355	444
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	599	527	449	340	282	193
<b>TRINITY BASIN TOTAL</b>			<b>2,717</b>	<b>3,323</b>	<b>3,301</b>	<b>3,158</b>	<b>3,181</b>	<b>3,138</b>
<b>VAN ZANDT COUNTY TOTAL</b>			<b>18,428</b>	<b>19,718</b>	<b>19,915</b>	<b>19,947</b>	<b>20,147</b>	<b>20,257</b>
CYPRESS SPRINGS SUD	D	CYPRESS SPRINGS LAKE/RESERVOIR	216	203	195	186	175	169
SHARON WSC	D	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	159	159	159	159	159	159
WINNSBORO	D	CYPRESS SPRINGS LAKE/RESERVOIR	587	560	534	514	490	469
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	795	799	808	801	810	806
MINING	D	QUEEN CITY AQUIFER   WOOD COUNTY	25	25	28	31	32	35
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	555	555	555	555	555	555
IRRIGATION	D	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	125	125	125	125	125	125
<b>CYPRESS BASIN TOTAL</b>			<b>2,462</b>	<b>2,426</b>	<b>2,404</b>	<b>2,371</b>	<b>2,346</b>	<b>2,318</b>
ALGONQUIN WATER RESOURCES OF TEXAS*	D	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	373	374	373	373	373	373
BRIGHT STAR SALEM SUD	D	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	343	343	343	343	343	343
CORNERSVILLE WSC	D	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	50	48	48	49	49	49
FOUKE WSC	D	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	945	945	944	944	943	943
GOLDEN WSC	D	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	376	373	370	367	365	363
HAWKINS	D	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	1,075	1,075	1,075	1,075	1,075	1,075
JONES WSC	D	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	818	813	809	804	801	795
LAKE FORK WSC	D	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	664	664	666	667	667	665
MINEOLA	D	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	1,347	1,347	1,347	1,347	1,347	1,347
NEW HOPE SUD	D	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	366	366	366	366	366	366
PRITCHETT WSC	D	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	3	3	3	3	3	3
PRITCHETT WSC	D	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	5	5	5	5	5	5
QUITMAN	D	FORK LAKE/RESERVOIR	316	1,010	1,000	989	978	967
RAMEY WSC	D	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	640	640	640	640	640	640
SHARON WSC	D	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	471	471	471	471	471	471
SHIRLEY WSC	D	CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	18	17	18	18	18	18
SHIRLEY WSC	D	CARRIZO-WILCOX AQUIFER   RAINS COUNTY	8	8	8	8	8	8
WINNSBORO	D	CYPRESS SPRINGS LAKE/RESERVOIR	930	891	851	819	777	746
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	2	2	2	2	2	2
COUNTY-OTHER	D	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	3,616	3,658	3,652	3,658	3,649	3,653
MANUFACTURING	D	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	1,502	1,502	1,502	1,502	1,502	1,502
MINING	D	QUEEN CITY AQUIFER   WOOD COUNTY	284	288	289	290	292	293

\*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

### Region D Water User Group (WUG) Existing Water Supply

WUG NAME	SOURCE	SOURCE DESCRIPTION	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
	REGION		2020	2030	2040	2050	2060	2070
LIVESTOCK	D	LOCAL SURFACE WATER SUPPLY	1,613	1,613	1,613	1,613	1,613	1,613
LIVESTOCK	D	SABINE RUN-OF-RIVER	30	30	30	30	30	30
IRRIGATION	D	CARRIZO-WILCOX AQUIFER   WOOD COUNTY	22	22	22	22	22	22
IRRIGATION	D	QUEEN CITY AQUIFER   WOOD COUNTY	226	226	226	226	226	226
IRRIGATION	D	SABINE RUN-OF-RIVER	1,001	1,001	1,001	1,001	1,001	1,001
<b>SABINE BASIN TOTAL</b>			<b>17,044</b>	<b>17,735</b>	<b>17,674</b>	<b>17,632</b>	<b>17,566</b>	<b>17,519</b>
<b>WOOD COUNTY TOTAL</b>			<b>19,506</b>	<b>20,161</b>	<b>20,078</b>	<b>20,003</b>	<b>19,912</b>	<b>19,837</b>
<b>REGION D EXISTING WATER SUPPLY TOTAL</b>			<b>677,524</b>	<b>687,729</b>	<b>683,254</b>	<b>685,147</b>	<b>694,555</b>	<b>692,647</b>

\*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

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Values in Acre-Feet per Year							
Recipient Name	WUG Name	2020	2030	2040	2050	2060	2070
<b>WUG Demands on Cash SUD</b>							
COUNTY-OTHER, HUNT	COUNTY-OTHER, HUNT	223	374	604	790	1,200	1,908
QUINLAN	QUINLAN	134	133	134	140	154	174
CASH SUD	CASH SUD	140	176	217	260	309	362
CASH SUD	CASH SUD	12	12	13	13	14	15
CASH SUD	CASH SUD	2,090	2,429	2,861	3,403	4,072	4,881
CASH SUD	CASH SUD	30	35	41	48	58	69
CASH SUD	CASH SUD	81	84	83	84	84	84
		<b>2,710</b>	<b>3,243</b>	<b>3,953</b>	<b>4,738</b>	<b>5,891</b>	<b>7,493</b>
<b>Current Supply</b>							
FORK LAKE/RESERVOIR		109	0	0	0	0	3,325
INDIRECT REUSE NTMWD/ LAKE LAVON		177	234	297	322	291	268
INDIRECT REUSE NTMWD/EAST FORK WETLANDS TO LAKE LAVON		347	407	432	450	406	374
NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM		411	436	346	302	382	440
TAWAKONI LAKE/RESERVOIR		1,755	1,805	1,869	2,318	3,466	2,391
		<b>2,799</b>	<b>2,882</b>	<b>2,944</b>	<b>3,392</b>	<b>4,545</b>	<b>6,798</b>
<b>WUG Demands on Cherokee Water Company</b>							
LONGVIEW	LONGVIEW	16,000	16,000	16,000	16,000	16,000	16,000
STEAM ELECTRIC POWER, GREGG	STEAM ELECTRIC POWER, GREGG	2,000	2,000	2,000	2,000	2,000	2,094
		<b>18,000</b>	<b>18,000</b>	<b>18,000</b>	<b>18,000</b>	<b>18,000</b>	<b>18,094</b>
<b>Current Supply</b>							
CHEROKEE LAKE/RESERVOIR		31,456	31,309	31,162	31,015	30,867	30,720
<b>WUG Demands on Commerce</b>							
COUNTY-OTHER, DELTA	COUNTY-OTHER, DELTA	74	74	74	74	74	74
COUNTY-OTHER, HUNT	COUNTY-OTHER, HUNT	0	0	0	0	0	0
GAFFORD CHAPEL WSC	GAFFORD CHAPEL WSC	3	3	3	3	3	3
MANUFACTURING, HUNT	MANUFACTURING, HUNT	55	67	67	67	67	67
NORTH HUNT SUD	NORTH HUNT SUD	147	147	147	147	147	147
TEXAS A&M UNIVERSITY COMMERCE	TEXAS A&M UNIVERSITY COMMERCE	1	1	1	1	1	1
COMMERCE	COMMERCE	1,427	1,555	1,749	2,039	2,473	3,108
		<b>1,707</b>	<b>1,847</b>	<b>2,041</b>	<b>2,331</b>	<b>2,765</b>	<b>3,400</b>
<b>Current Supply</b>							

Values in Acre-Feet per Year							
Recipient Name	WUG Name	2020	2030	2040	2050	2060	2070
NACATOCH AQUIFER		196	196	196	196	196	196
NACATOCH AQUIFER		126	126	126	126	126	126
TAWAKONI LAKE/RESERVOIR		1,629	6,025	5,975	5,531	3,917	3,884
		<b>1,951</b>	<b>6,347</b>	<b>6,297</b>	<b>5,853</b>	<b>4,239</b>	<b>4,206</b>
<b>WUG Demands on City of Emory</b>							
EAST TAWAKONI	EAST TAWAKONI	237	246	247	247	248	248
SOUTH RAINS SUD	SOUTH RAINS SUD	190	192	188	187	187	188
EMORY	EMORY	791	829	837	842	845	847
		<b>1,218</b>	<b>1,267</b>	<b>1,272</b>	<b>1,276</b>	<b>1,280</b>	<b>1,283</b>
<b>Current Supply</b>							
TAWAKONI LAKE/RESERVOIR		1,218	1,267	1,272	1,276	1,280	1,283
		<b>1,218</b>	<b>1,267</b>	<b>1,272</b>	<b>1,276</b>	<b>1,280</b>	<b>1,283</b>
<b>WUG Demands on Franklin County WD</b>							
CYPRESS SPRINGS SUD	CYPRESS SPRINGS SUD	4,278	4,097	3,915	3,770	3,589	3,444
MOUNT VERNON	MOUNT VERNON	2,852	2,731	2,610	2,514	2,393	2,296
WINNSBORO	WINNSBORO	1,901	1,821	1,740	1,676	1,595	1,531
		<b>9,031</b>	<b>8,649</b>	<b>8,265</b>	<b>7,960</b>	<b>7,577</b>	<b>7,271</b>
<b>Current Supply</b>							
CYPRESS SPRINGS LAKE/RESERVOIR		9,031	8,649	8,266	7,960	7,577	7,271
<b>WUG Demands on City of Greenville</b>							
CADDO MILLS	CADDO MILLS	178	186	201	242	309	319
COUNTY-OTHER, HUNT	COUNTY-OTHER, HUNT	925	900	862	807	726	607
MANUFACTURING, HUNT	MANUFACTURING, HUNT	797	965	1,146	1,319	1,438	1,624
MINING, HUNT	MINING, HUNT	19	20	23	24	29	30
SHADY GROVE WSC	SHADY GROVE WSC	139	164	202	257	338	457
STEAM ELECTRIC POWER, HUNT	STEAM ELECTRIC POWER, HUNT	373	373	373	373	373	373
GREENVILLE	GREENVILLE	9,271	10,481	12,187	14,624	18,163	23,319
		<b>11,702</b>	<b>13,089</b>	<b>14,994</b>	<b>17,646</b>	<b>21,376</b>	<b>26,729</b>
<b>Current Supply</b>							
GREENVILLE CITY LAKE/RESERVOIR		3,421	3,421	3,421	3,421	3,421	3,421
TAWAKONI LAKE/RESERVOIR		10,297	20,362	20,194	20,027	19,879	19,690
		<b>13,718</b>	<b>23,783</b>	<b>23,615</b>	<b>23,448</b>	<b>23,300</b>	<b>23,111</b>
<b>WUG Demands on Lamar County WSD</b>							
410 WSC	410 WSC	224	218	213	212	211	211
BLOSSOM	BLOSSOM	216	230	245	245	245	245
COUNTY-OTHER, LAMAR	COUNTY-OTHER, LAMAR	274	280	285	283	281	279

Values in Acre-Feet per Year							
Recipient Name	WUG Name	2020	2030	2040	2050	2060	2070
COUNTY-OTHER, RED RIVER	COUNTY-OTHER, RED RIVER	253	250	247	247	247	247
MANUFACTURING, LAMAR	MANUFACTURING, LAMAR	858	900	941	976	1,042	1,077
RED RIVER COUNTY WSC	RED RIVER COUNTY WSC	184	184	184	184	184	184
RENO (Lamar)	RENO (Lamar)	628	699	754	814	873	935
LAMAR COUNTY WSD	LAMAR COUNTY WSD	1,556	1,572	1,582	1,601	1,626	1,650
LAMAR COUNTY WSD	LAMAR COUNTY WSD	660	666	670	679	690	699
		<b>4,853</b>	<b>4,999</b>	<b>5,121</b>	<b>5,241</b>	<b>5,399</b>	<b>5,527</b>
<b>Current Supply</b>							
PAT MAYSE LAKE/RESERVOIR		11,556	11,604	11,650	11,683	11,748	11,758
<b>WUG Demands on City of Longview</b>							
COUNTY-OTHER, GREGG	COUNTY-OTHER, GREGG	50	50	50	50	50	50
ELDERVILLE WSC	ELDERVILLE WSC	566	566	566	566	566	566
GUM SPRINGS WSC	GUM SPRINGS WSC	2,940	2,940	2,940	2,940	2,940	2,940
HALLSVILLE	HALLSVILLE	887	887	887	887	887	887
MANUFACTURING, GREGG	MANUFACTURING, GREGG	1,092	1,094	1,094	1,094	1,094	1,094
MANUFACTURING, HARRISON	MANUFACTURING, HARRISON	5,924	5,924	5,924	5,924	5,924	5,924
STEAM ELECTRIC POWER, HARRISON	STEAM ELECTRIC POWER, HARRISON	6,161	6,161	6,161	6,161	6,161	6,161
WHITE OAK	WHITE OAK	2,685	2,685	2,685	2,685	2,685	2,685
LONGVIEW	LONGVIEW	23,716	25,539	27,736	30,380	33,500	37,060
LONGVIEW	LONGVIEW	552	583	617	671	732	805
		<b>44,573</b>	<b>46,429</b>	<b>48,660</b>	<b>51,358</b>	<b>54,539</b>	<b>58,172</b>
<b>Current Supply</b>							
BIG SANDY CREEK LAKE/RESERVOIR		2,685	2,685	2,685	2,685	2,685	2,685
CHEROKEE LAKE/RESERVOIR		16,000	16,000	16,000	16,000	16,000	16,000
DIRECT REUSE LONGVIEW/STEAM ELECTRIC, HARRISON		6,161	6,161	6,161	6,161	6,161	6,161
FORK LAKE/RESERVOIR		8,000	18,042	17,850	17,666	17,470	17,271
O' THE PINES LAKE/RESERVOIR		20,000	20,000	20,000	20,000	20,000	20,000
SABINE RUN-OF-RIVER		12,637	12,637	12,637	12,637	12,637	12,637
SABINE RUN-OF-RIVER		43	43	43	43	43	43
		<b>65,526</b>	<b>75,568</b>	<b>75,376</b>	<b>75,192</b>	<b>74,996</b>	<b>74,797</b>
<b>WUG Demands on City of Marshall</b>							
COUNTY-OTHER, HARRISON	COUNTY-OTHER, HARRISON	323	323	323	323	323	323
GILL WSC	GILL WSC	100	100	100	100	100	100
MANUFACTURING, HARRISON	MANUFACTURING, HARRISON	2,000	2,000	2,000	2,000	2,000	2,000

Values in Acre-Feet per Year							
Recipient Name	WUG Name	2020	2030	2040	2050	2060	2070
MARSHALL	MARSHALL	879	921	968	1,049	1,144	1,258
MARSHALL	MARSHALL	4,115	4,311	4,531	4,910	5,356	5,890
		<b>7,417</b>	<b>7,655</b>	<b>7,922</b>	<b>8,382</b>	<b>8,923</b>	<b>9,571</b>
<b>Current Supply</b>							
CYPRESS RUN-OF-RIVER		7,171	7,171	7,171	7,171	7,171	7,171
O' THE PINES LAKE/RESERVOIR		9,000	9,000	9,000	9,000	9,000	9,000
		<b>16,171</b>	<b>16,171</b>	<b>16,171</b>	<b>16,171</b>	<b>16,171</b>	<b>16,171</b>
<b>WUG Demands on City of Mount Pleasant</b>							
COUNTY-OTHER, FRANKLIN	COUNTY-OTHER, FRANKLIN	14	16	17	17	17	17
COUNTY-OTHER, TITUS	COUNTY-OTHER, TITUS	687	743	776	810	848	890
MANUFACTURING, TITUS	MANUFACTURING, TITUS	3,345	3,409	3,472	3,483	3,617	3,651
TRI SUD	TRI SUD	1,727	1,859	2,011	2,200	2,417	2,650
MOUNT PLEASANT	MOUNT PLEASANT	3,890	4,302	4,745	5,260	5,828	6,433
		<b>9,663</b>	<b>10,329</b>	<b>11,021</b>	<b>11,770</b>	<b>12,727</b>	<b>13,641</b>
<b>Current Supply</b>							
BOB SANDLIN LAKE/RESERVOIR		18,900	18,900	18,900	18,900	18,900	18,900
CYPRESS RUN-OF-RIVER WATER RIGHT 4567 4568 4569 4570 4572		404	404	404	404	404	404
CYPRESS SPRINGS LAKE/RESERVOIR		2,769	2,651	2,534	2,440	2,323	2,229
TANKERSLEY LAKE/RESERVOIR		1,500	1,500	1,500	1,500	1,500	1,500
		<b>23,573</b>	<b>23,455</b>	<b>23,338</b>	<b>23,244</b>	<b>23,127</b>	<b>23,033</b>
<b>WUG Demands on Northeast Texas MWD</b>							
COUNTY-OTHER, CASS	COUNTY-OTHER, CASS	302	302	302	302	302	302
COUNTY-OTHER, MARION	COUNTY-OTHER, MARION	169	169	169	169	169	169
DAINGERFIELD	DAINGERFIELD	1,582	1,582	1,582	1,582	1,582	1,582
DIANA SUD	DIANA SUD	595	595	595	595	595	595
HARLETON WSC	HARLETON WSC	68	68	68	68	68	68
HUGHES SPRINGS	HUGHES SPRINGS	656	656	656	656	656	656
JEFFERSON	JEFFERSON	1,509	1,509	1,509	1,509	1,509	1,509
LONE STAR	LONE STAR	747	747	747	747	747	747
LONGVIEW	LONGVIEW	20,000	20,000	20,000	20,000	20,000	20,000
MANUFACTURING, CAMP	MANUFACTURING, CAMP	100	100	100	100	100	100
MANUFACTURING, MORRIS	MANUFACTURING, MORRIS	45,437	45,437	45,437	45,437	45,437	45,437
MARSHALL	MARSHALL	9,000	9,000	9,000	9,000	9,000	9,000
MIMS WSC	MIMS WSC	896	896	896	896	896	896
MINING, TITUS	MINING, TITUS	1,398	1,228	1,185	1,227	1,295	728



Values in Acre-Feet per Year							
Recipient Name	WUG Name	2020	2030	2040	2050	2060	2070
ORE CITY	ORE CITY	1,504	1,504	1,504	1,504	1,504	1,504
PITTSBURG	PITTSBURG	1,344	1,344	1,344	1,344	1,344	1,344
STEAM ELECTRIC POWER, HARRISON	STEAM ELECTRIC POWER, HARRISON	18,000	18,000	18,000	18,000	18,000	18,000
STEAM ELECTRIC POWER, MARION	STEAM ELECTRIC POWER, MARION	6,668	6,668	6,668	6,668	6,668	6,668
STEAM ELECTRIC POWER, TITUS	STEAM ELECTRIC POWER, TITUS	21,862	21,062	20,162	19,362	18,539	18,300
		<b>131,837</b>	<b>130,867</b>	<b>129,924</b>	<b>129,166</b>	<b>128,411</b>	<b>127,605</b>
<b>Current Supply</b>							
BOB SANDLIN LAKE/RESERVOIR		7,655	8,153	7,851	7,849	7,146	6,344
ELLISON CREEK LAKE/RESERVOIR		22,180	22,180	22,180	22,180	22,180	22,180
MONTICELLO LAKE/RESERVOIR		5,000	4,400	3,800	3,300	2,700	2,200
O' THE PINES LAKE/RESERVOIR		169,700	169,900	167,000	165,700	164,300	163,000
WELSH LAKE/RESERVOIR		3,000	2,800	2,500	2,200	1,900	1,700
		<b>207,535</b>	<b>207,433</b>	<b>203,331</b>	<b>201,229</b>	<b>198,226</b>	<b>195,424</b>
<b>WUG Demands on City of Paris</b>							
LAMAR COUNTY WSD	LAMAR COUNTY WSD	11,556	11,604	11,650	11,683	11,748	11,758
MANUFACTURING, LAMAR	MANUFACTURING, LAMAR	5,091	5,340	5,580	5,787	6,183	6,386
STEAM ELECTRIC POWER, LAMAR	STEAM ELECTRIC POWER, LAMAR	8,961	8,961	8,961	8,961	8,961	8,961
PARIS	PARIS	1,179	1,172	1,163	1,169	1,187	1,204
PARIS	PARIS	1,880	1,870	1,854	1,864	1,892	1,919
		<b>28,667</b>	<b>28,947</b>	<b>29,208</b>	<b>29,464</b>	<b>29,971</b>	<b>30,228</b>
<b>Current Supply</b>							
CROOK LAKE/RESERVOIR		7,290	7,290	7,290	7,290	7,290	7,290
PAT MAYSE LAKE/RESERVOIR		51,488	51,490	51,489	51,489	51,490	51,461
		<b>58,778</b>	<b>58,780</b>	<b>58,779</b>	<b>58,779</b>	<b>58,780</b>	<b>58,751</b>
<b>WUG Demands on Riverbend WRD/Texarkana</b>							
CENTRAL BOWIE COUNTY WSC	CENTRAL BOWIE COUNTY WSC	0	0	0	0	0	0
COUNTY-OTHER, BOWIE	COUNTY-OTHER, BOWIE	0	0	0	0	0	0
COUNTY-OTHER, RED RIVER	COUNTY-OTHER, RED RIVER	0	0	0	0	0	0
DE KALB	DE KALB	0	0	0	0	0	0
HOOKS	HOOKS	0	0	0	0	0	0
MACEDONIA EYLAU MUD 1	MACEDONIA EYLAU MUD 1	0	0	0	0	0	0
MANUFACTURING, BOWIE	MANUFACTURING, BOWIE	0	0	0	0	0	0

Values in Acre-Feet per Year							
Recipient Name	WUG Name	2020	2030	2040	2050	2060	2070
MANUFACTURING, CASS	MANUFACTURING, CASS	120,000	120,000	120,000	120,000	120,000	120,000
MAUD	MAUD	0	0	0	0	0	0
NASH	NASH	0	0	0	0	0	0
NEW BOSTON	NEW BOSTON	0	0	0	0	0	0
RED RIVER COUNTY WSC	RED RIVER COUNTY WSC	0	0	0	0	0	0
REDWATER	REDWATER	0	0	0	0	0	0
TEXARKANA	TEXARKANA	0	0	0	0	0	0
WAKE VILLAGE	WAKE VILLAGE	0	0	0	0	0	0
RIVERBEND WATER RESOURCES DISTRICT	RIVERBEND WATER RESOURCES DISTRICT	90	92	92	92	92	92
RIVERBEND WATER RESOURCES DISTRICT	RIVERBEND WATER RESOURCES DISTRICT	433	444	447	445	445	445
ATLANTA	ATLANTA	2,328	2,328	2,328	2,328	2,328	2,328
COUNTY-OTHER, CASS	COUNTY-OTHER, CASS	44	44	44	44	44	44
QUEEN CITY	QUEEN CITY	258	251	244	243	243	243
BURNS REDBANK WSC	BURNS REDBANK WSC	0	0	0	0	0	0
		<b>123,153</b>	<b>123,159</b>	<b>123,155</b>	<b>123,152</b>	<b>123,152</b>	<b>123,152</b>
<b>Current Supply</b>							
CANEY CREEK LAKE/RESERVOIR		0	0	0	0	0	0
ELLIOT CREEK LAKE/RESERVOIR		0	0	0	0	0	0
WRIGHT PATMAN LAKE/RESERVOIR		122,630	122,623	122,616	122,615	122,615	122,615
		<b>122,630</b>	<b>122,623</b>	<b>122,616</b>	<b>122,615</b>	<b>122,615</b>	<b>122,615</b>
<b>WUG Demands on Sabine River Authority</b>							
BRIGHT STAR SALEM SUD	BRIGHT STAR SALEM SUD	354	758	750	742	734	725
CASH SUD	CASH SUD	1,679	1,762	1,824	2,272	3,425	5,678
COMBINED CONSUMERS SUD	COMBINED CONSUMERS SUD	594	684	816	1,013	1,304	1,726
COMMERCE	COMMERCE	1,629	6,025	5,975	5,531	3,917	3,884
EDGEWOOD	EDGEWOOD	272	285	295	307	318	329
EMORY	EMORY	1,218	1,267	1,272	1,276	1,280	1,283
GREENVILLE	GREENVILLE	10,297	20,362	20,194	20,027	19,879	19,690
IRRIGATION, VAN ZANDT	IRRIGATION, VAN ZANDT	184	166	164	163	161	159
KILGORE	KILGORE	2,240	6,063	5,998	5,937	5,919	6,411
LONGVIEW	LONGVIEW	8,000	18,042	17,850	17,666	17,470	17,271
MACBEE SUD	MACBEE SUD	516	572	621	673	724	779
MANUFACTURING, HARRISON	MANUFACTURING, HARRISON	3,500	3,157	3,124	3,092	3,057	3,022
POINT	POINT	376	391	392	393	395	395

Values in Acre-Feet per Year							
Recipient Name	WUG Name	2020	2030	2040	2050	2060	2070
QUITMAN	QUITMAN	316	1,010	1,000	989	978	967
SOUTH TAWAKONI WSC	SOUTH TAWAKONI WSC	438	472	498	530	562	590
WEST TAWAKONI	WEST TAWAKONI	276	804	797	738	784	777
		<b>31,889</b>	<b>61,820</b>	<b>61,570</b>	<b>61,349</b>	<b>60,907</b>	<b>63,686</b>
<b>Current Supply</b>							
FORK LAKE/RESERVOIR		167,908	166,118	164,304	162,570	160,719	158,846
TAWAKONI LAKE/RESERVOIR		229,352	227,475	225,577	223,686	221,764	219,849
SABINE RUN-OF-RIVER		132,943	132,943	132,943	132,943	132,943	132,943
TOLEDO BEND LAKE/RESERVOIR		750,000	750,000	750,000	750,000	750,000	750,000
		<b>1,280,203</b>	<b>1,276,536</b>	<b>1,272,824</b>	<b>1,269,199</b>	<b>1,265,426</b>	<b>1,261,638</b>
<b>WUG Demands on Sulphur River MWD</b>							
SULPHUR SPRINGS	SULPHUR SPRINGS	13,548	13,470	13,393	13,317	13,240	13,163
<b>Current Supply</b>							
CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION		14,347	14,265	14,183	14,103	14,021	13,940
<b>WUG Demands on Sulphur Springs</b>							
BRASHEAR WSC	BRASHEAR WSC	148	155	163	170	181	192
BRINKER WSC	BRINKER WSC	77	77	77	77	77	77
COUNTY-OTHER, HOPKINS	COUNTY-OTHER, HOPKINS	76	83	79	24	0	0
GAFFORD CHAPEL WSC	GAFFORD CHAPEL WSC	109	111	115	121	128	135
LIVESTOCK, HOPKINS	LIVESTOCK, HOPKINS	1,474	1,551	1,720	1,730	1,914	1,996
MANUFACTURING, HOPKINS	MANUFACTURING, HOPKINS	1,741	1,830	1,915	1,987	2,126	2,275
MANUFACTURING, HUNT	MANUFACTURING, HUNT	50	50	50	50	50	50
MARTIN SPRINGS WSC	MARTIN SPRINGS WSC	223	223	223	223	223	223
MINING, HOPKINS	MINING, HOPKINS	200	220	240	261	285	310
MINING, TITUS	MINING, TITUS	80	80	80	80	80	80
NORTH HOPKINS WSC	NORTH HOPKINS WSC	921	921	921	921	921	921
SHADY GROVE NO 2 WSC	SHADY GROVE NO 2 WSC	107	112	118	123	131	138
SULPHUR SPRINGS	SULPHUR SPRINGS	10	10	10	11	11	11
SULPHUR SPRINGS	SULPHUR SPRINGS	3,108	3,189	3,268	3,392	3,536	3,686
		<b>8,324</b>	<b>8,612</b>	<b>8,979</b>	<b>9,170</b>	<b>9,663</b>	<b>10,094</b>
<b>Current Supply</b>							
CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION		13,548	13,470	13,393	13,317	13,240	13,163
SULPHUR RUN-OF-RIVER WATER RIGHT 4812 4813 4814 5150		108	108	108	108	108	108

Values in Acre-Feet per Year							
Recipient Name	WUG Name	2020	2030	2040	2050	2060	2070
SULPHUR SPRINGS LAKE/RESERVOIR		9,800	9,800	9,800	9,800	9,800	9,800
		<b>23,456</b>	<b>23,378</b>	<b>23,301</b>	<b>23,225</b>	<b>23,148</b>	<b>23,071</b>
<b>WUG Demands on Titus County FWD #1</b>							
MOUNT PLEASANT	MOUNT PLEASANT	18,900	18,900	18,900	18,900	18,900	18,900
STEAM ELECTRIC POWER, TITUS	STEAM ELECTRIC POWER, TITUS	10,000	10,000	10,000	10,000	10,000	10,000
		<b>28,900</b>	<b>28,900</b>	<b>28,900</b>	<b>28,900</b>	<b>28,900</b>	<b>28,900</b>
<b>Current Supply</b>							
BOB SANDLIN LAKE/RESERVOIR		28,900	28,900	28,900	28,900	28,900	28,900

Values in Acre-Feet per Year							
Recipient Name	WUG Name	2020	2030	2040	2050	2060	2070
<b>WUG Demands on Cash SUD</b>							
COUNTY-OTHER, HUNT	COUNTY-OTHER, HUNT	321	550	886	1,160	1,762	2,746
QUINLAN	QUINLAN	605	605	605	605	605	605
CASH SUD	CASH SUD	140	176	217	260	309	362
CASH SUD	CASH SUD	12	12	13	13	14	15
CASH SUD	CASH SUD	2,090	2,429	2,861	3,403	4,072	4,881
CASH SUD	CASH SUD	30	35	41	48	58	69
CASH SUD	CASH SUD	81	84	83	84	84	84
		<b>3,279</b>	<b>3,891</b>	<b>4,706</b>	<b>5,573</b>	<b>6,904</b>	<b>8,762</b>
<b>Current Supply</b>							
FORK LAKE/RESERVOIR		109	0	0	0	0	3,325
INDIRECT REUSE NTMWD/ LAKE LAVON		177	234	297	322	291	268
INDIRECT REUSE NTMWD/EAST FORK WETLANDS TO LAKE LAVON		347	407	432	450	406	374
NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM		411	436	346	302	382	440
TAWAKONI LAKE/RESERVOIR		1,755	1,805	1,869	2,318	3,466	2,391
		<b>2,799</b>	<b>2,882</b>	<b>2,944</b>	<b>3,392</b>	<b>4,545</b>	<b>6,798</b>
<b>WUG Demands on Cherokee Water Company</b>							
LONGVIEW	LONGVIEW	16,000	16,000	16,000	16,000	16,000	16,000
STEAM ELECTRIC POWER, GREGG	STEAM ELECTRIC POWER, GREGG	2,000	2,000	2,000	2,000	2,000	2,094
		<b>18,000</b>	<b>18,000</b>	<b>18,000</b>	<b>18,000</b>	<b>18,000</b>	<b>18,094</b>
<b>Current Supply</b>							
CHEROKEE LAKE/RESERVOIR		31,456	31,309	31,162	31,015	30,867	30,720
<b>WUG Demands on Commerce</b>							
COUNTY-OTHER, DELTA	COUNTY-OTHER, DELTA	74	74	74	74	74	74
COUNTY-OTHER, HUNT	COUNTY-OTHER, HUNT	0	0	0	0	0	0
GAFFORD CHAPEL WSC	GAFFORD CHAPEL WSC	3	3	3	3	3	3
MANUFACTURING, HUNT	MANUFACTURING, HUNT	55	67	67	67	67	67
NORTH HUNT SUD	NORTH HUNT SUD	663	663	663	663	663	663
TEXAS A&M UNIVERSITY COMMERCE	TEXAS A&M UNIVERSITY COMMERCE	1	1	1	1	1	1
COMMERCE	COMMERCE	1,427	1,555	1,749	2,039	2,473	3,108
		<b>2,223</b>	<b>2,363</b>	<b>2,557</b>	<b>2,847</b>	<b>3,281</b>	<b>3,916</b>
<b>Current Supply</b>							

Values in Acre-Feet per Year							
Recipient Name	WUG Name	2020	2030	2040	2050	2060	2070
NACATOCH AQUIFER		196	196	196	196	196	196
NACATOCH AQUIFER		126	126	126	126	126	126
TAWAKONI LAKE/RESERVOIR		1,629	6,025	5,975	5,531	3,917	3,884
		<b>1,951</b>	<b>6,347</b>	<b>6,297</b>	<b>5,853</b>	<b>4,239</b>	<b>4,206</b>
<b>WUG Demands on City of Emory</b>							
EAST TAWAKONI	EAST TAWAKONI	773	773	773	773	773	773
SOUTH RAINS SUD	SOUTH RAINS SUD	190	192	188	187	187	188
EMORY	EMORY	791	829	837	842	845	847
		<b>1,754</b>	<b>1,794</b>	<b>1,798</b>	<b>1,802</b>	<b>1,805</b>	<b>1,808</b>
<b>Current Supply</b>							
TAWAKONI LAKE/RESERVOIR		1,218	1,267	1,272	1,276	1,280	1,283
		<b>1,218</b>	<b>1,267</b>	<b>1,272</b>	<b>1,276</b>	<b>1,280</b>	<b>1,283</b>
<b>WUG Demands on Franklin County WD</b>							
CYPRESS SPRINGS SUD	CYPRESS SPRINGS SUD	4,500	4,500	4,500	4,500	4,500	4,500
MOUNT VERNON	MOUNT VERNON	3,000	3,000	3,000	3,000	3,000	3,000
WINNSBORO	WINNSBORO	2,000	2,000	2,000	2,000	2,000	2,000
		<b>9,500</b>	<b>9,500</b>	<b>9,500</b>	<b>9,500</b>	<b>9,500</b>	<b>9,500</b>
<b>Current Supply</b>							
CYPRESS SPRINGS LAKE/RESERVOIR		9,031	8,649	8,266	7,960	7,577	7,271
<b>WUG Demands on City of Greenville</b>							
CADDO MILLS	CADDO MILLS	178	186	201	242	309	319
COUNTY-OTHER, HUNT	COUNTY-OTHER, HUNT	925	900	862	807	726	607
MANUFACTURING, HUNT	MANUFACTURING, HUNT	797	965	1,146	1,319	1,438	1,624
MINING, HUNT	MINING, HUNT	19	20	23	24	29	30
SHADY GROVE WSC	SHADY GROVE WSC	139	164	202	257	338	457
STEAM ELECTRIC POWER, HUNT	STEAM ELECTRIC POWER, HUNT	373	373	373	373	373	373
GREENVILLE	GREENVILLE	9,271	10,481	12,187	14,624	18,163	23,319
		<b>11,702</b>	<b>13,089</b>	<b>14,994</b>	<b>17,646</b>	<b>21,376</b>	<b>26,729</b>
<b>Current Supply</b>							
GREENVILLE CITY LAKE/RESERVOIR		3,421	3,421	3,421	3,421	3,421	3,421
TAWAKONI LAKE/RESERVOIR		10,297	20,362	20,194	20,027	19,879	19,690
		<b>13,718</b>	<b>23,783</b>	<b>23,615</b>	<b>23,448</b>	<b>23,300</b>	<b>23,111</b>
<b>WUG Demands on Lamar County WSD</b>							
410 WSC	410 WSC	224	218	213	212	211	211
BLOSSOM	BLOSSOM	216	230	245	245	245	245
COUNTY-OTHER, LAMAR	COUNTY-OTHER, LAMAR	274	280	285	283	281	279

Values in Acre-Feet per Year							
Recipient Name	WUG Name	2020	2030	2040	2050	2060	2070
COUNTY-OTHER, RED RIVER	COUNTY-OTHER, RED RIVER	253	250	247	247	247	247
MANUFACTURING, LAMAR	MANUFACTURING, LAMAR	858	900	941	976	1,042	1,077
RED RIVER COUNTY WSC	RED RIVER COUNTY WSC	323	323	323	323	323	323
RENO (Lamar)	RENO (Lamar)	628	699	754	814	873	935
LAMAR COUNTY WSD	LAMAR COUNTY WSD	1,556	1,572	1,582	1,601	1,626	1,650
LAMAR COUNTY WSD	LAMAR COUNTY WSD	660	666	670	679	690	699
		<b>4,992</b>	<b>5,138</b>	<b>5,260</b>	<b>5,380</b>	<b>5,538</b>	<b>5,666</b>
<b>Current Supply</b>							
PAT MAYSE LAKE/RESERVOIR		11,556	11,604	11,650	11,683	11,748	11,758
<b>WUG Demands on City of Longview</b>							
COUNTY-OTHER, GREGG	COUNTY-OTHER, GREGG	50	50	50	50	50	50
ELDERVILLE WSC	ELDERVILLE WSC	1,473	1,473	1,473	1,473	1,473	1,473
GUM SPRINGS WSC	GUM SPRINGS WSC	2,940	2,940	2,940	2,940	2,940	2,940
HALLSVILLE	HALLSVILLE	1,105	1,105	1,105	1,105	1,105	1,105
MANUFACTURING, GREGG	MANUFACTURING, GREGG	1,092	1,094	1,094	1,094	1,094	1,094
MANUFACTURING, HARRISON	MANUFACTURING, HARRISON	8,344	8,344	8,344	8,344	8,344	8,344
STEAM ELECTRIC POWER, HARRISON	STEAM ELECTRIC POWER, HARRISON	6,161	6,161	6,161	6,161	6,161	6,161
WHITE OAK	WHITE OAK	5,600	5,600	5,600	5,600	5,600	5,600
LONGVIEW	LONGVIEW	23,716	25,539	27,736	30,380	33,500	37,060
LONGVIEW	LONGVIEW	552	583	617	671	732	805
		<b>51,033</b>	<b>52,889</b>	<b>55,120</b>	<b>57,818</b>	<b>60,999</b>	<b>64,632</b>
<b>Current Supply</b>							
BIG SANDY CREEK LAKE/RESERVOIR		2,685	2,685	2,685	2,685	2,685	2,685
CHEROKEE LAKE/RESERVOIR		16,000	16,000	16,000	16,000	16,000	16,000
DIRECT REUSE LONGVIEW/STEAM ELECTRIC, HARRISON		6,161	6,161	6,161	6,161	6,161	6,161
FORK LAKE/RESERVOIR		8,000	18,042	17,850	17,666	17,470	17,271
O' THE PINES LAKE/RESERVOIR		20,000	20,000	20,000	20,000	20,000	20,000
SABINE RUN-OF-RIVER		12,637	12,637	12,637	12,637	12,637	12,637
SABINE RUN-OF-RIVER		43	43	43	43	43	43
		<b>65,526</b>	<b>75,568</b>	<b>75,376</b>	<b>75,192</b>	<b>74,996</b>	<b>74,797</b>
<b>WUG Demands on City of Marshall</b>							
COUNTY-OTHER, HARRISON	COUNTY-OTHER, HARRISON	323	323	323	323	323	323
GILL WSC	GILL WSC	100	100	100	100	100	100
MANUFACTURING, HARRISON	MANUFACTURING, HARRISON	2,000	2,000	2,000	2,000	2,000	2,000

Values in Acre-Feet per Year							
Recipient Name	WUG Name	2020	2030	2040	2050	2060	2070
MARSHALL	MARSHALL	879	921	968	1,049	1,144	1,258
MARSHALL	MARSHALL	4,115	4,311	4,531	4,910	5,356	5,890
		<b>7,417</b>	<b>7,655</b>	<b>7,922</b>	<b>8,382</b>	<b>8,923</b>	<b>9,571</b>
<b>Current Supply</b>							
CYPRESS RUN-OF-RIVER		7,171	7,171	7,171	7,171	7,171	7,171
O' THE PINES LAKE/RESERVOIR		9,000	9,000	9,000	9,000	9,000	9,000
		<b>16,171</b>	<b>16,171</b>	<b>16,171</b>	<b>16,171</b>	<b>16,171</b>	<b>16,171</b>
<b>WUG Demands on City of Mount Pleasant</b>							
COUNTY-OTHER, FRANKLIN	COUNTY-OTHER, FRANKLIN	14	16	17	17	17	17
COUNTY-OTHER, TITUS	COUNTY-OTHER, TITUS	687	743	776	810	848	890
MANUFACTURING, TITUS	MANUFACTURING, TITUS	3,345	3,409	3,472	3,483	3,617	3,651
TRI SUD	TRI SUD	1,727	1,859	2,011	2,200	2,417	2,650
MOUNT PLEASANT	MOUNT PLEASANT	3,890	4,302	4,745	5,260	5,828	6,433
		<b>9,663</b>	<b>10,329</b>	<b>11,021</b>	<b>11,770</b>	<b>12,727</b>	<b>13,641</b>
<b>Current Supply</b>							
BOB SANDLIN LAKE/RESERVOIR		18,900	18,900	18,900	18,900	18,900	18,900
CYPRESS RUN-OF-RIVER WATER RIGHT 4567 4568 4569 4570 4572		404	404	404	404	404	404
CYPRESS SPRINGS LAKE/RESERVOIR		2,769	2,651	2,534	2,440	2,323	2,229
TANKERSLEY LAKE/RESERVOIR		1,500	1,500	1,500	1,500	1,500	1,500
		<b>23,573</b>	<b>23,455</b>	<b>23,338</b>	<b>23,244</b>	<b>23,127</b>	<b>23,033</b>
<b>WUG Demands on Northeast Texas MWD</b>							
COUNTY-OTHER, CASS	COUNTY-OTHER, CASS	1,406	1,406	1,406	1,406	1,406	1,406
COUNTY-OTHER, MARION	COUNTY-OTHER, MARION	828	828	828	828	828	828
DAINGERFIELD	DAINGERFIELD	7,375	7,375	7,375	7,375	7,375	7,375
DIANA SUD	DIANA SUD	739	739	739	739	739	739
HARLETON WSC	HARLETON WSC	315	315	315	315	315	315
HUGHES SPRINGS	HUGHES SPRINGS	3,058	3,058	3,058	3,058	3,058	3,058
JEFFERSON	JEFFERSON	7,031	7,031	7,031	7,031	7,031	7,031
LONE STAR	LONE STAR	3,482	3,482	3,482	3,482	3,482	3,482
LONGVIEW	LONGVIEW	20,000	20,000	20,000	20,000	20,000	20,000
MANUFACTURING, CAMP	MANUFACTURING, CAMP	100	100	100	100	100	100
MANUFACTURING, MORRIS	MANUFACTURING, MORRIS	45,437	45,437	45,437	45,437	45,437	45,437
MARSHALL	MARSHALL	9,000	9,000	9,000	9,000	9,000	9,000
MIMS WSC	MIMS WSC	896	896	896	896	896	896
MINING, TITUS	MINING, TITUS	1,644	1,775	1,909	2,055	2,216	2,392



Values in Acre-Feet per Year							
Recipient Name	WUG Name	2020	2030	2040	2050	2060	2070
ORE CITY	ORE CITY	1,869	1,869	1,869	1,869	1,869	1,869
PITTSBURG	PITTSBURG	12,588	12,588	12,588	12,588	12,588	12,588
STEAM ELECTRIC POWER, HARRISON	STEAM ELECTRIC POWER, HARRISON	18,000	18,000	18,000	18,000	18,000	18,000
STEAM ELECTRIC POWER, MARION	STEAM ELECTRIC POWER, MARION	6,668	6,668	6,668	6,668	6,668	6,668
STEAM ELECTRIC POWER, TITUS	STEAM ELECTRIC POWER, TITUS	21,862	21,062	20,162	19,362	18,539	18,300
		<b>162,298</b>	<b>161,629</b>	<b>160,863</b>	<b>160,209</b>	<b>159,547</b>	<b>159,484</b>
<b>Current Supply</b>							
BOB SANDLIN LAKE/RESERVOIR		7,655	8,153	7,851	7,849	7,146	6,344
ELLISON CREEK LAKE/RESERVOIR		22,180	22,180	22,180	22,180	22,180	22,180
MONTICELLO LAKE/RESERVOIR		5,000	4,400	3,800	3,300	2,700	2,200
O' THE PINES LAKE/RESERVOIR		169,700	169,900	167,000	165,700	164,300	163,000
WELSH LAKE/RESERVOIR		3,000	2,800	2,500	2,200	1,900	1,700
		<b>207,535</b>	<b>207,433</b>	<b>203,331</b>	<b>201,229</b>	<b>198,226</b>	<b>195,424</b>
<b>WUG Demands on City of Paris</b>							
LAMAR COUNTY WSD	LAMAR COUNTY WSD	13,442	13,442	13,442	13,442	13,442	13,442
MANUFACTURING, LAMAR	MANUFACTURING, LAMAR	5,091	5,340	5,580	5,787	6,183	6,386
STEAM ELECTRIC POWER, LAMAR	STEAM ELECTRIC POWER, LAMAR	8,961	8,961	8,961	8,961	8,961	8,961
PARIS	PARIS	1,179	1,172	1,163	1,169	1,187	1,204
PARIS	PARIS	1,880	1,870	1,854	1,864	1,892	1,919
		<b>30,553</b>	<b>30,785</b>	<b>31,000</b>	<b>31,223</b>	<b>31,665</b>	<b>31,912</b>
<b>Current Supply</b>							
CROOK LAKE/RESERVOIR		7,290	7,290	7,290	7,290	7,290	7,290
PAT MAYSE LAKE/RESERVOIR		51,488	51,490	51,489	51,489	51,490	51,461
		<b>58,778</b>	<b>58,780</b>	<b>58,779</b>	<b>58,779</b>	<b>58,780</b>	<b>58,751</b>
<b>WUG Demands on Riverbend WRD/Texarkana</b>							
CENTRAL BOWIE COUNTY WSC	CENTRAL BOWIE COUNTY WSC	110	110	110	110	110	110
COUNTY-OTHER, BOWIE	COUNTY-OTHER, BOWIE	491	519	541	541	541	541
COUNTY-OTHER, RED RIVER	COUNTY-OTHER, RED RIVER	106	106	108	109	109	111
DE KALB	DE KALB	295	292	289	291	294	298
HOOKS	HOOKS	281	278	276	271	269	269
MACEDONIA EYLAU MUD 1	MACEDONIA EYLAU MUD 1	552	552	552	552	552	552
MANUFACTURING, BOWIE	MANUFACTURING, BOWIE	33,604	59,928	66,509	74,735	82,961	100,813

Values in Acre-Feet per Year							
Recipient Name	WUG Name	2020	2030	2040	2050	2060	2070
MANUFACTURING, CASS	MANUFACTURING, CASS	120,000	120,000	120,000	120,000	120,000	120,000
MAUD	MAUD	211	226	241	238	237	237
NASH	NASH	368	368	368	368	368	368
NEW BOSTON	NEW BOSTON	1,680	1,680	1,680	1,680	1,680	1,680
RED RIVER COUNTY WSC	RED RIVER COUNTY WSC	216	216	216	216	216	216
REDWATER	REDWATER	55	55	55	55	55	55
TEXARKANA	TEXARKANA	7,145	7,282	7,459	7,706	8,028	8,380
WAKE VILLAGE	WAKE VILLAGE	699	750	802	861	932	931
RIVERBEND WATER RESOURCES DISTRICT	RIVERBEND WATER RESOURCES DISTRICT	90	92	92	92	92	92
RIVERBEND WATER RESOURCES DISTRICT	RIVERBEND WATER RESOURCES DISTRICT	433	444	447	445	445	445
ATLANTA	ATLANTA	2,328	2,328	2,328	2,328	2,328	2,328
COUNTY-OTHER, CASS	COUNTY-OTHER, CASS	44	44	44	44	44	44
QUEEN CITY	QUEEN CITY	258	251	244	243	243	243
BURNS REDBANK WSC	BURNS REDBANK WSC	201	199	196	194	193	193
		<b>169,167</b>	<b>195,720</b>	<b>202,557</b>	<b>211,079</b>	<b>219,697</b>	<b>237,906</b>
<b>Current Supply</b>							
CANEY CREEK LAKE/RESERVOIR		0	0	0	0	0	0
ELLIOT CREEK LAKE/RESERVOIR		0	0	0	0	0	0
WRIGHT PATMAN LAKE/RESERVOIR		122,630	122,623	122,616	122,615	122,615	122,615
		<b>122,630</b>	<b>122,623</b>	<b>122,616</b>	<b>122,615</b>	<b>122,615</b>	<b>122,615</b>
<b>WUG Demands on Sabine River Authority</b>							
BRIGHT STAR SALEM SUD	BRIGHT STAR SALEM SUD	840	840	840	840	840	840
CASH SUD	CASH SUD	1,679	1,679	1,679	1,679	1,679	1,679
COMBINED CONSUMERS SUD	COMBINED CONSUMERS SUD	2,240	2,240	2,240	2,240	2,240	2,240
COMMERCE	COMMERCE	8,396	8,396	8,396	8,396	8,396	8,396
EDGEWOOD	EDGEWOOD	840	840	840	840	840	840
EMORY	EMORY	3,229	3,229	3,229	3,229	3,229	3,229
GREENVILLE	GREENVILLE	25,763	25,763	25,763	25,763	25,763	25,763
IRRIGATION, VAN ZANDT	IRRIGATION, VAN ZANDT	184	184	184	184	184	184
KILGORE	KILGORE	6,721	6,721	6,721	6,721	6,721	6,721
LONGVIEW	LONGVIEW	20,000	20,000	20,000	20,000	20,000	20,000
MACBEE SUD	MACBEE SUD	2,240	2,240	2,240	2,240	2,240	2,240
MANUFACTURING, HARRISON	MANUFACTURING, HARRISON	3,500	3,500	3,500	3,500	3,500	3,500
POINT	POINT	448	448	448	448	448	448

Values in Acre-Feet per Year							
Recipient Name	WUG Name	2020	2030	2040	2050	2060	2070
QUITMAN	QUITMAN	1,120	1,120	1,120	1,120	1,120	1,120
SOUTH TAWAKONI WSC	SOUTH TAWAKONI WSC	1,680	1,680	1,680	1,680	1,680	1,680
WEST TAWAKONI	WEST TAWAKONI	1,120	1,120	1,120	1,120	1,120	1,120
		<b>80,000</b>	<b>80,000</b>	<b>80,000</b>	<b>80,000</b>	<b>80,000</b>	<b>80,000</b>
<b>Current Supply</b>							
FORK LAKE/RESERVOIR		167,908	166,118	164,304	162,570	160,719	158,846
TAWAKONI LAKE/RESERVOIR		229,352	227,475	225,577	223,686	221,764	219,849
SABINE RUN-OF-RIVER		132,943	132,943	132,943	132,943	132,943	132,943
TOLEDO BEND LAKE/RESERVOIR		750,000	750,000	750,000	750,000	750,000	750,000
		<b>1,280,203</b>	<b>1,276,536</b>	<b>1,272,824</b>	<b>1,269,199</b>	<b>1,265,426</b>	<b>1,261,638</b>
<b>WUG Demands on Sulphur River MWD</b>							
SULPHUR SPRINGS	SULPHUR SPRINGS	13,548	13,470	13,393	13,317	13,240	13,163
<b>Current Supply</b>							
CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION		14,347	14,265	14,183	14,103	14,021	13,940
<b>WUG Demands on Sulphur Springs</b>							
BRASHEAR WSC	BRASHEAR WSC	148	155	163	170	181	192
BRINKER WSC	BRINKER WSC	77	77	77	77	77	77
COUNTY-OTHER, HOPKINS	COUNTY-OTHER, HOPKINS	76	83	79	24	0	0
GAFFORD CHAPEL WSC	GAFFORD CHAPEL WSC	109	111	115	121	128	135
LIVESTOCK, HOPKINS	LIVESTOCK, HOPKINS	1,474	1,551	1,720	1,730	1,914	1,996
MANUFACTURING, HOPKINS	MANUFACTURING, HOPKINS	1,741	1,830	1,915	1,987	2,126	2,275
MANUFACTURING, HUNT	MANUFACTURING, HUNT	50	50	50	50	50	50
MARTIN SPRINGS WSC	MARTIN SPRINGS WSC	223	223	223	223	223	223
MINING, HOPKINS	MINING, HOPKINS	200	220	240	261	285	310
MINING, TITUS	MINING, TITUS	80	80	80	80	80	80
NORTH HOPKINS WSC	NORTH HOPKINS WSC	921	921	921	921	921	921
SHADY GROVE NO 2 WSC	SHADY GROVE NO 2 WSC	107	112	118	123	131	138
SULPHUR SPRINGS	SULPHUR SPRINGS	10	10	10	11	11	11
SULPHUR SPRINGS	SULPHUR SPRINGS	3,108	3,189	3,268	3,392	3,536	3,686
		<b>8,324</b>	<b>8,612</b>	<b>8,979</b>	<b>9,170</b>	<b>9,663</b>	<b>10,094</b>
<b>Current Supply</b>							
CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION		13,548	13,470	13,393	13,317	13,240	13,163
SULPHUR RUN-OF-RIVER WATER RIGHT 4812 4813 4814 5150		108	108	108	108	108	108

Values in Acre-Feet per Year							
Recipient Name	WUG Name	2020	2030	2040	2050	2060	2070
SULPHUR SPRINGS LAKE/RESERVOIR		9,800	9,800	9,800	9,800	9,800	9,800
		<b>23,456</b>	<b>23,378</b>	<b>23,301</b>	<b>23,225</b>	<b>23,148</b>	<b>23,071</b>
<b>WUG Demands on Titus County FWD #1</b>							
MOUNT PLEASANT	MOUNT PLEASANT	30,000	30,000	30,000	30,000	30,000	30,000
STEAM ELECTRIC POWER, TITUS	STEAM ELECTRIC POWER, TITUS	10,000	10,000	10,000	10,000	10,000	10,000
		<b>40,000</b>	<b>40,000</b>	<b>40,000</b>	<b>40,000</b>	<b>40,000</b>	<b>40,000</b>
<b>Current Supply</b>							
BOB SANDLIN LAKE/RESERVOIR		28,900	28,900	28,900	28,900	28,900	28,900

### Region D Source Water Balance (Availability - WUG Supply)

GROUNDWATER SOURCE TYPE				SOURCE WATER BALANCE (ACRE-FEET PER YEAR)					
SOURCE NAME	COUNTY	BASIN	SALINITY*	2020	2030	2040	2050	2060	2070
BLOSSOM AQUIFER	BOWIE	RED	FRESH	21	21	21	21	21	21
BLOSSOM AQUIFER	BOWIE	SULPHUR	FRESH	180	180	180	180	180	180
BLOSSOM AQUIFER	LAMAR	RED	FRESH	323	323	323	323	323	323
BLOSSOM AQUIFER	LAMAR	SULPHUR	FRESH	71	71	71	71	71	71
BLOSSOM AQUIFER	RED RIVER	RED	FRESH	567	567	568	568	568	568
BLOSSOM AQUIFER	RED RIVER	SULPHUR	FRESH	388	388	388	388	388	388
CARRIZO-WILCOX AQUIFER	BOWIE	SULPHUR	FRESH	6,710	6,350	6,090	6,242	6,093	6,135
CARRIZO-WILCOX AQUIFER	CAMP	CYPRESS	FRESH	1,888	1,876	1,867	1,859	1,851	1,842
CARRIZO-WILCOX AQUIFER	CASS	CYPRESS	FRESH	12,771	12,744	12,744	12,743	12,730	12,718
CARRIZO-WILCOX AQUIFER	CASS	SULPHUR	FRESH	2,379	2,310	2,249	2,187	2,116	2,053
CARRIZO-WILCOX AQUIFER	FRANKLIN	CYPRESS	FRESH	6,875	6,884	6,893	6,904	6,916	6,916
CARRIZO-WILCOX AQUIFER	FRANKLIN	SULPHUR	FRESH	1,253	1,251	1,249	1,258	1,266	1,266
CARRIZO-WILCOX AQUIFER	GREGG	CYPRESS	FRESH	475	464	451	434	410	393
CARRIZO-WILCOX AQUIFER	GREGG	SABINE	FRESH	1,685	1,467	1,393	1,375	1,310	1,362
CARRIZO-WILCOX AQUIFER	HARRISON	CYPRESS	FRESH	853	644	499	346	169	14
CARRIZO-WILCOX AQUIFER	HARRISON	SABINE	FRESH	2,532	2,462	2,400	2,319	2,236	2,165
CARRIZO-WILCOX AQUIFER	HOPKINS	CYPRESS	FRESH	271	271	272	272	272	272
CARRIZO-WILCOX AQUIFER	HOPKINS	SABINE	FRESH	978	977	976	978	981	981
CARRIZO-WILCOX AQUIFER	HOPKINS	SULPHUR	FRESH	5,930	6,016	6,039	5,856	5,821	5,606
CARRIZO-WILCOX AQUIFER	MARION	CYPRESS	FRESH	402	399	396	394	392	390
CARRIZO-WILCOX AQUIFER	MORRIS	CYPRESS	FRESH	1,143	1,135	1,135	1,135	1,135	1,135
CARRIZO-WILCOX AQUIFER	MORRIS	SULPHUR	FRESH	5	18	18	18	18	18
CARRIZO-WILCOX AQUIFER	RAINS	SABINE	FRESH	937	924	921	886	889	832
CARRIZO-WILCOX AQUIFER	RED RIVER	SULPHUR	FRESH	0	0	0	0	0	0
CARRIZO-WILCOX AQUIFER	SMITH	SABINE	FRESH	5,116	4,770	4,370	3,715	3,034	2,210
CARRIZO-WILCOX AQUIFER	TITUS	CYPRESS	FRESH	1,587	878	379	425	517	560
CARRIZO-WILCOX AQUIFER	TITUS	SULPHUR	FRESH	1,664	1,605	1,560	1,514	1,467	1,445
CARRIZO-WILCOX AQUIFER	UPSHUR	CYPRESS	FRESH	364	345	344	362	387	413
CARRIZO-WILCOX AQUIFER	UPSHUR	SABINE	FRESH	0	0	0	0	0	0
CARRIZO-WILCOX AQUIFER	VAN ZANDT	NECHES	FRESH	801	688	601	493	374	363
CARRIZO-WILCOX AQUIFER	VAN ZANDT	SABINE	FRESH	138	100	100	100	100	100
CARRIZO-WILCOX AQUIFER	VAN ZANDT	TRINITY	FRESH	771	642	520	356	238	143
CARRIZO-WILCOX AQUIFER	WOOD	CYPRESS	FRESH	1,740	1,738	1,738	1,738	1,738	1,738
CARRIZO-WILCOX AQUIFER	WOOD	SABINE	FRESH	5,583	5,495	5,397	5,340	5,266	5,164
NACATOCH AQUIFER	BOWIE	RED	FRESH	1,548	1,525	1,541	1,625	1,698	1,724
NACATOCH AQUIFER	BOWIE	SULPHUR	FRESH	1,942	1,942	1,942	1,942	1,942	1,942
NACATOCH AQUIFER	DELTA	SULPHUR	FRESH	311	297	286	281	281	269
NACATOCH AQUIFER	FRANKLIN	SULPHUR	FRESH	30	30	30	30	30	30
NACATOCH AQUIFER	HOPKINS	SABINE	FRESH	171	171	171	171	171	171
NACATOCH AQUIFER	HOPKINS	SULPHUR	FRESH	0	0	0	0	0	0
NACATOCH AQUIFER	HUNT	SABINE	FRESH	2,713	2,715	2,719	2,721	2,727	2,729
NACATOCH AQUIFER	HUNT	SULPHUR	FRESH	0	0	22	377	856	1,561
NACATOCH AQUIFER	LAMAR	SULPHUR	FRESH	110	110	110	110	110	110
NACATOCH AQUIFER	RAINS	SABINE	FRESH	1	1	1	1	1	1
NACATOCH AQUIFER	RED RIVER	RED	FRESH	50	50	50	50	50	50

\* Salinity field indicates whether the source availability is considered 'fresh' (less than 1,000 mg/L), 'brackish' (1,000 to 10,000 mg/L), 'saline' (10,001 mg/L to 34,999 mg/L), or 'seawater' (35,000 mg/L or greater). Sources can also be labeled as 'fresh/brackish' or 'brackish/saline', if a combination of the salinity types is appropriate.

\*\* Since reservoir sources can exist across multiple counties, the county field value, 'reservoir' is applied to all reservoir sources.

### Region D Source Water Balance (Availability - WUG Supply)

GROUNDWATER SOURCE TYPE				SOURCE WATER BALANCE (ACRE-FEET PER YEAR)					
SOURCE NAME	COUNTY	BASIN	SALINITY*	2020	2030	2040	2050	2060	2070
NACATOCH AQUIFER	RED RIVER	SULPHUR	FRESH	2,057	2,057	2,057	2,057	2,057	2,057
QUEEN CITY AQUIFER	CAMP	CYPRESS	FRESH	4,170	4,170	4,014	4,014	4,014	4,014
QUEEN CITY AQUIFER	CASS	CYPRESS	FRESH	35,154	35,144	35,135	35,113	35,104	35,091
QUEEN CITY AQUIFER	CASS	SULPHUR	FRESH	2,319	2,306	2,293	2,282	2,269	2,256
QUEEN CITY AQUIFER	GREGG	CYPRESS	FRESH	1,359	1,359	1,359	1,359	1,359	1,359
QUEEN CITY AQUIFER	GREGG	SABINE	FRESH	5,625	5,625	5,625	5,625	5,625	5,625
QUEEN CITY AQUIFER	HARRISON	CYPRESS	FRESH	7,729	7,736	7,736	7,736	7,736	7,736
QUEEN CITY AQUIFER	HARRISON	SABINE	FRESH	2,310	2,310	2,310	2,310	2,310	2,310
QUEEN CITY AQUIFER	MARION	CYPRESS	FRESH	13,574	13,574	13,574	13,574	13,505	13,438
QUEEN CITY AQUIFER	MORRIS	CYPRESS	FRESH	4,971	4,971	4,971	4,971	4,971	4,864
QUEEN CITY AQUIFER	SMITH	SABINE	FRESH	27,288	27,288	27,288	27,158	26,963	26,832
QUEEN CITY AQUIFER	TITUS	CYPRESS	FRESH	144	144	144	144	144	144
QUEEN CITY AQUIFER	UPSHUR	CYPRESS	FRESH	18,710	18,380	18,067	18,205	18,312	18,332
QUEEN CITY AQUIFER	UPSHUR	SABINE	FRESH	7,447	7,354	7,328	7,352	7,379	7,398
QUEEN CITY AQUIFER	VAN ZANDT	NECHES	FRESH	4,624	4,624	4,624	4,624	4,624	4,624
QUEEN CITY AQUIFER	WOOD	CYPRESS	FRESH	986	986	986	986	986	986
QUEEN CITY AQUIFER	WOOD	SABINE	FRESH	8,525	8,521	8,517	8,513	8,510	8,506
TRINITY AQUIFER	DELTA	SULPHUR	FRESH	0	0	0	0	0	0
TRINITY AQUIFER	HUNT	SABINE	FRESH	213	213	213	213	213	213
TRINITY AQUIFER	HUNT	SULPHUR	FRESH	0	0	0	0	0	0
TRINITY AQUIFER	HUNT	TRINITY	FRESH	0	0	0	0	0	0
TRINITY AQUIFER	LAMAR	RED	FRESH	0	0	0	0	0	0
TRINITY AQUIFER	LAMAR	SULPHUR	FRESH	6	6	6	6	6	6
TRINITY AQUIFER	RED RIVER	RED	FRESH	29	29	29	29	29	29
TRINITY AQUIFER	RED RIVER	SULPHUR	FRESH	174	173	174	173	174	173
WOODBINE AQUIFER	HUNT	SABINE	FRESH	0	0	0	0	0	0
WOODBINE AQUIFER	HUNT	SULPHUR	FRESH	0	0	0	0	0	0
WOODBINE AQUIFER	HUNT	TRINITY	FRESH	206	210	216	225	230	229
WOODBINE AQUIFER	LAMAR	RED	FRESH	22	22	22	22	22	22
WOODBINE AQUIFER	LAMAR	SULPHUR	FRESH	0	0	0	0	0	0
WOODBINE AQUIFER	RED RIVER	RED	FRESH	0	0	0	0	0	0
<b>GROUNDWATER SOURCE WATER BALANCE TOTAL</b>				<b>220,919</b>	<b>218,046</b>	<b>215,712</b>	<b>214,799</b>	<b>213,685</b>	<b>212,616</b>

REUSE SOURCE TYPE				SOURCE WATER BALANCE (ACRE-FEET PER YEAR)					
SOURCE NAME	COUNTY	BASIN	SALINITY*	2020	2030	2040	2050	2060	2070
DIRECT REUSE	GREGG	SABINE	FRESH	0	0	0	0	0	0
DIRECT REUSE	LAMAR	RED	FRESH	0	0	0	0	0	0
DIRECT REUSE	MORRIS	CYPRESS	FRESH	0	0	0	0	0	0
DIRECT REUSE	TITUS	CYPRESS	FRESH	0	0	0	0	0	0
<b>REUSE SOURCE WATER BALANCE TOTAL</b>				<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

SURFACE WATER SOURCE TYPE				SOURCE WATER BALANCE (ACRE-FEET PER YEAR)					
SOURCE NAME	COUNTY	BASIN	SALINITY*	2020	2030	2040	2050	2060	2070
BIG CREEK LAKE/RESERVOIR	RESERVOIR**	SULPHUR	FRESH	644	644	644	644	644	644
BIG SANDY CREEK LAKE/RESERVOIR	RESERVOIR**	SABINE	FRESH	0	0	0	0	0	0

\* Salinity field indicates whether the source availability is considered 'fresh' (less than 1,000 mg/L), 'brackish' (1,000 to 10,000 mg/L), 'saline' (10,001 mg/L to 34,999 mg/L), or 'seawater' (35,000 mg/L or greater). Sources can also be labeled as 'fresh/brackish' or 'brackish/saline', if a combination of the salinity types is appropriate.

\*\* Since reservoir sources can exist across multiple counties, the county field value, 'reservoir' is applied to all reservoir sources.

### Region D Source Water Balance (Availability - WUG Supply)

SURFACE WATER SOURCE TYPE				SOURCE WATER BALANCE (ACRE-FEET PER YEAR)					
SOURCE NAME	COUNTY	BASIN	SALINITY*	2020	2030	2040	2050	2060	2070
BOB SANDLIN LAKE/RESERVOIR	RESERVOIR**	CYPRESS	FRESH	45	47	49	51	54	56
BRANDY BRANCH LAKE/RESERVOIR	RESERVOIR**	SABINE	FRESH	17,542	17,542	17,542	17,542	17,542	17,542
CADDO LAKE/RESERVOIR	RESERVOIR**	CYPRESS	FRESH	10,000	10,000	10,000	10,000	10,000	10,000
CANEY CREEK LAKE/RESERVOIR	RESERVOIR**	SULPHUR	FRESH	964	964	964	964	964	964
CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	RESERVOIR**	SULPHUR	FRESH	5,138	4,432	3,307	2,259	1,509	441
CROOK LAKE/RESERVOIR	RESERVOIR**	RED	FRESH	0	0	0	0	0	0
CYPRESS LIVESTOCK LOCAL SUPPLY	CAMP	CYPRESS	FRESH	53	53	90	155	217	243
CYPRESS LIVESTOCK LOCAL SUPPLY	CASS	CYPRESS	FRESH	0	0	0	0	0	0
CYPRESS LIVESTOCK LOCAL SUPPLY	FRANKLIN	CYPRESS	FRESH	0	0	0	0	0	0
CYPRESS LIVESTOCK LOCAL SUPPLY	HARRISON	CYPRESS	FRESH	0	0	0	0	21	55
CYPRESS LIVESTOCK LOCAL SUPPLY	HOPKINS	CYPRESS	FRESH	0	0	0	0	0	0
CYPRESS LIVESTOCK LOCAL SUPPLY	MORRIS	CYPRESS	FRESH	0	0	0	0	0	0
CYPRESS LIVESTOCK LOCAL SUPPLY	UPSHUR	CYPRESS	FRESH	0	0	0	0	0	0
CYPRESS LIVESTOCK LOCAL SUPPLY	WOOD	CYPRESS	FRESH	0	0	0	0	0	0
CYPRESS RUN-OF-RIVER	CAMP	CYPRESS	FRESH	1	1	1	1	1	1
CYPRESS RUN-OF-RIVER	CASS	CYPRESS	FRESH	168	168	168	168	168	168
CYPRESS RUN-OF-RIVER	GREGG	CYPRESS	FRESH	0	0	0	0	0	0
CYPRESS RUN-OF-RIVER	HARRISON	CYPRESS	FRESH	0	0	0	0	0	0
CYPRESS RUN-OF-RIVER	MARION	CYPRESS	FRESH	615	615	615	615	615	615
CYPRESS RUN-OF-RIVER	MORRIS	CYPRESS	FRESH	0	0	0	0	0	0
CYPRESS RUN-OF-RIVER	TITUS	CYPRESS	FRESH	0	0	0	0	0	0
CYPRESS RUN-OF-RIVER	UPSHUR	CYPRESS	FRESH	0	0	0	0	0	0
CYPRESS SPRINGS LAKE/RESERVOIR	RESERVOIR**	CYPRESS	FRESH	0	0	0	0	0	0
EDGEWOOD CITY LAKE/RESERVOIR	RESERVOIR**	SABINE	FRESH	0	0	0	0	0	0
ELLIOT CREEK LAKE/RESERVOIR	RESERVOIR**	SULPHUR	FRESH	1,892	1,892	1,892	1,892	1,892	1,892
ELLISON CREEK LAKE/RESERVOIR	RESERVOIR**	CYPRESS	FRESH	10,643	10,643	10,643	10,643	10,643	10,643
FORK LAKE/RESERVOIR	RESERVOIR**	SABINE	FRESH	0	0	0	0	0	0
GILMER LAKE/RESERVOIR	RESERVOIR**	CYPRESS	FRESH	0	0	0	0	0	0
GLADEWATER LAKE/RESERVOIR	RESERVOIR**	SABINE	FRESH	2,972	2,868	1,997	1,570	1,178	822
GRAYS CREEK RUN-OF-RIVER	HARRISON	CYPRESS	FRESH	0	0	0	0	0	0
GREENVILLE CITY LAKE/RESERVOIR	RESERVOIR**	SABINE	FRESH	0	0	0	0	0	0
JOHNSON CREEK LAKE/RESERVOIR	RESERVOIR**	CYPRESS	FRESH	0	0	0	0	0	0
LANGFORD LAKE/RESERVOIR	RESERVOIR**	SULPHUR	FRESH	433	293	0	0	0	0
LOMA LAKE/RESERVOIR	RESERVOIR**	SABINE	FRESH	1,027	1,027	1,027	1,027	1,027	1,027
MILL CREEK LAKE/RESERVOIR	RESERVOIR**	SABINE	FRESH	0	0	0	0	0	0
MONTICELLO LAKE/RESERVOIR	RESERVOIR**	CYPRESS	FRESH	0	0	0	0	0	0
NECHES LIVESTOCK LOCAL SUPPLY	VAN ZANDT	NECHES	FRESH	28	28	28	28	28	28
NECHES RUN-OF-RIVER	VAN ZANDT	NECHES	FRESH	0	0	0	0	0	0
O' THE PINES LAKE/RESERVOIR	RESERVOIR**	CYPRESS	FRESH	0	0	0	0	0	0
PAT MAYSE LAKE/RESERVOIR	RESERVOIR**	RED	FRESH	8,182	8,180	8,181	8,181	8,180	8,209
RED LIVESTOCK LOCAL SUPPLY	BOWIE	RED	FRESH	0	0	0	0	0	0
RED LIVESTOCK LOCAL SUPPLY	LAMAR	RED	FRESH	0	0	0	0	0	0
RED LIVESTOCK LOCAL SUPPLY	RED RIVER	RED	FRESH	0	0	0	0	0	0
RED RUN-OF-RIVER	BOWIE	RED	FRESH	2,220	2,220	2,220	2,220	2,220	2,220

\* Salinity field indicates whether the source availability is considered 'fresh' (less than 1,000 mg/L), 'brackish' (1,000 to 10,000 mg/L), 'saline' (10,001 mg/L to 34,999 mg/L), or 'seawater' (35,000 mg/L or greater). Sources can also be labeled as 'fresh/brackish' or 'brackish/saline', if a combination of the salinity types is appropriate.

\*\* Since reservoir sources can exist across multiple counties, the county field value, 'reservoir' is applied to all reservoir sources.

### Region D Source Water Balance (Availability - WUG Supply)

SURFACE WATER SOURCE TYPE				SOURCE WATER BALANCE (ACRE-FEET PER YEAR)					
SOURCE NAME	COUNTY	BASIN	SALINITY*	2020	2030	2040	2050	2060	2070
RED RUN-OF-RIVER	LAMAR	RED	FRESH	0	0	0	0	0	0
RED RUN-OF-RIVER	RED RIVER	RED	FRESH	0	0	0	0	0	0
RHINES LAKE/RESERVOIR	RESERVOIR**	NECHES	FRESH	0	0	0	0	0	0
SABINE LIVESTOCK LOCAL SUPPLY	FRANKLIN	SABINE	FRESH	0	0	0	0	0	0
SABINE LIVESTOCK LOCAL SUPPLY	HOPKINS	SABINE	FRESH	0	0	0	0	0	0
SABINE LIVESTOCK LOCAL SUPPLY	HUNT	SABINE	FRESH	0	0	0	0	0	0
SABINE LIVESTOCK LOCAL SUPPLY	RAINS	SABINE	FRESH	169	169	169	169	169	169
SABINE LIVESTOCK LOCAL SUPPLY	UPSHUR	SABINE	FRESH	59	59	59	59	59	59
SABINE LIVESTOCK LOCAL SUPPLY	VAN ZANDT	SABINE	FRESH	0	0	0	0	0	0
SABINE LIVESTOCK LOCAL SUPPLY	WOOD	SABINE	FRESH	0	0	0	0	0	0
SABINE OTHER LOCAL SUPPLY	GREGG	SABINE	FRESH	2,050	2,050	2,050	2,050	2,050	2,050
SABINE OTHER LOCAL SUPPLY	VAN ZANDT	SABINE	FRESH	0	0	0	0	0	0
SABINE RUN-OF-RIVER	GREGG	SABINE	FRESH	1	1	1	1	1	1
SABINE RUN-OF-RIVER	HARRISON	SABINE	FRESH	0	0	0	0	0	0
SABINE RUN-OF-RIVER	HOPKINS	SABINE	FRESH	0	0	0	0	0	0
SABINE RUN-OF-RIVER	HUNT	SABINE	FRESH	0	0	0	0	0	0
SABINE RUN-OF-RIVER	RAINS	SABINE	FRESH	0	0	0	0	0	0
SABINE RUN-OF-RIVER	SMITH	SABINE	FRESH	644	644	644	644	644	644
SABINE RUN-OF-RIVER	UPSHUR	SABINE	FRESH	1	1	1	1	1	1
SABINE RUN-OF-RIVER	VAN ZANDT	SABINE	FRESH	91	91	91	91	91	91
SABINE RUN-OF-RIVER	WOOD	SABINE	FRESH	0	0	0	0	0	0
SULPHUR LIVESTOCK LOCAL SUPPLY	BOWIE	SULPHUR	FRESH	576	576	514	406	300	258
SULPHUR LIVESTOCK LOCAL SUPPLY	CASS	SULPHUR	FRESH	0	0	0	0	0	0
SULPHUR LIVESTOCK LOCAL SUPPLY	DELTA	SULPHUR	FRESH	0	0	0	0	0	0
SULPHUR LIVESTOCK LOCAL SUPPLY	FRANKLIN	SULPHUR	FRESH	0	0	0	0	0	0
SULPHUR LIVESTOCK LOCAL SUPPLY	HOPKINS	SULPHUR	FRESH	0	0	0	0	0	0
SULPHUR LIVESTOCK LOCAL SUPPLY	HUNT	SULPHUR	FRESH	0	0	0	0	0	0
SULPHUR LIVESTOCK LOCAL SUPPLY	LAMAR	SULPHUR	FRESH	0	0	0	0	0	0
SULPHUR LIVESTOCK LOCAL SUPPLY	MORRIS	SULPHUR	FRESH	66	61	61	61	66	66
SULPHUR LIVESTOCK LOCAL SUPPLY	RED RIVER	SULPHUR	FRESH	0	0	0	0	0	0
SULPHUR LIVESTOCK LOCAL SUPPLY	TITUS	SULPHUR	FRESH	0	0	0	0	0	0
SULPHUR OTHER LOCAL SUPPLY	DELTA	SULPHUR	FRESH	25	26	26	26	26	26
SULPHUR RUN-OF-RIVER	BOWIE	SULPHUR	FRESH	0	0	0	0	0	0
SULPHUR RUN-OF-RIVER	DELTA	SULPHUR	FRESH	0	0	0	0	0	0
SULPHUR RUN-OF-RIVER	FRANKLIN	SULPHUR	FRESH	0	0	0	0	0	0
SULPHUR RUN-OF-RIVER	HOPKINS	SULPHUR	FRESH	0	0	0	0	0	0
SULPHUR RUN-OF-RIVER	HUNT	SULPHUR	FRESH	0	0	0	0	0	0
SULPHUR RUN-OF-RIVER	LAMAR	SULPHUR	FRESH	0	0	0	0	0	0
SULPHUR RUN-OF-RIVER	RED RIVER	SULPHUR	FRESH	0	0	0	0	0	0
SULPHUR RUN-OF-RIVER	TITUS	SULPHUR	FRESH	0	0	0	0	0	0
SULPHUR SPRINGS LAKE/RESERVOIR	RESERVOIR**	SULPHUR	FRESH	1,664	1,664	1,664	1,664	1,664	1,664
TANKERSLEY LAKE/RESERVOIR	RESERVOIR**	CYPRESS	FRESH	0	0	0	0	0	0
TAWAKONI LAKE/RESERVOIR	RESERVOIR**	SABINE	FRESH	0	0	0	0	0	0
TRINITY LIVESTOCK LOCAL SUPPLY	HUNT	TRINITY	FRESH	0	0	0	0	0	0
TRINITY LIVESTOCK LOCAL SUPPLY	VAN ZANDT	TRINITY	FRESH	0	0	0	0	0	0

\* Salinity field indicates whether the source availability is considered 'fresh' (less than 1,000 mg/L), 'brackish' (1,000 to 10,000 mg/L), 'saline' (10,001 mg/L to 34,999 mg/L), or 'seawater' (35,000 mg/L or greater). Sources can also be labeled as 'fresh/brackish' or 'brackish/saline', if a combination of the salinity types is appropriate.

\*\* Since reservoir sources can exist across multiple counties, the county field value, 'reservoir' is applied to all reservoir sources.



### Region D Source Water Balance (Availability - WUG Supply)

SURFACE WATER SOURCE TYPE				SOURCE WATER BALANCE (ACRE-FEET PER YEAR)					
SOURCE NAME	COUNTY	BASIN	SALINITY*	2020	2030	2040	2050	2060	2070
TURKEY CREEK LAKE/RESERVOIR	RESERVOIR**	SULPHUR	FRESH	0	0	0	0	0	0
WELSH LAKE/RESERVOIR	RESERVOIR**	CYPRESS	FRESH	0	0	0	0	0	0
WRIGHT PATMAN LAKE/RESERVOIR	RESERVOIR**	SULPHUR	FRESH	224,936	213,042	201,141	189,173	177,111	164,915
<b>SURFACE WATER SOURCE WATER BALANCE TOTAL</b>				<b>292,849</b>	<b>280,001</b>	<b>265,789</b>	<b>252,305</b>	<b>239,085</b>	<b>225,514</b>
<b>REGION D SOURCE WATER BALANCE TOTAL</b>				<b>513,768</b>	<b>498,047</b>	<b>481,501</b>	<b>467,104</b>	<b>452,770</b>	<b>438,130</b>

\* Salinity field indicates whether the source availability is considered 'fresh' (less than 1,000 mg/L), 'brackish' (1,000 to 10,000 mg/L), 'saline' (10,001 mg/L to 34,999 mg/L), or 'seawater' (35,000 mg/L or greater). Sources can also be labeled as 'fresh/brackish' or 'brackish/saline', if a combination of the salinity types is appropriate.

\*\* Since reservoir sources can exist across multiple counties, the county field value, 'reservoir' is applied to all reservoir sources.

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Appendix C4 – Chapter 4:  
**IDENTIFICATION OF WATER NEEDS**

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## APPENDIX C4

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- C4-1: Water User Group (WUG) Needs/Surplus from DB22
- C4-2: Water User Group (WUG) Category Summary from DB22
- C4-3: Second-Tier Identified Water Needs from DB22
- C4-4: Second-Tier Identified Water Need Summary from DB22

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### Region D Water User Group (WUG) Needs/Surplus

WUG supplies and projected demands are entered for each of a WUG’s region-county-basin divisions. The needs shown in the WUG Needs/Surplus report are calculated by first deducting the WUG split’s projected demand from its total existing water supply volume. If the WUG split has a greater existing supply volume than projected demand in any given decade, this amount is considered a surplus volume. Surplus volumes are shown as positive values, and needs are shown as negative values in parentheses.

	(NEEDS)/SURPLUS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
<b>BOWIE COUNTY - RED BASIN</b>						
BURNS REDBANK WSC	(201)	(199)	(196)	(194)	(193)	(193)
CENTRAL BOWIE COUNTY WSC	(88)	(91)	(101)	(112)	(124)	(137)
DE KALB	(45)	(44)	(44)	(44)	(45)	(45)
HOOKS	(281)	(278)	(276)	(271)	(269)	(269)
NEW BOSTON	(409)	(411)	(407)	(406)	(405)	(405)
RIVERBEND WATER RESOURCES DISTRICT	(90)	(92)	(92)	(92)	(92)	(92)
TEXARKANA	(843)	(859)	(880)	(909)	(947)	(989)
COUNTY-OTHER	538	668	861	843	833	833
MANUFACTURING	3	2	2	2	2	2
LIVESTOCK	(252)	(252)	(229)	(196)	(168)	(156)
IRRIGATION	922	922	922	922	922	922
<b>BOWIE COUNTY - SULPHUR BASIN</b>						
CENTRAL BOWIE COUNTY WSC	(531)	(548)	(607)	(672)	(745)	(825)
DE KALB	(250)	(248)	(245)	(247)	(249)	(253)
MACEDONIA EYLAU MUD 1	(588)	(598)	(601)	(601)	(601)	(601)
MAUD	(211)	(226)	(241)	(238)	(237)	(237)
NASH	(392)	(458)	(523)	(589)	(589)	(589)
NEW BOSTON	(981)	(988)	(978)	(975)	(974)	(974)
REDWATER	(440)	(487)	(535)	(588)	(616)	(616)
RIVERBEND WATER RESOURCES DISTRICT	(433)	(444)	(447)	(445)	(445)	(445)
TEXARKANA	(6,302)	(6,423)	(6,579)	(6,797)	(7,081)	(7,391)
WAKE VILLAGE	(699)	(750)	(802)	(861)	(932)	(931)
COUNTY-OTHER	1,379	1,616	1,966	1,924	1,902	1,902
MANUFACTURING	(1,579)	(2,014)	(2,014)	(2,014)	(2,014)	(2,014)
LIVESTOCK	(417)	(417)	(378)	(325)	(278)	(260)
IRRIGATION	(4,134)	(4,134)	(4,134)	(4,134)	(4,134)	(4,134)
<b>CAMP COUNTY - CYPRESS BASIN</b>						
BI COUNTY WSC	489	386	307	204	102	1
PITTSBURG	845	826	813	786	755	722
COUNTY-OTHER	259	283	301	321	339	358
MANUFACTURING	67	50	50	50	50	50
MINING	11	12	13	14	15	16
LIVESTOCK	(3,962)	(3,962)	(3,962)	(3,962)	(3,962)	(3,962)
<b>CASS COUNTY - CYPRESS BASIN</b>						
ATLANTA	0	0	0	0	0	0
E M C WSC	10	10	10	10	10	10
EASTERN CASS WSC	429	434	439	442	443	443
HOLLY SPRINGS WSC	(47)	(43)	(39)	(38)	(38)	(38)
HUGHES SPRINGS	284	295	305	307	308	308
LINDEN	143	152	159	160	161	161
MIMS WSC	114	114	114	114	114	114
QUEEN CITY	8	12	17	17	17	17
WESTERN CASS WSC	723	730	736	738	739	739

\*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

**Region D Water User Group (WUG) Needs/Surplus**

COUNTY-OTHER	(282)	(215)	(150)	(109)	(106)	(106)
MANUFACTURING	0	0	0	0	0	0
MINING	800	804	824	859	896	932
LIVESTOCK	(865)	(865)	(865)	(865)	(865)	(865)
<b>CASS COUNTY - SULPHUR BASIN</b>						
ATLANTA	0	0	0	0	0	0
EASTERN CASS WSC	26	27	27	27	27	27
QUEEN CITY	3	6	8	9	9	9
WESTERN CASS WSC	142	144	146	146	146	146
COUNTY-OTHER	(167)	(142)	(119)	(103)	(102)	(102)
MANUFACTURING	51	50	48	47	47	46
LIVESTOCK	(953)	(953)	(953)	(951)	(951)	(951)
<b>DELTA COUNTY - SULPHUR BASIN</b>						
COOPER	534	540	549	550	551	551
DELTA COUNTY MUD*	0	0	0	0	0	0
NORTH HUNT SUD*	(6)	(9)	(11)	(13)	(15)	(15)
COUNTY-OTHER	112	101	102	102	102	102
LIVESTOCK	(262)	(250)	(250)	(250)	(250)	(250)
IRRIGATION	6,767	6,780	6,790	6,795	6,795	6,807
<b>FRANKLIN COUNTY - CYPRESS BASIN</b>						
CYPRESS SPRINGS SUD	1,752	1,668	1,580	1,510	1,415	1,335
WINNSBORO	245	228	213	198	181	167
COUNTY-OTHER	4	7	11	9	8	7
MANUFACTURING	2	0	0	0	0	0
LIVESTOCK	(714)	(714)	(714)	(714)	(714)	(714)
IRRIGATION	69	69	69	69	69	69
<b>FRANKLIN COUNTY - SABINE BASIN</b>						
IRRIGATION	72	72	72	72	72	72
<b>FRANKLIN COUNTY - SULPHUR BASIN</b>						
CYPRESS SPRINGS SUD	1,093	1,040	982	933	872	822
MOUNT VERNON	2,448	2,314	2,188	2,083	1,953	1,847
COUNTY-OTHER	95	92	101	101	100	99
MINING	1,035	1,011	990	970	951	952
LIVESTOCK	(1,090)	(1,090)	(1,090)	(1,090)	(1,090)	(1,090)
IRRIGATION	70	70	70	70	70	70
<b>GREGG COUNTY - CYPRESS BASIN</b>						
GLENWOOD WSC	5	4	4	3	2	1
TRYON ROAD SUD	445	404	352	283	188	78
COUNTY-OTHER	205	228	241	259	283	300
MINING	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
<b>GREGG COUNTY - SABINE BASIN</b>						
CLARKSVILLE CITY	145	140	133	124	112	98
CROSS ROADS SUD*	51	51	50	50	51	52
ELDERVILLE WSC*	445	412	376	337	294	231
GLADEWATER	251	209	161	100	24	0
KILGORE*	223	2,986	2,589	2,107	1,595	1,533
LIBERTY CITY WSC	371	348	315	269	210	142
LONGVIEW	18,525	25,558	23,413	20,806	17,729	14,208
STARRVILLE-FRIENDSHIP WSC	26	21	15	8	(1)	(11)

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### Region D Water User Group (WUG) Needs/Surplus

TRYON ROAD SUD	819	816	812	807	800	793
WEST GREGG SUD*	214	201	181	153	116	70
WHITE OAK	1,248	1,154	1,037	892	719	519
COUNTY-OTHER	520	1,059	1,137	1,241	1,393	1,303
MANUFACTURING	339	57	57	57	57	57
MINING	(11)	(19)	(19)	(14)	(10)	(6)
STEAM ELECTRIC POWER	1,302	1,302	1,302	1,302	1,302	1,302
LIVESTOCK	5	5	5	5	5	5
IRRIGATION	152	152	152	152	152	152
<b>HARRISON COUNTY - CYPRESS BASIN</b>						
BLOCKER CROSSROADS WSC	8	7	7	6	5	3
DIANA SUD	63	62	61	59	56	52
GUM SPRINGS WSC	884	877	870	855	834	811
HARLETON WSC	(47)	(56)	(69)	(96)	(131)	(174)
LEIGH WSC	20	2	(17)	(49)	(86)	(130)
MARSHALL	1,541	1,499	1,452	1,371	1,276	1,162
NORTH HARRISON WSC	20	16	11	0	(15)	(32)
PANOLA-BETHANY WSC*	1	(3)	(9)	(19)	(25)	(31)
SCOTTSVILLE	(10)	(14)	(19)	(27)	(36)	(46)
TALLEY WSC	58	58	56	51	44	37
TRYON ROAD SUD	27	21	15	5	2	0
WASKOM	(96)	(114)	(136)	(173)	(220)	(275)
WEST HARRISON WSC	56	56	55	51	48	45
COUNTY-OTHER	1,422	1,458	1,479	1,478	1,470	1,419
MANUFACTURING	2,519	2,517	2,517	2,517	2,517	2,517
MINING	(234)	(137)	(58)	20	95	154
LIVESTOCK	177	212	248	287	305	310
IRRIGATION	(384)	(384)	(384)	(384)	(384)	(384)
<b>HARRISON COUNTY - SABINE BASIN</b>						
BLOCKER CROSSROADS WSC	71	69	65	56	44	30
GILL WSC*	130	126	119	102	83	59
GUM SPRINGS WSC	1,713	1,703	1,684	1,641	1,586	1,515
HALLSVILLE	269	245	217	169	111	41
LEIGH WSC	4	0	(4)	(11)	(19)	(29)
LONGVIEW	617	571	518	459	390	313
MARSHALL	7,213	7,017	6,797	6,418	5,972	5,438
PANOLA-BETHANY WSC*	0	(46)	(103)	(189)	(248)	(301)
SCOTTSVILLE	(21)	(30)	(39)	(55)	(73)	(95)
TALLEY WSC	42	42	41	37	34	29
WEST HARRISON WSC	176	173	169	163	153	141
COUNTY-OTHER	890	953	999	1,036	1,086	1,098
MANUFACTURING	81,117	77,572	77,539	77,507	77,472	77,437
MINING	(1,472)	(1,130)	(854)	(586)	(322)	(129)
STEAM ELECTRIC POWER	5,396	5,396	5,396	5,396	5,396	5,396
LIVESTOCK	151	158	167	175	183	188
IRRIGATION	(148)	(148)	(148)	(148)	(148)	(148)
<b>HOPKINS COUNTY - CYPRESS BASIN</b>						
CORNERSVILLE WSC	48	46	44	40	38	34
CYPRESS SPRINGS SUD	141	130	120	110	101	94
COUNTY-OTHER	176	177	176	176	176	176

\*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

**Region D Water User Group (WUG) Needs/Surplus**

MINING	(7)	(8)	(12)	(13)	(15)	(19)
LIVESTOCK	58	59	63	63	67	69
IRRIGATION	0	0	0	0	0	0
<b>HOPKINS COUNTY - SABINE BASIN</b>						
BRASHEAR WSC	0	0	0	0	0	0
CASH SUD*	3	1	(2)	(2)	(3)	(10)
CORNERSVILLE WSC	46	43	41	39	35	32
CUMBY	(13)	(27)	(41)	(54)	(71)	(81)
JONES WSC	15	18	20	23	24	27
LAKE FORK WSC	33	33	32	31	31	32
MARTIN SPRINGS WSC	204	158	113	75	22	(27)
MILLER GROVE WSC	(7)	(14)	(20)	(25)	(34)	(44)
SHADY GROVE NO 2 WSC	0	0	0	0	0	0
SHIRLEY WSC	110	103	96	92	81	75
SULPHUR SPRINGS	6	5	5	5	4	4
COUNTY-OTHER	520	547	559	515	507	503
MINING	(71)	(89)	(112)	(138)	(166)	(198)
LIVESTOCK	366	387	433	436	486	508
IRRIGATION	2	2	2	2	2	2
<b>HOPKINS COUNTY - SULPHUR BASIN</b>						
BRASHEAR WSC	0	0	0	0	0	0
BRINKER WSC	76	47	21	(12)	(47)	(83)
CUMBY	0	(2)	(3)	(4)	(6)	(7)
CYPRESS SPRINGS SUD	282	260	240	223	206	188
GAFFORD CHAPEL WSC	55	55	55	55	55	55
MARTIN SPRINGS WSC	40	31	24	15	5	(2)
NORTH HOPKINS WSC	447	427	407	367	323	276
SHADY GROVE NO 2 WSC	0	0	0	0	0	0
SULPHUR SPRINGS	1,878	1,798	1,719	1,594	1,451	1,301
COUNTY-OTHER	469	462	467	438	430	428
MANUFACTURING	797	862	947	1,019	1,158	1,307
MINING	(149)	(186)	(236)	(293)	(352)	(422)
LIVESTOCK	(1,068)	(1,090)	(1,140)	(1,143)	(1,196)	(1,219)
IRRIGATION	(4,627)	(4,627)	(4,627)	(4,627)	(4,627)	(4,627)
<b>HUNT COUNTY - SABINE BASIN</b>						
ABLES SPRINGS WSC*	0	(14)	(28)	(55)	(98)	(163)
B H P WSC*	0	(60)	(103)	(177)	(288)	(445)
BLACKLAND WSC*	0	(2)	(2)	(3)	(3)	(4)
CADDO BASIN SUD*	(5)	(172)	(314)	(560)	(945)	(1,503)
CADDO MILLS	26	(1)	(36)	(68)	(108)	(254)
CASH SUD*	41	(366)	(958)	(1,270)	(1,253)	(563)
CELESTE	(29)	(52)	(86)	(136)	(209)	(316)
COMBINED CONSUMERS SUD	0	0	0	0	0	0
GREENVILLE	(3,239)	(4,626)	(6,531)	(9,183)	(12,913)	(18,266)
HICKORY CREEK SUD*	(32)	(114)	(228)	(393)	(629)	(977)
JOSEPHINE*	0	(11)	(24)	(48)	(60)	(68)
MACBEE SUD*	0	0	0	0	0	0
POETRY WSC*	1	(48)	(83)	(143)	(237)	(364)
QUINLAN	0	0	0	0	0	0
ROYSE CITY*	(1)	(8)	(15)	(24)	(40)	(62)

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**Region D Water User Group (WUG) Needs/Surplus**

SHADY GROVE WSC	0	0	0	0	0	0
WEST TAWAKONI	0	495	437	302	235	63
COUNTY-OTHER	854	449	(142)	(551)	(1,571)	(3,426)
MANUFACTURING	547	610	791	964	1,083	1,269
MINING	(41)	(35)	(16)	(5)	0	3
STEAM ELECTRIC POWER	0	0	0	0	0	0
LIVESTOCK	41	41	41	41	41	41
IRRIGATION	(151)	(151)	(151)	(151)	(151)	(151)
<b>HUNT COUNTY - SULPHUR BASIN</b>						
CASH SUD*	4	1	(5)	(8)	(11)	(48)
COMMERCE	244	3,275	3,104	2,454	465	214
DELTA COUNTY MUD*	0	0	0	0	0	0
HICKORY CREEK SUD*	(36)	(91)	(172)	(285)	(451)	(692)
NORTH HUNT SUD*	(72)	(139)	(232)	(363)	(553)	(831)
TEXAS A&M UNIVERSITY COMMERCE	0	4	6	7	8	8
WOLFE CITY*	91	61	17	(52)	(149)	(293)
COUNTY-OTHER	0	0	(16)	(107)	(170)	(283)
MANUFACTURING	0	0	0	0	0	0
MINING	(30)	(27)	(18)	(13)	(7)	0
LIVESTOCK	12	12	12	12	12	12
IRRIGATION	(79)	(79)	(79)	(79)	(79)	(79)
<b>HUNT COUNTY - TRINITY BASIN</b>						
FROGNOT WSC*	3	3	2	1	1	0
HICKORY CREEK SUD*	(17)	(45)	(85)	(142)	(223)	(341)
WEST LEONARD WSC*	7	6	7	7	4	0
COUNTY-OTHER	8	0	(8)	(45)	(76)	(125)
MINING	(2)	(2)	(1)	(1)	0	0
LIVESTOCK	(2)	(2)	(2)	(2)	(1)	(1)
IRRIGATION	0	0	0	0	0	0
<b>LAMAR COUNTY - RED BASIN</b>						
LAMAR COUNTY WSD	3,778	3,706	3,647	3,592	3,533	3,458
PARIS	9,979	9,868	9,762	9,660	9,458	9,344
RENO (Lamar)	43	55	64	74	84	93
COUNTY-OTHER	(120)	(121)	(124)	(127)	(129)	(131)
MANUFACTURING	561	596	637	672	738	773
STEAM ELECTRIC POWER	263	263	263	263	263	263
LIVESTOCK	(617)	(617)	(617)	(617)	(617)	(617)
IRRIGATION	(1,140)	(1,140)	(1,140)	(1,140)	(1,140)	(1,140)
<b>LAMAR COUNTY - SULPHUR BASIN</b>						
BLOSSOM	80	96	114	114	112	110
LAMAR COUNTY WSD	2,897	2,852	2,816	2,783	2,748	2,705
PARIS	14,858	14,691	14,535	14,381	14,077	13,905
RENO (Lamar)	37	88	128	170	210	254
COUNTY-OTHER	(84)	(83)	(88)	(97)	(105)	(113)
MANUFACTURING	374	519	759	966	1,362	1,565
STEAM ELECTRIC POWER	3,187	3,187	3,187	3,187	3,187	3,187
LIVESTOCK	772	772	772	772	772	772
IRRIGATION	(328)	(328)	(328)	(328)	(328)	(328)
<b>MARION COUNTY - CYPRESS BASIN</b>						
DIANA SUD	18	19	20	21	21	21

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### Region D Water User Group (WUG) Needs/Surplus

E M C WSC	81	81	81	81	81	81
HARLETON WSC	(15)	(18)	(22)	(31)	(42)	(56)
JEFFERSON	1,231	1,242	1,251	1,256	1,257	1,257
KELLYVILLE-BEREA WSC	41	47	52	54	54	54
MIMS WSC	654	654	654	654	654	654
COUNTY-OTHER	1,658	1,663	1,669	1,677	1,686	1,696
MINING	(373)	(645)	(590)	(471)	(352)	(265)
STEAM ELECTRIC POWER	0	188	570	1,035	1,603	1,990
LIVESTOCK	223	223	223	223	223	223
IRRIGATION	309	309	309	309	309	309
<b>MORRIS COUNTY - CYPRESS BASIN</b>						
BI COUNTY WSC	11	13	14	12	9	7
DAINGERFIELD	1,117	1,122	1,123	1,114	1,105	1,094
HOLLY SPRINGS WSC	(26)	(24)	(21)	(20)	(20)	(20)
HUGHES SPRINGS	1	1	1	1	1	1
LONE STAR	558	563	566	563	560	556
NAPLES	38	47	49	47	46	45
OMAHA	38	40	40	38	35	32
TRI SUD	0	0	0	0	0	0
COUNTY-OTHER	100	105	107	99	93	86
MANUFACTURING	96,168	90,737	85,421	86,677	95,551	89,325
STEAM ELECTRIC POWER	770	770	770	770	770	770
LIVESTOCK	(510)	(510)	(510)	(510)	(510)	(510)
IRRIGATION	59	59	59	59	59	59
<b>MORRIS COUNTY - SULPHUR BASIN</b>						
NAPLES	32	26	27	26	24	22
OMAHA	39	39	39	38	36	34
COUNTY-OTHER	88	90	91	88	85	83
LIVESTOCK	(469)	(469)	(469)	(469)	(469)	(469)
IRRIGATION	0	0	0	0	0	0
<b>RAINS COUNTY - SABINE BASIN</b>						
BRIGHT STAR SALEM SUD	495	900	899	891	883	873
CASH SUD*	16	0	(12)	(16)	(17)	(57)
EAST TAWAKONI	0	0	0	0	0	0
EMORY	0	0	0	0	0	0
GOLDEN WSC	5	5	5	5	5	5
MILLER GROVE WSC	(1)	(2)	(3)	(4)	(6)	(8)
POINT	0	0	0	0	0	0
SHIRLEY WSC	51	48	45	43	38	35
SOUTH RAINS SUD	90	90	90	90	90	90
COUNTY-OTHER	319	337	346	345	345	348
MANUFACTURING	0	0	0	0	0	0
LIVESTOCK	78	78	78	78	78	78
IRRIGATION	146	146	146	146	146	146
<b>RED RIVER COUNTY - RED BASIN</b>						
410 WSC	0	0	0	0	0	0
RED RIVER COUNTY WSC	96	98	97	95	94	89
COUNTY-OTHER	0	11	31	38	41	52
LIVESTOCK	(184)	(184)	(184)	(184)	(184)	(184)
IRRIGATION	810	810	810	810	810	810

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### Region D Water User Group (WUG) Needs/Surplus

RED RIVER COUNTY - SULPHUR BASIN						
410 WSC	0	0	0	0	0	0
BOGATA	387	394	397	398	398	398
CLARKSVILLE	(237)	(231)	(222)	(221)	(219)	(219)
RED RIVER COUNTY WSC	77	89	87	81	77	65
COUNTY-OTHER	0	39	65	74	81	101
MANUFACTURING	8,524	8,524	8,517	8,517	8,517	8,517
MINING	0	0	0	0	0	0
LIVESTOCK	179	179	179	179	179	179
IRRIGATION	(2,154)	(2,154)	(2,154)	(2,154)	(2,154)	(2,154)
SMITH COUNTY - SABINE BASIN						
CARROLL WSC*	0	0	0	0	0	0
CRYSTAL SYSTEMS TEXAS*	389	240	81	(95)	(292)	(525)
JACKSON WSC*	0	0	0	0	0	0
LIBERTY CITY WSC	10	9	8	6	3	0
LINDALE RURAL WSC*	479	435	376	336	239	123
LINDALE*	(45)	(226)	(422)	(591)	(842)	(1,137)
OVERTON*	0	0	0	0	0	0
PINE RIDGE WSC	123	111	100	83	65	45
SAND FLAT WSC	303	291	265	236	205	172
SMITH COUNTY MUD 1	246	126	(13)	(178)	(375)	(609)
SOUTHERN UTILITIES*	0	0	0	0	0	0
STAR MOUNTAIN WSC	(20)	(39)	(61)	(87)	(116)	(148)
STARRVILLE-FRIENDSHIP WSC	63	52	37	19	(2)	(26)
TYLER*	7	7	7	9	10	12
WEST GREGG SUD*	56	49	41	29	15	0
WINONA	36	20	3	(20)	(48)	(81)
COUNTY-OTHER*	23	23	23	23	23	23
MANUFACTURING*	0	0	0	0	0	0
MINING*	161	156	153	167	184	200
LIVESTOCK*	0	0	0	0	0	0
IRRIGATION*	0	0	0	0	0	0
TITUS COUNTY - CYPRESS BASIN						
BI COUNTY WSC	42	39	35	31	26	21
CYPRESS SPRINGS SUD	44	42	48	49	49	49
MOUNT PLEASANT	13,910	13,126	12,317	11,474	10,400	9,392
TRI SUD	0	0	0	0	0	0
COUNTY-OTHER	323	241	237	230	168	117
MANUFACTURING	1,329	(1,418)	(1,295)	(1,305)	(1,564)	(1,694)
MINING	2,687	2,792	2,892	2,983	2,617	1,991
STEAM ELECTRIC POWER	(30,066)	(30,866)	(31,766)	(32,566)	(32,814)	(33,083)
LIVESTOCK	(923)	(923)	(923)	(923)	(928)	(928)
IRRIGATION	47	47	47	47	47	47
TITUS COUNTY - SULPHUR BASIN						
CYPRESS SPRINGS SUD	66	71	72	76	77	81
TRI SUD	0	0	0	0	0	0
COUNTY-OTHER	776	185	170	152	131	85
MINING	229	240	253	264	275	283
LIVESTOCK	(1,016)	(1,016)	(1,016)	(1,016)	(1,056)	(1,077)
IRRIGATION	368	368	368	368	368	368

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### Region D Water User Group (WUG) Needs/Surplus

UPSHUR COUNTY - CYPRESS BASIN						
BI COUNTY WSC	112	97	82	62	42	21
DIANA SUD	700	687	675	656	634	611
EAST MOUNTAIN WATER SYSTEM	72	69	66	63	59	56
GILMER	103	42	(11)	(75)	(142)	(206)
GLENWOOD WSC	61	52	44	30	14	0
ORE CITY	1,563	1,558	1,552	1,545	1,536	1,528
PRITCHETT WSC	242	237	233	224	214	203
SHARON WSC	216	214	213	205	197	189
UNION GROVE WSC	9	8	8	8	7	7
COUNTY-OTHER	651	690	754	721	707	694
MANUFACTURING	(63)	(70)	(70)	(70)	(70)	(70)
MINING	0	0	0	0	0	0
LIVESTOCK	(64)	(64)	(64)	(64)	(64)	(64)
IRRIGATION	543	543	543	543	543	543
UPSHUR COUNTY - SABINE BASIN						
BIG SANDY	72	62	52	41	27	15
EAST MOUNTAIN WATER SYSTEM	48	41	35	26	16	6
FOUKE WSC	3	3	3	3	3	3
GLADEWATER	153	126	94	56	12	4
GLENWOOD WSC	3	3	2	2	2	1
PRITCHETT WSC	99	87	75	56	30	5
UNION GROVE WSC	210	207	197	186	178	169
COUNTY-OTHER	522	529	539	535	532	530
MINING	105	105	105	105	105	105
LIVESTOCK	(76)	(76)	(76)	(76)	(76)	(76)
VAN ZANDT COUNTY - NECHES BASIN						
BEN WHEELER WSC*	201	190	183	174	164	154
BETHEL ASH WSC*	75	75	70	58	50	39
EDOM WSC*	(11)	(18)	(23)	(32)	(42)	(55)
LITTLE HOPE MOORE WSC	6	3	2	(1)	(3)	(5)
R P M WSC*	14	(25)	(58)	(93)	(124)	(152)
VAN	277	247	224	195	166	152
COUNTY-OTHER	1,283	1,360	1,418	1,493	1,584	1,570
MINING	1,215	1,221	1,220	1,221	1,222	1,222
LIVESTOCK	152	152	152	152	152	152
IRRIGATION	(43)	(61)	(63)	(64)	(66)	(68)
VAN ZANDT COUNTY - SABINE BASIN						
ABLES SPRINGS WSC*	(1)	(1)	(1)	(1)	(2)	(2)
CANTON	645	574	522	463	367	321
COMBINED CONSUMERS SUD	0	0	0	0	0	0
EDGEWOOD	160	160	160	160	160	160
FRUITVALE WSC	180	167	156	142	126	112
GOLDEN WSC	44	46	48	50	49	49
GRAND SALINE	258	257	258	253	211	203
LITTLE HOPE MOORE WSC	12	7	3	(2)	(8)	(12)
MACBEE SUD*	89	78	78	78	78	78
MYRTLE SPRINGS WSC	19	18	17	15	14	12
PINE RIDGE WSC	5	5	4	4	3	2
PRUITT SANDFLAT WSC	172	164	157	149	141	133

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### Region D Water User Group (WUG) Needs/Surplus

SOUTH TAWAKONI WSC	0	0	0	0	0	0
VAN	352	354	355	359	364	357
WILLS POINT	120	466	465	335	246	241
COUNTY-OTHER	264	247	143	94	153	78
MANUFACTURING	(242)	(492)	(492)	(492)	(503)	(503)
MINING	1,801	1,953	2,094	2,239	2,322	2,462
LIVESTOCK	463	463	463	463	458	458
<b>VAN ZANDT COUNTY - TRINITY BASIN</b>						
BETHEL ASH WSC*	23	21	20	18	14	11
CANTON	1	1	0	0	0	0
MABANK*	(17)	(22)	(26)	(44)	(73)	(114)
MACBEE SUD*	0	0	0	0	0	0
MYRTLE SPRINGS WSC	60	56	53	47	41	37
WILLS POINT	0	520	518	323	189	181
COUNTY-OTHER	562	594	528	528	641	565
MANUFACTURING	0	(1)	(1)	(1)	(1)	(1)
MINING	0	0	0	0	0	0
LIVESTOCK	424	424	424	424	424	424
<b>WOOD COUNTY - CYPRESS BASIN</b>						
CYPRESS SPRINGS SUD	176	164	156	147	136	129
SHARON WSC	58	61	65	63	62	61
WINNSBORO	375	345	320	297	270	248
COUNTY-OTHER	720	725	738	734	747	748
MINING	23	23	26	29	30	33
LIVESTOCK	72	72	72	72	72	72
IRRIGATION	89	89	89	89	89	89
<b>WOOD COUNTY - SABINE BASIN</b>						
ALGONQUIN WATER RESOURCES OF TEXAS*	266	255	242	229	214	199
BRIGHT STAR SALEM SUD	192	195	201	198	197	196
CORNERSVILLE WSC	25	22	21	20	19	17
FOUKE WSC	228	222	226	219	212	206
GOLDEN WSC	167	167	170	167	163	160
HAWKINS	713	705	705	698	694	691
JONES WSC	425	425	431	426	420	411
LAKE FORK WSC	446	446	452	451	448	443
MINEOLA	500	490	497	487	479	472
NEW HOPE SUD	37	34	37	33	30	27
PRITCHETT WSC	1	1	1	1	1	1
QUITMAN	0	691	683	668	654	641
RAMEY WSC	362	367	375	371	368	366
SHARON WSC	265	269	277	273	272	271
SHIRLEY WSC	9	8	8	8	7	6
WINNSBORO	594	549	510	473	428	394
COUNTY-OTHER	3,405	3,450	3,453	3,467	3,471	3,491
MANUFACTURING	(1,030)	(1,583)	(1,583)	(1,583)	(1,583)	(1,583)
MINING	261	265	268	271	274	276
LIVESTOCK	(1,098)	(1,098)	(1,098)	(1,098)	(1,098)	(1,098)
IRRIGATION	796	796	796	796	796	796

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### Region D Water User Group (WUG) Category Summary

<b>MUNICIPAL</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
POPULATION	736,652	806,858	882,597	973,210	1,079,438	1,210,903
DEMAND (acre-feet per year)	118,659	126,460	135,899	148,746	164,956	185,303
EXISTING SUPPLIES (acre-feet per year)	214,334	231,187	230,708	230,418	229,378	232,657
NEEDS (acre-feet per year)*	16,835	19,857	23,863	29,229	36,155	45,045
<b>COUNTY-OTHER</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
POPULATION	94,817	100,673	106,262	115,987	132,541	159,535
DEMAND (acre-feet per year)	10,649	10,982	11,435	12,483	14,394	17,557
EXISTING SUPPLIES (acre-feet per year)	28,141	28,810	29,500	30,085	31,252	32,066
NEEDS (acre-feet per year)*	653	561	647	1,139	2,259	4,286
<b>MANUFACTURING</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
DEMAND (acre-feet per year)	99,795	104,975	104,975	104,975	104,975	104,975
EXISTING SUPPLIES (acre-feet per year)	289,279	281,493	276,805	278,505	287,794	281,975
NEEDS (acre-feet per year)*	2,914	5,578	5,455	5,465	5,735	5,865
<b>MINING</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
DEMAND (acre-feet per year)	7,115	7,748	7,670	7,280	6,914	6,795
EXISTING SUPPLIES (acre-feet per year)	13,053	14,052	14,592	14,888	14,676	14,385
NEEDS (acre-feet per year)*	2,390	2,278	1,916	1,534	1,224	1,039
<b>STEAM ELECTRIC POWER</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
DEMAND (acre-feet per year)	94,174	94,174	94,174	94,174	94,174	94,174
EXISTING SUPPLIES (acre-feet per year)	75,026	74,414	73,896	73,561	73,881	73,999
NEEDS (acre-feet per year)*	30,066	30,866	31,766	32,566	32,814	33,083
<b>LIVESTOCK</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
DEMAND (acre-feet per year)	35,673	35,706	35,571	35,369	35,202	35,163
EXISTING SUPPLIES (acre-feet per year)	24,304	24,391	24,363	24,296	24,182	24,163
NEEDS (acre-feet per year)*	14,542	14,552	14,540	14,455	14,477	14,491
<b>IRRIGATION</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
DEMAND (acre-feet per year)	35,354	35,354	35,354	35,354	35,354	35,354
EXISTING SUPPLIES (acre-feet per year)	33,387	33,382	33,390	33,394	33,392	33,402
NEEDS (acre-feet per year)*	13,188	13,206	13,208	13,209	13,211	13,213

\*WUG supplies and projected demands are entered for each of a WUG’s region-county-basin divisions. The needs shown in the WUG Category Summary report are calculated by first deducting the WUG split’s projected demand from its total existing water supply volume. If the WUG split has a greater existing supply volume than projected demand in any given decade, this amount is considered a surplus volume. Before aggregating the difference between supplies and demands to the WUG category level, calculated surpluses are updated to zero so that only the WUGs with needs in the decade are included with the Needs totals.

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### Region D Water User Group (WUG) Second-Tier Identified Water Needs

Second-tier needs are WUG split needs adjusted to include the implementation of recommended demand reduction and direct reuse water management strategies.

	WUG SECOND-TIER NEEDS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
<b>BOWIE COUNTY - RED BASIN</b>						
BURNS REDBANK WSC	201	199	196	194	193	193
CENTRAL BOWIE COUNTY WSC	88	91	101	112	124	137
DE KALB	45	44	44	44	45	45
HOOKS	281	278	276	271	269	269
NEW BOSTON	409	411	407	406	405	405
RIVERBEND WATER RESOURCES DISTRICT	90	92	92	92	92	92
TEXARKANA	843	859	880	909	947	989
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
LIVESTOCK	252	252	229	196	168	156
IRRIGATION	0	0	0	0	0	0
<b>BOWIE COUNTY - SULPHUR BASIN</b>						
CENTRAL BOWIE COUNTY WSC	531	548	607	672	745	825
DE KALB	250	248	245	247	249	253
MACEDONIA EYLAU MUD 1	588	598	601	601	601	601
MAUD	211	226	241	238	237	237
NASH	392	458	523	589	589	589
NEW BOSTON	981	988	978	975	974	974
REDWATER	440	487	535	588	616	616
RIVERBEND WATER RESOURCES DISTRICT	433	444	447	445	445	445
TEXARKANA	6,302	6,423	6,579	6,797	7,081	7,391
WAKE VILLAGE	699	750	802	861	932	931
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	1,418	1,810	1,810	1,810	1,810	1,810
LIVESTOCK	417	417	378	325	278	260
IRRIGATION	4,134	4,134	4,134	4,134	4,134	4,134
<b>CAMP COUNTY - CYPRESS BASIN</b>						
BI COUNTY WSC	0	0	0	0	0	0
PITTSBURG	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	0	0	0	0	0	0
LIVESTOCK	3,962	3,962	3,962	3,962	3,962	3,962
<b>CASS COUNTY - CYPRESS BASIN</b>						
ATLANTA	0	0	0	0	0	0
E M C WSC	0	0	0	0	0	0
EASTERN CASS WSC	0	0	0	0	0	0
HOLLY SPRINGS WSC	47	43	39	38	38	38
HUGHES SPRINGS	0	0	0	0	0	0
LINDEN	0	0	0	0	0	0
MIMS WSC	0	0	0	0	0	0
QUEEN CITY	0	0	0	0	0	0
WESTERN CASS WSC	0	0	0	0	0	0
COUNTY-OTHER	282	215	150	109	106	106

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### Region D Water User Group (WUG) Second-Tier Identified Water Needs

	WUG SECOND-TIER NEEDS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
<b>CASS COUNTY - CYPRESS BASIN</b>						
MANUFACTURING	0	0	0	0	0	0
MINING	0	0	0	0	0	0
LIVESTOCK	865	865	865	865	865	865
<b>CASS COUNTY - SULPHUR BASIN</b>						
ATLANTA	0	0	0	0	0	0
EASTERN CASS WSC	0	0	0	0	0	0
QUEEN CITY	0	0	0	0	0	0
WESTERN CASS WSC	0	0	0	0	0	0
COUNTY-OTHER	167	142	119	103	102	102
MANUFACTURING	0	0	0	0	0	0
LIVESTOCK	953	953	953	951	951	951
<b>DELTA COUNTY - SULPHUR BASIN</b>						
COOPER	0	0	0	0	0	0
DELTA COUNTY MUD*	0	0	0	0	0	0
NORTH HUNT SUD*	6	9	11	13	15	15
COUNTY-OTHER	0	0	0	0	0	0
LIVESTOCK	262	250	250	250	250	250
IRRIGATION	0	0	0	0	0	0
<b>FRANKLIN COUNTY - CYPRESS BASIN</b>						
CYPRESS SPRINGS SUD	0	0	0	0	0	0
WINNSBORO	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
LIVESTOCK	714	714	714	714	714	714
IRRIGATION	0	0	0	0	0	0
<b>FRANKLIN COUNTY - SABINE BASIN</b>						
IRRIGATION	0	0	0	0	0	0
<b>FRANKLIN COUNTY - SULPHUR BASIN</b>						
CYPRESS SPRINGS SUD	0	0	0	0	0	0
MOUNT VERNON	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MINING	0	0	0	0	0	0
LIVESTOCK	1,090	1,090	1,090	1,090	1,090	1,090
IRRIGATION	0	0	0	0	0	0
<b>GREGG COUNTY - CYPRESS BASIN</b>						
GLENWOOD WSC	0	0	0	0	0	0
TRYON ROAD SUD	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MINING	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
<b>GREGG COUNTY - SABINE BASIN</b>						
CLARKSVILLE CITY	0	0	0	0	0	0
CROSS ROADS SUD*	0	0	0	0	0	0
ELDERVILLE WSC*	0	0	0	0	0	0
GLADEWATER	0	0	0	0	0	0
KILGORE*	0	0	0	0	0	0
LIBERTY CITY WSC	0	0	0	0	0	0

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### Region D Water User Group (WUG) Second-Tier Identified Water Needs

	WUG SECOND-TIER NEEDS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
<b>GREGG COUNTY - SABINE BASIN</b>						
LONGVIEW	0	0	0	0	0	0
STARRVILLE-FRIENDSHIP WSC	0	0	0	0	1	11
TRYON ROAD SUD	0	0	0	0	0	0
WEST GREGG SUD*	0	0	0	0	0	0
WHITE OAK	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	11	19	19	14	10	6
STEAM ELECTRIC POWER	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	0	0	0	0	0	0
<b>HARRISON COUNTY - CYPRESS BASIN</b>						
BLOCKER CROSSROADS WSC	0	0	0	0	0	0
DIANA SUD	0	0	0	0	0	0
GUM SPRINGS WSC	0	0	0	0	0	0
HARLETON WSC	47	56	69	96	131	174
LEIGH WSC	0	0	17	49	86	130
MARSHALL	0	0	0	0	0	0
NORTH HARRISON WSC	0	0	0	0	15	32
PANOLA-BETHANY WSC*	0	3	9	19	25	31
SCOTTSVILLE	10	14	19	27	36	46
TALLEY WSC	0	0	0	0	0	0
TRYON ROAD SUD	0	0	0	0	0	0
WASKOM	96	114	136	173	220	275
WEST HARRISON WSC	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	234	137	58	0	0	0
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	384	384	384	384	384	384
<b>HARRISON COUNTY - SABINE BASIN</b>						
BLOCKER CROSSROADS WSC	0	0	0	0	0	0
GILL WSC*	0	0	0	0	0	0
GUM SPRINGS WSC	0	0	0	0	0	0
HALLSVILLE	0	0	0	0	0	0
LEIGH WSC	0	0	4	11	19	29
LONGVIEW	0	0	0	0	0	0
MARSHALL	0	0	0	0	0	0
PANOLA-BETHANY WSC*	0	46	103	189	248	301
SCOTTSVILLE	21	30	39	55	73	95
TALLEY WSC	0	0	0	0	0	0
WEST HARRISON WSC	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	1,472	1,130	854	586	322	129
STEAM ELECTRIC POWER	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0

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### Region D Water User Group (WUG) Second-Tier Identified Water Needs

	WUG SECOND-TIER NEEDS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
<b>HARRISON COUNTY - SABINE BASIN</b>						
IRRIGATION	148	148	148	148	148	148
<b>HOPKINS COUNTY - CYPRESS BASIN</b>						
CORNERSVILLE WSC	0	0	0	0	0	0
CYPRESS SPRINGS SUD	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MINING	7	8	12	13	15	19
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	0	0	0	0	0	0
<b>HOPKINS COUNTY - SABINE BASIN</b>						
BRASHEAR WSC	0	0	0	0	0	0
CASH SUD*	0	0	2	2	3	10
CORNERSVILLE WSC	0	0	0	0	0	0
CUMBY	13	27	41	54	71	81
JONES WSC	0	0	0	0	0	0
LAKE FORK WSC	0	0	0	0	0	0
MARTIN SPRINGS WSC	0	0	0	0	0	27
MILLER GROVE WSC	7	14	20	25	34	44
SHADY GROVE NO 2 WSC	0	0	0	0	0	0
SHIRLEY WSC	0	0	0	0	0	0
SULPHUR SPRINGS	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MINING	71	89	112	138	166	198
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	0	0	0	0	0	0
<b>HOPKINS COUNTY - SULPHUR BASIN</b>						
BRASHEAR WSC	0	0	0	0	0	0
BRINKER WSC	0	0	0	12	47	83
CUMBY	0	2	3	4	6	7
CYPRESS SPRINGS SUD	0	0	0	0	0	0
GAFFORD CHAPEL WSC	0	0	0	0	0	0
MARTIN SPRINGS WSC	0	0	0	0	0	2
NORTH HOPKINS WSC	0	0	0	0	0	0
SHADY GROVE NO 2 WSC	0	0	0	0	0	0
SULPHUR SPRINGS	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	149	186	236	293	352	422
LIVESTOCK	1,068	1,090	1,140	1,143	1,196	1,219
IRRIGATION	4,627	4,627	4,627	4,627	4,627	4,627
<b>HUNT COUNTY - SABINE BASIN</b>						
ABLES SPRINGS WSC*	0	13	28	53	93	155
B H P WSC*	0	60	103	177	288	445
BLACKLAND WSC*	0	1	1	2	3	3
CADDO BASIN SUD*	4	170	311	555	936	1,488
CADDO MILLS	0	1	36	68	108	254
CASH SUD*	0	365	957	1,270	1,253	563
CELESTE	29	52	86	136	209	316

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### Region D Water User Group (WUG) Second-Tier Identified Water Needs

	WUG SECOND-TIER NEEDS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
<b>HUNT COUNTY - SABINE BASIN</b>						
COMBINED CONSUMERS SUD	0	0	0	0	0	0
GREENVILLE	0	140	1,391	3,059	5,320	8,525
HICKORY CREEK SUD*	32	114	228	393	629	977
JOSEPHINE*	0	8	19	41	53	61
MACBEE SUD*	0	0	0	0	0	0
POETRY WSC*	0	46	82	140	233	357
QUINLAN	0	0	0	0	0	0
ROYSE CITY*	0	7	14	24	37	60
SHADY GROVE WSC	0	0	0	0	0	0
WEST TAWAKONI	0	0	0	0	0	0
COUNTY-OTHER	0	0	142	551	1,571	3,426
MANUFACTURING	0	0	0	0	0	0
MINING	41	35	16	5	0	0
STEAM ELECTRIC POWER	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	151	151	151	151	151	151
<b>HUNT COUNTY - SULPHUR BASIN</b>						
CASH SUD*	0	0	5	8	11	48
COMMERCE	0	0	0	0	0	0
DELTA COUNTY MUD*	0	0	0	0	0	0
HICKORY CREEK SUD*	36	91	172	285	451	692
NORTH HUNT SUD*	72	139	232	363	553	831
TEXAS A&M UNIVERSITY COMMERCE	0	0	0	0	0	0
WOLFE CITY*	0	0	0	52	149	293
COUNTY-OTHER	0	0	16	107	170	283
MANUFACTURING	0	0	0	0	0	0
MINING	30	27	18	13	7	0
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	79	79	79	79	79	79
<b>HUNT COUNTY - TRINITY BASIN</b>						
FROGNOT WSC*	0	0	0	0	0	0
HICKORY CREEK SUD*	17	45	85	142	223	341
WEST LEONARD WSC*	0	0	0	0	0	0
COUNTY-OTHER	0	0	8	45	76	125
MINING	2	2	1	1	0	0
LIVESTOCK	2	2	2	2	1	1
IRRIGATION	0	0	0	0	0	0
<b>LAMAR COUNTY - RED BASIN</b>						
LAMAR COUNTY WSD	0	0	0	0	0	0
PARIS	0	0	0	0	0	0
RENO (Lamar)	0	0	0	0	0	0
COUNTY-OTHER	120	121	124	127	129	131
MANUFACTURING	0	0	0	0	0	0
STEAM ELECTRIC POWER	0	0	0	0	0	0
LIVESTOCK	617	617	617	617	617	617
IRRIGATION	1,140	1,140	1,140	1,140	1,140	1,140

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### Region D Water User Group (WUG) Second-Tier Identified Water Needs

	WUG SECOND-TIER NEEDS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
<b>LAMAR COUNTY - SULPHUR BASIN</b>						
BLOSSOM	0	0	0	0	0	0
LAMAR COUNTY WSD	0	0	0	0	0	0
PARIS	0	0	0	0	0	0
RENO (Lamar)	0	0	0	0	0	0
COUNTY-OTHER	84	83	88	97	105	113
MANUFACTURING	0	0	0	0	0	0
STEAM ELECTRIC POWER	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	328	328	328	328	328	328
<b>MARION COUNTY - CYPRESS BASIN</b>						
DIANA SUD	0	0	0	0	0	0
E M C WSC	0	0	0	0	0	0
HARLETON WSC	15	18	22	31	42	56
JEFFERSON	0	0	0	0	0	0
KELLYVILLE-BEREA WSC	0	0	0	0	0	0
MIMS WSC	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MINING	373	645	590	471	352	265
STEAM ELECTRIC POWER	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	0	0	0	0	0	0
<b>MORRIS COUNTY - CYPRESS BASIN</b>						
BI COUNTY WSC	0	0	0	0	0	0
DAINGERFIELD	0	0	0	0	0	0
HOLLY SPRINGS WSC	26	24	21	20	20	20
HUGHES SPRINGS	0	0	0	0	0	0
LONE STAR	0	0	0	0	0	0
NAPLES	0	0	0	0	0	0
OMAHA	0	0	0	0	0	0
TRI SUD	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
STEAM ELECTRIC POWER	0	0	0	0	0	0
LIVESTOCK	510	510	510	510	510	510
IRRIGATION	0	0	0	0	0	0
<b>MORRIS COUNTY - SULPHUR BASIN</b>						
NAPLES	0	0	0	0	0	0
OMAHA	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
LIVESTOCK	469	469	469	469	469	469
IRRIGATION	0	0	0	0	0	0
<b>RAINS COUNTY - SABINE BASIN</b>						
BRIGHT STAR SALEM SUD	0	0	0	0	0	0
CASH SUD*	0	0	12	16	17	57
EAST TAWAKONI	0	0	0	0	0	0
EMORY	0	0	0	0	0	0
GOLDEN WSC	0	0	0	0	0	0

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### Region D Water User Group (WUG) Second-Tier Identified Water Needs

	WUG SECOND-TIER NEEDS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
<b>RAINS COUNTY - SABINE BASIN</b>						
MILLER GROVE WSC	1	2	3	4	6	8
POINT	0	0	0	0	0	0
SHIRLEY WSC	0	0	0	0	0	0
SOUTH RAINS SUD	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	0	0	0	0	0	0
<b>RED RIVER COUNTY - RED BASIN</b>						
410 WSC	0	0	0	0	0	0
RED RIVER COUNTY WSC	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
LIVESTOCK	184	184	184	184	184	184
IRRIGATION	0	0	0	0	0	0
<b>RED RIVER COUNTY - SULPHUR BASIN</b>						
410 WSC	0	0	0	0	0	0
BOGATA	0	0	0	0	0	0
CLARKSVILLE	237	231	222	221	219	219
RED RIVER COUNTY WSC	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	2,154	2,154	2,154	2,154	2,154	2,154
<b>SMITH COUNTY - SABINE BASIN</b>						
CARROLL WSC*	0	0	0	0	0	0
CRYSTAL SYSTEMS TEXAS*	0	0	0	95	292	525
JACKSON WSC*	0	0	0	0	0	0
LIBERTY CITY WSC	0	0	0	0	0	0
LINDALE RURAL WSC*	0	0	0	0	0	0
LINDALE*	45	226	422	591	842	1,137
OVERTON*	0	0	0	0	0	0
PINE RIDGE WSC	0	0	0	0	0	0
SAND FLAT WSC	0	0	0	0	0	0
SMITH COUNTY MUD 1	0	0	13	178	375	609
SOUTHERN UTILITIES*	0	0	0	0	0	0
STAR MOUNTAIN WSC	20	39	61	87	116	148
STARRVILLE-FRIENDSHIP WSC	0	0	0	0	2	26
TYLER*	0	0	0	0	0	0
WEST GREGG SUD*	0	0	0	0	0	0
WINONA	0	0	0	20	48	81
COUNTY-OTHER*	0	0	0	0	0	0
MANUFACTURING*	0	0	0	0	0	0
MINING*	0	0	0	0	0	0
LIVESTOCK*	0	0	0	0	0	0
IRRIGATION*	0	0	0	0	0	0

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### Region D Water User Group (WUG) Second-Tier Identified Water Needs

	WUG SECOND-TIER NEEDS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
<b>TITUS COUNTY - CYPRESS BASIN</b>						
BI COUNTY WSC	0	0	0	0	0	0
CYPRESS SPRINGS SUD	0	0	0	0	0	0
MOUNT PLEASANT	0	0	0	0	0	0
TRI SUD	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	1,003	880	890	1,149	1,279
MINING	0	0	0	0	0	0
STEAM ELECTRIC POWER	30,066	30,866	31,766	32,566	32,814	33,083
LIVESTOCK	923	923	923	923	928	928
IRRIGATION	0	0	0	0	0	0
<b>TITUS COUNTY - SULPHUR BASIN</b>						
CYPRESS SPRINGS SUD	0	0	0	0	0	0
TRI SUD	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MINING	0	0	0	0	0	0
LIVESTOCK	1,016	1,016	1,016	1,016	1,056	1,077
IRRIGATION	0	0	0	0	0	0
<b>UPSHUR COUNTY - CYPRESS BASIN</b>						
BI COUNTY WSC	0	0	0	0	0	0
DIANA SUD	0	0	0	0	0	0
EAST MOUNTAIN WATER SYSTEM	0	0	0	0	0	0
GILMER	0	0	11	75	142	206
GLENWOOD WSC	0	0	0	0	0	0
ORE CITY	0	0	0	0	0	0
PRITCHETT WSC	0	0	0	0	0	0
SHARON WSC	0	0	0	0	0	0
UNION GROVE WSC	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	63	70	70	70	70	70
MINING	0	0	0	0	0	0
LIVESTOCK	64	64	64	64	64	64
IRRIGATION	0	0	0	0	0	0
<b>UPSHUR COUNTY - SABINE BASIN</b>						
BIG SANDY	0	0	0	0	0	0
EAST MOUNTAIN WATER SYSTEM	0	0	0	0	0	0
FOUKE WSC	0	0	0	0	0	0
GLADEWATER	0	0	0	0	0	0
GLENWOOD WSC	0	0	0	0	0	0
PRITCHETT WSC	0	0	0	0	0	0
UNION GROVE WSC	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MINING	0	0	0	0	0	0
LIVESTOCK	76	76	76	76	76	76
<b>VAN ZANDT COUNTY - NECHES BASIN</b>						
BEN WHEELER WSC*	0	0	0	0	0	0
BETHEL ASH WSC*	0	0	0	0	0	0
EDOM WSC*	11	18	23	32	42	55

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### Region D Water User Group (WUG) Second-Tier Identified Water Needs

	WUG SECOND-TIER NEEDS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
<b>VAN ZANDT COUNTY - NECHES BASIN</b>						
LITTLE HOPE MOORE WSC	0	0	0	1	3	5
R P M WSC*	0	25	58	93	124	152
VAN	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MINING	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	43	61	63	64	66	68
<b>VAN ZANDT COUNTY - SABINE BASIN</b>						
ABLES SPRINGS WSC*	0	0	0	0	0	0
CANTON	0	0	0	0	0	0
COMBINED CONSUMERS SUD	0	0	0	0	0	0
EDGEWOOD	0	0	0	0	0	0
FRUITVALE WSC	0	0	0	0	0	0
GOLDEN WSC	0	0	0	0	0	0
GRAND SALINE	0	0	0	0	0	0
LITTLE HOPE MOORE WSC	0	0	0	2	8	12
MACBEE SUD*	0	0	0	0	0	0
MYRTLE SPRINGS WSC	0	0	0	0	0	0
PINE RIDGE WSC	0	0	0	0	0	0
PRUITT SANDFLAT WSC	0	0	0	0	0	0
SOUTH TAWAKONI WSC	0	0	0	0	0	0
VAN	0	0	0	0	0	0
WILLS POINT	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	192	417	417	417	428	428
MINING	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
<b>VAN ZANDT COUNTY - TRINITY BASIN</b>						
BETHEL ASH WSC*	0	0	0	0	0	0
CANTON	0	0	0	0	0	0
MABANK*	14	18	21	37	65	104
MACBEE SUD*	0	0	0	0	0	0
MYRTLE SPRINGS WSC	0	0	0	0	0	0
WILLS POINT	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	1	1	1	1	1
MINING	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
<b>WOOD COUNTY - CYPRESS BASIN</b>						
CYPRESS SPRINGS SUD	0	0	0	0	0	0
SHARON WSC	0	0	0	0	0	0
WINNSBORO	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MINING	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	0	0	0	0	0	0

\*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

### Region D Water User Group (WUG) Second-Tier Identified Water Needs

	WUG SECOND-TIER NEEDS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
<b>WOOD COUNTY - SABINE BASIN</b>						
ALGONQUIN WATER RESOURCES OF TEXAS*	0	0	0	0	0	0
BRIGHT STAR SALEM SUD	0	0	0	0	0	0
CORNERSVILLE WSC	0	0	0	0	0	0
FOUKE WSC	0	0	0	0	0	0
GOLDEN WSC	0	0	0	0	0	0
HAWKINS	0	0	0	0	0	0
JONES WSC	0	0	0	0	0	0
LAKE FORK WSC	0	0	0	0	0	0
MINEOLA	0	0	0	0	0	0
NEW HOPE SUD	0	0	0	0	0	0
PRITCHETT WSC	0	0	0	0	0	0
QUITMAN	0	0	0	0	0	0
RAMEY WSC	0	0	0	0	0	0
SHARON WSC	0	0	0	0	0	0
SHIRLEY WSC	0	0	0	0	0	0
WINSBORO	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	1,030	1,583	1,583	1,583	1,583	1,583
MINING	0	0	0	0	0	0
LIVESTOCK	1,098	1,098	1,098	1,098	1,098	1,098
IRRIGATION	0	0	0	0	0	0

\*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

### Region D Water User Group (WUG) Second-Tier Identified Water Needs Summary

Second-tier needs are WUG split needs adjusted to include the implementation of recommended demand reduction and direct reuse water management strategies.

WUG CATEGORY	NEEDS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
MUNICIPAL	13,590	15,355	18,705	23,079	28,524	35,252
COUNTY-OTHER	653	561	647	1,139	2,259	4,286
MANUFACTURING	2,703	4,884	4,761	4,771	5,041	5,171
MINING	2,390	2,278	1,916	1,534	1,224	1,039
STEAM ELECTRIC POWER	30,066	30,866	31,766	32,566	32,814	33,083
LIVESTOCK	14,542	14,552	14,540	14,455	14,477	14,491
IRRIGATION	13,188	13,206	13,208	13,209	13,211	13,213

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Appendix C5 – Chapter 5:

## IDENTIFICATION, EVALUATION, AND SELECTION OF WATER MANAGEMENT STRATEGIES BASED ON NEEDS

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## APPENDIX C5

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## Potentially Feasible Water Management Strategies Considered

As required by statute and rules (TWC §16.053(e)(3), and 31 TAC §357.34(c)), the RWPGs shall consider, but not be limited to considering, the following types of WMSs for all identified water needs:

1. Conservation;
2. drought management;
3. reuse;
4. management of existing water supplies;
5. conjunctive use;
6. acquisition of available existing water supplies;
7. development of new water supplies;
8. developing regional water supply facilities or providing regional management of water supply facilities;
9. developing large-scale desalination facilities for seawater or brackish groundwater that serve local or regional brackish groundwater production zones identified and designated under TWC §16.060(b)(5)<sup>1</sup>;
10. developing large-scale desalination facilities for marine seawater that serve local or regional entities;
11. voluntary transfer of water within the region using, but not limited to, contracts, water marketing, regional water banks, sales, leases, options, subordination agreements, and financing agreements;
12. emergency transfer of water under TWC §11.139;
13. interbasin transfers of surface water;
14. system optimization;
15. reallocation of reservoir storage to new uses;
16. enhancements of yields;
17. improvements to water quality;
18. new surface water supply;
19. new groundwater supply;
20. brush control;
21. precipitation enhancement;
22. aquifer storage and recovery;
23. cancellation of water rights; and
24. rainwater harvesting.

As required by rule, the documented process used by the NETRWPG to identify potentially feasible WMS is presented with Chapter 5 of this Plan. The required list of all identified WMSs that were considered potentially feasible, including those listed above, for meeting a need in the region per 31 TAC §357.12(b) is presented below. This tabulation is based on the template provided by TWDB.

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<sup>1</sup> Note that local or regional brackish groundwater production zones are only relevant to brackish groundwater sources, not seawater.

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Every WUG Entity with an Identified Need		WMSs Names to be Considered by Statute <sup>1</sup>												Additional WMSs named to be considered by Rule										
Water User Group Name	Maximum Need 2020-2070 (af/yr)	Conservation (If PF and not recommended, plan will need to document why not.)	Drought Management (If PF and not recommended, plan will need to document why not.)	Reuse	Management of existing supplies	Development of large-scale marine seawater or brackish groundwater (If PF and not recommended, plan will need to document why not.)	Conjunctive Use	Acquisition of available existing supplies	Development of new supplies	Development of regional water supply or regional management of water supply facilities	Voluntary transfer of water (including regional water banks, sales, leases, options, subordination agreements, and financing agreements)	Emergency transfer of water under Section 11.139	System optimization, reallocation of reservoir storage to new uses, contracts, water marketing, enhancement of yield, improvement of water quality	New surface water supply	New groundwater Supply	Brush control; precipitation enhancement	Interbasin transfers of surface water	Aquifer storage recovery (If PF and not recommended, plan will need to document why not.)	Cancellation of water rights	Rainwater harvesting	Other	Other		
B H P WSC	445	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	PF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF			
BRINKER WSC	83	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	PF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
BURNS REDBANK WSC	201	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	PF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
CADDO BASIN SUD	1,503	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	PF	PF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
CADDO MILLS	254	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
CASH SUD	917	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	PF	PF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
CELESTE	316	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	PF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
CENTRAL BOWIE COUNTY WSC	962	nPF	nPF	nPF	PF	nPF	nPF	PF	nPF	PF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
CLARKSVILLE	237	nPF	nPF	nPF	nPF	nPF	PF	PF	PF	PF	PF	nPF	PF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF		
COUNTY-OTHER_CASS_CYPRESS	282	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
COUNTY-OTHER_CASS_SULPHUR	167	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
COUNTY-OTHER_HUNT_SABINE	3,426	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	PF	nPF	PF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF		
COUNTY-OTHER_HUNT_SULPHUR	283	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	PF	nPF	PF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF		
COUNTY-OTHER_HUNT_TRINITY	125	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	PF	nPF	PF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF		
COUNTY-OTHER_LAMAR_RED	131	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
COUNTY-OTHER_LAMAR_SULPHUR	113	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
CRYSTAL SYSTEMS TEXAS	525	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
CUMBY	88	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
DE KALB	298	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
EDOM WSC	55	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
GILMER	206	nPF	nPF	PF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
GREENVILLE	18,266	PF	nPF	PF	PF	nPF	nPF	PF	PF	PF	PF	nPF	PF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF		
HARLETON WSC	230	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
HICKORY CREEK SUD	2,010	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
HOLLY SPRINGS WSC	73	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
HOOKS	281	nPF	nPF	nPF	PF	nPF	nPF	PF	nPF	PF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
IRRIGATION_BOWIE_SULPHUR	4,134	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF		
IRRIGATION_HARRISON_CYPRESS	384	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
IRRIGATION_HARRISON_SABINE	148	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
IRRIGATION_HOPKINS_SULPHUR	4,627	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
IRRIGATION_HUNT_SABINE	151	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	PF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF		
IRRIGATION_HUNT_SULPHUR	79	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	PF	nPF	PF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF		
IRRIGATION_LAMAR_RED	1,140	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
IRRIGATION_LAMAR_SULPHUR	328	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
IRRIGATION_RED RIVER_SULPHUR	2,154	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
IRRIGATION_VAN ZANDT_NECHES	68	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	PF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF		
LEIGH WSC	159	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
LINDALE	1,137	nPF	nPF	PF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
LITTLE HOPE MOORE WSC	17	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
LIVESTOCK_BOWIE_RED	252	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	PF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF		
LIVESTOCK_BOWIE_SULPHUR	417	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	PF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF		
LIVESTOCK_CAMP_CYPRESS	3,962	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
LIVESTOCK_CASS_CYPRESS	865	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
LIVESTOCK_CASS_SULPHUR	953	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		

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Every WUG Entity with an Identified Need		WMSs Names to be Considered by Statute <sup>1</sup>											Additional WMSs named to be considered by Rule											
Water User Group Name	Maximum Need 2020-2070 (af/yr)	Conservation (If PF and not recommended, plan will need to document why not.)	Drought Management (If PF and not recommended, plan will need to document why not.)	Reuse	Management of existing supplies	Development of large-scale marine seawater or brackish groundwater (If PF and not recommended, plan will need to document why not.)	Conjunctive Use	Acquisition of available existing supplies	Development of new supplies	Development of regional water supply or regional management of water supply facilities	Voluntary transfer of water (including regional water banks, sales, leases, options, subordination agreements, and financing agreements)	Emergency transfer of water under Section 11.139	System optimization, reallocation of reservoir storage to new uses, contracts, water marketing, enhancement of yield, improvement of water quality	New surface water supply	New groundwater Supply	Brush control; precipitation enhancement	Interbasin transfers of surface water	Aquifer storage recovery (If PF and not recommended, plan will need to document why not.)	Cancellation of water rights	Rainwater harvesting	Other	Other		
LIVESTOCK_DELTA_SULPHUR	262	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	PF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF			
LIVESTOCK_FRANKLIN_CYPRESS	714	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
LIVESTOCK_FRANKLIN_SULPHUR	1,090	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
LIVESTOCK_HOPKINS_SULPHUR	1,219	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	PF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
LIVESTOCK_HUNT_TRINITY	2	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	PF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
LIVESTOCK_LAMAR_RED	617	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	PF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
LIVESTOCK_MORRIS_CYPRESS	510	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
LIVESTOCK_MORRIS_SULPHUR	469	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
LIVESTOCK_RED RIVER_RED	184	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	PF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
LIVESTOCK_TITUS_CYPRESS	928	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	PF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
LIVESTOCK_TITUS_SULPHUR	1,077	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	PF	PF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
LIVESTOCK_UPSHUR_CYPRESS	64	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
LIVESTOCK_UPSHUR_SABINE	76	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
LIVESTOCK_WOOD_SABINE	1,098	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
MACEDONIA EYLAU MUD 1	601	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
MANUFACTURING_BOWIE_SULPHUR	2,014	PF	nPF	nPF	PF	nPF	nPF	PF	PF	PF	nPF	PF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF		
MANUFACTURING_TITUS_CYPRESS	1,694	PF	nPF	nPF	nPF	nPF	PF	nPF	PF	nPF	nPF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
MANUFACTURING_UPSHUR_CYPRESS	70	PF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
MANUFACTURING_VAN ZANDT_SABINE	503	PF	nPF	nPF	nPF	nPF	nPF	PF	PF	PF	nPF	PF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF		
MANUFACTURING_VAN ZANDT_TRINITY	1	PF	nPF	nPF	nPF	nPF	PF	PF	PF	PF	nPF	PF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF		
MANUFACTURING_WOOD_SABINE	1,583	PF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
MARTIN SPRINGS WSC	29	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
MAUD	241	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
MILLER GROVE WSC	52	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
MINING_GREGG_SABINE	19	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
MINING_HARRISON_CYPRESS	234	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
MINING_HARRISON_SABINE	1,472	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
MINING_HOPKINS_CYPRESS	19	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
MINING_HOPKINS_SABINE	198	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
MINING_HOPKINS_SULPHUR	422	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
MINING_HUNT_SABINE	41	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
MINING_HUNT_SULPHUR	30	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
MINING_HUNT_TRINITY	2	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
MINING_MARION_CYPRESS	645	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
NASH	589	nPF	nPF	nPF	PF	nPF	nPF	PF	nPF	PF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
NEW BOSTON	1,399	nPF	nPF	nPF	PF	nPF	nPF	PF	nPF	PF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
NORTH HARRISON WSC	32	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
NORTH HUNT SUD	846	nPF	nPF	nPF	PF	nPF	PF	PF	nPF	nPF	nPF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
PANOLA-BETHANY WSC	332	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
POETRY WSC	364	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	PF	nPF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
R P M WSC	152	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
REDWATER	616	nPF	nPF	nPF	PF	nPF	nPF	PF	nPF	PF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
RIVERBEND WATER RESOURCES DISTRICT	539	nPF	nPF	nPF	PF	nPF	nPF	PF	nPF	PF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		
SCOTTSVILLE	141	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF		

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Every WUG Entity with an Identified Need		WMSs Names to be Considered by Statute <sup>1</sup>											Additional WMSs named to be considered by Rule										
Water User Group Name	Maximum Need 2020-2070 (af/yr)	Conservation (If PF and not recommended, plan will need to document why not.)	Drought Management (If PF and not recommended, plan will need to document why not.)	Reuse	Management of existing supplies	Development of large-scale marine seawater or brackish groundwater (If PF and not recommended, plan will need to document why not.)	Conjunctive Use	Acquisition of available existing supplies	Development of new supplies	Development of regional water supply or regional management of water supply facilities	Voluntary transfer of water (including regional water banks, sales, leases, options, subordination agreements, and financing agreements)	Emergency transfer of water under Section 11.139	System optimization, reallocation of reservoir storage to new uses, contracts, water marketing, enhancement of yield, improvement of water quality	New surface water supply	New groundwater Supply	Brush control; precipitation enhancement	Interbasin transfers of surface water	Aquifer storage recovery (If PF and not recommended, plan will need to document why not.)	Cancellation of water rights	Rainwater harvesting	Other	Other	
SMITH COUNTY MUD 1	609	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF			
STAR MOUNTAIN WSC	148	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF			
STARRVILLE-FRIENDSHIP WSC	37	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF			
STEAM ELECTRIC POWER_TITUS_CYPRESS	33,083	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	PF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF			
TEXARKANA	8,380	nPF	nPF	nPF	PF	nPF	nPF	PF	nPF	PF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF			
WAKE VILLAGE	932	nPF	nPF	nPF	PF	nPF	nPF	PF	nPF	PF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF	nPF	nPF			
WASKOM	275	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF			
WINONA	81	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF	PF	nPF	nPF	nPF	nPF	nPF			
WOLFE CITY	293	nPF	nPF	nPF	nPF	nPF	nPF	nPF	PF	PF	nPF	nPF	PF	nPF	PF	nPF	nPF	nPF	nPF	nPF			

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Every WUG Entity with an Identified Need		WMSs Names to be Considered by Statute <sup>1</sup>										Additional WMSs named to be considered by Rule										
Water User Group Name	Maximum Need 2020-2070 (af/yr)	Conservation <b>(If PF and not recommended, plan will need to document why not.)</b>	Drought Management <b>(If PF and not recommended, plan will need to document why not.)</b>	Reuse	Management of existing supplies	Development of large-scale marine seawater or brackish groundwater <b>(If PF and not recommended, plan will need to document why not.)</b>	Conjunctive Use	Acquisition of available existing supplies	Development of new supplies	Development of regional water supply or regional management of water supply facilities	Voluntary transfer of water (including regional water banks, sales, leases, options, subordination agreements, and financing agreements)	Emergency transfer of water under Section 11.139	System optimization, reallocation of reservoir storage to new uses, contracts, water marketing, enhancement of yield, improvement of water quality	New surface water supply	New groundwater Supply	Brush control; precipitation enhancement	Interbasin transfers of surface water	Aquifer storage recovery <b>(If PF and not recommended, plan will need to document why not.)</b>	Cancellation of water rights	Rainwater harvesting	Other	Other

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County	Entity	Strategy	Estimated % Loss
BOWIE	RIVERBEND WATER RESOURCES DISTRICT	RIVERBEND WMS	18.6%
BOWIE	RIVERBEND WATER RESOURCES DISTRICT	NEW 2.5 MGD PACKAGE WTP AND TRANSMISSION LINE	18.6%
BOWIE	BURNS REDBANK WSC	RENEW EXISTING CONTRACT	18.6%
BOWIE	CENTRAL BOWIE COUNTY WSC	RENEW EXISTING CONTRACT	18.0%
BOWIE	DE KALB	RENEW EXISTING CONTRACT	18.6%
BOWIE	HOOKS	RENEW EXISTING CONTRACT	18.6%
BOWIE	IRRIGATION BOWIE	DRILL NEW WELLS	18.6%
BOWIE	LIVESTOCK BOWIE	DRILL NEW WELLS	18.6%
BOWIE	LIVESTOCK BOWIE	DRILL NEW WELLS	18.6%
BOWIE	MACEDONIA EYLAU MUD 1	RENEW EXISTING CONTRACT	8.8%
BOWIE	MANUFACTURING BOWIE	ADVANCED WATER CONSERVATION	0.0%
BOWIE	MANUFACTURING BOWIE	RENEW EXISTING CONTRACT	18.6%
BOWIE	MAUD	RENEW EXISTING CONTRACT	18.6%
BOWIE	NASH	RENEW EXISTING CONTRACT	18.6%
BOWIE	NEW BOSTON	RENEW EXISTING CONTRACT	18.6%
BOWIE	REDWATER	RENEW EXISTING CONTRACT	18.6%
BOWIE	TEXARKANA	RENEW EXISTING CONTRACT	18.6%
BOWIE	WAKE VILLAGE	RENEW EXISTING CONTRACT	18.6%
CAMP	LIVESTOCK CAMP	DRILL NEW WELLS	18.6%
CASS	MANUFACTURING CASS	VOLUNTARY REALLOCATION (ATLANTA)	18.6%
CASS	ATLANTA	RENEW EXISTING CONTRACT	18.6%
CASS	COUNTY-OTHER, CASS	DRILL NEW WELLS	18.6%
CASS	COUNTY-OTHER, CASS	DRILL NEW WELLS	18.6%
CASS	MANUFACTURING CASS	VOLUNTARY REALLOCATION (COUNTY-OTHER, CASS)	18.6%
CASS	COUNTY-OTHER, CASS	RENEW EXISTING CONTRACT	18.6%
CASS	HOLLY SPRINGS WSC	INCREASE CONTRACT	18.6%
CASS	LIVESTOCK CASS	DRILL NEW WELLS	18.6%
CASS	LIVESTOCK CASS	DRILL NEW WELLS	18.6%
DELTA	LIVESTOCK DELTA	DRILL NEW WELLS	18.6%
FRANKLIN	LIVESTOCK FRANKLIN	DRILL NEW WELLS	18.6%
FRANKLIN	LIVESTOCK FRANKLIN	DRILL NEW WELLS	18.6%
GREGG	MINING GREGG	DRILL NEW WELLS	18.6%
HARRISON	HARLETON WSC	INCREASE CONTRACT	18.6%
HARRISON	IRRIGATION HARRISON	DRILL NEW WELLS	18.6%
HARRISON	IRRIGATION HARRISON	DRILL NEW WELLS	18.6%
HARRISON	LEIGH WSC	DRILL NEW WELLS	18.6%
HARRISON	MINING HARRISON	DRILL NEW WELLS	18.6%
HARRISON	MINING HARRISON	DRILL NEW WELLS	18.6%
HARRISON	NORTH HARRISON WSC	DRILL NEW WELLS	14.2%
HARRISON	PANOLA-BETHANY WSC	DRILL NEW WELLS	18.6%
HARRISON	SCOTTSVILLE	DRILL NEW WELLS	18.6%
HARRISON	WASKOM	DRILL NEW WELLS	18.6%
HOPKINS	BRINKER WSC	INCREASE CONTRACT	20.5%
HOPKINS	CUMBY	DRILL NEW WELLS	18.6%
HOPKINS	IRRIGATION HOPKINS	DRILL NEW WELLS	18.6%
HOPKINS	IRRIGATION HOPKINS	DRILL NEW WELLS	18.6%
HOPKINS	LIVESTOCK HOPKINS	DRILL NEW WELLS	18.6%
HOPKINS	MARTIN SPRINGS WSC	INCREASE CONTRACT	18.6%
HOPKINS	MILLER GROVE WSC	DRILL NEW WELLS	18.6%
HOPKINS	MINING HOPKINS	DRILL NEW WELLS	18.6%
HUNT	B H P WSC	ADVANCED WATER CONSERVATION	9.1%
HUNT	B H P WSC	INCREASE CONTRACT	9.1%
HUNT	CADDO BASIN SUD	ADVANCED WATER CONSERVATION	11.1%
HUNT	CADDO BASIN SUD	INCREASE CONTRACT	11.1%
HUNT	CADDO MILLS	INCREASE CONTRACT	18.6%
HUNT	CASH SUD	ADVANCED WATER CONSERVATION	16.3%
HUNT	CASH SUD	INCREASE CONTRACT	16.3%
HUNT	CELESTE	DRILL NEW WELLS	18.6%

County	Entity	Strategy	Estimated % Loss
HUNT	CELESTE	TREATED PIPELINE AND NEW CONTRACT	18.6%
HUNT	COUNTY-OTHER, HUNT	INCREASE CONTRACT	18.6%
HUNT	GREENVILLE	VOLUNTARY REALLOCATION (HUNT MANUFACTURING)	18.6%
HUNT	GREENVILLE	ADVANCED WATER CONSERVATION	0.0%
HUNT	GREENVILLE	WTP EXPANSION (15 MGD)	18.6%
HUNT	GREENVILLE	NEW WTP (15 MGD)	18.6%
HUNT	HICKORY CREEK SUD	GREENVILLE TIE-IN PIPELINE	39.5%
HUNT	IRRIGATION HUNT	DRILL NEW WELLS	18.6%
HUNT	LIVESTOCK HUNT	DRILL NEW WELLS	18.6%
HUNT	MINING HUNT	DRILL NEW WELLS	18.6%
HUNT	NORTH HUNT SUD	DRILL NEW WELLS	18.6%
HUNT	POETRY WSC	ADVANCED WATER CONSERVATION	0.0%
HUNT	POETRY WSC	INCREASE CONTRACT	18.6%
HUNT	WOLFE CITY	GREENVILLE TIE-IN PIPELINE	18.6%
LAMAR	COUNTY-OTHER, LAMAR	INCREASE CONTRACT	18.6%
LAMAR	IRRIGATION LAMAR	PAT MAYSE RAW WATER PIPELINE	18.6%
LAMAR	LIVESTOCK LAMAR	LIVESTOCK WATER PIPELINE	18.6%
MARION	MINING MARION	DRILL NEW WELLS	18.6%
MORRIS	LIVESTOCK MORRIS	LIVESTOCK LOCAL SUPPLY	18.6%
MORRIS	LIVESTOCK MORRIS	DRILL NEW WELLS	18.6%
MORRIS	LIVESTOCK MORRIS	DRILL NEW WELLS	18.6%
RED RIVER	CLARKSVILLE	CONTRACT WITH RIVERBEND WRD AND TREATED WATER PIPELINE TO DEKALB	18.6%
RED RIVER	IRRIGATION RED RIVER	DRILL NEW WELLS	18.6%
RED RIVER	LIVESTOCK RED RIVER	DRILL NEW WELLS	18.6%
RED RIVER	LIVESTOCK RED RIVER	DRILL NEW WELLS	18.6%
SMITH	CRYSTAL SYSTEMS TEXAS	DRILL NEW WELLS	18.6%
SMITH	CRYSTAL SYSTEMS TEXAS	DRILL NEW WELLS	18.6%
SMITH	LINDALE	DRILL NEW WELLS	18.6%
SMITH	SMITH COUNTY MUD 1	DRILL NEW WELLS	18.6%
SMITH	STAR MOUNTAIN WSC	DRILL NEW WELLS	39.1%
SMITH	STARRVILLE-FRIENDSHIP WSC	DRILL NEW WELLS	9.6%
SMITH	WINONA	DRILL NEW WELLS	18.6%
TITUS	LIVESTOCK TITUS	DRILL NEW WELLS	18.6%
TITUS	LIVESTOCK TITUS	DRILL NEW WELLS	18.6%
TITUS	MANUFACTURING TITUS	ADVANCED WATER CONSERVATION	0.0%
TITUS	MANUFACTURING TITUS	RENEW AND INCREASE CONTRACT	18.6%
TITUS	STEAM-ELECTRIC POWER GENERATION TITUS	INCREASE CONTRACT	18.6%
UPSHUR	GILMER	DRILL NEW WELLS	18.6%
UPSHUR	LIVESTOCK UPSHUR	DRILL NEW WELLS	18.6%
UPSHUR	LIVESTOCK UPSHUR	DRILL NEW WELLS	18.6%
UPSHUR	MANUFACTURING UPSHUR	DRILL NEW WELLS	18.6%
VAN ZANDT	CANTON	DRILL NEW WELLS	18.6%
VAN ZANDT	CANTON	INDIRECT REUSE	18.6%
VAN ZANDT	EDOM WSC	DRILL NEW WELLS	13.3%
VAN ZANDT	IRRIGATION VAN ZANDT	DRILL NEW WELLS	18.6%
VAN ZANDT	LITTLE HOPE MOORE WSC	DRILL NEW WELLS	18.6%
VAN ZANDT	MANUFACTURING VAN ZANDT	ADVANCED WATER CONSERVATION	0.0%
VAN ZANDT	MANUFACTURING VAN ZANDT	DRILL NEW WELLS	18.6%
VAN ZANDT	MANUFACTURING VAN ZANDT	INCREASE CONTRACT	18.6%
VAN ZANDT	MANUFACTURING VAN ZANDT	INCREASE CONTRACT	18.6%
VAN ZANDT	R P M WSC	DRILL NEW WELLS	19.6%
WOOD	LIVESTOCK WOOD	LIVESTOCK LOCAL SUPPLY	18.6%
WOOD	LIVESTOCK WOOD	DRILL NEW WELLS	18.6%
WOOD	MANUFACTURING WOOD	DRILL NEW WELLS	18.6%

## General Information

### Introduction

Water conservation includes those practices, techniques, and technologies that reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in the use of water, or increase the recycling and reuse of water so that a water supply is made available for future or alternative uses. As the prospect of acquiring new water source supplies is diminishing, Texans are realizing that saving the water we currently have is an important strategy for ensuring sufficient water supply for future generations. Even in the North East Texas Region, which is dotted with surface reservoirs and subsurface aquifers, water conservation is a vital tactic in the effort to protect our water resources.

Having well-managed and adequate water supplies is not only important for current residents of the North East Texas Region, but it also aids residential and commercial growth of the area, and encourages industry to locate in our region. If we are to remain in competition with metropolitan areas for residential and industrial growth, we must protect and preserve our natural resources, one of the most important being our water supplies. With this in mind, NETRWPG supports water conservation as a water management strategy, and has developed this guidance to assist those in the region who are incorporating a water conservation plan into their policies.

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*The holder of an existing permit, certified filing, or certificate of adjudication for the appropriation of surface water in the amount of 1,000 acre-feet a year or more for municipal, industrial, and non-irrigation uses shall develop, submit, and implement a water conservation plan meeting the requirements of Subchapter A of this chapter (relating to Water Conservation Plans). The water conservation plan must be submitted to the executive director not later than May 1, 2005. Thereafter, the next revision of the water conservation plan...must be submitted not later than May 1, 2009, and every five years after that date to coincide with the regional water planning group. Any revised plans must be submitted to the executive director within 90 days of adoption. The revised plans must include implementation reports. The requirement for a water conservation plan under this section must not result in the need for an amendment to an existing permit, certified filing, or certificate of adjudication. [30 TAC Chapter 288, Subchapter C]*

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If you fall into one of the categories listed above, you are required to submit a plan to the TCEQ. Send your plan to the following address: TCEQ, Resource Protection Team, Mail Code 160, P.O. Box 13087, Austin, TX 78711-3087 for regular and certified mail, or 12100 Park 35 Circle, Austin, TX 78753 for express carrier deliveries (U.S. Post Office Express Mail, FedEx, UPS, etc.). If you do not fall into an above category, but are creating a plan for another reason, you are not required to submit your plan to TCEQ.

Each entity required to submit a Water Conservation Plan (WCP) to TCEQ must also submit a copy to TWDB no later than May 1, 2009. In addition, entities that are applying for or receiving financial assistance from the TWDB of more than \$500,000, and/or retail public water suppliers providing water service to 3,300 or more connections must develop, submit and implement a WCP to TWDB. These plans should be sent to TWDB, 1700 North Congress Ave., PO Box 13231, Austin, Texas 78711-3231.

This guidance document was created using several reference materials, including Texas Administrative Code (TAC) Title 30 Chapter 288, TAC Chapter 363, the Texas Water Development Board's (TWDB) 'Water Conservation Plan Guidance Checklist,' and the TWDB and Texas Commission on Environmental Quality (TCEQ) websites. Example wording that you may want to use in your plan will be included throughout in bold italics. Water conservation forms are available in MSWord and PDF formats on the TCEQ website ([www.tceq.state.tx.us](http://www.tceq.state.tx.us)), water conservation page.

***The \_\_\_\_\_ (water system) recognizes that water conservation is a viable strategy to protecting its water supply. This Water Conservation Plan (Plan) has been developed to protect the system's water source and extend its useful life in order to ensure that a sufficient water supply is available for both present and future needs. The water conservation portion of the Plan looks at year-round methods for reducing water use. It will consider methods that should result in a continuous reduction of water use. However, because some of the methods take place primarily in summer months, these impacts may be more noticeable on a seasonal basis. The drought contingency portion of the Plan will look at measures designed to reduce water use on a temporary basis in the event of a period of drought or an emergency situation such as water source contamination. Methods considered here are not necessarily needed on a continual basis, but should be achievable in the short term.***

Include a description of your service area so that users can become familiar with the service area. The following is a very general guideline.

***The \_\_\_\_\_ (water system) is located in \_\_\_\_\_ County, along \_\_\_\_\_ (give a general location using major highways or rivers). It is a rural community comprised of around \_\_\_\_\_ citizens. (Locate nearest bodies of water, important landmasses, etc.). \_\_\_\_\_'s (water system) water supply comes from \_\_\_\_\_ (water rights, contract with..., etc. List contract amounts and lengths). \_\_\_\_\_ (water system) treats its own water, and also owns its own wastewater treatment facility.***

It is also helpful to include in the introduction a detailed description of your water supply and your storage and distribution systems. You can summarize your systems here, but need to complete the TCEQ 'Utility Profile' form, which will provide specific system information. This form can be downloaded in MSWord or PDF from the Conservation Program page of the TCEQ website or by calling 512-239-4691.

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*All water conservation plans for municipal uses by public drinking water suppliers must include ... a utility profile including, but not limited to, information regarding population and customer data, water use data, water supply system data, and wastewater system data. [30 TAC Chapter 288]*

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### **Coordination with the North East Texas Regional Water Planning Group**

The NETRWPG's Regional Water Plan contains population and water use projections for the next 50 years for all water systems within the North East Texas Region. We request that you review the latest version of this plan and use our projections in your plan. If you are unable to use our projections, please document your reasons.



In order to ensure that the water conservation plan is in agreement with the policies of the NETRWPG, we request that you submit a copy of your plan, once approved, to: NETRWPG, c/o Mr. Walt Sears, Northeast Texas Municipal Water District, P.O. Box 955, Hughes Springs, Texas 75656.

***A copy of this plan was submitted to the NETRWPG on \_\_\_\_\_ (date).***

### **Coordination with Wholesale Water Provider**

If you purchase all or a portion of your supply from a wholesaler, then please include this section. If you own your own water rights, or use groundwater, then disregard this section.

In order to create cohesive plans between water users, it is recommended that you review your wholesaler's water conservation plan before you create your own plan. You are not required to imitate the wholesaler's plan, but your plan should not contradict your wholesaler's plan.

***We have reviewed the \_\_\_\_\_ (wholesale provider) water conservation plan and have created our plan to compliment that plan.***

### **Coordination with the Public**

***The \_\_\_\_\_ (water supplier) gave the public an opportunity to provide input into this plan by \_\_\_\_\_ (public notice, public hearing, letter requesting comments, etc.). Public comments included \_\_\_\_\_.***

### **WATER CONSERVATION GOALS**

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*All water conservation plans for municipal uses by public drinking water suppliers must include beginning May 1, 2005, specific, quantified five-year and ten-year targets for water savings to include goals for water loss programs and goals for municipal use, in gallons per capita per day. The goals established by a public water supplier under this subparagraph are not enforceable. –30 TAC Chapter 288*

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***The \_\_\_\_\_ (water system) average daily water use is \_\_\_\_\_ gpcpd according to \_\_\_\_\_ (source). The \_\_\_\_\_ (water system) utilized Regional Water Planning Group projections when setting water savings goals. The system's 5-year goal for municipal use is to reduce daily water use (by/to) \_\_\_\_\_ gpcpd. Our water loss goal is \_\_\_\_\_. The system's 10-year goal is to reduce daily water use (by/to) \_\_\_\_\_ gpcpd, thus achieving the projected \_\_\_\_\_ gpcpd by \_\_\_\_\_ (year) as stated in the Regional Water Plan. Our water loss goal is \_\_\_\_\_.***

Note that there should be a goal for water loss and a goal for municipal water use; water use should be calculated in gpcpd.

### **PLAN FOR MEETING GOALS**

#### **Required Programs**

### **Master Meter**

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*All water conservation plans for municipal uses by public drinking water suppliers must include...metering devices with an accuracy of plus or minus 5.0% in order to measure and account for the amount of water diverted from the source of supply. –30 TAC Chapter 288*

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Discuss the type of master meter you currently have, and any plans for a new meter. If you cannot comply with the requirements, please explain.

### **Universal Metering**

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*All water conservation plans for municipal uses by public drinking water suppliers must include...a program for universal metering of both customer and public uses of water... –30 TAC Chapter 288*

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Discuss your existing and/or proposed universal metering program. If you do not comply with these requirements, please explain.

### **Meter Testing & Repair Program**

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*All water conservation plans for municipal uses by public drinking water suppliers must include...a program for meter testing and repair... –30 TAC Chapter 288*

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Discuss your existing and/or proposed meter testing and repair program. If you cannot comply with these requirements, please explain.

### **Meter Replacement Program**

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*All water conservation plans for municipal uses by public drinking water suppliers must include...a program for periodic meter replacement. –30 TAC Chapter 288*

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Discuss plans for meter replacement. List any replacement schedules you have in place. If you do not have a meter replacement program, please explain.

### **Unaccounted for Water**

---

*All water conservation plans for municipal uses by public drinking water suppliers must include...measures to determine and control unaccounted-for uses of water (for example, periodic visual inspections along distribution lines; annual or monthly audit of the water system to determine illegal connections; abandoned services, etc.). –30 TAC Chapter 288*

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Discuss your existing and/or proposed measures to find and control unaccounted-for water use. This should include discussion of leak detection and repair programs. The TWDB offers free assistance for water loss determination, including on-site water audit assistance and free water loss audit workshops. In addition, TWDB will loan out leak detection and flow meter testing equipment to aid in determining

water loss. You may also find the Water Loss Audit Manual for Texas Utilities helpful in determining water loss. More information can be found on TWDB’s website or by calling the Water Conservation Division.

In addition to the examples above, some systems have water-billing programs that note accounts with higher than normal activity, which could be a water leak. If you have this program, please discuss it here.

### **Public Education and Information Program**

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*All water conservation plans for municipal uses by public drinking water suppliers must include...a program of continuing public education and information regarding water conservation. –30 TAC Chapter 288*

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There are numerous ways to inform and educate the public about water conservation. Some examples include:

- Provide conservation pamphlets, available at City Hall or your water office. The TWDB offers free and low cost pamphlets on its website, [www.twdb.state.tx.us](http://www.twdb.state.tx.us).
- Add water conservation slogans to your monthly water bill, e.g., “Every drop counts – Be water smart!”; “Conserve water – It makes cents!”; “Please use the month of May to check your toilets for leaks.”
- Set up a water conservation booth at local fairs and festivals. Offer conservation oriented handouts.
- Sponsor a school project related to conservation in your local elementary school. TWDB offers the Major Rivers Water Education curriculum for 4th and 5th graders, and the Raising Your Water IQ curriculum for 6th graders. In addition, there is a TWDB kid’s page which promotes conservation with interactive games, coloring pages, and water facts. These can be accessed on TWDB’s website or by calling TWDB.
- Create a running banner on your website with water conservation tips that change periodically.
- Present a water conservation program at local service club meetings and industry group meetings. Free brochures from TWDB could be dispersed.
- Offer field trips of your water treatment facility to local schools, and use the opportunity to talk about conservation.
- Include “Keep Texas Beautiful” affiliate groups in conservation projects.

- Encourage your agricultural extension agency to present xeriscape programs to local high school horticulture classes, garden clubs, and other interested groups.

Discuss your program for public awareness.

### **Non-promotional Water Rates**

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*All water conservation plans for municipal uses by public drinking water suppliers must include...a water rate structure which is not “promotional,” i.e., a rate structure which is cost-based and which does not encourage the excessive use of water. –30 TAC Chapter 288*

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Attach a copy of your water rates to the plan and summarize your rates here. If you need to impose a non-promotional water rate structure, or otherwise update your rates, discuss your plan here.

### **Reservoir Systems Operations Plan**

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*All water conservation plans for municipal uses by public drinking water suppliers must include...a reservoir systems operations plan, if applicable, providing for the coordinated operation of reservoirs owned by the applicant within a common watershed or river basin in order to optimize available water supplies. –30 TAC Chapter 288*

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If this section applies to you, discuss your plan here. If you do not comply, please explain.

### **Additional Programs**

If necessary to meet the 5 and 10-year target goals, you can add any other water conservation strategies to your plan. They should be discussed in detail here, and can include, but are not limited to:

- Conservation-oriented rate structures.
- Requiring structures undergoing substantial modification or addition to install water conserving plumbing fixtures
- Creating a program for the replacement or retrofit of water-conserving plumbing fixtures in existing structures
- Reusing and/or recycling of wastewater and/or graywater
- Creating a program for pressure control and/or reduction in the distribution system and/or for customer connections
- Creating a program and/or ordinance(s) for landscape water management

### **Additional Requirements for Systems Serving over 5,000 Population**

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*Water conservation plans for municipal uses by public drinking water suppliers serving a current population of 5,000 or more and/or a projected population of 5,000 or more within the next ten years subsequent to the effective date of the plan must include the following elements: (A) a program of leak detection, repair, and water loss accounting for the water transmission, delivery, and distribution system in order to control unaccounted-for uses of water; (B) a record management system to record water pumped, water deliveries, water sales, and water losses which allows for the desegregation of water sales and uses into the following user classes: (i) residential; (ii) commercial; (iii) public and institutional; and (iv) industrial; and (C) a requirement in every wholesale water supply contract entered into or renewed after official adoption of the plan (by either ordinance, resolution, or tariff), and including any contract extension, that each successive wholesale customer develop and implement a water conservation plan or water conservation measures using the applicable elements in this chapter. If the customer intends to resell the water, the contract between the initial supplier and customer must provide that the contract for the resale of the water must have water conservation requirements so that each successive customer in the resale of the water will be required to implement water conservation measures in accordance with the provisions of this chapter. –30 TAC Chapter 288*

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If you are selling to a water provider who, in turn, intends to wholesale the water to a retail customer, your water supply contract, when renewed, must state that the subsequent wholesaler is required to have a water conservation plan in place. If this section applies, discuss the proposed contract changes here. If it does not apply, state why.

### **Schedule for Meeting Targets**

In this section, please discuss your estimated timeline for implementing any programs noted in the “Required Program” section. For example, if you are proposing a meter replacement program, please discuss the schedule here.

### **Means of Implementation and Enforcement**

*All water conservation plans for municipal uses by public drinking water suppliers must include...a means of implementation and enforcement which shall be evidenced by: (i) a copy of the ordinance, resolution, or tariff indicating official adoption of the water conservation plan by the water supplier; and (ii) a description of the authority by which the water supplier will implement and enforce the conservation plan. –30 TAC Chapter 288*

**The \_\_\_\_\_ (Mayor, President, etc.), or his/her designee, is hereby authorized to implement and enforce the water conservation plan.**

**The water conservation plan has made this plan official policy by means of a \_\_\_\_\_ (resolution, tariff, ordinance), passed on \_\_\_\_\_ (date). A copy of the \_\_\_\_\_ has been included at the end of the plan.**

### **Revision/Updates**

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*Beginning May 1, 2005, a public water supplier for municipal use shall review and update its water conservation plan, as appropriate, based on an assessment of previous five-year and ten-year targets and any other new or updated information. The public water supplier for municipal use shall review and update the next revision of its water conservation plan not later than May 1, 2009, and every five years after that date to coincide with the regional water planning group. – 30 TAC Chapter 288*

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**The \_\_\_\_\_ (authorized representative) shall be responsible for updating and revising this plan five years after its adoption, or May 1, 2014, whichever is earlier.**

## **PLAN FOR EMERGENCIES (DROUGHT CONTINGENCY)**

A drought contingency plan is required for all public water suppliers, in addition to this Water Conservation Plan. Please see the NETRWPG guidance documents for drought contingency plans in Chapter 7 herein, and use the one that is appropriate for you – either wholesale or retail.

### **1.2 MODEL WATER CONSERVATION PLAN – RETAIL WATER PROVIDERS**

#### **General Information**

##### **Introduction**

Drought is a very real natural disaster that occurs in Texas, even in the verdant bottomlands, green pastures, and piney woods of northeast Texas. As recently as 2011, drought strained water systems in the northeast Texas region. In addition to natural drought, there are also water supply emergencies that occur from time to time in which water supply becomes contaminated. A good example of this is the Methyl Tertiary Butyl Ether (MTBE) spill into Lake Tawakoni in May 2000, which contaminated supply for several Hunt County water systems for multiple days.

In an effort to better respond to drought conditions, the North East Texas Regional Water Planning Group (NETRWPG) has prepared this document, with the idea that if water providers study their water supply system before a drought or emergency occurs, then they will be better prepared to respond. In preparing this document, several references were used, including Chapters 288 and 363 of the Texas Administrative Code, the Texas Commission on Environmental Quality's (TCEQ) 'Handbook for Drought Contingency Planning for Retail Public Water Suppliers,' Texas Water Code §11.1272, and the TCEQ and TWDB websites. All of these resources are available to you if you need further information or clarification. You may also contact the TCEQ at 512-239-4691 with questions or for information. Example wording for your plan will be found throughout in bold italics.

According to the requirements set forth in the amended Chapter 288, Subchapter C of the Texas Administrative Code, retail public water suppliers providing water service to 3,300 or more connections must submit revisions to existing drought contingency plans to the executive director not later than May 1, 2009, and every five years after that date to coincide with the regional water planning group. Any new or revised plans must be submitted to the executive director within 90 days of adoption by the community water system. Any new retail public water suppliers providing water service to 3,300 or

more connections shall prepare and adopt a drought contingency plan within 180 days of commencement of operation, and submit the plan to the executive director within 90 days of adoption. If you are a retail supplier, but serve less than 3,300 connections, you are still required to develop and implement a plan, but you do not need to submit the plan unless specifically requested by TCEQ. If you provide wholesale supply in addition to retail supply, you will also need to develop a wholesale drought contingency plan. Please see the North East Texas Region’s guidance document for wholesale drought contingency plans.

***The \_\_\_\_\_ (water provider) understands that water conservation is a viable strategy for protecting water resources both now and in the future, and that adequate planning for times of drought or emergency is a necessary part of conservation. The purpose of this plan is to prepare for the possibility of a drought or emergency situation where water is in short supply. This plan will help to ensure that \_\_\_\_\_ (water supplier) uses water wisely and efficiently during periods of drought.***

Though not specifically required by rule, it is helpful to the reader if you summarize your water supply and distribution systems in the introduction. This will familiarize users of the Plan with your system, and help them to make sense of the actions that you intend to take. In addition, discussing your water system here will assist those who update the plan in five years, because they will know exactly what the system looked like when the plan was created.

***The \_\_\_\_\_ (water supplier) utilizes groundwater /surface water from \_\_\_\_\_ (source). Supply is secured by a (water right, water supply contract, etc.) through the year \_\_\_\_\_. We currently have \_\_\_\_\_ connections, and our average daily use is \_\_\_\_\_. Our storage and distribution systems consist of \_\_\_\_\_.***

#### **Coordination with the North East Texas Regional Water Planning Group**

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*The drought contingency plan must document coordination with the regional water planning groups for the service area of the retail public water supplier to ensure consistency with the appropriate approved regional water plans. – 30 TAC Chapter 288*

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***A copy of this adopted plan will be submitted to the NETRWPG via its administrator, Mr. Walt Sears, Northeast Texas Municipal Water District, P. O. Box 955, Hughes Springs, Texas 75656.***

#### **Informing the Public/Requesting Input**

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*Preparation of the plan shall include provisions to actively inform the public and to affirmatively provide opportunity for user input. Such acts may include, but are not limited to, having a public meeting at a time and location convenient to the public and providing written notice to the public concerning the proposed plan and meeting. – 30 TAC Chapter 288*

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The \_\_\_\_\_ (water supplier) gave the public an opportunity to provide input into this plan by \_\_\_\_\_ (public notice, public hearing, letter requesting comments, etc.). Public comments included \_\_\_\_\_.

Efforts to inform the public about each stage of the plan, and when stages are implemented or rescinded, will be through \_\_\_\_\_ (newspaper articles, radio announcements, website announcements, etc.).

#### Authorization/Applicability

The \_\_\_\_\_ (mayor, president, city administrator, etc.) is hereby authorized to monitor the weather as well as water supply and demand conditions and to implement the Drought Contingency Plan as appropriate.

The \_\_\_\_\_ (City Council, Board of Directors, etc.) authorizes the Plan by a \_\_\_\_\_ (resolution, ordinance), which has been included in this Plan.

#### Coordination with the Texas Commission on Environmental Quality

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*According to 30 TAC Chapter 288, Subchapter C, "For retail public water suppliers providing water service to 3,300 or more connections, the drought contingency plan must be submitted to the executive director not later than May 1, 2005. Thereafter, the retail public water suppliers providing service to 3,300 or more connections shall submit the next revision of the plan not later than May 1, 2009, and every five years after that date to coincide with the regional water planning group. Any new or revised plans must be submitted to the executive director within 90 days of adoption by the community water system. Any new retail public water suppliers providing water service to 3,300 or more connections shall prepare and adopt a drought contingency plan within 180 days of commencement of operation, and submit the plan to the executive director within 90 days of adoption."*

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***This plan was submitted to the executive director of the Texas Commission on Environmental Quality on \_\_\_\_\_ (date).***

Send your plan to the following address: TCEQ, Resource Protection Team, Mail Code 160, P.O. Box 13087, Austin, TX 78711-3087 for regular and certified mail, or 12100 Park 35 Circle, Austin, TX 78753 for express carrier deliveries (U.S. Post Office Express Mail, FedEx, UPS, etc.).

If you serve less than 3,300 connections, the following rule applies:

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*For all the retail public water suppliers, the drought contingency plan must be prepared and adopted not later than May 1, 2005 and must be available for inspection by the executive director upon request. Thereafter, the retail public water suppliers shall prepare and adopt the next revision of the plan not later than May 1, 2009, and every five years after that date to coincide with the regional water planning group. Any new retail public water supplier providing water service to less than 3,300 connections shall prepare and adopt a drought contingency plan within 180 days of commencement of*

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*operation, and shall make the plan available for inspection by the executive director upon request. – 30 TAC Chapter 288*

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In other words, if you serve less than 3,300 connections, you are still required to prepare and adopt a plan, but you do not have to turn it in unless TCEQ asks for it. Your section would read:

***Submission of this plan to the TCEQ was not required; however, the plan will be made available to TCEQ if requested.***

For questions to the TCEQ, you can check the website at [www.tceq.state.tx.us](http://www.tceq.state.tx.us), or call 512/239-4691.

### **Coordination with Wholesale Water Supplier**

*This section only applies if you purchase supply from a wholesale provider. If you have a contract or an agreement with a water provider, then complete this section. If you have water rights or otherwise own your supply, this section does not apply.*

***This plan has been created with consideration of our water provider, \_\_\_\_\_'s drought contingency plan. We have included \_\_\_\_\_'s (water provider) requirements within our plan and have created this plan to compliment \_\_\_\_\_'s (water provider) plan. \_\_\_\_\_ (water provider) has been provided a copy of this plan.***

### **Plan Definitions**

***For the purposes of this Plan, the following definitions, taken from TCEQ guidance, shall apply:***

***Aesthetic water use: water use for ornamental or decorative purposes such as fountains, reflecting pools, and water gardens.***

***Commercial and institutional water use: water use which is integral to the operations of commercial and non-profit establishments and governmental entities such as retail establishments, hotels and motels, restaurants, and office buildings.***

***Conservation: those practices, techniques, and technologies that reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in the use of water or increase the recycling and reuse of water so that a supply is conserved and made available for future or alternative uses.***

***Customer: any person, company, or organization using water supplied by \_\_\_\_\_ (name of water supplier).***

**Domestic water use:** water use for personal needs or for household or sanitary purposes such as drinking, bathing, heating, cooking, sanitation, or for cleaning a residence, business, industry, or institution.

**Even number address:** street addresses, box numbers, or rural postal route numbers ending in 0, 2, 4, 6, or 8 and locations without addresses.

**Industrial water use:** the use of water in processes designed to convert materials of lower value into forms having greater usability and value.

**Landscape irrigation use:** water used for the irrigation and maintenance of landscaped areas, whether publicly or privately owned, including residential and commercial lawns, gardens, golf courses, parks, rights-of-way and medians.

**Non-essential water use:** water uses that are not essential nor required for the protection of public, health, safety, and welfare, including:

- (a) irrigation of landscape areas, including parks, athletic fields, and golf courses, except otherwise provided under this Plan;**
- (b) use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle;**
- (c) use of water to wash down any sidewalks, walkways, driveways, parking lots, tennis courts, or other hard-surfaced areas;**
- (d) use of water to wash down buildings or structures for purposes other than immediate fire protection;**
- (e) flushing gutters or permitting water to run or accumulate in any gutter or street;**
- (f) use of water to fill, refill, or add to any indoor or outdoor swimming pools or jacuzzi-type pools;**
- (g) use of water in a fountain or pond for aesthetic or scenic purposes except where necessary to support aquatic life;**
- (h) failure to repair a controllable leak(s) within a reasonable period after having been given notice directing the repair of such leak(s); and**
- (i) use of water from hydrants for construction purposes or any other purposes other than fire fighting.**

**Odd numbered address: street addresses, box numbers, or rural postal route numbers ending in 1, 3, 5, 7, or 9.**

## **RESPONSE TO A DROUGHT EVENT**

In this portion of the plan, it will need to be determined whether a water constraint will more likely be caused by a shortage in water supply or by constraints in your storage and distribution system. Associated goals and water management measures should correspond to the type of constraint expected. For example, if insufficient storage is determined to be the most likely cause of water shortage during a drought, then an emergency back-up supply source would not solve the problem; reduced use during peak hours (banning lawn watering, etc.) would more likely solve the problem by giving storage tanks a better opportunity to refill.

The drought contingency plan should be designed for a drought condition at least as severe as the drought of record according to TCEQ rules. Since the drought of record in Texas occurred in the 1950's, few systems will have water use records still available to plan by. Therefore, the NETRWPG suggests using the most recent drought for the State, which occurred in 2011. If your system does not have records for 2011, use the time period in your records when your system was the most strained by dry weather conditions.

During each stage, it will need to be determined what will trigger initiation, what the water use reduction target goal is, what water management strategies will be put into place, and, finally, what will terminate the stage. Keep in mind that a supplier which is also a customer of its wholesale provider must comply with its provider's Drought Contingency Plan (DCP). Do not develop stages or management strategies that are in conflict with your water provider's DCP.

### **Stage 1 – Mild Water Shortage**

***Initiation: The \_\_\_\_\_ (water supplier) will consider that a mild water shortage exists when \_\_\_\_\_ (i.e. water levels in the reservoir reach \_\_\_\_\_; average daily water use reaches \_\_\_\_% of capacity for three consecutive days; water level in elevated storage tank is at or below \_\_\_\_\_ for more than 12 hours, etc.), or when requested by \_\_\_\_\_ (entity's water provider) if applicable.***

***Target Goal: When a mild water shortage exists, the \_\_\_\_\_ (water supplier) will implement water management strategies in an attempt to reduce daily water use to \_\_\_\_\_ (i.e. 2 MGD; \_\_\_\_% of average daily water use, etc.) Please note that this goal must be quantifiable. Goals established in this section are not enforceable.***

***Termination: Stage 1 shall be rescinded when \_\_\_\_\_ (i.e. water levels in the reservoir rise above \_\_\_\_ for 7 consecutive days; average daily water use falls below \_\_\_\_\_)***

\_\_\_% of capacity for three consecutive days; storage facilities return to normal levels for 24 consecutive hours, etc.), **or when Stage I is rescinded by** \_\_\_\_\_ (entity's water provider) if applicable.

**Water Management Strategies: During Stage 1, we will take the following steps to reduce water use:** \_\_\_\_\_.

The following are examples of strategies that are commonly used during this stage. These are not mandatory, only suggestive. When determining strategies, remember the type of constraint you expect on your system and plan accordingly.

- Request voluntary water conservation from all customers
- Reduce operating procedures that use water (i.e. flushing of mains) as appropriate
- Cease providing potable water for dust control, road building and similar construction purposes
- Enhance water supply and demand monitoring, as well as leak detection and repair efforts
- Request that water customers voluntarily limit the irrigation of landscaped areas
- Request that non-essential water uses be eliminated, including:
  1. Wash down of any sidewalks, walkways, driveways, parking lots, or other hard-surfaced areas;
  2. Wash down of buildings or structures for purposes other than immediate fire protection;
  3. Use of water for dust control;
  4. Flushing gutters or permitting water to run or accumulate in any gutter or street; and,
  5. Failure to repair a controllable leak(s) within a reasonable period after having been given notice directing the repair of such leak(s).

**Stage 2 – Moderate Water Shortage**

**Initiation: The** \_\_\_\_\_ **(water supplier) will consider that a moderate water shortage exists when** \_\_\_\_\_ (i.e. water levels in the reservoir reach \_\_\_\_\_; average daily water use reaches \_\_\_% of capacity for three consecutive days; water

level in elevated storage tank is at or below \_\_\_\_ for more than 12 hours, etc.), **or when requested by** \_\_\_\_\_ (entity's water provider) if applicable.

**Target Goal: When a moderate water shortage exists, the** \_\_\_\_\_ **(water supplier) will implement water management strategies in an attempt to reduce daily water use to** \_\_\_\_\_ (i.e. 2 MGD; \_\_\_\_% of average daily water use, etc.) Please note that this goal must be quantifiable. Goals established in this section are not enforceable.

**Termination: Stage 2 shall be rescinded** when \_\_\_\_\_ (i.e. water levels in the reservoir rise above \_\_\_\_ for 7 consecutive days; average daily water use falls below \_\_\_\_% of capacity for three consecutive days; storage facilities return to normal levels for 24 consecutive hours, etc.), **or when Stage 2 is rescinded by** \_\_\_\_\_ (entity's water provider) if applicable. **Upon termination of Stage 2, Stage 1 becomes operative.**

**Water Management Strategies: During Stage 2, we will take the following steps to reduce water use:**\_\_\_\_\_.

The following are examples of strategies that are commonly used during this stage. These are not mandatory, only suggestive. When determining strategies, remember the type of constraint you expect on your system and plan accordingly.

- Modify reservoir operations if applicable
- Cease providing potable water for dust control, road building and similar construction purposes
- Enhance water supply and demand monitoring, as well as leak detection and repair efforts
- Limit use of water from hydrants to fire fighting, related activities, or other activities necessary to maintain public health, safety, and welfare
- Restrict irrigation of landscaped areas, for example, "Irrigation of landscape areas with hose-end sprinklers or automatic irrigation systems shall be prohibited except during the evening hours between 10:00 p.m. and 6:00 a.m. However, irrigation of landscaped areas is permitted at anytime if it is by means of a hand-held hose, a faucet filled bucket or watering can of five (5) gallons or less, or a drip irrigation system." Please consider your individual system when restricting landscape watering. Allow watering when other types of water use are low to prevent strain on your system. Only use even/odd water days if you know it will work for your system – this type of watering plan can sometimes encourage lawn watering that otherwise wouldn't take place.

- Prohibit use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle. Vehicle washing may be done at any time on the immediate premises of a commercial car wash or commercial service station.
- Prohibit use of water to fill, refill, or add to any indoor or outdoor swimming pools, wading pools, or Jacuzzi-type pools.
- Prohibit operation of any ornamental fountain or pond for aesthetic or scenic purposes except where necessary to support aquatic life.
- Prohibit non-essential water uses such as:
  1. Wash down of any sidewalks, walkways, driveways, parking lots, or other hard-surfaced areas;
  2. Wash down of buildings or structures for purposes other than immediate fire protection;
  3. Use of water for dust control;
  4. Flushing gutters or permitting water to run or accumulate in any gutter or street;
  5. Failure to repair a controllable leak(s) within a reasonable period after having been given notice directing the repair of such leak(s).

**Stage 3 – Severe Water Shortage**

**Initiation:** The \_\_\_\_\_ (water supplier) will consider that a severe water shortage exists when \_\_\_\_\_ (i.e. water levels in the reservoir reach \_\_\_\_; average daily water use reaches \_\_\_\_% of capacity for three consecutive days; water level in elevated storage tank is at or below \_\_\_\_ for more than 12 hours, etc.), **or when requested by** \_\_\_\_\_ (entity’s water provider) if applicable.

**Target Goal:** When a severe water shortage exists, the \_\_\_\_\_ (water supplier) will implement water management strategies in an attempt to reduce daily water use to \_\_\_\_\_ (i.e. 2 MGD; \_\_\_\_% of average daily water use, etc.) Please note that this goal must be quantifiable. Goals established in this section are not enforceable.

**Termination:** Stage 3 shall be rescinded when \_\_\_\_\_ (i.e. water levels in the reservoir rise above \_\_\_\_ for 7 consecutive days; average daily water use falls below \_\_\_\_% of capacity for three consecutive days; storage facilities return to normal levels for 24 consecutive hours, etc.), **or when Stage 3 is rescinded by**

\_\_\_\_\_ (entity's water provider) if applicable. **Upon termination of Stage 3, Stage 2 becomes operative.**

**Water Management Strategies: During Stage 3, we will take the following steps to reduce water use:**\_\_\_\_\_.

The following are examples of strategies that are commonly used during this stage. These are not mandatory, only suggestive. When determining strategies, remember the type of constraint you expect on your system and plan accordingly.

- All of the strategies in Stage 2 are appropriate in Stage 3, except that landscape watering may need to be prohibited
- Implement water rate surcharges (i.e. a set charge for any use above average monthly use)
- Implement price adjustments (i.e. increase the price per 1,000 gallons of water used above the average monthly use)
- Utilize alternate or emergency water sources

#### **Stage 4 – Emergency Water Shortage**

This stage could apply in the instance of a major water line break, a contamination of the water supply source, or other urgent water system conditions. Most likely, this stage would be initiated by decision of the authorized plan implementer (Mayor, President, Manager, etc.)

**Initiation: The \_\_\_\_\_ (water supplier) will consider that an emergency water shortage exists when \_\_\_\_\_** (i.e. the water main at the water treatment plant bursts or is otherwise significantly damaged; the reservoir is contaminated by oil spill; etc.), **or when requested by \_\_\_\_\_** (entity's water provider) if applicable.

**Target Goal: When an emergency water shortage exists, the \_\_\_\_\_ (water supplier) will implement water management strategies in an attempt to reduce daily water use to \_\_\_\_\_** (i.e. 2 MGD; \_\_\_% of average daily water use, etc.) Please note that this goal must be quantifiable. Goals established in this section are not enforceable.

**Termination: Stage 4 shall be rescinded when \_\_\_\_\_** (i.e. the main at the water treatment plant is restored and storage tanks have been allowed to refill; analysis of the source water indicates that supply is safe to use; etc.), **or when Stage 4 is rescinded by \_\_\_\_\_** (entity's water provider) if applicable.

**Water Management Strategies: During Stage 4, we will take the following steps to reduce water use:**\_\_\_\_\_.

The following are examples of strategies that are commonly used during this stage. These are not mandatory, only suggestive. When determining strategies, remember the type of constraint you expect on your system and plan accordingly.

- Utilize alternative or emergency water supplies (i.e. tying into a neighboring water system, etc. (This may require approval by the TCEQ Executive Director)
- Modify reservoir operations
- All strategies that are used in Stage 3 could be applicable in Stage 4

## PLAN EXECUTION

### Public Involvement

This section should discuss the ways in which the supplier will inform its customers about the initiation and termination of drought stages, as well as management strategies that customers are expected to follow. Public involvement can be in the form of special public hearings, articles and notices in the local newspaper, radio announcements, announcements on local television stations, notices in billing statements, etc.

***The \_\_\_\_\_ (water provider) will keep its customers apprised of initiation of the drought contingency plan, and changes in stages, by means of \_\_\_\_\_.***

### Enforcement

***The \_\_\_\_\_ (Mayor, City Manager, President, etc.), or his/her designee, is responsible for monitoring weather conditions and water supply and determining when to initiate and terminate the stages of the DCP.***

***The \_\_\_\_\_ (governing body) has adopted this plan through \_\_\_\_\_ (ordinance, resolution), and has made it an official \_\_\_\_\_ (city, Corporation, etc.) policy.***

***The \_\_\_\_\_ (ordinance, resolution, etc.) is attached hereto as Figure \_\_\_\_.***

### Provision for responding to wholesale provider restrictions

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*Any water supplier that receives all or a portion of its water supply from another water supplier shall consult with that supplier and shall include in the drought contingency plan appropriate provisions for responding to reductions in that water supply. – 30 TAC Chapter 288*

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If you have a wholesale provider, then add this section. If you own your own supply, please skip this section.



***As stated in each water shortage stage, we intend to comply with all requirements of our wholesale provider's drought contingency plan. This plan is as stringent as our provider's plan, and in some cases may be more so.***

#### **Notification of TCEQ on mandatory provisions**

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*A wholesale or retail water supplier shall notify the executive director within five business days of the implementation of any mandatory provisions of the drought contingency plan. – 30 TAC Chapter 288*

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***The Executive Director at TCEQ shall be notified with 5 business days if any mandatory provisions of this plan are implemented. The Executive Director can be reached at 512-239-3900.***

#### **Variance procedures**

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*The drought contingency plan must include procedures for granting variances to the plan. – 30 TAC Chapter 288*

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***The \_\_\_\_\_ (authorized representative) may, in writing, grant temporary variance for existing water uses otherwise prohibited under this Plan if it is determined that failure to grant such variance would cause an emergency condition adversely affecting the health, sanitation, or fire protection for the public or the customer requesting such variance and if one or more of the following conditions are met:***

- a) Compliance with this Plan cannot be technically accomplished during the duration of the water supply shortage or other condition for which the Plan is in effect.***
- b) Alternative methods can be implemented which will achieve the same level of reduction in water use.***

***Customers requesting an exemption from the provisions of this Plan shall file a petition for variance with the \_\_\_\_\_ (water supplier) within 5 days after the Plan or a particular drought response stage has been invoked. All petitions for variances shall be reviewed by the \_\_\_\_\_ (authorized representative), and shall include the following:***

- a) Name and address of the petitioner(s).***
- b) Purpose of water use.***
- c) Specific provision(s) of the Plan from which the petitioner is requesting relief.***
- d) Detailed statement as to how the specific provision of the Plan adversely affects the petitioner or what damage or harm will occur to the petitioner or others if petitioner complies with this Ordinance.***

- e) Description of the relief requested.**
- f) Period of time for which the variance is sought.**
- g) Alternative water use restrictions or other measures the petitioner is taking or proposes to take to meet the intent of this Plan and the compliance date.**
- h) Other pertinent information.**

**Variations granted by the \_\_\_\_\_ (water supplier) shall be subject to the following conditions, unless waived or modified:**

- a) Variations granted shall include a timetable for compliance.**
- b) Variations granted shall expire when the Plan is no longer in effect, unless the petitioner has failed to meet specified requirements.**

**No variance shall be retroactive or otherwise justify any violation of this Plan occurring prior to the issuance of the variance.**

#### **5-year updates**

*The retail public water supplier shall review and update, as appropriate, the drought contingency plan, at least every five years, based on new or updated information, such as the adoption or revision of the regional water plan. – 30 TAC Chapter 288*

**This plan shall be reevaluated and updated every five years based on the most recent information; especially the latest adopted NETRWPG Regional Water Plan.**

County	Entity	Projected Deficit (-) / Recommendation (ac-ft/yr) by Decade						Strategy	Contingency	Seller (if applicable)	Supply Source				Reliability of Source	Total Capital Cost (\$)	Total Annual Cost (\$)
		2020	2030	2040	2050	2060	2070				Ground-water	Surface Water	County	Basin			
BOWIE	RIVERBEND WATER RESOURCES DISTRICT	-523	-536	-539	-537	-537	-537	RIVERBEND WMS			WRIGHT PATMAN LAKE /RESERVOIR	RESERVOIR	SULPHUR	HIGH	\$350,917,000	\$ 38,593,000	
		13,810	73,099	80,081	88,793	97,520	115,820										
BOWIE	RIVERBEND WATER RESOURCES DISTRICT	0	1,370	1,423	1,496	1,493	1,493	NEW 2.5 MGD PACKAGE WTP AND TRANSMISSION LINE	RIVERBEND WMS		WRIGHT PATMAN LAKE /RESERVOIR	RESERVOIR	SULPHUR	HIGH	\$ 22,807,000	\$ 2,711,000	
BOWIE	BURNS REDBANK WSC	-201	-199	-196	-194	-193	-193	RENEW EXISTING CONTRACT	RIVERBEND WMS	CITY OF HOOKS	WRIGHT PATMAN LAKE /RESERVOIR	RESERVOIR	SULPHUR	HIGH	\$ -	\$ 97,000	
		201	199	196	194	193	193										
BOWIE	CENTRAL BOWIE COUNTY WSC	-619	-639	-708	-784	-869	-962	RENEW EXISTING CONTRACT	RIVERBEND WMS	RIVERBEND WATER RESOURCES DISTRICT	WRIGHT PATMAN LAKE /RESERVOIR	RESERVOIR	SULPHUR	HIGH	\$ -	\$ 464,000	
		619	639	708	784	869	962										
BOWIE	DE KALB	-295	-292	-289	-291	-294	-298	RENEW EXISTING CONTRACT	RIVERBEND WMS	RIVERBEND WATER RESOURCES DISTRICT	WRIGHT PATMAN LAKE /RESERVOIR	RESERVOIR	SULPHUR	HIGH	\$ -	\$ 72,000	
		295	292	289	291	294	298										
BOWIE	HOOKS	-281	-278	-276	-271	-269	-269	RENEW EXISTING CONTRACT	RIVERBEND WMS	RIVERBEND WATER RESOURCES DISTRICT	WRIGHT PATMAN LAKE /RESERVOIR	RESERVOIR	SULPHUR	HIGH	\$ -	\$ 68,000	
		281	278	276	271	269	269										
BOWIE	IRRIGATION BOWIE	-4,134	-4,134	-4,134	-4,134	-4,134	-4,134	DRILL NEW WELLS		CARRIZO-WILCOX AQUIFER		BOWIE	SULPHUR	HIGH	\$ 10,597,000	\$ 3,218,000	
		4,134	4,134	4,134	4,134	4,134	4,134										
BOWIE	LIVESTOCK BOWIE	-252	-252	-229	-196	-168	-156	DRILL NEW WELLS		NACATOCCH AQUIFER		BOWIE	RED	HIGH	\$ 1,630,000	\$ 268,000	
		252	252	229	196	168	156										
BOWIE	LIVESTOCK BOWIE	-417	-417	-378	-325	-278	-260	DRILL NEW WELLS		CARRIZO-WILCOX AQUIFER		BOWIE	SULPHUR	HIGH	\$ 2,423,000	\$ 424,000	
		417	417	378	325	278	260										
BOWIE	MACEDONIA EYLAU MUD 1	-588	-598	-601	-601	-601	-601	RENEW EXISTING CONTRACT	RIVERBEND WMS	RIVERBEND WATER RESOURCES DISTRICT	WRIGHT PATMAN LAKE /RESERVOIR	RESERVOIR	SULPHUR	HIGH	\$ -	\$ 290,000	
		588	598	601	601	601	601										
BOWIE	MANUFACTURING BOWIE	-1,579	-2,014	-2,014	-2,014	-2,014	-2,014	ADVANCED WATER CONSERVATION				BOWIE	SULPHUR	HIGH	\$ -	\$ -	
		161	204	204	204	204	204										
BOWIE	MANUFACTURING BOWIE	789	59,724	66,305	74,531	82,757	100,609	RENEW EXISTING CONTRACT	RIVERBEND WMS	RIVERBEND WATER RESOURCES DISTRICT	WRIGHT PATMAN LAKE /RESERVOIR	RESERVOIR	SULPHUR	HIGH	\$ -	\$ 48,517,000	
		-211	-226	-241	-238	-237	-237										
BOWIE	MAUD	211	226	241	238	237	237	RENEW EXISTING CONTRACT	RIVERBEND WMS	RIVERBEND WATER RESOURCES DISTRICT	WRIGHT PATMAN LAKE /RESERVOIR	RESERVOIR	SULPHUR	HIGH	\$ -	\$ 58,000	
		-392	-458	-523	-589	-589	-589										
BOWIE	NASH	392	458	523	589	589	589	RENEW EXISTING CONTRACT	RIVERBEND WMS	RIVERBEND WATER RESOURCES DISTRICT	WRIGHT PATMAN LAKE /RESERVOIR	RESERVOIR	SULPHUR	HIGH	\$ -	\$ 143,000	
		-1,390	-1,399	-1,385	-1,381	-1,379	-1,379										
BOWIE	NEW BOSTON	1,390	1,399	1,385	1,381	1,379	1,379	RENEW EXISTING CONTRACT	RIVERBEND WMS	RIVERBEND WATER RESOURCES DISTRICT	WRIGHT PATMAN LAKE /RESERVOIR	RESERVOIR	SULPHUR	HIGH	\$ -	\$ 340,000	
		-440	-487	-535	-588	-616	-616										
BOWIE	REDWATER	440	487	535	588	616	616	RENEW EXISTING CONTRACT	RIVERBEND WMS	RIVERBEND WATER RESOURCES DISTRICT	WRIGHT PATMAN LAKE /RESERVOIR	RESERVOIR	SULPHUR	HIGH	\$ -	\$ 149,000	
		-7,145	-7,282	-7,459	-7,706	-8,028	-8,380										
BOWIE	TEXARKANA	7,145	7,282	7,459	7,706	8,028	8,380	RENEW EXISTING CONTRACT	RIVERBEND WMS	RIVERBEND WATER RESOURCES DISTRICT	WRIGHT PATMAN LAKE /RESERVOIR	RESERVOIR	SULPHUR	HIGH	\$ -	\$ 2,034,000	
		-699	-750	-802	-861	-932	-931										
BOWIE	WAKE VILLAGE	699	750	802	861	932	931	RENEW EXISTING CONTRACT	RIVERBEND WMS	RIVERBEND WATER RESOURCES DISTRICT	WRIGHT PATMAN LAKE /RESERVOIR	RESERVOIR	SULPHUR	HIGH	\$ -	\$ 226,000	
		-3,962	-3,962	-3,962	-3,962	-3,962	-3,962										
CAMP	LIVESTOCK CAMP	3,962	3,962	3,962	3,962	3,962	3,962	DRILL NEW WELLS		QUEEN CITY AQUIFER		CAMP	CYPRESS	HIGH	\$ 4,401,500	\$ 493,000	
		0	0	0	0	0	0										
CASS	MANUFACTURING CASS	0	1,075	1,135	1,209	1,206	1,206	VOLUNTARY REALLOCATION (ATLANTA)	NEW 2.5 MGD PACKAGE WTP AND TRANSMISSION LINE, RIVERBEND WMS	RIVERBEND WATER RESOURCES DISTRICT	WRIGHT PATMAN LAKE /RESERVOIR	RESERVOIR	SULPHUR	HIGH	\$ -	\$ -	
CASS	ATLANTA	0	1,075	1,135	1,209	1,206	1,206	RENEW EXISTING CONTRACT	NEW 2.5 MGD PACKAGE WTP AND TRANSMISSION LINE, RIVERBEND WMS, AND VOLUNTARY REALLOCATION (CASS MANUFACTURING)	RIVERBEND WATER RESOURCES DISTRICT	WRIGHT PATMAN LAKE /RESERVOIR	RESERVOIR	SULPHUR	HIGH	\$ -	\$ 293,000	
CASS	COUNTY-OTHER, CASS	-449	-357	-269	-212	-208	-208	DRILL NEW WELLS		CARRIZO-WILCOX AQUIFER		CASS	CYPRESS	HIGH	\$ 1,973,000	\$ 166,000	
		323	323	323	323	323	323										
CASS	COUNTY-OTHER, CASS	216	216	216	216	216	216	DRILL NEW WELLS		CARRIZO-WILCOX AQUIFER		CASS	SULPHUR	HIGH	\$ 1,324,000	\$ 114,000	
CASS	MANUFACTURING CASS	0	44	44	44	44	44	VOLUNTARY REALLOCATION (COUNTY-OTHER, CASS)	RIVERBEND WMS	RIVERBEND WATER RESOURCES DISTRICT	WRIGHT PATMAN LAKE /RESERVOIR	RESERVOIR	SULPHUR	HIGH	\$ -	\$ -	

County	Entity	Projected Deficit (-) / Recommendation (ac-ft/yr) by Decade						Strategy	Contingency	Seller (if applicable)	Supply Source				Reliability of Source	Total Capital Cost (\$)	Total Annual Cost (\$)
		2020	2030	2040	2050	2060	2070				Ground-water	Surface Water	County	Basin			
CASS	COUNTY-OTHER, CASS	0	44	44	44	44	44	RENEW EXISTING CONTRACT	NEW 2.5 MGD PACKAGE WTP AND TRANSMISSION LINE, RIVERBEND WMS, AND VOLUNTARY REALLOCATION (CASS MANUFACTURING)	RIVERBEND WATER RESOURCES DISTRICT	WRIGHT PATMAN LAKE /RESERVOIR	RESERVOIR	SULPHUR	HIGH	\$ -	\$ 21,000	
CASS	HOLLY SPRINGS WSC	-73 80	-67 80	-60 80	-58 80	-58 80	-58 80	INCREASE CONTRACT		NETMWD	LAKE O' THE PINES /RESERVOIR	RESERVOIR	CYPRESS	HIGH	\$ -	\$ 130,000	
CASS	LIVESTOCK CASS	-1,818 968	-1,818 968	-1,818 968	-1,816 968	-1,816 968	-1,816 968	DRILL NEW WELLS		QUEEN CITY AQUIFER		CASS	CYPRESS	HIGH	\$ 1,037,000	\$ 107,000	
CASS	LIVESTOCK CASS	966	966	966	966	966	966	DRILL NEW WELLS		QUEEN CITY AQUIFER		CASS	SULPHUR	HIGH	\$ 1,037,000	\$ 107,000	
DELTA	LIVESTOCK DELTA	-262 262	-250 250	-250 250	-250 250	-250 250	-250 250	DRILL NEW WELLS		NACATOC AQUIFER		DELTA	SULPHUR	HIGH	\$ 1,929,000	\$ 297,000	
FRANKLIN	LIVESTOCK FRANKLIN	-1,804 805	-1,804 805	-1,804 805	-1,804 805	-1,804 805	-1,804 805	DRILL NEW WELLS		CARRIZO-WILCOX AQUIFER		FRANKLIN	CYPRESS	HIGH	\$ 865,000	\$ 89,000	
FRANKLIN	LIVESTOCK FRANKLIN	1,129	1,129	1,129	1,129	1,129	1,129	DRILL NEW WELLS		CARRIZO-WILCOX AQUIFER		FRANKLIN	SULPHUR	HIGH	\$ 1,211,000	\$ 125,000	
GREGG	MINING GREGG	-11 27	-19 27	-19 27	-14 27	-10 27	-6 27	DRILL NEW WELLS		CARRIZO-WILCOX AQUIFER		GREGG	SABINE	HIGH	\$ 117,000	\$ 10,000	
HARRISON, MARION	HARLETON WSC	-62 62	-74 74	-91 91	-127 127	-173 173	-230 230	INCREASE CONTRACT		NETMWD	LAKE O' THE PINES /RESERVOIR	RESERVOIR	CYPRESS	HIGH	\$ -	\$ 4,928,000	
HARRISON	IRRIGATION HARRISON	-532 484	-532 484	-532 484	-532 484	-532 484	-532 484	DRILL NEW WELLS		QUEEN CITY AQUIFER		HARRISON	CYPRESS	HIGH	\$ 577,000	\$ 58,000	
HARRISON	IRRIGATION HARRISON	161	161	161	161	161	161	DRILL NEW WELLS		QUEEN CITY AQUIFER		HARRISON	SABINE	HIGH	\$ 193,000	\$ 19,000	
HARRISON	LEIGH WSC	0 0	0 0	-21 54	-60 108	-105 108	-159 162	DRILL NEW WELLS		QUEEN CITY AQUIFER		HARRISON	CYPRESS	HIGH	\$ 1,973,000	\$ 159,000	
HARRISON	MINING HARRISON	-1,706 332	-1,267 332	-912 332	-586 332	-322 332	-129 332	DRILL NEW WELLS		QUEEN CITY AQUIFER		HARRISON	CYPRESS	HIGH	\$ 384,000	\$ 39,000	
HARRISON	MINING HARRISON	1,452	1,452	1,452	1,452	1,452	1,452	DRILL NEW WELLS		QUEEN CITY AQUIFER		HARRISON	SABINE	HIGH	\$ 1,555,000	\$ 183,000	
HARRISON	NORTH HARRISON WSC	0 0	0 0	0 0	0 54	-15 54	-32 54	DRILL NEW WELLS		QUEEN CITY AQUIFER		HARRISON	CYPRESS	HIGH	\$ 612,000	\$ 50,000	
HARRISON	PANOLA-BETHANY WSC	11 0	-31 54	-98 108	-200 216	-269 270	-332 324	DRILL NEW WELLS		QUEEN CITY AQUIFER		HARRISON	SABINE	HIGH	\$ 2,399,000	\$ 195,000	
HARRISON	SCOTTSVILLE	-31 54	-44 54	-58 108	-82 108	-109 162	-141 162	DRILL NEW WELLS		QUEEN CITY AQUIFER		HARRISON	CYPRESS	HIGH	\$ 1,429,000	\$ 116,000	
HARRISON	WASKOM	-96 108	-114 162	-136 162	-173 216	-220 270	-275 324	DRILL NEW WELLS		QUEEN CITY AQUIFER		HARRISON	CYPRESS	HIGH	\$ 2,399,000	\$ 195,000	
HOPKINS	BRINKER WSC	0 0	0 0	0 0	-12 12	-47 47	-83 83	INCREASE CONTRACT		SULPHUR SPRINGS	SULPHUR SPRINGS LAKE /RESERVOIR	RESERVOIR	SULPHUR	HIGH	\$ -	\$ 95,000	
HOPKINS	CUMBY	-13 13	-29 29	-44 44	-58 58	-77 77	-88 88	DRILL NEW WELLS		NACATOC AQUIFER		HOPKINS	SABINE	HIGH	\$ 938,000	\$ 142,000	
HOPKINS	IRRIGATION HOPKINS	-4,627 0	-4,627 0	-4,627 111	-4,627 387	-4,627 575	-4,627 931	DRILL NEW WELLS		CARRIZO-WILCOX AQUIFER		HOPKINS	SABINE	HIGH	\$ 2,814,000	\$ 748,000	
HOPKINS	IRRIGATION HOPKINS	4,627	4,627	4,516	4,240	4,052	3,696	DRILL NEW WELLS		CARRIZO-WILCOX AQUIFER		HOPKINS	SULPHUR	HIGH	\$ 10,927,000	\$ 3,511,000	
HOPKINS	LIVESTOCK HOPKINS	-1,068 1,068	-1,090 1,090	-1,140 1,140	-1,143 1,143	-1,196 1,196	-1,219 1,219	DRILL NEW WELLS		CARRIZO-WILCOX AQUIFER		HOPKINS	SULPHUR	HIGH	\$ 6,373,000	\$ 1,198,000	

County	Entity	Projected Deficit (-) / Recommendation (ac-ft/yr) by Decade						Strategy	Contingency	Seller (if applicable)	Supply Source				Reliability of Source	Total Capital Cost (\$)	Total Annual Cost (\$)
		2020	2030	2040	2050	2060	2070				Ground-water	Surface Water	County	Basin			
HOPKINS	MARTIN SPRINGS WSC	0	0	0	0	0	-29	INCREASE CONTRACT		SULPHUR SPRINGS	CHAPMAN /COOPER LAKE / RESERVOIR NON-SYSTEM PORTION	RESERVOIR	SULPHUR	HIGH	\$ -	\$ 34,000	
		0	0	0	0	0	29										
HOPKINS	MILLER GROVE WSC	-8	-16	-23	-29	-40	-52	DRILL NEW WELLS		CARRIZO-WILCOX AQUIFER		HOPKINS	SULPHUR	HIGH	\$ 886,000	\$ 113,000	
		8	16	23	29	40	52										
HOPKINS	MINING HOPKINS	-227	-283	-360	-444	-533	-639	DRILL NEW WELLS		CARRIZO-WILCOX AQUIFER		HOPKINS	SULPHUR	HIGH	\$ 3,376,000	\$ 628,000	
		227	283	360	444	533	639										
HUNT	B H P WSC	0	-72	-125	-209	-333	-505	ADVANCED WATER CONSERVATION						HIGH	\$ -	\$ -	
		0	1	1	1	2	3										
HUNT	B H P WSC	0	71	124	208	331	502	INCREASE CONTRACT	REGION C NTMWD WMS	ROYSE CITY	NTMWD SYSTEM	RESERVOIRS	TRINITY	HIGH	\$ -	\$ 251,000	
HUNT	CADDO BASIN SUD	-7	-220	-406	-722	-1,202	-1,866	ADVANCED WATER CONSERVATION						HIGH	\$ -	\$ -	
		2	4	4	7	12	18										
HUNT	CADDO BASIN SUD	5	216	402	725	1,190	1,848	INCREASE CONTRACT	REGION C NTMWD WMS	NTMWD	NTMWD SYSTEM	RESERVOIRS	TRINITY	HIGH	\$ -	\$ 421,000	
HUNT	CADDO MILLS	0	-1	-36	-68	-108	-254	INCREASE CONTRACT	GREENVILLE WMSPS	GREENVILLE	TAWAKONI, GREENVILLE CITY LAKE, SULPHUR SPRINGS LAKE /RESERVOIR, CHAPMAN /COOPER RESERVOIR	RESERVOIRS	SULPHUR, SABINE	HIGH	\$ -	\$ 224,000	
		0	1	36	68	108	254										
HUNT	CASH SUD	89	-361	-1,009	-1,346	-1,346	-695	ADVANCED WATER CONSERVATION						HIGH	\$ -	\$ -	
		5	8	10	11	14	18										
HUNT	CASH SUD	332	688	1,025	1,353	1,352	1,343	INCREASE CONTRACT	REGION C NTMWD WMS	NTMWD	NTMWD SYSTEM	RESERVOIRS	TRINITY	HIGH	\$ 8,272,000	\$ 2,934,000	
HUNT	CELESTE	-29	-52	-86	-136	-209	-316	DRILL NEW WELLS		WOODBINE AQUIFER		HUNT	TRINITY	HIGH	\$ 1,686,000	\$ 292,000	
		29	52	86	136	209	229										
HUNT	CELESTE	0	0	0	0	0	87	TREATED PIPELINE AND NEW CONTRACT	GREENVILLE WMSPS	GREENVILLE	TAWAKONI LAKE /RESERVOIR, CHAPMAN /COOPER LAKE / RESERVOIR NON-SYSTEM PORTION, AND GREENVILLE LAKE /RESERVOIR	RESERVOIRS	SABINE, SULPHUR	HIGH	\$ 3,342,000	\$ 341,000	
HUNT	COUNTY-OTHER, HUNT	862	449	-166	-703	-1,817	-3,834	INCREASE CONTRACT	GREENVILLE WMSPS	GREENVILLE	TAWAKONI, GREENVILLE CITY LAKE	RESERVOIRS	SABINE, SULPHUR	HIGH	\$ -	\$ 3,385,000	
		0	0	166	703	1,817	3,834										
HUNT	GREENVILLE	-3,239	-4,626	-6,531	-9,183	-12,913	-18,266	VOLUNTARY REALLOCATION (HUNT MANUFACTURING)			TAWAKONI LAKE /RESERVOIR	RESERVOIR	SABINE	HIGH	\$ -	\$ -	
HUNT	GREENVILLE	4,051	4,486	5,140	6,124	7,593	9,741	ADVANCED WATER CONSERVATION						HIGH	\$ -	\$ 681	
HUNT	GREENVILLE	0	9,335	9,335	9,335	9,335	9,335	WTP EXPANSION (15 MGD)	Advanced Conservation		TAWAKONI LAKE /RESERVOIR AND GREENVILLE LAKE /RESERVOIR	RESERVOIRS	SABINE	HIGH	\$ 43,955,000	\$ 5,309,000	
HUNT	GREENVILLE	0	0	0	0	0	9,335	NEW WTP (15 MGD)	Advanced Conservation		TAWAKONI LAKE /RESERVOIR, CHAPMAN /COOPER LAKE / RESERVOIR NON-SYSTEM PORTION, AND GREENVILLE LAKE /RESERVOIR	RESERVOIRS	SABINE, SULPHUR	HIGH	\$ 81,786,000	\$ 9,880,000	
HUNT	IRRIGATION HUNT	-230	-230	-230	-230	-230	-230	DRILL NEW WELLS		NACATOCH AQUIFER		HUNT	SABINE	HIGH	\$ 1,249,000	\$ 226,000	
		230	230	230	230	230	230										
HUNT	LIVESTOCK HUNT	-2	-2	-2	-2	-1	-1	DRILL NEW WELLS		TRINITY AQUIFER		HUNT	SABINE	HIGH	\$ 407,000	\$ 33,000	
		2	2	2	2	2	2										

County	Entity	Projected Deficit (-) / Recommendation (ac-ft/yr) by Decade						Strategy	Contingency	Seller (if applicable)	Supply Source				Reliability of Source	Total Capital Cost (\$)	Total Annual Cost (\$)
		2020	2030	2040	2050	2060	2070				Ground-water	Surface Water	County	Basin			
HUNT	MINING HUNT	-73	-64	-35	-19	-7	0	DRILL NEW WELLS			TRINITY AQUIFER	HUNT	SABINE	HIGH	\$ 766,000	\$ 103,000	
		73	64	35	19	7	0										
HUNT	NORTH HUNT SUD	-89	-165	-266	-405	-603	-888	DRILL NEW WELLS			NACATOC AQUIFER	HUNT	SABINE	HIGH	\$ 10,998,000	\$ 1,458,000	
		89	165	266	405	603	888										
HUNT	POETRY WSC	2	-66	-115	-200	-330	-510	ADVANCED WATER CONSERVATION						HIGH	\$ -	\$ -	
		1	2	1	3	4	7										
HUNT	POETRY WSC	0	64	114	197	326	503	INCREASE CONTRACT	REGION C TERRELL INCREASE CONTRACT & REGION C NTMWD WMS	TERRELL	NTMWD SYSTEM	RESERVOIRS	TRINITY	HIGH	\$ -	\$ 864,000	
HUNT	WOLFE CITY	0	0	0	-54	-157	-308	GREENVILLE TIE-IN PIPELINE	GREENVILLE WMSPS	GREENVILLE	TAWAKONI LAKE /RESERVOIR, CHAPMAN /COOPER LAKE / RESERVOIR NON-SYSTEM PORTION, AND GREENVILLE LAKE /RESERVOIR	HUNT	SABINE, SULPHUR	HIGH	\$ 7,124,000	\$ 846,000	
		0	0	0	54	157	308										
LAMAR	COUNTY-OTHER, LAMAR	-204	-204	-212	-224	-234	-244	INCREASE CONTRACT		LAMAR COUNTY WSD	PAT MAYSE LAKE /RESERVOIR	RESERVOIR	RED	HIGH	\$ -	\$ 398,000	
		204	204	212	224	234	244										
LAMAR	IRRIGATION LAMAR	-1,468	-1,468	-1,468	-1,468	-1,468	-1,468	PAT MAYSE RAW WATER PIPELINE		PARIS	PAT MAYSE LAKE /RESERVOIR	RESERVOIR	RED	HIGH	\$ 12,021,000	\$ 1,317,000	
		1,468	1,468	1,468	1,468	1,468	1,468										
LAMAR	LIVESTOCK LAMAR	-617	-617	-617	-617	-617	-617	LIVESTOCK WATER PIPELINE		LAMAR COUNTY WSD	PAT MAYSE LAKE /RESERVOIR	LAMAR	RED	HIGH	\$ 14,574,000	\$ 2,237,000	
		617	617	617	617	617	617										
MARION	MINING MARION	-373	-645	-590	-471	-352	-265	DRILL NEW WELLS			QUEEN CITY AQUIFER	MARION	CYPRESS	HIGH	\$ 767,000	\$ 78,000	
		432	645	654	654	654	654										
MORRIS	LIVESTOCK MORRIS	-979	-979	-979	-979	-979	-979	LIVESTOCK LOCAL SUPPLY			LOCAL SUPPLY	MORRIS	SULPHUR	HIGH	\$ -	\$ -	
		60	60	60	60	60	60										
MORRIS	LIVESTOCK MORRIS	483	483	483	483	483	483	DRILL NEW WELLS			QUEEN CITY AQUIFER	MORRIS	SULPHUR	HIGH	\$ 539,000	\$ 47,000	
MORRIS	LIVESTOCK MORRIS	644	644	644	644	644	644	DRILL NEW WELLS			QUEEN CITY AQUIFER	MORRIS	CYPRESS	HIGH	\$ 767,000	\$ 78,000	
RED RIVER	CLARKSVILLE	-237	-231	-222	-221	-219	-219	DRILL NEW WELLS AND RO TREATMENT			BLOSSOM AQUIFER	RED RIVER	SULPHUR	HIGH	\$ 10,537,000	\$ 1,673,000	
		388	388	388	388	388	388										
RED RIVER	IRRIGATION RED RIVER	-2,154	-2,154	-2,154	-2,154	-2,154	-2,154	DRILL NEW WELLS			NACATOC AQUIFER	RED RIVER	SULPHUR	HIGH	\$ 6,551,000	\$ 1,709,000	
		2,057	2,057	2,057	2,057	2,057	2,057										
RED RIVER	LIVESTOCK RED RIVER	-184	-184	-184	-184	-184	-184	DRILL NEW WELLS			BLOSSOM AQUIFER	RED RIVER	RED	HIGH	\$ 425,000	\$ 40,000	
		10	11	10	11	10	11										
RED RIVER	LIVESTOCK RED RIVER	174	173	174	173	174	173	DRILL NEW WELLS			TRINITY AQUIFER	RED RIVER	SULPHUR	HIGH	\$ 1,436,000	\$ 210,000	
SMITH	CRYSTAL SYSTEMS TEXAS	0	0	-78	-192	-456	-816	DRILL NEW WELLS			CARRIZO-WILCOX AQUIFER	SMITH	SABINE	HIGH	\$ 2,531,000	\$ 231,000	
		0	0	135	135	269	538										
SMITH	CRYSTAL SYSTEMS TEXAS	0	0	134	134	269	538	DRILL NEW WELLS			CARRIZO-WILCOX AQUIFER	SMITH	NECHES	HIGH	\$ 2,531,000	\$ 231,000	
SMITH	LINDALE	-70	-362	-681	-975	-1,377	-1,833	DRILL NEW WELLS			CARRIZO-WILCOX AQUIFER	SMITH	SABINE	HIGH	\$ 7,592,000	\$ 714,000	
		322	644	966	1,288	1,610	1,932										
SMITH	SMITH COUNTY MUD 1	0	0	-13	-178	-375	-609	DRILL NEW WELLS			QUEEN CITY AQUIFER	SMITH	SABINE	HIGH	\$ 3,948,000	\$ 348,000	
		0	0	108	216	432	648										
SMITH	STAR MOUNTAIN WSC	-20	-39	-61	-87	-116	-148	DRILL NEW WELLS			QUEEN CITY AQUIFER	SMITH	SABINE	HIGH	\$ 1,521,000	\$ 132,000	
SMITH	STARRVILLE-FRIENDSHIP WSC	0	0	0	0	-3	-37	DRILL NEW WELLS			CARRIZO-WILCOX AQUIFER	SMITH	SABINE	HIGH	\$ 761,000	\$ 62,000	
		0	0	0	0	108	108										
SMITH	WINONA	0	0	0	-20	-48	-81	DRILL NEW WELLS			CARRIZO-WILCOX AQUIFER	SMITH	SABINE	HIGH	\$ 761,000	\$ 66,000	
		0	0	0	108	108	108										

County	Entity	Projected Deficit (-) / Recommendation (ac-ft/yr) by Decade						Strategy	Contingency	Seller (if applicable)	Supply Source				Reliability of Source	Total Capital Cost (\$)	Total Annual Cost (\$)
		2020	2030	2040	2050	2060	2070				Ground-water	Surface Water	County	Basin			
TITUS	LIVESTOCK TITUS	-1,939	-1,939	-1,939	-1,939	-1,984	-2,095	DRILL NEW WELLS			CARRIZO-WILCOX AQUIFER		TITUS	CYPRESS	HIGH	\$ 2,253,000	\$ 496,000
		275	334	379	425	517	560										
TITUS	LIVESTOCK TITUS	1,664	1,605	1,560	1,514	1,467	1,445	DRILL NEW WELLS			CARRIZO-WILCOX AQUIFER		TITUS	SULPHUR	HIGH	\$ 5,215,000	\$ 1,362,000
TITUS	MANUFACTURING TITUS	0	-1,418	-1,295	-1,305	-1,564	-1,694	ADVANCED WATER CONSERVATION							HIGH	\$ -	\$ -
TITUS	MANUFACTURING TITUS	0	415	415	415	415	415										
TITUS	MANUFACTURING TITUS	0	1,003	880	890	1,149	1,279	RENEW AND INCREASE CONTRACT		MOUNT PLEASANT		BOB SANDLIN LAKE /RESERVOIR	RESERVOIR	CYPRESS	HIGH	\$ -	\$ 1,000,000
TITUS	STEAM-ELECTRIC POWER GENERATION TITUS	-30,066	-30,866	-31,766	-32,566	-32,814	-33,083	INCREASE CONTRACT		NETMWD		BOB SANDLIN LAKE /RESERVOIR, LAKE O' THE PINES /RESERVOIR	RESERVOIRS	CYPRESS	HIGH	-	\$ 3,308,000
		30,066	30,866	31,766	32,566	32,814	33,083										
UPSHUR	GILMER	0	0	-11	-75	-142	-206	DRILL NEW WELLS			CARRIZO-WILCOX AQUIFER		UPSHUR	CYPRESS	HIGH	\$ 801,000	\$ 69,000
		0	0	216	216	216	216										
UPSHUR	LIVESTOCK UPSHUR	-140	-140	-140	-140	-140	-140	DRILL NEW WELLS			QUEEN CITY AQUIFER		UPSHUR	CYPRESS	HIGH	\$ 172,000	\$ 17,000
		161	161	161	161	161	161										
UPSHUR	LIVESTOCK UPSHUR	161	161	161	161	161	161	DRILL NEW WELLS			QUEEN CITY AQUIFER		UPSHUR	SABINE	HIGH	\$ 172,000	\$ 17,000
UPSHUR	MANUFACTURING UPSHUR	-63	-70	-70	-70	-70	-70	DRILL NEW WELLS			CARRIZO-WILCOX AQUIFER		UPSHUR	CYPRESS	HIGH	\$ 172,000	\$ 17,000
		161	161	161	161	161	161										
VAN ZANDT	CANTON	0	0	0	0	0	0	DRILL NEW WELLS			CARRIZO-WILCOX AQUIFER		VAN ZANDT	SABINE	HIGH	\$ 716,000	\$ 142,000
		100	100	100	100	100	100										
VAN ZANDT	CANTON	323	323	323	323	323	323	INDIRECT REUSE				INDIRECT REUSE	VAN ZANDT	SABINE	HIGH	\$ 8,381,000	\$ 1,063,000
VAN ZANDT	EDOM WSC	-13	-21	-27	-37	-49	-64	DRILL NEW WELLS			CARRIZO-WILCOX AQUIFER		VAN ZANDT	NECHES	HIGH	\$ 1,088,000	\$ 136,000
		13	21	27	37	49	64										
VAN ZANDT	IRRIGATION VAN ZANDT	-43	-61	-63	-64	-66	-68	DRILL NEW WELLS			QUEEN CITY AQUIFER		VAN ZANDT	NECHES	HIGH	\$ 825,000	\$ 103,000
		43	61	63	64	66	68										
VAN ZANDT	LITTLE HOPE MOORE WSC	0	0	0	-3	-11	-17	DRILL NEW WELLS			CARRIZO-WILCOX AQUIFER		VAN ZANDT	NECHES	HIGH	\$ 371,000	\$ 44,000
		0	0	0	3	11	17										
VAN ZANDT	MANUFACTURING VAN ZANDT	-242	-493	-493	-493	-504	-504	ADVANCED WATER CONSERVATION							HIGH	\$ -	\$ -
		0	75	75	75	75	75										
VAN ZANDT	MANUFACTURING VAN ZANDT	242	504	504	356	238	143	DRILL NEW WELLS			CARRIZO-WILCOX AQUIFER		VAN ZANDT	TRINITY	HIGH	\$ 2,852,000	\$ 506,000
VAN ZANDT	MANUFACTURING VAN ZANDT	0	0	0	0	0	72	INCREASE CONTRACT		Grand Saline					HIGH	\$ -	\$ 202,000
VAN ZANDT	MANUFACTURING VAN ZANDT	0	0	0	62	191	214	INCREASE CONTRACT		Golden WSC					HIGH	\$ -	\$ 279,000
VAN ZANDT	R P M WSC	0	-34	-79	-131	-175	-217	DRILL NEW WELLS			CARRIZO-WILCOX AQUIFER		VAN ZANDT	NECHES	HIGH	\$ 3,469,000	\$ 422,000
		0	34	79	131	175	217										
WOOD	LIVESTOCK WOOD	-1,098	-1,098	-1,098	-1,098	-1,098	-1,098	LIVESTOCK LOCAL SUPPLY				LOCAL SUPPLY	WOOD	SABINE	HIGH	\$ -	\$ -
		34	34	34	34	34	34										
WOOD	LIVESTOCK WOOD	1,129	1,129	1,129	1,129	1,129	1,129	DRILL NEW WELLS			QUEEN CITY AQUIFER		WOOD	SABINE	HIGH	\$ 1,210,000	\$ 125,000
WOOD	MANUFACTURING WOOD	-1,030	-1,583	-1,583	-1,583	-1,583	-1,583	DRILL NEW WELLS			QUEEN CITY AQUIFER		WOOD	SABINE	HIGH	\$ 1,210,000	\$ 125,000
		1,129	1,610	1,610	1,610	1,610	1,610										

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### Region D Recommended Projects Associated with Water Management Strategies

SPONSOR NAME	SPONSOR IS WWP?	ONLINE DECADE	PROJECT NAME	PROJECT DESCRIPTION	CAPITAL COST
CANTON	NO	2020	CANTON INDIRECT REUSE	CONVEYANCE/TRANSMISSION PIPELINE; DIVERSION AND CONTROL STRUCTURE; NEW WATER RIGHT/PERMIT NO IBT; PUMP STATION; STORAGE TANK	\$8,381,000
CANTON	NO	2020	DRILL NEW WELLS (CANTON, CARRIZO-WILCOX, SABINE)	SINGLE WELL; WATER TREATMENT PLANT EXPANSION	\$716,000
CELESTE	NO	2020	DRILL NEW WELLS (CELESTE, WOODBINE, TRINITY, 2020)	SINGLE WELL; CONVEYANCE/TRANSMISSION PIPELINE; NEW WATER TREATMENT PLANT	\$694,000
CELESTE	NO	2040	DRILL NEW WELLS (CELESTE, WOODBINE, TRINITY, 2040)	SINGLE WELL; WATER TREATMENT PLANT EXPANSION	\$509,000
CELESTE	NO	2060	DRILL NEW WELLS (CELESTE, WOODBINE, TRINITY, 2060)	SINGLE WELL; WATER TREATMENT PLANT EXPANSION	\$509,000
CELESTE	NO	2070	NEW CONTRACT WITH GREENVILLE AND PIPELINE TO CELESTE	CONVEYANCE/TRANSMISSION PIPELINE; NEW CONTRACT; PUMP STATION	\$3,342,000
CLARKSVILLE	NO	2020	DRILL NEW WELLS (CLARKSVILLE, NACATOCH, SULPHUR)	MULTIPLE WELLS/WELL FIELD; WATER TREATMENT PLANT EXPANSION	\$10,537,000
COUNTY-OTHER, CASS	NO	2020	DRILL NEW WELLS (COUNTY OTHER, CASS, CARRIZO, CYPRESS)	MULTIPLE WELLS/WELL FIELD	\$1,973,000
COUNTY-OTHER, CASS	NO	2020	DRILL NEW WELLS (COUNTY OTHER, CASS, CARRIZO, SULPHUR)	MULTIPLE WELLS/WELL FIELD	\$1,324,000
CRYSTAL SYSTEMS TEXAS	NO	2040	DRILL NEW WELLS (CRYSTAL SYSTEMS INC, CARRIZO, NECHES)	MULTIPLE WELLS/WELL FIELD	\$2,531,000
CRYSTAL SYSTEMS TEXAS	NO	2040	DRILL NEW WELLS (CRYSTAL SYSTEMS INC, CARRIZO, SABINE)	MULTIPLE WELLS/WELL FIELD	\$2,531,000
CUMBY	NO	2020	DRILL NEW WELLS (CUMBY, HOPKINS, NACATOCH, SABINE, 2020)	SINGLE WELL; WATER TREATMENT PLANT EXPANSION	\$480,000
CUMBY	NO	2070	DRILL NEW WELLS (CUMBY, HOPKINS, NACATOCH, SABINE, 2070)	SINGLE WELL; WATER TREATMENT PLANT EXPANSION	\$480,000
EDOM WSC	NO	2020	DRILL NEW WELL (EDOM WSC, VAN ZANDT, CARRIZO, NECHES, 2020)	SINGLE WELL; WATER TREATMENT PLANT EXPANSION	\$403,000
EDOM WSC	NO	2050	DRILL NEW WELL (EDOM WSC, VAN ZANDT, CARRIZO, NECHES, 2050)	SINGLE WELL; WATER TREATMENT PLANT EXPANSION	\$358,000
EDOM WSC	NO	2070	DRILL NEW WELL (EDOM WSC, VAN ZANDT, CARRIZO, NECHES, 2070)	SINGLE WELL; WATER TREATMENT PLANT EXPANSION	\$344,000
GILMER	NO	2040	DRILL NEW WELLS (GILMER, CARRIZO, CYPRESS)	MULTIPLE WELLS/WELL FIELD	\$801,000
GREENVILLE	YES	2070	NEW WTP GREENVILLE	NEW WATER TREATMENT PLANT	\$81,786,000
GREENVILLE	YES	2030	WTP EXPANSION 2030 (GREENVILLE, SABINE)	WATER TREATMENT PLANT EXPANSION	\$43,955,000
HARLETON WSC	NO	2020	INCREASE EXISTING CONTRACT (HARLETON, CYPRESS)	CONTRACT AMENDMENT	\$4,928
HOLLY SPRINGS WSC	NO	2020	INCREASE EXISTING CONTRACT (HOLLY SPRINGS, CYPRESS)	CONTRACT AMENDMENT	\$130,000
IRRIGATION, BOWIE	NO	2020	DRILL NEW WELLS (BOWIE IRRIGATION, CARRIZO-WILCOX, SULPHUR)	MULTIPLE WELLS/WELL FIELD	\$10,597,000
IRRIGATION, HARRISON	NO	2020	DRILL NEW WELLS (IRRIGATION HARRISON, QUEEN CITY, CYPRESS)	MULTIPLE WELLS/WELL FIELD	\$577,000
IRRIGATION, HARRISON	NO	2020	DRILL NEW WELLS (IRRIGATION HARRISON, QUEEN CITY, SABINE)	SINGLE WELL	\$193,000
IRRIGATION, HOPKINS	NO	2040	DRILL NEW WELLS (IRRIGATION HOPKINS, CARRIZO-WILCOX, SABINE, 2040)	SINGLE WELL	\$1,030,000
IRRIGATION, HOPKINS	NO	2060	DRILL NEW WELLS (IRRIGATION HOPKINS, CARRIZO-WILCOX, SABINE, 2060)	MULTIPLE WELLS/WELL FIELD	\$1,802,000
IRRIGATION, HOPKINS	NO	2020	DRILL NEW WELLS (IRRIGATION HOPKINS, CARRIZO-WILCOX, SULPHUR)	MULTIPLE WELLS/WELL FIELD	\$10,927,000
IRRIGATION, HUNT	NO	2020	DRILL NEW WELLS (IRRIGATION HUNT, NACATOCH, SABINE)	MULTIPLE WELLS/WELL FIELD	\$1,249,000
IRRIGATION, LAMAR	NO	2020	PAT MAYSE RAW WATER PIPELINE (IRRIGATION LAMAR, RED)	CONVEYANCE/TRANSMISSION PIPELINE	\$12,021,000
IRRIGATION, RED RIVER	NO	2020	DRILL NEW WELLS (IRRIGATION, RED RIVER, NACATOCH, SULPHUR)	MULTIPLE WELLS/WELL FIELD	\$6,551,000
IRRIGATION, VAN ZANDT	NO	2020	DRILL NEW WELLS (IRRIGATION VAN ZANDT, QUEEN, NECHES)	MULTIPLE WELLS/WELL FIELD	\$1,683,000
LEIGH WSC	NO	2040	DRILL NEW WELLS (LEIGH, QUEEN CITY, CYPRESS)	MULTIPLE WELLS/WELL FIELD	\$1,973,000
LINDALE	NO	2020	DRILL NEW WELLS (LINDALE, CARRIZO, NECHES)	MULTIPLE WELLS/WELL FIELD	\$7,592,000

### Region D Recommended Projects Associated with Water Management Strategies

SPONSOR NAME	SPONSOR IS WWP?	ONLINE DECADE	PROJECT NAME	PROJECT DESCRIPTION	CAPITAL COST
LITTLE HOPE MOORE WSC	NO	2050	DRILL NEW WELL (LITTLE HOPE MOORE WSC, VAN ZANDT, CARRIZO, NECHES)	SINGLE WELL; WATER TREATMENT PLANT EXPANSION	\$371,000
LIVESTOCK, BOWIE	NO	2020	DRILL NEW WELLS (LIVESTOCK BOWIE , NACATOCH, RED)	MULTIPLE WELLS/WELL FIELD	\$1,630,000
LIVESTOCK, BOWIE	NO	2020	DRILL NEW WELLS (LIVESTOCK, BOWIE, CARRIZO-WILCOX, SULPHUR)	MULTIPLE WELLS/WELL FIELD	\$2,423,000
LIVESTOCK, CAMP	NO	2020	DRILL NEW WELLS (LIVESTOCK, CAMP, QUEEN, CYPRESS)	MULTIPLE WELLS/WELL FIELD	\$4,401,500
LIVESTOCK, CASS	NO	2020	DRILL NEW WELLS (LIVESTOCK, CASS, QUEEN CITY, CYPRESS)	MULTIPLE WELLS/WELL FIELD	\$1,037,000
LIVESTOCK, CASS	NO	2020	DRILL NEW WELLS (LIVESTOCK, CASS, QUEEN CITY, SULPHUR)	MULTIPLE WELLS/WELL FIELD	\$1,037,000
LIVESTOCK, DELTA	NO	2020	DRILL NEW WELLS (LIVESTOCK, DELTA, NACATOCH, SULPHUR)	MULTIPLE WELLS/WELL FIELD	\$1,929,000
LIVESTOCK, FRANKLIN	NO	2020	DRILL NEW WELLS (LIVESTOCK, FRANKLIN, CARRIZO, CYPRESS)	MULTIPLE WELLS/WELL FIELD	\$865,000
LIVESTOCK, FRANKLIN	NO	2020	DRILL NEW WELLS (LIVESTOCK, FRANKLIN, CARRIZO, SULPHUR)	MULTIPLE WELLS/WELL FIELD	\$1,211,000
LIVESTOCK, HOPKINS	NO	2020	DRILL NEW WELLS (LIVESTOCK HOPKINS, HOPKINS, CARRIZO, SULPHUR, 2020)	MULTIPLE WELLS/WELL FIELD	\$4,961,000
LIVESTOCK, HOPKINS	NO	2060	DRILL NEW WELLS (LIVESTOCK HOPKINS, HOPKINS, CARRIZO, SULPHUR, 2060)	MULTIPLE WELLS/WELL FIELD	\$924,000
LIVESTOCK, HUNT	NO	2020	DRILL NEW WELL (LIVESTOCK HUNT, TRINITY, SABINE)	SINGLE WELL	\$407,000
LIVESTOCK, LAMAR	NO	2020	NEW CONTRACT AND PIPELINE TO LAMAR CO WSD FOR LAMAR LIVESTOCK	CONVEYANCE/TRANSMISSION PIPELINE; NEW CONTRACT	\$14,574,000
LIVESTOCK, MORRIS	NO	2020	DRILL NEW WELLS (LIVESTOCK, MORRIS, QUEEN CITY, CYPRESS)	MULTIPLE WELLS/WELL FIELD	\$767,000
LIVESTOCK, MORRIS	NO	2020	DRILL NEW WELLS (LIVESTOCK, MORRIS, QUEEN CITY, SULPHUR)	MULTIPLE WELLS/WELL FIELD	\$539,000
LIVESTOCK, RED RIVER	NO	2020	DRILL NEW WELLS (LIVESTOCK RED RIVER, BLOSSOM, RED)	SINGLE WELL	\$425,000
LIVESTOCK, RED RIVER	NO	2020	DRILL NEW WELLS (LIVESTOCK RED RIVER, TRINITY AQUIFER, SULPHUR)	MULTIPLE WELLS/WELL FIELD	\$1,436,000
LIVESTOCK, TITUS	NO	2020	DRILL NEW WELLS (LIVESTOCK TITUS, CARRIZO, CYPRESS, 2020)	SINGLE WELL	\$767,000
LIVESTOCK, TITUS	NO	2030	DRILL NEW WELLS (LIVESTOCK TITUS, CARRIZO, CYPRESS, 2030)	SINGLE WELL	\$684,000
LIVESTOCK, TITUS	NO	2020	DRILL NEW WELLS (LIVESTOCK TITUS, CARRIZO, SULPHUR)	MULTIPLE WELLS/WELL FIELD	\$5,215,000
LIVESTOCK, UPSHUR	NO	2020	DRILL NEW WELLS (LIVESTOCK, UPSHUR, QUEEN CITY, CYPRESS)	SINGLE WELL	\$172,000
LIVESTOCK, UPSHUR	NO	2020	DRILL NEW WELLS (LIVESTOCK, UPSHUR, QUEEN CITY, SABINE)	SINGLE WELL	\$172,000
LIVESTOCK, WOOD	NO	2020	DRILL NEW WELL (LIVESTOCK, WOOD, QUEEN CITY, SABINE)	MULTIPLE WELLS/WELL FIELD	\$1,210,000
MANUFACTURING, UPSHUR	NO	2020	DRILL NEW WELLS (MANUFACTURING UPSHUR, QUEEN CITY, CYPRESS)	SINGLE WELL	\$172,000
MANUFACTURING, VAN ZANDT	NO	2020	DRILL NEW WELLS (MANUFACTURING VAN ZANDT, CARRIZO-WILCOX, TRINITY, 2020)	MULTIPLE WELLS/WELL FIELD	\$1,043,000
MANUFACTURING, VAN ZANDT	NO	2030	DRILL NEW WELLS (MANUFACTURING VAN ZANDT, CARRIZO-WILCOX, TRINITY, 2030)	MULTIPLE WELLS/WELL FIELD	\$1,355,000
MANUFACTURING, WOOD	NO	2020	DRILL NEW WELLS (MANUFACTURING, WOOD, QUEEN CITY, SABINE)	MULTIPLE WELLS/WELL FIELD	\$1,210,000
MILLER GROVE WSC	NO	2020	DRILL NEW WELLS (MILLER GROVE WSC, HOPKINS, CARRIZO-WILCOX, SULPHUR, 2020)	SINGLE WELL	\$459,000
MILLER GROVE WSC	NO	2070	DRILL NEW WELLS (MILLER GROVE WSC, HOPKINS, CARRIZO-WILCOX, SULPHUR, 2070)	SINGLE WELL	\$459,000
MINING, GREGG	NO	2020	DRILL NEW WELLS (MINING GREGG, CARRIZO-WILCOX, SABINE)	SINGLE WELL	\$117,000
MINING, HARRISON	NO	2020	DRILL NEW WELLS (MINING HARRISON, QUEEN CITY, CYPRESS)	MULTIPLE WELLS/WELL FIELD	\$384,000
MINING, HARRISON	NO	2020	DRILL NEW WELLS (MINING HARRISON, QUEEN CITY, SABINE)	SINGLE WELL	\$1,555,000
MINING, HOPKINS	NO	2020	DRILL NEW WELLS (MINING HOPKINS, HOPKINS, CARRIZO, SULPHUR, 2020)	MULTIPLE WELLS/WELL FIELD	\$1,528,000

### Region D Recommended Projects Associated with Water Management Strategies

SPONSOR NAME	SPONSOR IS WWP?	ONLINE DECADE	PROJECT NAME	PROJECT DESCRIPTION	CAPITAL COST
MINING, HOPKINS	NO	2050	DRILL NEW WELLS (MINING HOPKINS, HOPKINS, CARRIZO, SULPHUR, 2050)	MULTIPLE WELLS/WELL FIELD	\$428,000
MINING, HOPKINS	NO	2060	DRILL NEW WELLS (MINING HOPKINS, HOPKINS, CARRIZO, SULPHUR, 2060)	MULTIPLE WELLS/WELL FIELD	\$924,000
MINING, HUNT	NO	2020	DRILL NEW WELLS (MINING HUNT, TRINITY, SABINE)	MULTIPLE WELLS/WELL FIELD	\$766,000
MINING, MARION	NO	2020	DRILL NEW WELLS (MINING MARION, QUEEN CITY, CYPRESS)	MULTIPLE WELLS/WELL FIELD	\$767,000
NORTH HARRISON WSC	NO	2060	DRILL NEW WELLS (NORTH HARRISON, QUEEN CITY, CYPRESS)	SINGLE WELL	\$612,000
NORTH HUNT SUD	NO	2020	DRILL NEW WELLS (NORTH HUNT SUD, HUNT, NACATOCH, SABINE, 2020)	CONVEYANCE/TRANSMISSION PIPELINE; MULTIPLE WELLS/WELL FIELD; WATER TREATMENT PLANT EXPANSION	\$1,493,000
NORTH HUNT SUD	NO	2030	DRILL NEW WELLS (NORTH HUNT SUD, HUNT, NACATOCH, SABINE, 2030)	CONVEYANCE/TRANSMISSION PIPELINE; MULTIPLE WELLS/WELL FIELD; WATER TREATMENT PLANT EXPANSION	\$1,054,000
NORTH HUNT SUD	NO	2040	DRILL NEW WELLS (NORTH HUNT SUD, HUNT, NACATOCH, SABINE, 2040)	CONVEYANCE/TRANSMISSION PIPELINE; MULTIPLE WELLS/WELL FIELD; WATER TREATMENT PLANT EXPANSION	\$1,054,000
NORTH HUNT SUD	NO	2050	DRILL NEW WELLS (NORTH HUNT SUD, HUNT, NACATOCH, SABINE, 2050)	CONVEYANCE/TRANSMISSION PIPELINE; MULTIPLE WELLS/WELL FIELD; WATER TREATMENT PLANT EXPANSION	\$1,998,000
NORTH HUNT SUD	NO	2060	DRILL NEW WELLS (NORTH HUNT SUD, HUNT, NACATOCH, SABINE, 2060)	CONVEYANCE/TRANSMISSION PIPELINE; MULTIPLE WELLS/WELL FIELD; WATER TREATMENT PLANT EXPANSION	\$2,932,000
NORTH HUNT SUD	NO	2070	DRILL NEW WELLS (NORTH HUNT SUD, HUNT, NACATOCH, SABINE, 2070)	CONVEYANCE/TRANSMISSION PIPELINE; MULTIPLE WELLS/WELL FIELD; WATER TREATMENT PLANT EXPANSION	\$2,902,000
PANOLA-BETHANY WSC	NO	2030	DRILL NEW WELLS (PANOLA BETHANY, QUEEN CITY, SABINE)	MULTIPLE WELLS/WELL FIELD	\$2,399,000
R P M WSC	NO	2030	DRILL NEW WELLS (R-P-M WSC, CARRIZO-WILCOX, NECHES, 2030)	MULTIPLE WELLS/WELL FIELD	\$895,000
R P M WSC	NO	2040	DRILL NEW WELLS (R-P-M WSC, CARRIZO-WILCOX, NECHES, 2040)	SINGLE WELL	\$370,000
R P M WSC	NO	2050	DRILL NEW WELLS (R-P-M WSC, CARRIZO-WILCOX, NECHES, 2050)	MULTIPLE WELLS/WELL FIELD	\$753,000
R P M WSC	NO	2060	DRILL NEW WELLS (R-P-M WSC, CARRIZO-WILCOX, NECHES, 2060)	MULTIPLE WELLS/WELL FIELD	\$784,000
R P M WSC	NO	2070	DRILL NEW WELLS (R-P-M WSC, CARRIZO-WILCOX, NECHES, 2070)	MULTIPLE WELLS/WELL FIELD	\$774,000
RIVERBEND WATER RESOURCES DISTRICT	YES	2030	RIVERBEND STRATEGY CASS NEW WTP AND TRANSMISSION LINE	CONVEYANCE/TRANSMISSION PIPELINE; NEW WATER TREATMENT PLANT	\$22,807,000
RIVERBEND WATER RESOURCES DISTRICT	YES	2020	RIVERBEND WMS INTERIM TO ULTIMATE STORAGE CONVERSION	CONTRACT AMENDMENT; RAISE CONSERVATION POOL	\$20,550,000
RIVERBEND WATER RESOURCES DISTRICT	YES	2030	RIVERBEND WMS NEW RAW WATER INTAKE 120 MGD 2030	NEW SURFACE WATER INTAKE	\$13,282,000
RIVERBEND WATER RESOURCES DISTRICT	YES	2050	RIVERBEND WMS NEW RAW WATER PIPELINE 32 MGD 2050	CONVEYANCE/TRANSMISSION PIPELINE	\$61,647,000
RIVERBEND WATER RESOURCES DISTRICT	YES	2030	RIVERBEND WMS NEW WTP 25 MGD 2030	NEW WATER TREATMENT PLANT	\$127,811,000
RIVERBEND WATER RESOURCES DISTRICT	YES	2050	RIVERBEND WMS PUMP STATION EXPANSION 18 MGD 2050	PUMP STATION	\$11,603,000
RIVERBEND WATER RESOURCES DISTRICT	YES	2060	RIVERBEND WMS PUMP STATION EXPANSION 30 MGD 2060	PUMP STATION	\$22,130,000
RIVERBEND WATER RESOURCES DISTRICT	YES	2040	RIVERBEND WMS PUMP STATION EXPANSION 6 MGD 2040	PUMP STATION	\$4,326,000
RIVERBEND WATER RESOURCES DISTRICT	YES	2030	RIVERBEND WMS RAW WATER PIPELINE 72 MGD 2030	CONVEYANCE/TRANSMISSION PIPELINE	\$36,061,000
RIVERBEND WATER RESOURCES DISTRICT	YES	2030	RIVERBEND WMS RAW WATER PUMP STATION 66 MGD 2030	PUMP STATION	\$45,041,000
RIVERBEND WATER RESOURCES DISTRICT	YES	2020	RIVERBEND WMS WATER RIGHT AMENDMENT	NEW WATER RIGHT/PERMIT NO IBT	\$103,000
RIVERBEND WATER RESOURCES DISTRICT	YES	2050	RIVERBEND WMS WTP EXPANSION 10 MGD 2050	WATER TREATMENT PLANT EXPANSION	\$33,348,000

### Region D Recommended Projects Associated with Water Management Strategies

SPONSOR NAME	SPONSOR IS WWP?	ONLINE DECADE	PROJECT NAME	PROJECT DESCRIPTION	CAPITAL COST
RIVERBEND WATER RESOURCES DISTRICT	YES	2040	RIVERBEND WMS WTP EXPANSION 5 MGD 2040	WATER TREATMENT PLANT EXPANSION	\$19,745,000
SCOTTSVILLE	NO	2020	DRILL NEW WELLS (SCOTTSVILLE, QUEEN CITY, CYPRESS)	MULTIPLE WELLS/WELL FIELD	\$1,429,000
SMITH COUNTY MUD 1	NO	2040	DRILL NEW WELLS (SMITH COUNTY MUD 1, QUEEN CITY, SABINE)	MULTIPLE WELLS/WELL FIELD	\$3,948,000
STAR MOUNTAIN WSC	NO	2020	DRILL NEW WELLS (STAR MOUNTAIN, QUEEN CITY, SABINE)	MULTIPLE WELLS/WELL FIELD	\$1,521,000
STARRVILLE-FRIENDSHIP WSC	NO	2060	DRILL NEW WELLS (STARRVILLE FRIENDSHIP, CARRIZO, SABINE)	SINGLE WELL	\$761,000
WASKOM	NO	2020	DRILL NEW WELLS (WASKOM, QUEEN CITY, CYPRESS)	SINGLE WELL	\$2,399,000
WINONA	NO	2050	DRILL NEW WELLS (WINONA, CARRIZO-WILCOX, SABINE)	SINGLE WELL	\$761,000
WOLFE CITY	NO	2050	NEW CONTRACT WITH GREENVILLE AND PIPELINE TO WOLFE CITY	CONVEYANCE/TRANSMISSION PIPELINE; NEW CONTRACT; PUMP STATION	\$7,124,000
<b>REGION D RECOMMENDED CAPITAL COST TOTAL</b>					<b>\$730,725,428</b>

### Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

						WATER MANAGEMENT STRATEGY SUPPLY (ACRE-FEET PER YEAR)					
WUG ENTITY NAME	WMS SPONSOR REGION	WMS NAME	SOURCE NAME	UNIT COST 2020	UNIT COST 2070	2020	2030	2040	2050	2060	2070
ABLES SPRINGS WSC*	C	CONSERVATION - ABLES SPRINGS WSC	DEMAND REDUCTION	\$0	\$34	1	2	1	3	7	10
ABLES SPRINGS WSC*	C	MARVIN NICHOLS (328) STRATEGY FOR NTMWD, TRWD, AND UTRWD	D   MARVIN NICHOLS LAKE/RESERVOIR	N/A	\$707	0	0	0	21	35	44
ABLES SPRINGS WSC*	C	NTMWD - ADDITIONAL LAVON WATERSHED REUSE	C   TRINITY INDIRECT REUSE	N/A	\$835	0	0	0	1	6	10
ABLES SPRINGS WSC*	C	NTMWD - ADDITIONAL MEASURES TO ACCESS FULL LAVON YIELD	C   NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	N/A	\$75	0	1	2	1	2	3
ABLES SPRINGS WSC*	C	NTMWD - BOIS D'ARC LAKE	C   BOIS D ARC LAKE/RESERVOIR	N/A	\$81	0	11	17	15	24	31
ABLES SPRINGS WSC*	C	NTMWD - EXPANDED WETLAND REUSE	C   TRINITY INDIRECT REUSE	N/A	\$749	0	1	3	3	6	9
ABLES SPRINGS WSC*	C	NTMWD - OKLAHOMA	OK   OKLAHOMA RUN-OF-RIVER	N/A	\$423	0	0	0	0	0	13
ABLES SPRINGS WSC*	C	NTMWD - TEXOMA BLENDING	C   NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	N/A	\$430	0	0	6	12	20	30
ABLES SPRINGS WSC*	C	WRIGHT PATMAN REALLOCATION FOR NTMWD, TRWD, AND UTRWD	D   WRIGHT PATMAN LAKE/RESERVOIR	N/A	\$834	0	0	0	0	0	15
ATLANTA	D	RIVERBEND STRATEGY CASS COUNTY	D   WRIGHT PATMAN LAKE/RESERVOIR	N/A	\$242	0	1,075	1,135	1,209	1,206	1,206
B H P WSC*	C	MARVIN NICHOLS (328) STRATEGY FOR NTMWD, TRWD, AND UTRWD	D   MARVIN NICHOLS LAKE/RESERVOIR	N/A	\$707	0	0	0	68	107	125
B H P WSC*	C	NTMWD - ADDITIONAL LAVON WATERSHED REUSE	C   TRINITY INDIRECT REUSE	N/A	\$834	0	0	0	5	17	29
B H P WSC*	C	NTMWD - ADDITIONAL MEASURES TO ACCESS FULL LAVON YIELD	C   NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	N/A	\$75	0	56	71	54	84	99
B H P WSC*	C	NTMWD - EXPANDED WETLAND REUSE	C   TRINITY INDIRECT REUSE	N/A	\$749	0	4	10	11	19	28
B H P WSC*	C	NTMWD - OKLAHOMA	OK   OKLAHOMA RUN-OF-RIVER	N/A	\$423	0	0	0	0	0	37
B H P WSC*	C	NTMWD - TEXOMA BLENDING	C   NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	N/A	\$430	0	0	22	39	61	85
B H P WSC*	C	WRIGHT PATMAN REALLOCATION FOR NTMWD, TRWD, AND UTRWD	D   WRIGHT PATMAN LAKE/RESERVOIR	N/A	\$834	0	0	0	0	0	42
BLACKLAND WSC*	C	CONSERVATION - BLACKLAND WSC	DEMAND REDUCTION	N/A	\$357	0	1	1	1	0	1
BLACKLAND WSC*	C	MARVIN NICHOLS (328) STRATEGY FOR NTMWD, TRWD, AND UTRWD	D   MARVIN NICHOLS LAKE/RESERVOIR	N/A	\$707	0	0	0	1	1	1
BLACKLAND WSC*	C	NTMWD - ADDITIONAL LAVON WATERSHED REUSE	C   TRINITY INDIRECT REUSE	N/A	N/A	0	0	0	0	0	0
BLACKLAND WSC*	C	NTMWD - ADDITIONAL MEASURES TO ACCESS FULL LAVON YIELD	C   NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	N/A	N/A	0	0	0	0	0	0
BLACKLAND WSC*	C	NTMWD - BOIS D'ARC LAKE	C   BOIS D ARC LAKE/RESERVOIR	N/A	\$81	0	1	1	1	1	1
BLACKLAND WSC*	C	NTMWD - EXPANDED WETLAND REUSE	C   TRINITY INDIRECT REUSE	N/A	N/A	0	0	0	0	0	0
BLACKLAND WSC*	C	NTMWD - OKLAHOMA	OK   OKLAHOMA RUN-OF-RIVER	N/A	N/A	0	0	0	0	0	0

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**Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)**

WUG ENTITY NAME	WMS SPONSOR REGION	WMS NAME	SOURCE NAME	UNIT COST 2020	UNIT COST 2070	WATER MANAGEMENT STRATEGY SUPPLY (ACRE-FEET PER YEAR)					
						2020	2030	2040	2050	2060	2070
BLACKLAND WSC*	C	NTMWD - TEXOMA BLENDING	C   NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	N/A	\$430	0	0	0	0	1	1
BLACKLAND WSC*	C	WRIGHT PATMAN REALLOCATION FOR NTMWD, TRWD, AND UTRWD	D   WRIGHT PATMAN LAKE/RESERVOIR	N/A	N/A	0	0	0	0	0	0
BRINKER WSC	D	INCREASE EXISTING CONTRACT (BRINKER WSC, SULPHUR)	D   CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	N/A	\$1176	0	0	0	12	47	83
BURNS REDBANK WSC	D	RIVERBEND STRATEGY	D   WRIGHT PATMAN LAKE/RESERVOIR	\$482	\$537	201	199	196	194	193	193
CADDO BASIN SUD*	C	MARVIN NICHOLS (328) STRATEGY FOR NTMWD, TRWD, AND UTRWD	D   MARVIN NICHOLS LAKE/RESERVOIR	N/A	\$707	0	0	0	217	349	421
CADDO BASIN SUD*	C	NTMWD - ADDITIONAL LAVON WATERSHED REUSE	C   TRINITY INDIRECT REUSE	N/A	\$835	0	0	0	15	54	98
CADDO BASIN SUD*	C	NTMWD - ADDITIONAL MEASURES TO ACCESS FULL LAVON YIELD	C   NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	N/A	\$75	0	15	21	14	22	24
CADDO BASIN SUD*	C	NTMWD - BOIS D'ARC LAKE	C   BOIS D ARC LAKE/RESERVOIR	\$486	\$81	4	144	195	153	246	298
CADDO BASIN SUD*	C	NTMWD - EXPANDED WETLAND REUSE	C   TRINITY INDIRECT REUSE	N/A	\$749	0	11	30	32	66	93
CADDO BASIN SUD*	C	NTMWD - OKLAHOMA	OK   OKLAHOMA RUN-OF-RIVER	N/A	\$423	0	0	0	0	0	127
CADDO BASIN SUD*	C	NTMWD - TEXOMA BLENDING	C   NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	N/A	\$430	0	0	65	124	199	285
CADDO BASIN SUD*	C	WRIGHT PATMAN REALLOCATION FOR NTMWD, TRWD, AND UTRWD	D   WRIGHT PATMAN LAKE/RESERVOIR	N/A	\$834	0	0	0	0	0	142
CADDO BASIN SUD*	D	ADVANCED WATER CONSERVATION (CADDO BASIN SUD)	DEMAND REDUCTION	\$770	\$770	1	2	3	5	9	15
CADDO MILLS	D	GREENVILLE CONSERVATION AND WTP	D   TAWAKONI LAKE/RESERVOIR	N/A	\$237	0	1	36	68	108	254
CANTON	D	CANTON REUSE	D   SABINE INDIRECT REUSE	\$3291	\$1464	323	323	323	323	323	323
CANTON	D	DRILL NEW WELLS (CANTON, CARRIZO-WILCOX, SABINE)	D   CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	\$1420	\$920	100	100	100	100	100	100
CASH SUD*	C	MARVIN NICHOLS (328) STRATEGY FOR NTMWD, TRWD, AND UTRWD	D   MARVIN NICHOLS LAKE/RESERVOIR	N/A	\$707	0	0	0	258	307	266
CASH SUD*	C	NTMWD - ADDITIONAL LAVON WATERSHED REUSE	C   TRINITY INDIRECT REUSE	N/A	\$835	0	0	0	19	48	62
CASH SUD*	C	NTMWD - ADDITIONAL MEASURES TO ACCESS FULL LAVON YIELD	C   NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	N/A	\$75	0	238	297	204	239	202
CASH SUD*	C	NTMWD - EXPANDED WETLAND REUSE	C   TRINITY INDIRECT REUSE	N/A	\$749	0	16	41	37	57	60
CASH SUD*	C	NTMWD - OKLAHOMA	OK   OKLAHOMA RUN-OF-RIVER	N/A	\$423	0	0	0	0	0	79
CASH SUD*	C	NTMWD - TEXOMA BLENDING	C   NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	N/A	\$430	0	0	95	154	182	181
CASH SUD*	C	WRIGHT PATMAN REALLOCATION FOR NTMWD, TRWD, AND UTRWD	D   WRIGHT PATMAN LAKE/RESERVOIR	N/A	\$834	0	0	0	0	0	90

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### Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG ENTITY NAME	WMS SPONSOR REGION	WMS NAME	SOURCE NAME	UNIT COST 2020	UNIT COST 2070	WATER MANAGEMENT STRATEGY SUPPLY (ACRE-FEET PER YEAR)					
						2020	2030	2040	2050	2060	2070
CASH SUD*	D	ADVANCED WATER CONSERVATION (CASH SUD)	DEMAND REDUCTION	N/A	N/A	0	1	1	0	0	0
CASH SUD*	D	INCREASE EXISTING CONTRACT (CASH SUD)	C   NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	\$2198	\$1762	332	416	568	642	471	337
CELESTE	D	DRILL NEW WELLS (CELESTE, WOODBINE, TRINITY)	D   WOODBINE AQUIFER   HUNT COUNTY	\$2288	\$1276	29	52	86	136	209	229
CELESTE	D	NEW CONTRACT WITH GREENVILLE AND PIPELINE TO CELESTE	D   TAWAKONI LAKE/RESERVOIR	N/A	\$3920	0	0	0	0	0	87
CENTRAL BOWIE COUNTY WSC	D	RIVERBEND STRATEGY	D   WRIGHT PATMAN LAKE/RESERVOIR	\$482	\$537	619	639	708	784	869	962
CLARKSVILLE	D	DRILL NEW WELLS WITH RO TREATMENT (CLARKSVILLE, BLOSSOM)	D   BLOSSOM AQUIFER   RED RIVER COUNTY	\$4312	\$2402	388	388	388	388	388	388
COUNTY-OTHER, CASS	D	DRILL NEW WELLS (COUNTY OTHER, CASS, CARRIZO, CYPRESS)	D   CARRIZO-WILCOX AQUIFER   CASS COUNTY	\$514	\$84	323	323	323	323	323	323
COUNTY-OTHER, CASS	D	DRILL NEW WELLS (COUNTY OTHER, CASS, CARRIZO, SULPHUR)	D   CARRIZO-WILCOX AQUIFER   CASS COUNTY	\$528	\$97	216	216	216	216	216	216
COUNTY-OTHER, CASS	D	RIVERBEND STRATEGY CASS COUNTY	D   WRIGHT PATMAN LAKE/RESERVOIR	N/A	\$483	0	44	44	44	44	44
COUNTY-OTHER, HUNT	D	GREENVILLE CONSERVATION AND WTP	D   TAWAKONI LAKE/RESERVOIR	N/A	\$237	0	0	166	703	1,817	3,834
COUNTY-OTHER, LAMAR	D	INCREASE EXISTING CONTRACT (COUNTY-OTHER LAMAR)	D   PAT MAYSE LAKE/RESERVOIR	\$1629	\$1629	204	204	212	224	234	244
CRYSTAL SYSTEMS TEXAS*	D	DRILL NEW WELLS (CRYSTAL SYSTEMS INC, CARRIZO, SABINE)	D   CARRIZO-WILCOX AQUIFER   SMITH COUNTY	N/A	\$99	0	0	135	135	269	538
CRYSTAL SYSTEMS TEXAS*	I	TYLER-LAKE PALESTINE	I   PALESTINE LAKE/RESERVOIR	N/A	\$896	0	71	145	232	331	418
CUMBY	D	DRILL NEW WELLS (CUMBY, NACATOCH, HOPKINS, SABINE)	D   NACATOCH AQUIFER   HOPKINS COUNTY	\$6001	\$1387	13	29	44	58	77	88
DE KALB	D	RIVERBEND STRATEGY	D   WRIGHT PATMAN LAKE/RESERVOIR	\$243	\$537	295	292	289	291	294	298
EDOM WSC*	D	DRILL NEW WELLS (EDOM WSC, VAN ZANDT, CARRIZO, NECHES)	D   CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	\$3308	\$2250	11	18	23	32	42	55
GILMER	D	DRILL NEW WELLS (GILMER, CARRIZO, CYPRESS)	D   CARRIZO-WILCOX AQUIFER   UPSHUR COUNTY	N/A	\$60	0	0	216	216	216	216
GREENVILLE	D	GREENVILLE CONSERVATION AND WTP	D   TAWAKONI LAKE/RESERVOIR	N/A	\$237	0	140	1,391	3,059	5,320	3,212
GREENVILLE	D	GREENVILLE CONSERVATION AND WTP	DEMAND REDUCTION	\$681	\$681	4,051	4,486	5,140	6,124	7,593	9,741
GREENVILLE	D	NEW WTP GREENVILLE	D   TAWAKONI LAKE/RESERVOIR	N/A	\$1059	0	0	0	0	0	5,313
HARLETON WSC	D	INCREASE EXISTING CONTRACT (HARLETON, CYPRESS)	D   O' THE PINES LAKE/RESERVOIR	\$652	\$652	62	74	91	127	173	230
HOLLY SPRINGS WSC	D	INCREASE EXISTING CONTRACT (HOLLY SPRINGS, CYPRESS)	D   O' THE PINES LAKE/RESERVOIR	\$0	\$0	80	80	80	80	80	80
HOOKS	D	RIVERBEND STRATEGY	D   WRIGHT PATMAN LAKE/RESERVOIR	\$243	\$537	281	278	276	271	269	269

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**Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)**

WUG ENTITY NAME	WMS SPONSOR REGION	WMS NAME	SOURCE NAME	UNIT COST 2020	UNIT COST 2070	WATER MANAGEMENT STRATEGY SUPPLY (ACRE-FEET PER YEAR)					
						2020	2030	2040	2050	2060	2070
IRRIGATION, BOWIE	D	DRILL NEW WELLS (IRRIGATION BOWIE, CARRIZO-WILCOX, SULPHUR)	D   CARRIZO-WILCOX AQUIFER   BOWIE COUNTY	\$1052	\$624	4,134	4,134	4,134	4,134	4,134	4,134
IRRIGATION, HARRISON	D	DRILL NEW WELLS (IRRIGATION HARRISON, QUEEN CITY, SABINE)	D   QUEEN CITY AQUIFER   HARRISON COUNTY	\$118	\$31	161	161	161	161	161	161
IRRIGATION, HARRISON	D	DRILL NEW WELLS (IRRIGATION HARRISON, QUEEN CITY, CYPRESS)	D   QUEEN CITY AQUIFER   HARRISON COUNTY	\$120	\$35	484	484	484	484	484	484
IRRIGATION, HOPKINS	D	DRILL NEW WELLS (IRRIGATION HOPKINS, CARRIZO-WILCOX, SABINE)	D   CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	N/A	\$728	0	0	111	387	575	931
IRRIGATION, HOPKINS	D	DRILL NEW WELLS (IRRIGATION HOPKINS, CARRIZO-WILCOX, SULPHUR)	D   CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	\$759	\$593	4,627	4,627	4,516	4,240	4,052	3,696
IRRIGATION, HUNT	D	DRILL NEW WELLS (IRRIGATION HUNT, NACATOCH, SABINE)	D   NACATOCH AQUIFER   HUNT COUNTY	\$1396	\$639	230	230	230	230	230	230
IRRIGATION, LAMAR	D	PAT MAYSE RAW WATER PIPELINE (IRRIGATION LAMAR)	D   PAT MAYSE LAKE/RESERVOIR	\$897	\$321	1,468	1,468	1,468	1,468	1,468	1,468
IRRIGATION, RED RIVER	D	DRILL NEW WELLS (IRRIGATION, RED RIVER)	D   NACATOCH AQUIFER   RED RIVER COUNTY	\$831	\$607	2,057	2,057	2,057	2,057	2,057	2,057
IRRIGATION, VAN ZANDT	D	DRILL NEW WELLS (IRRIGATION VAN ZANDT, QUEEN CITY, NECHES)	D   QUEEN CITY AQUIFER   VAN ZANDT COUNTY	\$1137	\$617	227	227	227	227	227	227
JOSEPHINE*	C	CONSERVATION - JOSEPHINE	DEMAND REDUCTION	N/A	\$132	0	1	2	3	3	3
JOSEPHINE*	C	CONSERVATION, IRRIGATION RESTRICTIONS - JOSEPHINE	DEMAND REDUCTION	\$184	\$69	1	2	3	4	4	4
JOSEPHINE*	C	MARVIN NICHOLS (328) STRATEGY FOR NTMWD, TRWD, AND UTRWD	D   MARVIN NICHOLS LAKE/RESERVOIR	N/A	\$707	0	0	0	16	20	17
JOSEPHINE*	C	NTMWD - ADDITIONAL LAVON WATERSHED REUSE	C   TRINITY INDIRECT REUSE	N/A	\$835	0	0	0	1	3	4
JOSEPHINE*	C	NTMWD - ADDITIONAL MEASURES TO ACCESS FULL LAVON YIELD	C   NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	N/A	\$75	0	8	13	13	15	13
JOSEPHINE*	C	NTMWD - EXPANDED WETLAND REUSE	C   TRINITY INDIRECT REUSE	N/A	\$749	0	0	2	2	4	4
JOSEPHINE*	C	NTMWD - OKLAHOMA	OK   OKLAHOMA RUN-OF-RIVER	N/A	\$423	0	0	0	0	0	5
JOSEPHINE*	C	NTMWD - TEXOMA BLENDING	C   NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	N/A	\$430	0	0	4	9	11	12
JOSEPHINE*	C	WRIGHT PATMAN REALLOCATION FOR NTMWD, TRWD, AND UTRWD	D   WRIGHT PATMAN LAKE/RESERVOIR	N/A	\$834	0	0	0	0	0	6
LEIGH WSC	D	DRILL NEW WELLS (LEIGH, QUEEN CITY, CYPRESS)	D   QUEEN CITY AQUIFER   HARRISON COUNTY	N/A	\$123	0	0	54	108	108	162
LINDALE*	D	DRILL NEW WELLS (LINDALE, CARRIZO, NECHES)	I   CARRIZO-WILCOX AQUIFER   SMITH COUNTY	\$370	\$93	206	402	599	781	984	1,198
LINDALE*	I	TYLER-LAKE PALESTINE	I   PALESTINE LAKE/RESERVOIR	N/A	\$896	0	116	206	313	426	538
LITTLE HOPE MOORE WSC	D	DRILL NEW WELL (LITTLE HOPE MOORE WSC, VAN ZANDT, CARRIZO, NECHES)	D   CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	N/A	\$1059	0	0	0	3	11	17

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### Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

						WATER MANAGEMENT STRATEGY SUPPLY (ACRE-FEET PER YEAR)					
WUG ENTITY NAME	WMS SPONSOR REGION	WMS NAME	SOURCE NAME	UNIT COST 2020	UNIT COST 2070	2020	2030	2040	2050	2060	2070
LIVESTOCK, BOWIE	D	BOWIE COUNTY LIVESTOCK DRILL NEW WELLS	D   CARRIZO-WILCOX AQUIFER   BOWIE COUNTY	\$1518	\$650	417	417	378	325	278	260
LIVESTOCK, BOWIE	D	BOWIE COUNTY LIVESTOCK DRILL NEW WELLS	D   NACATOCH AQUIFER   BOWIE COUNTY	\$1401	\$639	252	252	229	196	168	156
LIVESTOCK, CAMP	D	DRILL NEW WELLS (LIVESTOCK, CAMP, QUEEN CITY, CYPRESS)	D   QUEEN CITY AQUIFER   CAMP COUNTY	\$123	\$46	4,000	4,000	4,000	4,000	4,000	4,000
LIVESTOCK, CASS	D	DRILL NEW WELLS (LIVESTOCK, CASS, QUEEN CITY, CYPRESS)	D   QUEEN CITY AQUIFER   CASS COUNTY	\$111	\$35	968	968	968	968	968	968
LIVESTOCK, CASS	D	DRILL NEW WELLS (LIVESTOCK, CASS, QUEEN CITY, SULPHUR)	D   QUEEN CITY AQUIFER   CASS COUNTY	\$111	\$35	966	966	966	966	966	966
LIVESTOCK, DELTA	D	DRILL NEW WELLS (LIVESTOCK, DELTA, NACATOCH, SULPHUR)	D   NACATOCH AQUIFER   DELTA COUNTY	\$1134	\$615	262	250	250	250	250	250
LIVESTOCK, FRANKLIN	D	DRILL NEW WELLS (LIVESTOCK, FRANKLIN, CARRIZO, CYPRESS)	D   CARRIZO-WILCOX AQUIFER   FRANKLIN COUNTY	\$111	\$35	805	805	805	805	805	805
LIVESTOCK, FRANKLIN	D	DRILL NEW WELLS (LIVESTOCK, FRANKLIN, CARRIZO, SULPHUR)	D   CARRIZO-WILCOX AQUIFER   FRANKLIN COUNTY	\$111	\$35	1,129	1,129	1,129	1,129	1,129	1,129
LIVESTOCK, HOPKINS	D	DRILL NEW WELLS (LIVESTOCK, HOPKINS, CARRIZO, SULPHUR)	D   CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	\$1016	\$704	1,068	1,090	1,140	1,143	1,196	1,219
LIVESTOCK, HUNT	D	DRILL NEW WELL (LIVESTOCK, HUNT, TRINITY, SABINE)	D   TRINITY AQUIFER   HUNT COUNTY	\$16500	\$2000	2	2	2	2	2	2
LIVESTOCK, LAMAR	D	LAMAR LIVESTOCK PIPELINE AND CONTRACT WITH LAMAR CO WSD	D   PAT MAYSE LAKE/RESERVOIR	\$3626	\$1964	617	617	617	617	617	617
LIVESTOCK, MORRIS	D	DRILL NEW WELLS (LIVESTOCK, MORRIS, QUEEN CITY, CYPRESS)	D   QUEEN CITY AQUIFER   MORRIS COUNTY	\$121	\$37	644	644	644	644	644	644
LIVESTOCK, MORRIS	D	DRILL NEW WELLS (LIVESTOCK, MORRIS, QUEEN CITY, SULPHUR)	D   QUEEN CITY AQUIFER   MORRIS COUNTY	\$97	\$19	483	483	483	483	483	483
LIVESTOCK, RED RIVER	D	DRILL NEW WELLS (LIVESTOCK, RED RIVER)	D   BLOSSOM AQUIFER   RED RIVER COUNTY	\$3636	\$909	10	11	10	11	10	11
LIVESTOCK, RED RIVER	D	DRILL NEW WELLS (LIVESTOCK, RED RIVER)	D   TRINITY AQUIFER   RED RIVER COUNTY	\$1207	\$626	174	173	174	173	174	173
LIVESTOCK, TITUS	D	DRILL NEW WELLS (LIVESTOCK, TITUS)	D   CARRIZO-WILCOX AQUIFER   TITUS COUNTY	\$808	\$531	1,939	1,939	1,939	1,939	1,984	2,005
LIVESTOCK, UPSHUR	D	DRILL NEW WELLS (LIVESTOCK, UPSHUR, QUEEN CITY, CYPRESS)	D   QUEEN CITY AQUIFER   UPSHUR COUNTY	\$106	\$31	161	161	161	161	161	161
LIVESTOCK, UPSHUR	D	DRILL NEW WELLS (LIVESTOCK, UPSHUR, QUEEN CITY, SABINE)	D   QUEEN CITY AQUIFER   UPSHUR COUNTY	\$106	\$31	161	161	161	161	161	161
LIVESTOCK, WOOD	D	DRILL NEW WELLS (LIVESTOCK, WOOD, QUEEN CITY, SABINE)	D   QUEEN CITY AQUIFER   WOOD COUNTY	\$111	\$111	1,129	1,129	1,129	1,129	1,129	1,129
MABANK*	C	CONSERVATION - MABANK	DEMAND REDUCTION	\$767	\$305	2	2	3	5	4	4
MABANK*	C	CONSERVATION - WASTE PROHIBITION, MABANK	DEMAND REDUCTION	N/A	\$347	0	0	0	0	1	1
MABANK*	C	CONSERVATION, IRRIGATION RESTRICTIONS - MABANK	DEMAND REDUCTION	\$107	\$70	1	2	2	2	3	5

\*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

### Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG ENTITY NAME	WMS SPONSOR REGION	WMS NAME	SOURCE NAME	UNIT COST 2020	UNIT COST 2070	WATER MANAGEMENT STRATEGY SUPPLY (ACRE-FEET PER YEAR)					
						2020	2030	2040	2050	2060	2070
MABANK*	C	CONSERVATION, WATER LOSS CONTROL - MABANK	DEMAND REDUCTION	N/A	N/A	0	0	0	0	0	0
MABANK*	C	INTEGRATED PIPELINE	C   TRINITY INDIRECT REUSE	N/A	\$163	0	15	12	12	20	28
MABANK*	C	MARVIN NICHOLS (328) STRATEGY FOR NTMWD, TRWD, AND UTRWD	D   MARVIN NICHOLS LAKE/RESERVOIR	N/A	\$1003	0	0	0	16	27	36
MABANK*	C	TRWD - AQUIFER STORAGE AND RECOVERY PILOT	C   TRINITY AQUIFER ASR   TARRANT COUNTY	N/A	\$99	0	0	1	0	1	1
MABANK*	C	TRWD - CARRIZO-WILCOX GROUNDWATER	C   CARRIZO-WILCOX AQUIFER   FREESTONE COUNTY	N/A	\$375	0	0	0	0	0	1
MABANK*	C	TRWD - CARRIZO-WILCOX GROUNDWATER	I   CARRIZO-WILCOX AQUIFER   ANDERSON COUNTY	N/A	\$375	0	0	2	2	3	4
MABANK*	C	TRWD - CARRIZO-WILCOX GROUNDWATER	I   QUEEN CITY AQUIFER   ANDERSON COUNTY	N/A	\$375	0	0	1	1	2	2
MABANK*	C	TRWD - REUSE FROM TRA CENTRAL WWTP	C   TRINITY INDIRECT REUSE	N/A	\$510	0	3	3	4	8	13
MABANK*	C	TRWD - TEHUACANA	C   TEHUACANA LAKE/RESERVOIR	N/A	\$1069	0	0	2	2	3	5
MABANK*	C	TRWD - UNALLOCATED SUPPLY UTILIZATION	C   TRWD LAKE/RESERVOIR SYSTEM	\$0	\$0	14	0	0	0	1	2
MABANK*	C	WRIGHT PATMAN REALLOCATION FOR NTMWD, TRWD, AND UTRWD	D   WRIGHT PATMAN LAKE/RESERVOIR	N/A	\$907	0	0	0	0	0	12
MACEDONIA EYLAU MUD 1	D	RIVERBEND STRATEGY	D   WRIGHT PATMAN LAKE/RESERVOIR	\$482	\$537	588	598	601	601	601	601
MANUFACTURING, BOWIE	D	ADVANCED WATER CONSERVATION (MANUFACTURING BOWIE)	DEMAND REDUCTION	\$0	\$0	161	204	204	204	204	204
MANUFACTURING, BOWIE	D	RIVERBEND STRATEGY	D   WRIGHT PATMAN LAKE/RESERVOIR	\$105	\$85	789	59,724	66,305	74,531	82,757	100,609
MANUFACTURING, TITUS	D	ADVANCED WATER CONSERVATION (MANUFACTURING TITUS, CYPRESS)	DEMAND REDUCTION	N/A	\$0	0	415	415	415	415	415
MANUFACTURING, TITUS	D	INCREASE EXISTING CONTRACT (MANUFACTURING TITUS FROM MT PLEASANT SURPLUS)	D   BOB SANDLIN LAKE/RESERVOIR	N/A	\$782	0	1,003	880	890	1,149	1,279
MANUFACTURING, UPSHUR	D	DRILL NEW WELLS (MANUFACTURING UPSHUR, QUEEN CITY, CYPRESS)	D   QUEEN CITY AQUIFER   UPSHUR COUNTY	\$106	\$31	161	161	161	161	161	161
MANUFACTURING, VAN ZANDT	D	ADVANCED WATER CONSERVATION (MANUFACTURING VAN ZANDT)	DEMAND REDUCTION	\$0	\$0	50	75	75	75	75	75
MANUFACTURING, VAN ZANDT	D	DRILL NEW WELLS (MANUFACTURING VAN ZANDT, CARRIZO-WILCOX, TRINITY)	D   CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	\$893	\$613	242	504	504	356	238	143
MANUFACTURING, VAN ZANDT	D	INCREASE EXISTING CONTRACT (MANUFACTURING VAN ZANDT FROM GOLDEN WSC SURPLUS)	D   CARRIZO-WILCOX AQUIFER   WOOD COUNTY	N/A	\$1303	0	0	0	62	191	214

\*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

### Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG ENTITY NAME	WMS SPONSOR REGION	WMS NAME	SOURCE NAME	UNIT COST 2020	UNIT COST 2070	WATER MANAGEMENT STRATEGY SUPPLY (ACRE-FEET PER YEAR)					
						2020	2030	2040	2050	2060	2070
MANUFACTURING, VAN ZANDT	D	INCREASE EXISTING CONTRACT (MANUFACTURING VAN ZANDT FROM GRAND SALINE SURPLUS)	D   CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	N/A	\$2803	0	0	0	0	0	72
MANUFACTURING, WOOD	D	DRILL NEW WELLS (MANUFACTURING, WOOD, QUEEN CITY, SABINE)	D   QUEEN CITY AQUIFER   WOOD COUNTY	\$78	\$25	1,129	1,610	1,610	1,610	1,610	1,610
MARTIN SPRINGS WSC	D	INCREASE EXISTING CONTRACT (MARTIN SPRINGS)	D   CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	N/A	\$1176	0	0	0	0	0	29
MAUD	D	RIVERBEND STRATEGY	D   WRIGHT PATMAN LAKE/RESERVOIR	\$243	\$537	211	226	241	238	237	237
MILLER GROVE WSC	D	DRILL NEW WELLS (MILLER GROVE WSC, HOPKINS, CARRIZO-WILCOX, SULPHUR)	D   CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	\$9000	\$2154	8	16	23	29	40	52
MINING, GREGG	D	DRILL NEW WELLS (MINING GREGG, CARRIZO-WILCOX, SABINE)	D   CARRIZO-WILCOX AQUIFER   GREGG COUNTY	\$370	\$74	27	27	27	27	27	27
MINING, HARRISON	D	DRILL NEW WELLS (MINING HARRISON, QUEEN CITY, CYPRESS)	D   QUEEN CITY AQUIFER   HARRISON COUNTY	\$117	\$36	332	332	332	332	332	332
MINING, HARRISON	D	DRILL NEW WELLS (MINING HARRISON, QUEEN CITY, SABINE)	D   QUEEN CITY AQUIFER   HARRISON COUNTY	\$126	\$51	1,452	1,452	1,452	1,452	1,452	1,452
MINING, HOPKINS	D	DRILL NEW WELLS (MINING HOPKINS, HOPKINS, CARRIZO, SULPHUR)	D   CARRIZO-WILCOX AQUIFER   HOPKINS COUNTY	\$1123	\$718	227	283	360	444	533	639
MINING, HUNT	D	DRILL NEW WELLS (MINING HUNT, TRINITY, SABINE)	D   TRINITY AQUIFER   HUNT COUNTY	\$1384	N/A	73	64	35	19	7	0
MINING, MARION	D	DRILL NEW WELLS (MINING MARION, QUEEN CITY, CYPRESS)	D   QUEEN CITY AQUIFER   MARION COUNTY	\$121	\$37	432	645	645	645	645	645
NASH	D	RIVERBEND STRATEGY	D   WRIGHT PATMAN LAKE/RESERVOIR	\$243	\$537	392	458	523	589	589	589
NEW BOSTON	D	RIVERBEND STRATEGY	D   WRIGHT PATMAN LAKE/RESERVOIR	\$243	\$537	1,390	1,399	1,385	1,381	1,379	1,379
NORTH HARRISON WSC	D	DRILL NEW WELLS (NORTH HARRISON, QUEEN CITY, CYPRESS)	D   QUEEN CITY AQUIFER   HARRISON COUNTY	N/A	\$130	0	0	0	0	54	54
NORTH HUNT SUD*	D	DRILL NEW WELLS (NORTH HUNT SUD, HUNT, NACATOCH, SABINE)	D   NACATOCH AQUIFER   HUNT COUNTY	\$2337	\$1331	78	148	243	376	568	846
PANOLA-BETHANY WSC*	D	DRILL NEW WELLS (PANOLA BETHANY, QUEEN CITY, SABINE)	D   QUEEN CITY AQUIFER   HARRISON COUNTY	N/A	\$77	0	52	112	210	276	335
POETRY WSC*	C	MARVIN NICHOLS (328) STRATEGY FOR NTMWD, TRWD, AND UTRWD	D   MARVIN NICHOLS LAKE/RESERVOIR	N/A	\$707	0	0	0	55	87	102
POETRY WSC*	C	NTMWD - ADDITIONAL LAVON WATERSHED REUSE	C   TRINITY INDIRECT REUSE	N/A	\$835	0	0	0	4	14	24
POETRY WSC*	C	NTMWD - ADDITIONAL MEASURES TO ACCESS FULL LAVON YIELD	C   NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	N/A	\$75	0	4	5	4	6	6
POETRY WSC*	C	NTMWD - BOIS D'ARC LAKE	C   BOIS D'ARC LAKE/RESERVOIR	N/A	\$81	0	39	52	39	61	72
POETRY WSC*	C	NTMWD - EXPANDED WETLAND REUSE	C   TRINITY INDIRECT REUSE	N/A	\$749	0	3	8	8	16	23
POETRY WSC*	C	NTMWD - OKLAHOMA	OK   OKLAHOMA RUN-OF-RIVER	N/A	\$423	0	0	0	0	0	31

\*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

### Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG ENTITY NAME	WMS SPONSOR REGION	WMS NAME	SOURCE NAME	UNIT COST 2020	UNIT COST 2070	WATER MANAGEMENT STRATEGY SUPPLY (ACRE-FEET PER YEAR)					
						2020	2030	2040	2050	2060	2070
POETRY WSC*	C	NTMWD - TEXOMA BLENDING	C   NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	N/A	\$430	0	0	18	32	50	68
POETRY WSC*	C	WRIGHT PATMAN REALLOCATION FOR NTMWD, TRWD, AND UTRWD	D   WRIGHT PATMAN LAKE/RESERVOIR	N/A	\$834	0	0	0	0	0	34
POETRY WSC*	D	ADVANCED WATER CONSERVATION (POETRY WSC)	DEMAND REDUCTION	\$770	\$770	1	2	1	3	4	7
R P M WSC*	D	DRILL NEW WELLS (R-P-M WSC, CARRIZO-WILCOX, NECHES)	D   CARRIZO-WILCOX AQUIFER   VAN ZANDT COUNTY	N/A	\$1355	0	25	58	93	124	152
REDWATER	D	RIVERBEND STRATEGY	D   WRIGHT PATMAN LAKE/RESERVOIR	\$243	\$537	440	487	535	588	616	616
RIVERBEND WATER RESOURCES DISTRICT	D	RIVERBEND STRATEGY	D   WRIGHT PATMAN LAKE/RESERVOIR	\$105	\$537	523	536	539	537	537	537
ROYSE CITY*	C	CONSERVATION - ROYSE CITY	DEMAND REDUCTION	\$0	\$0	1	1	1	0	3	2
ROYSE CITY*	C	MARVIN NICHOLS (328) STRATEGY FOR NTMWD, TRWD, AND UTRWD	D   MARVIN NICHOLS LAKE/RESERVOIR	N/A	\$707	0	0	0	9	14	17
ROYSE CITY*	C	NTMWD - ADDITIONAL LAVON WATERSHED REUSE	C   TRINITY INDIRECT REUSE	N/A	\$835	0	0	0	1	2	4
ROYSE CITY*	C	NTMWD - ADDITIONAL MEASURES TO ACCESS FULL LAVON YIELD	C   NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	N/A	\$75	0	7	9	7	11	13
ROYSE CITY*	C	NTMWD - EXPANDED WETLAND REUSE	C   TRINITY INDIRECT REUSE	N/A	\$749	0	0	2	2	2	4
ROYSE CITY*	C	NTMWD - OKLAHOMA	OK   OKLAHOMA RUN-OF-RIVER	N/A	\$423	0	0	0	0	0	5
ROYSE CITY*	C	NTMWD - TEXOMA BLENDING	C   NORTH TEXAS MWD LAKE/RESERVOIR SYSTEM	N/A	\$430	0	0	3	5	8	11
ROYSE CITY*	C	WRIGHT PATMAN REALLOCATION FOR NTMWD, TRWD, AND UTRWD	D   WRIGHT PATMAN LAKE/RESERVOIR	N/A	\$834	0	0	0	0	0	6
SCOTTSVILLE	D	DRILL NEW WELLS (SCOTTSVILLE, QUEEN CITY, CYPRESS)	D   QUEEN CITY AQUIFER   HARRISON COUNTY	\$716	\$93	54	54	108	108	162	162
SMITH COUNTY MUD 1	D	DRILL NEW WELLS (SMITH COUNTY MUD 1, QUEEN CITY, SABINE)	D   QUEEN CITY AQUIFER   SMITH COUNTY	N/A	\$108	0	0	108	216	432	648
STAR MOUNTAIN WSC	D	DRILL NEW WELLS (STAR MOUNTAIN, QUEEN CITY, SABINE)	D   QUEEN CITY AQUIFER   SMITH COUNTY	\$611	\$116	108	108	108	108	216	216
STARRVILLE-FRIENDSHIP WSC	D	DRILL NEW WELLS (STARRVILLE FRIENDSHIP, CARRIZO, SABINE)	D   CARRIZO-WILCOX AQUIFER   GREGG COUNTY	N/A	\$574	0	0	0	0	108	108
STEAM ELECTRIC POWER, TITUS	D	INCREASE EXISTING CONTRACT (STEAM ELECTRIC POWER TITUS)	D   BOB SANDLIN LAKE/RESERVOIR	\$100	\$100	5,351	6,019	5,760	5,716	4,868	4,172
STEAM ELECTRIC POWER, TITUS	D	INCREASE EXISTING CONTRACT (STEAM ELECTRIC POWER TITUS)	D   O' THE PINES LAKE/RESERVOIR	\$100	\$100	24,715	24,847	26,006	26,850	27,946	28,911
TEXARKANA	D	RIVERBEND STRATEGY	D   WRIGHT PATMAN LAKE/RESERVOIR	\$243	\$537	7,145	7,282	7,459	7,706	8,028	8,380
WAKE VILLAGE	D	RIVERBEND STRATEGY	D   WRIGHT PATMAN LAKE/RESERVOIR	\$243	\$537	699	750	802	861	932	931

\*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

### Region D Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG ENTITY NAME	WMS SPONSOR REGION	WMS NAME	SOURCE NAME	UNIT COST 2020	UNIT COST 2070	WATER MANAGEMENT STRATEGY SUPPLY (ACRE-FEET PER YEAR)					
						2020	2030	2040	2050	2060	2070
WASKOM	D	DRILL NEW WELLS (WASKOM, QUEEN CITY, CYPRESS)	D   QUEEN CITY AQUIFER   HARRISON COUNTY	\$602	\$80	108	162	162	216	270	324
WINONA	D	DRILL NEW WELLS (WINONA, CARRIZO-WILCOX, SABINE)	D   CARRIZO-WILCOX AQUIFER   SMITH COUNTY	N/A	\$111	0	0	0	108	108	108
WOLFE CITY*	D	NEW CONTRACT WITH GREENVILLE AND PIPELINE TO WOLFE CITY	D   TAWAKONI LAKE/RESERVOIR	N/A	\$1120	0	0	0	52	149	293
<b>REGION D RECOMMENDED WMS SUPPLY TOTAL</b>						<b>83,220</b>	<b>148,810</b>	<b>160,572</b>	<b>175,221</b>	<b>191,870</b>	<b>220,948</b>

\*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

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REGION D  
EVALUATIONS OF WATER MANAGEMENT STRATEGIES  
FOR MEETING PROJECTED WATER SUPPLY NEEDS  
TO YEAR 2070

## BOWIE COUNTY

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WUGs:

Burns Redbank WSC  
Central Bowie County WSC  
The City of DeKalb  
The City of Hooks  
Bowie County Irrigation  
Bowie County Livestock  
Macedonia-Eylau MUD #1  
Bowie County Manufacturing  
The City of Maud  
The City of Nash  
The City of New Boston  
The City of Redwater  
Riverbend Water Resources District  
The City of Texarkana, Texas  
The City of Wake Village

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF BURNS REDBANK WSC**

**Description of Water User Group:**

Burns Redbank Water Supply Corporation (WSC) provides water service in Bowie County. The system population is projected to be 1,576 in 2020 and 1,634 in the year 2070. The WSC has a contract for water supply with the City of Hooks from Lake Wright Patman. The WSC is projected to have a shortage in 2020 due to aging of Texarkana’s Water Treatment Plant.

**Water Supply and Demand Analysis:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Population</b>	1,576	1,620	1,634	1,634	1,634	1,634
<b>Projected Water Demand</b>	201	199	196	194	193	193
<b>Water Demand from other entities</b>	0	0	0	0	0	0
<b>Current Water Supply</b>	0	0	0	0	0	0
<b>Projected Supply Surplus (+) / Deficit (-)</b>	<b>-201</b>	<b>-199</b>	<b>-196</b>	<b>-194</b>	<b>-193</b>	<b>-193</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

There were four alternative strategies considered to meet the WSC’s water supply shortages as summarized in the Table below. Advanced conservation was not considered because the WSC’s supply is not projected to meet TCEQ regulatory minimums. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was not selected because the WSC is planning on continuing to purchase surface water from the City of Hooks. A request was submitted by Riverbend Water Resources District to consider a new Water Treatment Plant, pipeline, and intake to Wright Patman Reservoir. Thus, a renewal contract with Texarkana/Riverbend has been considered herein.

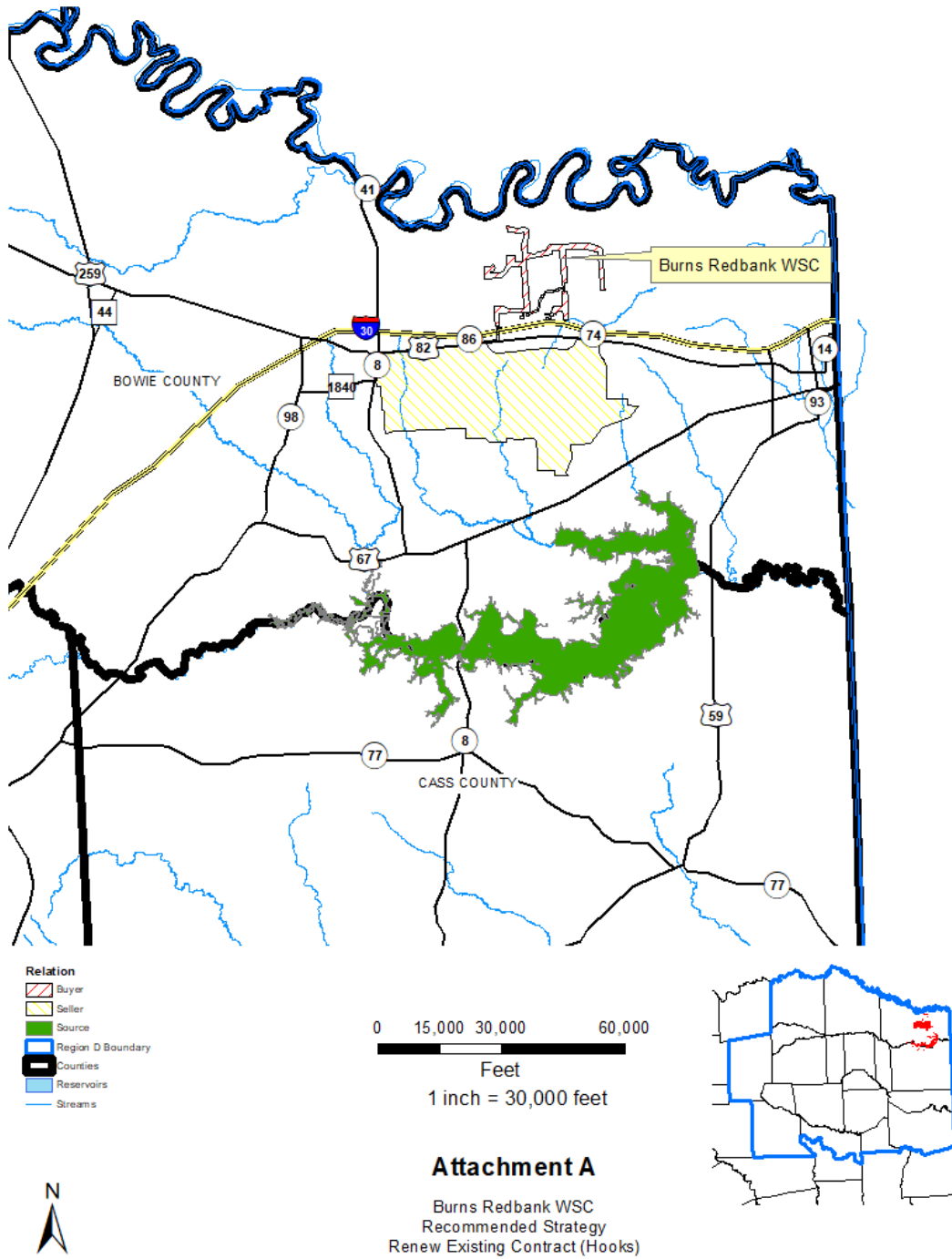
<b>Strategy</b>	<b>Firm Yield (ac-ft)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Environmental Impact</b>
Renew Existing Contract	<b>201</b>		<b>\$97,000</b>	<b>\$483</b>	<b>1</b>

**Recommendations:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
Renew Existing Contract (ac-ft/yr)	201	199	196	194	193	193

It is recommended that the Burns Redbank WSC continue its surface water purchase from the City of Hooks contingent upon Riverbend WRD’s strategies.





<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices Burns Redbank - Renew Existing Contract</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>ANNUAL COST</b>	
Operation and Maintenance	
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (0 kW-hr @ 0.08 \$/kW-hr)	\$0
Purchase of Water (201 acft/yr @ 482.23 \$/acft)	<u>\$97,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$97,000</b>
<b>Available Project Yield (acft/yr)</b>	201
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$483
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$483
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$1.48
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$1.48
<i>JMP</i>	<i>10/2/2019</i>

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CENTRAL BOWIE COUNTY WSC**

**Description of Water User Group:**

The Central Bowie County Water Supply Corporation (WSC) provides water service in Bowie County. The system population is projected to be 7,529 in 2020 and 12,101 in the year 2070. The WSC has a contract for 110 ac-ft/yr of water supply from Lake Wright Patman with the City of Texarkana/Riverbend Water Resources District (WRD). The WSC is projected to have a shortage in 2020 due to aging of Texarkana’s Water Treatment Plant.

**Water Supply and Demand Analysis:**

	2020	2030	2040	2050	2060	2070
<b>Population</b>	7,529	8,037	8,903	9,862	10,924	12,101
<b>Projected Water Demand</b>	619	639	708	784	869	962
<b>Water Demand from other entities</b>	0	0	0	0	0	0
<b>Current Water Supply</b>	0	0	0	0	0	0
<b>Projected Supply Surplus (+) / Deficit (-)</b>	<b>-619</b>	<b>-639</b>	<b>-708</b>	<b>-784</b>	<b>-869</b>	<b>-962</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

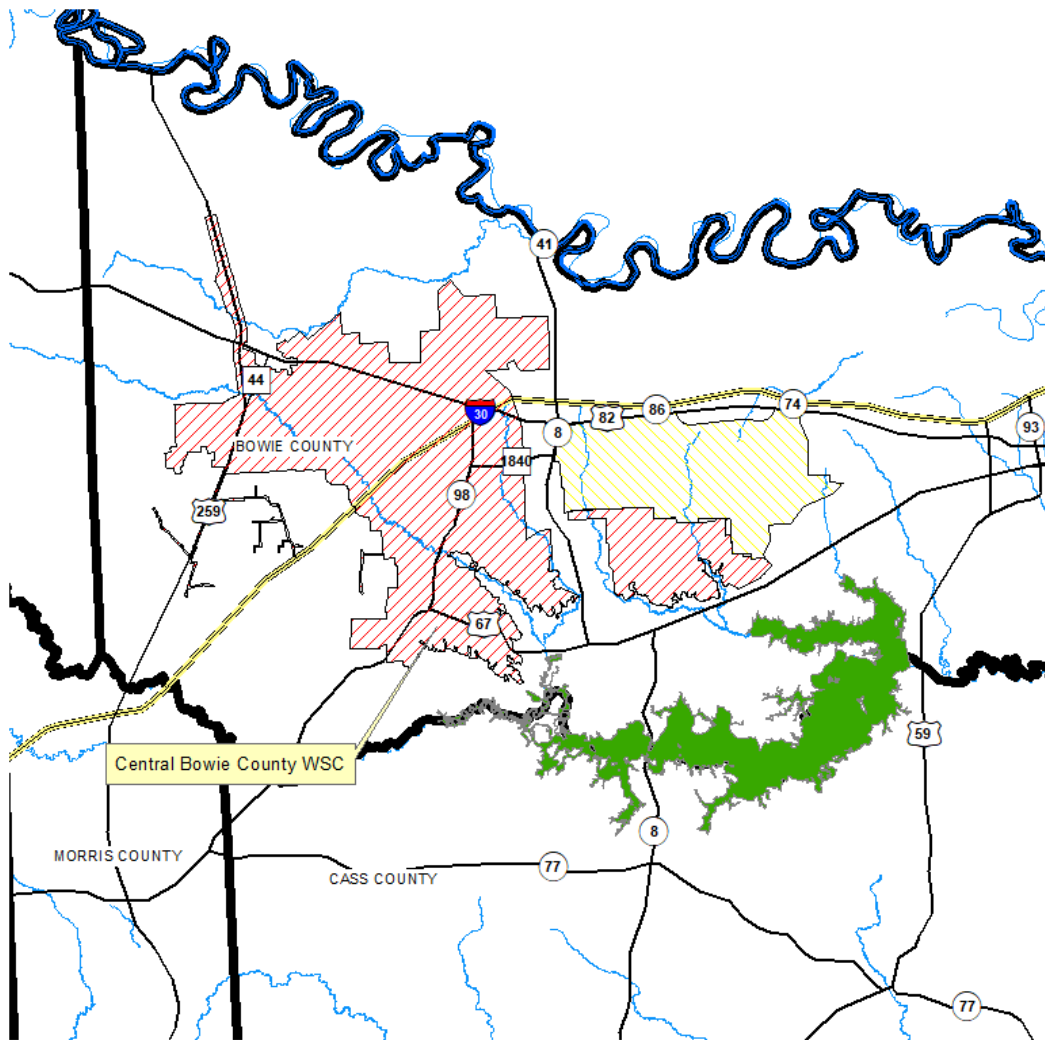
There were four alternative strategies considered to meet the WSC’s water supply shortages as summarized in the Table below. Advanced conservation was not considered because the WSC’s supply would not be projected to meet TCEQ regulatory minimums. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was not selected because the WSC is planning on continuing to purchase surface water from the City of Texarkana and/or Riverbend WRD. A request was submitted by Riverbend Water Resources District to consider a new Water Treatment Plant, pipeline, and intake to Wright Patman Reservoir. Thus, a renewal contract with Texarkana/Riverbend has been considered herein.

<b>Strategy</b>	<b>Firm Yield (ac-ft)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Environmental Impact</b>
Renew Existing Contract	962		\$464,000	\$482	1

**Recommendations:**

	2020	2030	2040	2050	2060	2070
Renew Existing Contract (ac-ft/yr)	619	639	708	784	869	962

It is recommended that the Central Bowie County WSC continue its surface water purchase from the City of Texarkana and/or Riverbend WRD contingent upon Riverbend WRD’s recommended strategies.



- Relation**
- Buyer
  - Seller
  - Source
  - Region D Boundary
  - Counties
  - Reservoirs
  - Streams

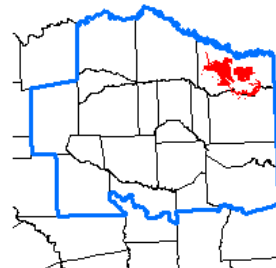
0 15,000 30,000 60,000

Feet

1 inch = 30,000 feet

**Attachment A**

Central Bowie County WSC  
 Recommended Strategy  
 Renew Existing Contract (Riverbend WRD)



<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices Central Bowie WSC - Renew Existing Contract</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018</b>	
<i>Item</i>	<i>Estimated Costs for Facilities</i>
<b>ANNUAL COST</b>	
Operation and Maintenance	
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (0 kW-hr @ 0.08 \$/kW-hr)	\$0
Purchase of Water (962 acft/yr @ 482.23 \$/acft)	<u>\$464,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$464,000</b>
<b>Available Project Yield (acft/yr)</b>	962
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$482
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$482
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$1.48
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$1.48
<i>JMP</i>	<i>10/2/2019</i>

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF DE KALB**

**Description of Water User Group:**

The City of De Kalb provides water service in Bowie County. The City population is projected to be 1,711 in 2020 and 1,827 in the year 2070. The City has a contract for water supply with the City of Texarkana from Lake Wright Patman. The City is projected to have a shortage in 2020 due to aging of Texarkana’s Water Treatment Plant.

**Water Supply and Demand Analysis:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Population</b>	1,711	1,748	1,769	1,780	1,803	1,827
<b>Projected Water Demand</b>	295	292	289	291	294	298
<b>Water Demand from other entities</b>	0	0	0	0	0	0
<b>Current Water Supply</b>	0	0	0	0	0	0
<b>Projected Supply Surplus (+) / Deficit (-)</b>	<b>-295</b>	<b>-292</b>	<b>-289</b>	<b>-291</b>	<b>-294</b>	<b>-298</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

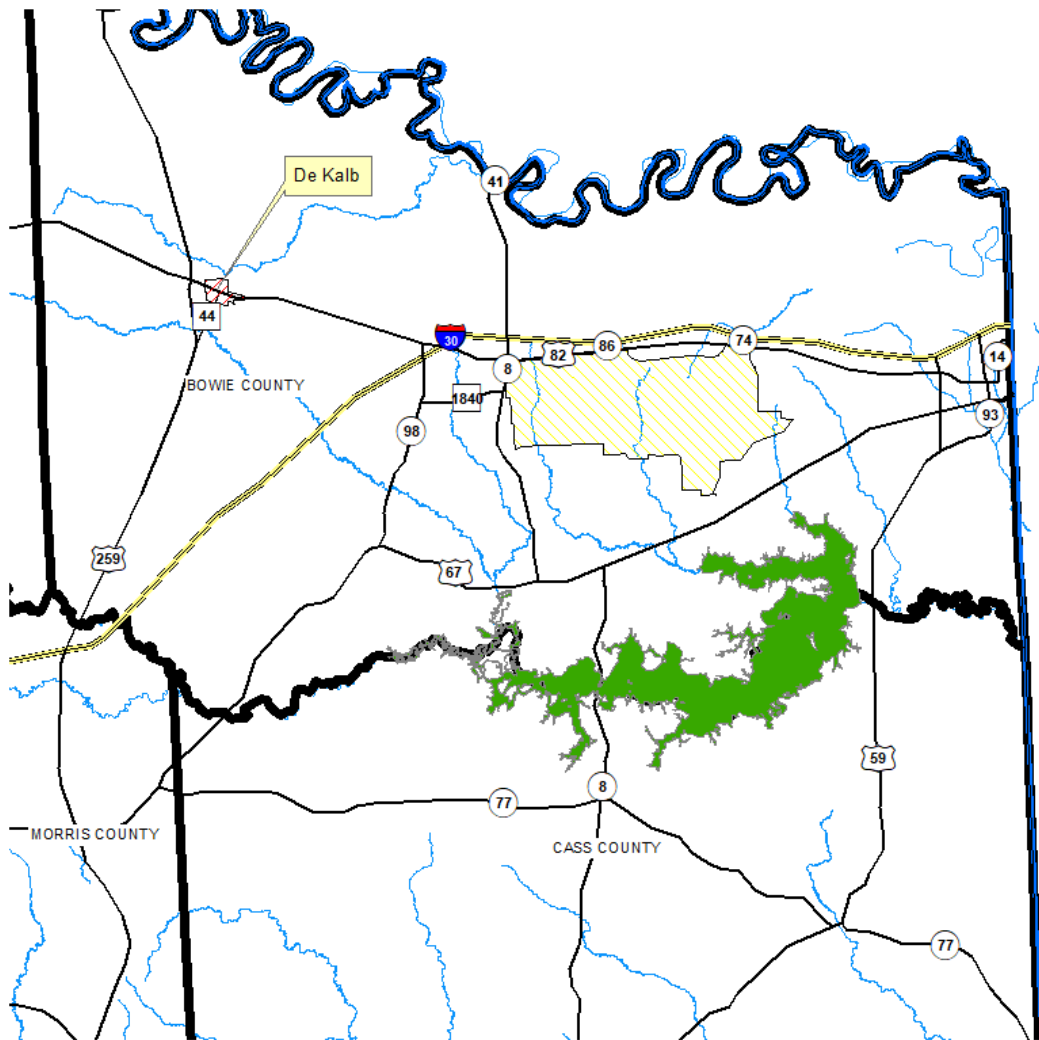
There were four alternative strategies considered to meet the City’s water supply shortages as summarized in the Table below. Advanced conservation was not considered because De Kalb’s supply is not projected to meet TCEQ regulatory minimums. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was not selected because the City is planning on continuing to purchase surface water from the City of Texarkana. A request was submitted by Riverbend Water Resources District to consider a new Water Treatment Plant, pipeline, and intake to Wright Patman Reservoir. Thus, a renewal contract with Texarkana/Riverbend has been considered herein.

<b>Strategy</b>	<b>Firm Yield (ac-ft)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Environmental Impact</b>
Renew Existing Contract	<b>298</b>		<b>\$72,000</b>	<b>\$242</b>	<b>1</b>

**Recommendations:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
Renew Existing Contract (ac-ft/yr)	295	292	289	291	294	298

It is recommended that the City of DeKalb continue its surface water purchase from Texarkana contingent upon Texarkana/Riverbend strategies.



- Relation**
- Buyer
  - Seller
  - Source
  - Region D Boundary
  - Counties
  - Reservoirs
  - Streams

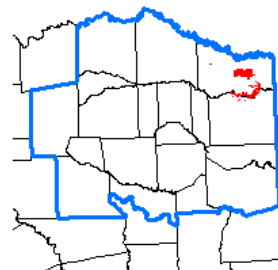
0 15,000 30,000 60,000

Feet

1 inch = 30,000 feet

**Attachment A**

De Kalb  
 Recommended Strategy  
 Renew Existing Contract (Riverbend WRD)



<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices De Kalb - Renew Existing Contract</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018</b>	
<i>Item</i>	<i>Estimated Costs for Facilities</i>
<b>ANNUAL COST</b>	
Operation and Maintenance	
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (0 kW-hr @ 0.08 \$/kW-hr)	\$0
Purchase of Water (298 acft/yr @ 242.68 \$/acft)	<u>\$72,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$72,000</b>
<b>Available Project Yield (acft/yr)</b>	298
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$242
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$242
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$0.74
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$0.74
<i>JMP</i>	<i>10/2/2019</i>



**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF HOOKS**

**Description of Water User Group:**

The City of Hooks provides water service in Bowie County. The City population is projected to be 3,049 in 2020 and 3,303 in the year 2070. The City has a contract for water supply with the City of Texarkana from Lake Wright Patman. The City is projected to have a shortage in 2020 due to aging of Texarkana’s Water Treatment Plant.

**Water Supply and Demand Analysis:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Population</b>	3,049	3,173	3,303	3,303	3,303	3,303
<b>Projected Water Demand</b>	281	278	276	271	269	269
<b>Water Demand from other entities</b>	0	0	0	0	0	0
<b>Current Water Supply</b>	0	0	0	0	0	0
<b>Projected Supply Surplus (+) / Deficit (-)</b>	<b>-281</b>	<b>-278</b>	<b>-276</b>	<b>-271</b>	<b>-269</b>	<b>-269</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

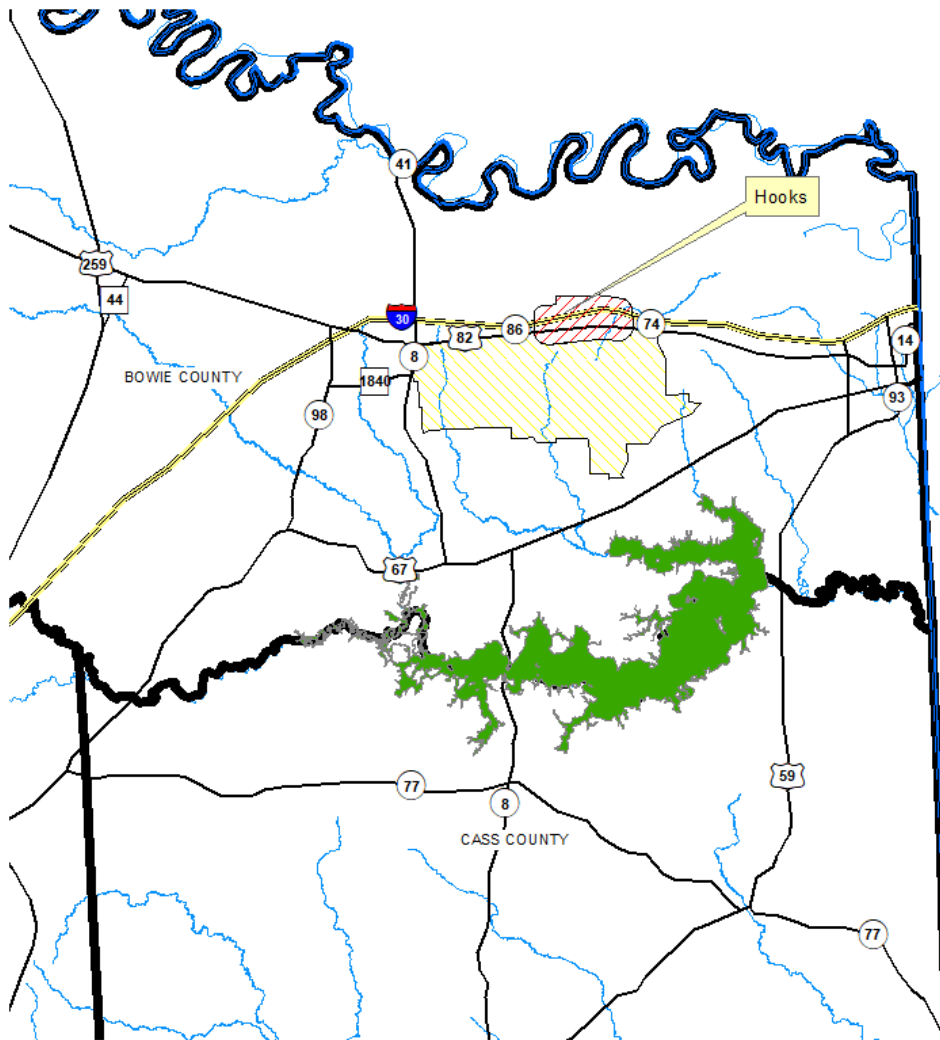
There were four alternative strategies considered to meet the City’s water supply shortages as summarized in the Table below. Advanced conservation was not considered because the per capita use per day was less than the 140 gpcd threshold set by the water planning group. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was not selected because the City is planning on continuing to purchase surface water from the City of Texarkana. A request was submitted by Riverbend Water Resources District to consider a new Water Treatment Plant, pipeline, and intake to Wright Patman Reservoir. Thus, a renewal contract with Texarkana/Riverbend has been considered herein.

<b>Strategy</b>	<b>Firm Yield (ac-ft)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Environmental Impact</b>
Renew Existing Contract	<b>281</b>		<b>\$68,000</b>	<b>\$242</b>	<b>1</b>

**Recommendations:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Renew Existing Contract (ac-ft/yr)</b>	<b>281</b>	<b>278</b>	<b>276</b>	<b>271</b>	<b>269</b>	<b>269</b>

It is recommended that the City of Hooks continue its surface water purchase from Texarkana contingent upon Texarkana/Riverbend strategies.



- Relation**
- Buyer
  - Seller
  - Source
  - Region D Boundary
  - Counties
  - Reservoirs
  - Streams

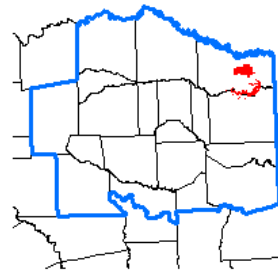
0 15,000 30,000 60,000

Feet

1 inch = 30,000 feet

### Attachment A

Hooks  
Recommended Strategy  
Renew Existing Contract (Riverbend WRD)



<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices Hooks - Renew Existing Contract</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>ANNUAL COST</b>	
Operation and Maintenance	
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (0 kW-hr @ 0.08 \$/kW-hr)	\$0
Purchase of Water (281 acft/yr @ 242.68 \$/acft)	<u>\$68,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$68,000</b>
<b>Available Project Yield (acft/yr)</b>	281
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$242
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$242
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$0.74
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$0.74
<i>JMP</i>	<i>10/2/2019</i>

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF IRRIGATION IN BOWIE COUNTY**

**Description of Water User Group:**

The Irrigation WUG in Bowie County has a demand that is projected to be 10,373 ac-ft/yr in 2020 through 2070. The Irrigation WUG in Bowie County is projected to be supplied by surface water supplies from run-of-river diversions from the Red and Sulphur Rivers. The current round of planning has identified a deficit of 4,134 ac-ft/yr in the Sulphur basin and a surplus of 922 ac-ft/yr in the Red River basin, projected to occur in 2020 through 2070.

**Water Supply and Demand Analysis:**

	2020	2030	2040	2050	2060	2070
<b>Projected Water Demand</b>	10,373	10,373	10,373	10,373	10,373	10,373
<b>Current Water Supply</b>	7,161	7,161	7,161	7,161	7,161	7,161
<b>Projected Supply Surplus (+)/Deficit(-)</b>	<b>-3,212</b>	<b>-3,212</b>	<b>-3,212</b>	<b>-3,212</b>	<b>-3,212</b>	<b>-3,212</b>

<b>Projected Supply Surplus (+)/Deficit(-) by Basin</b>	2020	2030	2040	2050	2060	2070
<b>Red River Basin</b>	922	922	922	922	922	922
<b>Sulphur Basin</b>	-4,134	-4,134	-4,134	-4,134	-4,134	-4,134
<b>Total</b>	<b>-3,212</b>	<b>-3,212</b>	<b>-3,212</b>	<b>-3,212</b>	<b>-3,212</b>	<b>-3,212</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

Four alternative strategies were considered to meet the Bowie County Irrigation WUG’s projected water supply shortages. Advanced water conservation for irrigation practices were not considered in this planning effort, as present irrigation practices likely already incorporate many BMPs to extend water supplies, thus no additional conservation would be feasible. The use of reuse water from nearby municipalities is not considered feasible as it would not be effective to deliver reuse water to rural farm irrigation systems. Groundwater from the Carrizo-Wilcox aquifer has been identified as a potential source of water for irrigation in Bowie County. Surface water was not considered as a viable alternative to meet projected demands due to this option would be considered cost prohibitive.

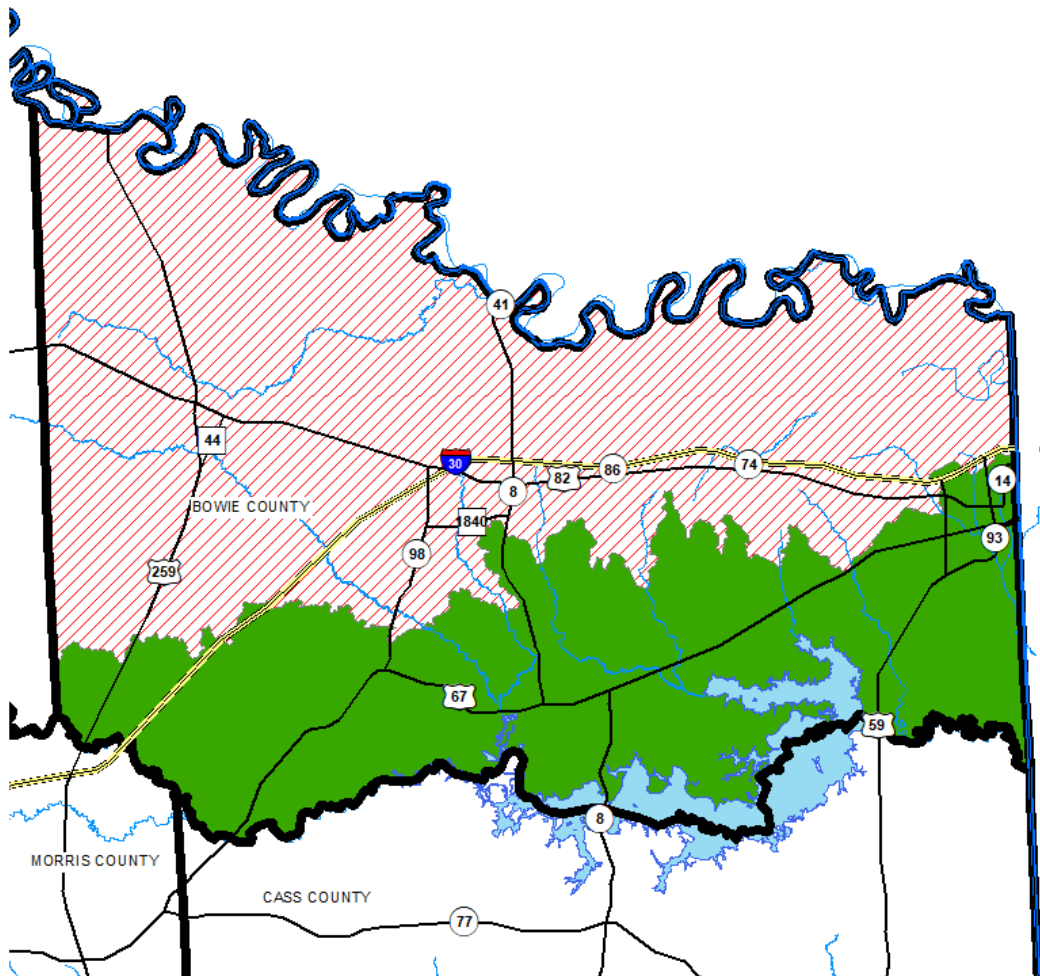
<b>Strategy</b>	<b>Strategy Yield (AF)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Environmental Impact</b>
Drill New Wells (Carrizo-Wilcox, Sulphur River Basin)	4,134	\$10,597,000	\$3,218,000	\$778	1

**Recommendations:**

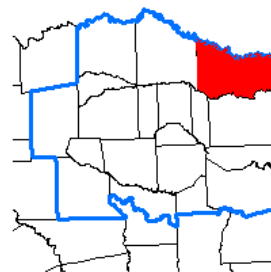
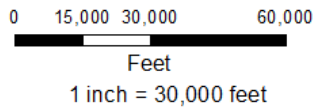
	2020	2030	2040	2050	2060	2070
<b>Drill New Wells (Carrizo-Wilcox, Sulphur River Basin; ac-ft/yr)</b>	4,134	4,134	4,134	4,134	4,134	4,134

The recommended strategy for the Bowie County Irrigation WUG to meet projected demands during the planning period is to drill 13 new ground water wells with average production capacity of 250 gpm in the Carrizo-Wilcox Aquifer in Bowie County. A well operating at an average of 250 gpm is capable of delivering 403 ac-ft per year per well.

<b>Cost Estimate Summary</b>	
<b>Water Supply Project Option</b>	
<b>September 2018 Prices</b>	
<b>Bowie Irrigation - Drill New Wells (Bowie, Carrizo-Wilcox Aquifer, Sulphur Basin)</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and</b>	
<b>a PPI of 201.9 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>CAPITAL COST</b>	
Well Fields (Wells, Pumps, and Piping)	\$7,441,000
<b>TOTAL COST OF FACILITIES</b>	<b>\$7,441,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$2,604,000
Environmental & Archaeology Studies and Mitigation	\$182,000
Land Acquisition and Surveying (17 acres)	\$86,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	<u>\$284,000</u>
<b>TOTAL COST OF PROJECT</b>	<b>\$10,597,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$746,000
Reservoir Debt Service (3.5 percent, 40 years)	\$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$74,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (4141092 kW-hr @ 0.08 \$/kW-hr)	\$331,000
Purchase of Water (4134 acft/yr @ 500 \$/acft)	<u>\$2,067,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$3,218,000</b>
<b>Available Project Yield (acft/yr)</b>	4,134
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$778
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$598
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$2.39
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$1.83
<i>JMP</i>	9/30/2019



- Relation**
- Buyer
  - Seller
  - Source
  - Region D Boundary
  - Counties
  - Reservoirs
  - Streams



### Attachment A

Irrigation Bowie Co  
 Recommended Strategy  
 Drill New Wells (Bowie, Carrizo-Wilcox, Sulphur)

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF LIVESTOCK IN BOWIE COUNTY**

**Description of Water User Group:**

The Livestock WUG in Bowie County has a demand that is projected to be 1,825 ac-ft/yr in 2020 decreasing to 1,136 ac-ft/yr in 2070. The Livestock WUG in Bowie County is projected to be supplied by groundwater supplies from the Carrizo-Wilcox Aquifer, Nacatoch Aquifer and livestock local supply. The current round of planning has identified a deficit of 417 ac-ft/yr in the Sulphur basin and 252 ac-ft/yr in the Red River basin, projected to occur in 2020 and decrease to 260 and 156 ac-ft/yr by 2070.

**Water Supply and Demand Analysis:**

	2020	2030	2040	2050	2060	2070
<b>Projected Water Demand</b>	1,825	1,825	1,657	1,421	1,217	1,136
<b>Current Water Supply</b>	1,156	1,156	1,050	900	771	720
<b>Projected Supply Surplus (+)/Deficit(-)</b>	<b>-669</b>	<b>-669</b>	<b>-607</b>	<b>-521</b>	<b>-446</b>	<b>-416</b>

<b>Projected Supply Surplus (+)/Deficit(-) by Basin</b>	2020	2030	2040	2050	2060	2070
<b>Red River Basin</b>	-252	-252	-229	-196	-168	-156
<b>Sulphur Basin</b>	-417	-417	-378	-325	-278	-260
<b>Total</b>	<b>-669</b>	<b>-669</b>	<b>-607</b>	<b>-521</b>	<b>-446</b>	<b>-416</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

Five alternative strategies were considered to meet the Bowie County Livestock WUG’s projected water supply shortages. Advanced water conservation for livestock practices were not considered, as present livestock practices likely result in sale of the livestock to reduce demand and extend water supply. The use of reuse water from nearby municipalities is not considered feasible as the water may be used for livestock consumption. Groundwater from the Carrizo-Wilcox and Nacatoch aquifers has been identified as a potential source of water for livestock in Bowie County. Surface water was not considered as a viable alternative to meet projected demands due to this option would be considered cost prohibitive.

<b>Strategy</b>	<b>Strategy Yield (AF)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Environmental Impact</b>
Drill New Wells (Carrizo-Wilcox, Sulphur River Basin)	417	\$2,423,000	\$424,000	\$1,017	1
Drill New Wells (Nacatoch, Red Basin)	252	\$1,630,000	\$268,000	\$1,063	1

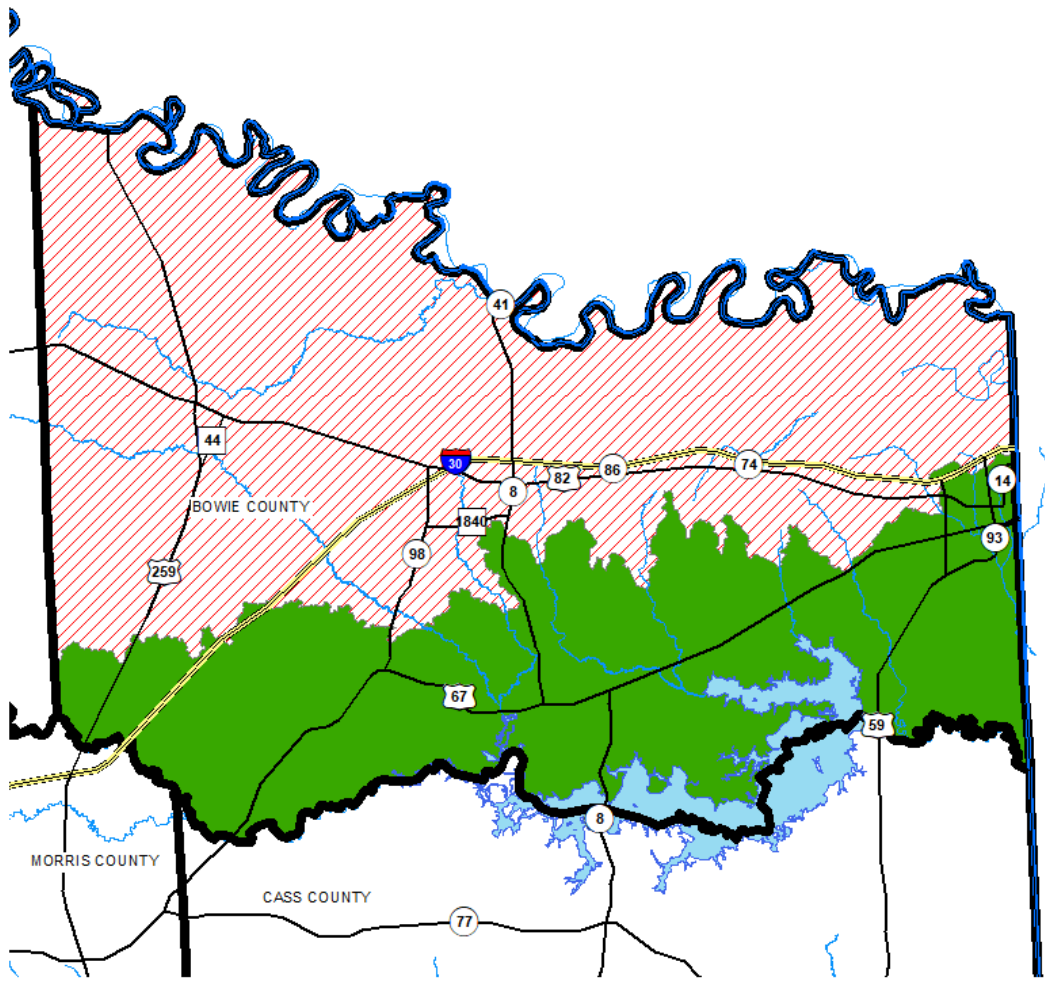
**Recommendations:**






	2020	2030	2040	2050	2060	2070
<b>Drill New Wells (Carrizo-Wilcox, Sulphur River Basin; ac-ft/yr)</b>	417	417	378	325	278	260
<b>Drill New Wells (Nacatoch, Red Basin; ac-ft/yr)</b>	252	252	229	196	168	156

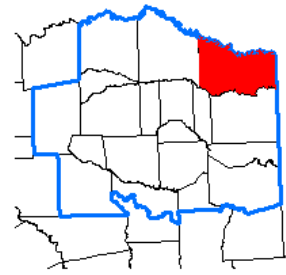
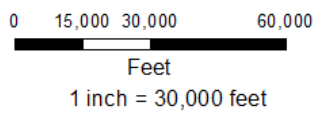
The recommended strategy for the Bowie County Livestock WUG to meet projected demands during the planning period is to drill new ground water wells in the Carrizo-Wilcox and Nacatoch Aquifers in Bowie County. This strategy estimates five (5) new wells at a rated capacity of 75 gpm in the Carrizo-Wilcox Aquifer and four (4) new wells at a rated capacity of 75 gpm in the Nacatoch Aquifer in Bowie County. A well operating at an average of 75 gpm is capable of delivering 121 ac-ft per year per well.

<b>Cost Estimate Summary</b> <b>Water Supply Project Option</b> <b>September 2018 Prices</b> <b>Bowie Livestock Sulphur - Drill New Wells (Bowie Carrizo-Wilcox Aquifer, Sulphur Basin)</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and</b> <b>a PPI of 201.9 for September 2018</b>	
<i>Item</i>	<i>Estimated Costs for Facilities</i>
Well Fields (Wells, Pumps, and Piping)	\$1,659,000
<b>TOTAL COST OF FACILITIES</b>	<b>\$1,659,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$580,000
Environmental & Archaeology Studies and Mitigation	\$81,000
Land Acquisition and Surveying (7 acres)	\$38,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	<u>\$65,000</u>
<b>TOTAL COST OF PROJECT</b>	<b>\$2,423,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$170,000
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$17,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (345061 kW-hr @ 0.08 \$/kW-hr)	\$28,000
Purchase of Water (417 acft/yr @ 500 \$/acft)	<u>\$209,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$424,000</b>
<b>Available Project Yield (acft/yr)</b>	417
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$1,017
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$609
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$3.12
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$1.87
<i>JMP</i>	<i>9/30/2019</i>





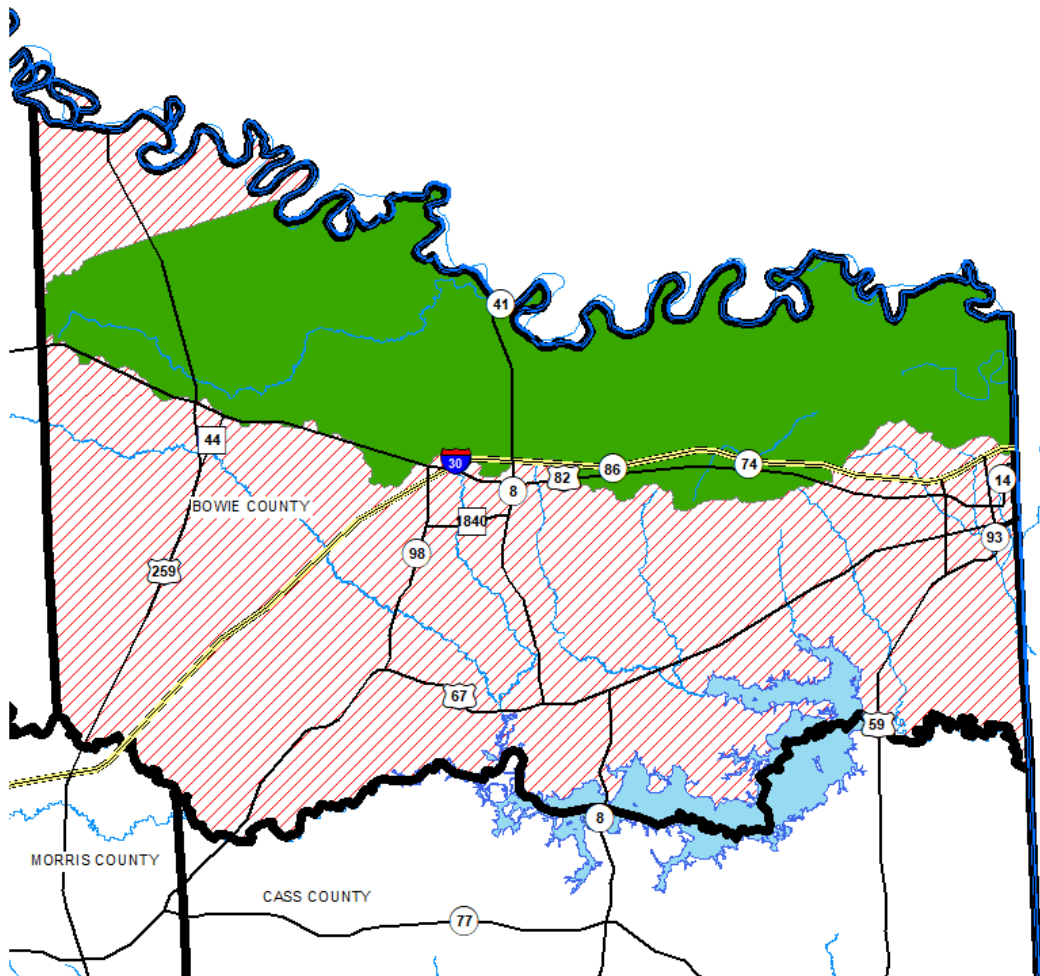
- Relation**
-  Buyer
  -  Seller
  -  Source
  -  Region D Boundary
  -  Counties
  -  Reservoirs
  -  Streams



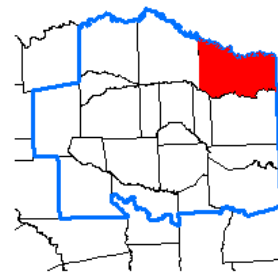
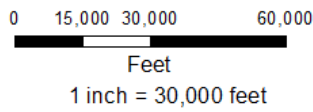
**Attachment A**

Livestock Bowie Co  
 Recommended Strategy  
 Drill New Wells (Bowie, Carrizo-Wilcox, Sulphur)

<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices</b>	
<b>Bowie Livestock Red - Drill New Wells (Bowie, Nacatoch Aquifer, Red Basin)</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
Well Fields (Wells, Pumps, and Piping)	\$1,122,000
<b>TOTAL COST OF FACILITIES</b>	<b>\$1,122,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$393,000
Environmental & Archaeology Studies and Mitigation	\$53,000
Land Acquisition and Surveying (6 acres)	\$18,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	<u>\$44,000</u>
<b>TOTAL COST OF PROJECT</b>	<b>\$1,630,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$115,000
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$11,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (203010 kW-hr @ 0.08 \$/kW-hr)	\$16,000
Purchase of Water (252 acft/yr @ 500 \$/acft)	<u>\$126,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$268,000</b>
<b>Available Project Yield (acft/yr)</b>	252
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$1,063
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$607
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$3.26
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$1.86
<i>JMP</i>	<i>9/30/2019</i>



- Relation**
- Buyer
  - Seller
  - Source
  - Region D Boundary
  - Counties
  - Reservoirs
  - Streams



**Attachment B**  
 Livestock Bowie Co  
 Recommended Strategy  
 Drill New Wells (Bowie, Nacatoch, Red)

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF MACEDONIA-EYLAU MUD#1**

**Description of Water User Group:**

Macedonia-Eylau MUD #1 provides water service in Bowie County. The MUD’s population is projected to be 8,742 in 2020 and 8,939 in the year 2070. The MUD has a contract for water supply with the City of Texarkana for 552 ac-ft/yr that expires in 2019. The MUD is projected to have a deficit of 588 ac-ft in 2020 and increasing to a deficit of 601 ac-ft by 2070.

**Water Supply and Demand Analysis:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Population</b>	8,742	8,892	8,939	8,939	8,939	8,939
<b>Projected Water Demand</b>	588	598	601	601	601	601
<b>Water Demand from other entities</b>	0	0	0	0	0	0
<b>Current Water Supply</b>	0	0	0	0	0	0
<b>Projected Supply Surplus (+) / Deficit (-)</b>	<b>-588</b>	<b>-598</b>	<b>-601</b>	<b>-601</b>	<b>-601</b>	<b>-601</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

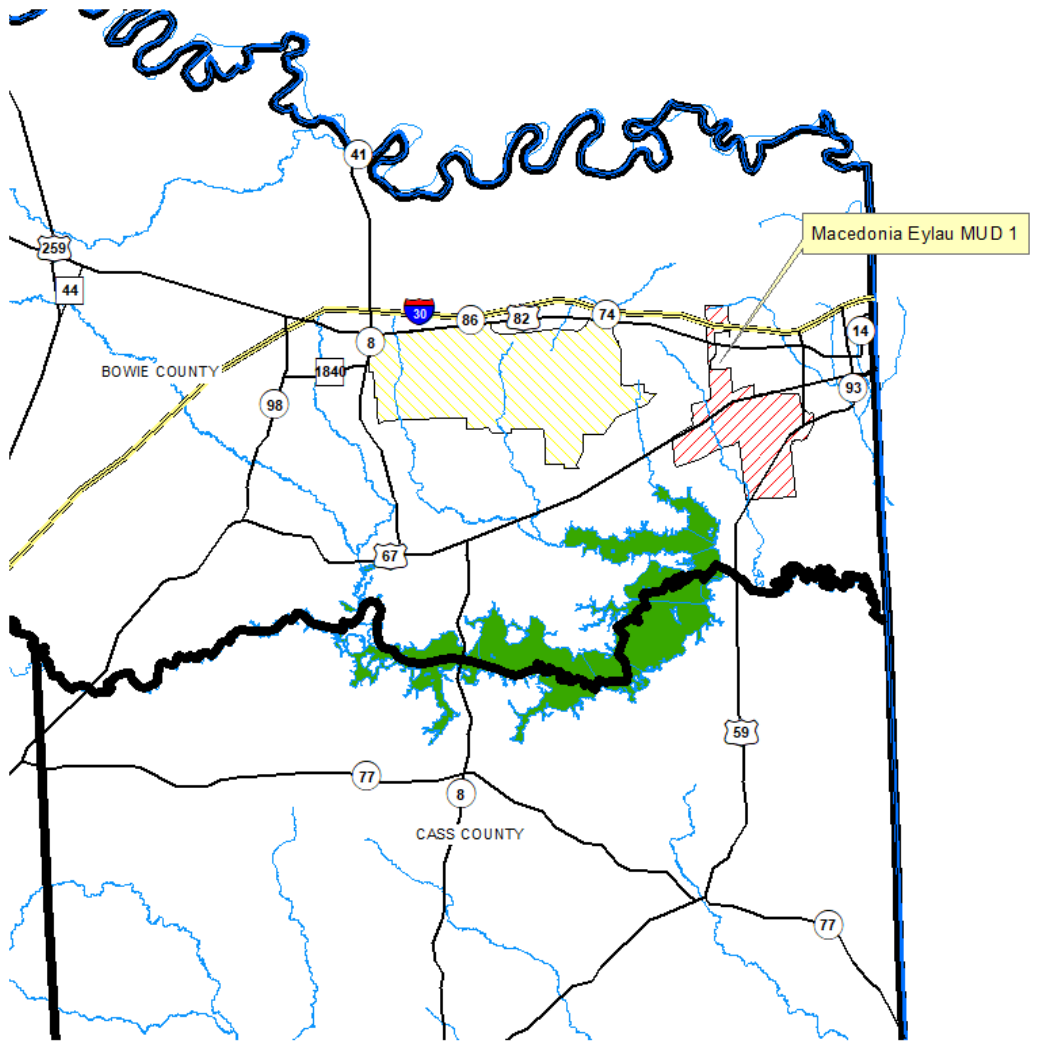
There were four alternative strategies considered to meet the MUD’s water supply shortages as summarized in the table below. Advanced conservation was not considered because the per capita use per day was less than the 140 gpcd threshold established by the water planning group. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was not selected because the MUD is planning on continuing to purchase surface water from the City of Texarkana.

<b>Strategy</b>	<b>Firm Yield (ac-ft)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Environmental Impact</b>
Renew Existing Contract	<b>601</b>		<b>\$290,000</b>	<b>\$483</b>	<b>1</b>

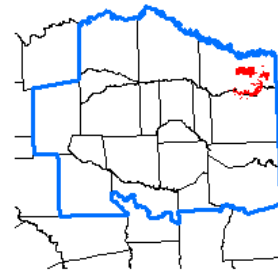
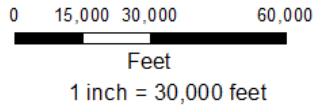
**Recommendations:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Renew Existing Contract (ac-ft/yr)</b>	<b>588</b>	<b>598</b>	<b>601</b>	<b>601</b>	<b>601</b>	<b>601</b>

Renewal of the existing surface water purchase from City of Texarkana is the recommended strategy to meet the Macedonia-Eylau MUD No. 1’s needs contingent on Riverbend WRD’s recommended strategies.



- Relation**
- Buyer
  - Seller
  - Source
  - Region D Boundary
  - Counties
  - Streams
  - Reservoirs



**Attachment A**  
 Macedonia Eylau MUD 1  
 Recommended Strategy  
 Renew Existing Contract (Riverbend WRD)

<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices Macedonia Eylau MUD - Renew Existing Contract</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>ANNUAL COST</b>	
Operation and Maintenance	
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (0 kW-hr @ 0.08 \$/kW-hr)	\$0
Purchase of Water (601 acft/yr @ 482.23 \$/acft)	<u>\$290,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$290,000</b>
<b>Available Project Yield (acft/yr)</b>	601
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$483
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$483
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$1.48
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$1.48
<i>JMP</i>	<i>10/2/2019</i>

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF MANUFACTURING IN BOWIE COUNTY**

**Description of Water User Group:**

The Manufacturing WUG in Bowie County has a demand that is projected to be 1,611 ac-ft/yr in 2020 increasing to 2,047 ac-ft/yr in 2070. Manufacturing demands identified via contract between the Riverbend WRD and TexAmericas Center range from 33,604 ac-ft/yr in 2020 to 100,813 ac-ft/yr in 2070. The Manufacturing WUG in Bowie County is projected to be supplied by existing groundwater supplies from the Carrizo-Wilcox Aquifer, surface water from existing run-of-river rights in the Red River Basin, and contracted water supplies from Wright Patman Lake from the Riverbend WRD. The current round of planning has identified a projected 2020 deficit of 1,579 ac-ft/yr in the Sulphur River Basin with a surplus of 3 ac-ft/yr in the Red River Basin. This deficit in the Sulphur River Basin is projected to increase to 2,014 ac-ft/yr by 2070, whereas the projected surplus in the Red River Basin decreases slightly to 2 ac-ft/yr by 2070. Contractual need in the Sulphur River Basin is established by the aforementioned contract between Riverbend WRD and TexAmericas Center, and the need established by Riverbend WRD to replace aging infrastructure by 2030. This contractual need ranges from 33,604 ac-ft/yr in 2020 to 100,813 ac-ft/yr in 2070.

**Water Supply and Demand Analysis:**

	2020	2030	2040	2050	2060	2070
<b>Projected Water Demand</b>	1,611	2,047	2,047	2,047	2,047	2,047
<b>Current Water Supply</b>	35	35	35	35	35	35
<b>Projected Supply Surplus (+)/Deficit(-)</b>	<b>-2,012</b>	<b>-2,012</b>	<b>-2,012</b>	<b>-2,012</b>	<b>-2,012</b>	<b>-2,012</b>

<b>Projected Supply Surplus (+)/Deficit(-) by Basin</b>	2020	2030	2040	2050	2060	2070
<b>Red River Basin</b>	3	2	2	2	2	2
<b>Sulphur Basin</b>	-1,579	-2,014	-2,014	-2,014	-2,014	-2,014
<b>Total</b>	<b>-1,576</b>	<b>-2,012</b>	<b>-2,012</b>	<b>-2,012</b>	<b>-2,012</b>	<b>-2,012</b>

<b>Contracted Supply Surplus (+)/Deficit(-) by Basin</b>	2020	2030	2040	2050	2060	2070
<b>Sulphur Basin</b>	-33,604	-59,928	-66,509	-74,735	-82,961	-100,813
<b>Total</b>	<b>-33,604</b>	<b>-59,928</b>	<b>-66,509</b>	<b>-74,735</b>	<b>-82,961</b>	<b>-100,813</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

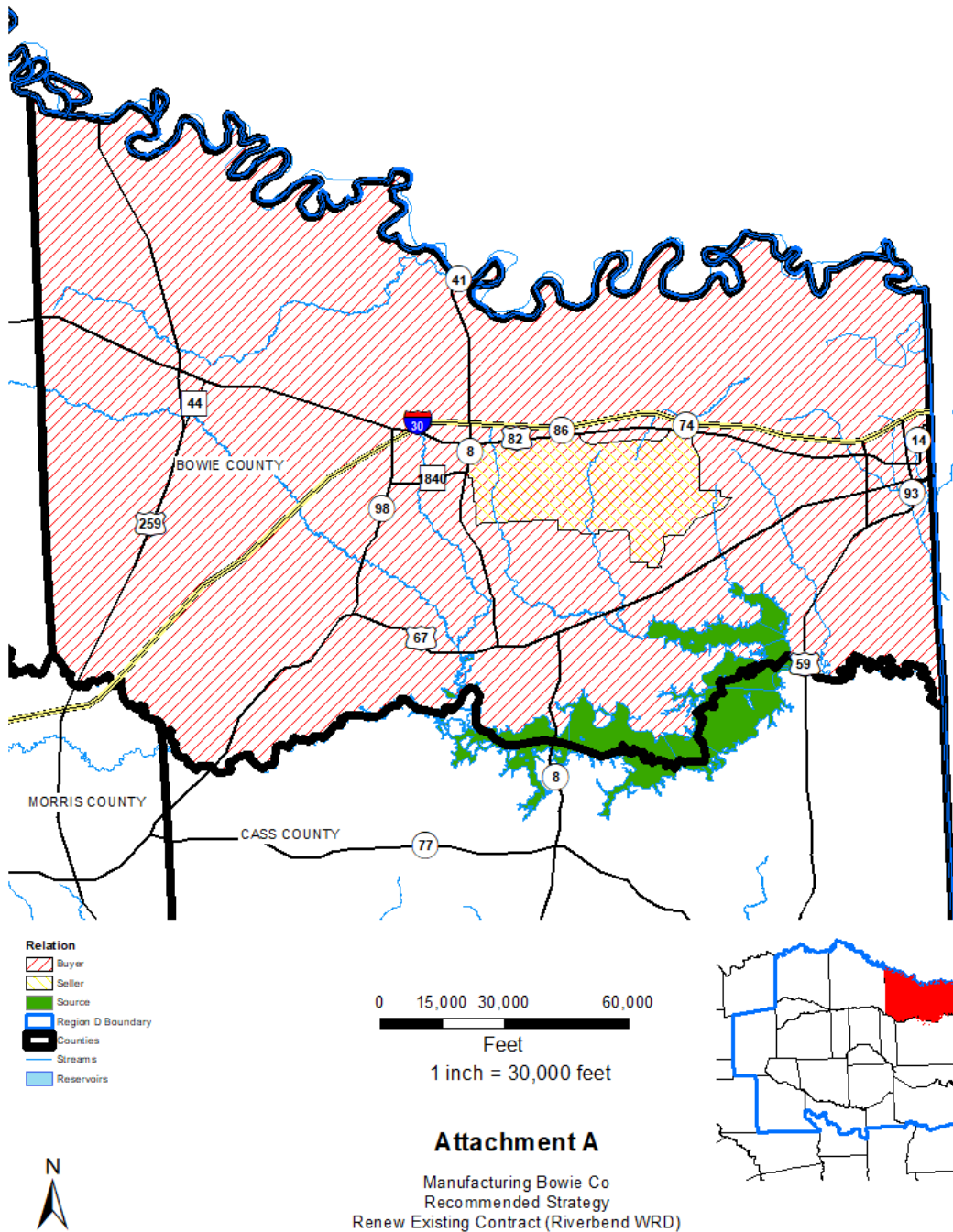
Five alternative strategies were considered to meet the Bowie County Manufacturing WUG’s projected water supply shortages. Advanced water conservation for manufacturing practices were considered feasible, whereby industrial water auditing BMPs could extend water supplies through an assumed 10% demand reduction. The use of reuse water from nearby municipalities is not considered feasible as it would not be effective to deliver reuse water to this WUG. Groundwater from the Carrizo-Wilcox and Nacatoch aquifers was considered insufficient to meet the full contractual needs identified for manufacturing in Bowie County. Riverbend WRD requested consideration of the Riverbend WRD WMSPs to meet the identified need.

<b>Strategy</b>	<b>Strategy Yield (AF)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Environmental Impact</b>
Advanced Water Conservation	204	\$0	\$0	\$0	1
Renew Existing Contract contingent upon Riverbend Strategy	100,609		\$48,517,000	\$482	1

**Recommendations:**

	2020	2030	2040	2050	2060	2070
<b>Advanced Water Conservation</b>	<b>161</b>	<b>204</b>	<b>204</b>	<b>204</b>	<b>204</b>	<b>204</b>
<b>Renew Existing Contract contingent upon Riverbend Strategy</b>	<b>789</b>	<b>59,724</b>	<b>66,305</b>	<b>74,531</b>	<b>82,757</b>	<b>100,609</b>
<b>Unmet Projected Need</b>	<b>631</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

The recommended strategy for the Bowie County Manufacturing WUG to meet projected demands during the planning period is advanced conservation and renewal of the existing contract with Riverbend WRD contingent upon implementation of the Riverbend WRD's recommended WMS and WMSPs. As the recommended approach is contingent upon the Riverbend WRD's recommended WMSPs, which are not planned to come online until 2026, for the purposes of the 2021 Region D Plan there remains a projected unmet manufacturing need in 2020 of 631 ac-ft/yr.





<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices Bowie County Manufacturing - Renew Existing Contract</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>ANNUAL COST</b>	
Operation and Maintenance	
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (0 kW-hr @ 0.08 \$/kW-hr)	\$0
Purchase of Water (100609 acft/yr @ 482.23 \$/acft)	<u>\$48,517,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$48,517,000</b>
<b>Available Project Yield (acft/yr)</b>	100,609
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$482
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$482
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$1.48
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$1.48
<i>JMP</i>	<i>10/2/2019</i>

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF MAUD**

**Description of Water User Group:**

The City of Maud provides water service in Bowie County. The City population is projected to be 1,358 in 2020 and 1,642 in the year 2070. The City has a contract for water supply with the City of Texarkana from Lake Wright Patman. The City is projected to have a shortage in 2020 due to aging of Texarkana’s Water Treatment Plant.

**Water Supply and Demand Analysis:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Population</b>	1,358	1,500	1,642	1,642	1,642	1,642
<b>Projected Water Demand</b>	211	226	241	238	237	237
<b>Water Demand from other entities</b>	0	0	0	0	0	0
<b>Current Water Supply</b>	0	0	0	0	0	0
<b>Projected Supply Surplus (+) / Deficit (-)</b>	<b>-211</b>	<b>-226</b>	<b>-241</b>	<b>-238</b>	<b>-237</b>	<b>-237</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

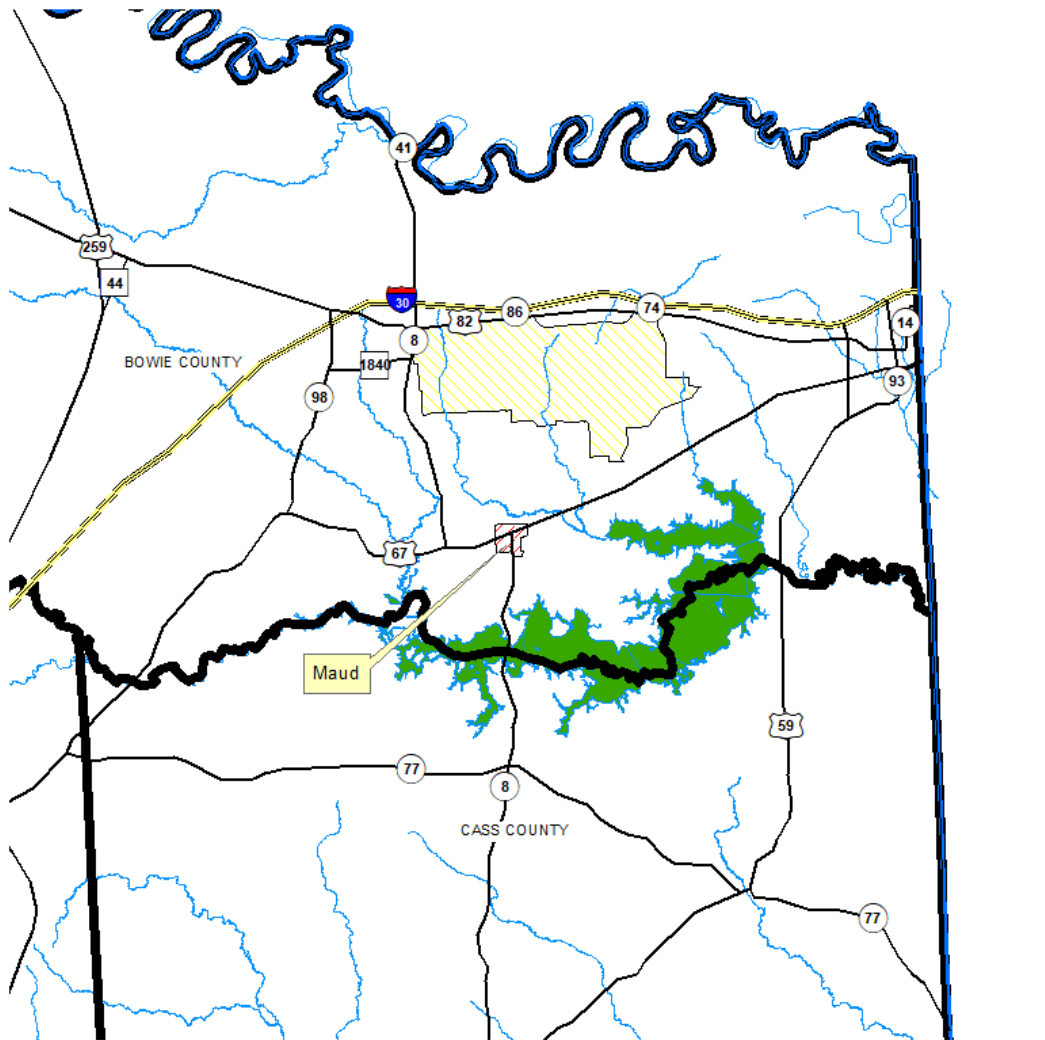
There were four alternative strategies considered to meet the City’s water supply shortages as summarized in the Table below. Advanced conservation was not considered because Maud’s supply would not be projected to meet TCEQ regulatory minimums. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was not selected because the City is planning on continuing to purchase surface water from the City of Texarkana. A request was submitted by Riverbend Water Resources District to consider a new Water Treatment Plant, pipeline, pump station, and intake to Wright Patman Reservoir. Thus, a renewal contract with Texarkana/Riverbend has been considered herein.

<b>Strategy</b>	<b>Firm Yield (ac-ft)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Env. Impact</b>
Renew Existing Contract (ac-ft/yr)	<b>241</b>		<b>\$58,000</b>	<b>\$241</b>	<b>1</b>

**Recommendations:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
Renew Existing Contract (ac-ft/yr)	211	226	241	238	237	237

It is recommended that the City of Maud renew its existing contract with Texarkana contingent upon Riverbend WRD recommended strategies.



- Relation**
- Buyer
  - Seller
  - Source
  - Region D Boundary
  - Counties
  - Streams
  - Reservoirs

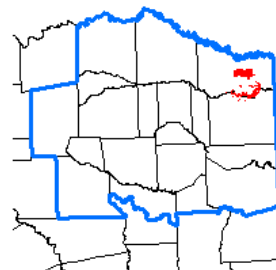
0 15,000 30,000 60,000

Feet

1 inch = 30,000 feet

**Attachment A**

Maud  
 Recommended Strategy  
 Renew Existing Contract (Riverbend WRD)



<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices Maud - Renew Existing Contract</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>ANNUAL COST</b>	
Operation and Maintenance	
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (0 kW-hr @ 0.08 \$/kW-hr)	\$0
Purchase of Water (241 acft/yr @ 242.68 \$/acft)	<u>\$58,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$58,000</b>
<b>Available Project Yield (acft/yr)</b>	241
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$241
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$241
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$0.74
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$0.74
<i>JMP</i>	<i>10/2/2019</i>

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF NASH**

**Description of Water User Group:**

The City of Nash provides water service in Bowie County. The City population is projected to be 4,070 in 2020 and 6,111 in the year 2070. The City has a contract for water supply with the City of Texarkana from Lake Wright Patman. The City is projected to have a shortage in 2020 due to constraints in supply availability and aging of Texarkana’s Water Treatment Plant.

**Water Supply and Demand Analysis:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Population</b>	4,070	4,751	5,431	6,111	6,111	6,111
<b>Projected Water Demand</b>	392	458	523	589	589	589
<b>Water Demand from other entities</b>	0	0	0	0	0	0
<b>Current Water Supply</b>	0	0	0	0	0	0
<b>Projected Supply Surplus (+) / Deficit (-)</b>	<b>-392</b>	<b>-458</b>	<b>-523</b>	<b>-589</b>	<b>-589</b>	<b>-589</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

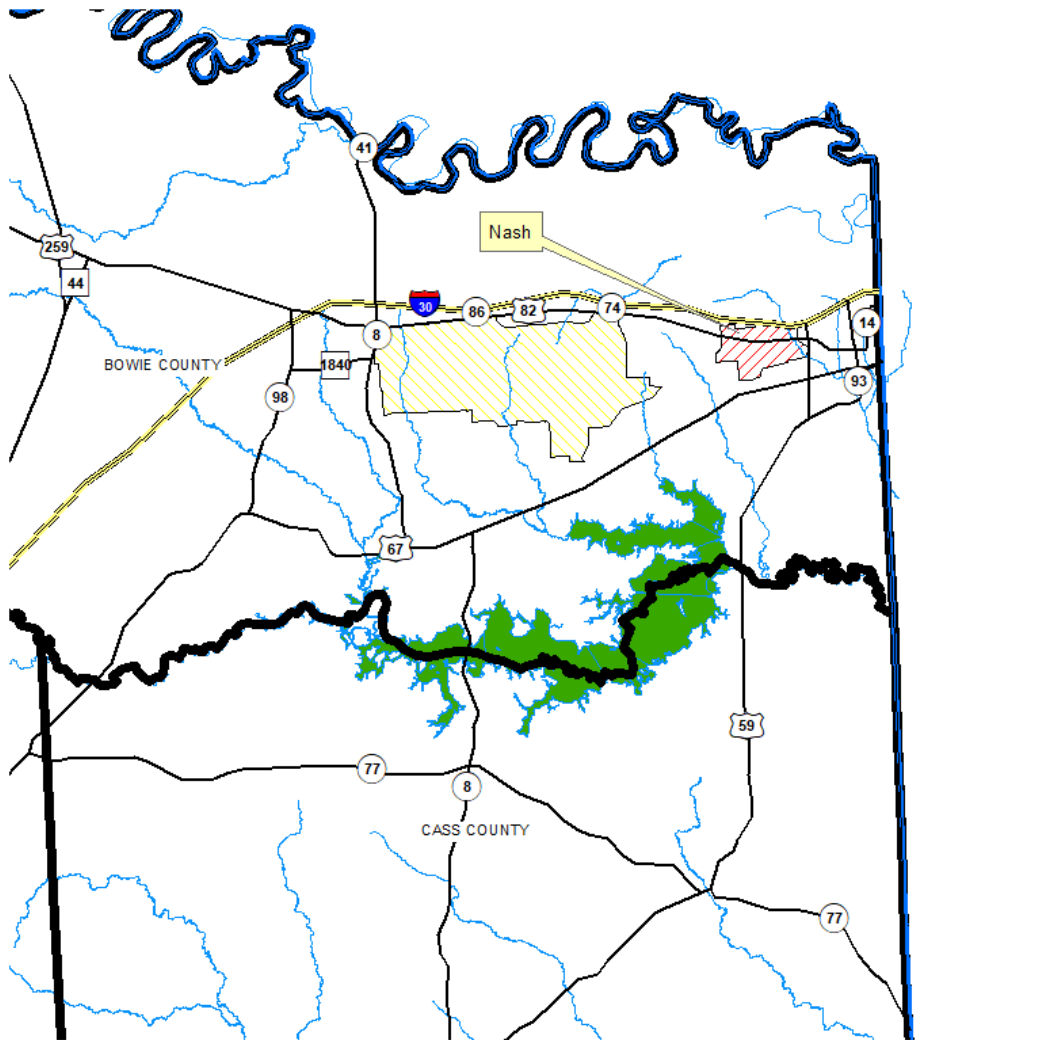
There were four alternative strategies considered to meet the City’s water supply shortages as summarized in the Table below. Advanced conservation was not considered because Nash’s supply would not be projected to meet TCEQ regulatory minimums. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was not selected because the City is planning on continuing to purchase surface water from the City of Texarkana. A request was submitted by Riverbend Water Resources District to consider a new Water Treatment Plant, pipeline, and intake to Wright Patman Reservoir. Thus, a renewal contract with Texarkana/Riverbend has been considered herein.

<b>Strategy</b>	<b>Firm Yield (ac-ft)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Env. Impact</b>
Renew Existing Contract (ac-ft/yr)	<b>589</b>		<b>\$143,000</b>	<b>\$243</b>	<b>1</b>

**Recommendations:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
Renew Existing Contract (ac-ft/yr)	392	458	523	589	589	589

It is recommended that the City of Nash continue its surface water purchase from Texarkana contingent upon Riverbend WRD’s recommended strategies.



- Relation**
- Buyer
  - Seller
  - Source
  - Region D Boundary
  - Counties
  - Streams
  - Reservoirs

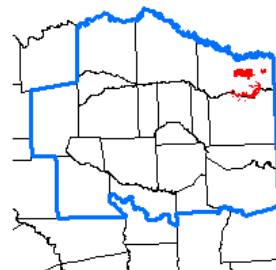
0 15,000 30,000 60,000

Feet

1 inch = 30,000 feet

**Attachment A**

Nash  
 Recommended Strategy  
 Renew Existing Contract (Riverbend WRD)



<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices Nash - Renew Existing Contract</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>ANNUAL COST</b>	
Operation and Maintenance	
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (0 kW-hr @ 0.08 \$/kW-hr)	\$0
Purchase of Water (589 acft/yr @ 242.68 \$/acft)	<u>\$143,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$143,000</b>
<b>Available Project Yield (acft/yr)</b>	589
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$243
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$243
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$0.74
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$0.74
<i>JMP</i>	<i>10/2/2019</i>

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CITY OF NEW BOSTON IN BOWIE COUNTY**

**Description of Water User Group:**

The City of New Boston provides water service in Bowie County. The WUG population is projected to be 5,960 in 2020 and 6,180 in the year 2070. The city has a contract for water supply with the City of Texarkana for 1,680 ac-ft/yr that expires in 2016, with a one year auto renewal. New Boston also has a water right permit for run-of-river diversions from the Sulphur River, but no infrastructure to utilize it. The City is projected to have a shortage in 2020 due to constraints in supply availability and aging of Texarkana’s Water Treatment Plant.

**Water Supply and Demand Analysis:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Population</b>	5,960	6,129	6,180	6,180	6,180	6,180
<b>Projected Water Demand</b>	1,390	1,399	1,385	1,381	1,379	1,379
<b>Water Demand from other entities</b>	0	0	0	0	0	0
<b>Current Water Supply</b>	0	0	0	0	0	0
<b>Projected Supply Surplus (+) / Deficit (-)</b>	<b>-1,390</b>	<b>-1,399</b>	<b>-1,385</b>	<b>-1,381</b>	<b>-1,379</b>	<b>-1,379</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

There were four alternative strategies considered to meet New Boston’s water supply shortages as summarized in the Table below. Advanced conservation was not considered because New Boston’s supply would not be projected to meet TCEQ regulatory minimums. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was not selected because the city has historically utilized surface water supplies and, at present, is planning on continuing to purchase surface water from the City of Texarkana. A request was submitted by Riverbend Water Resources District to consider a new Water Treatment Plant, pipeline, pump station, and intake to Wright Patman Reservoir. Thus, a renewal contract with Texarkana/Riverbend has been considered herein.

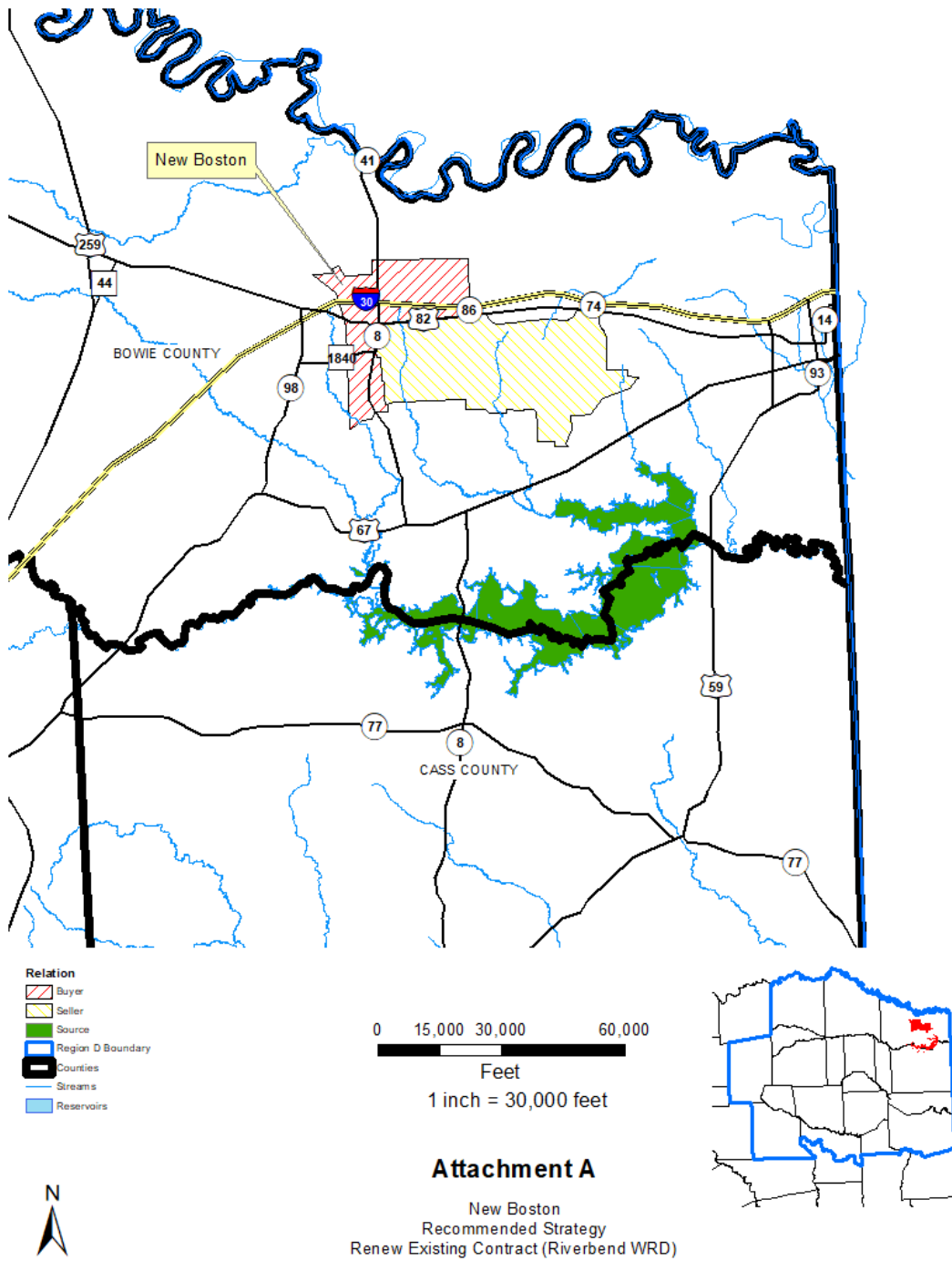
<b>Strategy</b>	<b>Firm Yield (ac-ft)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Environmental Impact</b>
Renew Existing Contract	<b>1,399</b>		<b>\$340,000</b>	<b>\$243</b>	<b>1</b>

**Recommendations:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
Renew Existing Contract (ac-ft/yr)	1,390	1,399	1,385	1,381	1,379	1,379

It is recommended that the City of New Boston continue its surface water purchase from Texarkana contingent upon Riverbend WRD’s recommended strategies.





<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices New Boston - Renew Existing Contract</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>ANNUAL COST</b>	
Operation and Maintenance	
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (0 kW-hr @ 0.08 \$/kW-hr)	\$0
Purchase of Water (1399 acft/yr @ 242.68 \$/acft)	<u>\$340,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$340,000</b>
<b>Available Project Yield (acft/yr)</b>	1,399
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$243
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$243
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$0.75
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$0.75
<i>JMP</i>	<i>10/2/2019</i>

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF REDWATER**

**Description of Water User Group:**

The City of Redwater provides water service in Bowie County. The City population is projected to be 3,749 in 2020 and 5,429 in the year 2070. The City has a contract for water supply with the City of Texarkana from Lake Wright Patman, and groundwater supply from the Carrizo-Wilcox Aquifer. The City is projected to have a shortage in 2020 due to constraints in water supply and aging of the Texarkana’s Water Treatment Plant.

**Water Supply and Demand Analysis:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Population</b>	3,749	4,229	4,709	5,189	5,429	5,429
<b>Projected Water Demand</b>	506	553	601	654	682	682
<b>Water Demand from other entities</b>	0	0	0	0	0	0
<b>Current Water Supply</b>	66	66	66	66	66	66
<b>Projected Supply Surplus (+) / Deficit (-)</b>	<b>-440</b>	<b>-487</b>	<b>-535</b>	<b>-588</b>	<b>-616</b>	<b>-616</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

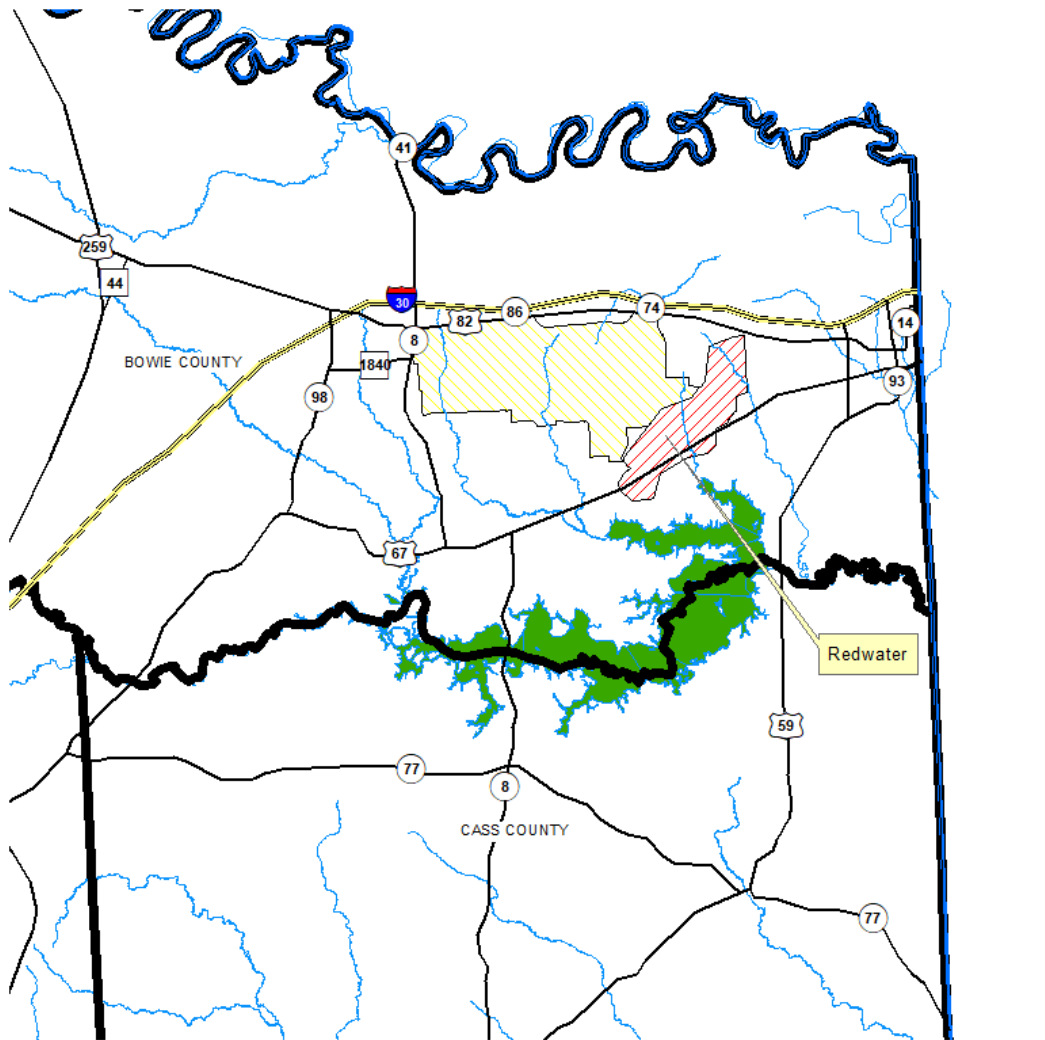
There were four alternative strategies considered to meet the City’s water supply shortages. Advanced conservation was not considered because Redwater’s supply would not be projected to meet TCEQ regulatory minimums. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was not selected because the City is planning on continuing to purchase surface water from the City of Texarkana. A request was submitted by Riverbend Water Resources District to consider a new Water Treatment Plant, pipeline, pump station, and intake to Wright Patman Reservoir. Thus, a renewal contract with Texarkana/Riverbend has been considered herein.

<b>Strategy</b>	<b>Firm Yield (ac-ft)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Env. Impact</b>
Renew Existing Contract (ac-ft/yr)	<b>616</b>		<b>\$149,000</b>	<b>\$242</b>	<b>1</b>

**Recommendations:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
Renew Existing Contract (ac-ft/yr)	440	487	535	588	616	616

It is recommended that the City of Redwater continue its surface water purchase from Texarkana contingent upon Riverbend WRD’s recommended strategies. Development of infrastructure necessary to provide water to the City’s customers is to be considered consistent with this recommended strategy.



- Relation**
-  Buyer
  -  Seller
  -  Source
  -  Region D Boundary
  -  Counties
  -  Streams
  -  Reservoirs

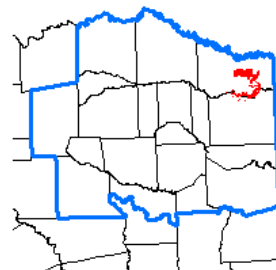
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Feet

1 inch = 30,000 feet

**Attachment A**

Redwater  
 Recommended Strategy  
 Renew Existing Contract (Riverbend WRD)



<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices Red Water - Renew Existing Contract</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018</b>	
<i>Item</i>	<i>Estimated Costs for Facilities</i>
<b>ANNUAL COST</b>	
Operation and Maintenance	
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (0 kW-hr @ 0.08 \$/kW-hr)	\$0
Purchase of Water (616 acft/yr @ 242.68 \$/acft)	<u>\$149,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$149,000</b>
<b>Available Project Yield (acft/yr)</b>	616
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$242
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$242
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$0.74
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$0.74
<i>JMP</i>	<i>10/2/2019</i>

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF RIVERBEND WRD**

**Description of Water User Group:**

Riverbend Water Resources District (WRD) provides water service in Bowie, Cass, and Red River Counties via two separate intake structures. The system population is projected to be 542 in 2020 and 563 in the year 2070. Riverbend is now the contracting entity for the water supply made available from the surface water right owned by the City of Texarkana from Lake Wright Patman. The WRD is projected to have a shortage in 2020 due to constraints in water supply and aging of Texarkana’s New Boston Road Water Treatment Plant and GPI Water Treatment Plant.

**Water Supply and Demand Analysis:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Population</b>	542	558	563	563	563	563
<b>Projected Water Demand</b>	523	536	539	537	537	537
<b>Water Demand from other entities</b>	0	0	0	0	0	0
<b>Current Water Supply</b>	0	0	0	0	0	0
<b>Projected Supply Surplus (+) / Deficit (-)</b>	<b>-523</b>	<b>-536</b>	<b>-539</b>	<b>-537</b>	<b>-537</b>	<b>-537</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

Riverbend WRD is supplied by water in Lake Wright Patman. A request was submitted by Riverbend WRD to consider a number of WMS and WMSPs, including implementation of the Ultimate Rule Curve via contract with the USACE, amending the current surface water right to increase diversion from Wright Patman Lake up to a maximum firm storage available within the Ultimate Rule Curve, and new infrastructure including a new intake, pump station, pipeline, and water treatment plant to be located at the Texas Americas Center, and a new 2.5 MGD water treatment plant for the provision of municipal supplies in Cass County.

The requested strategies have been considered to meet the Riverbend WRD’s (along with its member entities and their customers) identified contractual water supply shortages. There are no significant current water needs in the area that could be met by water reuse. Groundwater was not considered as an alternative as the entities rely upon existing surface water supplies. Conservation targets for near term reductions in demand are reflected in the City of Texarkana, Texas’ Water Conservation and Drought Contingency Plan. However, Advanced Water Conservation is not recommended as a water management strategy as such a strategy would not potentially meet the TCEQ regulatory minimum of 0.6 gpm/connection.

Riverbend WRD has requested consideration of the strategy to decommission the existing New Boston Rd WTP and construct a new WTP by 2030 (referred to hereafter as the Riverbend Strategy), although the timing of this action is still under development by the Riverbend WRD and its member entities. As the Riverbend WRD has indicated a desire to remain flexible, alternatives as to the timing of various WMS projects have not been ruled out at present, and should be considered consistent for the purposes of the 2021 Region D Plan.

While future growth utilizing the adopted TWDB methodology is limited, significant growth has been contractually obligated for customer demands for manufacturing in Bowie County. Along with moderate projections of municipal growth in the area, the contracted manufacturing demands largely represent the dominant need over the 2020 – 2070 period.

**Detailed Description of Evaluated Water Management Strategy Projects**

Riverbend WRD has requested for inclusion a water management strategy entailing multiple WMS Projects (WMSPs). A summary of each project is included here.

*Amend and Increase of Water Right (2020)* – Based on the contractual demands identified herein, this WMSP is planned to occur by 2020, and would entail amendment of Certificate of Adjudication 03-4836. The amendment would include changing the total use of the water right to a more general, multi-use permit, and an increase in diversion of 57,517 ac-ft/yr, for a total permitted diversion of 237,517 ac-ft/yr. If the actual implementation of this strategy is a new surface water permit, such an approach should be considered consistent for the purposes of this Plan.

*Interim to Ultimate Storage (2020)* – In order to meet the contracted and projected demands for the District, development of this WMSP by 2020 would entail full implementation of the Ultimate Rule Curve per the contract with the USACE for storage in Lake Wright Patman.

*New Wright Patman Intake, Pump Station, Raw Water Pipeline, and New WTP (2030)* – The District has requested this WMSP to meet contractual and projected demands by 2030. This evolving WMSP has been identified specifically to provide the infrastructure necessary to meet member entities’ and their customers’ needs in the year 2030. The Riverbend WRD’s Regional Water Master Plan (Roth, 2018) and the Second Cost Estimates (AECOM 2018) were utilized as the basis to evaluate and identify the specifics of the project. Sizing, timing, and costs were necessarily updated from that information to meet the contractual demands identified by Riverbend WRD and adopted for the purposes of the 2021 Region D Plan. Costs have been derived utilizing the UCM. Where appropriate, costs and assumptions from the Riverbend WRD Regional Water Master Plan and Second Cost Estimates were incorporated into the UCM. This strategy entails the construction of a new intake location with a deeper invert elevation allowing access to additional storage in Wright Patman, a new pump station, raw water pipeline, a new 25 MGD WTP, a 5 MGD WTP expansion in 2040 and a final 10 MGD WTP expansion in 2050, and the decommission of the existing New Boston WTP to meet member entities’ and wholesale customer contractual and projected needs. The supply necessary to meet the contractual needs identified in the 2021 planning process is a maximum firm supply of 117,313 ac-ft/yr. The total project cost is \$356.4 million, with an annual cost up to \$35.5 million and a unit cost of \$307 per ac-ft. during debt service (\$0.94/1,000 gal.) and \$129 per ac-ft after debt service. Supply adequate to meet the identified needs, when considered in conjunction with all member entities’ and customer needs, do not over allocate the existing firm supply available from Wright Patman Reservoir within the Ultimate Rule Curve, if other recommended Water Management Strategy Projects are also employed. It is noted that the District’s present plans are for implementation of this project by 2026, although the timing of this WMSP may vary and should be considered consistent with the 2021 Region D Plan. However, this timing results in a projected Bowie County manufacturing unmet need by 2020 of 629 ac-ft/yr.

*New 2.5 MGD Package WTP and Transmission Line (2030)* – The District has requested this WMSP to meet municipal demands starting in 2030 for its member entities and customers in Cass County. Utilizing the existing Graphics Packaging International (GPI) intake, this WMSP entails construction of a 12” transmission pipeline to be connected from the IP intake, which would be routed to a new 2.5 MGD package WTP, along with clearwells for a total of 3 MG of ground storage capacity, high service pumps, and electrical modifications. The supply from this WMSP would total 1,918 ac-ft/yr, assuming a peaking factor of 1.46. The total project cost is \$22.8 million, with an annual cost of \$2.7 million and a unit cost of \$1,812 per ac-ft during debt service (\$5.56/1,000 gal.) and \$739 per ac-ft after debt service.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Riverbend WMS	115,820	\$350,917,000	\$38,593,000	\$333	1
New 2.5 MGD Package WTP and Transmission Line	1,496	\$22,807,000	\$2,711,000	\$1,812	1

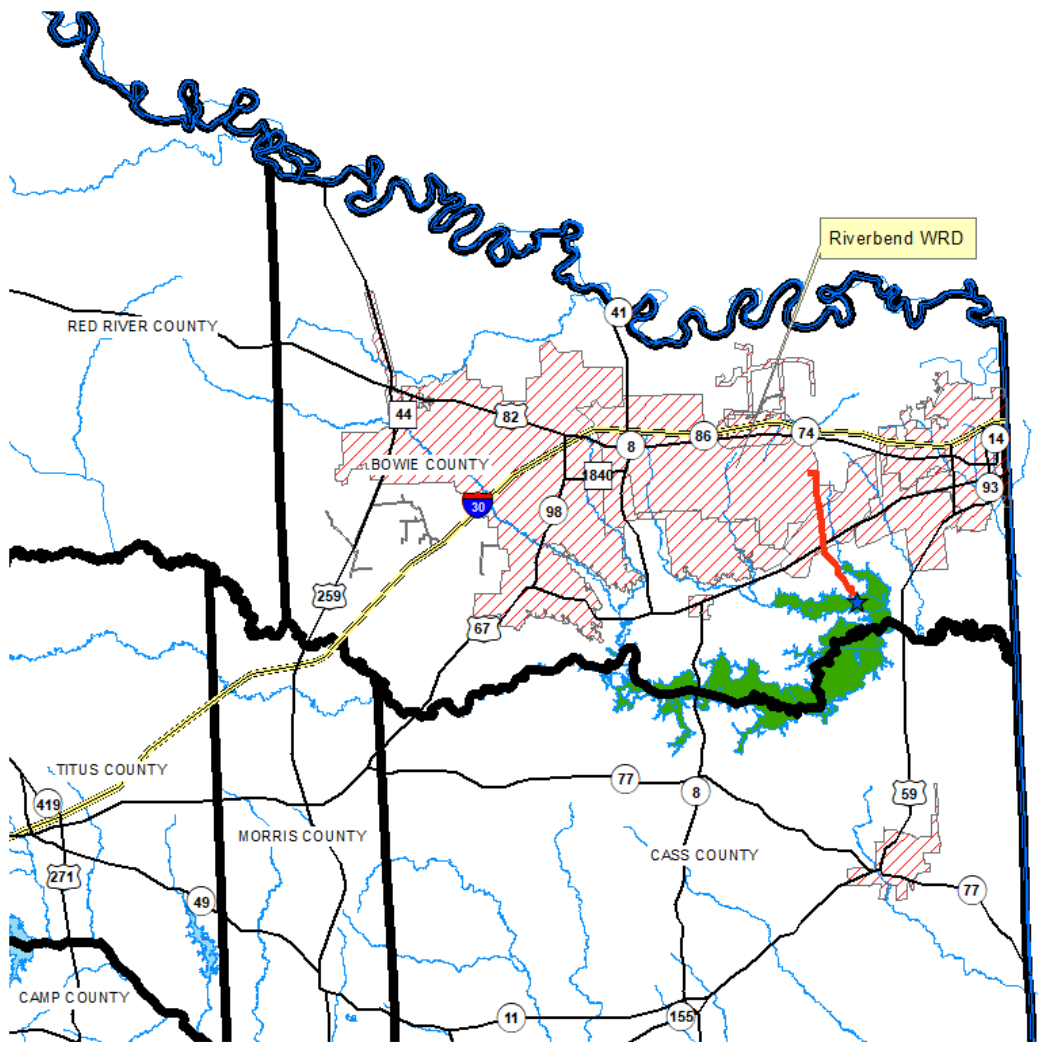
**Recommendations:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
Riverbend WMS	<b>13,810</b>	<b>73,099</b>	<b>80,081</b>	<b>88,793</b>	<b>97,520</b>	<b>115,820</b>
New 2.5 MGD Package WTP and Transmission Line	<b>0</b>	<b>1,370</b>	<b>1,423</b>	<b>1,496</b>	<b>1,493</b>	<b>1,493</b>

To meet the Riverbend WRD's, its member entities', and customers' contractual and projected needs and the requested approach for the 2021 RWP, it is recommended that the water right be amended to multi-use for a total permitted diversion of 237,517 ac-ft/yr utilizing the permitted storage at the Ultimate Rule Curve, full implementation up to the Ultimate Rule Curve per contract for storage out of Lake Wright Patman with the USACE, and construction of a new intake, pipeline, and water treatment plant be constructed by 2030 to meet these WUGs' contractual needs. It is further recommended that a new 2.5 MGD package WTP and transmission line be constructed by 2030 to meet identified municipal needs in Cass County. Each of these WMSPs are contingent upon the other, as each are necessary to secure the identified supplies necessary to meet the projected municipal demands and contractual industrial demands identified herein.

At present, considerable discussions are underway between all of the member entities of Riverbend Water Resources District. As noted previously and reiterated here, this 2021 Plan recognizes that Riverbend may become the contracting entity between its members and the City of Texarkana, Texas. The strategies shown herein for entities with shortages in Bowie, Cass, and Red River Counties rely on continued use of water from Lake Wright Patman. Presently, the strategies related to Riverbend WRD are presented with the Riverbend WRD's water management strategies. However, the strategies should be considered consistent with the plan for this planning cycle if the City of Texarkana, Texas, is the contracting party rather than Riverbend WRD, as long as the water source remains Lake Wright Patman.



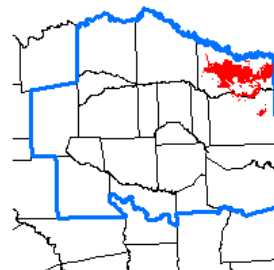


- Relation**
- Buyer
  - Seller
  - Source
  - Region D Boundary
  - Counties
  - Streams
  - Reservoirs
- Riverbend WMS Wright Patman Intake
  - Riverbend WMS Raw Water Pipeline
  - Riverbend WMS New WTP

0 20,000 40,000 80,000

Feet

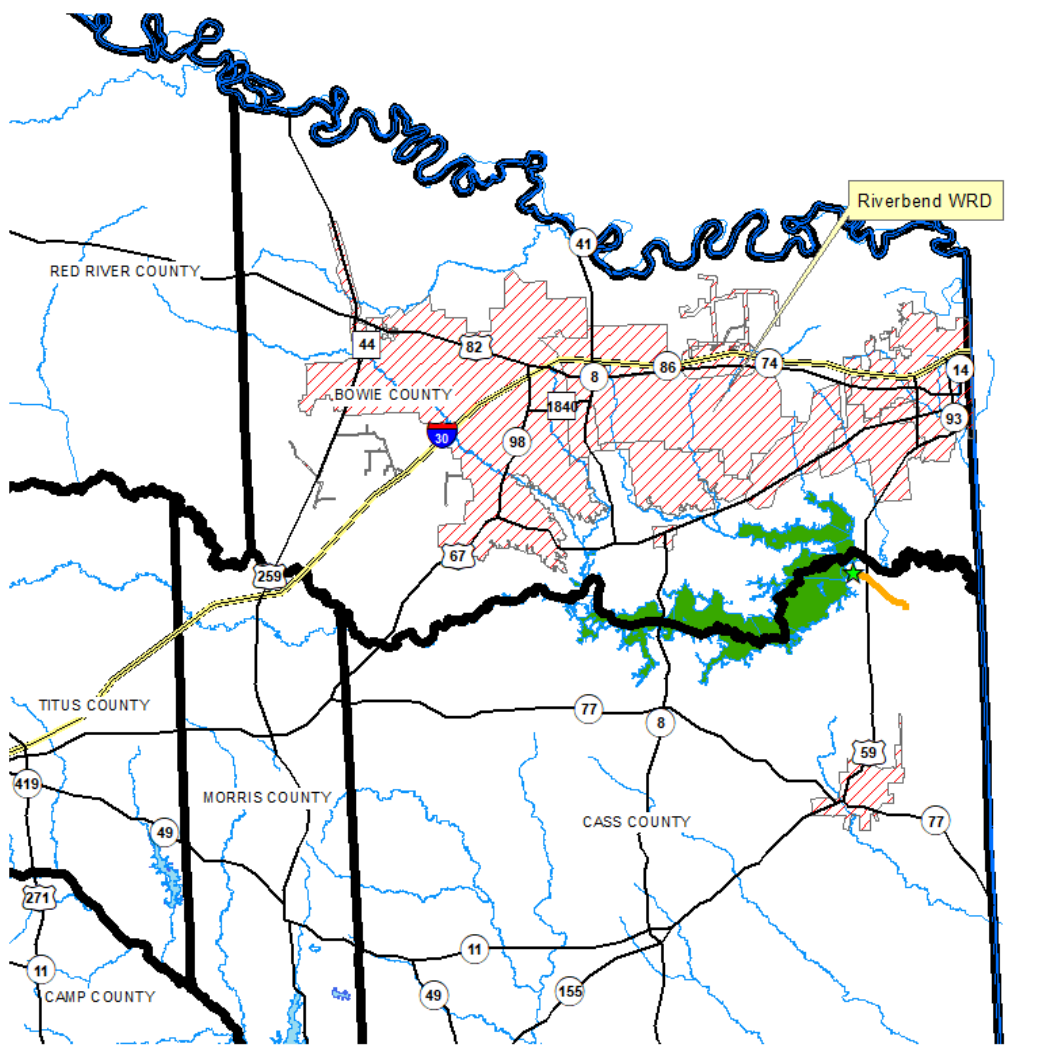
1 inch = 40,000 feet



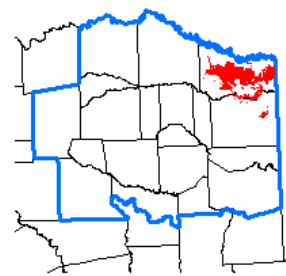
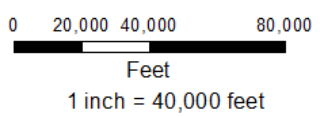
**Attachment A**

Riverbend WRD  
Recommended Strategy  
Riverbend Strategy

<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices Riverbend WMS - Riverbend WMS</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
Primary Pump Station (151 MGD)	\$66,514,000
Transmission Pipeline (78 and 54 in dia., 8.3 miles)	\$42,770,000
Two Water Treatment Plants (25 MGD and 15 MGD)	\$129,862,000
<b>TOTAL COST OF FACILITIES</b>	<b>\$239,146,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$81,563,000
Environmental & Archaeology Studies and Mitigation	\$20,576,000
Land Acquisition and Surveying (45 acres)	\$240,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	<u>\$9,392,000</u>
<b>TOTAL COST OF PROJECT</b>	<b>\$350,917,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$24,691,000
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$428,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$1,663,000
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$8,651,000
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (39497383 kW-hr @ 0.08 \$/kW-hr)	\$3,160,000
Purchase of Water ( acft/yr @ \$/acft)	<u>\$0</u>
<b>TOTAL ANNUAL COST</b>	<b>\$38,593,000</b>
<b>Available Project Yield (acft/yr)</b>	115,820
<b>Annual Cost of Water (\$ per acft), based on PF=1.46</b>	\$333
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1.46</b>	\$120
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1.46</b>	\$1.02
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1.46</b>	\$0.37
<i>Note: One or more cost element has been calculated externally</i>	
JMP	10/4/2019



- Relation**
- Buyer
  - Seller
  - Source
  - Region D Boundary
  - Counties
  - Streams
  - Reservoirs
- Riverbend WMS Cass Co 2.5 MGD WTP
  - Riverbend WMS Cass Co Water Pipeline



**Attachment B**  
 Riverbend WRD  
 Recommended Strategy  
 Riverbend Strategy Cass Co WTP

<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices Riverbend - New 2.5 MGD WTP and transmission line</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
Primary Pump Station (2.5 MGD)	\$1,171,000
Transmission Pipeline (12 in dia., 3.9 miles)	\$1,400,000
Storage Tanks (Other Than at Booster Pump Stations)	\$1,527,000
Water Treatment Plant (2.5 MGD)	\$12,263,000
<b>TOTAL COST OF FACILITIES</b>	<b>\$16,361,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$5,657,000
Environmental & Archaeology Studies and Mitigation	\$121,000
Land Acquisition and Surveying (18 acres)	\$57,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	<u>\$611,000</u>
<b>TOTAL COST OF PROJECT</b>	<b>\$22,807,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$1,605,000
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$29,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$29,000
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$1,014,000
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (428004 kW-hr @ 0.08 \$/kW-hr)	\$34,000
Purchase of Water ( acft/yr @ \$/acft)	<u>\$0</u>
<b>TOTAL ANNUAL COST</b>	<b>\$2,711,000</b>
<b>Available Project Yield (acft/yr)</b>	1,496
<b>Annual Cost of Water (\$ per acft), based on PF=1.46</b>	\$1,812
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1.46</b>	\$739
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1.46</b>	\$5.56
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1.46</b>	\$2.27
<i>JMP</i>	<i>10/3/2019</i>

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE  
PROJECTED  
WATER SUPPLY NEEDS OF THE CITY OF TEXARKANA**

**Description of Water User Group:**

The City of Texarkana, Texas, is a municipality located in Bowie County, Texas. Although the City of Texarkana, Texas, is a separate and distinct entity from the City of Texarkana, Arkansas, both entities are served by the same system (operated by Texarkana Water Utility). For the purposes of the 2021 Region D Water Plan, it has been assumed that water supplied from Arkansas (i.e., Millwood Reservoir) serves the population of Texarkana, Arkansas, while water supplied from Texas serves Texarkana, Texas.

For the City of Texarkana, Texas, the system is projected to serve 38,007 people in 2020, increasing to 47,102 by 2070. The current sources of supply based in Texas are surface water from Lake Wright Patman and a run of river diversion permit from the Red River (although no infrastructure is currently in place for the latter). The City provides water to area municipal and industrial customers and is projected to have a water supply deficit of 7,145 ac-ft/yr in 2020 increasing to 8,380 ac-ft/yr in 2070, due to water supply constraints and the age and functionality of the existing New Boston Water Treatment Plant and GPI treatment plant.

In 1969 Texarkana, Texas, entered into separate water supply contracts with surrounding communities. The contracts provided that Texarkana, Texas, and member cities would participate in paying debt service on bonds to be issued by Lake Texarkana Water Supply Corporation (LTWSC, today known as Riverbend Water Resources District, referred to hereafter as Riverbend). These member cities would all make payments for water supplied through facilities. In exchange Texarkana, Texas, and member cities were guaranteed ownership interest in LTWSC facilities and specified amounts of water in Wright Patman. Each city was guaranteed a maximum amount of water sufficient to meet the needs of the member cities, but also agreed to pay a minimum amount to ensure adequate funding for LTWSC facilities. Member cities historically relied on Texarkana, Texas, to manage and administer the water, the LTWSC facilities and water rates fairly for the benefits of all parties. When debt was paid off member cities would own an undivided interest in LTWSC facilities equal to that percentage that was paid by each member city to discharge debt.

In 2010, Texarkana, Texas executes water supply contract extensions, an interlocal cooperation agreement with Riverbend, and the formation of an advisory committee regarding the creation of water facilities and new cooperative agreements. The City of Texarkana sells and/or supplies surface water to: City of Atlanta, Central Bowie County WSC, City of De Kalb, City of Hooks, Macedonia-Eylau MUD#1, City of Maud, City of Nash, City of New Boston, City of Queen City, Red River County WSC, City of Redwater, TexAmericas Center, City of Wake Village, County-Other portions of Bowie, Cass and Red River Counties, and Manufacturing in Bowie and Cass Counties. Texarkana, along with the Cities of DeKalb, Hooks, Maud, Nash, New Boston, Redwater, Wake Village, TexAmericas Center, and sub-WUG entities comprising Bowie County-Other and Red River County-Other, comprise Riverbend Water Resources District (Riverbend). The system does have a water conservation and drought management plan in place.

**Water Supply and Demand Analysis:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Population</b>	38,007	39,674	41,413	43,229	45,124	47,102
<b>Projected Water Demand</b>	7,145	7,282	7,459	7,706	8,028	8,380
<b>Current Water Supply</b>	0	0	0	0	0	0
<b>Projected Supply Surplus (+) / Deficit (-)</b>	<b>-7,145</b>	<b>-7,282</b>	<b>-7,459</b>	<b>-7,706</b>	<b>-8,028</b>	<b>-8,380</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

There were several alternative strategies considered to meet the City’s water supply shortages. Advanced conservation was not considered because the City’s supply would not be projected to meet TCEQ regulatory minimums. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was not selected because the City is planning on continuing to utilize surface water from Lake Wright Patman. A request was submitted by Riverbend Water Resources District to consider a new Water Treatment Plant, pipeline, pump station, and intake to Wright Patman Reservoir. Thus, a renewal for supply in conjunction with Riverbend WRD has been considered herein.

Each alternative is summarized in the following table.

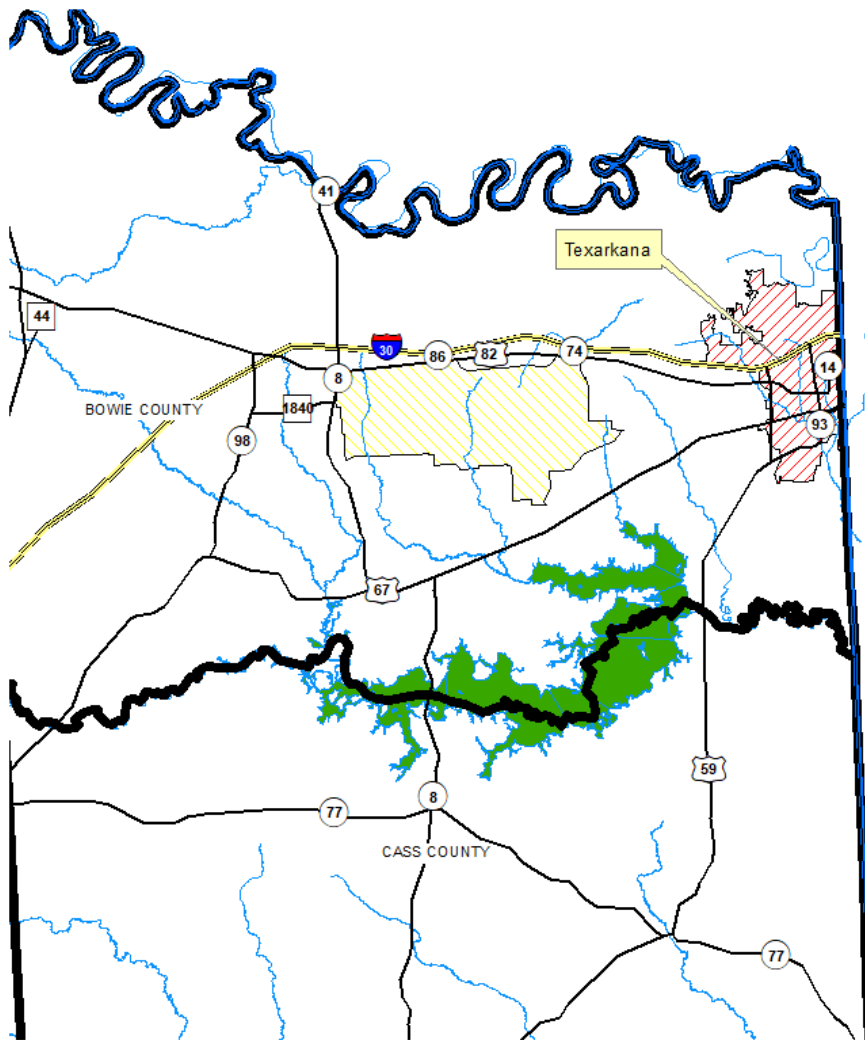
Strategy	Firm Yield (ac-ft)	Start Year	Total Capital Cost	Total Annual Cost	Unit Cost	Env. Impact
Renew contract with Riverbend WRD contingent upon Riverbend Strategy	8,380	2020	\$0	\$2,034,000	\$243	1

**Recommendations:**

	2020	2030	2040	2050	2060	2070
<b>Renew contract with Riverbend WRD contingent upon Riverbend Strategy</b>	<b>7,145</b>	<b>7,282</b>	<b>7,459</b>	<b>7,706</b>	<b>8,028</b>	<b>8,380</b>

It is recommended that the City of Texarkana, Texas continue and renew its surface water use and contracting approach as a participating member entity with Riverbend WRD contingent upon Riverbend WRD’s recommended strategies.

At present, considerable discussions are underway between all of the member cities of Riverbend Water Resources District. As noted previously and reiterated here, this 2021 Plan recognizes that Riverbend has become the contracting entity between its members and Texarkana, Texas. The strategies shown herein for entities with shortages in Bowie, Cass, and Red River Counties rely on continued use of water from Lake Wright Patman. Presently, the strategies related to the City of Texarkana, Texas, are presented with the Riverbend WRD’s water management strategies. However, the strategies should be considered consistent with the plan for this planning cycle if the City of Texarkana, Texas, is the contracting party rather than Riverbend WRD, as long as the water source remains Lake Wright Patman.



- Relation**
- Buyer
  - Seller
  - Source
  - Region D Boundary
  - Counties
  - Streams
  - Reservoirs

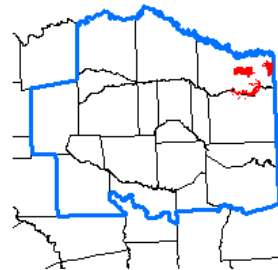
0 15,000 30,000 60,000

Feet

1 inch = 30,000 feet

**Attachment A**

Texarkana  
 Recommended Strategy  
 Renew Existing Contract (Riverbend WRD)



<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices Texarkana - Renew Existing Contract</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>ANNUAL COST</b>	
Operation and Maintenance	
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (0 kW-hr @ 0.08 \$/kW-hr)	\$0
Purchase of Water (8380 acft/yr @ 242.68 \$/acft)	<u>\$2,034,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$2,034,000</b>
<b>Available Project Yield (acft/yr)</b>	8,380
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$243
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$243
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$0.74
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$0.74
<i>JMP</i>	<i>10/2/2019</i>



**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF WAKE VILLAGE**

**Description of Water User Group:**

The City of Wake Village provides water service in Bowie County. The City’s population is projected to be 6,150 in 2020 and 8,950 in the year 2070. The City has a contract for water supply with the City of Texarkana from Lake Wright Patman. The City is projected to have a shortage in 2020 due to constraints on water supply and aging of Texarkana’s Water Treatment Plant.

**Water Supply and Demand Analysis:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Population</b>	6,150	6,850	7,550	8,250	8,950	8,950
<b>Projected Water Demand</b>	699	750	802	861	932	931
<b>Water Demand from other entities</b>	0	0	0	0	0	0
<b>Current Water Supply</b>	0	0	0	0	0	0
<b>Projected Supply Surplus (+) / Deficit (-)</b>	<b>-699</b>	<b>-750</b>	<b>-802</b>	<b>-861</b>	<b>-932</b>	<b>-931</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

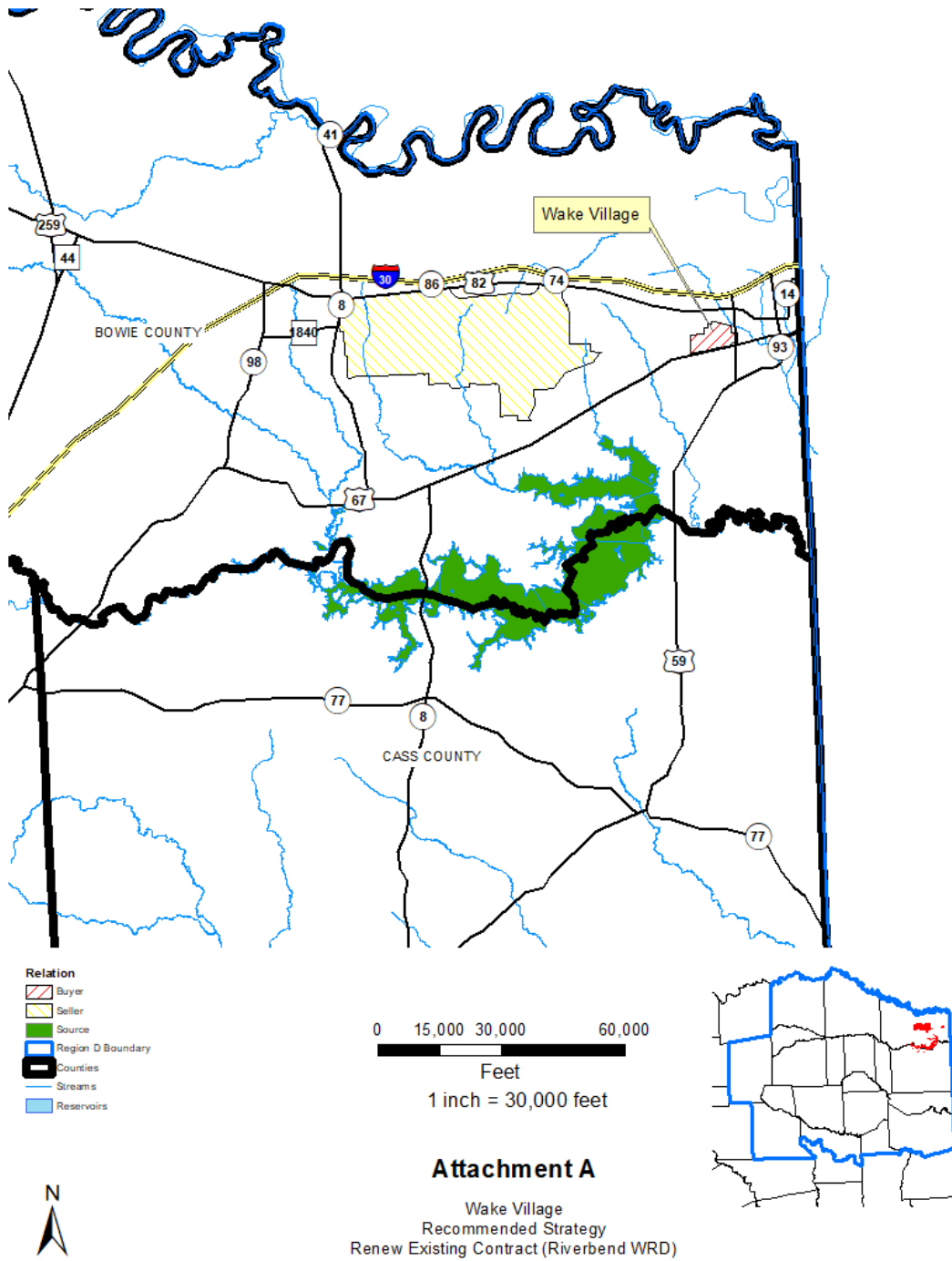
There were four alternative strategies considered to meet the City’s water supply shortages. Advanced conservation was not considered because the per capita use per day was less than the 140 gpcd threshold set by the water planning group. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was not selected because the City is planning on continuing to purchase surface water from the City of Texarkana. A request was submitted by Riverbend Water Resources District to consider a new Water Treatment Plant, pipeline, pump station, and intake to Wright Patman Reservoir. Thus, a renewal contract with Texarkana/Riverbend has been considered herein.

<b>Strategy</b>	<b>Firm Yield (ac-ft)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Environmental Impact</b>
Renew Existing Contract	<b>932</b>	<b>\$0</b>	<b>\$226,000</b>	<b>\$242</b>	<b>1</b>

**Recommendations:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Renew Existing Contract (ac-ft/yr)</b>	699	750	802	861	932	931

It is recommended that the City of Wake Village continue its surface water purchase from Texarkana contingent upon Riverbend WRD recommended strategies.



**Cost Estimate Summary  
Water Supply Project Option  
September 2018 Prices**

**Wake Village - Renew Existing Contract**

**Cost based on ENR CCI 11170.28 for September 2018 and  
a PPI of 201.9 for September 2018**

<i>Item</i>	<i>Estimated Costs for Facilities</i>
<b>ANNUAL COST</b>	
Operation and Maintenance	
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (0 kW-hr @ 0.08 \$/kW-hr)	\$0
Purchase of Water (932 acft/yr @ 242.68 \$/acft)	<u>\$226,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$226,000</b>
<b>Available Project Yield (acft/yr)</b>	932
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$242
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$242
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$0.74
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$0.74
<i>JMP</i>	<i>10/2/2019</i>

REGION D  
EVALUATIONS OF WATER MANAGEMENT STRATEGIES  
FOR MEETING PROJECTED WATER SUPPLY NEEDS  
TO YEAR 2070

# CAMP COUNTY

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WUGs:

Camp County Livestock

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS LIVESTOCK IN CAMP COUNTY – CYPRESS**

**Description of Water User Group:**

The Livestock WUG in Camp County has a demand that is projected to be a constant 4,914 ac-ft/yr from 2020 to 2070. Livestock in Cass County, Cypress has a current water supply consisting of water wells from the Carrizo-Wilcox Aquifer, Queen City Aquifer, and Local Supplies. The total rated available supply from these sources is 952 ac-ft/yr in 2020 thru 2070. Livestock in Cass County, Cypress is projected to have a water supply deficit of 3,962 ac-ft/yr in 2020 thru 2070.

**Water Supply and Demand Analysis:**

Livestock Camp Cypress	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Projected Water Demand</b>	4,914	4,914	4,914	4,914	4,914	4,914
<b>Current Water Supply</b>	952	952	952	952	952	952
<b>Projected Supply Surplus (+)/Deficit(-)</b>	-3,962	-3,962	-3,962	-3,962	-3,962	-3,962

**Evaluation of Potentially Feasible Water Management Strategies:**

Three alternative strategies were considered to meet the Camp County, Livestock, Cypress water supply shortages as summarized in the following table. Advanced conservation and water reuse were not considered because the demands are very rural in nature. Surface water alternatives were not utilized due to the rural nature of the demands.

<b>Strategy</b>	<b>Firm Yield (AF)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Environmental Impact</b>
Groundwater	<b>4,000</b>	<b>\$4,401,500</b>	<b>\$ 493,082</b>	<b>\$ 123</b>	<b>Minimal</b>

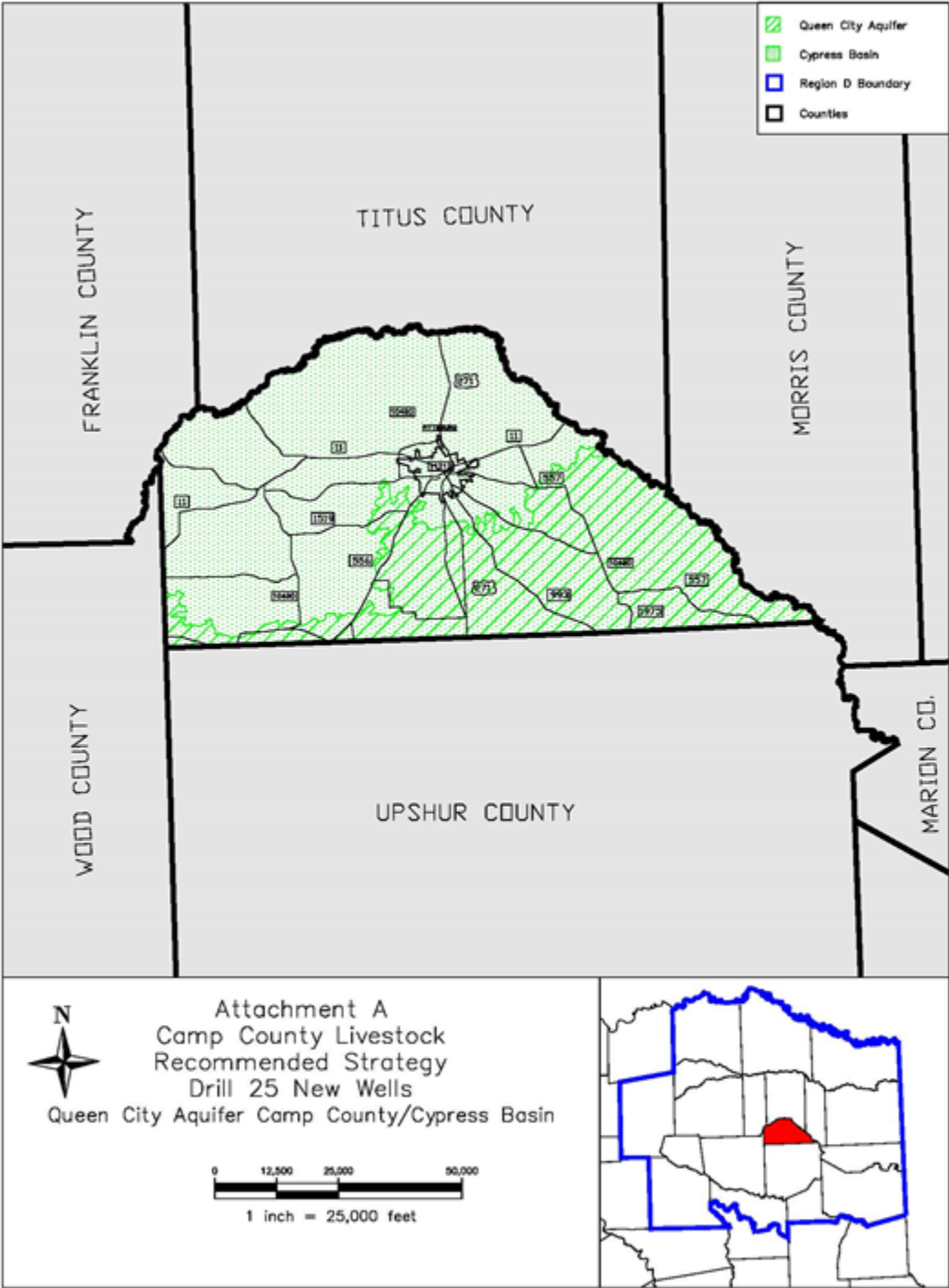
**Recommendations:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Drill New Wells (Queen City Aquifer, Cypress; ac-ft/yr)</b>	4,000	4,000	4,000	4,000	4,000	4,000

The recommended strategy for the Camp County, Livestock, Cypress to meet their projected deficit of 3,962 ac-ft/yr in 2020 thru 2070 would be to construct twenty-five water wells prior to 2020. The recommended supply source will be the Queen City Aquifer in Camp County. One well with rated capacity of 100 gpm each would provide approximately 160 ac-ft/yr. Twenty-five new wells will be needed to provide the 3,962 ac-ft/yr needed. The Queen Aquifer in Camp County is projected to have a more than ample supply availability to meet the needs of the Livestock in Camp County for the planning period.

Given the increasing costs to comply with more stringent regulations and the decreasing reliability of groundwater as a future supply source due to quality issues in this region, it is recommended that groundwater supply systems consider combining resources and/or soliciting future water supply from neighboring systems and/or major water providers in the region. If a feasible alternative becomes available, then the recommendations previously discussed should be disregarded and a re-evaluation completed.

<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices</b>	
<b>Livestock Camp Cypress - Drill New Well Queen City Aquifer Camp Cypress</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 202.4 for September 2018</b>	
<i>Item</i>	<i>Estimated Costs for Facilities</i>
<b>CAPITAL COST</b>	
Dam and Reservoir (Conservation Pool acft, acres)	\$0
Off-Channel Storage/Ring Dike (Conservation Pool acft, acres)	\$0
Terminal Storage (Conservation Pool acft, acres)	\$0
Primary Pump Station (0 MGD)	\$0
Transmission Pipeline (6 in dia., miles)	\$0
Transmission Pump Station(s) & Storage Tank(s)	\$0
Well Fields (Wells, Pumps, and Piping)	\$1,242,000
Storage Tanks (Other Than at Booster Pump Stations)	\$0
Water Treatment Plant (0 MGD)	\$0
Advanced Water Treatment Facility ( MGD)	\$0
Conservation (Leaking Pipe/Meter Replacement)	\$0
Integration, Relocations, & Other	\$0
<b>TOTAL COST OF FACILITIES</b>	<b>\$1,242,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$435,000
Environmental & Archaeology Studies and Mitigation	\$19,000
Land Acquisition and Surveying (5 acres)	\$16,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	<u>\$48,000</u>
<b>TOTAL COST OF PROJECT</b>	<b>\$1,760,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$124,000
Reservoir Debt Service (3.5 percent, 40 years)	\$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$12,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (761634 kW-hr @ 0.08 \$/kW-hr)	\$61,000
Purchase of Water ( acft/yr @ \$/acft)	\$0
<b>TOTAL ANNUAL COST</b>	<b>\$197,000</b>
<b>Available Project Yield (acft/yr)</b>	<b>1,600</b>
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	<b>\$123</b>
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	<b>\$46</b>
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	<b>\$0.38</b>
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	<b>\$0.14</b>
<i>Stanley Hayes</i>	<i>11/3/2019</i>



REGION D  
EVALUATIONS OF WATER MANAGEMENT STRATEGIES  
FOR MEETING PROJECTED WATER SUPPLY NEEDS  
TO YEAR 2070

## CASS COUNTY

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WUGs:

City of Atlanta  
County-Other, Cass  
Holly Springs WSC  
Livestock, Cass County  
Queen City



**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF ATLANTA**

**Description of Water User Group:**

The City of Atlanta provides water service in Cass County. The City’s population is projected to be 5,877 in 2020 and 7,427 in the year 2070. The City has a contract for water supply with the City of Texarkana from Lake Wright Patman. The City is expected to have shortages due to constraints on water supply and aging of Texarkana’s existing Water Treatment Plant located at the Graphics Packaging International (GPI) facility as identified in the Riverbend WRD’s Regional Water Master Plan.

**Water Supply and Demand Analysis:**

	2020	2030	2040	2050	2060	2070
<b>Population</b>	5,877	6,394	6,910	7,427	7,427	7,427
<b>Projected Water Demand</b>	1,017	1,075	1,135	1,209	1,206	1,206
<b>Water Demand from other entities</b>	0	0	0	0	0	0
<b>Current Water Supply</b>	1,017	1,075	1,135	1,209	1,206	1,206
<b>Projected Supply Surplus (+) / Deficit (-)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

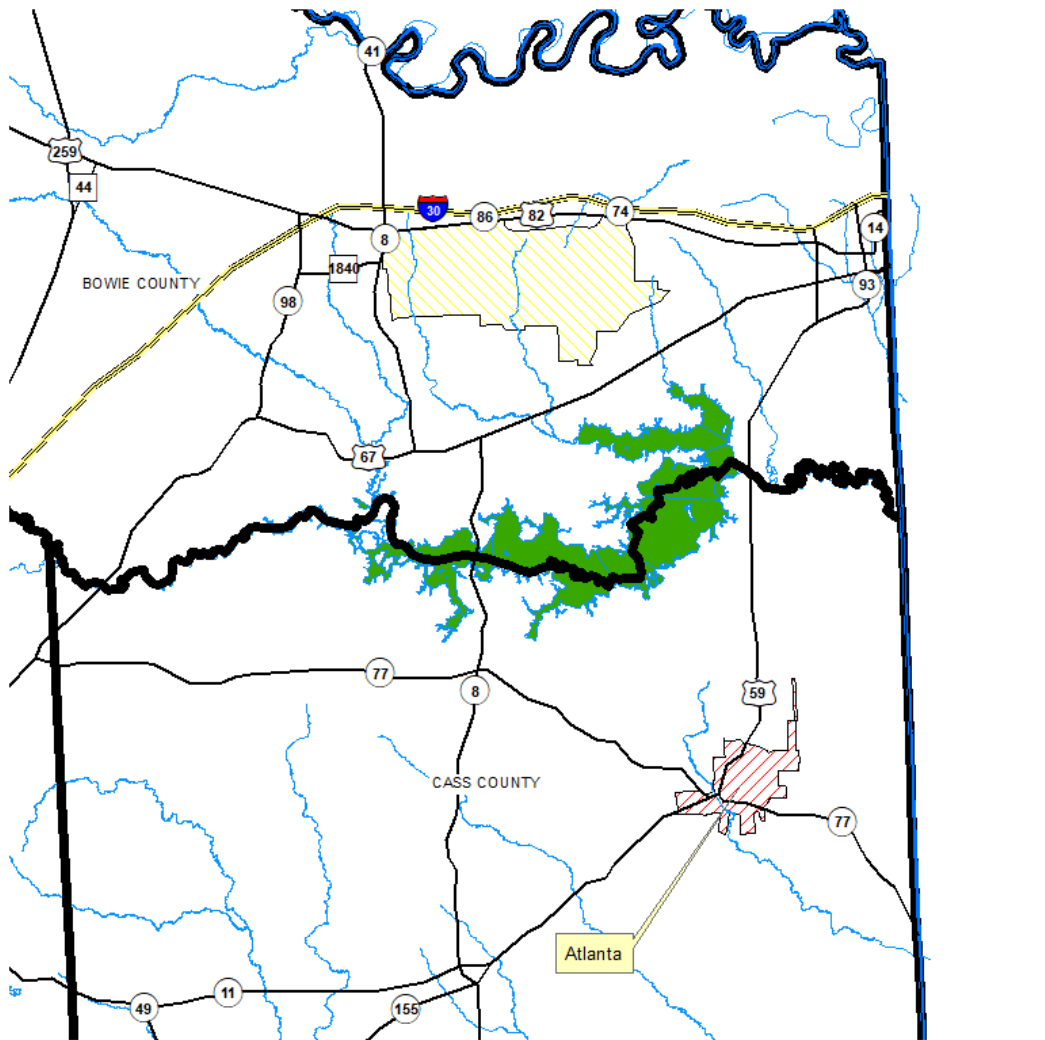
There were five alternative strategies considered to meet the City’s water supply shortages. Advanced conservation was not considered because the per capita use per day would be less than the 140 gpcd threshold set by the water planning group. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was not selected because the City is planning on continuing to purchase surface water from the City of Texarkana. Voluntary reallocation of manufacturing supply was identified in order to account for the fact that the City’s present supply comes via diversion of supply for GPI at Lake Wright Patman, a part of the Cass Manufacturing WUG, thus the amount for voluntary reallocation does not affect the 120,000 ac-ft/yr of contracted supply between Texarkana and GPI. Further, a request was submitted by Riverbend Water Resources District to consider a new 2.5 MGD package water treatment plant and transmission line for supply from Wright Patman Reservoir. Thus, a renewal contract with Texarkana/Riverbend has been considered herein.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Voluntary Reallocation (from Cass Manufacturing)	1,209	\$0	\$0	\$0	1
Renew Existing Contract	1,209	\$0	\$293,000	\$242	1

**Recommendations:**

	2020	2030	2040	2050	2060	2070
<b>Voluntary Reallocation (from Cass Manufacturing)</b>	<b>0</b>	<b>1,075</b>	<b>1,135</b>	<b>1,209</b>	<b>1,206</b>	<b>1,206</b>
<b>Renew Existing Contract (ac-ft/yr)</b>	<b>0</b>	<b>1,075</b>	<b>1,135</b>	<b>1,209</b>	<b>1,206</b>	<b>1,206</b>

It is recommended that the City of Atlanta continue its surface water purchase from Texarkana contingent upon voluntary reallocation of supply from Cass Manufacturing and Riverbend WRD’s recommended strategy for a new 2.5 MGD package water treatment plant and transmission line.

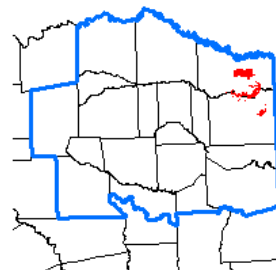


- Relation**
- Buyer
  - Seller
  - Source
  - Region D Boundary
  - Counties
  - Streams
  - Reservoirs

0 15,000 30,000 60,000

Feet

1 inch = 30,000 feet



**Attachment A**  
 Atlanta  
 Recommended Strategy  
 Renew Existing Contract (Riverbend WRD)

<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices Atlanta - Renew Existing Contract</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>ANNUAL COST</b>	
Operation and Maintenance	
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (0 kW-hr @ 0.08 \$/kW-hr)	\$0
Purchase of Water (1209 acft/yr @ 242.68 \$/acft)	<u>\$293,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$293,000</b>
<b>Available Project Yield (acft/yr)</b>	1,209
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$242
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$242
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$0.74
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$0.74
<i>JMP</i>	<i>10/2/2019</i>

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS COUNTY OTHER IN CASS COUNTY**

**Description of Water User Group:**

The County Other WUG in Cass County is a split entity and has a demand that is projected to be decreasing from 1,087 ac-ft/yr in 2020 to 846 ac-ft/yr in 2070. County Other in Cass County has a current water supply consisting of water wells from the Carrizo-Wilcox Aquifer and surface water from Lake O' the Pines (Avinger thru NETMWD), and Wright Patman Lake (Domino thru Texarkana Water Utilities/Riverbend). The total rated available supply from these sources is 638 ac-ft/yr. County Other in Cass County is projected to have a water supply deficit of 449 ac-ft/yr in 2020 and declining to a deficit of 208 ac-ft/yr in 2070.

**Water Supply and Demand Analysis:**

County Other Cass	2020	2030	2040	2050	2060	2070
<b>Projected Water Demand</b>						
Cypress Basin	796	729	664	623	620	620
Sulphur Basin	291	266	243	227	226	226
<b>Total</b>	<b>1,087</b>	<b>995</b>	<b>907</b>	<b>850</b>	<b>846</b>	<b>846</b>
<b>Current Water Supply</b>						
Cypress Basin	514	514	514	514	514	514
Sulphur Basin	124	124	124	124	124	124
<b>Total</b>	<b>638</b>	<b>638</b>	<b>638</b>	<b>638</b>	<b>638</b>	<b>638</b>
<b>Projected Supply Surplus (+)/Deficit(-)</b>						
Cypress Basin	-282	-215	-150	-109	-106	-106
Sulphur Basin	-167	-142	-119	-103	-102	-102
<b>Total</b>	<b>-449</b>	<b>-357</b>	<b>-269</b>	<b>-212</b>	<b>-208</b>	<b>-208</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

Three alternative strategies were considered to meet the Cass County, County Other Cypress water supply shortages as summarized in the following table. Advanced conservation and water reuse were not considered because the demands are very rural in nature. Surface water alternatives were utilized where feasible since the demands are not concentrated it is impossible to distribute the water. Groundwater has been identified as a potentially feasible strategy.

Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Groundwater Carrizo Wilcox, Cypress	323	\$ 1,973,000	\$ 166,000	\$ 514	Minimal
Groundwater Carrizo Wilcox, Sulphur	216	\$ 1,324,000	\$ 114,000	\$ 528	Minimal

**Recommendations:**

	2020	2030	2040	2050	2060	2070
<b>Drill New Wells(Carrizo Wilcox, Cypress; ac-ft/yr)</b>	323	323	323	323	323	323
<b>Drill New Wells (Carrizo Wilcox, Sulphur; ac-ft/yr)</b>	216	216	216	216	216	216

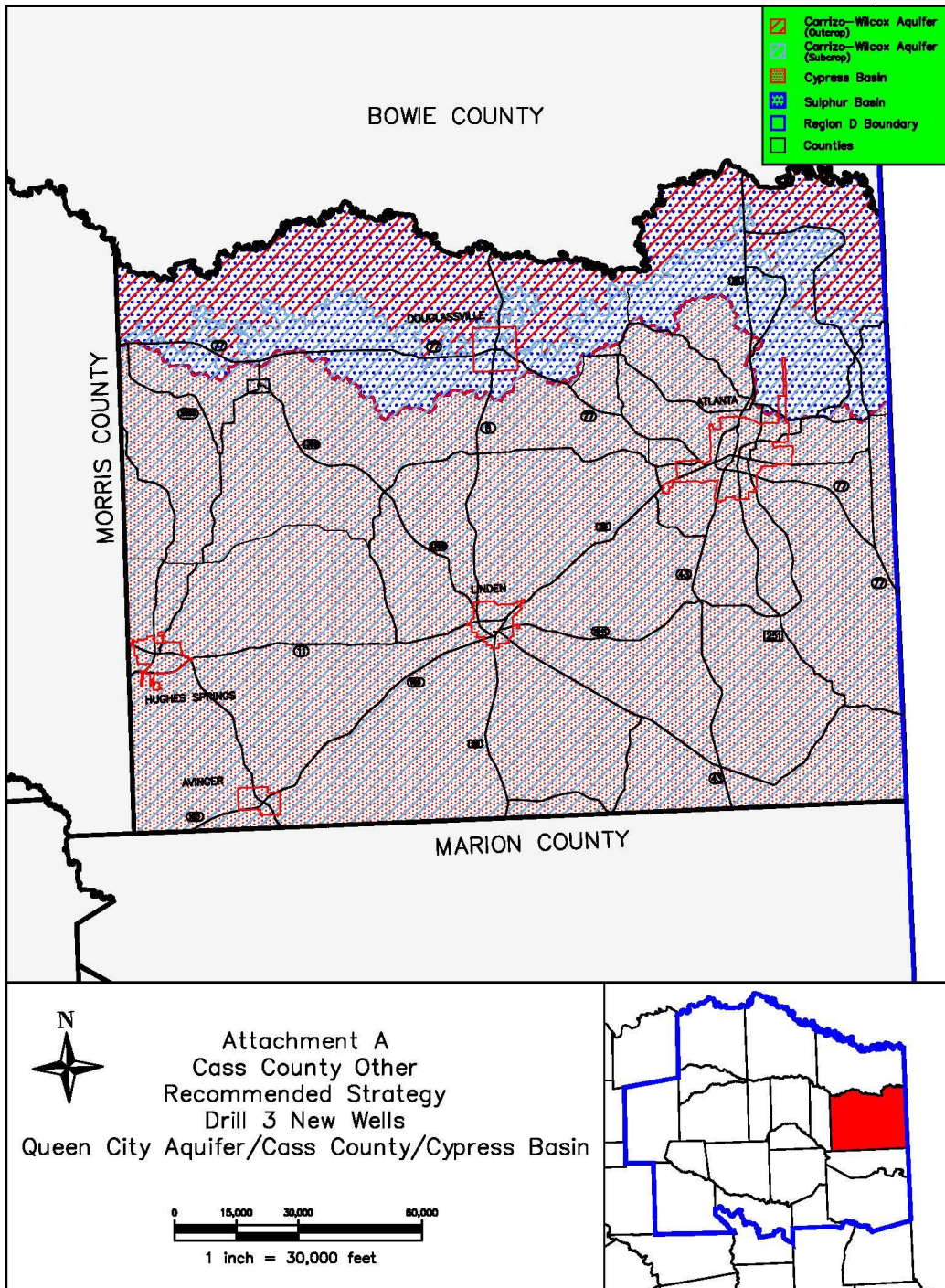
The recommended strategy for the Cass County, County Other, Cypress to meet their projected deficit of 282 ac-ft/yr in 2020 reducing to 106 ac-ft/yr in 2070 would be to construct three water wells prior to 2020. The recommended supply source will be the Carrizo Wilcox Aquifer in Cass County. One well with rated

capacity of 200 gpm each would provide approximately 108 ac-ft/yr. Three new wells will be needed to provide the 282 ac-ft/yr needed.

The recommended strategy for the Cass County, County Other, Sulphur to meet their projected deficit of 167 ac-ft/yr in 2020 reducing to 102 ac-ft/yr in 2070 would be to construct two water wells prior to 2020. The recommended supply source will be the Carrizo Wilcox Aquifer in Cass County. One well with rated capacity of 200 gpm each would provide approximately 108 ac-ft/yr. Two new wells will be needed to provide the 167 ac-ft/yr needed. The Carrizo Wilcox Aquifer in Cass County is projected to have a more than ample supply availability to meet the needs of the County Other in Cass County for the planning period.

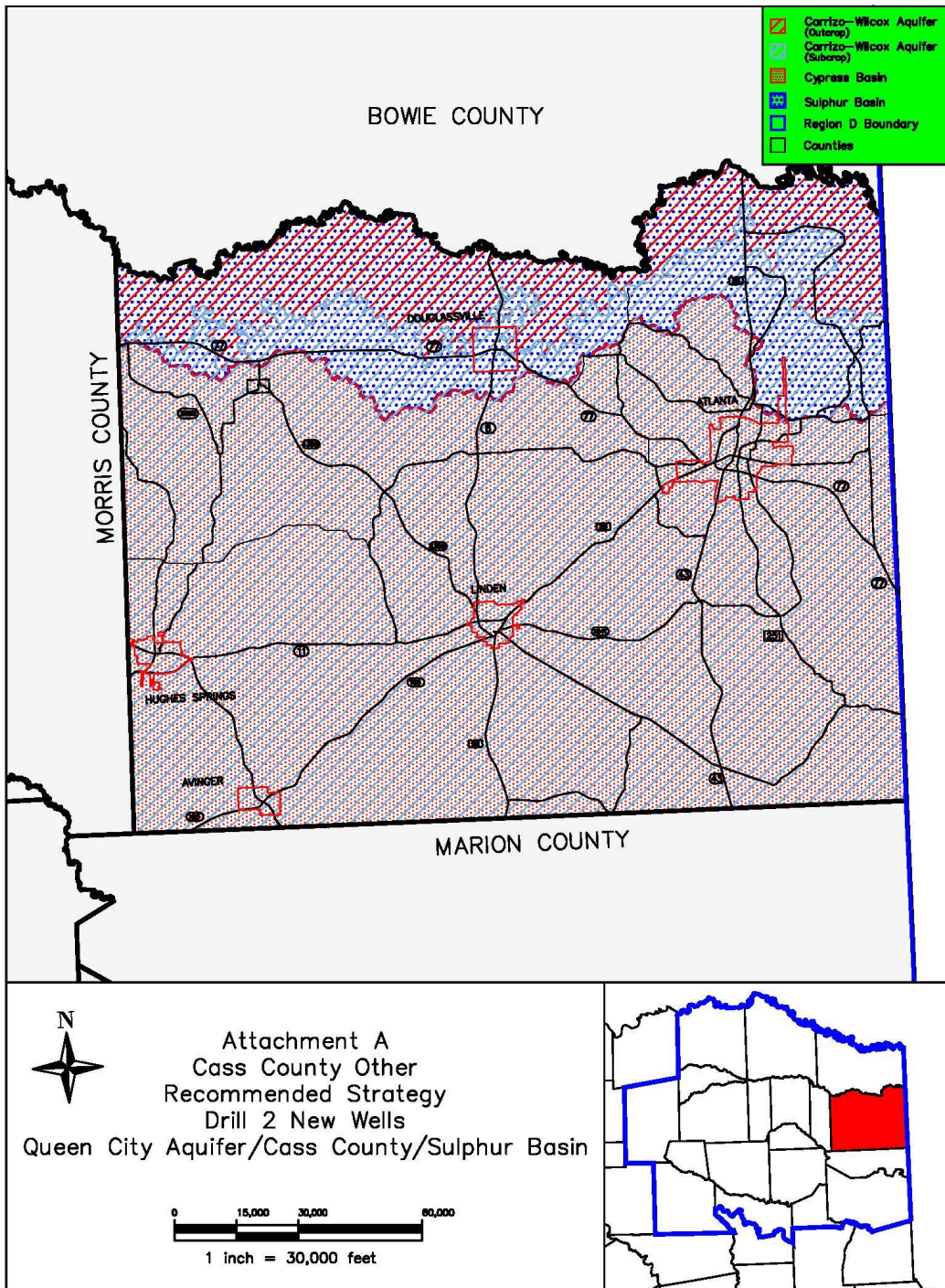
Given the increasing costs to comply with more stringent regulations and the decreasing reliability of groundwater as a future supply source due to quality issues in this region, it is recommended that groundwater supply systems consider combining resources and/or soliciting future water supply from neighboring systems and/or major water providers in the region. If a feasible alternative becomes available, then the recommendations previously discussed should be disregarded and a re-evaluation completed.

<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices</b>	
<b>County Other Cass Cypress - Drill New Well Carrizo Wilcox Aquifer Cass Cypress</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 202.4 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>CAPITAL COST</b>	
Dam and Reservoir (Conservation Pool acft, acres)	\$0
Off-Channel Storage/Ring Dike (Conservation Pool acft, acres)	\$0
Terminal Storage (Conservation Pool acft, acres)	\$0
Primary Pump Station (0 MGD)	\$0
Transmission Pipeline (6 in dia., miles)	\$0
Transmission Pump Station(s) & Storage Tank(s)	\$0
Well Fields (Wells, Pumps, and Piping)	\$1,394,000
Storage Tanks (Other Than at Booster Pump Stations)	\$0
Water Treatment Plant (0 MGD)	\$0
Advanced Water Treatment Facility ( MGD)	\$0
Conservation (Leaking Pipe/Meter Replacement)	\$0
Integration, Relocations, & Other	\$0
<b>TOTAL COST OF FACILITIES</b>	<b>\$1,394,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$488,000
Environmental & Archaeology Studies and Mitigation	\$33,000
Land Acquisition and Surveying (2 acres)	\$5,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	\$53,000
<b>TOTAL COST OF PROJECT</b>	<b>\$1,973,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$139,000
Reservoir Debt Service (3.5 percent, 40 years)	\$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$14,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (157800 kW-hr @ 0.08 \$/kW-hr)	\$13,000
Purchase of Water ( acft/yr @ \$/acft)	\$0
<b>TOTAL ANNUAL COST</b>	<b>\$166,000</b>
<b>Available Project Yield (acft/yr)</b>	<b>323</b>
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	<b>\$514</b>
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	<b>\$84</b>
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	<b>\$1.58</b>
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	<b>\$0.26</b>
<i>Stanley Hayes</i>	<i>10/3/2019</i>



<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices</b>	
<b>County-Other Cass Sulpur - Drill New Well Carrizo Wilcox Aquifer Cass Sulpur</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 202.4 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>CAPITAL COST</b>	
Dam and Reservoir (Conservation Pool acft, acres)	\$0
Off-Channel Storage/Ring Dike (Conservation Pool acft, acres)	\$0
Terminal Storage (Conservation Pool acft, acres)	\$0
Primary Pump Station (0 MGD)	\$0
Transmission Pipeline (6 in dia., miles)	\$0
Transmission Pump Station(s) & Storage Tank(s)	\$0
Well Fields (Wells, Pumps, and Piping)	\$929,000
Storage Tanks (Other Than at Booster Pump Stations)	\$0
Water Treatment Plant (0 MGD)	\$0
Advanced Water Treatment Facility ( MGD)	\$0
Conservation (Leaking Pipe/Meter Replacement)	\$0
Integration, Relocations, & Other	\$0
<b>TOTAL COST OF FACILITIES</b>	<b>\$929,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$325,000
Environmental & Archaeology Studies and Mitigation	\$31,000
Land Acquisition and Surveying (1 acres)	\$3,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	\$36,000
<b>TOTAL COST OF PROJECT</b>	<b>\$1,324,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$93,000
Reservoir Debt Service (3.5 percent, 40 years)	\$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$9,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (146646 kW-hr @ 0.08 \$/kW-hr)	\$12,000
Purchase of Water ( acft/yr @ \$/acft)	\$0
<b>TOTAL ANNUAL COST</b>	<b>\$114,000</b>
<b>Available Project Yield (acft/yr)</b>	<b>216</b>
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	<b>\$528</b>
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	<b>\$97</b>
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	<b>\$1.62</b>
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	<b>\$0.30</b>
<i>Paula Coleman</i>	<i>11/1/2019</i>





**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS HOLLY SPRINGS WSC**

**Description of Water User Group:**

The Holly Springs WSC WUG is a split WUG. In Cass County Cypress, it has a demand that is projected to be decreasing from 107 ac-ft/yr in 2020 to 97 ac-ft/yr in 2070. Holly Springs WSC in Cass County has a current water supply from Hughes Springs thru NETMWD and Lake O’ Pines. The total rated available supply from these sources is 60 ac-ft/yr in 2020 thru 2070. Holly Springs WSC in Cass County is projected to have a water supply deficit of 47 ac-ft/yr in 2020 and decreasing to 38 ac-ft/yr in 2070.

In Morris County, Cypress, it has a demand that is projected to be decreasing from 58 ac-ft/yr in 2020 to 53 ac-ft/yr in 2070. Holly Springs WSC in Morris County has a current water supply from Hughes Springs thru NETMWD and Lake O’ Pines. The total rated available supply from this source is 32 ac-ft/yr in 2020 thru 2040 and 33 ac-ft/yr in 2050 thru 2070. Holly Springs WSC in Morris County is projected to have a water supply deficit of 26 ac-ft/yr in 2020 and decreasing to 20 ac-ft/yr in 2070.

**Water Supply and Demand Analysis:**

	2020	2030	2040	2050	2060	2070
<b>Projected Water Demand</b>						
Cass County	107	103	99	97	97	97
Morris County	58	56	53	53	53	53
<b>Total</b>	<b>165</b>	<b>159</b>	<b>150</b>	<b>150</b>	<b>150</b>	<b>150</b>
<b>Current Water Supply</b>						
Cass County	60	60	60	59	59	59
Morris County	32	32	32	33	33	33
<b>Total</b>	<b>92</b>	<b>92</b>	<b>92</b>	<b>92</b>	<b>92</b>	<b>92</b>
<b>Projected Supply Surplus (+)/Deficit(-)</b>						
Cass County	-47	-43	-39	-38	-38	-38
Morris County	-26	-24	-21	-20	-20	-20
<b>Total</b>	<b>-73</b>	<b>-67</b>	<b>-60</b>	<b>-58</b>	<b>-58</b>	<b>-58</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

Three alternative strategies were considered to meet the Holly Springs WSC Cass County water supply shortages as summarized in the following table. Advanced conservation and water reuse was not considered because it is a rural system. Surface water alternatives include increasing their contract with the City of Hughes Springs thru NETMWD and Lake O’ Pines.

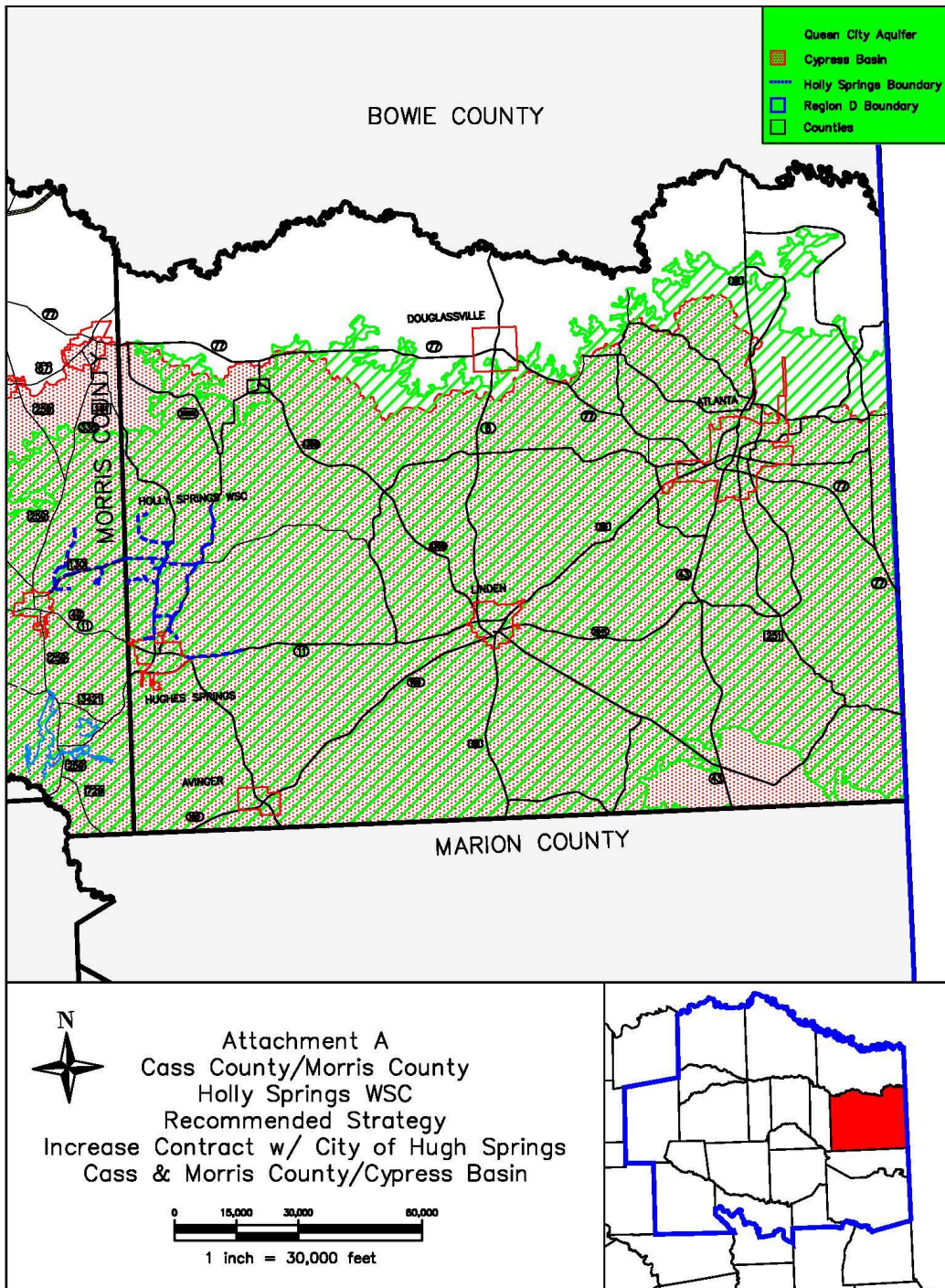
Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Surface Water	80	0	\$130,000	\$1,629	None

**Recommendations:**

	2020	2030	2040	2050	2060	2070
Cass County	50	50	50	50	50	50
Morris County	30	30	30	30	30	30
<b>Increase Contract (NETMWD; ac-ft/yr)</b>	<b>80</b>	<b>80</b>	<b>80</b>	<b>80</b>	<b>80</b>	<b>80</b>

The recommended strategy for the Holly Springs WSC to meet their projected deficit of 73 ac-ft/yr in 2020 would be to increase their contract with City of Hughes Springs thru NETMWD and Lake O’ Pines. The recommended supply source will be the Lake O’Pines in Marion County. Lake O’ Pines in Marion County is projected to have a more than ample supply availability to meet the needs of the Holly Springs WSC thru Hughes Springs and NETMWD for the planning period.

<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices</b>	
<b>Holly Springs - Increase Existing Contract from Hughes Springs</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 202.4 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>CAPITAL COST</b>	
Dam and Reservoir (Conservation Pool acft, acres)	\$0
Off-Channel Storage/Ring Dike (Conservation Pool acft, acres)	\$0
Terminal Storage (Conservation Pool acft, acres)	\$0
Primary Pump Station (0 MGD)	\$0
Transmission Pipeline (0 in dia., miles)	\$0
Transmission Pump Station(s) & Storage Tank(s)	\$0
Well Fields (Wells, Pumps, and Piping)	\$0
Storage Tanks (Other Than at Booster Pump Stations)	\$0
Water Treatment Plant (0 MGD)	\$0
Advanced Water Treatment Facility ( MGD)	\$0
Conservation (Leaking Pipe/Meter Replacement)	\$0
Integration, Relocations, & Other	\$0
<b>TOTAL COST OF FACILITIES</b>	<b>\$0</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$0
Environmental & Archaeology Studies and Mitigation	\$0
Land Acquisition and Surveying (0 acres)	\$0
Interest During Construction (3% for 1 years with a 0.5% ROI)	\$0
<b>TOTAL COST OF PROJECT</b>	<b>\$0</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$0
Reservoir Debt Service (3.5 percent, 40 years)	\$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$0
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (0 kW-hr @ 0.08 \$/kW-hr)	\$0
Purchase of Water (80 acft/yr @ 1629 \$/acft)	\$130,000
<b>TOTAL ANNUAL COST</b>	<b>\$130,000</b>
<b>Available Project Yield (acft/yr)</b>	<b>80</b>
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	<b>\$1,625</b>
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	<b>\$1,625</b>
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	<b>\$4.99</b>
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	<b>\$4.99</b>
<i>Paula Coleman</i>	<i>11/3/2019</i>





## EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS LIVESTOCK IN CASS COUNTY

### Description of Water User Group:

The Livestock WUG in Cass County is a split entity and has a demand that is projected to be a constant 2,657 ac-ft/yr from 2020 to 2070. Livestock in Cass County, Cypress has a current water supply consisting of water wells from the Carrizo-Wilcox Aquifer, Queen City Aquifer, Local Supplies, and surface water from a Cypress Run -of-River Water Right. The total rated available supply from these sources is 484 ac-ft/yr in 2020 thru 2070. Livestock in Cass County, Cypress is projected to have a water supply deficit of 865 ac-ft/yr in 2020 thru 2070.

Livestock in Cass County, Sulphur has a current water supply consisting of water wells from the Carrizo-Wilcox Aquifer, Queen City Aquifer, and Local Supplies. The total rated available supply from these sources is 355 ac-ft/yr in 2020 to 357 ac-ft/yr in 2070. Livestock in Cass County, Sulphur is projected to have a water supply deficit of 953 ac-ft/yr in 2020 and reducing to a deficit of 951 ac-ft/yr in 2070.

### Water Supply and Demand Analysis:

Livestock Cass	2020	2030	2040	2050	2060	2070
<b>Projected Water Demand</b>						
Cypress	1,349	1,349	1,349	1,349	1,349	1,349
Sulphur	1,308	1,308	1,308	1,308	1,308	1,308
<b>Total</b>	<b>2,657</b>	<b>2,657</b>	<b>2,657</b>	<b>2,657</b>	<b>2,657</b>	<b>2,657</b>
<b>Current Water Supply</b>						
Cypress	484	484	484	484	484	484
Sulphur	355	355	355	357	357	357
<b>Total</b>	<b>839</b>	<b>839</b>	<b>839</b>	<b>841</b>	<b>841</b>	<b>841</b>
<b>Projected Supply Surplus (+)/Deficit(-)</b>						
Cypress	-865	-865	-865	-865	-865	-865
Sulphur	-953	-953	-953	-951	-951	-951
<b>Total</b>	<b>-1,818</b>	<b>-1,818</b>	<b>-1,818</b>	<b>-1,816</b>	<b>-1,816</b>	<b>-1,816</b>

### Evaluation of Potentially Feasible Water Management Strategies:

Three alternative strategies were considered to meet the Cass County, Livestock, Cypress water supply shortages as summarized in the following table. Advanced conservation and water reuse were not considered because the demands are very rural in nature. Surface water alternatives were utilized where currently available but increase in permit amounts are not available. Construction of new wells accessing groundwater from the Queen City Aquifer was identified as a potentially feasible strategy.

Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Groundwater Queen City Aquifer Cypress	968	\$ 1,037,000	\$ 107,000	\$ 111	Minimal
Groundwater Queen City Aquifer Sulphur	966	\$ 1,037,000	\$ 107,000	\$ 111	Minimal

### Recommendations:

	2020	2030	2040	2050	2060	2070
<b>Drill New Wells (Queen City Aquifer, Cypress; ac-ft/yr)</b>	968	968	968	968	968	968
<b>Drill New Wells (Queen City Aquifer, Sulphur; ac-ft/yr)</b>	966	966	966	966	966	966

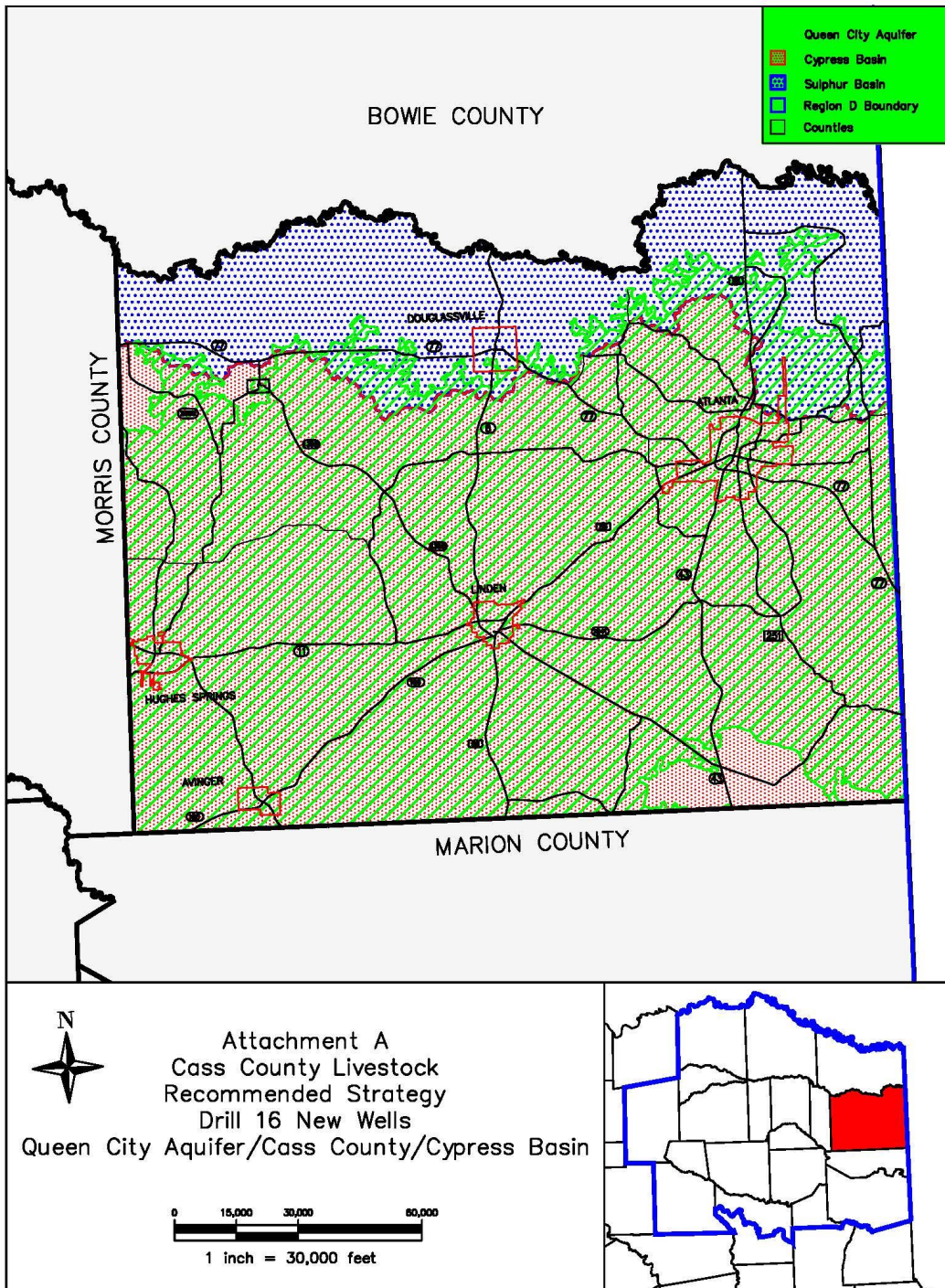
The recommended strategy for the Cass County, Livestock, Cypress to meet their projected deficit of 865 ac-ft/yr in 2020 thru 2070 would be to construct six water wells prior to 2020. The recommended supply source will be the Queen City Aquifer in Cass County. One well with rated capacity of 100 gpm each would provide approximately 161 ac-ft/yr. Six new wells will be needed to provide the 865 ac-ft/yr

needed. The Queen Aquifer in Cass County is projected to have a more than ample supply availability to meet the needs of the Livestock in Cass County for the planning period.

The recommended strategy for the Cass County, Livestock, Sulphur to meet their projected deficit of 953 ac-ft/yr in 2020 reducing to 951 ac-ft/yr in 2070 would be to construct six water wells prior to 2020. The recommended supply source will be the Queen City Aquifer in Cass County. One well with rated capacity of 100 gpm each would provide approximately 161 ac-ft/yr. Six new wells will be needed to provide the 953 ac-ft/yr needed. The Queen Aquifer in Cass County is projected to have a more than ample supply availability to meet the needs of the Livestock in Cass County for the planning period.

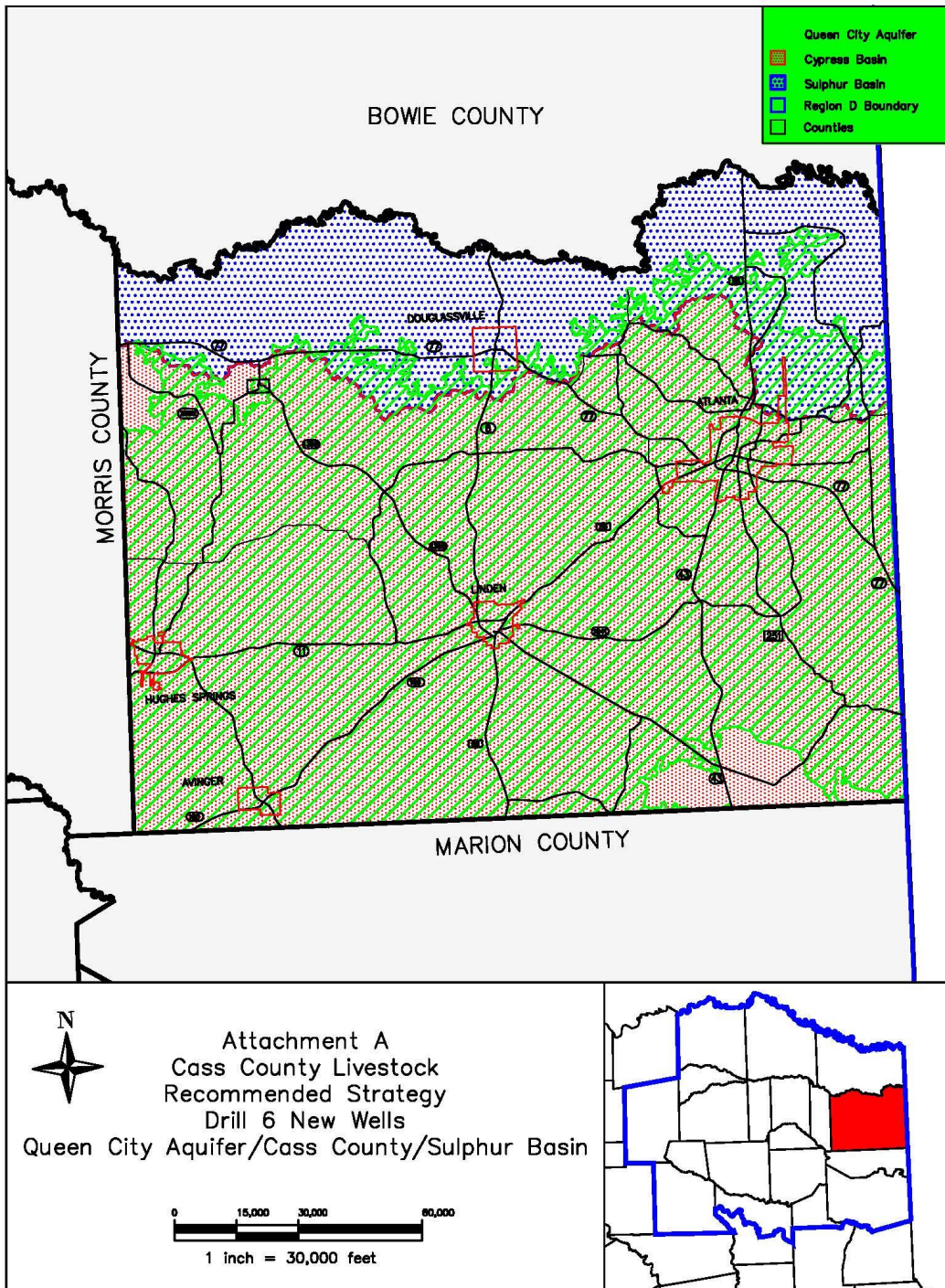
Given the increasing costs to comply with more stringent regulations and the decreasing reliability of groundwater as a future supply source due to quality issues in this region, it is recommended that groundwater supply systems consider combining resources and/or soliciting future water supply from neighboring systems and/or major water providers in the region. If a feasible alternative becomes available, then the recommendations previously discussed should be disregarded and a re-evaluation completed.

<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices</b>	
<b>Livestock Cass Cypress - Drill New Well Queen City Aquifer Cass Cypress</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 202.4 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>CAPITAL COST</b>	
Dam and Reservoir (Conservation Pool acft, acres)	\$0
Off-Channel Storage/Ring Dike (Conservation Pool acft, acres)	\$0
Terminal Storage (Conservation Pool acft, acres)	\$0
Primary Pump Station (0 MGD)	\$0
Transmission Pipeline (6 in dia., miles)	\$0
Transmission Pump Station(s) & Storage Tank(s)	\$0
Well Fields (Wells, Pumps, and Piping)	\$745,000
Storage Tanks (Other Than at Booster Pump Stations)	\$0
Water Treatment Plant (0 MGD)	\$0
Advanced Water Treatment Facility ( MGD)	\$0
Conservation (Leaking Pipe/Meter Replacement)	\$0
Integration, Relocations, & Other	\$0
<b>TOTAL COST OF FACILITIES</b>	<b>\$745,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$261,000
Environmental & Archaeology Studies and Mitigation	\$3,000
Land Acquisition and Surveying (3 acres)	\$0
Interest During Construction (3% for 1 years with a 0.5% ROI)	\$28,000
<b>TOTAL COST OF PROJECT</b>	<b>\$1,037,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$73,000
Reservoir Debt Service (3.5 percent, 40 years)	\$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$7,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (336892 kW-hr @ 0.08 \$/kW-hr)	\$27,000
Purchase of Water ( acft/yr @ \$/acft)	\$0
<b>TOTAL ANNUAL COST</b>	<b>\$107,000</b>
<b>Available Project Yield (acft/yr)</b>	<b>968</b>
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	<b>\$111</b>
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	<b>\$35</b>
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	<b>\$0.34</b>
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	<b>\$0.11</b>
Stanley Hayes	9/29/2019





<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices</b>	
<b>Livestock Cass Sulphur - Drill New Well Queen City Aquifer Cass Sulphur</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 202.4 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>CAPITAL COST</b>	
Dam and Reservoir (Conservation Pool acft, acres)	\$0
Off-Channel Storage/Ring Dike (Conservation Pool acft, acres)	\$0
Terminal Storage (Conservation Pool acft, acres)	\$0
Primary Pump Station (0 MGD)	\$0
Transmission Pipeline (6 in dia., miles)	\$0
Transmission Pump Station(s) & Storage Tank(s)	\$0
Well Fields (Wells, Pumps, and Piping)	\$745,000
Storage Tanks (Other Than at Booster Pump Stations)	\$0
Water Treatment Plant (0 MGD)	\$0
Advanced Water Treatment Facility ( MGD)	\$0
Conservation (Leaking Pipe/Meter Replacement)	\$0
Integration, Relocations, & Other	\$0
<b>TOTAL COST OF FACILITIES</b>	<b>\$745,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$261,000
Environmental & Archaeology Studies and Mitigation	\$3,000
Land Acquisition and Surveying (3 acres)	\$0
Interest During Construction (3% for 1 years with a 0.5% ROI)	\$28,000
<b>TOTAL COST OF PROJECT</b>	<b>\$1,037,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$73,000
Reservoir Debt Service (3.5 percent, 40 years)	\$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$7,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (336892 kW-hr @ 0.08 \$/kW-hr)	\$27,000
Purchase of Water ( acft/yr @ \$/acft)	\$0
<b>TOTAL ANNUAL COST</b>	<b>\$107,000</b>
<b>Available Project Yield (acft/yr)</b>	<b>966</b>
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	<b>\$111</b>
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	<b>\$35</b>
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	<b>\$0.34</b>
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	<b>\$0.11</b>
Stanley Hayes	9/29/2019



**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF QUEEN CITY**

**Description of Water User Group:**

The City of Queen City provides water service in Cass County. The City’s population is projected to be 1,701 in 2020 and 1,714 in the year 2070. The City primarily utilizes groundwater supply from the Carrizo-Wilcox Aquifer, although it has the capability to use water supply from the City of Texarkana from Lake Wright Patman that it has used in the past. The City is not expected to have shortages as sufficient groundwater supplies are projected over the 2020 – 2070 planning period. However, the City’s full demands have been considered in evaluation of strategies for the purposes of the 2021 Region D Plan as the City’s demands were included as part of the evaluation of strategies within the Riverbend WRD’s Regional Water Master Plan.

**Water Supply and Demand Analysis:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Population</b>	1,701	1,714	1,714	1,714	1,714	1,714
<b>Projected Water Demand</b>	258	251	244	243	243	243
<b>Current Water Supply</b>	269	269	269	269	269	269
<b>Projected Supply Surplus (+) / Deficit (-)</b>	<b>11</b>	<b>18</b>	<b>25</b>	<b>26</b>	<b>26</b>	<b>26</b>

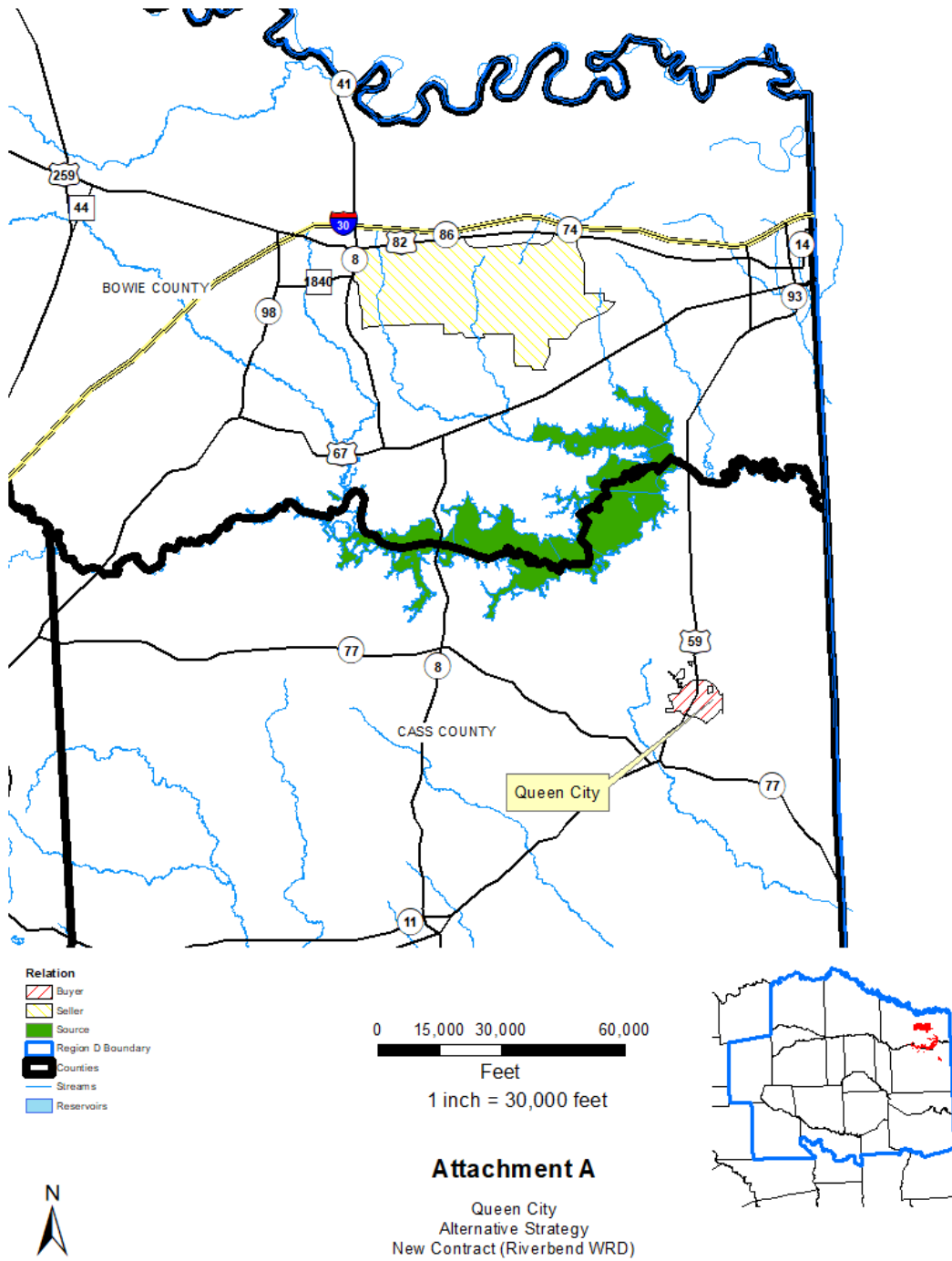
**Evaluation of Potentially Feasible Water Management Strategies:**

There were five alternative strategies considered to meet the City’s water supply shortages as summarized in the Table below. Advanced conservation was not considered because the per capita use per day would be less than the 140 gpcd threshold set by the water planning group. Reuse is not a feasible option because water supply is mainly used for public consumption. Existing groundwater supply is sufficient to meet the City’s needs, and is expected to continue to meet projected future demands for the City. Voluntary reallocation of manufacturing supply was identified in order to account for the fact that the Riverbend WRD Regional Master Plan indicates that supply could be provided via diversion of supply for GPI at Lake Wright Patman, a part of the Cass Manufacturing WUG, thus the amount for voluntary reallocation does not affect the 120,000 ac-ft/yr of contracted supply between Texarkana and GPI. Further, a request was submitted by Riverbend Water Resources District to consider a new 2.5 MGD package water treatment plant and transmission line for supply from Wright Patman Reservoir. Thus, a new contract with Texarkana/Riverbend has been considered herein.

<b>Strategy</b>	<b>Firm Yield (ac-ft)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Environmental Impact</b>
Voluntary Reallocation (from Cass Manufacturing)	<b>251</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>1</b>
New Contract	<b>251</b>	<b>\$0</b>	<b>\$121,000</b>	<b>\$482</b>	<b>1</b>

**Recommendations:**

As the City of Queen City’s groundwater supplies are sufficient to meet projected future demands for the City, no additional WMS is recommended.



<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices Queen City - New Contract with Riverbend WRD</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>ANNUAL COST</b>	
Operation and Maintenance	
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (0 kW-hr @ 0.08 \$/kW-hr)	\$0
Purchase of Water (251 acft/yr @ 482.28 \$/acft)	<u>\$121,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$121,000</b>
<b>Available Project Yield (acft/yr)</b>	251
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$482
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$482
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$1.48
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$1.48
<i>JMP</i>	<i>10/2/2019</i>

REGION D  
EVALUATIONS OF WATER MANAGEMENT STRATEGIES  
FOR MEETING PROJECTED WATER SUPPLY NEEDS  
TO YEAR 2070

## DELTA COUNTY

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WUGs:

Delta County Livestock

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF LIVESTOCK IN DELTA COUNTY**

**Description of Water User Group:**

The Livestock WUG in Delta County has a demand that is projected to remain constant at 541 ac-ft/yr over the 2020 – 2070 planning period. The Livestock WUG in Delta County is supplied by groundwater from the Nacatoch and Trinity Aquifers and livestock local supplies from the Sulphur basin. A deficit of 262 ac-ft/yr is projected to occur in 2020 decreasing to 250 ac-ft/yr by 2030 that remains throughout the planning period.

**Water Supply and Demand Analysis:**

	2020	2030	2040	2050	2060	2070
<b>Projected Water Demand</b>	541	541	541	541	541	541
<b>Current Water Supply</b>	279	291	291	291	291	291
<b>Projected Supply Surplus (+)/Deficit(-)</b>	<b>-262</b>	<b>-250</b>	<b>-250</b>	<b>-250</b>	<b>-250</b>	<b>-250</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

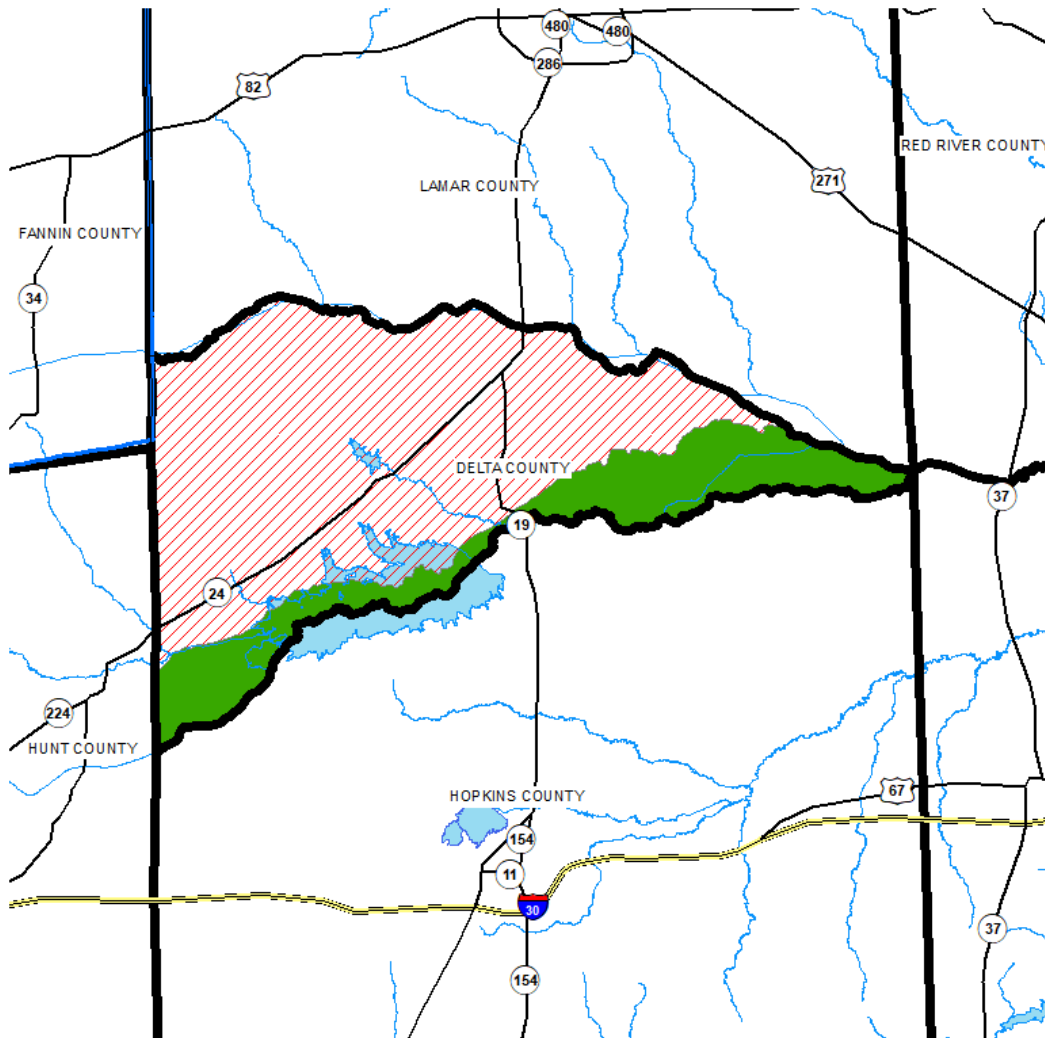
Three alternative strategies were considered to meet the projected shortages for Delta County Livestock. Advanced water conservation for livestock practices was not considered, as present livestock practices likely result in sale of the livestock to reduce demand and extend water supply. The use of reuse water was not considered feasible as no centralized supply is available. Groundwater from the Nacatoch aquifer has been identified as a potential source of water.

Strategy	Strategy Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Drill New Wells (Nacatoch, Sulphur Basin)	262	\$1,929,000	\$297,000	\$1,134	1

**Recommendations:**

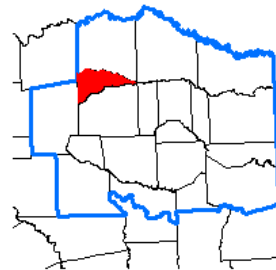
	2020	2030	2040	2050	2060	2070
<b>Drill New Wells (Nacatoch Aquifer, Sulphur Basin; ac-ft/yr)</b>	262	250	250	250	250	250

The recommended strategies for the Delta County Livestock to meet their projected deficit of 262 ac-ft/yr is to construct four (4) additional water wells with a rated capacity of 75 gpm in the Nacatoch aquifer. A well operating at an average of 75 gpm is capable of delivering 121 ac-ft per year per well with a well in reserve.



- Relation**
- Buyer
  - Seller
  - Source
  - Region D Boundary
  - Counties
  - Streams
  - Reservoirs

0 15,000 30,000 60,000  
 Feet  
 1 inch = 30,000 feet



**Attachment A**  
 Livestock Delta Co  
 Recommended Strategy  
 Drill New Wells (Delta, Nacatoch, Sulphur)



<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices</b>	
<b>Delta Livestock - Drill New Wells (Delta, Nacatoch Aquifer, Sulphur Basin)</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
Well Fields (Wells, Pumps, and Piping)	\$1,321,000
<b>TOTAL COST OF FACILITIES</b>	<b>\$1,321,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$462,000
Environmental & Archaeology Studies and Mitigation	\$64,000
Land Acquisition and Surveying (6 acres)	\$30,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	<u>\$52,000</u>
<b>TOTAL COST OF PROJECT</b>	<b>\$1,929,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$136,000
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$13,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (216873 kW-hr @ 0.08 \$/kW-hr)	\$17,000
Purchase of Water (262 acft/yr @ 500 \$/acft)	<u>\$131,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$297,000</b>
<b>Available Project Yield (acft/yr)</b>	262
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$1,134
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$615
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$3.48
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$1.89
<i>JMP</i>	9/30/2019

REGION D  
EVALUATIONS OF WATER MANAGEMENT STRATEGIES  
FOR MEETING PROJECTED WATER SUPPLY NEEDS  
TO YEAR 2070

FRANKLIN COUNTY

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WUGs:

Franklin County Livestock

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS LIVESTOCK IN FRANKLIN COUNTY – CYPRESS**

**Description of Water User Group:**

The Livestock WUG in Franklin County is a split entity and has a demand that is projected to be a constant 2,850 ac-ft/yr from 2020 to 2070. Livestock in Franklin County, Cypress has a current water supply consisting of water wells from the Carrizo-Wilcox Aquifer, Queen City Aquifer, and Local Supplies. The total rated available supply from these sources is 425 ac-ft/yr in 2020 thru 2070. Livestock in Franklin County, Cypress is projected to have a water supply deficit of 714 ac-ft/yr in 2020 thru 2070.

Livestock in Franklin County, Sulphur has a current water supply consisting of water wells from the Carrizo-Wilcox Aquifer, Queen City Aquifer, and Local Supplies. The total rated available supply from these sources is 621 ac-ft/yr in 2020 thru 2070. Livestock in Franklin County, Sulphur is projected to have a water supply deficit of 1,090 ac-ft/yr in 2020 thru 2070.

**Water Supply and Demand Analysis:**

Livestock Franklin	2020	2030	2040	2050	2060	2070
<b>Projected Water Demand</b>						
Cypress	1,139	1,139	1,139	1,139	1,139	1,139
Sulphur	1,711	1,711	1,711	1,711	1,711	1,711
<b>Total</b>	<b>2,850</b>	<b>2,850</b>	<b>2,850</b>	<b>2,850</b>	<b>2,850</b>	<b>2,850</b>
<b>Current Water Supply</b>						
Cypress	425	425	425	425	425	425
Sulphur	621	621	621	621	621	621
<b>Total</b>	<b>1,046</b>	<b>1,046</b>	<b>1,046</b>	<b>1,046</b>	<b>1,046</b>	<b>1,046</b>
<b>Projected Supply Surplus (+)/Deficit(-)</b>						
Cypress	-714	-714	-714	-714	-714	-714
Sulphur	-1,090	-1,090	-1,090	-1,090	-1,090	-1,090
<b>Total</b>	<b>-1,804</b>	<b>-1,804</b>	<b>-1,804</b>	<b>-1,804</b>	<b>-1,804</b>	<b>-1,804</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

Three alternative strategies were considered to meet the Franklin County, Livestock, Cypress water supply shortages as summarized in the following table. Advanced conservation and water reuse were not considered because the demands are very rural in nature. Surface water alternatives were not utilized due to the rural nature of livestock demands. New wells in the Carrizo-Wilcox Aquifer were also identified as a potentially feasible strategy for the WUG.

Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Groundwater Carrizo-Wilcox Cypress	805	\$ 865,000	\$ 89,000	\$ 111	Minimal
Groundwater Carrizo-Wilcox Sulphur	1,129	\$ 1,211,000	\$ 125,000	\$ 111	Minimal

**Recommendations:**

	2020	2030	2040	2050	2060	2070
<b>Drill New Wells (Carrizo-Wilcox, Cypress; ac-ft/yr)</b>	805	805	805	805	805	805
<b>Drill New Wells (Carrizo-Wilcox, Sulphur; ac-ft/yr)</b>	1,129	1,129	1,129	1,129	1,129	1,129

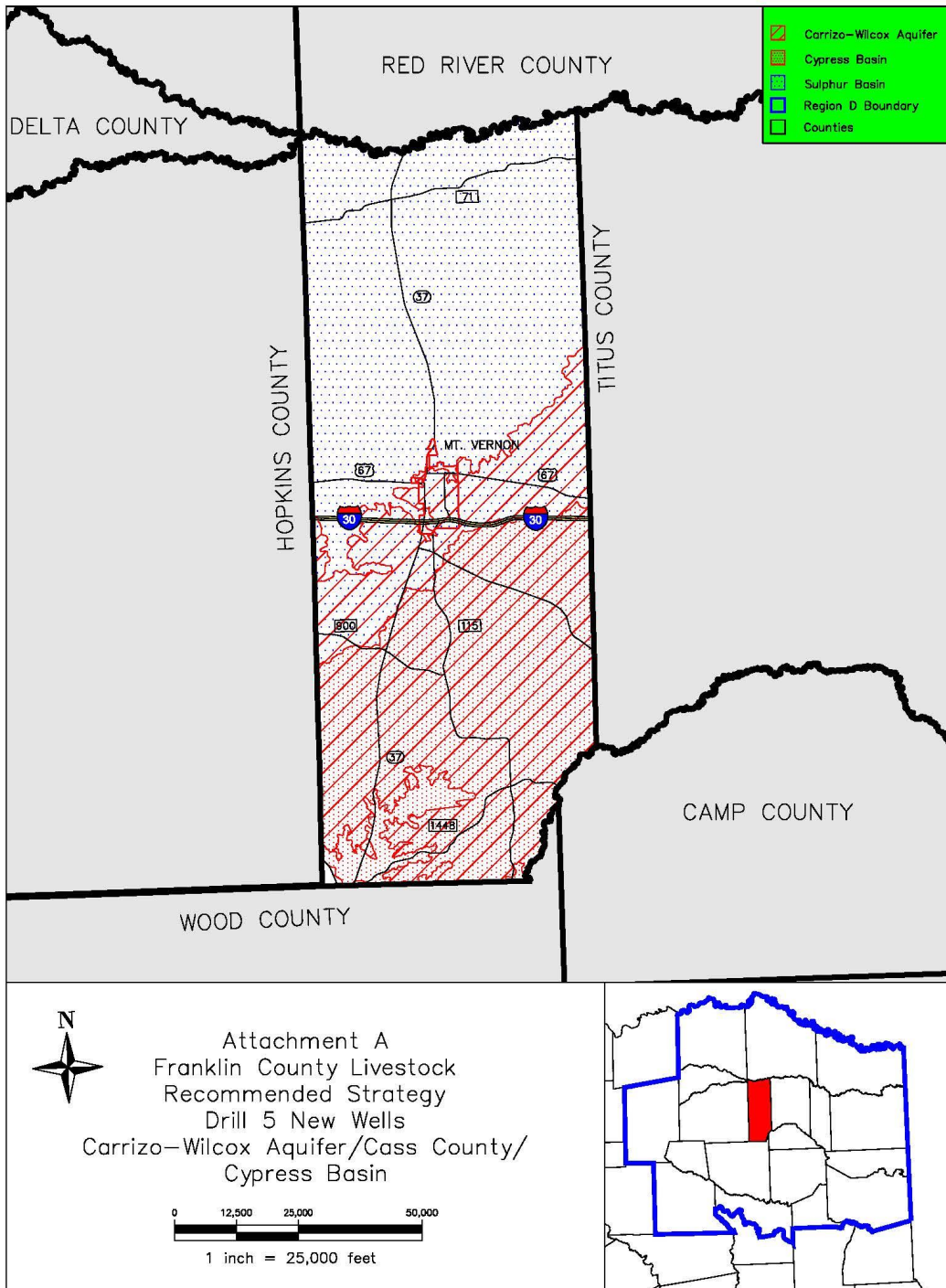
The recommended strategy for the Franklin County, Livestock, Cypress to meet their projected deficit of 865 ac-ft/yr in 2020 thru 2070 would be to construct five water wells prior to 2020. The recommended supply source will be the Carrizo Aquifer in Franklin County. One well with rated capacity of 100 gpm each would provide approximately 161 ac-ft/yr. Five new wells will be needed to provide the 714 ac-ft/yr

needed. The Carrizo Aquifer in Franklin County is projected to have a more than ample supply availability to meet the needs of the Livestock in Franklin County for the planning period.

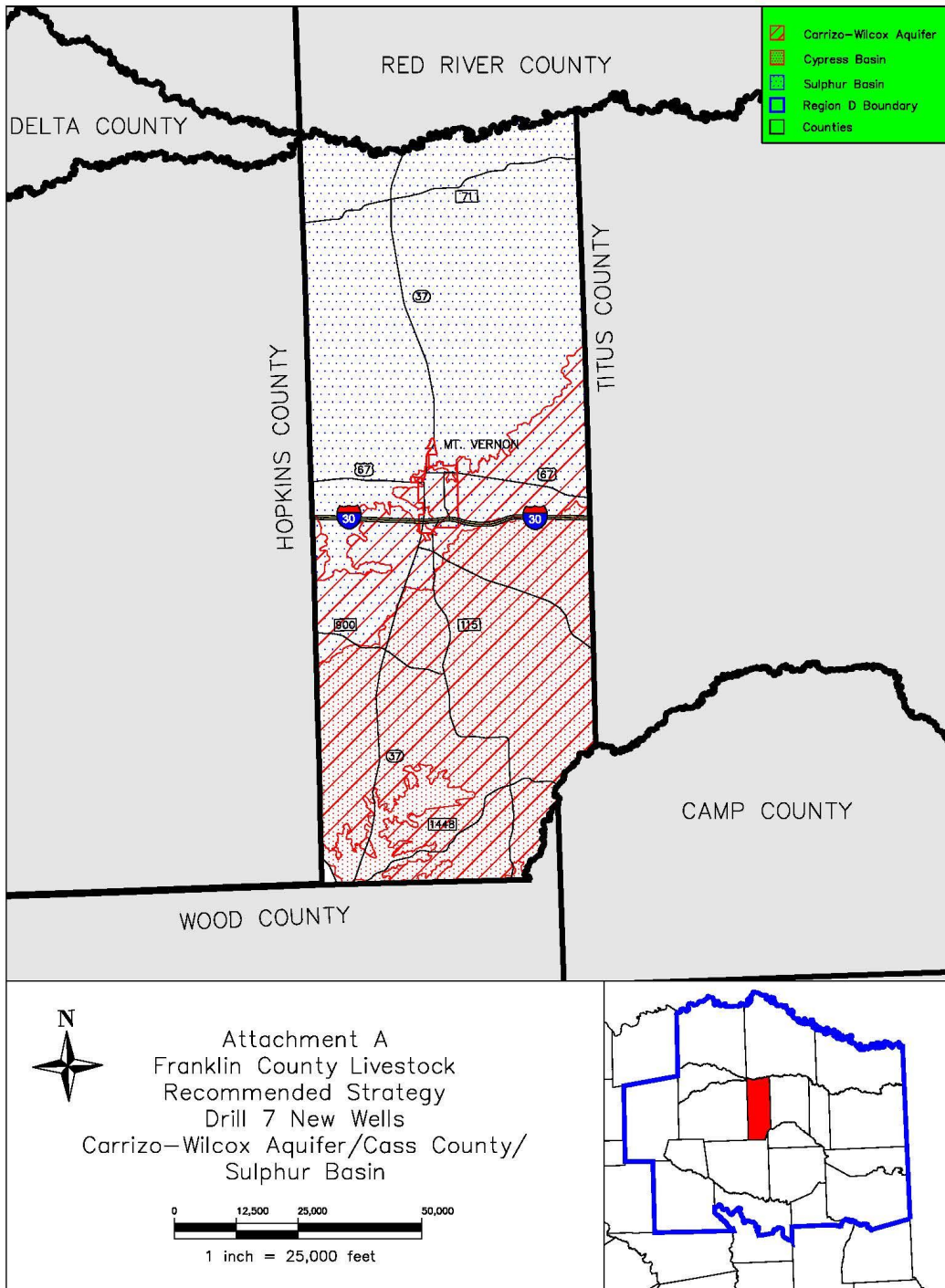
The recommended strategy for the Franklin County, Livestock, Sulphur to meet their projected deficit of 1,090 ac-ft/yr in 2020 thru 2070 would be to construct seven water wells prior to 2020. The recommended supply source will be the Carrizo Aquifer in Franklin County. One well with rated capacity of 100 gpm each would provide approximately 161 ac-ft/yr. Seven new wells will be needed to provide the 1,090 ac-ft/yr needed. The Carrizo Aquifer in Franklin County is projected to have a more than ample supply availability to meet the needs of the Livestock in Franklin County for the planning period.

Given the increasing costs to comply with more stringent regulations and the decreasing reliability of groundwater as a future supply source due to quality issues in this region, it is recommended that groundwater supply systems consider combining resources and/or soliciting future water supply from neighboring systems and/or major water providers in the region. If a feasible alternative becomes available, then the recommendations previously discussed should be disregarded and a re-evaluation completed.

<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices</b>	
<b>Livestock Franklin Cypress - Drill New Well Carrizo Wilcox Aquifer Franklin Cypress</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 202.4 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>CAPITAL COST</b>	
Dam and Reservoir (Conservation Pool acft, acres)	\$0
Off-Channel Storage/Ring Dike (Conservation Pool acft, acres)	\$0
Terminal Storage (Conservation Pool acft, acres)	\$0
Primary Pump Station (0 MGD)	\$0
Transmission Pipeline (6 in dia., miles)	\$0
Transmission Pump Station(s) & Storage Tank(s)	\$0
Well Fields (Wells, Pumps, and Piping)	\$870,000
Storage Tanks (Other Than at Booster Pump Stations)	\$0
Water Treatment Plant (0 MGD)	\$0
Advanced Water Treatment Facility (MGD)	\$0
Conservation (Leaking Pipe/Meter Replacement)	\$0
Integration, Relocations, & Other	\$0
<b>TOTAL COST OF FACILITIES</b>	<b>\$870,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$304,000
Environmental & Archaeology Studies and Mitigation	\$4,000
Land Acquisition and Surveying (4 acres)	\$0
Interest During Construction (3% for 1 years with a 0.5% ROI)	\$33,000
<b>TOTAL COST OF PROJECT</b>	<b>\$1,211,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$85,000
Reservoir Debt Service (3.5 percent, 40 years)	\$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$9,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (393040 kW-hr @ 0.08 \$/kW-hr)	\$31,000
Purchase of Water ( acft/yr @ \$/acft)	\$0
<b>TOTAL ANNUAL COST</b>	<b>\$125,000</b>
<b>Available Project Yield (acft/yr)</b>	<b>1,129</b>
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	<b>\$111</b>
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	<b>\$35</b>
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	<b>\$0.34</b>
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	<b>\$0.11</b>
Stanley Hayes	10/3/2019



<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices</b>	
<b>Livestock Cass Sulphur - Drill New Well Queen City Aquifer Cass Sulphur</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 202.4 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>CAPITAL COST</b>	
Dam and Reservoir (Conservation Pool acft, acres)	\$0
Off-Channel Storage/Ring Dike (Conservation Pool acft, acres)	\$0
Terminal Storage (Conservation Pool acft, acres)	\$0
Primary Pump Station (0 MGD)	\$0
Transmission Pipeline (6 in dia., miles)	\$0
Transmission Pump Station(s) & Storage Tank(s)	\$0
Well Fields (Wells, Pumps, and Piping)	\$745,000
Storage Tanks (Other Than at Booster Pump Stations)	\$0
Water Treatment Plant (0 MGD)	\$0
Advanced Water Treatment Facility (MGD)	\$0
Conservation (Leaking Pipe/Meter Replacement)	\$0
Integration, Relocations, & Other	\$0
<b>TOTAL COST OF FACILITIES</b>	<b>\$745,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$261,000
Environmental & Archaeology Studies and Mitigation	\$3,000
Land Acquisition and Surveying (3 acres)	\$0
Interest During Construction (3% for 1 years with a 0.5% ROI)	\$28,000
<b>TOTAL COST OF PROJECT</b>	<b>\$1,037,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$73,000
Reservoir Debt Service (3.5 percent, 40 years)	\$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$7,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (336892 kW-hr @ 0.08 \$/kW-hr)	\$27,000
Purchase of Water ( acft/yr @ \$/acft)	\$0
<b>TOTAL ANNUAL COST</b>	<b>\$107,000</b>
<b>Available Project Yield (acft/yr)</b>	<b>966</b>
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	<b>\$111</b>
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	<b>\$35</b>
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	<b>\$0.34</b>
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	<b>\$0.11</b>
Stanley Hayes	9/29/2019





REGION D  
EVALUATIONS OF WATER MANAGEMENT STRATEGIES  
FOR MEETING PROJECTED WATER SUPPLY NEEDS  
TO YEAR 2070

# GREGG COUNTY

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WUGs:

Gregg County Mining

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS MINING IN GREGG COUNTY SABINE**

**Description of Water User Group:**

The Mining WUG in Gregg County is a split entity and has a demand that is projected to be decreasing from 260 ac-ft/yr in 2020 to 171 ac-ft/yr in 2070. Mining in Gregg County has a current water supply consisting of water wells from the Carrizo-Wilcox Aquifer and a Sabine Run-of-River Permit. The total rated available supply from these sources varies from 171 ac-ft/yr to 407 ac-ft/yr over the planning period. Mining in Gregg County is projected to have a water supply deficit of 11 ac-ft/yr in 2020 increasing to a deficit of 19 ac-ft/yr in 2030 and decreasing to a deficit of 6 ac-ft/yr in 2070 for the Gregg Sabine split.

**Water Supply and Demand Analysis:**

<b>Mining Gregg Sabine</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Projected Water Demand</b>	260	411	407	320	233	171
<b>Current Water Supply</b>	249	392	388	306	223	165
<b>Projected Supply Surplus (+)/Deficit(-)</b>	-11	-19	-19	-14	-10	-6

**Evaluation of Potentially Feasible Water Management Strategies:**

Three alternative strategies were considered to meet the Gregg County Mining water supply shortages as summarized in the following table. Advanced conservation and water reuse was not considered because operational procedures for the existing mines are not available. Surface water alternatives were omitted since there is not a supply source within close proximity to the county with available supply. Wells in the Carrizo-Wilcox Aquifer (Sabine River Basin) were identified as a potentially feasible strategy for the WUG.

<b>Strategy</b>	<b>Firm Yield (AF)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Environmental Impact</b>
Groundwater	27	\$117,000	\$10,000	\$370	1

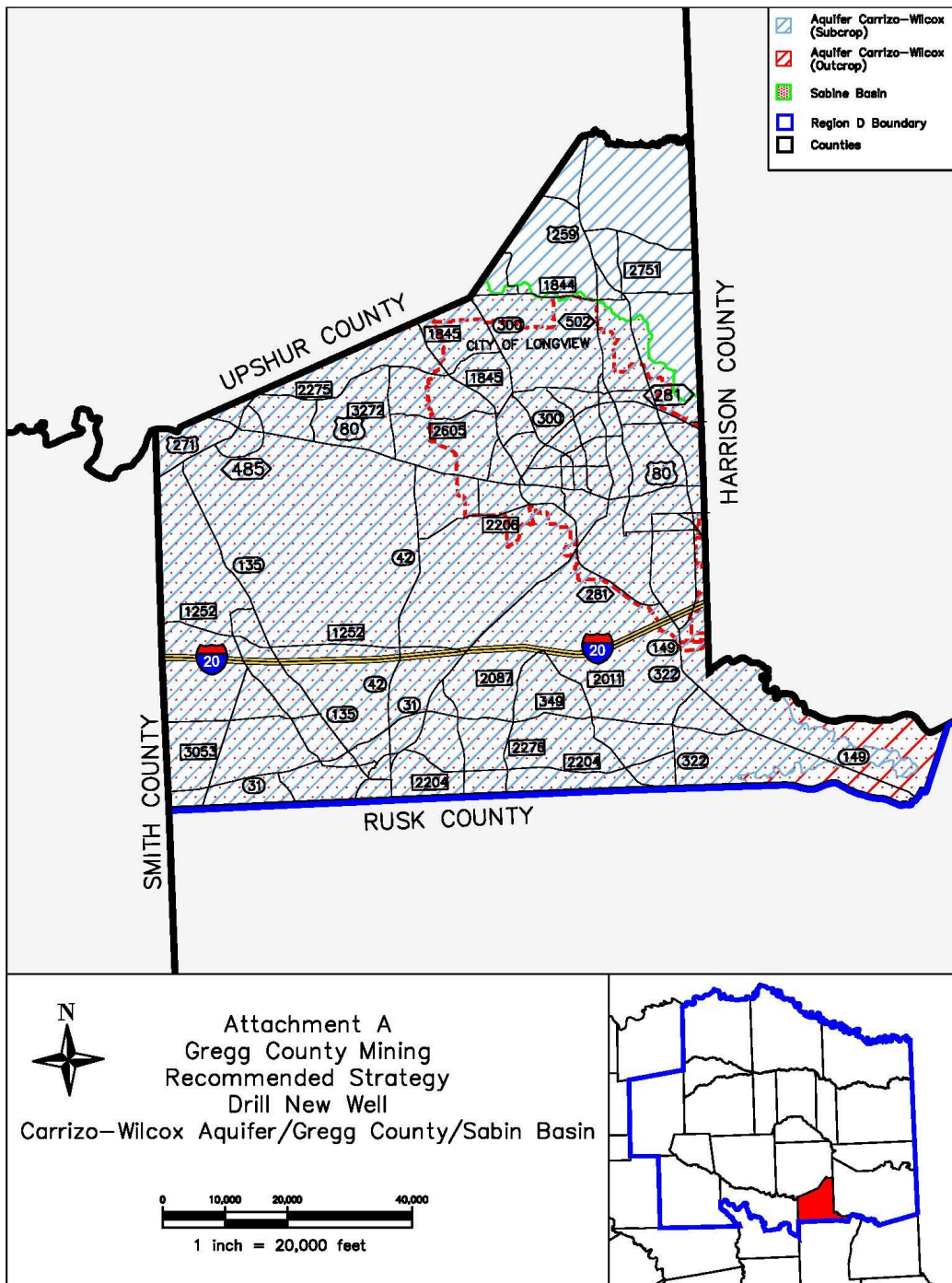
**Recommendations:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Drill New Wells (Carrizo-Wilcox, Sabine), ac-ft/yr)</b>	27	27	27	27	27	27

The recommended strategy for the Gregg County Mining Sabine to meet their projected deficit of 11 ac-ft/yr in 2020 and 19 ac-ft/yr in 2030 would be to construct one additional water well similar to their existing wells just prior to each decade as the deficits occur. The recommended supply source will be the Carrizo-Wilcox Aquifer in Gregg County. One well with rated capacity of 50 gpm each would provide approximately 27 ac-ft/yr. The Carrizo-Wilcox Aquifer in Gregg County is projected to have a more than ample supply availability to meet the needs of the Mining in Gregg County Sabine for the planning period.

Given the increasing costs to comply with more stringent regulations and the decreasing reliability of groundwater as a future supply source due to quality issues in this region, it is recommended that groundwater supply systems consider combining resources and/or soliciting future water supply from neighboring systems and/or major water providers in the region. If a feasible alternative becomes available, then the recommendations previously discussed should be disregarded and a re-evaluation completed.

<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices</b>	
<b>Mining Gregg Sabine - Drill New Well Carrizo-Wilcox Aquifer Gregg Sabine</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 202.4 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>CAPITAL COST</b>	
Dam and Reservoir (Conservation Pool acft, acres)	\$0
Off-Channel Storage/Ring Dike (Conservation Pool acft, acres)	\$0
Terminal Storage (Conservation Pool acft, acres)	\$0
Primary Pump Station (0 MGD)	\$0
Transmission Pipeline (6 in dia., miles)	\$0
Transmission Pump Station(s) & Storage Tank(s)	\$0
Well Fields (Wells, Pumps, and Piping)	\$84,000
Storage Tanks (Other Than at Booster Pump Stations)	\$0
Water Treatment Plant (0 MGD)	\$0
Advanced Water Treatment Facility (MGD)	\$0
Conservation (Leaking Pipe/Meter Replacement)	\$0
Integration, Relocations, & Other	\$0
<b>TOTAL COST OF FACILITIES</b>	<b>\$84,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$29,000
Environmental & Archaeology Studies and Mitigation	\$0
Land Acquisition and Surveying (1 acres)	\$0
Interest During Construction (3% for 1 years with a 0.5% ROI)	\$4,000
<b>TOTAL COST OF PROJECT</b>	<b>\$117,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$8,000
Reservoir Debt Service (3.5 percent, 40 years)	\$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$1,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (9396 kW-hr @ 0.08 \$/kW-hr)	\$1,000
Purchase of Water ( acft/yr @ \$/acft)	\$0
<b>TOTAL ANNUAL COST</b>	<b>\$10,000</b>
<b>Available Project Yield (acft/yr)</b>	<b>27</b>
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	<b>\$370</b>
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	<b>\$74</b>
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	<b>\$1.14</b>
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	<b>\$0.23</b>
Stanley Hayes	9/30/2019



REGION D  
EVALUATIONS OF WATER MANAGEMENT STRATEGIES  
FOR MEETING PROJECTED WATER SUPPLY NEEDS  
TO YEAR 2070

## HARRISON COUNTY

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WUGs:

Harleton WSC  
Harrison County Irrigation  
Leigh WSC  
Harrison County Mining  
North Harrison WSC  
Panola Bethany WSC  
City of Scottsville  
City of Waskom

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF HARLETON WSC**

**Description of Water User Group:**

The Harleton WSC system is located in northwest Harrison County and southern Marion County. The WSC served 1,480 connections in 2018. The population is projected to increase from 4,486 persons in 2020 to 6,787 persons in 2070. The WSC is included as a W.U.G. in Harrison and Marion Counties. The system’s current water supply consists of four water wells from the Carrizo-Wilcox Aquifer and a contract with NETMWD for surface water from Lake O’ the Pines. The total rated capacity of these sources is approximately 610 GPM, or 328 ac-ft/yr. The system is bounded on the west by the Diana SUD, the south Gum Springs WSC, the east by Talley WSC and Cypress Valley WSC, and the north by Lake O’ the Pines. The System does have a water conservation plan. The System is projected to have a water supply deficit of 62 ac-ft/yr in 2020 decreasing to 230 ac-ft/yr in 2070.

**Water Supply and Demand Analysis:**

<b>Harleton WSC, Harrison, Cypress</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Population</b>	3381	3632	3890	4253	4649	5116
<b>Projected Water Demand</b>	345	354	367	394	429	472
<b>Current Water Supply</b>	298	298	298	298	298	298
<b>Projected Supply Surplus (+)/Deficit(-)</b>	<b>-47</b>	<b>-56</b>	<b>-69</b>	<b>-96</b>	<b>-131</b>	<b>-174</b>

<b>Harleton WSC, Marion, Cypress</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Population</b>	1105	1186	1271	1390	1518	1671
<b>Projected Water Demand</b>	113	116	120	129	140	154
<b>Current Water Supply</b>	98	98	98	98	98	98
<b>Projected Supply Surplus (+)/Deficit(-)</b>	<b>-15</b>	<b>-18</b>	<b>-22</b>	<b>-31</b>	<b>-42</b>	<b>-56</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

Four alternative strategies were considered to meet the WSC’s water supply shortages as summarized in the following table. Advanced conservation was not considered because the per capita use per day was below the 140 gpcd threshold set by the planning group. Water reuse was not considered because the system does not have a sewer collection system. Groundwater of acceptable quality is difficult to find in the Harleton Service area. Existing well water is blended with surface water to meet quality standards. Harleton WSC has an existing contract with NETMWD for treated water from Lake O’ the Pines.

<b>Strategy</b>	<b>Firm Yield (AF)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Environmental Impact</b>
Surface Water	<b>230</b>		<b>\$ 4,928</b>	<b>652</b>	<b>1</b>

**Recommendations:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Increase Contract (NETMWD; ac-ft/yr)</b>	62	74	91	127	173	230

The recommended strategy for the Harleton WSC to meet their projected deficiency of 62 ac-ft/yr in 2020 and deficit of 230 ac-ft/yr in 2070 would be to increase their contract with NETMWD just prior to each decade as the deficits occur. The recommended supply source will be the Lake O’ the Pines in Marion County. The Lake O’ the Pines in Marion County is projected to have a more than ample supply availability to meet the needs of Harleton WSC for the planning period.

Given the increasing costs to comply with more stringent regulations and the decreasing reliability of groundwater as a future supply source due to quality issues in this region, it is recommended that groundwater supply systems consider combining resources and/or soliciting future water supply from neighboring systems and/or major water providers in the region. If a feasible alternative becomes available, then the recommendations previously discussed should be disregarded and a re-evaluation completed.

<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices Harleton WSC - Increase Contract</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 202.4 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>CAPITAL COST</b>	
Dam and Reservoir (Conservation Pool acft, acres)	\$0
Off-Channel Storage/Ring Dike (Conservation Pool acft, acres)	\$0
Terminal Storage (Conservation Pool acft, acres)	\$0
Primary Pump Station (0 MGD)	\$0
Transmission Pipeline (0 in dia., miles)	\$0
Transmission Pump Station(s) & Storage Tank(s)	\$0
Well Fields (Wells, Pumps, and Piping)	\$0
Storage Tanks (Other Than at Booster Pump Stations)	\$0
Water Treatment Plant (0 MGD)	\$0
Advanced Water Treatment Facility (MGD)	\$0
Conservation (Leaking Pipe/Meter Replacement)	\$0
Integration, Relocations, & Other	\$0
<b>TOTAL COST OF FACILITIES</b>	<b>\$0</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$0
Environmental & Archaeology Studies and Mitigation	\$0
Land Acquisition and Surveying (0 acres)	\$0
Interest During Construction (3% for 1 years with a 0.5% ROI)	\$0
<b>TOTAL COST OF PROJECT</b>	<b>\$0</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$0
Reservoir Debt Service (3.5 percent, 40 years)	\$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$0
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (0 kW-hr @ 0.08 \$/kW-hr)	\$0
Purchase of Water (7570 acft/yr @ 651 \$/acft)	<u>\$4,928,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$4,928,000</b>
<b>Available Project Yield (acft/yr)</b>	230
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$21,426
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$21,426
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$65.74
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$65.74
SRH	10/4/2019

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS IRRIGATION IN HARRISON COUNTY**

**Description of Water User Group:**

The Irrigation WUG in Harrison County is a split entity and has a demand that is projected to be constant 701 ac-ft/yr from 2020 to 2070. Irrigation in Harrison County, Cypress Basin has a current water supply consisting of water wells from the Carrizo-Wilcox Aquifer, surface water from Cypress Run-of-River permit, and Sabine Run-of-River permit. The total rated available supply from these sources is 35 ac-ft/yr for the Cypress split. Irrigation in Harrison County is projected to have a water supply deficit of 384 ac-ft/yr in 2020 and staying even to a deficit of 384 ac-ft/yr in 2070 for the Cypress split.

Irrigation in Harrison County, Sabine Basin has a current water supply consisting of water wells from the Carrizo-Wilcox Aquifer surface water from Sabine Run-of-River permit, and Cypress Run-of-River permit. The total rated available supply from these sources is 134 ac-ft/yr for the Sabine split. Irrigation in Harrison County is projected to have a water supply deficit of 148 ac-ft/yr in 2020 thru 2070 for the Sabine split.

**Water Supply and Demand Analysis:**

Mining Harrison Cypress	2020	2030	2040	2050	2060	2070
<b>Projected Water Demand</b>						
Cypress	419	419	419	419	419	419
Sabine	282	282	282	282	282	282
<b>Total</b>	<b>701</b>	<b>701</b>	<b>701</b>	<b>701</b>	<b>701</b>	<b>701</b>
<b>Current Water Supply</b>						
Cypress	35	35	35	35	35	35
Sabine	134	134	134	134	134	134
<b>Total</b>	<b>169</b>	<b>169</b>	<b>169</b>	<b>169</b>	<b>169</b>	<b>169</b>
<b>Projected Supply Surplus (+)/Deficit(-)</b>						
Cypress	-384	-384	-384	-384	-384	-384
Sabine	-148	-148	-148	-148	-148	-148
<b>Total</b>	<b>-532</b>	<b>-532</b>	<b>-532</b>	<b>-532</b>	<b>-532</b>	<b>-532</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

Three alternative strategies were considered to meet the Harrison County Irrigation water supply shortages as summarized in the following table. Advanced conservation and water reuse was not considered because operational procedures for the existing irrigation is not available. Surface water alternatives were omitted since there is not a supply source within close proximity to the county with available supply. New wells in the Queen City Aquifer was identified as a potentially feasible strategy for the WUG.

Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Groundwater Queen City Aquifer Cypress Basin	484	\$ 577,000	\$ 58,000	\$ 120	Minimal
Groundwater Queen City Aquifer Sabine Basin	161	\$ 193,000	\$ 19,000	\$ 118	Minimal

**Recommendations:**

	2020	2030	2040	2050	2060	2070
<b>Drill New Wells (Queen City Aquifer, Cypress Basin; ac-ft/yr)</b>	484	484	484	484	484	484
<b>Drill New Wells (Queen City Aquifer, Sabine Basin; ac-ft/yr)</b>	161	161	161	161	161	161

The recommended strategy for the Harrison County Irrigation, Cypress Basin, to meet their projected deficit of 384 ac-ft/yr in 2020 through 2070 would be to construct three water wells prior to 2020 as the

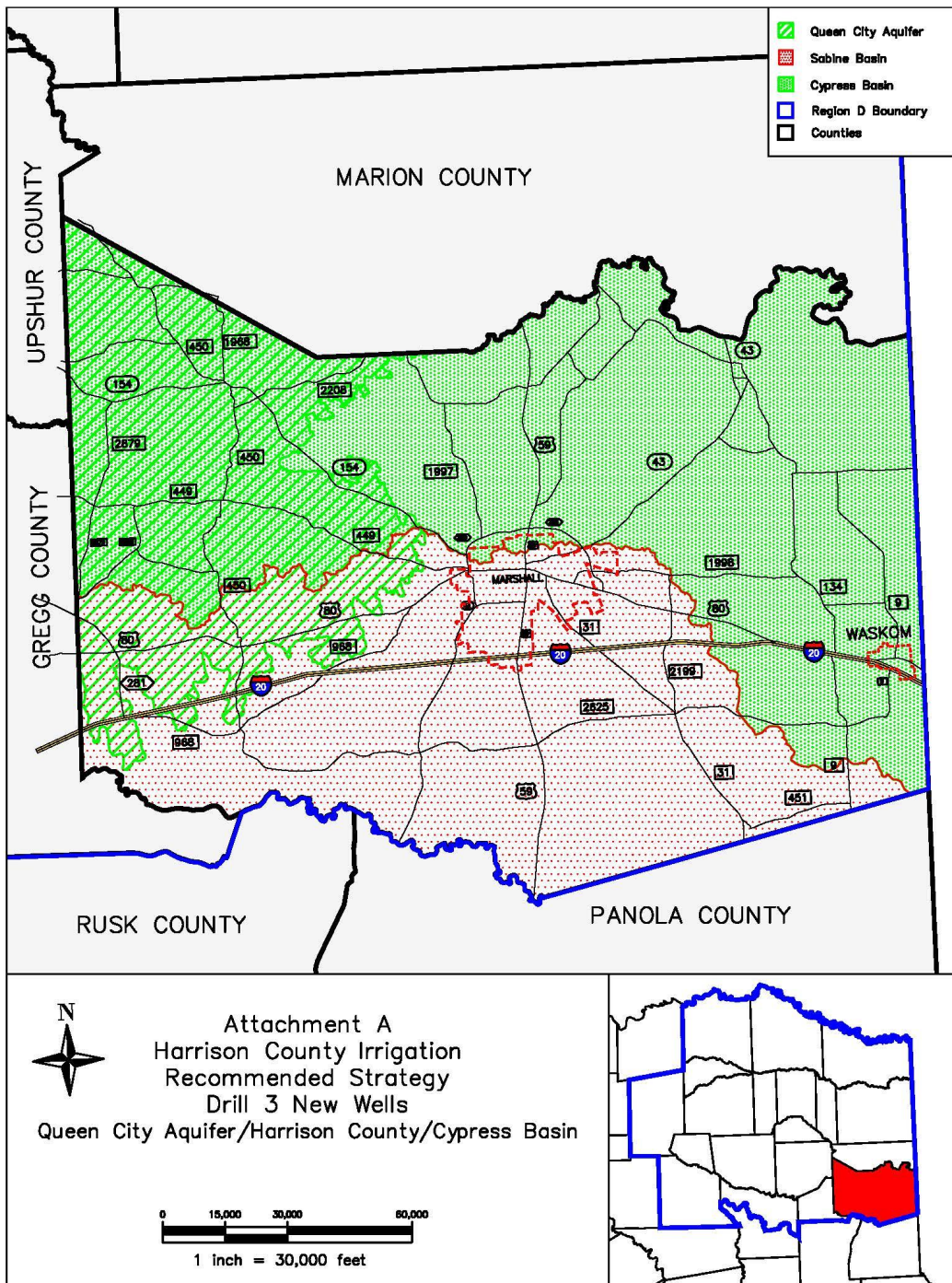


deficits occur. The recommended supply source will be the Queen City Aquifer in Harrison County. Three wells with rated capacity of 100 gpm each would provide approximately 161 acre-feet each or 484 ac-ft/yr.

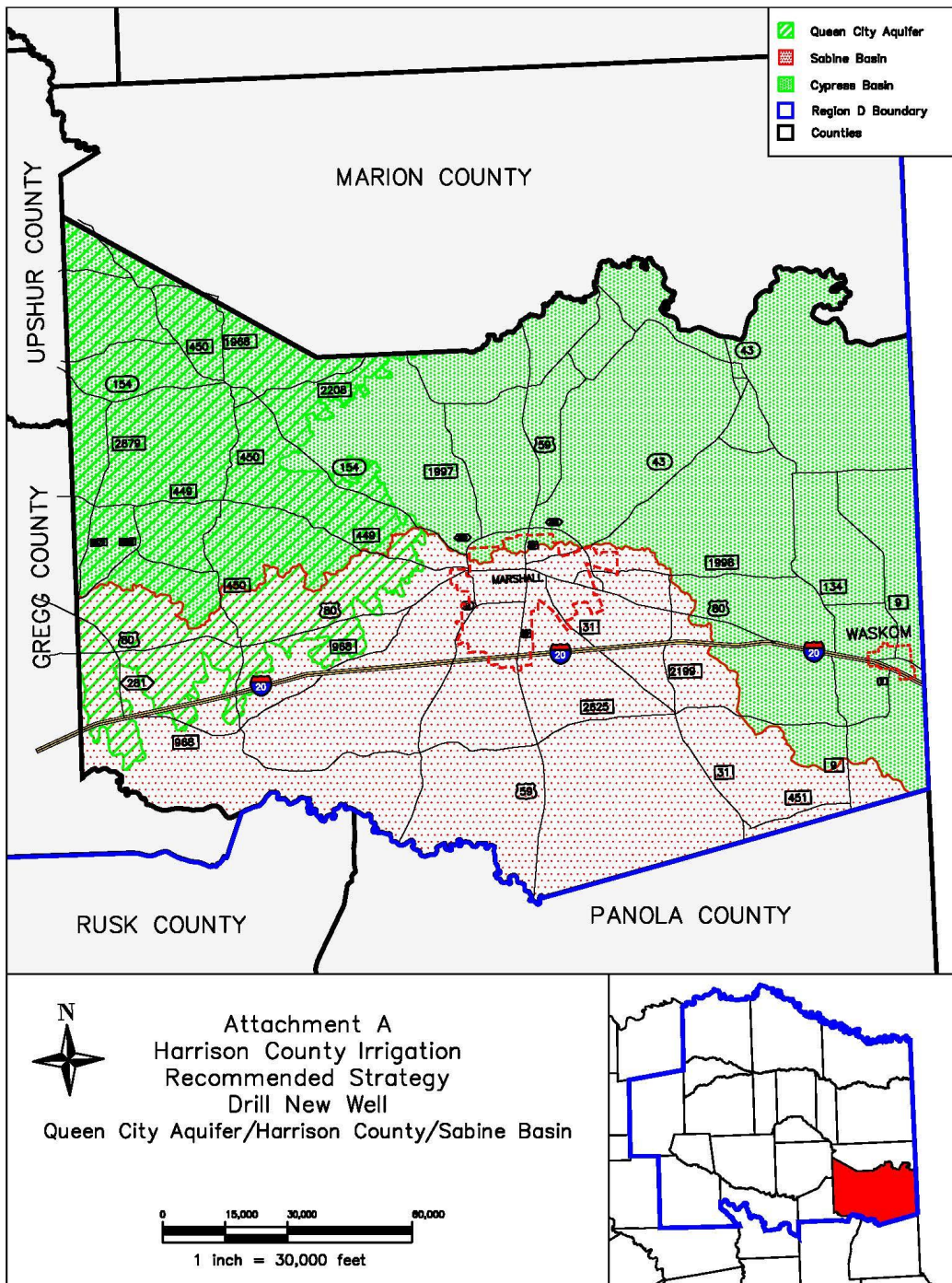
The recommended strategy for the Harrison County Irrigation, Sabine Basin, to meet their projected deficit of 148 ac-ft/yr in 2020 from 2070 would be to construct one water well prior to 2020. The recommended supply source will be the Queen City Aquifer in Harrison County Sabine. One well with rated capacity of 100 gpm each would provide approximately 161 ac-ft/yr. The Queen City Aquifer in Harrison County Sabine is projected to have a more than ample supply availability to meet the needs of the Irrigation in Harrison County for the planning period.

Given the increasing costs to comply with more stringent regulations and the decreasing reliability of groundwater as a future supply source due to quality issues in this region, it is recommended that groundwater supply systems consider combining resources and/or soliciting future water supply from neighboring systems and/or major water providers in the region. If a feasible alternative becomes available, then the recommendations previously discussed should be disregarded and a re-evaluation completed.

<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices</b>	
<b>Irrigation Harrison Cypress - Drill New Well Queen City Aquifer Harrison Cypress</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 202.4 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>CAPITAL COST</b>	
Dam and Reservoir (Conservation Pool acft, acres)	\$0
Off-Channel Storage/Ring Dike (Conservation Pool acft, acres)	\$0
Terminal Storage (Conservation Pool acft, acres)	\$0
Primary Pump Station (0 MGD)	\$0
Transmission Pipeline (6 in dia., miles)	\$0
Transmission Pump Station(s) & Storage Tank(s)	\$0
Well Fields (Wells, Pumps, and Piping)	\$414,000
Storage Tanks (Other Than at Booster Pump Stations)	\$0
Water Treatment Plant (0 MGD)	\$0
Advanced Water Treatment Facility ( MGD)	\$0
Conservation (Leaking Pipe/Meter Replacement)	\$0
Integration, Relocations, & Other	\$0
<b>TOTAL COST OF FACILITIES</b>	<b>\$414,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$145,000
Environmental & Archaeology Studies and Mitigation	\$2,000
Land Acquisition and Surveying (2 acres)	\$0
Interest During Construction (3% for 1 years with a 0.5% ROI)	\$16,000
<b>TOTAL COST OF PROJECT</b>	<b>\$577,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$41,000
Reservoir Debt Service (3.5 percent, 40 years)	\$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$4,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (168446 kW-hr @ 0.08 \$/kW-hr)	\$13,000
Purchase of Water ( acft/yr @ \$/acft)	\$0
<b>TOTAL ANNUAL COST</b>	<b>\$58,000</b>
<b>Available Project Yield (acft/yr)</b>	<b>484</b>
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	<b>\$120</b>
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	<b>\$35</b>
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	<b>\$0.37</b>
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	<b>\$0.11</b>
<i>Stanley Hayes</i>	<i>10/3/2019</i>



<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices</b>	
<b>Irrigation Harrison Sabine - Drill New Well Queen City Aquifer Harrison Sabine</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 202.4 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>CAPITAL COST</b>	
Dam and Reservoir (Conservation Pool acft, acres)	\$0
Off-Channel Storage/Ring Dike (Conservation Pool acft, acres)	\$0
Terminal Storage (Conservation Pool acft, acres)	\$0
Primary Pump Station (0 MGD)	\$0
Transmission Pipeline (6 in dia., miles)	\$0
Transmission Pump Station(s) & Storage Tank(s)	\$0
Well Fields (Wells, Pumps, and Piping)	\$138,000
Storage Tanks (Other Than at Booster Pump Stations)	\$0
Water Treatment Plant (0 MGD)	\$0
Advanced Water Treatment Facility ( MGD)	\$0
Conservation (Leaking Pipe/Meter Replacement)	\$0
Integration, Relocations, & Other	\$0
<b>TOTAL COST OF FACILITIES</b>	<b>\$138,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$48,000
Environmental & Archaeology Studies and Mitigation	\$1,000
Land Acquisition and Surveying (1 acres)	\$0
Interest During Construction (3% for 1 years with a 0.5% ROI)	\$6,000
<b>TOTAL COST OF PROJECT</b>	<b>\$193,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$14,000
Reservoir Debt Service (3.5 percent, 40 years)	\$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$1,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (56149 kW-hr @ 0.08 \$/kW-hr)	\$4,000
Purchase of Water ( acft/yr @ \$/acft)	\$0
<b>TOTAL ANNUAL COST</b>	<b>\$19,000</b>
<b>Available Project Yield (acft/yr)</b>	<b>161</b>
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	<b>\$118</b>
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	<b>\$31</b>
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	<b>\$0.36</b>
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	<b>\$0.10</b>
Stanley Hayes	10/3/2019





**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF LEIGH WATER SUPPLY CORPORATION**

**Description of Water User Group:**

The Leigh WSC system is located in northeastern Harrison County. In 2018, the system had 1974 residential connections. The population is projected to increase from 1,852 persons in 2020 to 2,801 persons in 2070. The System is included as a W.U.G. in Harrison County. The system’s current water supply consists of eight water wells from the Carrizo-Wilcox Aquifer. The total rated capacity of these wells is 809 GPM, or 435 ac-ft/yr. The system is bounded on the north by Caddo Lake WSC, on the east by the State of Louisiana, on the south by Waskom Rural WSC, and on the west by the City of Marshall and North Harrison WSC. The System does have a water conservation plan. The System is projected to have a water supply surplus of 24 ac-ft/yr in 2020 decreasing to a deficit of 21 ac-ft/yr in 2040 continuing in a decline to 159 ac-ft/yr in 2070.

**Water Supply and Demand Analysis:**

**Cypress River Basin**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Population</b>	1519	1631	1747	1910	2088	2297
<b>Projected Water Demand</b>	337	355	374	406	443	487
<b>Current Water Supply</b>	357	357	357	357	357	357
<b>Projected Supply Surplus (+)/Deficit(-)</b>	<b>20</b>	<b>2</b>	<b>-17</b>	<b>-49</b>	<b>-86</b>	<b>-130</b>

**Sabine River Basin**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Population</b>	333	358	383	419	458	504
<b>Projected Water Demand</b>	74	78	82	89	97	107
<b>Current Water Supply</b>	78	78	78	78	78	78
<b>Projected Supply Surplus (+)/Deficit(-)</b>	<b>4</b>	<b>0</b>	<b>-4</b>	<b>-11</b>	<b>-19</b>	<b>-29</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

Four alternative strategies were considered to meet the Leigh WSC’s water supply shortages as summarized in the following table. Advanced conservation was not considered because the per capita use per day was below the 140 gpcd threshold set by the planning group. Water reuse was not considered because the system does not have a sewer collection system. Surface water alternatives were omitted since there is not a supply source within close proximity to the system and surface water treatment is not economically feasible for a system of this size. Wells in the Queen City Aquifer in the Cypress Basin were identified as a potentially feasible strategy for this WUG.

<b>Strategy</b>	<b>Firm Yield (AF)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Environmental Impact</b>
Groundwater	<b>162</b>	<b>\$ 1,973,000</b>	<b>\$ 159,000</b>	<b>\$ 981</b>	<b>Minimal</b>

**Recommendations:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Drill New Wells (Queen City Aquifer, Cypress Basin; ac-ft/yr)</b>	0	0	54	108	108	162

The recommended strategy for Leigh WSC to meet their projected deficit of 21 ac-ft/yr in 2040 and 159 ac-ft/yr in 2070 would be to construct three additional water wells similar to their existing wells just prior to each decade as the deficits occur. The recommended supply source will be the Queen City Aquifer in Harrison County Cypress. Three wells with rated capacity of 100 gpm each would provide approximately 54 acre-feet each. The Queen City Aquifer in Harrison County Cypress is projected to have a more than ample supply availability to meet the needs of Leigh WSC for the planning period. During the planning period three wells will be drilled in the Queen City formation of the Cypress River Basin.

Given the increasing costs to comply with more stringent regulations and the decreasing reliability of groundwater as a future supply source due to 2020-2019 issues in this region, it is recommended that

groundwater supply systems consider combining resources and/or soliciting future water supply from neighboring systems and/or major water providers in the region. If a feasible alternative becomes available, then the recommendations previously discussed should be disregarded and a re-evaluation completed.

<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices</b>	
<b>Leigh WSC - Drill New Well Queen City Aquifer Harrison Cypress</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 202.4 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>CAPITAL COST</b>	
Dam and Reservoir (Conservation Pool acft, acres)	\$0
Off-Channel Storage/Ring Dike (Conservation Pool acft, acres)	\$0
Terminal Storage (Conservation Pool acft, acres)	\$0
Primary Pump Station (0 MGD)	\$0
Transmission Pipeline (6 in dia., miles)	\$0
Transmission Pump Station(s) & Storage Tank(s)	\$0
Well Fields (Wells, Pumps, and Piping)	\$1,394,000
Storage Tanks (Other Than at Booster Pump Stations)	\$0
Water Treatment Plant (0 MGD)	\$0
Advanced Water Treatment Facility ( MGD)	\$0
Conservation (Leaking Pipe/Meter Replacement)	\$0
Integration, Relocations, & Other	\$0
<b>TOTAL COST OF FACILITIES</b>	<b>\$1,394,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$488,000
Environmental & Archaeology Studies and Mitigation	\$33,000
Land Acquisition and Surveying (2 acres)	\$5,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	\$53,000
<b>TOTAL COST OF PROJECT</b>	<b>\$1,973,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$139,000
Reservoir Debt Service (3.5 percent, 40 years)	\$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$14,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (78900 kW-hr @ 0.08 \$/kW-hr)	\$6,000
Purchase of Water ( acft/yr @ \$/acft)	\$0
<b>TOTAL ANNUAL COST</b>	<b>\$159,000</b>
<b>Available Project Yield (acft/yr)</b>	<b>162</b>
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	<b>\$981</b>
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	<b>\$123</b>
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	<b>\$3.01</b>
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	<b>\$0.38</b>
Stanley Hayes	10/3/2019





**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS MINING IN HARRISON COUNTY – CYPRESS**

**Description of Water User Group:**

The Mining WUG in Harrison County is a split entity and has a total demand that is projected to be decreasing from 2,498 ac-ft/yr in 2020 to 855 ac-ft/yr in 2070. Mining in Harrison County, Cypress has a current water supply consisting of water wells from the Carrizo-Wilcox Aquifer and Queen City Aquifer, and contract with Sabine River Authority for surface water from Lake Fork. The total rated available supply from these sources is 291 ac-ft/yr in 2020 increasing to 334 ac-ft/yr in 2070. Mining in Harrison County is projected to have a water supply deficit of 234 ac-ft/yr in 2020 and increasing to a surplus of 154 ac-ft/yr in 2070 for the Harrison Cypress split.

Mining in the Harrison County Sabine split has a current water supply consisting of water wells from the Carrizo-Wilcox Aquifer, surface water from Sabine Run-of-River permit, and contract with Sabine River Authority for surface water from Lake Fork. The total rated available supply from these sources is 501 ac-ft/yr in 2020 increasing to 546 ac-ft/yr in 2070. Mining in Harrison County is projected to have a water supply deficit of 1,472 ac-ft/yr in 2020 decreasing to a deficit of 129 ac-ft/yr in 2070 for the Sabine split.

**Water Supply and Demand Analysis:**

<b>Mining Harrison</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Projected Water Demand</b>						
Cypress	525	437	366	297	229	180
Sabine	1,973	1,640	1,374	1,115	859	675
<b>Total</b>	<b>2,498</b>	<b>2,077</b>	<b>1,740</b>	<b>1,412</b>	<b>1,088</b>	<b>855</b>
<b>Current Water Supply</b>						
Cypress	291	300	308	317	324	334
Sabine	501	510	520	529	537	546
<b>Total</b>	<b>792</b>	<b>810</b>	<b>828</b>	<b>846</b>	<b>861</b>	<b>880</b>
<b>Projected Supply Surplus (+)/Deficit(-)</b>						
Cypress	-234	-137	-58	20	95	154
Sabine	-1,472	-1,130	-854	-586	-322	-129
<b>Total</b>	<b>-1,706</b>	<b>-1,267</b>	<b>-912</b>	<b>-566</b>	<b>-277</b>	<b>25</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

Four alternative strategies were considered to meet the Harrison County Mining water supply shortages as summarized in the following table. Advanced conservation and water reuse was not considered because operational procedures for the existing mines is not available. Surface water alternatives were omitted since there is not a supply source within close proximity to the county with available supply. Wells in the Queen City Aquifer (portions in the Cypress Creek and Sabine River basins) were identified and evaluated as a potentially feasible strategy for the WUG.

<b>Strategy</b>	<b>Firm Yield (AF)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Environmental Impact</b>
Groundwater Queen City Aquifer Cypress Basin	332	\$ 384,000	\$ 39,000	\$ 117	Minimal
Groundwater Queen City Aquifer Sabine Basin	1,452	\$1,555,000	\$ 183,00	\$ 126	Minimal

**Recommendations:**

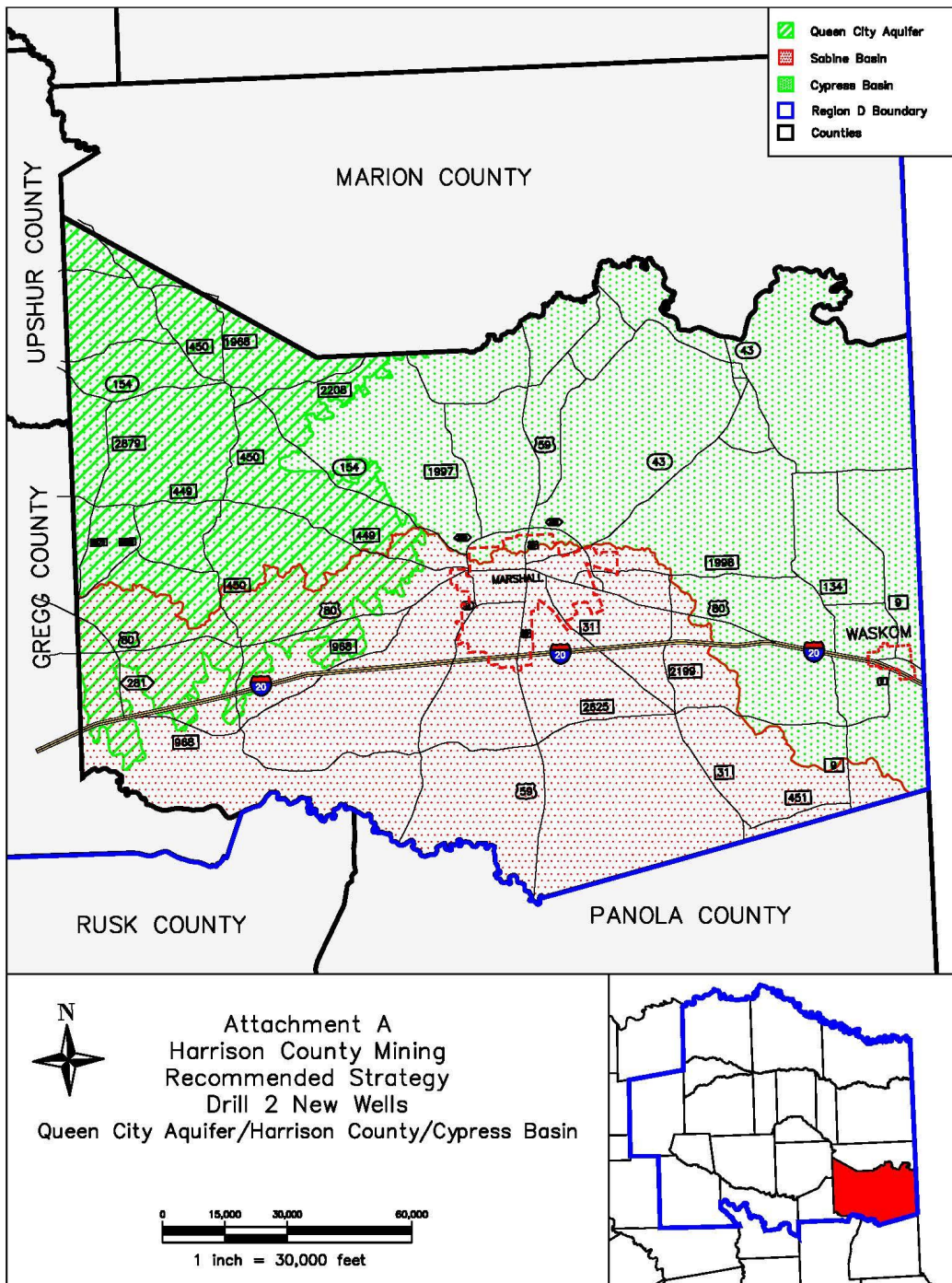
	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Drill New Wells (Queen City Aquifer Cypress Basin; ac-ft/yr)</b>	332	332	332	332	332	332
<b>Drill New Wells (Queen City Aquifer Sabine Basin; ac-ft/yr)</b>	1,452	1,452	1,452	1,452	1,452	1,452

The recommended strategy for the Harrison County Mining, Cypress Basin, to meet their projected deficit of 234 ac-ft/yr in 2020 and 58 ac-ft/yr in 2040 would be to construct two additional water wells similar to their existing wells just prior to each decade as the deficits occur to 2040. The recommended supply source will be the Queen City Aquifer in Harrison County Cypress. Two wells with rated capacity of 100 gpm each would provide approximately 161 acre-feet each or 332 ac-ft/yr.

The recommended strategy for the Harrison County Mining, Sabine Basin, to meet their projected deficit of 1,472 ac-ft/yr in 2020 would be to construct nine additional water well similar to their existing wells in 2020. The recommended supply source will be the Queen City Aquifer in Harrison County Sabine. Nine wells with rated capacity of 100 gpm each would provide approximately 161 acre-feet each or 1,452 ac-ft/yr. The Queen City Aquifer in Harrison County Sabine is projected to have a more than ample supply availability to meet the needs of the Mining in Harrison County for the planning period. Remaining needs can be met from the remaining surplus from the cypress basin.

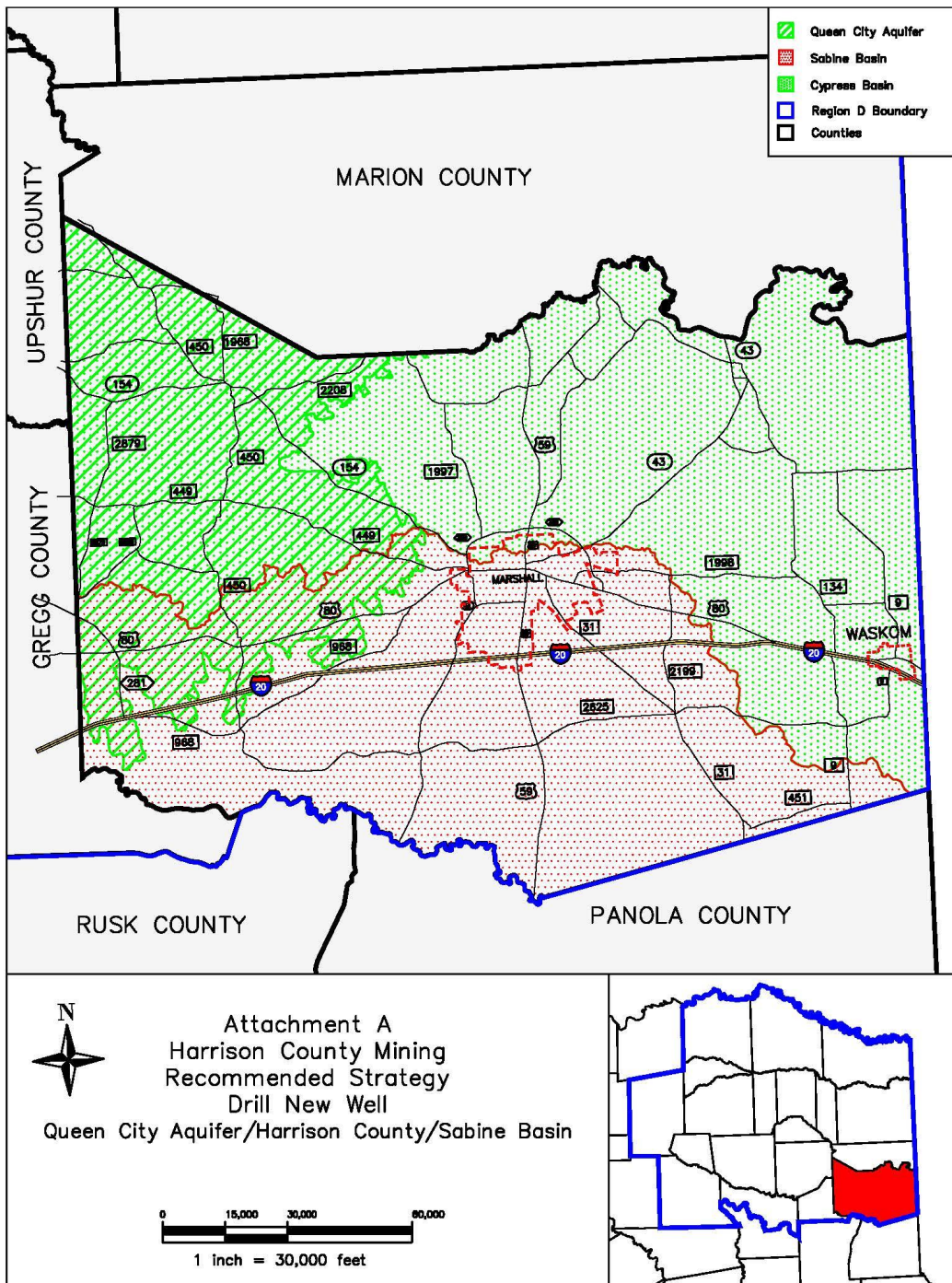
Given the increasing costs to comply with more stringent regulations and the decreasing reliability of groundwater as a future supply source due to quality issues in this region, it is recommended that groundwater supply systems consider combining resources and/or soliciting future water supply from neighboring systems and/or major water providers in the region. If a feasible alternative becomes available, then the recommendations previously discussed should be disregarded and a re-evaluation completed.

<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices</b>	
<b>Mining Harrison Cypress - Drill New Well Queen City Aquifer Harrison Cypress</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 202.4 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>CAPITAL COST</b>	
Dam and Reservoir (Conservation Pool acft, acres)	\$0
Off-Channel Storage/Ring Dike (Conservation Pool acft, acres)	\$0
Terminal Storage (Conservation Pool acft, acres)	\$0
#NAME?	#NAME?
Transmission Pipeline (6 in dia., miles)	#NAME?
Transmission Pump Station(s) & Storage Tank(s)	#NAME?
Well Fields (Wells, Pumps, and Piping)	#NAME?
Storage Tanks (Other Than at Booster Pump Stations)	\$0
Water Treatment Plant (0 MGD)	#NAME?
Advanced Water Treatment Facility ( MGD)	#NAME?
Conservation (Leaking Pipe/Meter Replacement)	\$0
Integration, Relocations, & Other	\$0
<b>TOTAL COST OF FACILITIES</b>	<b>#NAME?</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	#NAME?
Environmental & Archaeology Studies and Mitigation	\$1,000
Land Acquisition and Surveying (1 acres)	\$0
Interest During Construction (3% for 1 years with a 0.5% ROI)	#NAME?
<b>TOTAL COST OF PROJECT</b>	<b>#NAME?</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	#NAME?
Reservoir Debt Service (3.5 percent, 40 years)	\$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	#NAME?
Intakes and Pump Stations (2.5% of Cost of Facilities)	#NAME?
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	#NAME?
Advanced Water Treatment Facility	#NAME?
#NAME?	#NAME?
Purchase of Water ( acft/yr @ \$/acft)	\$0
<b>TOTAL ANNUAL COST</b>	<b>#NAME?</b>
<b>Available Project Yield (acft/yr)</b>	<b>332</b>
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	<b>\$0</b>
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	<b>\$0</b>
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	<b>\$0.00</b>
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	<b>\$0.00</b>
Stanley Hayes	10/3/2019



<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices</b>	
<b>Mining Harrison Sabine - Drill New Well Queen City Aquifer Harrison Sabine</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 202.4 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>CAPITAL COST</b>	
Dam and Reservoir (Conservation Pool acft, acres)	\$0
Off-Channel Storage/Ring Dike (Conservation Pool acft, acres)	\$0
Terminal Storage (Conservation Pool acft, acres)	\$0
Primary Pump Station (0 MGD)	\$0
Transmission Pipeline (6 in dia., miles)	\$0
Transmission Pump Station(s) & Storage Tank(s)	\$0
Well Fields (Wells, Pumps, and Piping)	\$1,118,000
Storage Tanks (Other Than at Booster Pump Stations)	\$0
Water Treatment Plant (0 MGD)	\$0
Advanced Water Treatment Facility (MGD)	\$0
Conservation (Leaking Pipe/Meter Replacement)	\$0
Integration, Relocations, & Other	\$0
<b>TOTAL COST OF FACILITIES</b>	<b>\$1,118,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$391,000
Environmental & Archaeology Studies and Mitigation	\$4,000
Land Acquisition and Surveying (5 acres)	\$0
Interest During Construction (3% for 1 years with a 0.5% ROI)	\$42,000
<b>TOTAL COST OF PROJECT</b>	<b>\$1,555,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$109,000
Reservoir Debt Service (3.5 percent, 40 years)	\$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$11,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (782434 kW-hr @ 0.08 \$/kW-hr)	\$63,000
Purchase of Water ( acft/yr @ \$/acft)	\$0
<b>TOTAL ANNUAL COST</b>	<b>\$183,000</b>
<b>Available Project Yield (acft/yr)</b>	<b>1,452</b>
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	<b>\$126</b>
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	<b>\$51</b>
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	<b>\$0.39</b>
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	<b>\$0.16</b>
Stanley Hayes	10/4/2019





**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF THE NORTH HARRISON WSC**

**Description of Water User Group:**

The North Harrison WSC is located in north central Harrison County and serves the community of Woodlawn and an area immediately north of the City of Marshall. In 2018, the system had 505 residential connections. The population is projected to increase from 1,374 persons in 2020 to 2,078 persons in 2070. The City is included as a W.U.G. in Harrison County. The system’s current water supply consists of three water wells from the Carrizo-Wilcox Aquifer. The total rated capacity of these wells is 300 GPM, or 161 ac-ft/yr. The system is bounded on the north by Harleton WSC, on the east by Leigh WSC, on the south by the City of Marshall, and on the west by the Cypress Valley WSC. The WSC does not have a water conservation plan. North Harrison WSC is projected to have a water supply surplus of 20 ac-ft/yr in 2020 decreasing to a deficit of 32 ac-ft/yr in 2070.

**Water Supply and Demand Analysis:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Population</b>	1374	1475	1580	1727	1889	2078
<b>Projected Water Demand</b>	141	145	150	161	176	193
<b>Current Water Supply</b>	161	161	161	161	161	161
<b>Projected Supply Surplus (+)/Deficit (-)</b>	<b>20</b>	<b>16</b>	<b>11</b>	<b>0</b>	<b>-15</b>	<b>-32</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

Four alternative strategies were considered to meet the North Harrison WSC water supply shortages as summarized in the following table. Advanced conservation was not considered because the per capita use per day was below the 140 gpcpd threshold set by the planning group. Water reuse was not considered because the WSC does not have a sewer collection system. Surface water alternatives were omitted since there is not a supply source within close proximity to the WSC and surface water treatment is not economically feasible for a system of this size. Groundwater wells in the Queen City Aquifer (Cypress Creek Basin) were identified as a potentially feasible strategy for the WUG.

<b>Strategy</b>	<b>Firm Yield (AF)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Environmental Impact</b>
Groundwater	<b>54</b>	<b>\$ 612,000</b>	<b>\$ 50,000</b>	<b>\$ 926</b>	<b>Minimal</b>

**Recommendations:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Drill New Wells (Queen City Aquifer, Cypress Basin; ac-ft/yr)</b>	0	0	0	0	54	54

The recommended strategy for the North Harrison WSC to meet their projected deficit of 15 ac-ft/yr in 2060 and 32 ac-ft/yr in 2070 would be to construct one additional water well similar to their existing wells just prior to each decade as the deficits occur. The recommended supply source will be the Queen City Aquifer in Harrison County Cypress. One well with rated capacity of 100 gpm each would provide approximately 54 acre-feet. The Queen City Aquifer in Harrison County Cypress is projected to have a more than ample supply availability to meet the needs of the North Harrison WSC for the planning period.

Given the increasing costs to comply with more stringent regulations and the decreasing reliability of groundwater as a future supply source due to quality issues in this region, it is recommended that groundwater supply systems consider combining resources and/or soliciting future water supply from neighboring systems and/or major water providers in the region. If a feasible alternative becomes available, then the recommendations previously discussed should be disregarded and a re-evaluation completed.



<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices</b>	
<b>North Harrison WSC - Drill New Well Queen City Aquifer Harrison Cypress</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 202.4 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>CAPITAL COST</b>	
Dam and Reservoir (Conservation Pool acft, acres)	\$0
Off-Channel Storage/Ring Dike (Conservation Pool acft, acres)	\$0
Terminal Storage (Conservation Pool acft, acres)	\$0
Primary Pump Station (0 MGD)	\$0
Transmission Pipeline (6 in dia., miles)	\$0
Transmission Pump Station(s) & Storage Tank(s)	\$0
Well Fields (Wells, Pumps, and Piping)	\$431,000
Storage Tanks (Other Than at Booster Pump Stations)	\$0
Water Treatment Plant (0 MGD)	\$0
Advanced Water Treatment Facility (MGD)	\$0
Conservation (Leaking Pipe/Meter Replacement)	\$0
Integration, Relocations, & Other	\$0
<b>TOTAL COST OF FACILITIES</b>	<b>\$431,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$151,000
Environmental & Archaeology Studies and Mitigation	\$11,000
Land Acquisition and Surveying (1 acres)	\$2,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	\$17,000
<b>TOTAL COST OF PROJECT</b>	<b>\$612,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$43,000
Reservoir Debt Service (3.5 percent, 40 years)	\$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$4,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (38784 kW-hr @ 0.08 \$/kW-hr)	\$3,000
Purchase of Water ( acft/yr @ \$/acft)	\$0
<b>TOTAL ANNUAL COST</b>	<b>\$50,000</b>
<b>Available Project Yield (acft/yr)</b>	<b>54</b>
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	<b>\$926</b>
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	<b>\$130</b>
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	<b>\$2.84</b>
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	<b>\$0.40</b>
Stanley Hayes	9/30/2019



**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF THE PANOLA BETHANY WSC**

**Description of Water User Group:**

The Panola Bethany WSC is located in southeastern Harrison County and serves the communities of Panola and Bethany an area northeast of the City of Carthage. In 2018, the system had 545 residential connections. The population is projected to increase from 1,508 persons in 2020 to 3,407 persons in 2070. The WSC is included as a W.U.G. in Harrison County. The system’s current water supply consists of five water wells from the Carrizo-Wilcox Aquifer. The total rated capacity of these wells is 576 GPM, or 310 ac-ft/yr. The system is bounded on the north by Waskom Rural WSC, on the east by the State of Louisiana, on the south by the Deadwood WSC, and on the west by the City of Carthage. The WSC has a water conservation plan. Panola Bethany WSC is projected to have a water supply surplus of 11 ac-ft/yr in 2020 decreasing to a deficit of 332 ac-ft/yr in 2070.

**Water Supply and Demand Analysis:**

<b>Panola Bethany WSC Harrison Cypress</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Population</b>	142	166	202	254	289	321
<b>Projected Water Demand</b>	28	32	38	48	54	60
<b>Current Water Supply</b>	29	29	29	29	29	29
<b>Projected Supply Surplus (+)/Deficit(-)</b>	<b>1</b>	<b>-3</b>	<b>-9</b>	<b>-19</b>	<b>-25</b>	<b>-31</b>

<b>Panola Bethany WSC Harrison Sabine</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Population</b>	1274	1488	1813	2278	2593	2875
<b>Projected Water Demand</b>	253	288	345	430	489	542
<b>Current Water Supply</b>	253	242	242	241	241	241
<b>Projected Supply Surplus (+)/Deficit(-)</b>	<b>0</b>	<b>-46</b>	<b>-103</b>	<b>-189</b>	<b>-248</b>	<b>-301</b>

<b>Panola Bethany WSC Panola Sabine</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Population</b>	92	111	134	169	192	211
<b>Projected Water Demand</b>	18	21	25	32	36	40
<b>Current Water Supply</b>	28	39	39	40	40	40
<b>Projected Supply Surplus (+)/Deficit(-)</b>	<b>10</b>	<b>18</b>	<b>14</b>	<b>8</b>	<b>4</b>	<b>0</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

Four alternative strategies were considered to meet the Panola Bethany WSC water supply shortages as summarized in the following table. Advanced conservation was not considered because the per capita use per day was below the 140 gpcpd threshold set by the planning group. Water reuse was not considered because the WSC does not have a sewer collection system. Surface water alternatives were omitted since there is not a supply source within close proximity to the WSC and surface water treatment is not economically feasible for a system of this size. Groundwater wells in the Queen City Aquifer (Sabine Basin) were identified as a potentially feasible strategy for the WUG.

<b>Strategy</b>	<b>Firm Yield (AF)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Environmental Impact</b>
Groundwater	<b>336</b>	<b>\$ 2,399,000</b>	<b>\$ 195,000</b>	<b>\$ 580</b>	<b>Minimal</b>

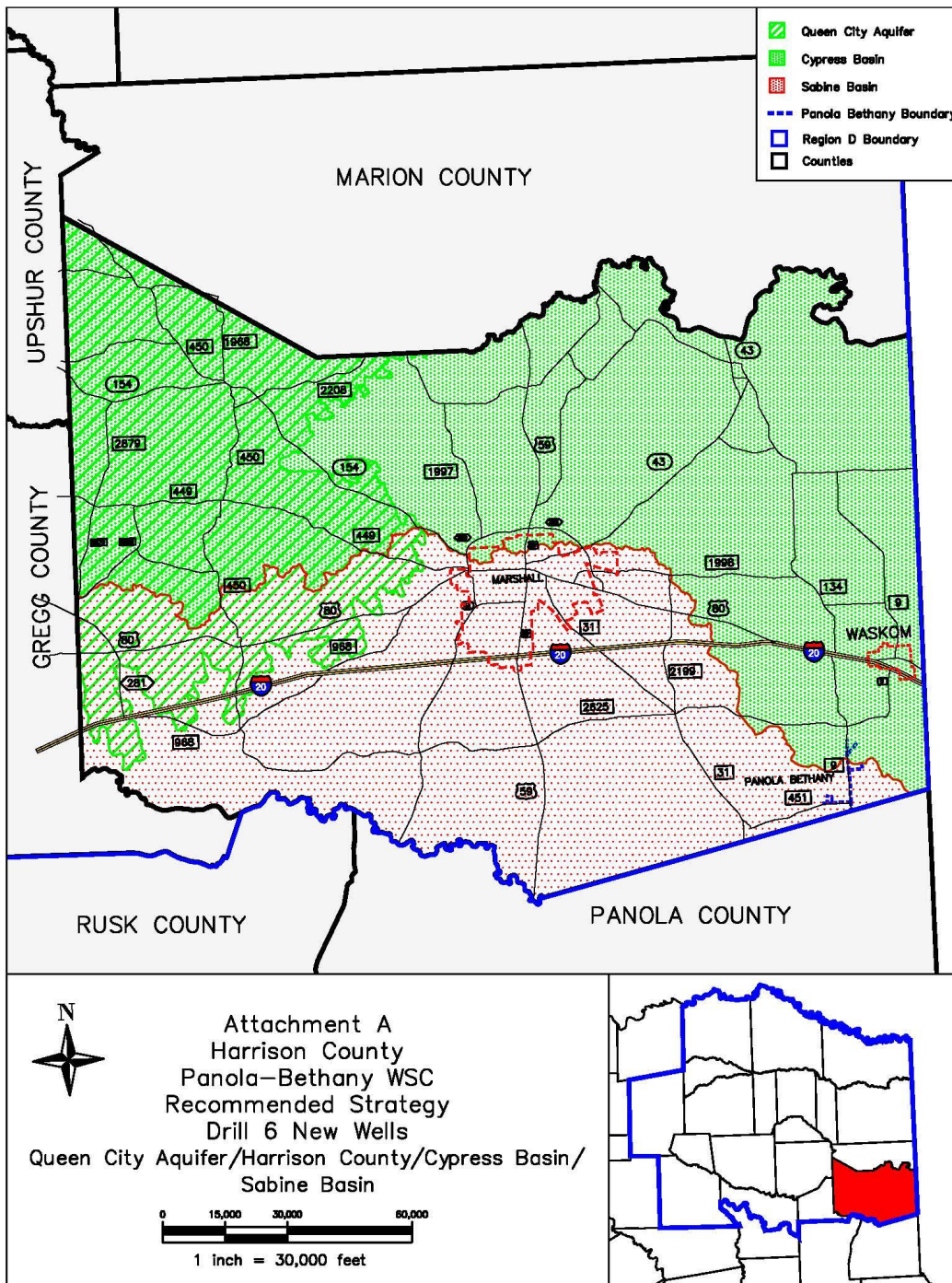
**Recommendations:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Drill New Wells (Queen City Aquifer, Sabine Basin; ac-ft/yr)</b>	0	56	112	224	280	336

wells just prior to each decade as the deficits occur. The recommended supply source will be the Queen City Aquifer in Harrison County Sabine. One well with rated capacity of 105 gpm each would provide approximately 56 acre-feet each or 336 ac-ft/yr total. The Queen City Aquifer in Harrison County Sabine is projected to have a more than ample supply availability to meet the needs of the Panola Bethany WSC for the planning period.

Given the increasing costs to comply with more stringent regulations and the decreasing reliability of groundwater as a future supply source due to quality issues in this region, it is recommended that groundwater supply systems consider combining resources and/or soliciting future water supply from neighboring systems and/or major water providers in the region. If a feasible alternative becomes available, then the recommendations previously discussed should be disregarded and a re-evaluation completed.

<b>Cost Estimate Summary</b>	
<b>Water Supply Project Option</b>	
<b>September 2018 Prices</b>	
<b>Panola Bethany WSC - Drill New Well Queen City Aquifer Harrison Sabine</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and</b>	
<b>a PPI of 202.4 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>CAPITAL COST</b>	
Dam and Reservoir (Conservation Pool acft, acres)	\$0
Off-Channel Storage/Ring Dike (Conservation Pool acft, acres)	\$0
Terminal Storage (Conservation Pool acft, acres)	\$0
Primary Pump Station (0 MGD)	\$0
Transmission Pipeline (6 in dia., miles)	\$0
Transmission Pump Station(s) & Storage Tank(s)	\$0
Well Fields (Wells, Pumps, and Piping)	\$1,745,000
Storage Tanks (Other Than at Booster Pump Stations)	\$0
Water Treatment Plant (0 MGD)	\$0
Advanced Water Treatment Facility (MGD)	\$0
Conservation (Leaking Pipe/Meter Replacement)	\$0
Integration, Relocations, & Other	\$0
<b>TOTAL COST OF FACILITIES</b>	<b>\$1,745,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$611,000
Environmental & Archaeology Studies and Mitigation	\$13,000
Land Acquisition and Surveying (3 acres)	\$11,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	\$66,000
<b>TOTAL COST OF PROJECT</b>	<b>\$2,446,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$172,000
Reservoir Debt Service (3.5 percent, 40 years)	\$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$17,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (116962 kW-hr @ 0.08 \$/kW-hr)	\$9,000
Purchase of Water ( acft/yr @ \$/acft)	\$0
<b>TOTAL ANNUAL COST</b>	<b>\$198,000</b>
<b>Available Project Yield (acft/yr)</b>	<b>336</b>
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	<b>\$589</b>
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	<b>\$77</b>
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	<b>\$1.81</b>
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	<b>\$0.24</b>
<i>Stanley Hayes</i>	<i>9/29/2019</i>





**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF THE CITY OF SCOTTSVILLE**

**Description of Water User Group:**

The City of Scottsville is located in southeastern Harrison County and serves the incorporated city limits and an area immediately north, east, and south of the City of Scottsville. In 2018, the system had 480 residential connections. The population is projected to increase from 1,141 persons in 2020 to 1,727 persons in 2070. The City is included as a WUG. in Harrison County. The system’s current water supply consists of three water wells from the Carrizo-Wilcox Aquifer. The total rated capacity of these wells is 402 GPM, or 216 ac-ft/yr. The system is bounded on the east by the Waskom Rural Water WSC #1, on the south by Blocker Crossroads WSC, on the west by the City of Marshall, and the north by Leigh WSC. The City does not have a water conservation plan. The City of Scottsville is projected to have a water supply deficit of 31 ac-ft/yr in 2020 increasing to a deficit of 141 ac-ft/yr in 2070.

**Water Supply and Demand Analysis:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Population</b>	1141	1227	1314	143	1570	1727
<b>Projected Water Demand</b>	247	260	274	298	325	357
<b>Current Water Supply</b>	216	216	216	216	216	216
<b>Projected Supply Surplus (+)/Deficit(-)</b>	<b>-31</b>	<b>-44</b>	<b>-58</b>	<b>-82</b>	<b>-109</b>	<b>-141</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

Four alternative strategies were considered to meet the City of Waskom water supply shortages as summarized in the following table. Advanced conservation was not considered because the per capita use per day was below the 140 gpcpd threshold set by the planning group. Water reuse was not considered because the City does not have a central sewer collection system. Surface water alternatives were omitted since there is not a supply source within close proximity to the City and surface water treatment is not economically feasible for a system of this size. Wells in the Queen City Aquifer (Cypress Basin) in Harrison County were identified as a potentially feasible strategy for the WUG.

<b>Strategy</b>	<b>Firm Yield (AF)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Environmental Impact</b>
Groundwater	<b>162</b>	<b>\$ 1,429,000</b>	<b>\$ 116,000</b>	<b>\$ 716</b>	<b>1</b>

**Recommendations:**

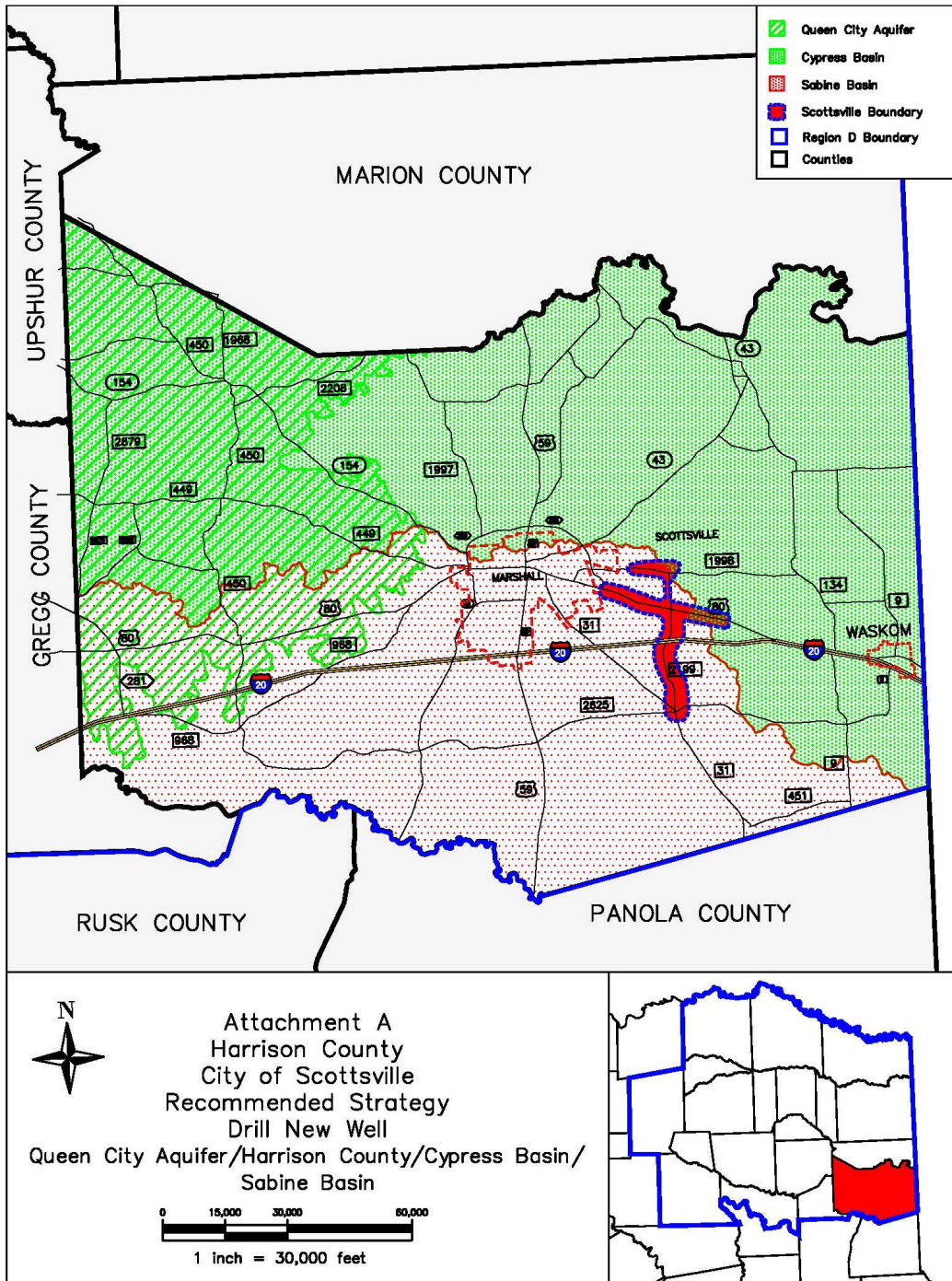
	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Drill New Wells (Queen City Aquifer, Cypress Basin; ac-ft/yr)</b>	54	54	108	108	162	162

The recommended strategy for the City of Scottsville to meet their projected deficit of 31 ac-ft/yr in 2020 and 141 ac-ft/yr in 2070 would be to construct one additional water well similar to their existing wells just prior to each decade as the deficits occur. The recommended supply source will be the Queen City Aquifer in Harrison County Cypress. Three wells with rated capacity of 100 gpm each would provide approximately 54 acre-feet each or 162 ac-ft/yr. The Queen City Aquifer in Harrison County Cypress is projected to have a more than ample supply availability to meet the needs of the City of Scottsville for the planning period.

Given the increasing costs to comply with more stringent regulations and the decreasing reliability of groundwater as a future supply source due to quality issues in this region, it is recommended that groundwater supply systems consider combining resources and/or soliciting future water supply from neighboring systems and/or major water providers in the region. If a feasible alternative becomes available, then the recommendations previously discussed should be disregarded and a re-evaluation completed.

<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices</b>	
<b>Scottsville - Drill New Well Queen City Aquifer Harrison Sabine</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 202.4 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>CAPITAL COST</b>	
Dam and Reservoir (Conservation Pool acft, acres)	\$0
Off-Channel Storage/Ring Dike (Conservation Pool acft, acres)	\$0
Terminal Storage (Conservation Pool acft, acres)	\$0
Primary Pump Station (0 MGD)	\$0
Transmission Pipeline (6 in dia., miles)	\$0
Transmission Pump Station(s) & Storage Tank(s)	\$0
Well Fields (Wells, Pumps, and Piping)	\$1,001,000
Storage Tanks (Other Than at Booster Pump Stations)	\$0
Water Treatment Plant (0 MGD)	\$0
Advanced Water Treatment Facility (MGD)	\$0
Conservation (Leaking Pipe/Meter Replacement)	\$0
Integration, Relocations, & Other	\$0
<b>TOTAL COST OF FACILITIES</b>	<b>\$1,001,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$350,000
Environmental & Archaeology Studies and Mitigation	\$34,000
Land Acquisition and Surveying (2 acres)	\$5,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	\$39,000
<b>TOTAL COST OF PROJECT</b>	<b>\$1,429,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$101,000
Reservoir Debt Service (3.5 percent, 40 years)	\$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$10,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (56392 kW-hr @ 0.08 \$/kW-hr)	\$5,000
Purchase of Water ( acft/yr @ \$/acft)	\$0
<b>TOTAL ANNUAL COST</b>	<b>\$116,000</b>
<b>Available Project Yield (acft/yr)</b>	<b>162</b>
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	<b>\$716</b>
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	<b>\$93</b>
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	<b>\$2.20</b>
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	<b>\$0.28</b>
Stanley Hayes	9/29/2019





**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF THE CITY OF WASKOM**

**Description of Water User Group:**

The City of Waskom is located in southeastern Harrison County and serves the incorporated city limits and an area immediately north, east, and south of the City of Waskom. In 2018, the system had 1,526 residential connections. The population is projected to increase from 2,924 persons in 2020 to 4,424 persons in 2070. The City is included as a W.U.G. in Harrison County. The system’s current water supply consists of nine water wells from the Carrizo-Wilcox Aquifer. The total rated capacity of these wells is 631 GPM, or 339 ac-ft/yr. The system is bounded on the east, south, and west by the Waskom Rural Water WSC #1. The City does not have a water conservation plan. The City of Waskom is projected to have a water supply deficit of 96 ac-ft/yr in 2020 increasing to a deficit of 275 ac-ft/yr in 2070.

**Water Supply and Demand Analysis:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Population</b>	2924	3141	3365	3678	4020	4424
<b>Projected Water Demand</b>	435	453	475	512	559	614
<b>Current Water Supply</b>	339	339	339	339	339	339
<b>Projected Supply Surplus (+)/Deficit(-)</b>	<b>-96</b>	<b>-114</b>	<b>-136</b>	<b>-173</b>	<b>-220</b>	<b>-275</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

Four alternative strategies were considered to meet the City of Waskom water supply shortages as summarized in the following table. Advanced conservation was not considered because the per capita use per day was below the 140 gpcd threshold set by the planning group. Water reuse was not considered because the City does not have a demand for non-potable water. Surface water alternatives were omitted since there is not a supply source within close proximity to the City and surface water treatment is not economically feasible for a system of this size. Groundwater wells in the Queen City Aquifer (Cypress Creek Basin) were identified as a potentially feasible strategy for the WUG.

<b>Strategy</b>	<b>Firm Yield (AF)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Environmental Impact</b>
Groundwater	<b>324</b>	<b>\$ 2,399,000</b>	<b>\$ 195,000</b>	<b>\$ 602</b>	<b>Minimal</b>

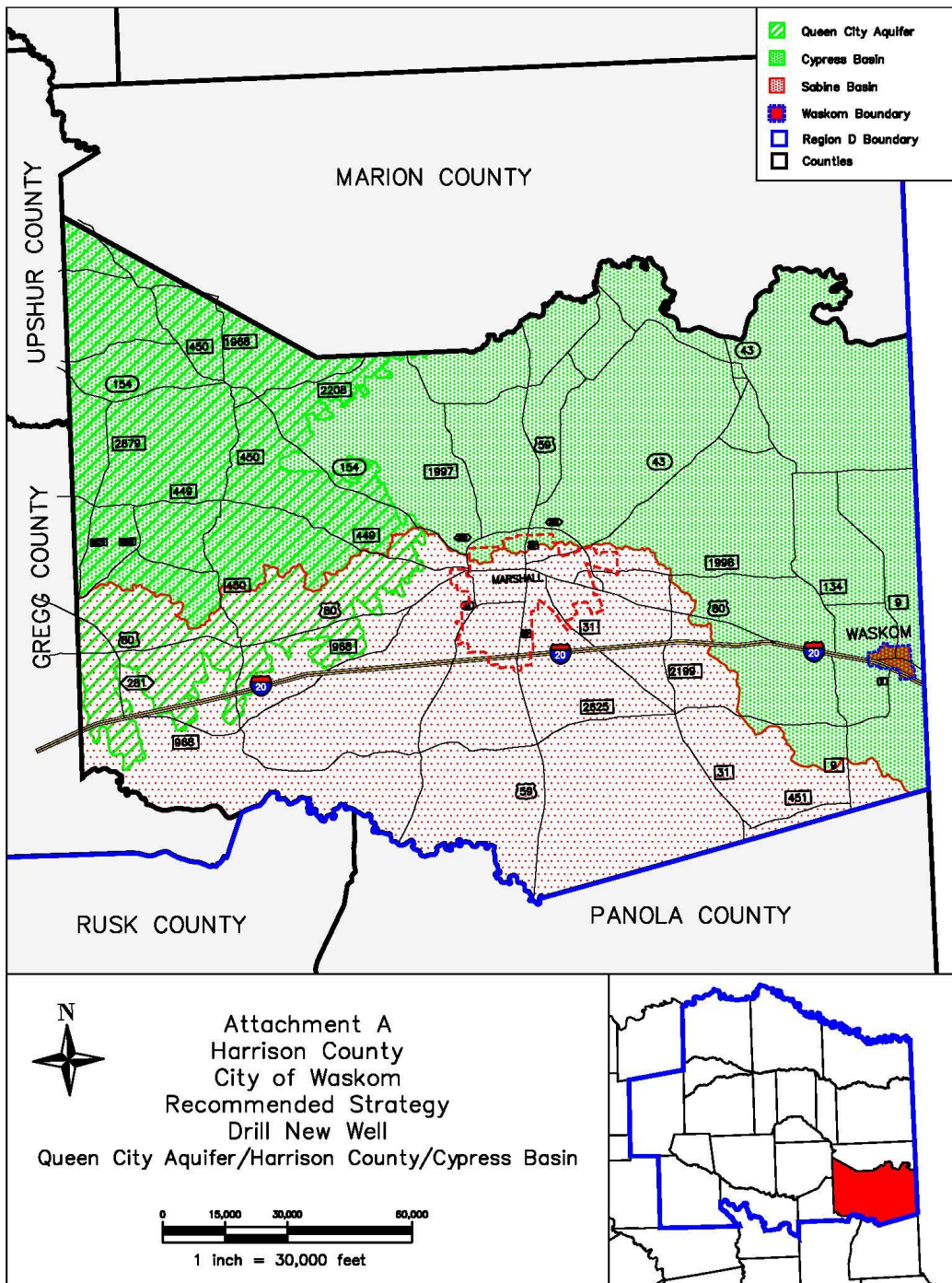
**Recommendations:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Drill New Wells (Queen City Aquifer, Cypress Creek Basin; ac-ft/yr)</b>	108	162	162	216	270	324

The recommended strategy for the City of Waskom to meet their projected deficit of 96 ac-ft/yr in 2020 and 275 ac-ft/yr in 2070 would be to construct one additional water well similar to their existing wells just prior to each decade as the deficits occur. The recommended supply source will be the Queen City Aquifer in Harrison County Cypress. Six wells with rated capacity of 100 gpm each would provide approximately 54 acre-feet each or 324 ac-ft/yr. The Queen City Aquifer in Harrison County Cypress is projected to have a more than ample supply availability to meet the needs of the City of Waskom for the planning period.

Given the increasing costs to comply with more stringent regulations and the decreasing reliability of groundwater as a future supply source due to quality issues in this region, it is recommended that groundwater supply systems consider combining resources and/or soliciting future water supply from neighboring systems and/or major water providers in the region. If a feasible alternative becomes available, then the recommendations previously discussed should be disregarded and a re-evaluation completed.

<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices</b>	
<b>City of Waskom - Drill New Well Queen City Aquifer Harrison Cypress</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 202.4 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>CAPITAL COST</b>	
Dam and Reservoir (Conservation Pool acft, acres)	\$0
Off-Channel Storage/Ring Dike (Conservation Pool acft, acres)	\$0
Terminal Storage (Conservation Pool acft, acres)	\$0
Primary Pump Station (0 MGD)	\$0
Transmission Pipeline (6 in dia., miles)	\$0
Transmission Pump Station(s) & Storage Tank(s)	\$0
Well Fields (Wells, Pumps, and Piping)	\$1,711,000
Storage Tanks (Other Than at Booster Pump Stations)	\$0
Water Treatment Plant (0 MGD)	\$0
Advanced Water Treatment Facility (MGD)	\$0
Conservation (Leaking Pipe/Meter Replacement)	\$0
Integration, Relocations, & Other	\$0
<b>TOTAL COST OF FACILITIES</b>	<b>\$1,711,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$599,000
Environmental & Archaeology Studies and Mitigation	\$13,000
Land Acquisition and Surveying (3 acres)	\$11,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	\$65,000
<b>TOTAL COST OF PROJECT</b>	<b>\$2,399,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$169,000
Reservoir Debt Service (3.5 percent, 40 years)	\$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$17,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (112785 kW-hr @ 0.08 \$/kW-hr)	\$9,000
Purchase of Water ( acft/yr @ \$/acft)	\$0
<b>TOTAL ANNUAL COST</b>	<b>\$195,000</b>
<b>Available Project Yield (acft/yr)</b>	<b>324</b>
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	<b>\$602</b>
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	<b>\$80</b>
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	<b>\$1.85</b>
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	<b>\$0.25</b>
Stanley Hayes	10/4/2019



REGION D  
EVALUATIONS OF WATER MANAGEMENT STRATEGIES  
FOR MEETING PROJECTED WATER SUPPLY NEEDS  
TO YEAR 2070

## HOPKINS COUNTY

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WUGs:

Brinker WSC  
City of Cumby  
Hopkins County Irrigation  
Hopkins County Livestock  
Martin Springs WSC  
Miller Grove WSC  
Hopkins County Mining



**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF BRINKER WATER SUPPLY CORPORATION IN HOPKINS COUNTY**

**Description of Water User Group:**

Brinker WSC provides water service in Hopkins County. It is projected that the users in the WUG will have a shortage in 2050. The WUG population is projected to be 2,369 by 2020 and increases to 4,198 by 2070. The WSC utilizes groundwater from the Carrizo-Wilcox aquifer and has a contract for water supply with City of Sulphur Springs for 77 ac-ft/yr. Brinker WSC is projected to have a deficit of 12 ac-ft in 2050, increasing to a deficit of 83 ac-ft by 2070.

**Water Supply and Demand Analysis:**

	2020	2030	2040	2050	2060	2070
<b>Population</b>	2,369	2,737	3,071	3,456	3,825	4,198
<b>Projected Water Demand</b>	253	281	307	341	377	413
<b>Water Demand from other entities</b>	0	0	0	0	0	0
<b>Current Water Supply</b>	329	328	328	329	330	330
<b>Projected Supply Surplus (+) / Deficit (-)</b>	<b>76</b>	<b>47</b>	<b>21</b>	<b>-12</b>	<b>-47</b>	<b>-83</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

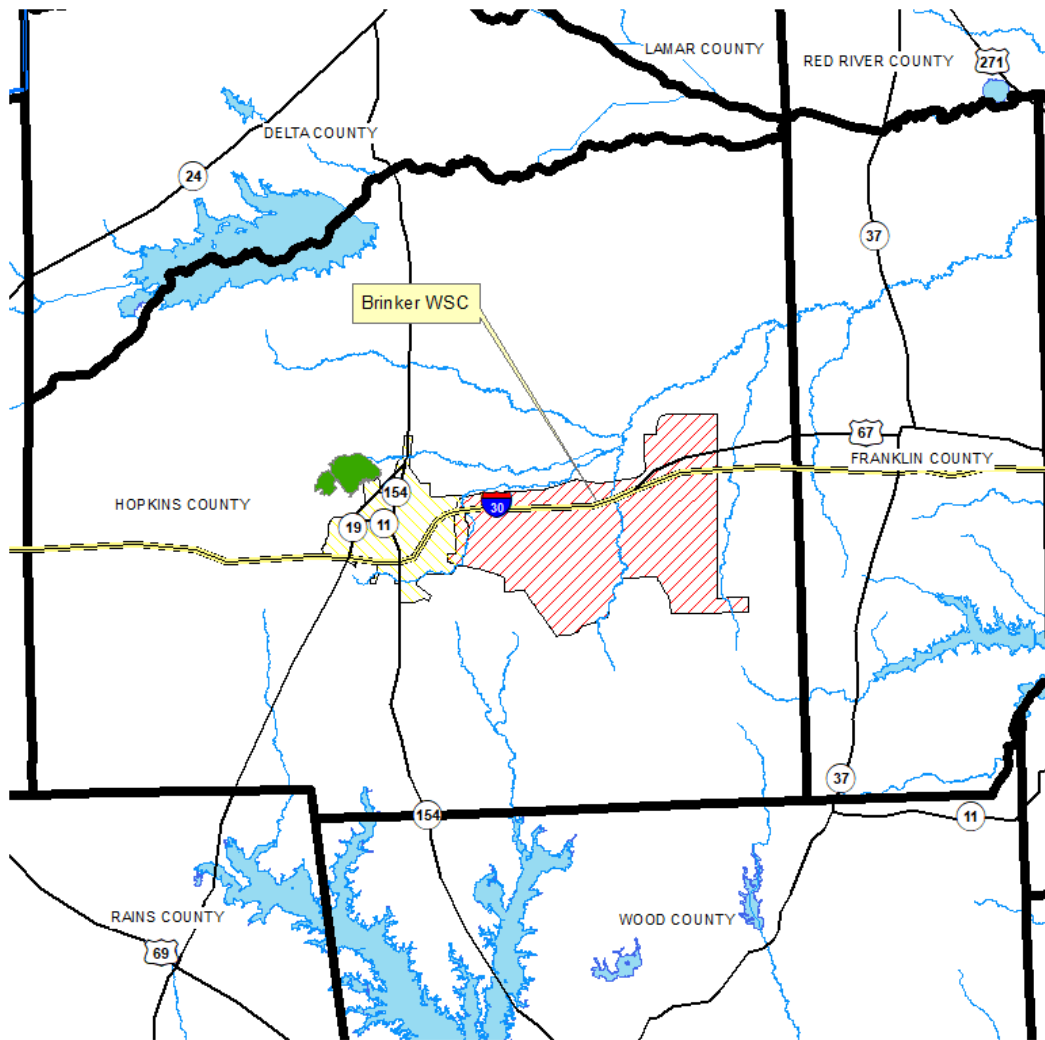
Five alternative strategies considered to meet the WSC’s water supply shortages. Advanced conservation was not selected because the per capita use per day was less than the 140 gpcd threshold set by the water planning group. Reuse is not a feasible option because water supply is mainly used for public consumption. Additional use of groundwater has been identified as a likely source of water for Brinker WSC in Hopkins County; however, projected needs exceed the availability of groundwater in the Sulphur basin based on the modeled available groundwater (MAG) estimates and review of available information from a local hydrogeological assessment. A potential regionalization strategy is the Wood County Pipeline. Purchase of additional surface water from Sulphur Springs Lake under the existing contract from the City of Sulphur Springs was also considered.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Drill New Wells (Carrizo-Wilcox, Sulphur Basin)	83	\$1,405,000	\$175,000	\$2,108	1
Increase Existing Contract w/ Sulphur Springs	83	\$0	\$95,000	\$1,145	1
Wood County Pipeline	83	\$3,567,000	\$409,000	\$4,928	2

**Recommendations:**

	2020	2030	2040	2050	2060	2070
<b>Increase Existing Contract (ac-ft/yr)</b>	0	0	0	12	47	83

To meet the identified needs for Brinker WSC, the recommended strategy is to increase the existing surface water contract from the City of Sulphur Springs prior to 2050.



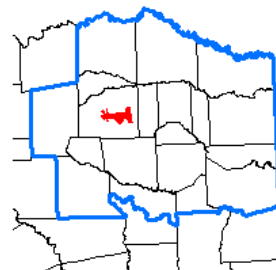
- Relation**
- Buyer
  - Seller
  - Source
  - Region D Boundary
  - Counties
  - Streams
  - Reservoirs

0 15,000 30,000 60,000



Feet

1 inch = 30,000 feet



### Attachment A

Brinker WSC  
 Recommended Strategy  
 Increase Existing Contract (Sulphur Springs)

<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices Brinker WSC - Increase Contract w/ Sulphur Springs</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>ANNUAL COST</b>	
Operation and Maintenance	
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (0 kW-hr @ 0.08 \$/kW-hr)	\$0
Purchase of Water (83 acft/yr @ 1150.25 \$/acft)	<u>\$95,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$95,000</b>
<b>Available Project Yield (acft/yr)</b>	83
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$1,145
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$1,145
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$3.51
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$3.51
<i>JMP</i>	9/30/2019



**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CITY OF CUMBY**

**Description of Water User Group:**

The City of Cumby provides water service in Hopkins County. It is projected that the users in the WUG will have a shortage in 2020. The WUG population is projected to be 1,044 by 2020 and increases to 1,755 by 2070. The City of Cumby utilizes groundwater from the Nacatoch aquifer through 4 wells with a combined production capacity of 223 gpm. The City of Cumby is projected to have a deficit of 13 ac-ft in 2020 and increasing to a deficit of 88 ac-ft by 2070.

**Water Supply and Demand Analysis:**

	2020	2030	2040	2050	2060	2070
<b>Population</b>	1,044	1,212	1,363	1,496	1,660	1,755
<b>Projected Water Demand</b>	133	149	164	178	197	208
<b>Water Demand from other entities</b>	0	0	0	0	0	0
<b>Current Water Supply</b>	120	120	120	120	120	120
<b>Projected Supply Surplus (+) / Deficit (-)</b>	<b>-13</b>	<b>-29</b>	<b>-44</b>	<b>-58</b>	<b>-77</b>	<b>-88</b>

<b>Projected Supply Surplus (+) / Deficit (-) by Basin</b>	2020	2030	2040	2050	2060	2070
<b>Sabine</b>	-13	-27	-41	-54	-71	-81
<b>Sulphur</b>	0	-2	-3	-4	-6	-7
<b>Total</b>	<b>-13</b>	<b>-29</b>	<b>-44</b>	<b>-58</b>	<b>-77</b>	<b>-88</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

There were five alternative strategies considered to meet the WSC’s water supply shortages. Advanced conservation was not selected because the per capita use per day was less than the 140 gpcd threshold set by the water planning group. Reuse is not a feasible option because water supply is mainly used for public consumption. The system is not presently large enough to treat surface water in a cost-effective manner. Additional groundwater from the Nacatoch Aquifer has been considered as a potential water management strategy. A potential regionalization strategy considered is the Wood County Pipeline where in the city could construct an eleven (11) mile long 8-inch diameter waterline that ties into a branch of the Wood County Pipeline near Sulphur Springs.

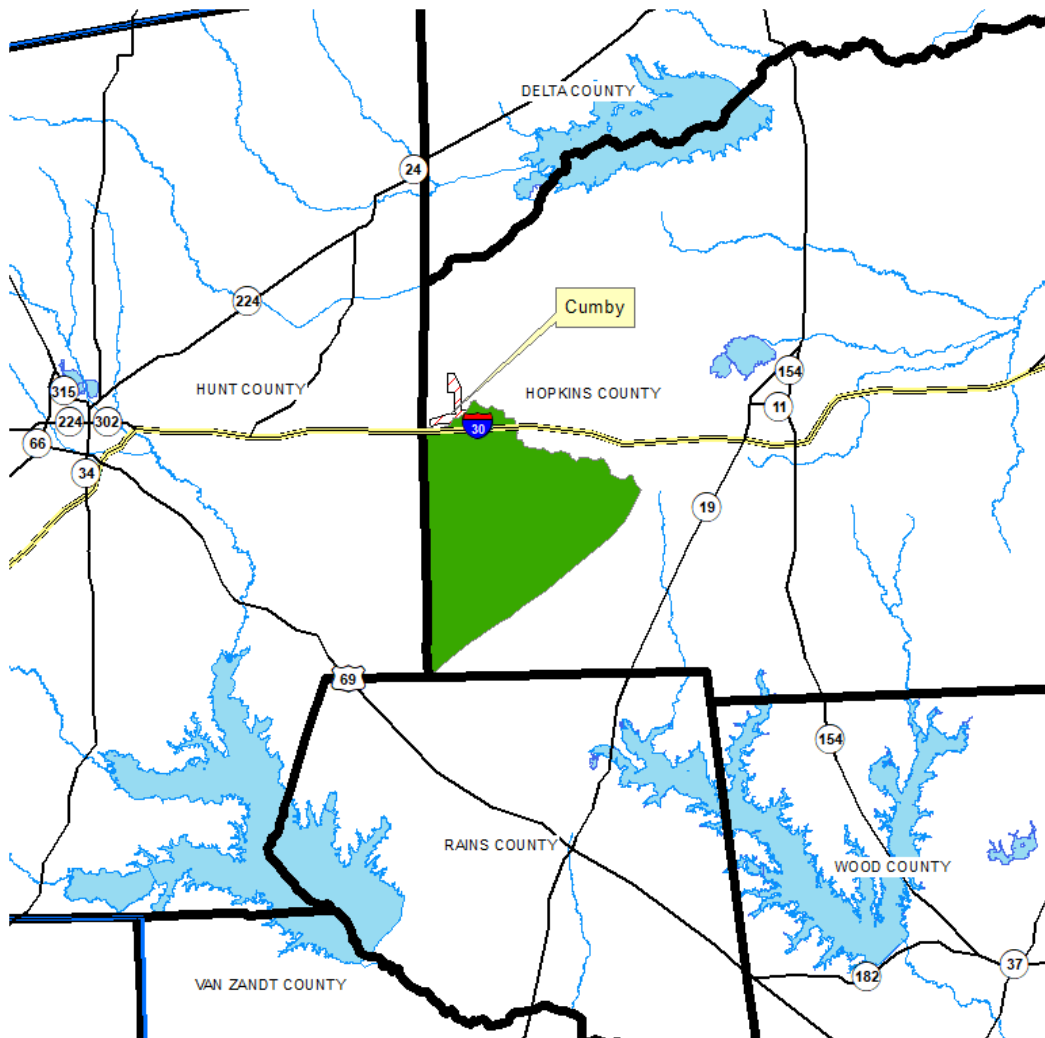
<b>Strategy</b>	<b>Firm Yield (ac-ft)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Environmental Impact</b>
Drill New Wells (Nacatoch Aquifer, Sabine Basin, Hopkins County)	<b>88</b>	<b>\$938,000</b>	<b>\$142,000</b>	<b>\$1,614</b>	<b>1</b>
Wood County Pipeline	<b>88</b>	<b>\$4,809,000</b>	<b>\$511,000</b>	<b>\$5,807</b>	<b>2</b>

**Recommendations:**

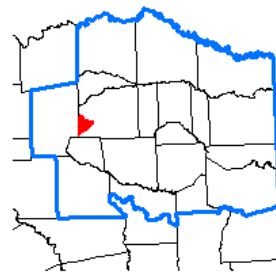
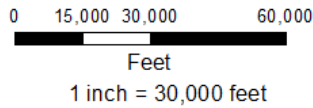
	2020	2030	2040	2050	2060	2070
<b>Drill New Wells (Nacatoch Aquifer, Sabine Basin, Hopkins County; ac-ft/yr)</b>	13	29	44	58	77	88

The recommended strategy for the City of Cumby to meet their projected deficit of 13 ac-ft/yr in 2020 and 88 ac-ft/yr in 2070 would be to construct two additional water wells similar to their existing wells just prior to the decade as the deficits occur. The recommended supply source will be the Nacatoch Aquifer in Hopkins County, Sabine River Basin. A well operating at an average of 85 gpm is capable of delivering 46

ac-ft per year per well. The Nacatoch Aquifer in Hopkins County, Sabine River Basin, is projected to have sufficient supply availability to meet the needs of the City of Cumby for the planning period.



- Relation**
- Buyer
  - Seller
  - Source
  - Region D Boundary
  - Counties
  - Streams
  - Reservoirs



**Attachment A**  
 Cumby  
 Recommended Strategy  
 Drill New Wells (Hopkins, Nacatoch, Sabine)

<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices Cumby - Drill New Wells (Hopkins, Nacatoch Aquifer, Sabine Basin)</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
Well Fields (Wells, Pumps, and Piping)	\$626,000
Water Treatment Plant (0.2 MGD)	\$33,000
<b>TOTAL COST OF FACILITIES</b>	<b>\$659,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$231,000
Environmental & Archaeology Studies and Mitigation	\$15,000
Land Acquisition and Surveying (2 acres)	\$7,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	<u>\$26,000</u>
<b>TOTAL COST OF PROJECT</b>	<b>\$938,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$66,000
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$6,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$20,000
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (70120 kW-hr @ 0.08 \$/kW-hr)	\$6,000
Purchase of Water (88 acft/yr @ 500 \$/acft)	<u>\$44,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$142,000</b>
<b>Available Project Yield (acft/yr)</b>	88
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$1,614
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$864
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$4.95
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$2.65
<i>JMP</i>	9/30/2019

## EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF IRRIGATION IN HOPKINS COUNTY

### Description of Water User Group:

The Irrigation WUG in Hopkins County has a demand that is projected to remain constant at 4,769 ac-ft/yr for the planning period. The Irrigation WUG in Hopkins County is supplied by groundwater from the Carrizo-Wilcox Aquifer and run-of-river diversions from the Sabine and Sulphur Rivers. A deficit of 4,627 ac-ft/yr is projected to occur throughout the planning period.

### Water Supply and Demand Analysis:

	2020	2030	2040	2050	2060	2070
<b>Projected Water Demand</b>	4,769	4,769	4,769	4,769	4,769	4,769
<b>Current Water Supply</b>	144	144	144	144	144	144
<b>Projected Supply Surplus (+)/Deficit(-)</b>	<b>-4,627</b>	<b>-4,627</b>	<b>-4,627</b>	<b>-4,627</b>	<b>-4,627</b>	<b>-4,627</b>

<b>Projected Supply Surplus (+)/Deficit(-) by Basin</b>	2020	2030	2040	2050	2060	2070
<b>Sabine</b>	2	2	2	2	2	2
<b>Sulphur</b>	-4,627	-4,627	-4,627	-4,627	-4,627	-4,627
<b>Cypress</b>	0	0	0	0	0	0
<b>Total</b>	<b>-4,625</b>	<b>-4,625</b>	<b>-4,625</b>	<b>-4,625</b>	<b>-4,625</b>	<b>-4,625</b>

### Evaluation of Potentially Feasible Water Management Strategies:

Three alternative strategies were considered to meet the projected shortages for Hopkins County Irrigation. Advanced water conservation for irrigation practices was not considered, as present irrigation practices likely already incorporate many BMPs to extend water supplies, thus no additional conservation would be feasible. The use of reuse water from nearby municipalities is not considered feasible as it would not be effective to deliver reuse water to the distributed farm irrigation systems. Groundwater from the Carrizo-Wilcox and Nacatoch aquifers has been identified as a potential source of water for irrigation in Hopkins County. The construction of a pipeline to convey raw surface water from Sulphur Springs Lake purchased via the City of Sulphur Springs was also considered as a potential alternative to meet projected demands. A potential regionalization strategy that was considered is the Wood County Pipeline which the WUG could tie-in to a branch of the Wood County Pipeline routed toward Sulphur Springs, Tx.

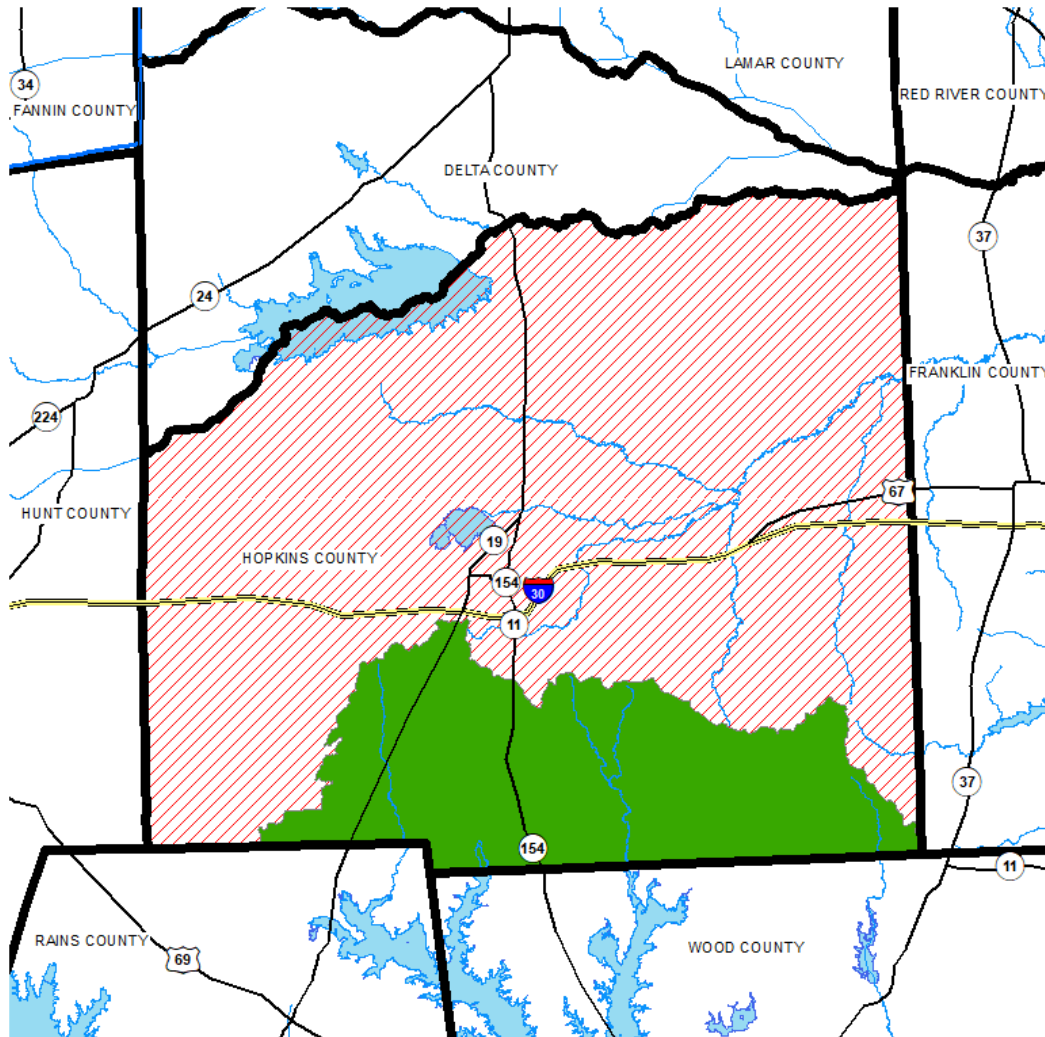
<b>Strategy</b>	<b>Strategy Yield (AF)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Environmental Impact</b>
Drill New Wells (Carrizo-Wilcox, Sabine Basin)	931	\$2,814,000	\$748,000	\$803	1
Drill New Wells (Carrizo-Wilcox, Sulphur Basin)	4,627	\$10,927,000	\$3,511,000	\$759	2
Sulphur Springs Raw Water Pipeline	4,627	\$38,392,000	\$9,039,000	\$1,954	-
Wood County Pipeline Tie-in	4,627	\$13,522,000	\$7,181,000	\$1,552	2

### Recommendations:

	2020	2030	2040	2050	2060	2070
<b>Drill New Wells (Carrizo-Wilcox, Sabine Basin; ac-ft/yr)</b>	0	0	111	387	575	931
<b>Drill New Wells (Carrizo-Wilcox, Sulphur Basin; ac-ft/yr)</b>	4,627	4,627	4,516	4,240	4,052	3,696

The recommended strategies for the Hopkins County Irrigation to meet their projected deficit of 4,227 ac-ft/yr would be to construct by 2020 twelve additional water wells with a rated capacity of 300 gpm in the portion of the Carrizo-Wilcox Aquifer located in Hopkins County in the Sulphur River Basin. This portion of the Carrizo-Wilcox Aquifer is projected to have sufficient source availability to only meet a portion of the projected irrigation demands for Hopkins County. It is thus recommended that by 2040 three additional

water wells with a rated capacity of 300 gpm be constructed in the portion of the Carrizo-Wilcox Aquifer located in the Sabine River Basin in Hopkins County. This portion of the aquifer is projected to have sufficient source availability to meet the remaining Hopkins County Irrigation needs over the remainder of the 2020-2070 planning period.



- Relation**
-  Buyer
  -  Seller
  -  Source
  -  Region D Boundary
  -  Counties
  -  Streams
  -  Reservoirs

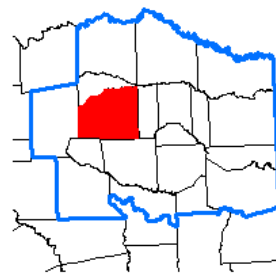
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Feet

1 inch = 30,000 feet

### Attachment A

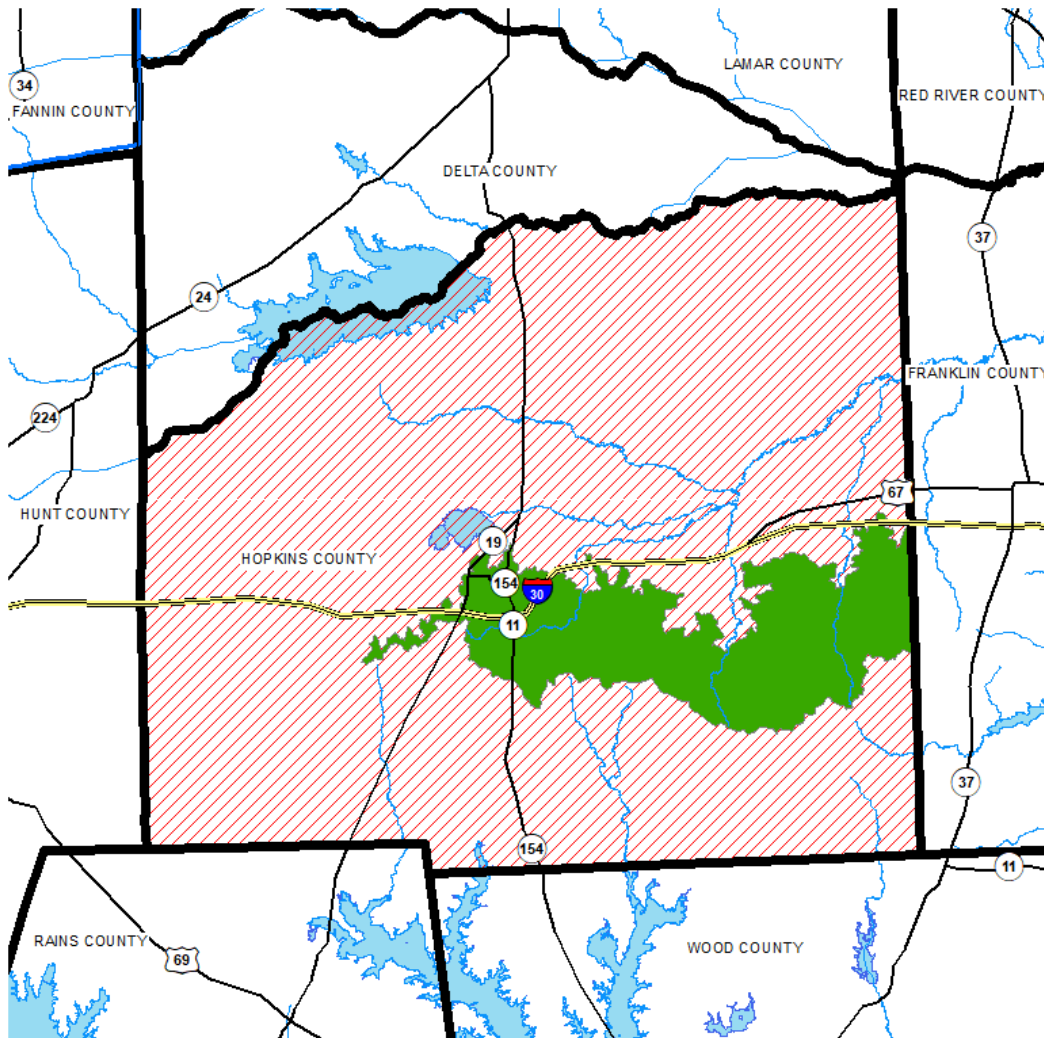
Irrigation Hopkins Co  
 Recommended Strategy  
 Drill New Wells (Hopkins, Carrizo-Wilcox, Sabine)



**Cost Estimate Summary  
Water Supply Project Option  
September 2018 Prices  
Hopkins County Irrigation - Drill New Wells (Hopkins, Carrizo-Wilcox Aquifer,  
Sabine Basin)**

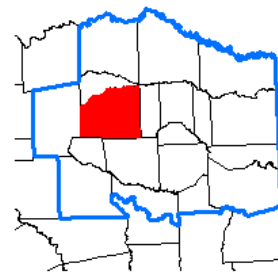
**Cost based on ENR CCI 11170.28 for September 2018 and  
a PPI of 201.9 for September 2018**

<i>Item</i>	<i>Estimated Costs for Facilities</i>
Well Fields (Wells, Pumps, and Piping)	\$1,984,000
<b>TOTAL COST OF FACILITIES</b>	<b>\$1,984,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$694,000
Environmental & Archaeology Studies and Mitigation	\$45,000
Land Acquisition and Surveying (5 acres)	\$15,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	<u>\$76,000</u>
<b>TOTAL COST OF PROJECT</b>	<b>\$2,814,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$198,000
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$20,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (796548 kW-hr @ 0.08 \$/kW-hr)	\$64,000
Purchase of Water (931 acft/yr @ 500 \$/acft)	<u>\$466,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$748,000</b>
<b>Available Project Yield (acft/yr)</b>	931
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$803
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$591
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$2.47
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$1.81
<i>JMP</i>	<i>10/5/2019</i>



- Relation**
- Buyer
  - Seller
  - Source
  - Region D Boundary
  - Counties
  - Streams
  - Reservoirs

0 15,000 30,000 60,000  
 Feet  
 1 inch = 30,000 feet



**Attachment B**

Irrigation Hopkins Co  
 Recommended Strategy  
 Drill New Wells (Hopkins, Carrizo-Wilcox, Sulphur)



**Cost Estimate Summary  
Water Supply Project Option  
September 2018 Prices  
Hopkins County Irrigation - Drill New Wells (Hopkins, Carrizo-Wilcox Aquifer,  
Sulphur Basin)**

**Cost based on ENR CCI 11170.28 for September 2018 and  
a PPI of 201.9 for September 2018**

<i>Item</i>	<i>Estimated Costs for Facilities</i>
<b>CAPITAL COST</b>	
Well Fields (Wells, Pumps, and Piping)	\$7,703,000
<b>TOTAL COST OF FACILITIES</b>	<b>\$7,703,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$2,696,000
Environmental & Archaeology Studies and Mitigation	\$159,000
Land Acquisition and Surveying (15 acres)	\$76,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	<u>\$293,000</u>
<b>TOTAL COST OF PROJECT</b>	<b>\$10,927,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$769,000
Reservoir Debt Service (3.5 percent, 40 years)	\$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$77,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (4393140 kW-hr @ 0.08 \$/kW-hr)	\$351,000
Purchase of Water (4627 acft/yr @ 500 \$/acft)	<u>\$2,314,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$3,511,000</b>
<b>Available Project Yield (acft/yr)</b>	4,627
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$759
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$593
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$2.33
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$1.82
<i>JMP</i>	<i>10/5/2019</i>

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF LIVESTOCK IN HOPKINS COUNTY**

**Description of Water User Group:**

The Livestock WUG in Hopkins County has a demand that is projected to remain constant at 5,498 ac-ft/yr for the planning period. The Livestock WUG in Hopkins County is supplied by groundwater from the Carrizo-Wilcox and Nacatoch Aquifers, livestock local supplies from the Cypress, Sulphur, and Sabine basins and surface water purchased from Sulphur Springs. A deficit of 1,068 ac-ft/yr is projected to occur in 2020 increasing to 1,219 ac-ft/yr by 2070 in the Sulphur basin. In both the Cypress and Sabine basins a surplus of 424 ac-ft/yr is projected by 2020 increasing to 577 ac-ft/yr by 2070.

**Water Supply and Demand Analysis:**

	2020	2030	2040	2050	2060	2070
<b>Projected Water Demand</b>	5,498	5,498	5,498	5,498	5,498	5,498
<b>Current Water Supply</b>	4,854	4,854	4,854	4,854	4,855	4,856
<b>Projected Supply Surplus (+)/Deficit(-)</b>	<b>-644</b>	<b>-644</b>	<b>-644</b>	<b>-644</b>	<b>-643</b>	<b>-642</b>

<b>Projected Supply Surplus (+)/Deficit(-) by Basin</b>	2020	2030	2040	2050	2060	2070
<b>Sabine</b>	366	387	433	436	486	508
<b>Sulphur</b>	-1,068	-1,090	-1,140	-1,143	-1,196	-1,219
<b>Cypress</b>	58	59	63	63	67	69
<b>Total</b>	<b>-644</b>	<b>-644</b>	<b>-644</b>	<b>-644</b>	<b>-643</b>	<b>-642</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

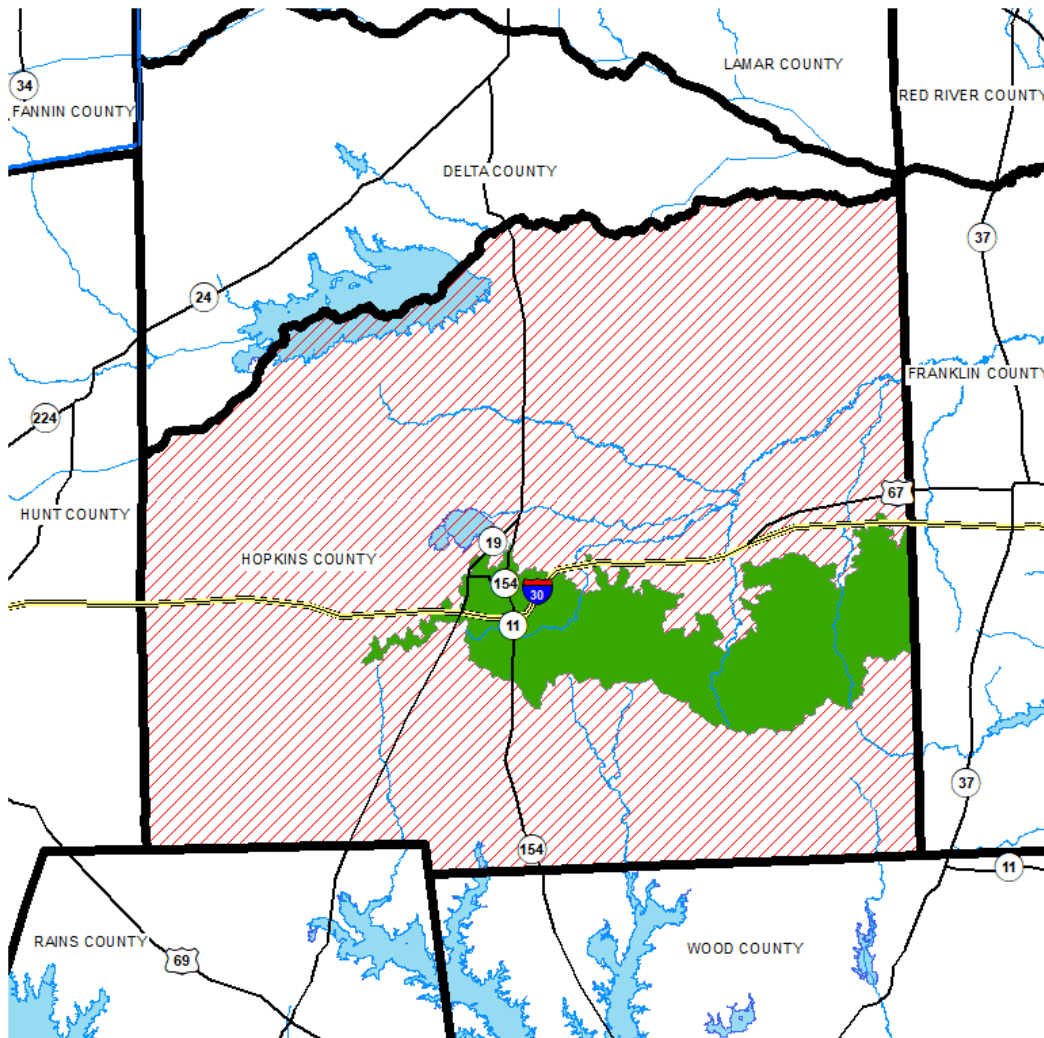
Eight alternative strategies were considered to meet the projected shortages for Hopkins County Livestock. Advanced water conservation for livestock practices was not considered, as present livestock practices likely result in sale of the livestock to reduce demand and extend water supply. The use of reuse water is not considered feasible as there is no centralized water supply. Groundwater from the Carrizo-Wilcox and Nacatoch aquifers has been identified as a potential source of water for irrigation in Hopkins County; however, the total needs exceed the availability of groundwater in the Nacatoch Aquifer based on the modeled available groundwater (MAG) estimates. Increasing the existing contract with the City of Sulphur Springs was also considered as a potential alternative to meet projected demands. A potential regionalization strategy that was considered is the Wood County Pipeline which the WUG could tie-in to a branch of the Wood County Pipeline routed toward Sulphur Springs, Tx.

<b>Strategy</b>	<b>Strategy Yield (AF)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Environmental Impact</b>
Drill New Wells (Carrizo-Wilcox, Sulphur Basin)	1,219	\$6,373,000	\$1,198,000	\$983	2
Increase Contract w/ Sulphur Springs	1,219	\$0	\$1,434,000	\$1,176	1
Wood County Pipeline	1,219	\$8,273,000	\$706,000	\$2,021	2

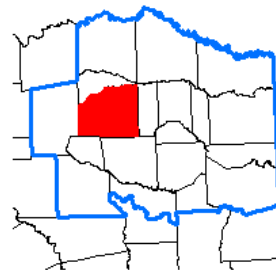
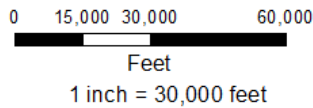
**Recommendations:**

	2020	2030	2040	2050	2060	2070
<b>Drill New Wells (Carrizo-Wilcox, Sulphur Basin; ac-ft/yr)</b>	<b>1,068</b>	<b>1,090</b>	<b>1,140</b>	<b>1,143</b>	<b>1,196</b>	<b>1,219</b>

The recommended strategy for the Hopkins County Livestock to meet their projected deficit of 1,219 ac-ft/yr would be to construct 13 additional water wells with a rated capacity of 75 gpm in the Carrizo-Wilcox/Sulphur/Hopkins aquifer. The recommended supply source will be the Carrizo-Wilcox Aquifer in Hopkins County, Sulphur River Basin. The portion of the Carrizo-Wilcox Aquifer in the Sulphur River Basin in Hopkins County is projected to have sufficient supply availability to meet the needs of Hopkins County Livestock over the planning period.



- Relation**
- Buyer
  - Seller
  - Source
  - Region D Boundary
  - Counties
  - Streams
  - Reservoirs



**Attachment A**

Livestock Hopkins Co  
 Recommended Strategy  
 Drill New Wells (Hopkins, Carrizo-Wilcox, Sulphur)

**Cost Estimate Summary  
Water Supply Project Option  
September 2018 Prices  
Livestock Hopkins County - Drill New Wells (Hopkins, Carrizo Wilcox Aquifer,  
Sulphur Basin)**

**Cost based on ENR CCI 11170.28 for September 2018 and  
a PPI of 201.9 for September 2018**

<i>Item</i>	<i>Estimated Costs for Facilities</i>
<b>CAPITAL COST</b>	
Well Fields (Wells, Pumps, and Piping)	\$4,375,000
<b>TOTAL COST OF FACILITIES</b>	<b>\$4,375,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$1,531,000
Environmental & Archaeology Studies and Mitigation	\$203,000
Land Acquisition and Surveying (18 acres)	\$93,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	<u>\$171,000</u>
<b>TOTAL COST OF PROJECT</b>	<b>\$6,373,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$448,000
Reservoir Debt Service (3.5 percent, 40 years)	\$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$44,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (1205103 kW-hr @ 0.08 \$/kW-hr)	\$96,000
Purchase of Water (1219 acft/yr @ 500 \$/acft)	<u>\$610,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$1,198,000</b>
<b>Available Project Yield (acft/yr)</b>	1,219
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$983
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$615
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$3.02
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$1.89
<i>JMP</i>	<i>9/30/2019</i>

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF MARTIN SPRINGS WATER SUPPLY CORPORATION**

**Description of Water User Group:**

Martin Springs WSC provides water service in Hopkins County. It is projected that the users in the WUG will have a shortage in 2070. The WUG population is projected to be 3,502 by 2020 and increases to 6,214 by 2070. Martin Springs WSC utilizes groundwater from the Carrizo-Wilcox aquifer and has a contract with the City of Sulphur Springs for surface water supply from Lake Chapman. Martin Springs WSC is projected to have a deficit of 29 ac-ft in 2070.

**Water Supply and Demand Analysis:**

	2020	2030	2040	2050	2060	2070
<b>Population</b>	3,502	4,097	4,641	5,130	5,715	6,214
<b>Projected Water Demand</b>	424	478	529	578	642	698
<b>Water Demand from other entities</b>	0	0	0	0	0	0
<b>Current Water Supply</b>	668	667	666	668	669	669
<b>Projected Supply Surplus (+) / Deficit (-)</b>	<b>244</b>	<b>189</b>	<b>137</b>	<b>90</b>	<b>27</b>	<b>-29</b>

<b>Projected Supply Surplus (+) / Deficit (-) by Basin</b>	2020	2030	2040	2050	2060	2070
<b>Sabine</b>	204	158	113	75	22	-27
<b>Sulphur</b>	40	31	24	15	5	-2
<b>Total</b>	<b>244</b>	<b>189</b>	<b>137</b>	<b>90</b>	<b>27</b>	<b>-29</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

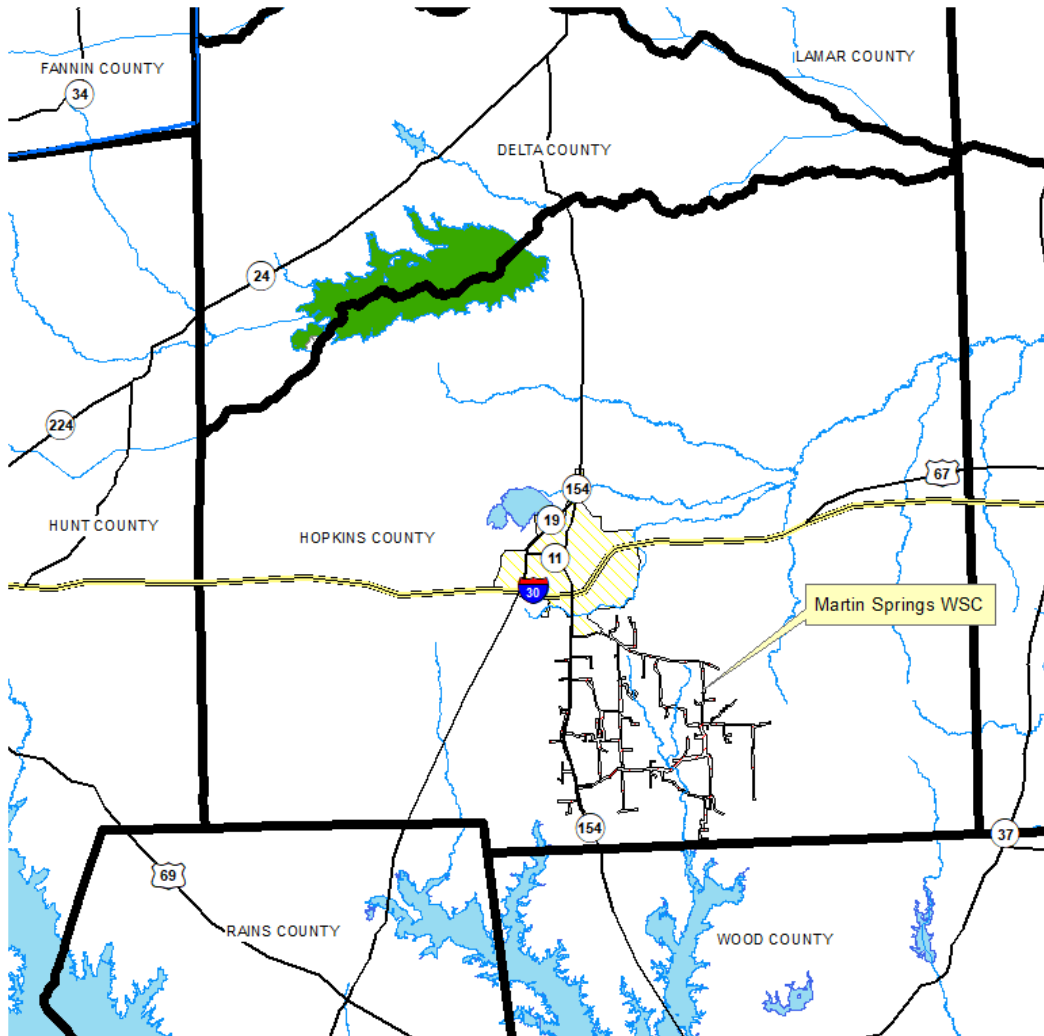
Six alternative strategies were considered to meet the WSC’s water supply shortages. Advanced conservation was not selected because the per capita use per day was less than the 140 gpcd threshold set by the water planning group. Reuse is not a feasible option because water supply is mainly used for public consumption. Additional use of groundwater has been identified as a potential source of water for Martin Springs WSC in Hopkins County. A potential regionalization strategy that was considered is the Wood County Pipeline. Increasing the existing contract with Sulphur Springs was identified and considered as a potentially feasible strategy.

<b>Strategy</b>	<b>Firm Yield (ac-ft)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Env. Impact</b>
Drill New Wells (Carrizo-Wilcox Aquifer, Sulphur Basin)	29	\$360,000	\$55,000	\$1,897	1
Increase Existing Contract w/ Sulphur Springs	29	\$0	\$34,000	\$1,172	1
Wood County Pipeline	29	\$1,574,000	\$166,000	\$5,724	2

**Recommendations:**

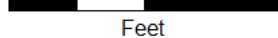
	2020	2030	2040	2050	2060	2070
<b>Increase Existing Contract w/ Sulphur Springs</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>29</b>

The recommended strategy for Martin Springs WSC to meet their projected deficit of 29 ac-ft/yr in 2070 is to increase the existing contract supply from Sulphur Springs for water from their portion of Lake Chapman.



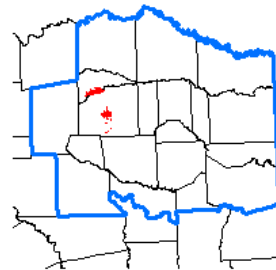
- Relation**
- Buyer
  - Seller
  - Source
  - Region D Boundary
  - Counties
  - Streams
  - Reservoirs

0 15,000 30,000 60,000



Feet

1 inch = 30,000 feet



**Attachment A**

Martin Springs WSC  
 Recommended Strategy  
 Increase Existing Contract (Sulphur Springs)

<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices</b>	
<b>Martin Springs WSC - Increase Existing Contract w/ Sulphur Springs</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018</b>	
<i>Item</i>	<i>Estimated Costs for Facilities</i>
<b>ANNUAL COST</b>	
Operation and Maintenance	
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (0 kW-hr @ 0.08 \$/kW-hr)	\$0
Purchase of Water (29 acft/yr @ 1176 \$/acft)	<u>\$34,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$34,000</b>
<b>Available Project Yield (acft/yr)</b>	29
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$1,172
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$1,172
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$3.60
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$3.60
<i>JMP</i>	<i>9/30/2019</i>

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF MILLER GROVE WATER SUPPLY CORPORATION**

**Description of Water User Group:**

Miller Grove WSC provides water service in Hopkins County. It is projected that the users in the WUG will have a shortage in 2020. The WUG population is projected to be 1,451 by 2020 and increases to 1,896 by 2070. Miller Grove WSC utilizes groundwater from the Carrizo-Wilcox aquifer. Miller Grove WSC is projected to have a deficit of 8 ac-ft by 2020 increasing to 52 ac-ft by 2070.

**Water Supply and Demand Analysis:**

	2020	2030	2040	2050	2060	2070
<b>Population</b>	1,451	1,559	1,649	1,706	1,802	1,896
<b>Projected Water Demand</b>	200	208	215	221	232	244
<b>Water Demand from other entities</b>	0	0	0	0	0	0
<b>Current Water Supply</b>	192	192	192	192	192	192
<b>Projected Supply Surplus (+) / Deficit (-)</b>	<b>-8</b>	<b>-16</b>	<b>-23</b>	<b>-29</b>	<b>-40</b>	<b>-52</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

Five alternative strategies were considered to meet the WSC’s water supply shortages. Advanced conservation was not selected because the per capita use per day was less than the 140 gpcd threshold set by the water planning group. Reuse is not a feasible option because water supply is mainly used for public consumption. Additional use of groundwater has been identified as a potential source of water the WSC. Purchase of surface water from Chapman Lake under contract from Sulphur Springs was also considered. A potential regionalization strategy that was considered is the Wood County Pipeline.

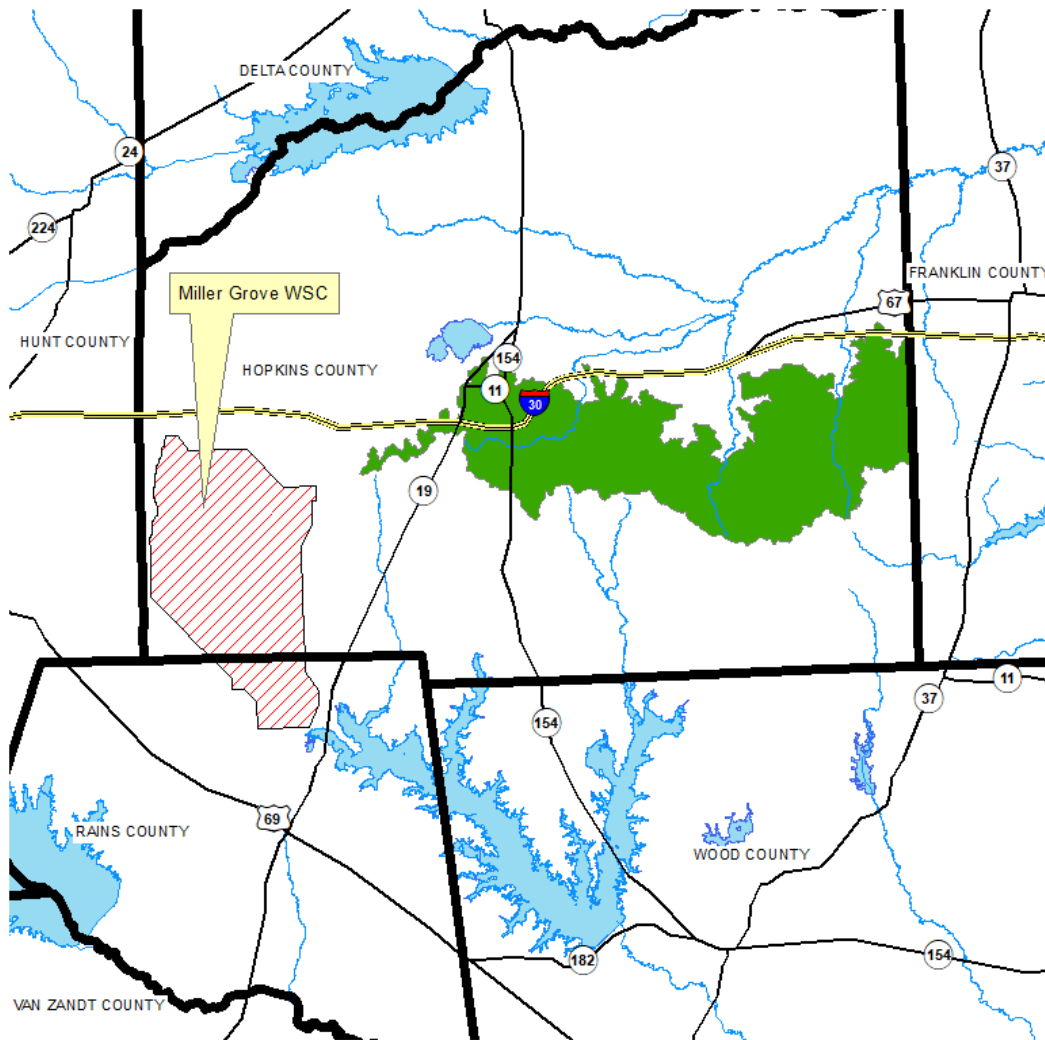
Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Env. Impact
Drill New Wells (Carrizo-Wilcox Aquifer, Sulphur Basin)	52	\$886,000	\$113,000	\$2,173	1
New Contract (Chapman, Sulphur Springs)	52	\$2,319,000	\$242,000	\$4,654	1
Wood County Pipeline Tie-in	52	\$1,587,000	\$200,000	\$3,846	2

**Recommendations:**

	2020	2030	2040	2050	2060	2070
<b>Drill New Wells (Carrizo-Wilcox Aquifer, Sabine; ac-ft/yr)</b>	<b>8</b>	<b>16</b>	<b>23</b>	<b>29</b>	<b>40</b>	<b>52</b>

The recommended strategy for Miller Grove WSC to meet their projected deficit of 8 ac-ft/yr in 2020 and 52 ac-ft/yr in 2070 would be to construct two additional water wells with a rated capacity of 75 gpm in the Carrizo-Wilcox/Sulphur/Hopkins aquifer. Two wells with rated capacity of 75 gpm each would provide approximately 40 acre-feet each. Construction of this well in the year preceding the decade of need would allow for sufficient provision of supply to meet the projected demands.



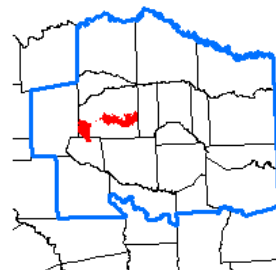


- Relation**
- Buyer
  - Seller
  - Source
  - Region D Boundary
  - Counties
  - Streams
  - Reservoirs

0 15,000 30,000 60,000

Feet

1 inch = 30,000 feet



**Attachment A**

Miller Grove WSC  
 Recommended Strategy  
 Drill New Wells (Hopkins, Carrizo-Wilcox, Sulphur)

<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices Miller Grove WSC - Drill New Wells (Hopkins, Carrizo Wilcox Aquifer, Sulphur Basin)</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
Well Fields (Wells, Pumps, and Piping)	\$597,000
Water Treatment Plant (0.1 MGD)	\$26,000
<b>TOTAL COST OF FACILITIES</b>	<b>\$623,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$218,000
Environmental & Archaeology Studies and Mitigation	\$15,000
Land Acquisition and Surveying (2 acres)	\$6,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	<u>\$24,000</u>
<b>TOTAL COST OF PROJECT</b>	<b>\$886,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$62,000
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$6,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$16,000
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (41422 kW-hr @ 0.08 \$/kW-hr)	\$3,000
Purchase of Water (52 acft/yr @ 500 \$/acft)	<u>\$26,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$113,000</b>
<b>Available Project Yield (acft/yr)</b>	52
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$2,173
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$981
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$6.67
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$3.01
<i>JMP</i>	<i>9/30/2019</i>

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF MINING IN HOPKINS COUNTY**

**Description of Water User Group:**

Mining in Hopkins County has a demand that is projected to increase from 1,031 ac-ft/yr in 2020 to 1,577 ac-ft/yr in 2070. This WUG is projected to be supplied by groundwater from Nacatoch Aquifer and a nominal amount of surface water purchased from Sulphur Springs for potable use. A deficit of 227 ac-ft/yr is projected to occur in 2020 and increase to 639 ac-ft/yr by 2070.

**Water Supply and Demand Analysis:**

	2020	2030	2040	2050	2060	2070
<b>Projected Water Demand</b>	1,031	1,124	1,222	1,329	1,446	1,577
<b>Current Water Supply</b>	804	841	862	885	913	938
<b>Projected Supply Surplus (+)/Deficit(-)</b>	<b>-227</b>	<b>-283</b>	<b>-360</b>	<b>-444</b>	<b>-533</b>	<b>-639</b>

<b>Projected Supply Surplus (+)/Deficit(-) by Basin</b>	2020	2030	2040	2050	2060	2070
<b>Sulphur</b>	-149	-186	-236	-293	-352	-422
<b>Sabine</b>	-71	-89	-112	-138	-166	-198
<b>Cypress</b>	-7	-8	-12	-13	-15	-19
<b>Total</b>	<b>-227</b>	<b>-283</b>	<b>-360</b>	<b>-444</b>	<b>-533</b>	<b>-639</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

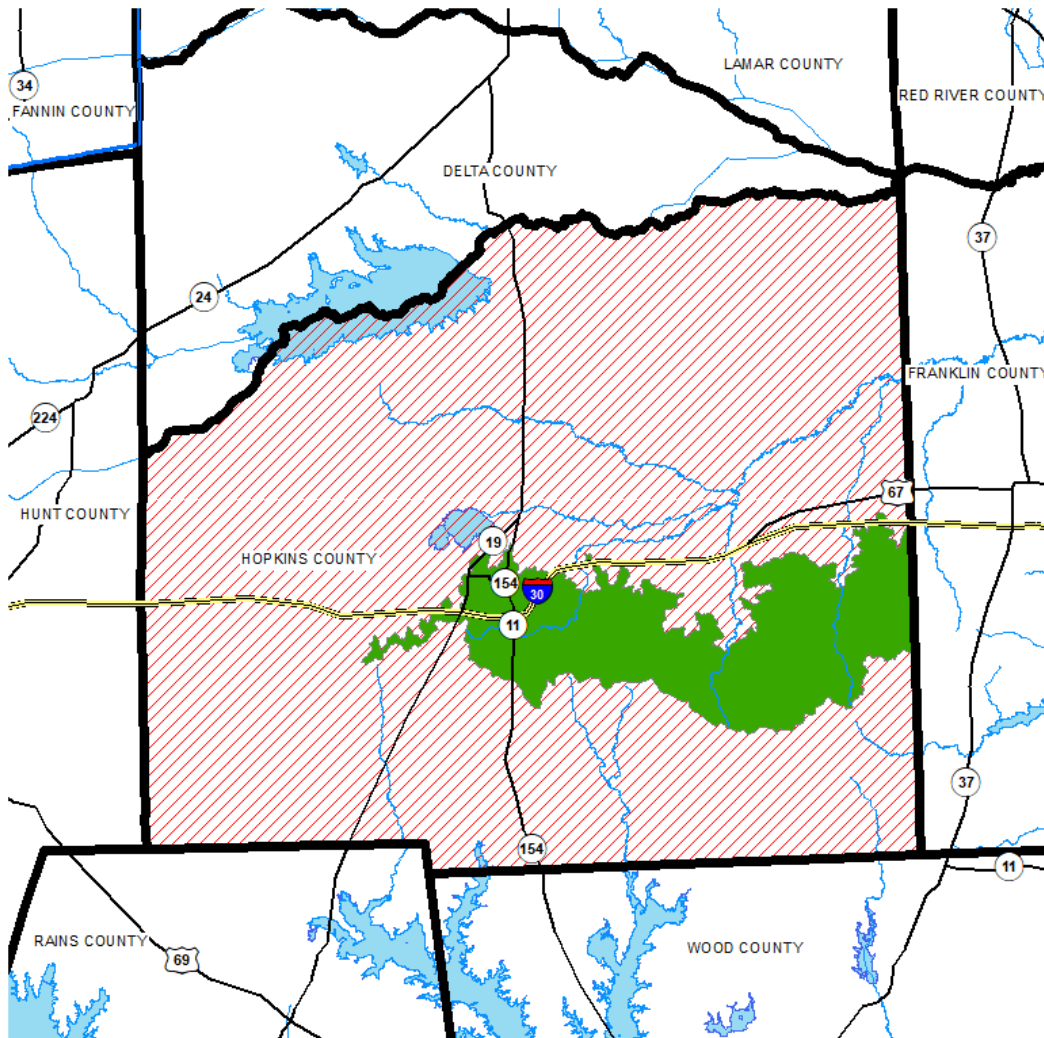
Advanced water conservation for mining practices was not considered, as present operations of the facilities are not available. The use of reuse water from nearby municipalities was not considered feasible as it would not be effective to deliver reuse water to the mining locations. Since the projected demands for mining in Hopkins County are primarily due to overburden dewatering, it was assumed that projected needs would likely be met by additional groundwater pumping. Increasing the existing contract from Sulphur Springs could provide additional supply. Additionally, the Wood County Pipeline regional strategy was evaluated as a feasible supply source.

<b>Strategy</b>	<b>Firm Yield (ac-ft)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Env. Impact</b>
Drill New Wells (Carrizo-Wilcox Aquifer, Sulphur Basin)	639	\$3,376,000	\$628,000	\$983	1
Increase Existing Contract from Sulphur Springs	639	\$0	\$751,000	\$1,175	1
Wood County Pipeline Tie-in	639	\$5,367,000	\$1,365,000	\$2,136	2

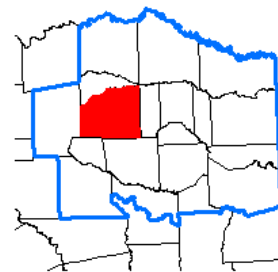
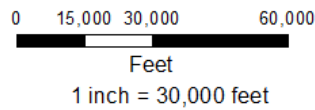
**Recommendations:**

	2020	2030	2040	2050	2060	2070
<b>Drill New Wells (Carrizo-Wilcox Aquifer, Sulphur Basin; ac-ft/yr)</b>	<b>227</b>	<b>283</b>	<b>360</b>	<b>444</b>	<b>533</b>	<b>639</b>

The recommended strategy for the Hopkins County Mining to meet their projected deficit of up to 639 ac-ft/yr would be to construct seven (7) additional water wells with a rated capacity of 75 gpm in the Carrizo-Wilcox/Sulphur/Hopkins aquifer. The recommended supply source will be the Carrizo-Wilcox Aquifer in Hopkins County, Sulphur River Basin. The portion of the Carrizo-Wilcox Aquifer in the Sulphur River Basin in Hopkins County is projected to have sufficient supply availability to meet the needs of Hopkins County Mining over the planning period.



- Relation**
- Buyer
  - Seller
  - Source
  - Region D Boundary
  - Counties
  - Streams
  - Reservoirs



### Attachment A

Mining Hopkins Co  
 Recommended Strategy  
 Drill New Wells (Hopkins, Carrizo-Wilcox, Sulphur)

**Cost Estimate Summary  
Water Supply Project Option  
September 2018 Prices  
Mining Hopkins County - Drill New Wells (Hopkins, Carizzo Wilcox Aquifer,  
Sulphur Basin)**

**Cost based on ENR CCI 11170.28 for September 2018 and  
a PPI of 201.9 for September 2018**

<i>Item</i>	<i>Estimated Costs for Facilities</i>
<b>CAPITAL COST</b>	
Well Fields (Wells, Pumps, and Piping)	\$2,313,000
<b>TOTAL COST OF FACILITIES</b>	<b>\$2,313,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$810,000
Environmental & Archaeology Studies and Mitigation	\$111,000
Land Acquisition and Surveying (10 acres)	\$51,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	<u>\$91,000</u>
<b>TOTAL COST OF PROJECT</b>	<b>\$3,376,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$237,000
Reservoir Debt Service (3.5 percent, 40 years)	\$0
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$23,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (602971 kW-hr @ 0.08 \$/kW-hr)	\$48,000
Purchase of Water (639 acft/yr @ 500 \$/acft)	<u>\$320,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$628,000</b>
<b>Available Project Yield (acft/yr)</b>	639
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$983
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$612
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$3.02
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$1.88
<i>JMP</i>	<i>9/30/2019</i>

REGION D  
EVALUATIONS OF WATER MANAGEMENT STRATEGIES  
FOR MEETING PROJECTED WATER SUPPLY NEEDS  
TO YEAR 2070

## HUNT COUNTY

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WUGs:

B H P WSC  
Caddo Basin SUD  
Caddo Mills  
Cash SUD  
The City of Celeste  
Hunt County-Other  
The City of Greenville  
Hickory Creek SUD  
Hunt County Irrigation  
Hunt County Livestock  
Hunt County Mining  
North Hunt SUD  
Poetry WSC  
The City of Wolfe City

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF B H P WATER SUPPLY CORPORATION IN HUNT COUNTY**

**Description of Water User Group:**

B H P WSC provides water service in western Hunt County, southeastern Colin County and northeastern Rockwall County. The WUG population is projected to be 5,233 people in 2020 and 18,110 by the year 2070. The water supply for this WSC is treated surface water purchased from the NTMWD, the source of whose supplies derive from the NTMWD system (i.e., indirect reuse via Lake Lavon and the NTMWD reservoir system) and the Sabine River Authority’s system (i.e., Lake Fork and Lake Tawakoni). The WSC is projected to have a deficit of 72 ac-ft/yr in 2030 increasing to a deficit of 505 ac-ft/yr by 2070.

**Water Supply and Demand Analysis:**

	2020	2030	2040	2050	2060	2070
<b>Population</b>	5,233	6,647	8,426	10,583	13,664	18,110
<b>Projected Water Demand</b>	391	467	571	711	918	1,216
<b>Water Demand from other entities</b>	0	0	0	0	0	0
<b>Current Water Supply</b>	391	395	446	502	585	711
<b>Projected Supply Surplus (+) / Deficit (-)</b>	<b>0</b>	<b>-72</b>	<b>-125</b>	<b>-209</b>	<b>-333</b>	<b>-505</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

Multiple alternative strategies considered to meet B H P WSC’s water supply shortages are listed in the table below. Advanced conservation was not selected because the per capita use per day was less than the 140 gpcd threshold set by the water planning group; however, coordination with the Region C Planning Group indicates that conservation is a potential strategy for that portion of the WSC within the Region C planning area, thus conservation amounts identified by the Region C Planning Group have been incorporated herein for this WUG. The NETRWPG has considered the conservation efforts of this WUG, and has assumed for the purposes of this plan that the WUG will ascribe to any required conservation efforts that may be applied by a wholesale water provider of either existing supply or supply from a future water management strategy. Reuse is not a feasible option because water supply is mainly used for public consumption. Potentially feasible strategies include increase of the existing contract with NTMWD. Another potentially feasible strategy is the Wood County Pipeline which could supply groundwater from Wood County. Groundwater use from the portion of the Nacatoch Aquifer located in the Sabine River Basin in Hunt County was also evaluated as a potentially feasible strategy.

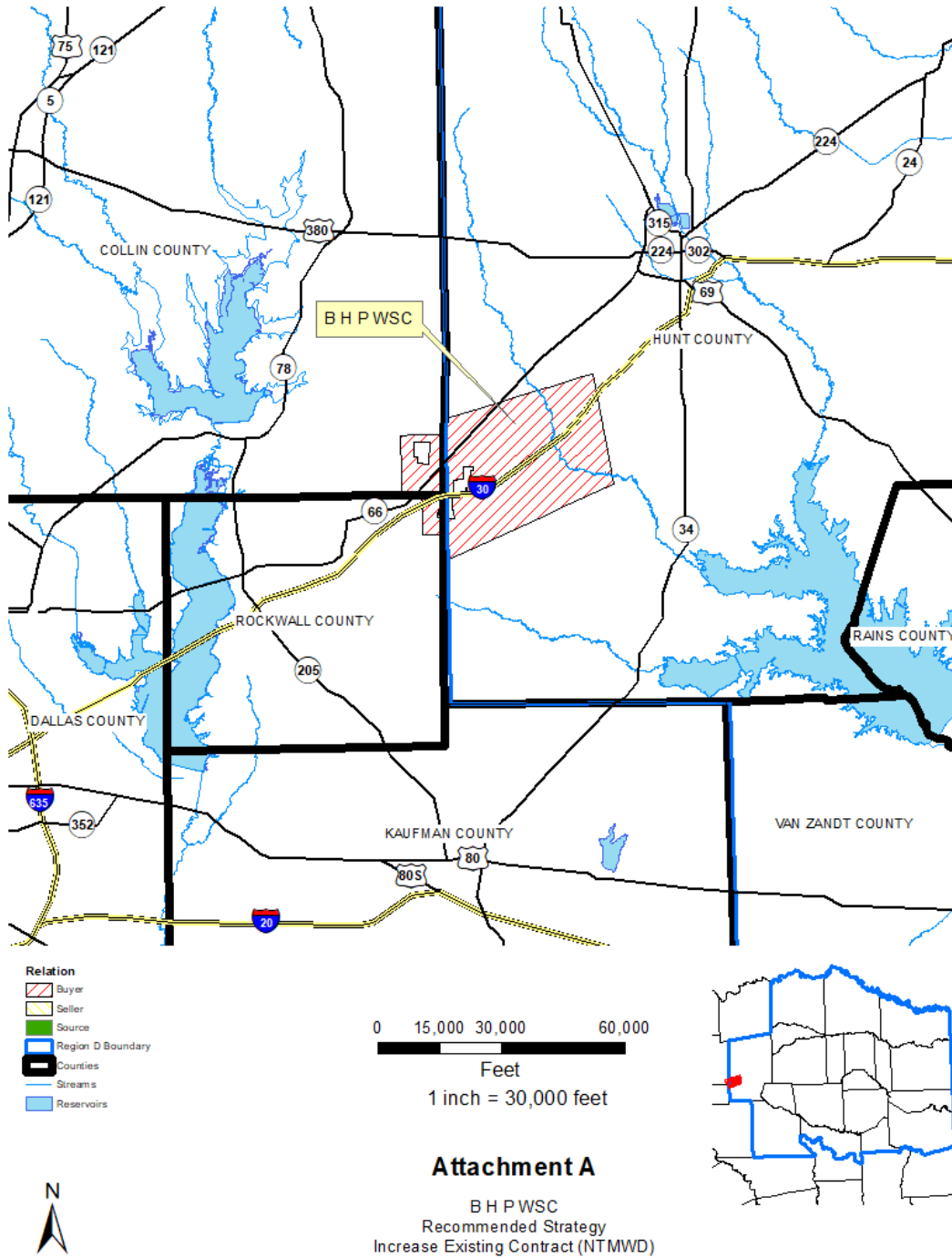
Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annual Cost	Unit Cost	Environmental Impact
Advanced Water Conservation	3	\$0	\$0	\$0	1
Drill New Wells (Hunt, Nacatoch Aquifer, Sabine Basin)	505	\$1,689,000	\$416,000	\$824	1
Increase Contract (NTMWD)	502	\$0	\$251,000	\$500	1
Wood County Pipeline Tie-in	502	\$5,704,000	\$1,184,000	\$2,345	2

**Recommendations:**

	2020	2030	2040	2050	2060	2070
<b>Advanced Water Conservation (ac-ft/yr)</b>	0	1	1	1	2	3
<b>Increase Contract (NTMWD) (ac-ft/yr)</b>	0	71	124	208	331	502

The recommended strategy for BHP WSC is to implement Advanced Water Conservation up to the amounts identified herein over the 2020-2070 planning period (consistent with preliminarily identified recommendations for conservation for this WUG from the 2021 Region C Plan), and to increase the

existing contract with the NTMWD. This strategy is contingent upon Region C recommended strategies for the NTMWD.





<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices B H P WSC - Increase Existing Contract (NTMWD)</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018</b>	
<i>Item</i>	<i>Estimated Costs for Facilities</i>
<b>ANNUAL COST</b>	
Operation and Maintenance	
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (0 kW-hr @ 0.08 \$/kW-hr)	\$0
Purchase of Water (502 acft/yr @ 500 \$/acft)	<u>\$251,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$251,000</b>
<b>Available Project Yield (acft/yr)</b>	502
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$500
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$500
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$1.53
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$1.53
<i>JMP</i>	<i>10/5/2019</i>

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CADDO BASIN SUD IN HUNT COUNTY**

**Description of Water User Group:**

Caddo Basin SUD provides water service in western Hunt County and eastern Collin County. The WUG population is projected to be 10,115 in 2020 and 43,698 by the year 2070. The SUD purchases treated water from North Texas MWD and Farmersville. The SUD is projected to have a shortage beginning in 2020 based on the availability of current firm supplies from North Texas MWD. The SUD is projected to have a deficit of 8 ac-ft in 2020 increasing to a deficit of 1,866 ac-ft by 2070.

**Water Supply and Demand Analysis:**

	2020	2030	2040	2050	2060	2070
<b>Population</b>	10,115	13,263	17,792	23,883	32,195	43,698
<b>Projected Water Demand</b>	1,128	1,417	1,855	2,465	3,314	4,493
<b>Water Demand from other entities</b>	0	0	0	0	0	0
<b>Current Water Supply</b>	1,121	1,197	1,449	1,743	2,112	2,627
<b>Projected Supply Surplus (+) / Deficit (-)</b>	-7	-220	-406	-722	-1,202	-1,866

**Evaluation of Potentially Feasible Water Management Strategies:**

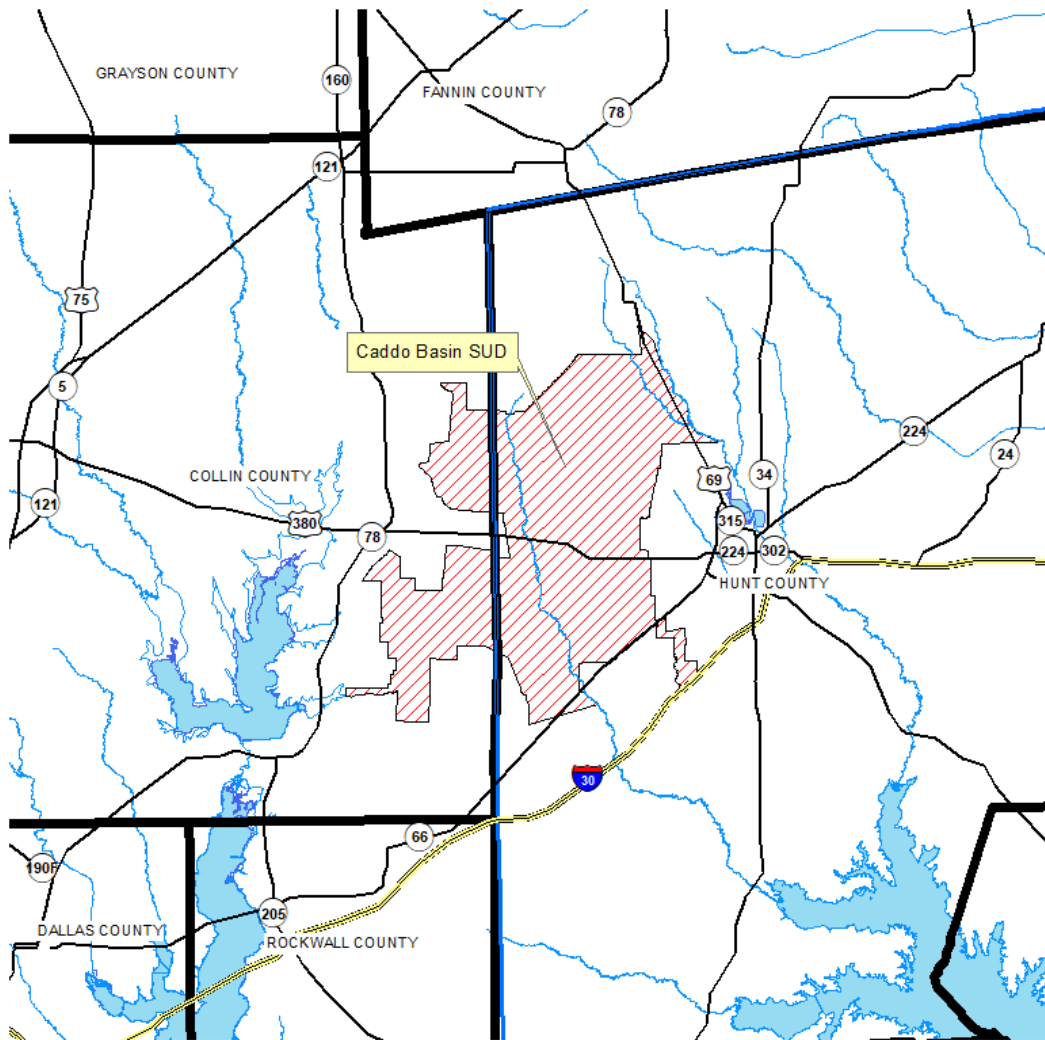
Seven alternative strategies were considered to meet the SUD’s water supply shortages as summarized in the following table. Advanced conservation was not selected because the per capita use per day was less than the 140 gpcd threshold set by the water planning group; however, preliminary coordination with the Region C Planning Group indicates that conservation is a potential strategy for that portion of the WUG within the Region C planning area, thus conservation amounts identified by the Region C Planning Group have been incorporated herein for this WUG. Water reuse was not considered because the SUD does not have a demand for non-potable water. Groundwater was considered, but the SUD has previously indicated that it currently purchases treated water from NTMWD and is planning to meet its future needs from water purchases. Thus, the SUD could potentially increase existing contracts with NTMWD. Another potentially feasible contract increase could be from the City of Farmersville. The SUD also has an existing emergency interconnect with the City of Greenville, thus, a contract with the City of Greenville was considered. Another potentially feasible strategy is the Wood County Pipeline which could supply groundwater from Wood County.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation (Region C Portion)	18	\$0	\$0	\$0	1
Water Reuse	0	-	-	-	-
Ground Water (Hunt, Woodbine Aquifer, Trinity)	0	-	-	-	-
Increase Existing Contract (NTMWD)	1,848	\$0	\$421,000	\$228	1
Increase Existing Contract (Farmersville)	1,848	\$0	\$421,000	\$228	1
New Contract (Greenville)	1,866	\$2,473,000	\$1,889,000	\$1,012	1
Wood County Pipeline	1,866	\$5,953,000	\$3,192,000	\$1,711	2

**Recommendations:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Advanced Water Conservation (Region C Portion; ac-ft/yr)</b>	<b>2</b>	<b>4</b>	<b>4</b>	<b>7</b>	<b>12</b>	<b>18</b>
<b>Increase Contract (NTMWD; ac-ft/yr)</b>	<b>5</b>	<b>216</b>	<b>402</b>	<b>715</b>	<b>1,190</b>	<b>1,848</b>

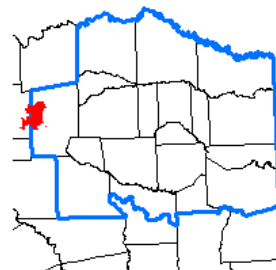
The recommended strategy for Caddo Basin SUD is to implement Advanced Water Conservation up to the amounts identified herein over the 2020-2070 planning period (consistent with preliminarily identified recommendations for conservation for this WUG for the 2021 Region C Plan), and to increase the existing contract with the NTMWD. This strategy is contingent upon Region C recommended strategies for the NTMWD.



- Relation**
- Buyer
  - Seller
  - Source
  - Region D Boundary
  - Counties
  - Streams
  - Reservoirs

0 15,000 30,000 60,000

Feet  
1 inch = 30,000 feet



**Attachment A**

Caddo Basin SUD  
Recommended Strategy  
Increase Existing Contract (NTMWD)

<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices Caddo Basin - Increase Existing Contract with NTMWD</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018</b>	
<i>Item</i>	<i>Estimated Costs for Facilities</i>
<b>ANNUAL COST</b>	
Operation and Maintenance	
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (0 kW-hr @ 0.08 \$/kW-hr)	\$0
Purchase of Water (1848 acft/yr @ 228 \$/acft)	<u>\$421,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$421,000</b>
<b>Available Project Yield (acft/yr)</b>	1,848
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$228
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$228
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$0.70
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$0.70
<i>JMP</i>	<i>10/5/2019</i>

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CADDO MILLS IN HUNT COUNTY**

**Description of Water User Group:**

The City of Caddo Mills provides water service in Hunt County. This City’s population was 1,338 in 2010 and is projected to increase to 1,710 by 2020 and 7,147 by 2070. The City purchases treated water from the City of Greenville and is projected to have a shortage beginning in 2030 based on the availability of current supplies to Greenville. Caddo Mills is projected to have a deficit of 1 ac-ft in 2030 increasing to a deficit of 254 ac-ft by 2070.

**Water Supply and Demand Analysis:**

	2020	2030	2040	2050	2060	2070
<b>Population</b>	1,710	2,214	2,898	3,843	5,190	7,147
<b>Projected Water Demand</b>	152	187	237	310	417	573
<b>Water Demand from other entities</b>	0	0	0	0	0	0
<b>Current Water Supply</b>	178	186	201	242	309	319
<b>Projected Supply Surplus (+) / Deficit (-)</b>	<b>26</b>	<b>-1</b>	<b>-36</b>	<b>-68</b>	<b>-108</b>	<b>-254</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

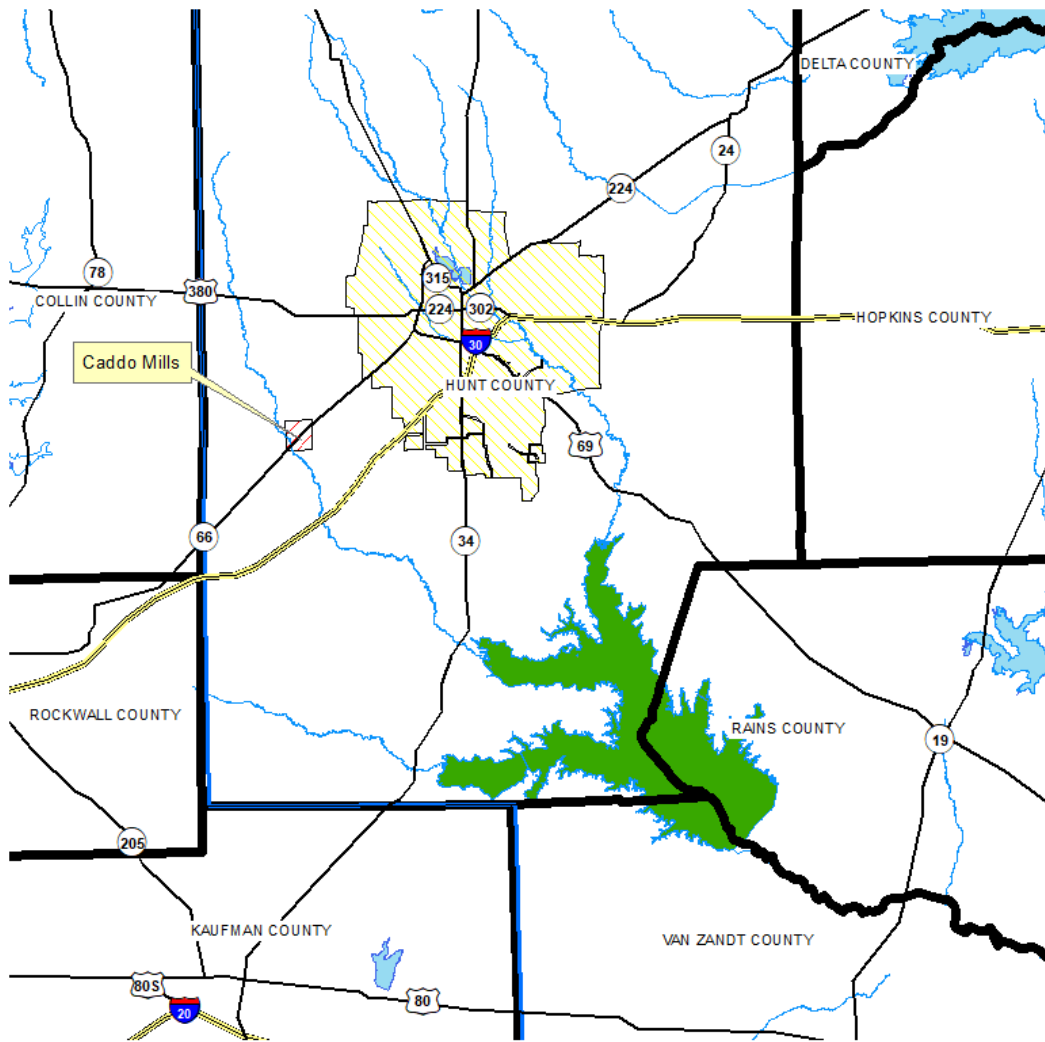
Four alternative strategies were considered to meet the City of Caddo Mills water supply shortages as summarized in the following table. Advanced conservation was not considered because the per capita use per day was below the 140 gpcpd threshold set by the planning group. Water reuse was not considered because the City does not have a demand for non-potable water. Groundwater was considered, although the City has previously indicated that it plans to meet its future needs from water purchase from the City of Greenville. Another potentially feasible strategy is the Wood County Pipeline which could supply groundwater from Wood County via existing infrastructure from Greenville.

<b>Strategy</b>	<b>Firm Yield (ac-ft)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Environmental Impact</b>
Drill New Wells (Hunt, Nacatoch Aquifer, Sabine Basin)	254	\$1,014,000	\$221,000	\$870	1
Increase Existing Contract (Greenville)	254	\$0	\$224,000	\$882	1
Wood County Pipeline, Increase Contract	254	\$0	\$366,000	\$1,442	2

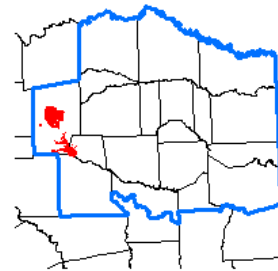
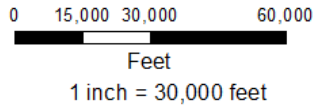
**Recommendations:**

	2020	2030	2040	2050	2060	2070
<b>Increase Existing Contract (ac-ft/yr)</b>	0	1	36	68	108	254

The recommended strategy for the City of Caddo Mills to meet their projected deficit of 1 ac-ft/yr in 2030 and 254 ac-ft/yr in 2070 is to increase the volume of treated surface water purchased from the City of Greenville, contingent upon Greenville strategies.



- Relation**
- Buyer
  - Seller
  - Source
  - Region D Boundary
  - Counties
  - Streams
  - Reservoirs



**Attachment A**  
 Caddo Mills  
 Recommended Strategy  
 Increase Existing Contract (Greenville)

<b>Cost Estimate Summary</b> <b>Water Supply Project Option</b> <b>September 2018 Prices</b> <b>Caddo Mills - Increase Existing Contract with Greenville</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and</b> <b>a PPI of 201.9 for September 2018</b>	
<i>Item</i>	<i>Estimated Costs for Facilities</i>
<b>ANNUAL COST</b>	
Operation and Maintenance	
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (0 kW-hr @ 0.08 \$/kW-hr)	\$0
Purchase of Water (254 acft/yr @ 883 \$/acft)	<u>\$224,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$224,000</b>
<b>Available Project Yield (acft/yr)</b>	254
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$882
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$882
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$2.71
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$2.71
<i>JMP</i>	<i>10/3/2019</i>



**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CASH SUD IN HUNT COUNTY**

**Description of Water User Group:**

Cash SUD provides water in the south-central portion of Hunt County and small areas of northwestern Rains County, western Hopkins County, and eastern Rockwall County from purchased surface water supplies from the North Texas Municipal Water District (NTMWD) and the Sabine River Authority for supplies out of Lake Fork and Lake Tawakoni. Over 90% of the SUD’s demand is located in Region D (Hunt County), with less than 10% in Region C (Rockwall County). In both regions, the system is projected to serve a total of 20,491 people in 2020 and 50,195 people by the year 2070. Cash SUD is projected to have a supply deficit of 361 ac-ft/yr by 2030 increasing to 1,346 ac-ft/yr by 2050.

**Water Supply and Demand Analysis:**

In coordination with Cash SUD and Region C, the below summarization of Cash SUD supplies and demands has been developed.

**Cash Special Utility District (Region C & D)**

(Values in Ac-Ft/Yr)	Projected Population and Demand					
	2020	2030	2040	2050	2060	2070
<b>Projected Region Population (C&amp;D)</b>	<b>20,491</b>	<b>24,592</b>	<b>29,451</b>	<b>35,192</b>	<b>42,044</b>	<b>50,195</b>
Projected Region Population (D)	19,271	23,012	27,462	32,789	39,180	46,841
Projected Region Population (C)	1,220	1,580	1,989	2,403	2,864	3,354
<b>Projected Water Demand</b>						
Municipal Demand (Region D)	2,213	2,560	2,998	3,548	4,228	5,049
Municipal Demand (Region C)	140	176	217	260	309	362
<b>Total Projected Total Demand</b>	<b>2,353</b>	<b>2,736</b>	<b>3,215</b>	<b>3,808</b>	<b>4,537</b>	<b>5,411</b>
<b>Currently Available Water Supplies</b>						
North Texas Municipal Water District	1,120	1,120	1,120	1,120	1,120	1,120
Sabine River Authority (current and future)	1,322	1,255	1,086	1,342	2,071	3,596
<b>Total Current Supplies</b>	<b>2,442</b>	<b>2,375</b>	<b>2,206</b>	<b>2,462</b>	<b>3,191</b>	<b>4,716</b>
<b>Need (Demand - Current Supply)</b>	<b>0</b>	<b>361</b>	<b>1,009</b>	<b>1,346</b>	<b>1,346</b>	<b>695</b>
<b>Water Management Strategies</b>						
Water Conservation	5	8	10	11	14	18
Increase Contract with NTMWD	332	688	1,025	1,353	1,352	1,343
<i>Additional Delivery Infrastructure from NTMWD</i>	<i>332</i>	<i>688</i>	<i>1,025</i>	<i>1,353</i>	<i>1,352</i>	<i>1,343</i>
Wood County Pipeline (Alt Region D Needs)	330	394	1,009	1,346	1,346	1,346
<b>Total Water Management Strategies</b>	<b>337</b>	<b>696</b>	<b>1,035</b>	<b>1,364</b>	<b>1,366</b>	<b>1,361</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

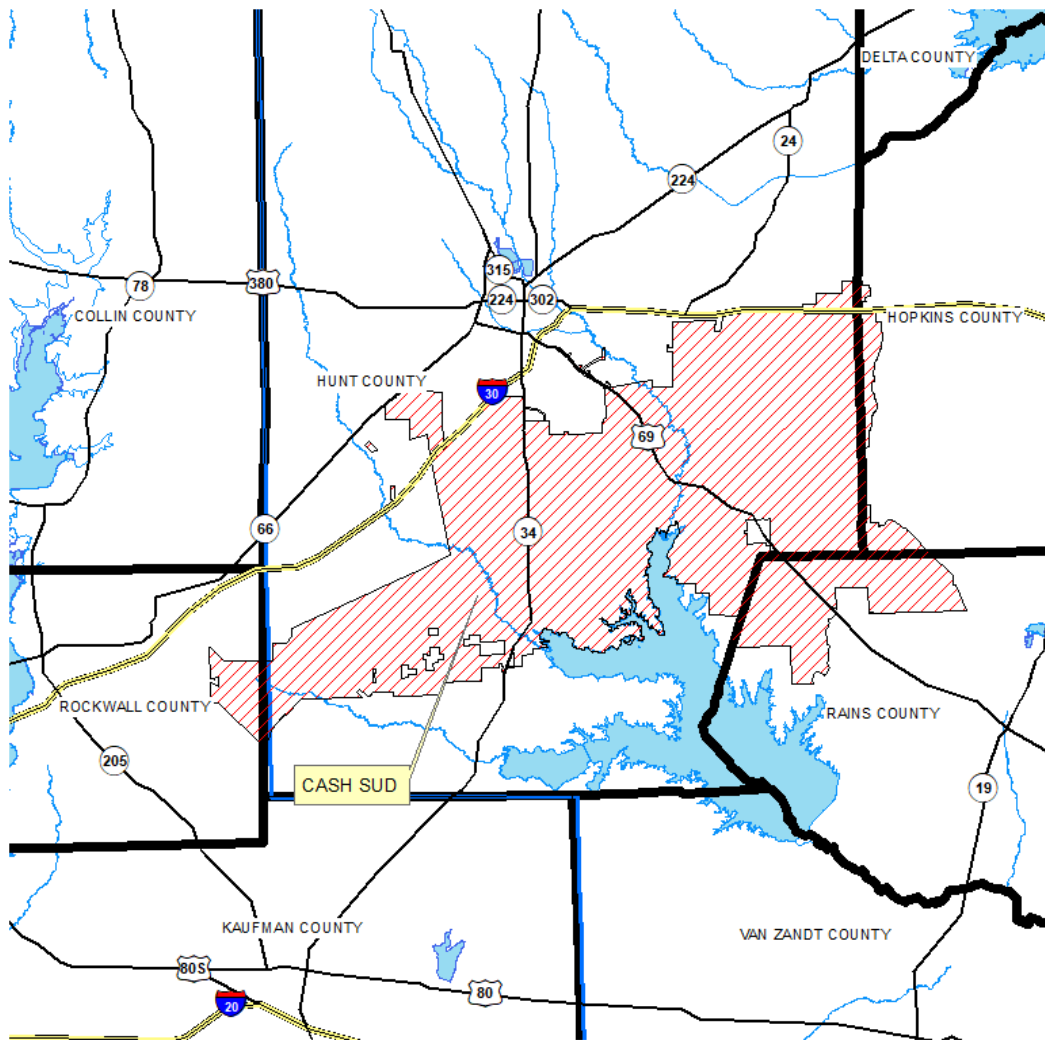
Cash SUD has a contract with NTMWD for 1.0 MGD (1,020 ac-ft/yr). Additional supply comes from the SRA. Cash SUD operates its own water treatment plant within Region D to treat the supply from SRA. The water management strategies for Cash SUD include conservation, acquisition of additional supplies from NTMWD, including additional delivery infrastructure. Another potentially feasible strategy is the Wood County Pipeline which could supply groundwater from Wood County.






Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annual Cost	Unit Cost	Environmental Impact
Advanced Water Conservation (Region C Portion)	18		\$0	\$0	1
Increase Contract w/ NTMWD (contingent upon Region C NTMWD WMS)	1,353	\$8,272,000	\$2,965,000	\$2,198	1
Wood County Pipeline Tie-in	1,346	\$1,926,000	\$2,114,000	\$1,571	2

**Recommendations:**

	2020	2030	2040	2050	2060	2070
<b>Advanced Water Conservation (ac-ft/yr)</b>	5	8	10	11	14	18
<b>Increase Contract (NTMWD; ac-ft/yr)</b>	332	688	1,025	1,353	1,352	1,343

The NETRWPG recommends Cash SUD increase its' existing contract with the NTMWD, contingent upon Region C NTMWD strategies. The NETRWPG supports the recommendation (as previously indicated by Region C for the purposes of the 2016 Plan) for construction of a new 16" transmission line from Fate to Union Valley, for an approximate cost of \$6 million. The NETRWPG also supports the strategy recommendation from Region C for advanced water conservation for Cash SUD.

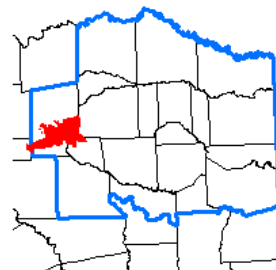


-  Buyer
-  Region D Boundary
-  Counties
-  Streams
-  Reservoirs

0 15,000 30,000 60,000

Feet

1 inch = 30,000 feet



### Attachment A

Cash SUD  
 Recommended Strategy  
 Increase Contract w/ NTMWD (contingent upon Region C NTMWD WMS)

<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices Cash SUD - Increase Contract with NTMWD</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018</b>	
<i>Item</i>	<i>Estimated Costs for Facilities</i>
Transmission Pipeline (16 in dia., 10 miles)	\$6,000,000
<b>TOTAL COST OF FACILITIES</b>	<b>\$6,000,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$1,800,000
Environmental & Archaeology Studies and Mitigation	\$250,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	<u>\$222,000</u>
<b>TOTAL COST OF PROJECT</b>	<b>\$8,272,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$582,000
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$60,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (0 kW-hr @ 0.08 \$/kW-hr)	\$0
Purchase of Water (1353 acft/yr @ 1723 \$/acft)	<u>\$2,331,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$2,973,000</b>
<b>Available Project Yield (acft/yr)</b>	1,353
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$2,198
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$1,762
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$6.74
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$5.42
<i>Note: One or more cost element has been calculated externally</i>	
<i>JMP</i>	<i>10/3/2019</i>

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CITY OF CELESTE**

**Description of Water User Group:**

The City of Celeste is a small public water supply located in northwest Hunt County. The system is projected to serve 1,012 people in 2020 and 3,658 people by the year 2070. The current sources of supply are two wells into the Woodbine Aquifer with production capacities of 150 gpm and 200 gpm. The City provides water to its own customers in the Sabine River Basin and is projected to have a water supply deficit of 29 ac-ft/yr in 2020 increasing to 316 ac-ft/yr by 2070.

**Water Supply and Demand Analysis:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Population</b>	1,012	1,257	1,590	2,051	2,706	3,658
<b>Projected Water Demand</b>	124	147	181	231	304	411
<b>Water Demand from other entities</b>	0	0	0	0	0	0
<b>Current Water Supply</b>	95	95	95	95	95	95
<b>Projected Supply Surplus (+) / Deficit (-)</b>	<b>-29</b>	<b>-52</b>	<b>-86</b>	<b>-136</b>	<b>-209</b>	<b>-316</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

Multiple alternative strategies considered to meet Celeste’s water supply shortages are listed in the table below. Advanced conservation was not selected since per capita use is less than 140 gpcd. The purchase of surface water from the City of Greenville and construction of a treated water pipeline was identified as a potentially feasible strategy and evaluated. Additional supplies from the City of Greenville would be contingent upon City of Greenville water strategies. Pumping of additional groundwater from the Woodbine Aquifer was also considered as an alternative for this entity. There is sufficient source availability in the Woodbine Aquifer through 2060, but if this alternative were to be implemented availability would be insufficient by 2070, which would necessitate a smaller contract and infrastructure for treated supply from the City of Greenville by 2070. Such an approach would be contingent upon recommended seller strategies for the City of Greenville. Another potentially feasible strategy is the Wood County Pipeline which could supply groundwater from Wood County.

<b>Strategy</b>	<b>Firm Yield (ac-ft)</b>	<b>Total Capital Cost</b>	<b>Total Annual Cost</b>	<b>Unit Cost</b>	<b>Environmental Impact</b>
Drill New Wells (Woodbine, Trinity Basin)	<b>229</b>	<b>\$1,686,000</b>	<b>\$292,000</b>	<b>\$1,275</b>	<b>1</b>
New Contract and Treated Water Pipeline (Greenville, contingent on Seller WMS)	<b>87</b>	<b>\$3,342,000</b>	<b>\$341,000</b>	<b>\$3,920</b>	<b>1</b>
New Contract and Treated Water Pipeline (Greenville contingent on Seller WMS)	<b>316</b>	<b>\$5,076,000</b>	<b>\$690,000</b>	<b>\$2,184</b>	<b>1</b>
Wood County Pipeline Tie-in	<b>316</b>	<b>\$5,076,000</b>	<b>\$867,000</b>	<b>\$2,744</b>	<b>2</b>

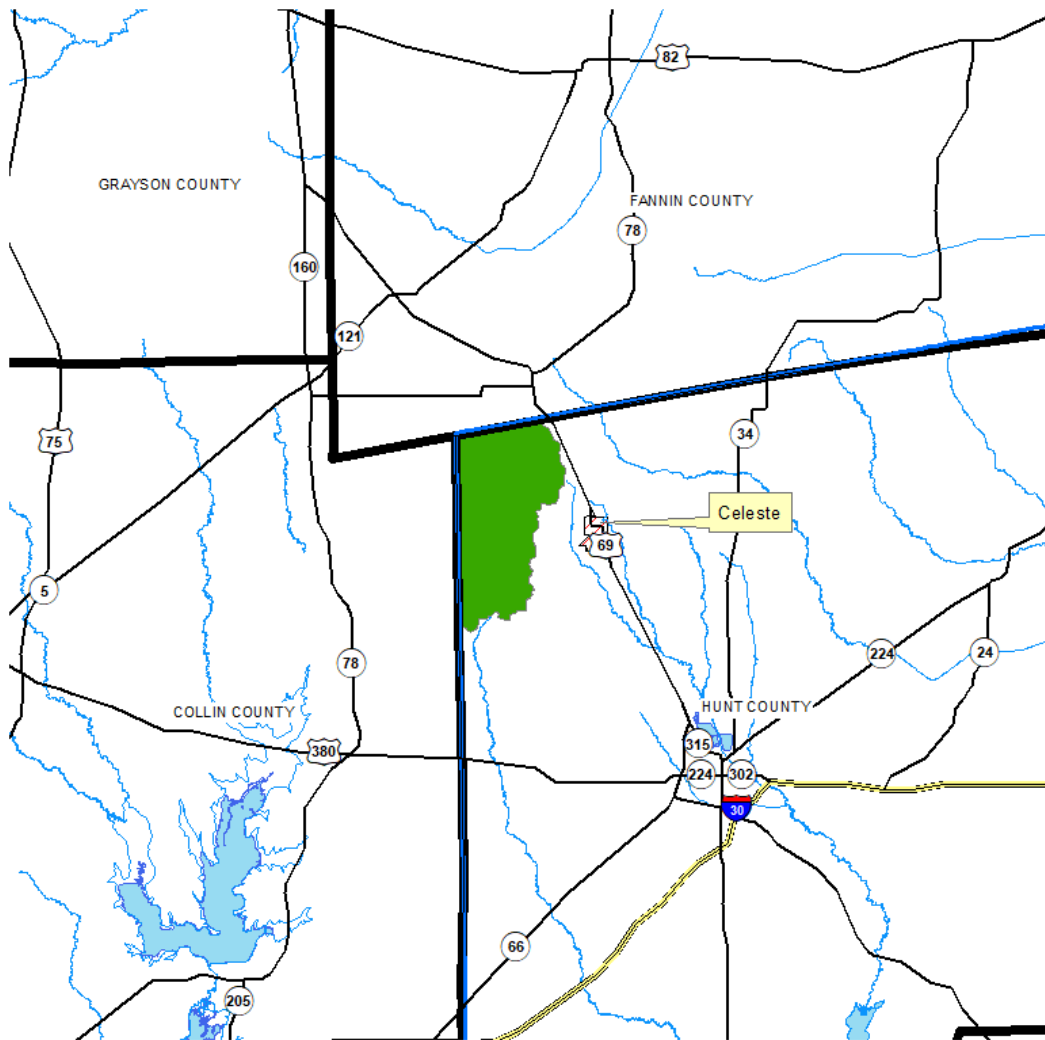
**Recommendations:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Drill New Wells (Woodbine, Trinity Basin; ac-ft/yr)</b>	<b>29</b>	<b>52</b>	<b>86</b>	<b>136</b>	<b>209</b>	<b>229</b>
<b>New Contract and Treated Water Pipeline (Greenville, contingent on Seller WMS)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>87</b>

The recommended strategy for the City of Celeste to meet their projected deficit of 29 ac-ft/yr in 2020 and 316 ac-ft/yr in 2070 would be to construct three additional water wells similar to their existing wells just prior to each decade as the deficits occur. The recommended supply source will be the Woodbine Aquifer in Hunt County. Three wells with rated capacity of 150 gpm each would provide approximately 81 acre-feet each. The portion of the Woodbine Aquifer in Hunt County within the Trinity River Basin is projected by Region D to have a more than ample supply availability to meet the needs of the City of Celeste through 2060.

To meet the remaining 2070 needs, it is recommended that the City of Celeste contract with the City of Greenville for treated water supply of up to 87 ac-ft/yr by 2070, and construct a treated water pipeline with necessary infrastructure to convey this amount from the City of Greenville’s system to the City of Celeste. This strategy is contingent upon the recommended seller strategies for the City of Greenville.

Given the increasing costs to comply with more stringent regulations and the decreasing reliability of groundwater as a future supply source due to quality issues in this region, it is recommended that groundwater supply systems consider combining resources and/or soliciting future water supply from neighboring systems and/or major water providers in the region. If a feasible alternative becomes available, then the recommendations previously discussed should be disregarded and a re-evaluation completed.

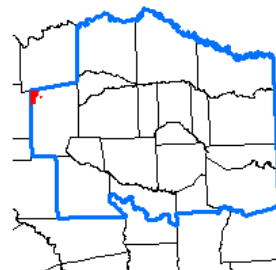


- Relation**
- Buyer
  - Seller
  - Source
  - Region D Boundary
  - Counties
  - Streams
  - Reservoirs

0 15,000 30,000 60,000

Feet

1 inch = 30,000 feet

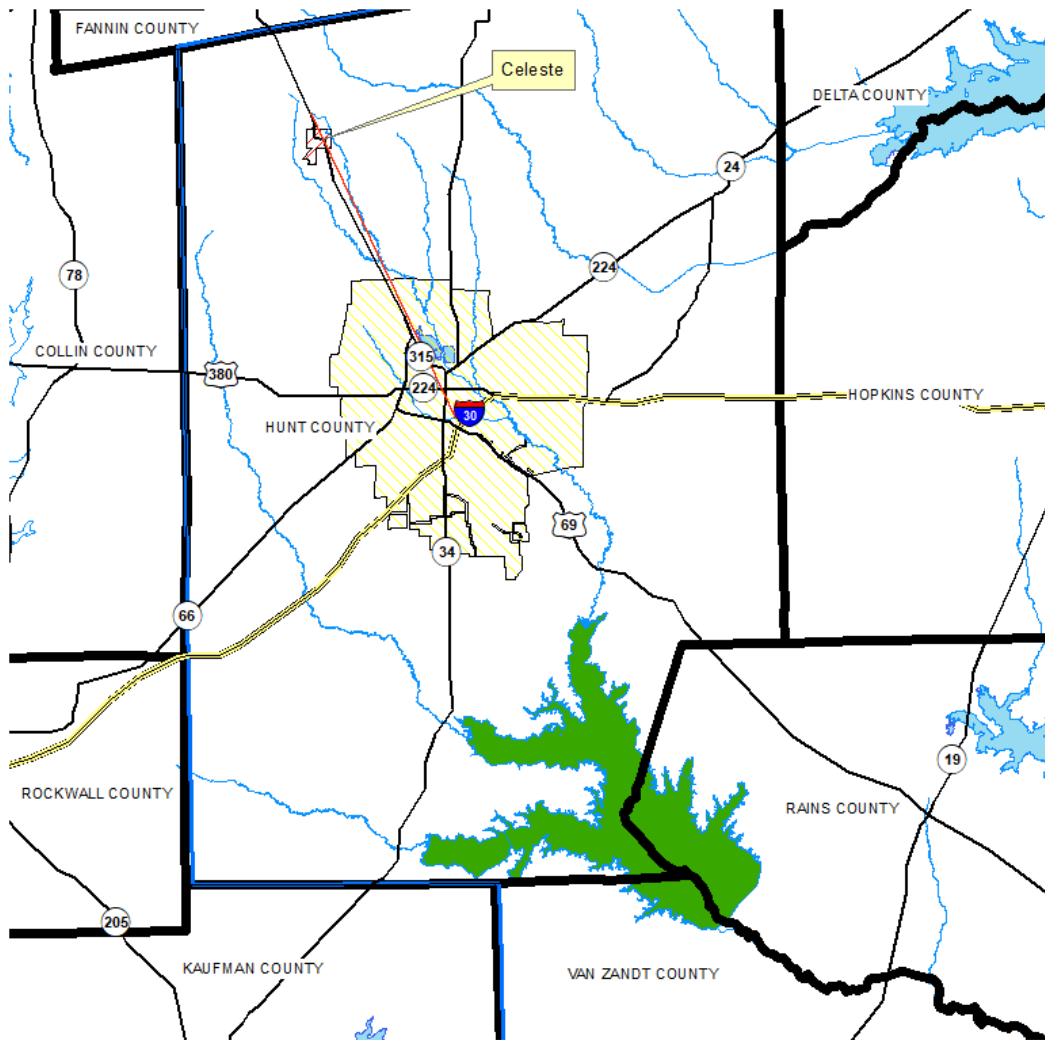


### Attachment A

Celeste  
 Recommended Strategy  
 Drill New Wells (Hunt, Woodbine, Trinity)

<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices Celeste - Drill New Wells (Hunt, Woodbine Aquifer, Trinity Basin)</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018</b>	
<i>Item</i>	<i>Estimated Costs for Facilities</i>
Well Fields (Wells, Pumps, and Piping)	\$1,105,000
Water Treatment Plant (0.6 MGD)	\$61,000
<b>TOTAL COST OF FACILITIES</b>	<b>\$1,166,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$408,000
Environmental & Archaeology Studies and Mitigation	\$44,000
Land Acquisition and Surveying (4 acres)	\$22,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	<u>\$46,000</u>
<b>TOTAL COST OF PROJECT</b>	<b>\$1,686,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$119,000
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$11,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$36,000
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (141126 kW-hr @ 0.08 \$/kW-hr)	\$11,000
Purchase of Water (229 acft/yr @ 500 \$/acft)	<u>\$115,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$292,000</b>
<b>Available Project Yield (acft/yr)</b>	229
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$1,275
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$755
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$3.91
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$2.32
<i>JMP</i>	<i>10/5/2019</i>





- Pipeline
- Relation**
- Buyer
- Seller
- Source
- Region D Boundary
- Counties
- Streams
- Reservoirs

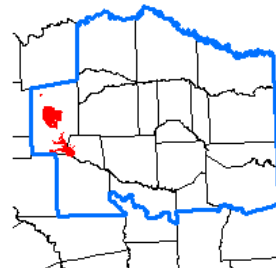
0 15,000 30,000 60,000

Feet

1 inch = 30,000 feet

### Attachment B

Celeste  
 Recommended Strategy  
 New Contract (Greenville) and Treated Water Pipeline



<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices Celeste - New Contract with Greenville 2070</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
Primary Pump Station (0.08 MGD)	\$484,000
Transmission Pipeline (6 in dia., 12 miles)	\$1,606,000
<b>TOTAL COST OF FACILITIES</b>	<b>\$2,090,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$651,000
Environmental & Archaeology Studies and Mitigation	\$325,000
Land Acquisition and Surveying (34 acres)	\$186,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	<u>\$90,000</u>
<b>TOTAL COST OF PROJECT</b>	<b>\$3,342,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$235,000
Operation and Maintenance	
Pipeline, Wells, and Storage Tanks (1% of Cost of Facilities)	\$16,000
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$12,000
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (18280 kW-hr @ 0.08 \$/kW-hr)	\$1,000
Purchase of Water (87 acft/yr @ 883 \$/acft)	<u>\$77,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$341,000</b>
<b>Available Project Yield (acft/yr)</b>	<b>87</b>
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	<b>\$3,920</b>
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	<b>\$1,218</b>
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	<b>\$12.03</b>
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	<b>\$3.74</b>
<i>JMP</i>	<i>10/3/2019</i>

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF COUNTY-OTHER IN HUNT COUNTY**

**Description of Water User Group:**

The County-Other WUG in Hunt County comprises all or portions of Campbell WSC, Jacobia WSC, City of Lone Oak, Maloy WSC, and Aqua Texas within Hunt County. The WUG population is projected to be 6,342 in 2020 and 58,270 by the year 2070. The WUG is supplied by groundwater from the Nacatoch, Trinity, and Woodbine Aquifers and purchases surface water from Cash SUD, City of Cooper, and City of Greenville. In Hunt County, the County-Other WUG is projected to have a deficit of 20 ac-ft in 2020 increasing to 283 ac-ft by 2070 within the Sulphur River Basin. Within the Sabine River Basin a deficit of 65 ac-ft is projected by 2040 increasing to 3,426 ac-ft by 2070. In the Trinity River Basin a deficit of 2 ac-ft is projected by 2030 increasing to 125 ac-ft by 2070.

**Water Supply and Demand Analysis:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Population</b>	6,342	11,000	17,951	23,690	36,034	58,270
<b>Projected Water Demand</b>	790	1,326	2,130	2,792	4,238	6,846
<b>Water Demand from other entities</b>	0	0	0	0	0	0
<b>Current Water Supply</b>	1,652	1,775	1,964	2,089	2,421	3,012
<b>Projected Supply Surplus (+) / Deficit (-)</b>	<b>862</b>	<b>449</b>	<b>-166</b>	<b>-703</b>	<b>-1,817</b>	<b>-3,834</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

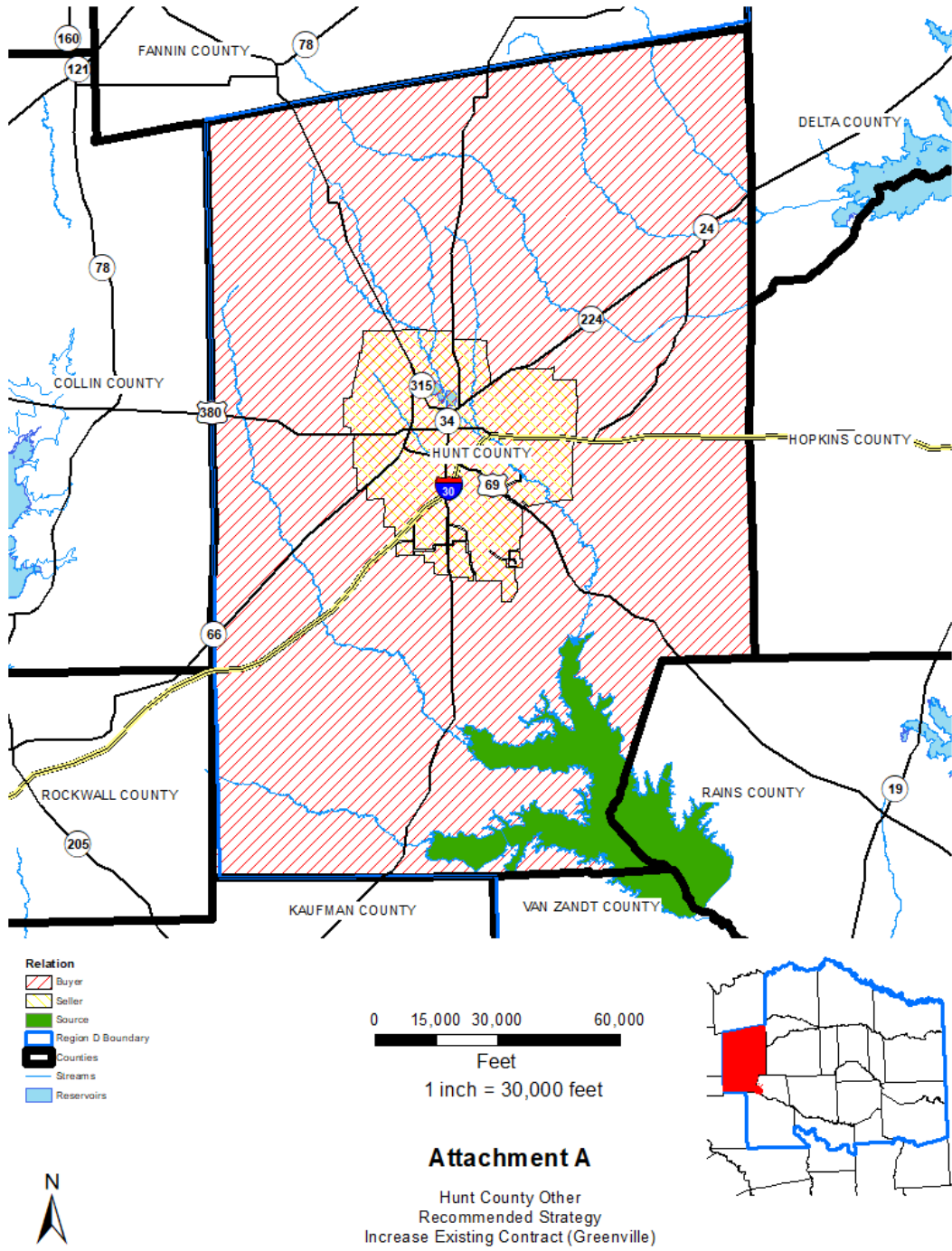
Multiple alternative strategies were considered to meet the WUG’s water supply shortages as summarized in the following table. Advanced conservation was not considered because the per capita use per day was below the 140 gpcpd threshold set by the planning group. Water reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was identified as a potential source of water for Hunt County-Other, but the Nacatoch aquifer does not have sufficient availability to cover all shortages. Various sources of treated surface water are available to the entities in the County-Other WUG based on proximity and availability. Potential sources for contracted surface water include the City of Greenville, City of Commerce, Combined Consumers SUD, and City of West Tawakoni. Another potentially feasible strategy is the Wood County Pipeline which could supply groundwater from Wood County via existing infrastructure with the City of Greenville.

<b>Strategy</b>	<b>Firm Yield (ac-ft)</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Environmental Impact</b>
Drill New Wells (Nacatoch Aquifer, Sabine Basin)	<b>703</b>	<b>\$8,609,000</b>	<b>\$1,150,000</b>	<b>\$1,636</b>	<b>1</b>
Increase Existing Contract with City of Greenville (contingent upon Greenville WMSs)	<b>3,834</b>	<b>\$0</b>	<b>\$3,385,000</b>	<b>\$883</b>	<b>1</b>
Wood County Pipeline, Increase Contract	<b>3,834</b>	<b>\$0</b>	<b>\$5,529,000</b>	<b>\$1,442</b>	<b>2</b>

**Recommendations:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Increase Existing Contract (w/Greenville, contingent upon Greenville WMSs)</b>	0	0	166	703	1,817	3,834

Increasing the existing water supply contracts with the City of Greenville to purchase treated surface water is recommended to provide sufficient supply to meet the demands of the County-Other WUG through 2070. Increasing contracted supply with the City of Greenville is recommended, contingent upon the City of Greenville's recommended WMSs.



<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices</b>	
<b>Hunt County Other - Increase Existing Contract with Greenville</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
<b>ANNUAL COST</b>	
Operation and Maintenance	
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$0
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (0 kW-hr @ 0.08 \$/kW-hr)	\$0
Purchase of Water (3834 acft/yr @ 883 \$/acft)	<u>\$3,385,000</u>
<b>TOTAL ANNUAL COST</b>	<b>\$3,385,000</b>
<b>Available Project Yield (acft/yr)</b>	3,834
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$883
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$883
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$2.71
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$2.71
<i>JMP</i>	<i>10/4/2019</i>

**EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CITY OF GREENVILLE**

**Description of Water User Group:**

The City of Greenville provides water service in Hunt County. The WUG population is projected to be 29,871 in 2020 increasing to 77,705 by the year 2070. The City of Greenville uses surface water from Greenville’s city lake and purchases surface water out of Lake Tawakoni from the Sabine River Authority. The City of Greenville sells water to the City of Caddo Mills, Shady Grove WSC and entities within Hunt County-Other, Manufacturing, Mining and Steam Electric WUGs in Hunt County. The City of Greenville is projected to have a deficit of -3,618 ac-ft by 2070. When incorporating projected treated water demands of existing and potential customers, the projected deficit increases from -3,239 ac-ft in 2020 to 24,844 ac-ft in 2070.

**Water Supply and Demand Analysis:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Population</b>	29,871	34,309	40,330	48,645	60,491	77,705
<b>Projected Water Demand</b>	9,271	10,481	12,187	14,624	18,163	23,319
<b>Existing Water Demand from other entities</b>	2,431	2,608	2,807	3,022	3,213	3,410
<b>Current Total (Raw &amp; Treated) Water Supply</b>	13,718	23,783	23,615	23,448	23,300	23,111
<b>Projected Supply Surplus (+) / Deficit (-)</b>	<b>2,016</b>	<b>10,694</b>	<b>8,621</b>	<b>5,802</b>	<b>1,924</b>	<b>-3,618</b>

<b>Treated Supply Analysis</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Projected Greenville WUG Water Demand</b>	9,271	10,481	12,187	14,624	18,163	23,319
<b>Existing Treated Water Demand from other entities</b>	2,058	2,235	2,434	2,649	2,840	3,037
<b>Existing Customer Projected Needs</b>	0	1	202	771	1,925	4,088
<b>Potential Customer Projected Needs</b>	96	273	519	920	1,523	2,490
<b>Current Treated Water Supply</b>	8,090	8,090	8,090	8,090	8,090	8,090
<b>Existing Supply (Greenville City Lake/Reservoir)</b>	3,318	3,318	3,318	3,318	3,318	3,318
<b>Existing Supply (Tawakoni Lake/Reservoir)</b>	2,714	2,537	2,338	2,123	1,932	1,735
<b>Projected Treated Supply Surplus (+) / Deficit (-)</b>	<b>-3,239</b>	<b>-4,626</b>	<b>-6,531</b>	<b>-9,183</b>	<b>-12,913</b>	<b>-18,266</b>
<b>Projected Treated Supply Surplus (+) / Deficit (-) with Projected Additional Customer Needs</b>	<b>-3,335</b>	<b>-4,900</b>	<b>-7,252</b>	<b>-10,874</b>	<b>-16,361</b>	<b>-24,844</b>

**Evaluation of Potentially Feasible Water Management Strategies:**

Multiple alternative strategies have been identified and evaluated to meet the City of Greenville’s water supply shortages as summarized in the below table. Advanced conservation is recommended as the gpcd associated with the projected population and demand is approximately 277 gpcd. The City of Greenville’s 2019 water conservation plan utilizes a base per capita water use of 156 gpcd. Thus, the recommended advanced water conservation strategy is to achieve the identified per capita water use of 156 gpcd. Water reuse was not considered because the City has not presently indicated an identified a demand for non-

potable water. Groundwater was not determined to be feasible due to limited availability and the City's current utilization of surface water supplies.

Potentially feasible surface water strategies include the purchase of water out of Chapman Lake from either the City of Sulphur Springs and/or NTMWD, and purchase of raw water from the Sabine River Authority's proposed Toledo Bend Transfer. To utilize the City of Sulphur Springs supply from Chapman Lake, one strategy would necessitate that the City construct an intake structure, pump station, pipeline, and new Water Treatment Plant (WTP) to bring water from Chapman Lake to the City. The City is also presently evaluating the feasibility of a water swap whereby the City would obtain NTMWD supply from Chapman Lake (via construction of a tie-in pipeline to NTMWD's existing raw water line) in a 1-to-1 exchange for Greenville's supply from Lake Tawakoni. Since this strategy would not produce additional supply for the City, it has not been included herein as a feasible strategy to produce additional supply. However, given the identified need, a strategy to purchase supply from NTMWD and construct a tie-in pipeline has been identified and evaluated. Additionally, according to preliminary discussions with Region C, Phase 1 of the Toledo Bend Transfer is currently not being considered until 2070, and was thus not considered a feasible alternative for Greenville until 2070.

Because the City of Greenville currently provides wholesale water to a number of entities in the surrounding area, shortages for Caddo Mills, Hunt County-Other, Hickory Creek SUD (a potential new customer), the City of Wolfe City (a potential new customer) and the City of Celeste (a potential new customer) were included in the analysis of needed supply for Greenville under the assumption that Greenville could sell treated and untreated water, as needed, to these other entities.

The City of Greenville's existing water treatment plant was expanded in 1993-1994 to a capacity of 13 MGD. Based on TWDB projections, the City will need to expand the WTP by 2030 to accommodate projected demand for the City and its customers. With an assumed peaking factor of 1.8, expanding the WTP to include an additional 15 MGD of capacity will ensure adequate capacity through 2060. By 2070, the City will need to construct an additional new WTP with a total production capacity of 15 MGD to meet projected demands of the City and its customers.

To meet projected demands for the City along with the other existing and potential customers, the City of Greenville would need to implement a voluntary reallocation of surplus supplies to Hunt County Manufacturing.

Projected demands for Steam Electric power generation are associated with a proposed 1,750 MW combined cycle generation facility at Greenville. This facility was announced in 2002, but has not yet been constructed. The facility has been estimated to require approximately 4,000 acre-feet per year of supply, while the projections for Steam Electric water demand in Hunt County range from 12,400 ac-ft in 2020 to 28,500 ac-ft in 2070. Because of the uncertainty in demand and when this facility will be constructed, for the purposes of the 2021 Plan, Steam Electric demands have not been included in the strategy for the City of Greenville. Depending on the actual demand, the City may need to construct a pipeline to other water resources earlier than the 2070 planning horizon.

Another potentially feasible strategy is the Wood County Pipeline which could supply groundwater from Wood County.

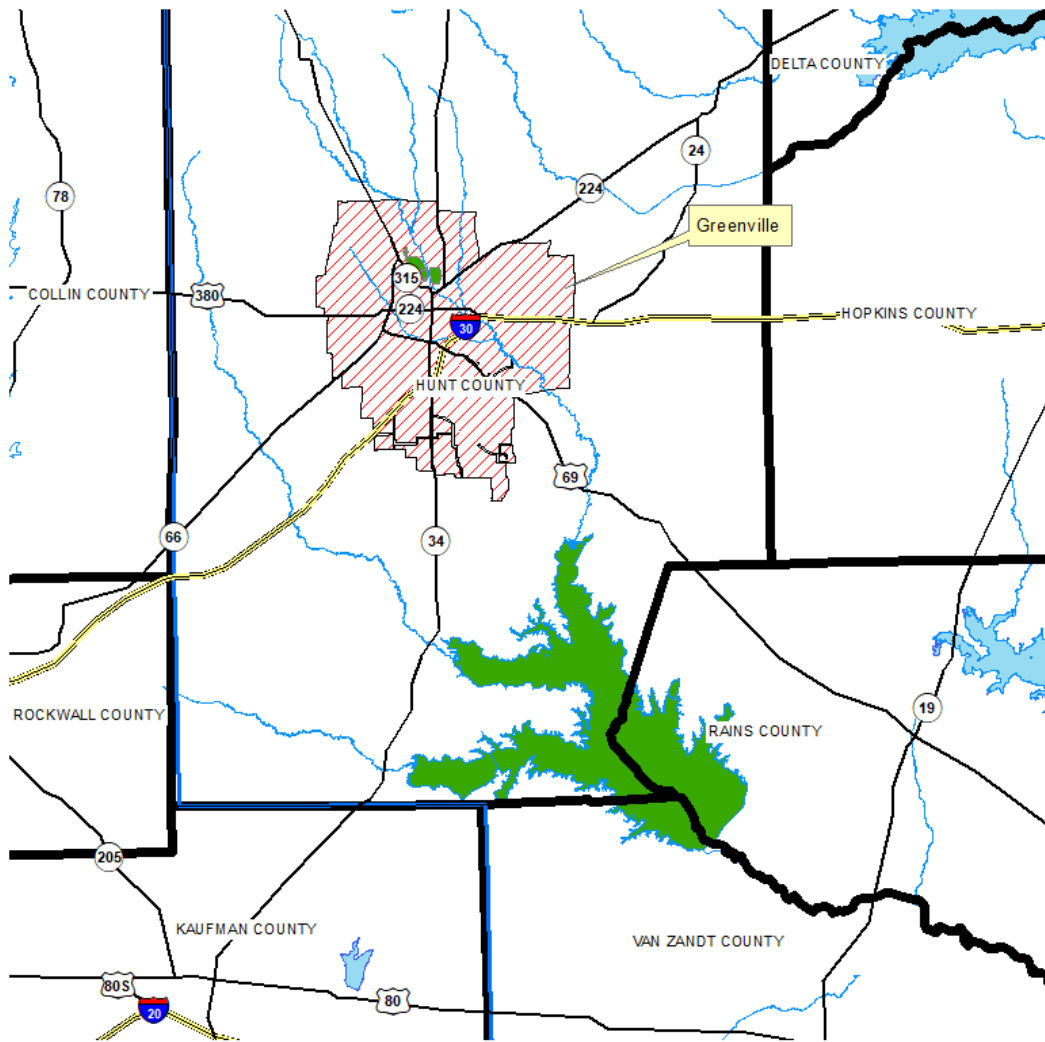
<b>Strategy</b>	<b>Firm Yield (ac-ft)</b>	<b>Start Year</b>	<b>Total Capital Cost</b>	<b>Total Annualized Cost</b>	<b>Unit Cost</b>	<b>Env. Impact</b>
Advanced Water Conservation	9,741	2020	0	\$6,633,000	\$681	
Voluntary Reallocation of Hunt County Other Surplus purchased from Greenville (purchased from SRA Tawakoni; ac-ft/yr)	354	2020	\$0	\$0	\$0	1
Voluntary Reallocation of Hunt Manufacturing Surplus purchased from Greenville (purchased from SRA Tawakoni; ac-ft/yr)	455	2070	\$0	\$0	\$0	1
WTP Expansion (15 MGD)	9,335	2030	\$43,955,000	\$5,309,000	\$569	1
New WTP (15 MGD)	9,335	2070	\$81,786,000	\$9,880,000	\$1,058	1
Chapman Intake, Pump Station, and Raw Water Pipeline (contingent on City of Sulphur Springs Strategies)	500	2070	\$60,235,000	\$4,851,000	\$9,702	3
Toledo Bend Tie-In Pipeline	500	2070	\$12,559,000	\$1,112,000	\$2,224	3
Chapman Raw Water Tie-In Pipeline (purchase from NTMWD)	500	2070	\$10,389,000	\$945,000	\$1,890	2
Wood County Pipeline Tie-in	6,491	2020	\$0	\$9,360,000	\$1,442	2



**Recommendations:**

	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>Advanced Water Conservation</b>	<b>4,051</b>	<b>4,486</b>	<b>5,140</b>	<b>6,124</b>	<b>7,593</b>	<b>9,741</b>
<b>Voluntary Reallocation of Hunt Manufacturing Surplus purchased from Greenville (purchased from SRA Tawakoni; ac-ft/yr)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>455</b>
<b>WTP Expansion (15 MGD)</b>	<b>0</b>	<b>140</b>	<b>1,391</b>	<b>3,059</b>	<b>5,320</b>	<b>2,757</b>
<b>New WTP (15 MGD)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5,313</b>

The recommended strategies to meet the projected demands of the City of Greenville and its wholesale customers (both existing and identified potential future customers) first includes advanced water conservation efforts to reduce projected demand rate from 277 gpcd to 156 gpcd. Also by 2030, the existing 13 MGD water treatment plant should be expanded by 15 MGD. This will allow the provision of additional treated supply capacity up to 9,335 ac-ft/yr. By 2070, voluntary reallocation of Hunt Manufacturing surplus supply is recommended as well as the construction of an additional 15 MGD WTP to provide additional treatment capacity.



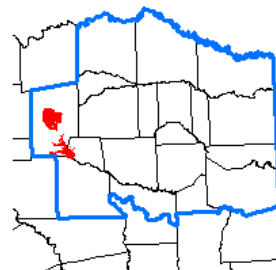
- Relation**
- Buyer
  - Seller
  - Source
  - Region D Boundary
  - Counties
  - Streams
  - Reservoirs

0 15,000 30,000 60,000

Feet  
1 inch = 30,000 feet

**Attachment A**

Greenville  
Recommended Strategy  
WTP Expansion



<b>Cost Estimate Summary Water Supply Project Option September 2018 Prices Greenville - 15 MGD WTP Expansion</b>	
<b>Cost based on ENR CCI 11170.28 for September 2018 and a PPI of 201.9 for September 2018</b>	
<b>Item</b>	<b>Estimated Costs for Facilities</b>
Water Treatment Plant (15 MGD)	\$31,653,000
<b>TOTAL COST OF FACILITIES</b>	<b>\$31,653,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$11,079,000
Environmental & Archaeology Studies and Mitigation	\$22,000
Land Acquisition and Surveying (8 acres)	\$24,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	<u>\$1,177,000</u>
<b>TOTAL COST OF PROJECT</b>	<b>\$43,955,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$3,093,000
Operation and Maintenance	
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$2,216,000
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (0 kW-hr @ 0.08 \$/kW-hr)	\$0
Purchase of Water ( acft/yr @ \$/acft)	<u>\$0</u>
<b>TOTAL ANNUAL COST</b>	<b>\$5,309,000</b>
<b>Available Project Yield (acft/yr)</b>	9,335
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$569
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$237
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$1.75
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$0.73
JMP	10/5/2019

**Cost Estimate Summary  
Water Supply Project Option  
September 2018 Prices  
Greenville - New 15 MGD WTP**

**Cost based on ENR CCI 11170.28 for September 2018 and  
a PPI of 201.9 for September 2018**

<i>Item</i>	<i>Estimated Costs for Facilities</i>
Water Treatment Plant (15 MGD)	\$58,927,000
<b>TOTAL COST OF FACILITIES</b>	<b>\$58,927,000</b>
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	\$20,624,000
Environmental & Archaeology Studies and Mitigation	\$22,000
Land Acquisition and Surveying (8 acres)	\$24,000
Interest During Construction (3% for 1 years with a 0.5% ROI)	<u>\$2,189,000</u>
<b>TOTAL COST OF PROJECT</b>	<b>\$81,786,000</b>
<b>ANNUAL COST</b>	
Debt Service (3.5 percent, 20 years)	\$5,755,000
Operation and Maintenance	
Intakes and Pump Stations (2.5% of Cost of Facilities)	\$0
Dam and Reservoir (1.5% of Cost of Facilities)	\$0
Water Treatment Plant	\$4,125,000
Advanced Water Treatment Facility	\$0
Pumping Energy Costs (0 kW-hr @ 0.08 \$/kW-hr)	\$0
Purchase of Water ( acft/yr @ \$/acft)	<u>\$0</u>
<b>TOTAL ANNUAL COST</b>	<b>\$9,880,000</b>
<b>Available Project Yield (acft/yr)</b>	9,335
<b>Annual Cost of Water (\$ per acft), based on PF=1</b>	\$1,058
<b>Annual Cost of Water After Debt Service (\$ per acft), based on PF=1</b>	\$442
<b>Annual Cost of Water (\$ per 1,000 gallons), based on PF=1</b>	\$3.25
<b>Annual Cost of Water After Debt Service (\$ per 1,000 gallons), based on PF=1</b>	\$1.36
<i>JMP</i>	<i>10/5/2019</i>



  
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Prepared for  
**The North  
East Texas  
Regional Water  
Planning Group**

**2021  
REGION D  
WATER  
PLAN  
VOLUME II:  
APPENDICES**

FINAL

October 14, 2020

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